two spaced openings for the two parts of the tube T, and the openings are formed with re-bent flanges *f*, Fig. 2. The fins are preferably of copper, 0.010—0.015 inch in thickness, and the tube T is expanded into good contact with the flanges

FIG. 7.

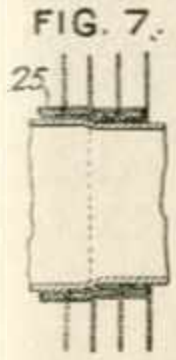


FIG. 1.

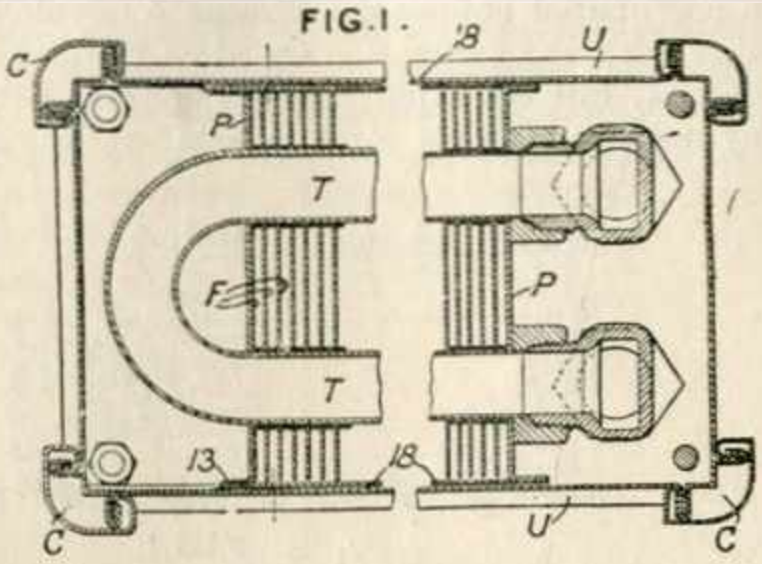


FIG. 2

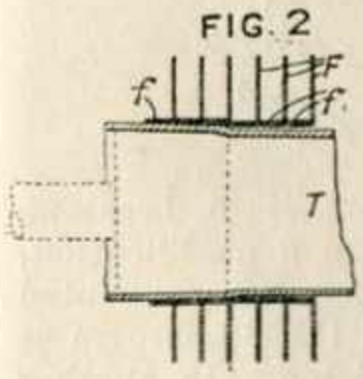
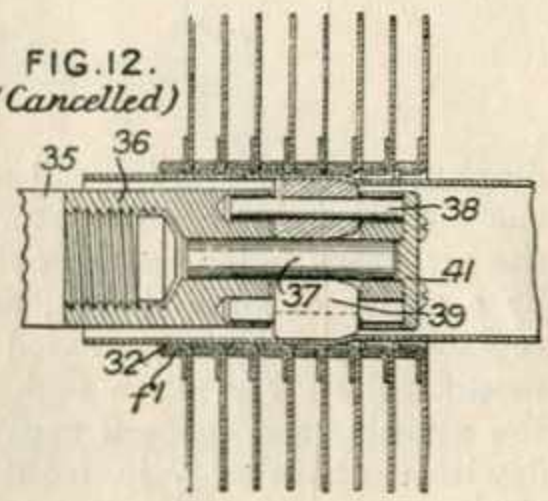


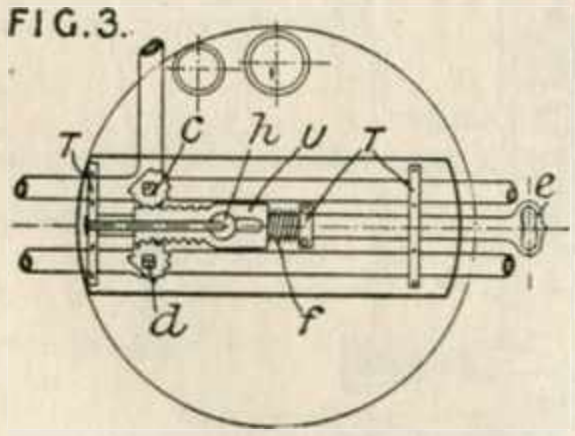
FIG. 12. *(Cancelled)*



by hydraulic pressure or by an expanding tool. The re-bent flange may enclose a ring 25, Fig. 7, or a single flange f^1, Fig. 12 (*Cancelled*), may be surrounded by re-bent flanges 32 formed from separate pieces of sheet metal.

273,315. Le Roy, P. M. June 23, 1926, [*Convention date*].

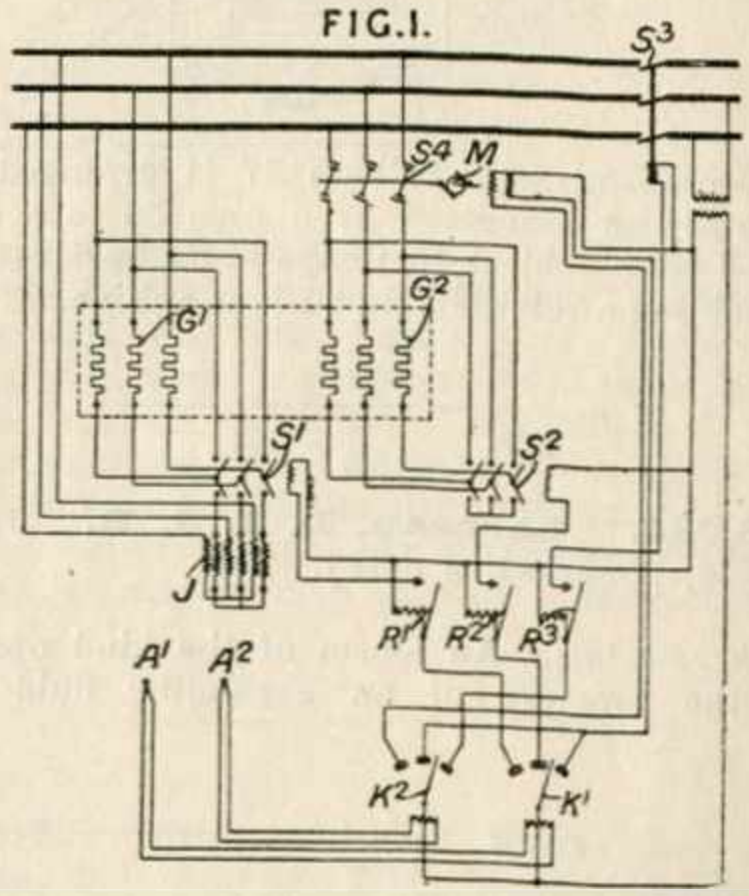
FIG. 3.



Thermostats.—A thermostat for controlling the operation of an absorption refrigerating machine comprises an aluminium rod disposed in a gas-tight tube in the generator and surmounted by a flange *h* engaging a recess formed in the upper surface of a spring-urged slotted block U supported in guides T; the block is formed with racks engaging toothed-wheels mounted upon the spindles of the valves *c*, *d*, controlling the flow of heating-medium and cooling-water respectively. In operation, the block is moved to the right by the handle *e* against the resistance of the spring *f* so as to open the valves *c*, *d* controlling the flow of heating-medium to the generator-absorber and cooling-water to the condenser. Upon a predetermined rise of temperature in the generator, the thermostat rod expands and the flange disengages the recess so that the block is moved to the left under the influence of the spring, the valve *c* being automatically closed and the valve *d* adjusted so as to direct the cooling-water from the condenser to the cooling-coil of the generator-absorber.

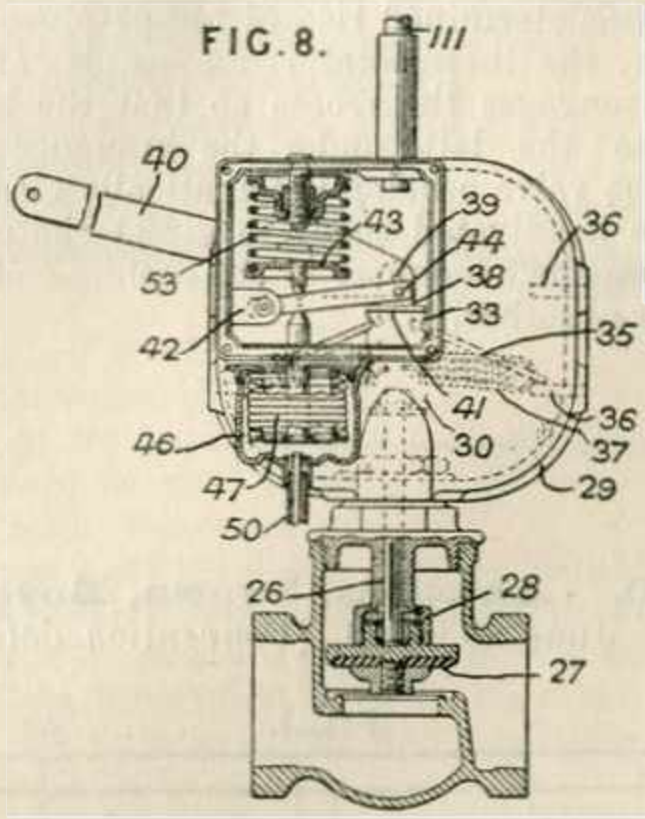
273,320. Akt.-Ges. Brown, Boveri, et Cie. June 23, 1926, [*Convention date*].

FIG. 1.



Thermostats.—A three-phase furnace is fitted with two sets of resistances G^1, G^2 and with elements A^1, A^2 responsive to the temperatures of the surface and the interior of the charge respectively, and operating switches K^1, K^2 each of which has three different positions. Initially G^1, G^2 are delta-connected by switches S^1, S^2. On approaching the desired surface temperature relay R^1 is closed to operate S^1 to change the connection of G^1 from delta to star. The star-connection is closed through an induction regulator J. On reaching the desired temperature relay R^2 operates S^2 to produce a similar change in the connection at G^2. If the surface temperature rises further the motor M operates switch S^4 to cut out G^2. In the initial position of K^2 the switch S^4 is closed by motor M. When the interior of the charge reaches the desired temperature G^2 is cut out. If the internal temperature rises further relay R^3 is closed with consequent opening of the switch S^3 in the supply circuit.

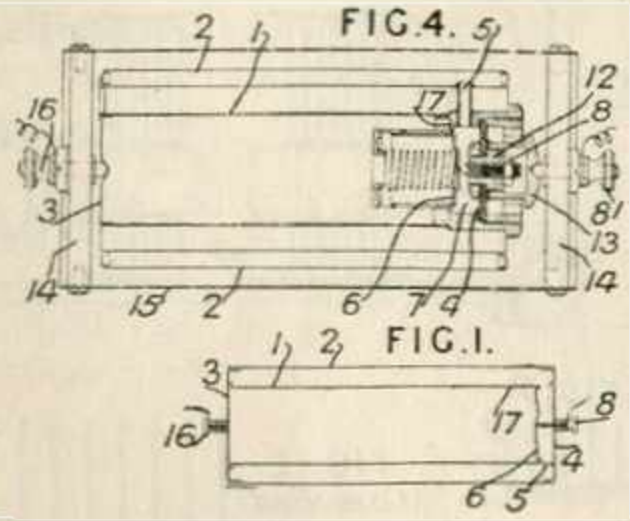
273,674. American Radiator Co., (Assignees of *Eggleston, L. W.*). July 2, 1926, [*Convention date*].



Thermostats.—A bellows 47 is arranged in a chamber 46 connected by a pipe 50 to a closed coiled tube subject to temperature variation and containing a volatile fluid such as aniline.

273,764. Cheneau, L. J. J. B. July 3, 1926, [*Convention date*].

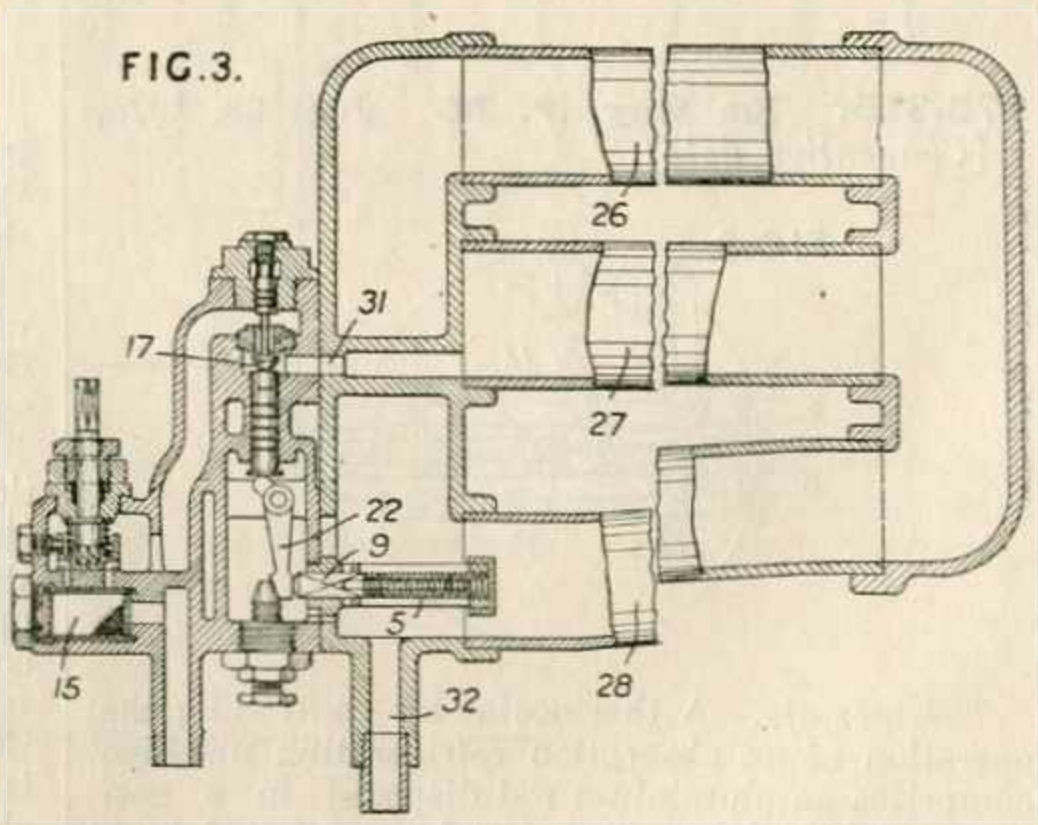
Thermostats.—An alarm of the kind operated by the pressure of an expanding fluid on a diaphragm comprises an outer cylinder 2 of good heat conductivity and an inner cylinder 1 of inferior conductivity. The cylinders are closed at one end by a disc 3 carrying an electric terminal 16 and at the other by a disc 4 carrying an adjustable screw terminal 8. Within the cylinder 1 is a corrugated copper diaphragm 6 normally in contact with the screw 8. On slow heating no action occurs, but on rapid heating the air between the cylinders expands and exerts pressure on the



diaphragm by way of small apertures 5, breaking the circuit to give an alarm. In a modification, the air space between the cylinders is constituted by a series of small tubes, and the diaphragm is replaced by a spring-pressed piston. In another modification, Fig. 4, in which a piston 6 is used, the annular air space 2 communicates by a tube 5 with a chamber 7 in front of the piston. The contact screw 8 is in connection with a terminal 8¹ through a cap 13 and plug 12 mounted in an insulating disc 4. The terminals 8¹, 16 are carried by end stays 14 and the apparatus is protected by a perforated casing 15.

274,267. Lloyd, H. J. July 2, 1926.

Thermostats.—A thermostat comprises a series of abutting bimetallic plates 5 mounted in a slotted casing closed at one end by a cap and at the other by a movable plunger 9. The thermostat is applied to a radiator having a steam valve 17 which is controlled through a bell-crank 22 by the plunger. The steam after passing the strainer 15 and the valve 17 flows through the passage 31 to the radiator element 27 and returns through the elements 26, 28 and the slots in the thermostat casing to the outlet 32.



274,471. Weiss, J. July 14, 1926, [*Convention date*]. *Drawings to Specification.*

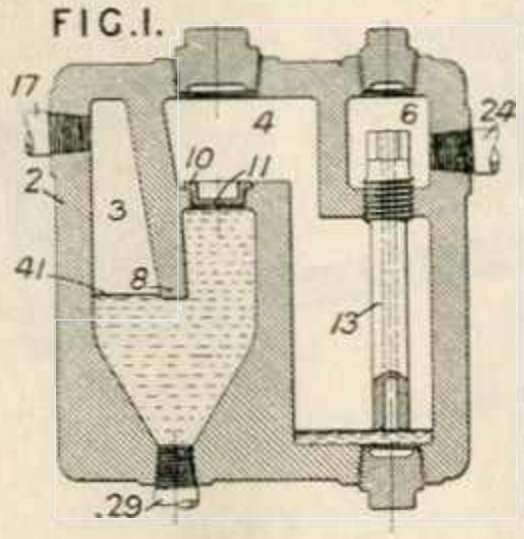
Non-conducting coverings for heat.—Insulating plates, sheets, &c. are made from fibrous vegetable material, such as wood wool, shavings, rushes, and straw, magnesite, and a solution capable of reacting with the magnesite, such as an aqueous

solution of kieserite, bitter salt, or Glauber's salt, the mass after draining, being pressed and dried in perforated moulds.

According to the Specification as open to inspection under Sect. 91 (3) (a) facing layers of cement, gypsum, artificial wood, &c., may be applied by plastering or moulding, reinforcing laths may be embedded in the mass, and the plates &c. may be formed during moulding with keys and slots of the same or other material, for example, wood cement. This subject-matter does not appear in the Specification as accepted.

274,531. Chevalier, R. F. Feb. 20, 1926.

FIG. 1.



Steam traps.—Condensate collects in a chamber communicating by a small overflow opening with another chamber in which re-evaporation takes place, and the resulting steam pressure expels the water. A casing 2 is divided into three chambers 3, 4, 6. The chamber 3, into which condensed water flows from the pipe 17, is provided with a depending partition 8, and with an outlet in which a disc 10 having a small opening 11 is placed. The chambers 4, 6 are connected by a tube 13 which is water-sealed at its lower end. As long as the water level 41 is above the lower edge of the partition 8, water passes through the opening 11 into the chamber 4, which is at lower pressure so that re-evaporation takes place. Water and steam are discharged through the tube 13 into the chamber 6 where some re-evaporation again takes place, and finally through the outlet 24. A draining pipe 29 may be provided on the chamber 3. Specifications 27044/12 and 144,270 are referred to.

274,664. Phillips, F. J. Aug. 25, 1926.

Radiators.—In heating apparatus of the kind in which pipes are embedded in plastic material so as to radiate heat from the surface of the ceiling, wall, or floor, a metal tray A is flanged at A^1 and has a coil of pipes B connected to it before being filled with concrete or like material C. The unit thus formed may be applied to the surface of an existing wall, or may be incorporated in a building without forming a structural part thereof. In another form, a plate D, Fig. 4, is first formed with a series of parallel slots D^1, and is then corrugated so as to form ribs D^2 of dovetail section. A length of pipe E is then placed so that the loops E^1 pass through the slots, and the pipe is then embedded in plastic material. The

FIG. 2.

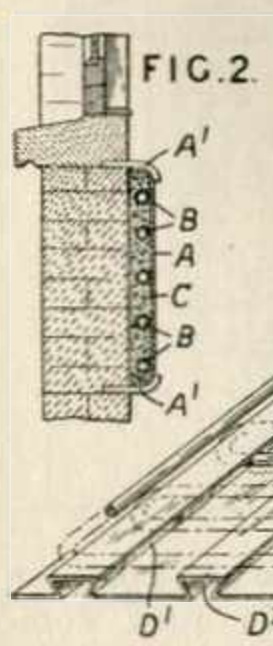
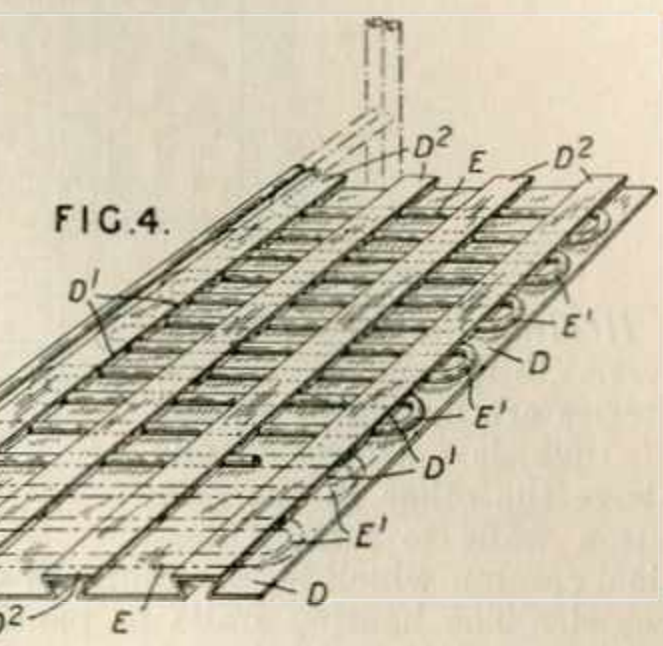


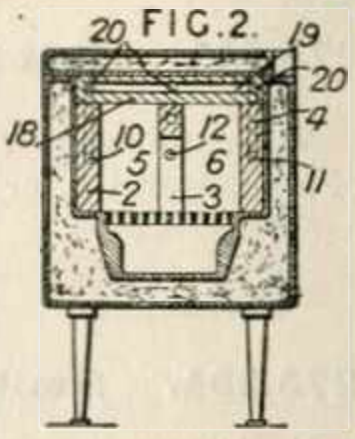
FIG. 4.



radiator unit is secured to the studs or stanchions of a wall or to the joists of girders of a floor or ceiling, and an outer coating of plaster or decorative material may be applied to the surface, or the exposed metal plate may constitute the radiating surface. The inner face of the radiator may be lined with heat insulating material. Such radiators may constitute partition walls, or ceiling surfaces, or may be used in place of floor boards.

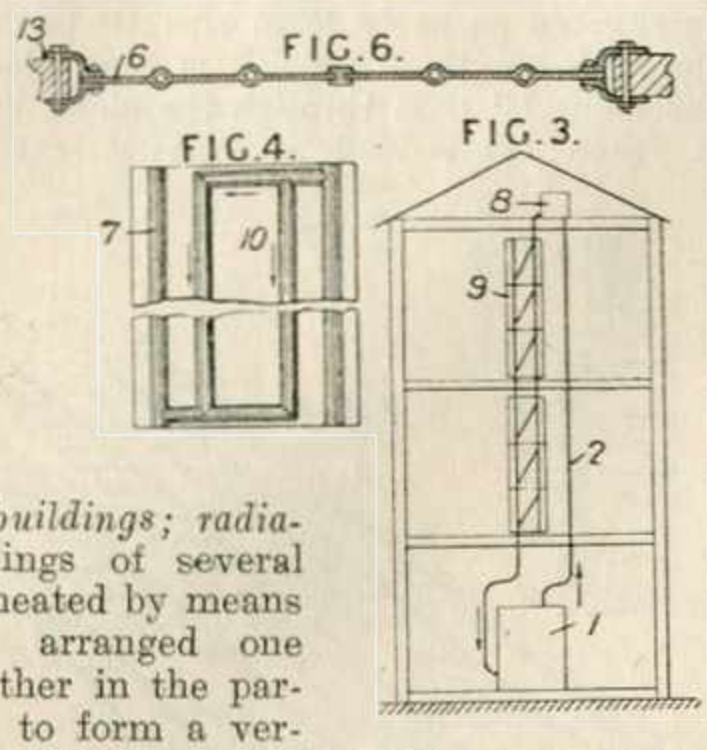
274,813. Popescu, T., Pais, A., and **Pais, C.** July 26, 1926, [*Convention date*]. *Addition to* 258,413.

FIG. 2.



Heat-storing apparatus.—In the apparatus described in the parent Specification, the heat receiving surface is increased compared with the heat transmitting surface. The furnace is situated in a recess at one end of a heat receiving block, having longitudinal flues 5, 6 bounded by vertical portions 2, 3, 4. Each of the portions 2, 3, 4 is provided with a longitudinal passage 10, 12, 11, connected with passages 19, 20, all containing volatile liquid. The heat transmitting plate 18 is covered by a heat insulating plate, portions of which are removable for cooking purposes, while an oven is mounted over one end. The parts 2, 34, provide a large surface for receiving heat. Specification 263,819 also is referred to.

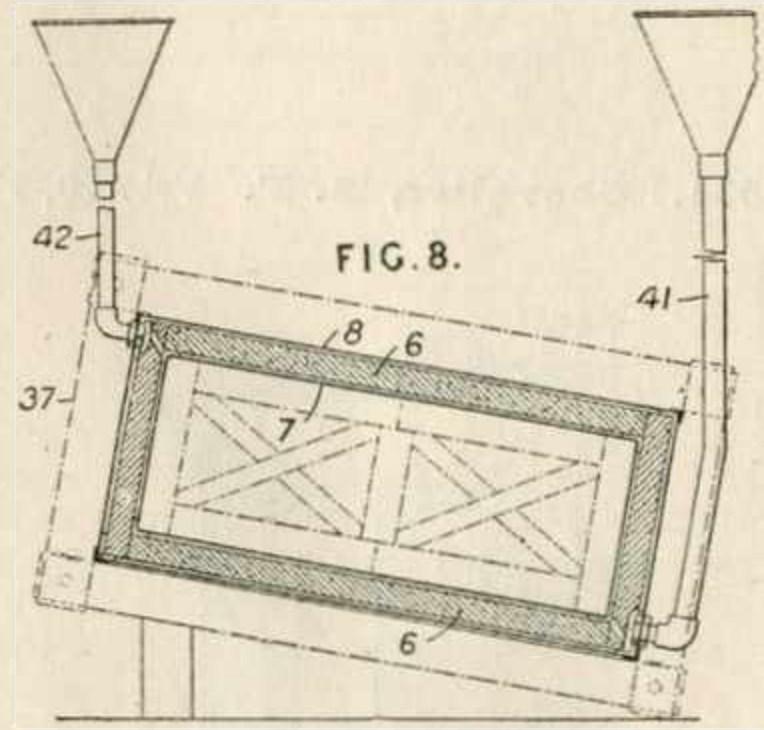
274,818. Compagnie Nationale des Radiateurs. July 26, 1926, [*Convention date*]. *Void* [*Published under Sect.* 91 *of the Acts*].



Heating buildings; radiators.—Buildings of several stories are heated by means of panels arranged one above the other in the partition walls to form a vertical column which is surmounted by an expansion vessel. The heating units or panels may comprise cast plates having two vertical conduits therein for flow and return. Short pipes may pass through the floors to connect the units. In Fig. 3, the flow pipe 2 rises directly to the expansion vessel 8, and the units 9 constitute the return conduits to the boiler 1. The units may be of the form indicated in Fig. 4, with main conduits 7 and branch conduits 10. The units may be mounted in openings in the partition walls, such as in Fig. 6, where the units 6 are clamped in supports 13 at each side and serve to heat two adjoining rooms. Two such units 6 may be placed one behind the other, and may have openings to form hot air registers.

274,941. Knox, L. L. April 23, 1926.

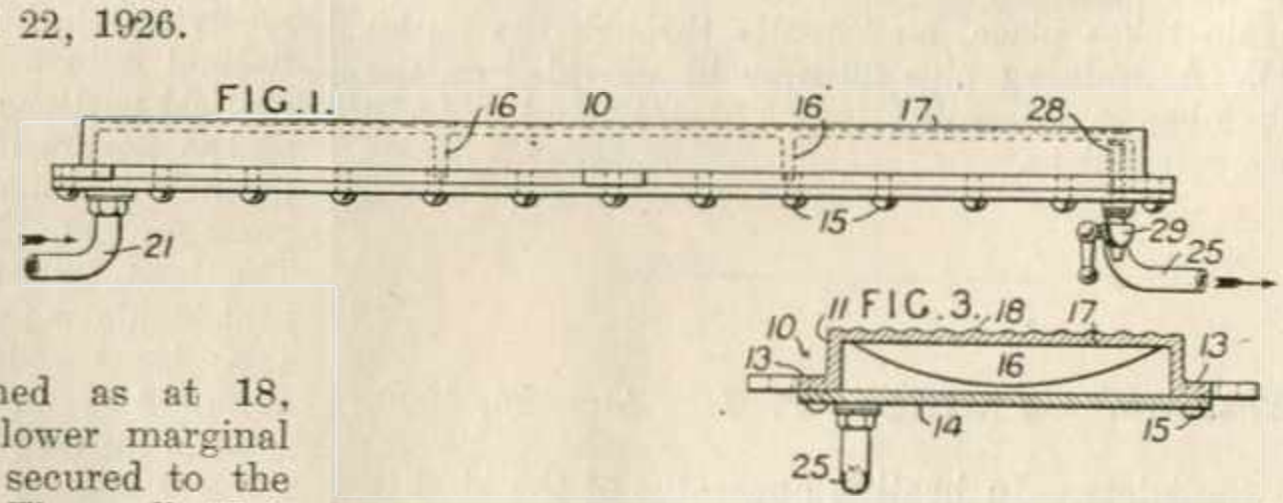
Non-conducting coverings for heat.—The walls of a refrigerator, or of a cold-storage compartment of a building, are formed of outer sheets of metal or other material enclosing a layer of insulation spaced therefrom, and a filling of natural or artificial asphalt or like material poured into the spaces between the insulation and the outer layers. The walls of large chambers may be built up of sections jointed together. The inner enamelled lining of a small chamber and of a door preferably extends without a joint to the outside of the door opening. A small chamber is made by assembling the whole wall structure, Fig. 8, comprising metal sheets 7, 8 and insulation 6, in



a frame 37, and pouring in the asphalt &c. through a tube 41, an overflow 42 being provided. Preferably spacers or chaplets are placed between the insulation and outer layers. Another method of forming the slabs consists in rolling down the metal sheets 71, Fig. 15, on to a plastic layer 70 previously applied to an insulating slab as by pouring and smoothing with a suitable tool. The wall parts may have a preliminary coating of coal-tar oils before the filling material is poured on.

275,294. Smith, T. April 22, 1926.

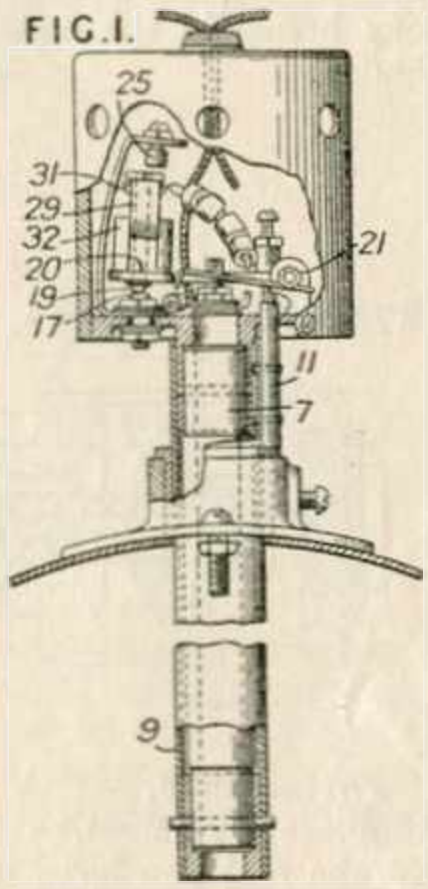
Footwarmers; radiators.—A vessel 10 arranged in the floor or wall of a motor ambulance or other motor vehicle and adapted to be heated by the whole or a part of the engine jacket water comprises an upper wall 17, preferably roughened as at 18, having depending sides 11 and lower marginal flanges 13, and a base cover 14 secured to the flanges by screws 15 or rivets. The wall 17 is provided with inwardly directed stiffening ribs 16 serving also as baffles to distribute the water, and a vent cock 29 fitted to the base cover connects with a pipe 28 extending nearly to the top of the chamber. The inlet and outlet pipes 21, 25 for the water are preferably connected to opposite corners of the base. Several such vessels may be employed, the water flowing through them in



series or in parallel. They may be employed in conjunction with the usual radiators, the inlet pipe 21 being connected with the hot water inlet of the radiator and the other pipe 25 with the cold water return to the water-circulating pump or to the jacket. The flow of water may be regulated by a cock on the inlet pipe 21 adjustable directly or through a Bowden wire control from the steering column or the instrument board.

275,431. Marks, E. C. R., *(Williams Oil-O-Matic Heating Corporation).* Sept. 4, 1926.

FIG. 1.

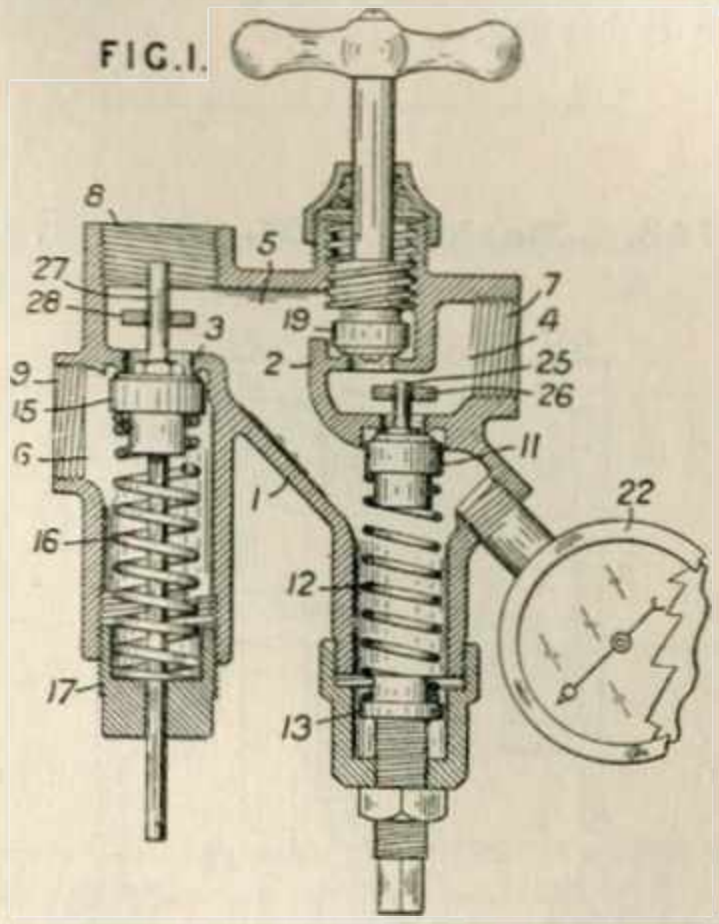


Thermostats. — A control for a furnace comprises two concentric tubes 7, 9 projecting into the stack leading from the furnace, the differential expansion of the tubes controlling contacts in the circuit of a motor which actuates dampers or operates a liquid fuel burner. The natural draught of the furnace causes a current of air to pass through the tube 7 from outside which increases the normal rate of contraction of both tubes when the furnace goes out. The tubes 7, 9 may be of iron and brass respectively and when heated, the relative expansion of the tube 9 raises a post 11 operating a switch.

275,501. Griffiths, W. J. Feb. 19, 1927.

Heating buildings.—A control valve for a water heating system comprises a hollow body 1 divided by partitions 2, 3 into three compartments 4, 5, 6. A water inlet 7 communicates with the compartment 4 and a spring pressed non-return valve 11 is interposed between the compartments 4 and 5. An opening communicates with the heating system and a second non-return valve 15 separates the exhaust port 9 from the compartment 5. Between the compartments 4 and 5 a manually operated valve 19 is fitted to enable direct communication to be established at will. The tension on the springs 12, 16 can be adjusted by adjusting the position of the members 13, 17. In operation, assuming the system to be empty, the water forces the valve 11 from its seat and enters, and the pressure within the system can be adjusted by varying the tension in the spring 12. Excess pressure within the system is relieved by the valve 15 which opens at any predetermined pressure. If the pressure is maintained and the water is low, fresh water is admitted through the valve

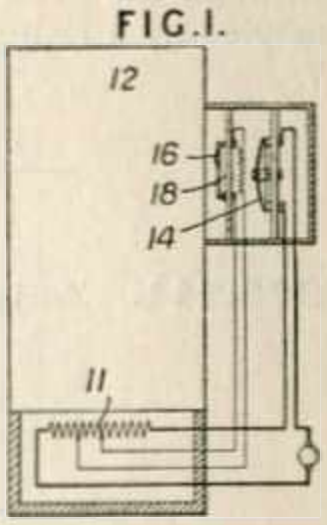
FIG. 1.



19. A pressure gauge 22 indicates the pressure in the system. Bridges 26, 28 are provided for centering the valve guides 25, 27.

275,527. Spencer Thermostat Co., and **Marshall, L. K.** April 19, 1927.

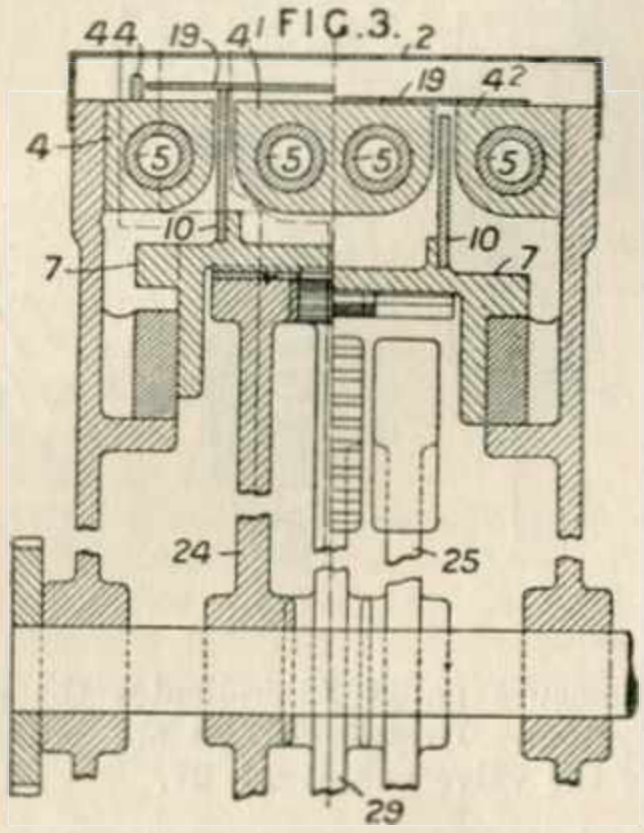
FIG. 1.



Thermostats.—In a thermostat of the kind in which a heater is controlled by a main thermostat actuated by an auxiliary heater under the control of an auxiliary thermostat responsive to the main heater and actuating an electric switch, the thermostats are so arranged that current through the contacts is discontinued by the main thermostat, and the discontinuity is maintained until the contacts have been separated by the auxiliary thermostat. A boiler 12 is heated by a resistance element 11 which includes in its circuit a thermostatic bimetallic disc switch 14 of the kind described in Specification 178,103. The disc is heated by an auxiliary heater 18 in series with a thermostatic auxiliary switch 16 in a circuit including a portion of the resistance 11. When the boiler reaches a predetermined temperature the thermostat 16 closes its switch, and the heater 18 rapidly heats the main thermostat 14 until its switch opens and breaks the main circuit which supplies both heaters. The thermostat 14 is in heat-transfer relation to the boiler 12 and maintains its switch open until after the thermostat 16 has cooled

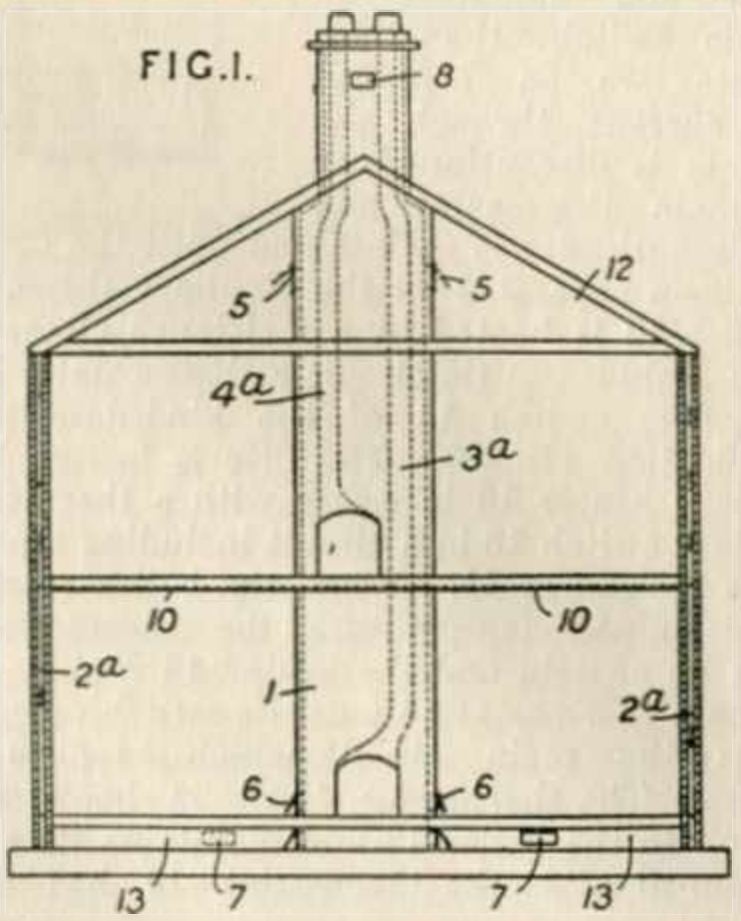
ciently to open its switch. The circuit is finally re-established by the main switch. A modification is described in which gas heaters controlled by solenoids are used in place of the resistance heaters.

275,743. Barker, J. H. May 21, 1926.



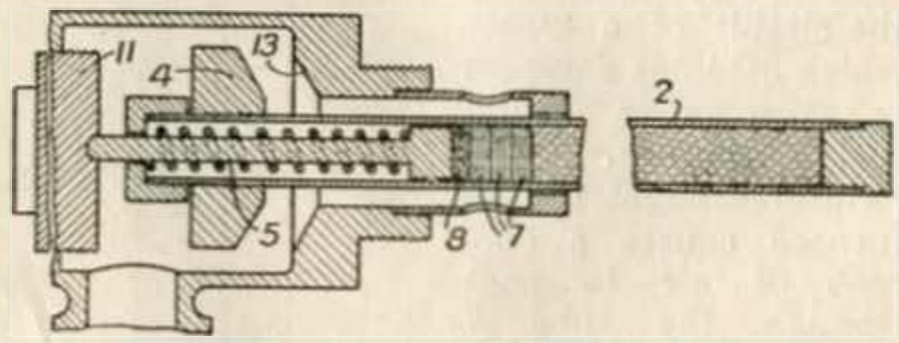
Heating systems and apparatus.—Ovens for use in heating cordite discs 19 are fitted with a series of hollow bars on supports 4, 4^1, 4^2, arranged below the cover 2 to form passages for steam, hot water, or other heating medium; the passages may be lined with pipes 5. The discs are moved through the oven by means of " raising bars " 10 carried by a rising, falling, and reciprocating table 7.

275,744. Leighton, J. M. May 21, 1926.



Heating buildings.—Buildings are heated by the provision of wall cavities 2^a and a hollow chimney breast 1, which are adapted to constitute the whole or part of a closed path around which air can circulate, means also being provided to allow air to enter or escape from such path when desired. Flues 3^a, 4^a are arranged in the hollow breast 1, and for heating the building air passes from the chimney breast through valve-controlled openings 5 and into the wall cavities 2^a. Baffles 10 are provided at the first floor level to cause the air to circulate, and the air is finally drawn into the chimney breast through controlled openings 6. Part of the air path may be constituted by the space 12 between the roof and ceilings of the upper floor, or by the space 13 beneath the ground floors. Radiators may be disposed in the chimney breast in the case of an electrically-heated house.

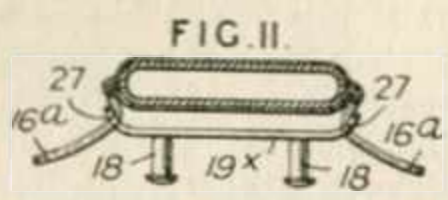
275,873. Horne, A. D. Feb. 15, 1927.



Thermostats. — A thermostat comprises a temperature-sensitive composition 2 of gutta percha and powdered charcoal packed into a tube carrying a valve 4 which coacts with a seating 13 formed in a casing adapted to be screwed into a radiator. One end of the tube is closed by a plug, and the other end is closed by a plunger 5 which abuts against a screwed stop 11. Leatherite washers 7 and an asbestos washer 8 are interposed between the plunger and the composition.

275,882. Reach, M. B. Jan. 26, 1927, [*Convention date*].

Hot-water bottles and like heating apparatus. — A watertight closure for a water bag having an elongated neck adapted to be folded on itself as described in Specification 270,256 is effected by rolling the neck upon itself. The folded or rolled neck is held under either compression or lateral tension by tabs secured to it. To the lower end of an elongated neck 2, Fig. 1, comprising thicker portions or cross bands *a*, *b*, *c* separated by thinner parts 14, 15 there are secured tabs 16 adapted to be folded over a metal stiffening plate



19 to secure it to the cross band *c*. Each tab is formed with a slit 20, through which an end of the plate 19 is passed, and a perforation adapted to be passed over a stud 18 on the plate to secure the folded tab to it. The upper cross band *a* of the neck is rolled over or folded on to the middle band *b* and the two bands are then folded on to the face of the band *c* opposite the plate 19; perforated ears 23 on the band *a* are brought around the neck and secured to the studs 18 and longer

FIG. 1.

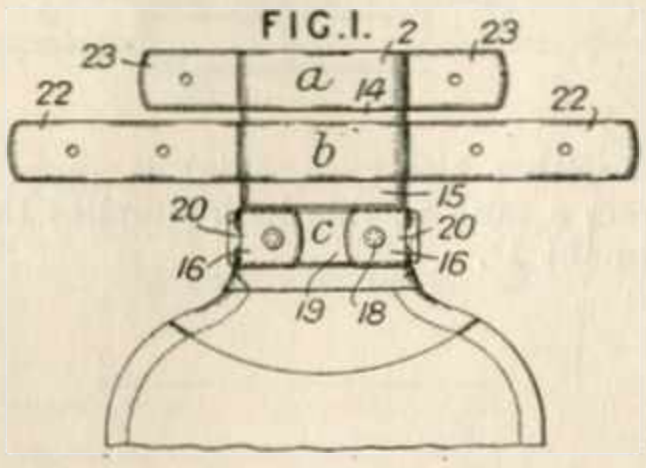
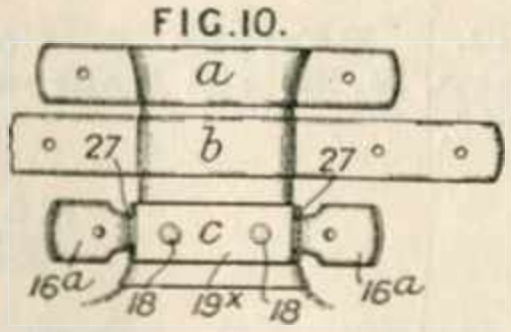
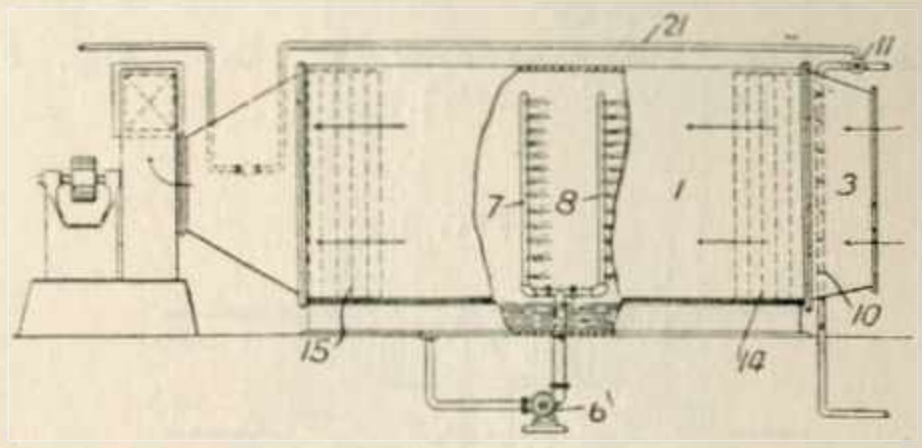


FIG. 10.



ears 22 on the band *b* are secured above the ears 23 on the studs 18, each ear 22 being secured to both studs 18. In modifications, the plate 19 is secured in an elastic pocket on the neck 2 or a flexible strap, secured to short extensions on the neck, replaces the tabs 16. In another form, tabs 16^a, Figs. 10 and 11, formed with reduced necks, are threaded through slots 27 in a plate 19^x having curved ends 27 conforming to the shape of the neck.

276,214. Carrier Engineering Co., Ltd., and **Groom, S. L.** Dec. 24, 1926.

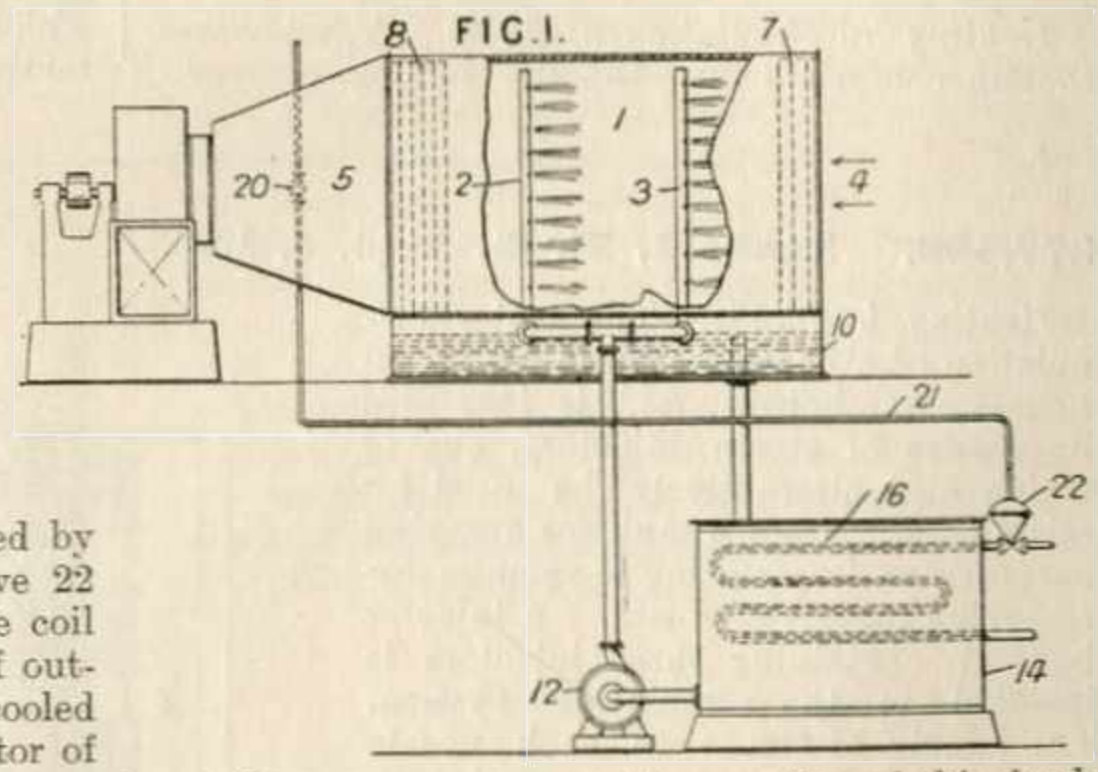


Thermostats.—A humidifier for conditioning air or gases comprises a spraying chamber 1 having at the inlet 3 a preheater 10, the heating effect of which is controlled by the temperature of the moistened gas. The preheater consists of steam or hot water pipes, and water is circulated through spray pipes 7, 8 by means of a pump 6. A thermostat 20 in the outlet 3 is connected by an air pressure pipe 21 to a steam-control valve 11 so that a predetermined temperature and humidification may be stabilized by the control of the preheater. Specification 273,069, [*Class* 55 (ii), Gas manufacture &c.], is referred to.

276,221. Carrier Engineering Co., Ltd., and **Groom, S. L.** Jan. 11, 1927.

Thermostats.—Dehumidification apparatus in which the saturation temperature of air or gases is controlled, comprises a chamber 1 having an air inlet 4 and outlet 5, and spray pipes 2, 3, supplied with water which is continuously recirculated from the base of the chamber. Diffusing and eliminator plates 7, 8, are also provided. A pump 12 circulates the water through a cooling tank 14 in which a coil 16 supplied with cold brine or the like is located. A thermostat 20 in the outlet 5 is connected by an air pressure pipe 21 with a control valve 22 whereby more or less brine is passed to the coil 16 according to variations in temperature of outgoing air. In a modification the water is cooled by passage through a coil within an evaporator of a refrigerating system, and the thermostat controls the degree of cooling by regulating the supply of cold water to the condenser of the system, or the rate at which the refrigerant is withdrawn from the evaporator. Another arrangement provides for the cooling of the circulating water by the addition to the tank 10 of cold water from an

FIG. 1.

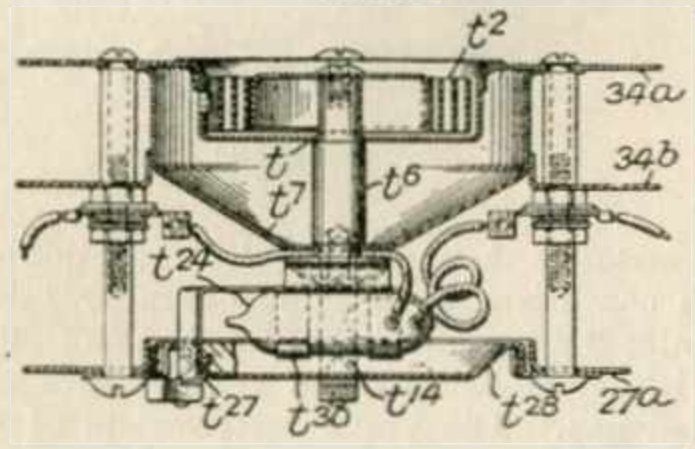


outside source. A variable quantity of this fresh supply is admitted through a control valve governed by the thermostat to a space which is separated by a weir from the main part of the tank, and from which the pump draws its supply. The tank is separated by a slightly higher weir from an outlet space from which excess water

can be run to waste or to a refrigerator. In a modified plant a three-way valve operated by the thermostat, and with a connection to the tank is interposed between the additional supply and the pump. Specifications 269,714, 273,069, [both in *Class* 55 (ii), Gas manufacture &c.]; and 276,214 are referred to.

276,362. Armstrong, C. C. Aug. 3, 1925, [*Convention date*].

FIG.2.

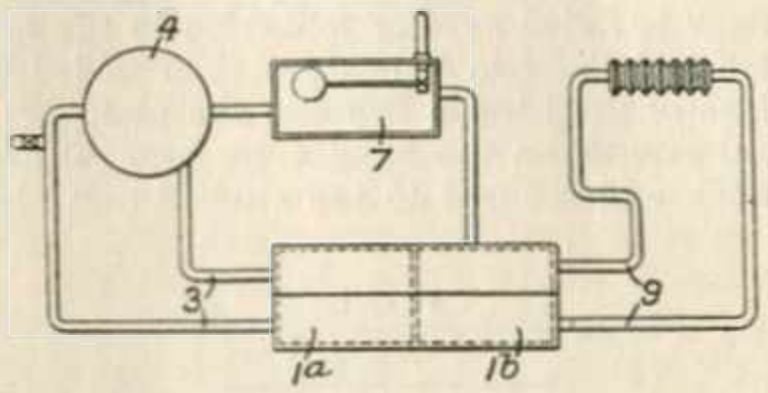


Thermostats.—The heat-sensitive element of a thermal switch is in the form of a coil t^2 fixed at one end to a shaft t^6 and at the other end to a shell t.

276,565. Comery, B., and **Duckering, G. F.** Feb. 12, 1927. *No Patent granted (Sealing fee not paid).*

Heating by circulation of fluids.—A hot water system comprises an L-boiler having compartments 1^a, 1^b which supply independent circuits 3, 9 for domestic supply and heating systems respectively. The domestic supply circuit is

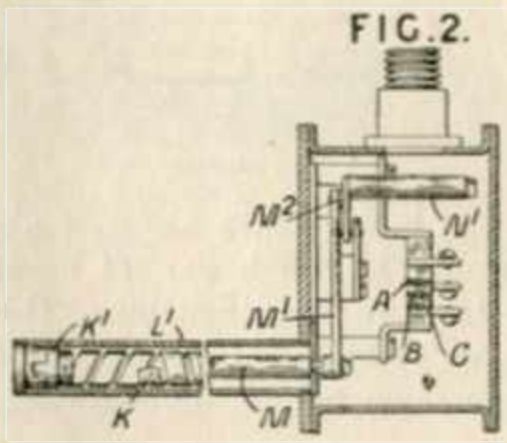
FIG.II.



provided with a cistern 4 which is supplied with water from a tank 7; this tank supplies the boiler compartment 1^b.

277,122. Reyrolle & Co., Ltd., A., Leeson, B. H., and **Andrew, T. S.** June 12, 1926.

FIG.2.

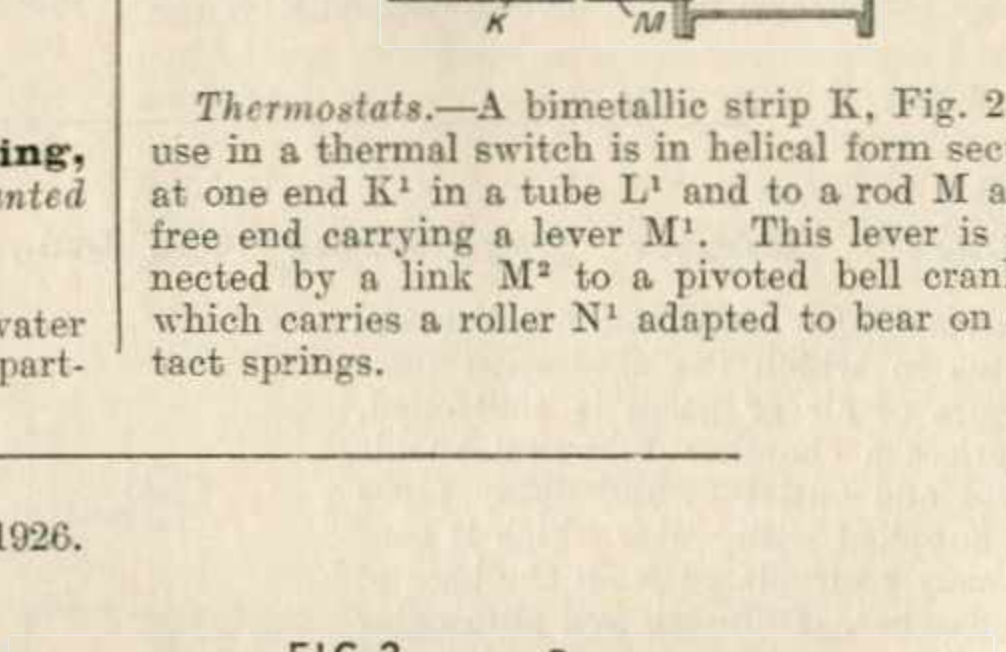


Thermostats.—A bimetallic strip K, Fig. 2, for use in a thermal switch is in helical form secured at one end K^1 in a tube L^1 and to a rod M at its free end carrying a lever M^1. This lever is connected by a link M^2 to a pivoted bell crank M which carries a roller N^1 adapted to bear on contact springs.

277,486. Linfield, H. G. Sept. 8, 1926.

Heating buildings.—The water circulation of a heating system for greenhouses, warehouses, &c., is increased by means of steam injectors, one of which may alternatively be used for raising water from a tank for spraying purposes or for creating a vacuum for removing insects or dust. An injector box B containing three injectors is inserted in the circulating system. The supply of steam to each nozzle c, c^1, c^2 is controlled by a valve E, and the outlet of each injector is provided with a spring-controlled valve F. One of the injectors c^2 is isolated by a partition b, and valves (not shown) are provided by which the inlet chambers b^1, B and outlet chambers b^2, B^2

FIG.3.



may be placed in communication. The water inlet of the chamber b^1 may be connected to a water tank and the outlet of the chamber b^2 to a hose pipe, so that the water passing through is warmed by the steam about 10°—15° and may be used for watering plants. Alternatively, the inlet may be provided with a flexible pipe so that insects, dust, &c. may be removed by the vacuum created by the injector. The nozzles C, C^1, C^2 may be of different sizes, so that several different combinations are available. Stop valves may be provided to isolate the box B for repair or other purposes.

277,577. Zimmermann, W. April 28, 1927.

Non-conducting coverings for heat. — Magnesium-containing minerals such as hornblende, dolomite, magnesite, steatite, &c. with or without the addition of fluorspar are fused and converted into threads by blowing with compressed air or steam, and the product is used for insulating purposes.

277,656. Basin, J. Sept. 17, 1926, [*Convention date*].

Radiators.—A radiator for heating buildings is constructed of sheet steel tubes having the section shown in Fig. 1, mounted in threes in headers 7 constructed of sheet steel in halves. The headers are grooved to receive a rubber washer 2, and all the sections are threaded upon a tube 4 and secured by nuts 6 at each end. The pipe connections are made to a threaded ring 3.

FIG.3.

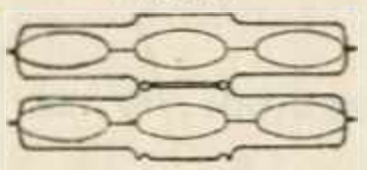


FIG.4.

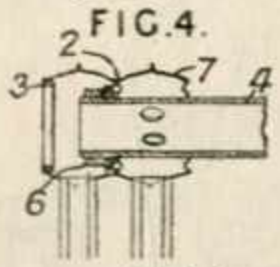
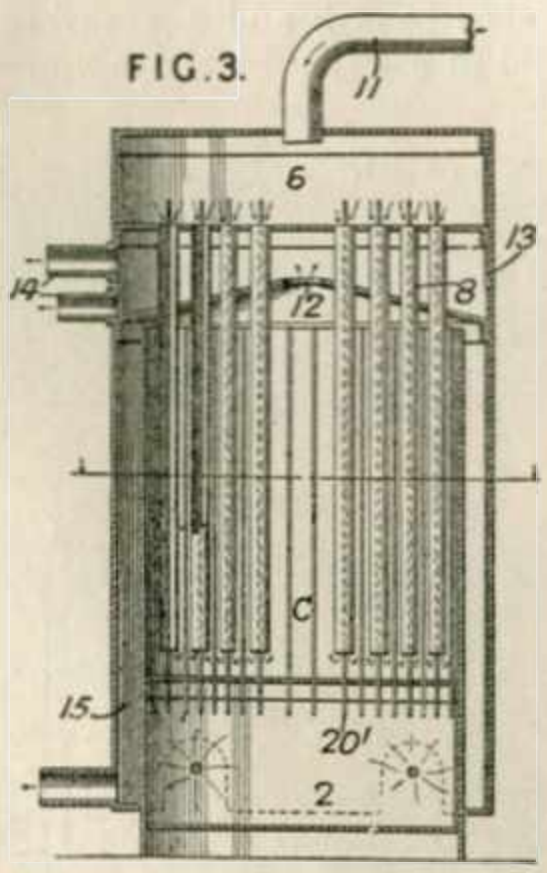


FIG.1.

277,660. Trent Process Corporation, (Assignees of *Trent, W. E.*). Sept. 14, 1926, [*Convention date*].

Heating systems and apparatus.—Granular material such as powdered coal is heated in a chamber by means of rods or conductors which are heated only at their extremities. The material is supplied by a pipe 11 and falls through tubes 8; it is forced upwards through a chamber C, and collects in an annular space 15; any volatiles escape through outlets 14. Heat is supplied by conducting rods 20^1 which extend through the

FIG.3.



tubes 8 and are heated in a furnace 2. Additional rods may be located in the chamber C.

277,747. Anderson, R. W. June 22, 1926.

FIG.1.

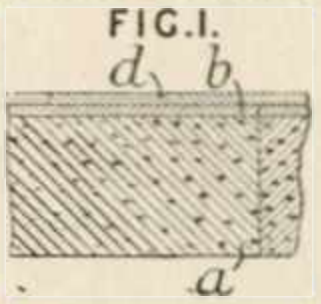
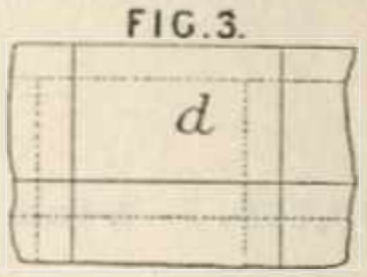


FIG.3.

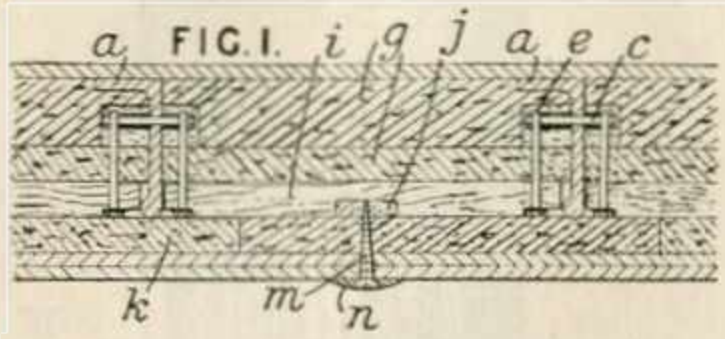


Non-conducting coverings for heat.—Heat-insulating blocks for walls, ceilings, ships' bulkheads, &c. each comprise a slab of compressed cork *a* and facings *b*, *d* of asbestos cement &c., the edges of at least one of the facings being non-conterminous with those of the slab. When assembled, the edges of the non-conterminous facings break joint with those of the slab. The double facings may be applied to both sides of the cork slab. In a modification, the facings are symmetrically disposed relatively to the slab and successively smaller. In this case, the joints of the assembled blocks are covered with strips of asbestos cement. Specifications 15975/13 and 277,748 are referred to.

277,748. Anderson, R. W. June 22, 1926.

Non-conducting coverings for heat.—The cork &c. slabs *g* for insulating ships' bulkheads &c. are retained in position by wooden frames composed

of bars *i*, *j* and supported by eyebolts *e* which are suspended on bolts *i* passing through the beams *a*. The frames may be covered with slabs comprising a cork base *k* and a covering of cement &c. and held in position by strips *n* and screws *m*.



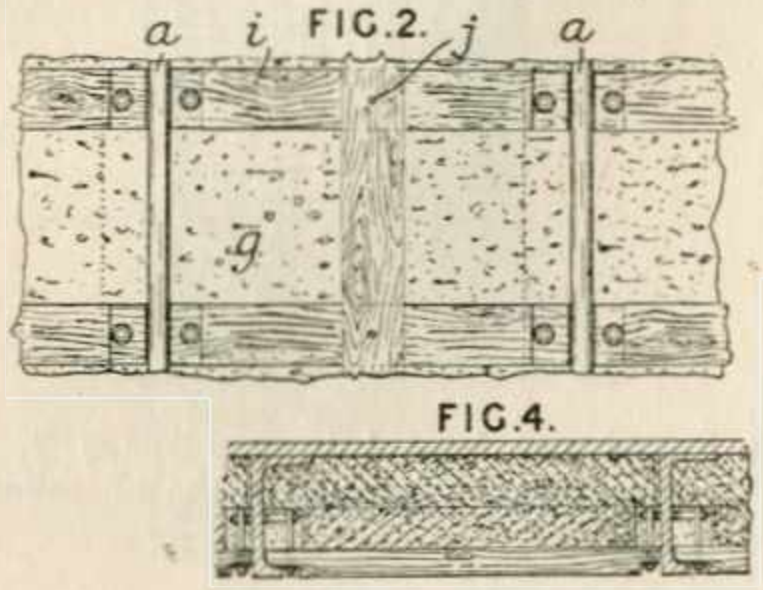
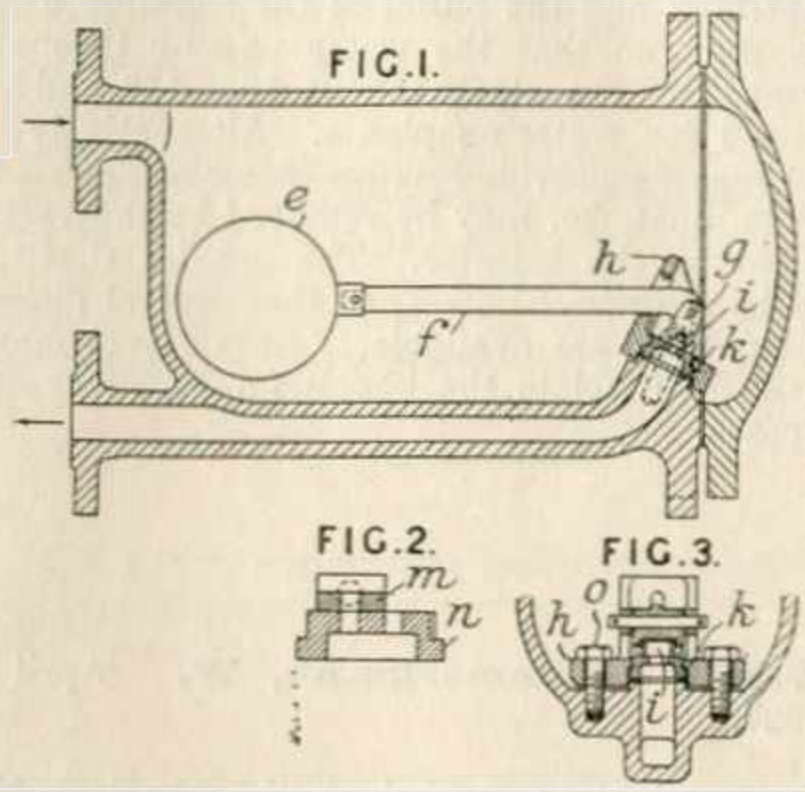


Fig. 4 shows a modification in which the beams are of channel-section. In another form, the slabs are held in position by the longitudinal bars *i*, the bars *j* being dispensed with. Specifications 166,350, 172,871, and 277,747 are referred to.

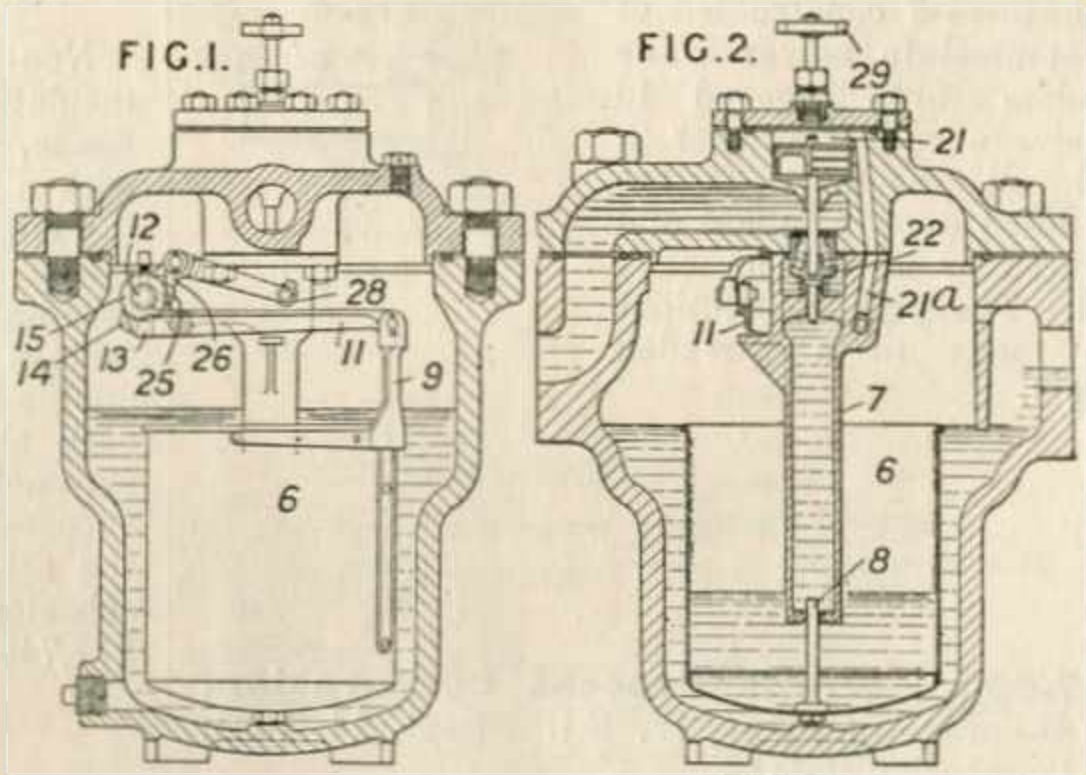
277,842. Kuhn, J. Dec. 28, 1926.

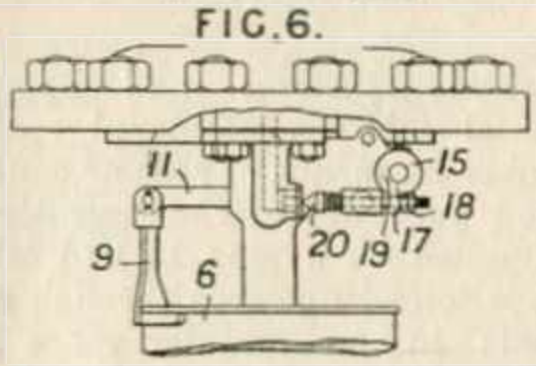


Steam traps.—In a liquid separator, a float *e* is carried by an arm *f* pivoted at *g*, and the end of the arm is bifurcated and adapted to move a slide valve *i* over its seating *k*. In Fig. 2, the valve *m* has one opening, and the seat *n* two openings. The seating *k* may be a separate member fitted into a holder *h* which is secured to the casing by studs *o*, and the holder *h* also provides the fulcrum for the float lever. The part of the casing on which the seating *k* is mounted is made oblique so that it may be more readily machined.

277,879. Plummer, C. St. C., and **Kermode, W. M.** April 7, 1927.

Steam traps of the bucket float type are provided with a pilot valve opened by the fall of the bucket and held open by a trip catch until the discharge is complete. The float 6 is provided with a guide pin 8 sliding in the discharge tube 7, and carries a bracket 9 pivoted to a lever 11 which is also pivoted on a fixed spindle 12. A projection 13 on the lever 11 is adapted to engage with a projection 14 on a sleeve 15, carrying a fork 17, Fig. 6, which bears against an adjustable stop 18 on the spindle 19 of a spring controlled pilot valve 20. Pressure fluid is thus admitted through passage 21a to a cylinder 21, the piston of which opens the main discharge valve 22. When the pilot valve is open, a detent 25 on the sleeve 15 engages with a gravity trip catch 26 which holds the valve open until the discharge is complete, and the rising bucket lever 11 then engages the roller 28 and releases the catch. The main valve may be operated by hand by means of a screwed spindle 29 which engages the piston.





278,195. Francis, J. H., and **Comyn, Ching, & Co., Ltd.** Oct. 30, 1926.

FIG.1.

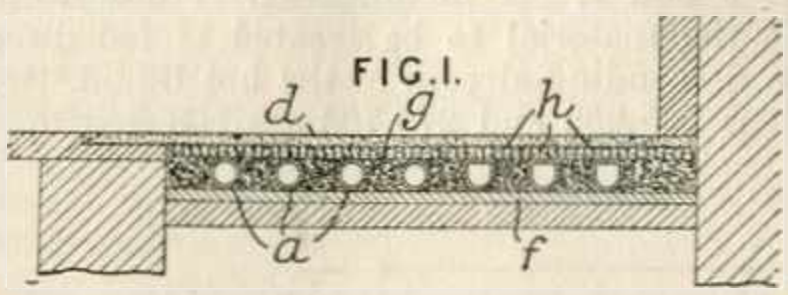
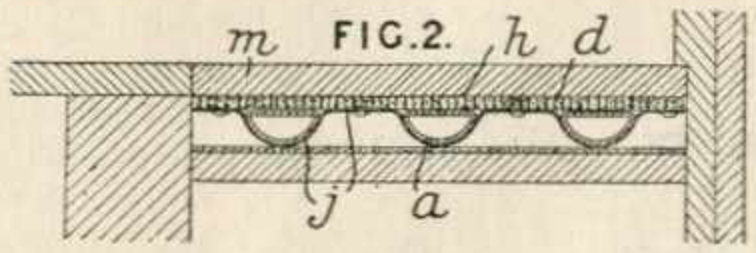


FIG.2.



Radiators. — In a heating apparatus embedded in the floor, hot water pipes *a* are placed over a layer of non-conducting material *f*, and are packed in granulated marble, iron, or copper filings *g*, leaving the tops of the pipes uncovered. A metal grid *h* composed of steel strips is then laid on the pipes and is packed with and covered by conductive plastic material *d*. In a modification, Fig. 2, the pipes *a* are laid in recesses in a sheet steel plate *j*, those parts between the pipes being flush with the tops of the pipes. The grid *h* is bolted or welded to the plate *j*, and packed with plastic material *d*, the whole being covered by a marble slab *m*. Specification 260,414 is referred to.

278,229. Musgrave, J. L., and **Crittall & Co., Ltd., R.** Jan. 28, 1927.

FIG.2.

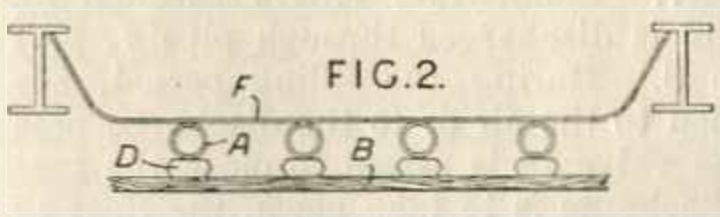
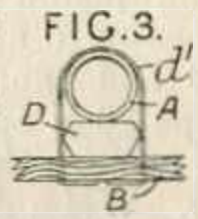


FIG.3.



Radiators.—In apparatus for heating or cooling buildings by means of pipes A embedded in the walls, blocks D are provided between the pipes and the temporary shuttering B. The pipes A may be held against the blocks D whilst the concrete is being filled in by means of bars F, which also serve to reinforce the concrete. Alternatively the pipes may be held by wires d^1, Fig. 3, which may be embedded in the blocks, or secured to the shuttering by nails or screws.

278,768. Hammond, C. F., and **Shackleton, W.** April 15, 1926.

Heating systems and apparatus.—In apparatus of the kind in which material is subjected to heat treatment in a heated liquid or molten metal, a pipe *c*, Fig. 1, projects upwards from a bath *a* of hot liquid or molten metal, and terminates in an upper pan *b*. Lifting means, not shown, are provided to maintain an upward stream from the bath *a* to the pan *b*, and the hot liquid then overflows down the pipe *c* and entrains with it the material to be treated, which is fed on to the surface of the liquid in the pan *b*. The material is liberated at the bottom of the pipe *c*, and an extended passage through the hot liquid is ensured by a baffle *d*. In a modification, an increased

FIG.1.

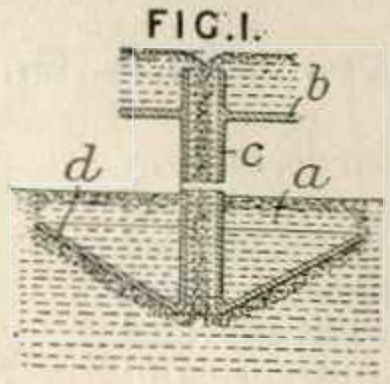
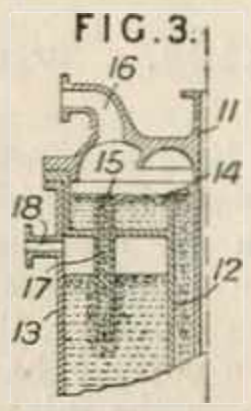


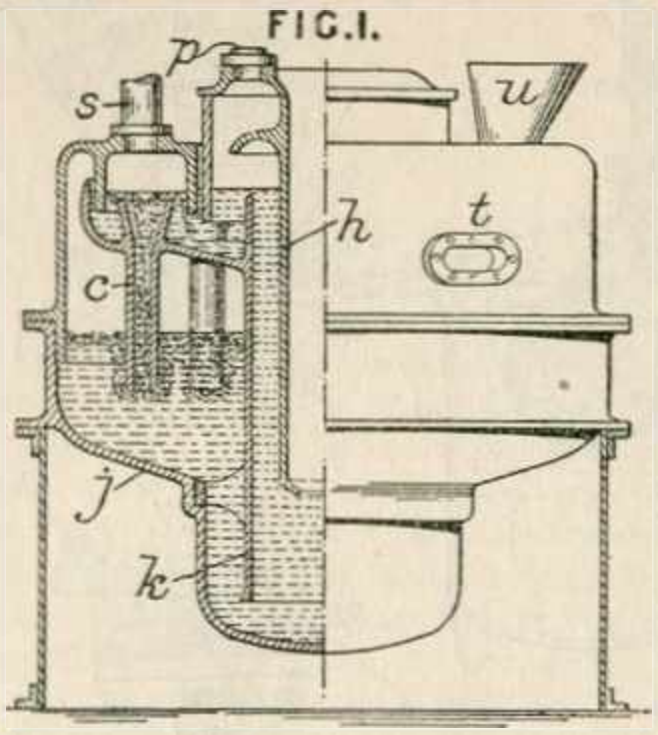
FIG.3.



time of contact is obtained by arranging a series of baffles to form a zigzag passage. In another modification for the fractional distillation of hydrocarbons, these are introduced through a tube 11, Fig. 3, into the air-lift tube 12, and are entrained into the rising liquid which overflows at 14 into a chamber 15, and then overflows downwards through a tube 17 carrying the material with it. First products of distillation are drawn off at 16, and second products at 18, while the residue floats on the liquid in the chamber 13.

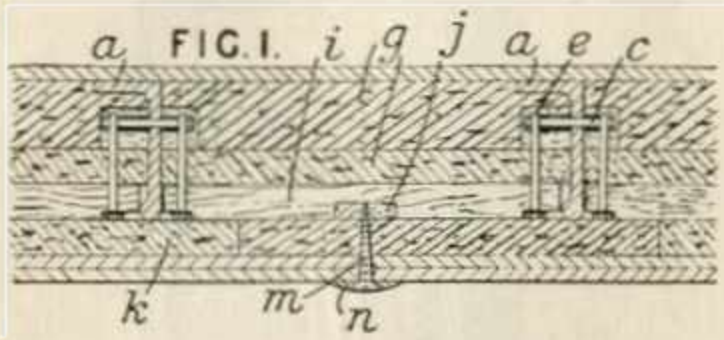
278,985. Hammond, C. F., and **Shackleton, W.** April 15, 1926.

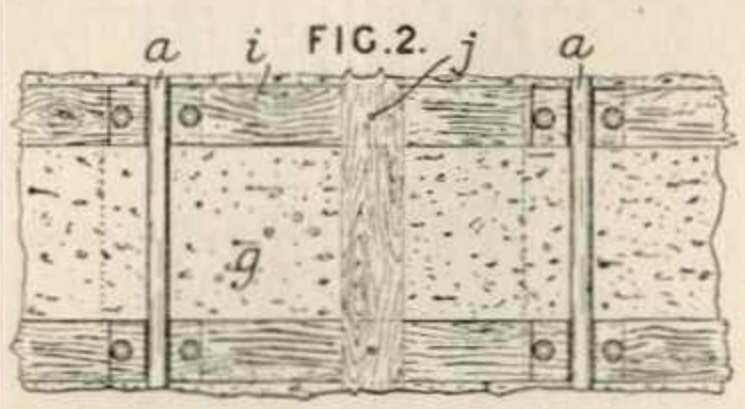
FIG.1.

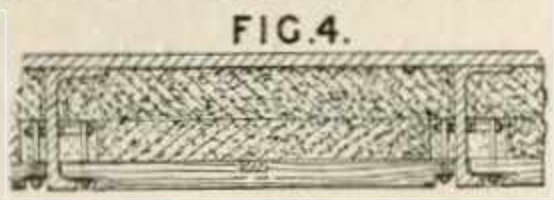


Heating systems and apparatus. — Liquids or molten metal are heated and circulated by a submerged burner, and material to be treated is entrained in the circulating liquid. The burner holder *h* is arranged centrally in a pot *j* containing

of bars *i*, *j* and supported by eyebolts *e* which are suspended on bolts *i* passing through the beams *a*. The frames may be covered with slabs comprising a cork base *k* and a covering of cement &c. and held in position by strips *n* and screws *m*.







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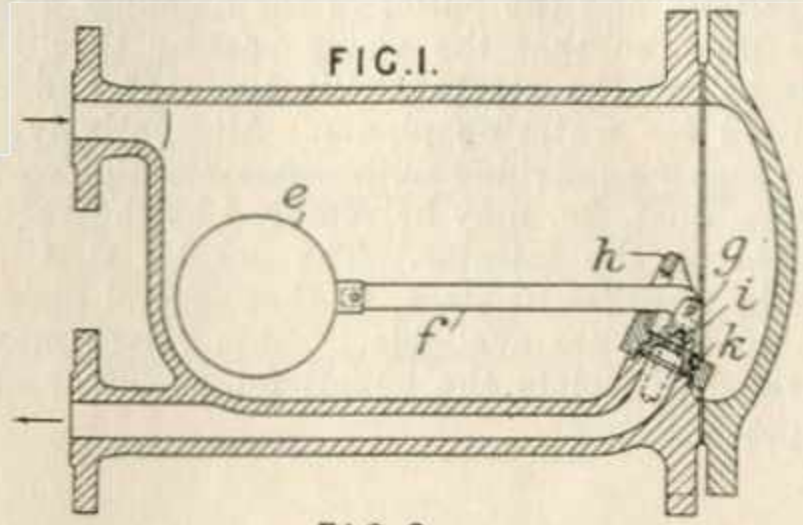
277,842. Kuhn, J. Dec. 28, 1926.



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277,879. Plummer, C. St. C., and **Kermode, W. M.** April 7, 1927.

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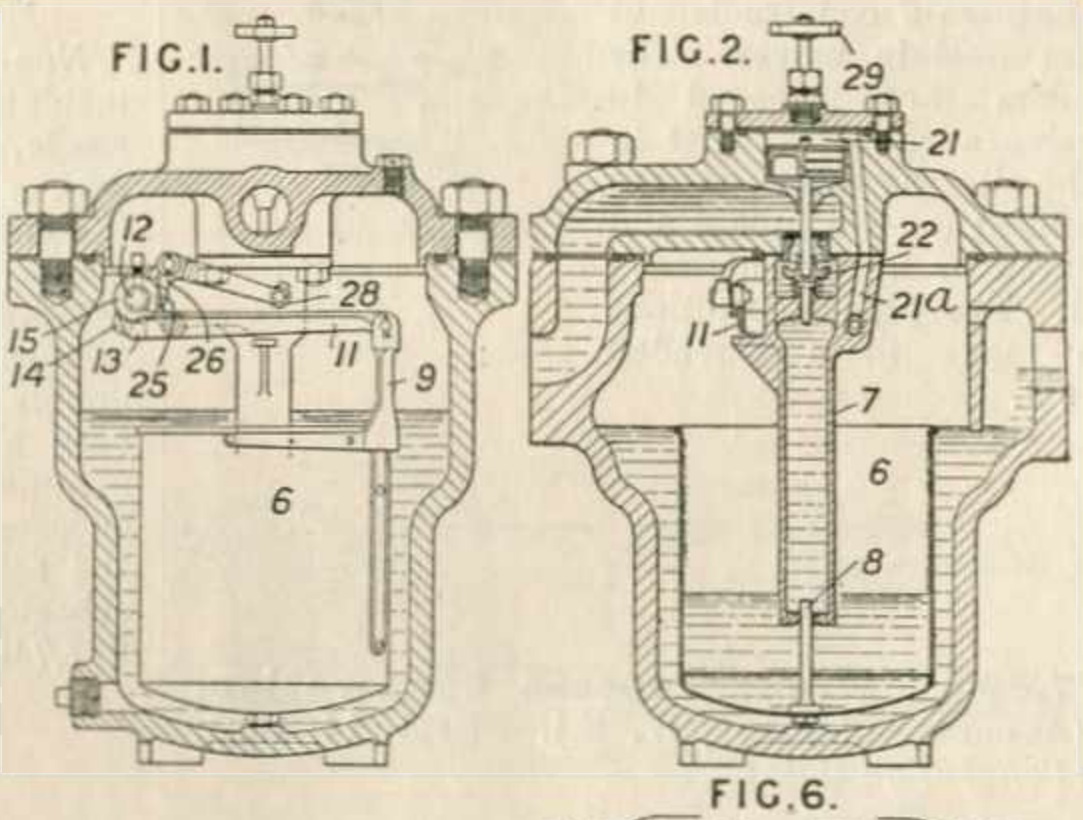
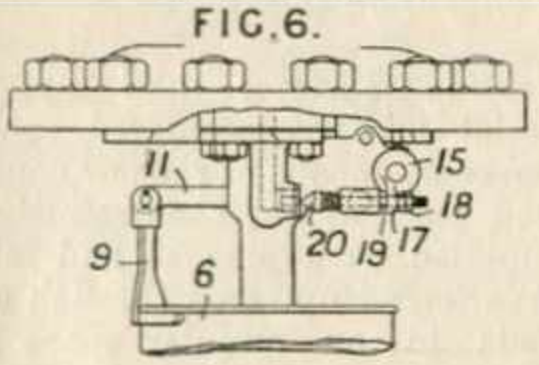




278,195. Francis, J. H., and **Comyn, Ching, & Co., Ltd.** Oct. 30, 1926.

FIG.1.

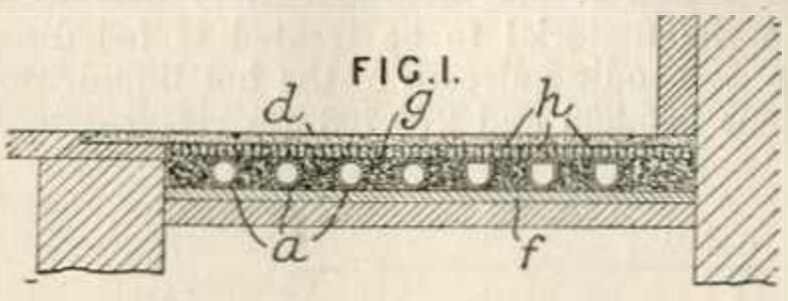
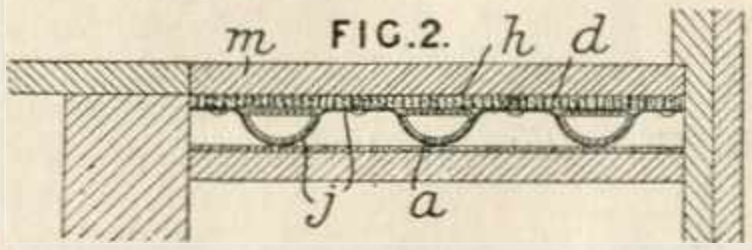


FIG.2.



Radiators. — In a heating apparatus embedded in the floor, hot water pipes *a* are placed over a layer of non-conducting material *f*, and are packed in granulated marble, iron, or copper filings *g*, leaving the tops of the pipes uncovered. A metal grid *h* composed of steel strips is then laid on the pipes and is packed with and covered by conductive plastic material *d*. In a modification, Fig. 2, the pipes *a* are laid in recesses in a sheet steel plate *j*, those parts between the pipes being flush with the tops of the pipes. The grid *h* is bolted or welded to the plate *j*, and packed with plastic material *d*, the whole being covered by a marble slab *m*. Specification 260,414 is referred to.

278,229. Musgrave, J. L., and **Crittall & Co., Ltd., R.** Jan. 28, 1927.

FIG.2.

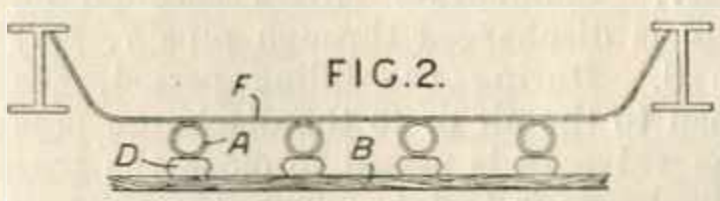
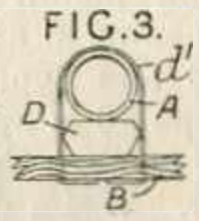


FIG.3.



Radiators.—In apparatus for heating or cooling buildings by means of pipes A embedded in the walls, blocks D are provided between the pipes and the temporary shuttering B. The pipes A may be held against the blocks D whilst the concrete is being filled in by means of bars F, which also serve to reinforce the concrete. Alternatively the pipes may be held by wires d^1, Fig. 3, which may be embedded in the blocks, or secured to the shuttering by nails or screws.

278,768. Hammond, C. F., and **Shackleton, W.** April 15, 1926.

Heating systems and apparatus.—In apparatus of the kind in which material is subjected to heat treatment in a heated liquid or molten metal, a pipe *c*, Fig. 1, projects upwards from a bath *a* of hot liquid or molten metal, and terminates in an upper pan *b*. Lifting means, not shown, are provided to maintain an upward stream from the bath *a* to the pan *b*, and the hot liquid then overflows down the pipe *c* and entrains with it the material to be treated, which is fed on to the surface of the liquid in the pan *b*. The material is liberated at the bottom of the pipe *c*, and an extended passage through the hot liquid is ensured by a baffle *d*. In a modification, an increased

FIG.1.

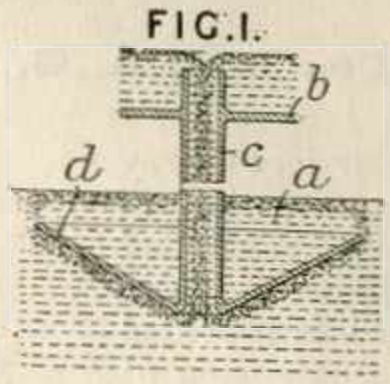
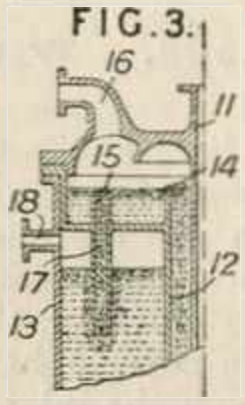


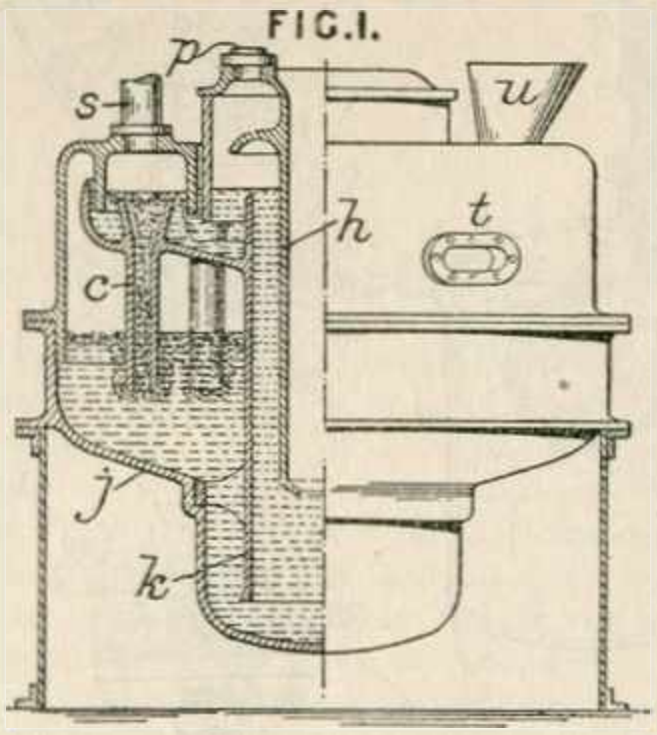
FIG.3.



time of contact is obtained by arranging a series of baffles to form a zigzag passage. In another modification for the fractional distillation of hydrocarbons, these are introduced through a tube 11, Fig. 3, into the air-lift tube 12, and are entrained into the rising liquid which overflows at 14 into a chamber 15, and then overflows downwards through a tube 17 carrying the material with it. First products of distillation are drawn off at 16, and second products at 18, while the residue floats on the liquid in the chamber 13.

278,985. Hammond, C. F., and **Shackleton, W.** April 15, 1926.

FIG.1.



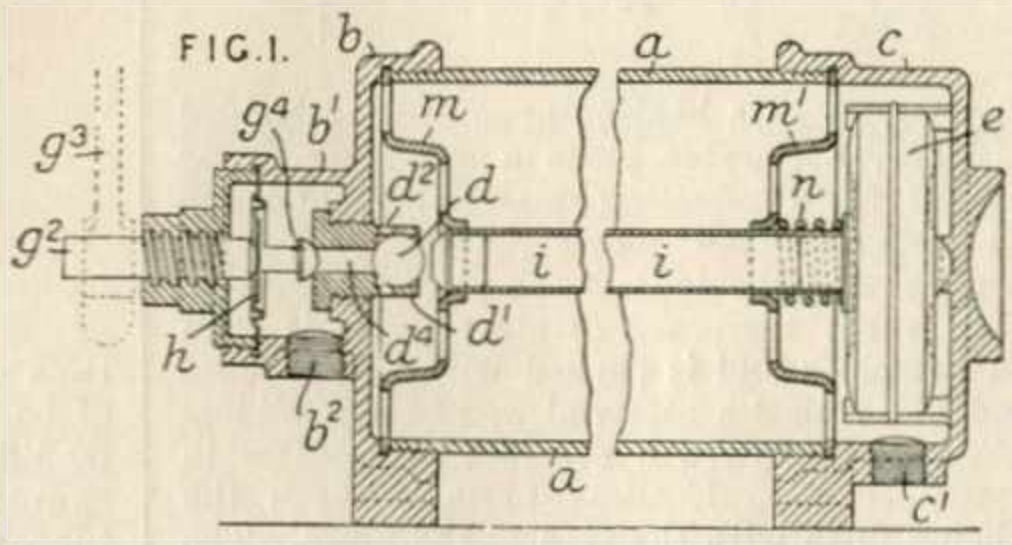
Heating systems and apparatus. — Liquids or molten metal are heated and circulated by a submerged burner, and material to be treated is entrained in the circulating liquid. The burner holder *h* is arranged centrally in a pot *j* containing

the hot liquid, and is surrounded by an air-lift tube *k* through which combustion gases rise to the outlet *p*. The hot liquid overflows into a number of down-take tubes *c*. Material to be treated is fed into a hopper *u* from which it passes on to the surface of the heated liquid and is drawn down into the tubes *c* to the lower part of the apparatus. Fractional distillates are drawn off at *s* and *t*. A modification is described in which the material to be treated is fed directly into a descending stream of the hot liquid. Specifications 265,252 and 278,768 are referred to.

279,198. Wild & Co., Ltd., A. G., and **Bates, B. W.** Aug. 19, 1926.

Radiators.—In a radiator for railway vehicles, in which the admission of steam is thermostatically controlled and a hand-operated admission valve is also provided, the body *a* is provided with a cover *b* having an extension b^1 to which the inlet pipe is connected at b^2. The thermostatic ball valve *d* is carried in a cage d^1 having lateral openings d^2, and a hand operated valve g^4 also controls the inlet passage d^4. The valve g^4 is mounted on a corrugated diaphragm *h*, and is actuated by a screwed spindle g^2 and handle g^3. A thermostatic capsule *e* is mounted in the cover *c*, and its movements are transmitted by a tube *i* mounted in perforated members *m*, m^1. A spring *n* keeps the tube *i* in contact with the capsule *e*. A drainage opening c^1 is provided.

FIG. 1.



279,430. Sulzer Frères Soc. Anon.
Oct. 23, 1926, [*Convention date*].

FIG. 2.

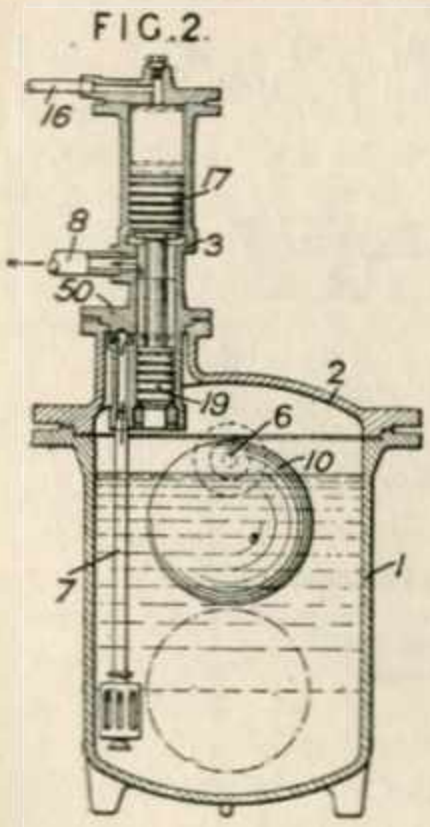


FIG. 3.

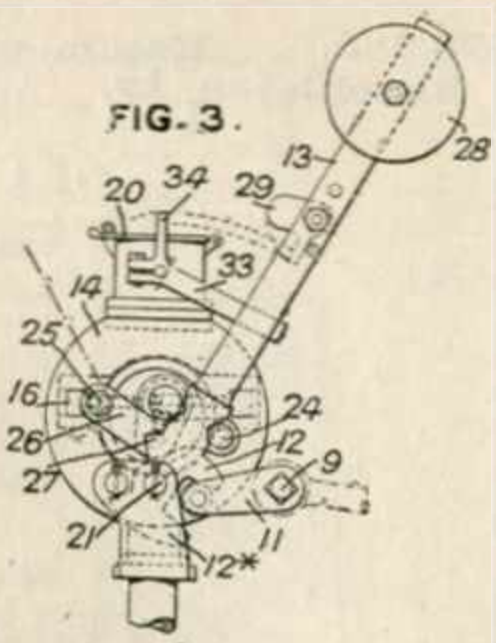
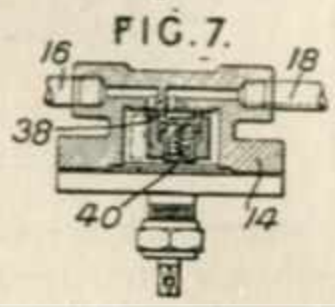


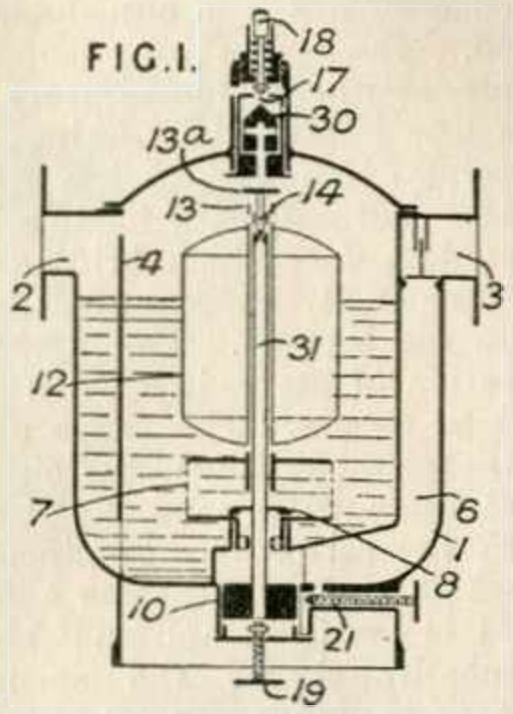
FIG. 7.



Steam traps in which a float-operated pilot valve controls the admission of pressure fluid to a piston operating the discharge valve comprise a casing 1, the cover 2 of which carries a casing 3 containing the discharge valve 19 and its operating piston 17. Condensate enters through an opening 6 and is discharged through pipe 7, port 50 and pipe 8. During the filling period, the pipe 16 is open to the air or to the discharge pipe 8, so that the valve 19 is raised to close the port 50. When discharge is to take place, the float 10 places the pipe 16 in communication with a pipe connected to the vessel 1, so that fluid pressure is admitted above the piston 17 and the valve 19 is opened. The float 10 is mounted on a spindle 9 carrying a lever 11 adapted to act on projections 12, 12* on a lever 13 pivoted at 21 to a casing 14 and carrying a weight 28. The lever 13 is adapted to act on pins 24, 25 on a rocking lever 26 mounted on a spindle 27 extending into the casing 14, and carrying a valve member 38 on a short radial arm. The valve is pressed on its seating by a spring 40, and is adapted to connect the pipe 16 to the casing 14 or to the pipe 18 which is connected to the pipe 8. The valve is moved quickly from one extreme position to the other when the lever 13 passes its dead centre. The casing 14 carries a counting mechanism 20, the spindle of which carries a lever 33 which is operated by a tappet 29 on the lever 13 when moving to the left, while the tappet rides over the arm 34 when moving to the right, so that the counter is operated only once for each filling of the trap.

279,450. Walter, P. Oct. 19, 1926, [*Convention date*].

FIG. 1.

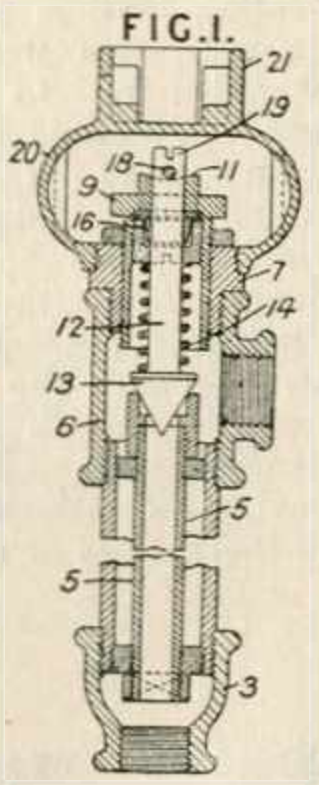


Steam traps in which a float-operated pilot valve controls the main discharge valve have a casing 1 provided with an inlet 2 and outlet 3, and a main discharge valve 8 controlling the discharge passage 6. A drum 7 containing the valve 8 is formed with a strainer 7, and a baffle 4 is arranged in front of the steam inlet 2. An air vent 17 is controlled by a loose valve 30 having passages for the flow of air. A float 12 is guided on a central hollow shaft 31 carrying the valve 8 and piston 10, and formed at the top with a seating for the pilot valve 14. This valve is lifted by an extension 13 of the float engaging a plate 13a. When the device is put into operation, steam is gradually admitted while air escapes through the valve 30, this valve being ultimately closed by the steam pressure, which also keeps the valves 8 and 14 closed. The rising of the float opens the pilot valve which allows steam to pass down the tube 31 to the space below the piston 10 to lift the main valve 8. A screw 21 controls a bye-pass for regulating the rate of closing of the valve 8. The main valve can also be opened by hand through a screw 19, or by a rotary eccentric. A plunger 18 is provided for depressing the valve 30 for testing purposes. Modifications are described in which the valve 14 is not coaxial with the valve 8, but is operated by the float through a lever.

In the Specification as open to inspection under Sect. 91 (3) (a) the bye-pass controlled by the screw 21 contains also a non-return ball valve (Fig. 5 *Cancelled* and not shown). This subject-matter does not appear in the Specification as accepted.

279,729. Bailey, A. J., and **Knowles, A.** May 17, 1927.

FIG. 1.

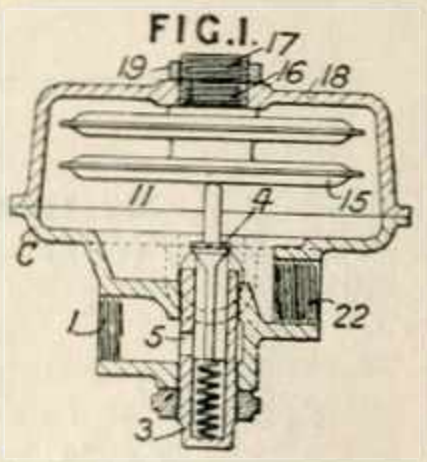


Steam traps.—A valve 13 is carried by a stem 12 passing through a packing 16 and member 9, and having a cross pin 18 resting in a recess 11. The valve is pressed downwards by a spring 14, and closes the passage through an expansible tube 5 when steam passing through from the inlet 3 to the outlet 6 heats it to a predetermined temperature. Any further expansion of the tube 5 causes the spring 14 to yield. The valve may be opened to blow off water more rapidly by turning the spindle 12 so that the pin 18 rises out of its groove. The valve may be ground on its seating by means of a screwdriver inserted into the slot 19, and the position of the valve may be adjusted by screwing the member 9 into or out of the part 7. The cover 20 has a projection 21 which is shaped internally to fit the hexagonal member 9 so that it may be removed and used as a tool for removing the member 9 and valve.

279,804. Hanton, A. S. D., and **Dick, J.** Oct. 28, 1926, [*Convention date*].

Thermostats.—A heat-sensitive actuating means of the capsule type comprises two superposed conected capsules 15, the upper of which is provided with a filling aperture 16, closed by a plug 17 screwing on to the neck of the capsule and into the opening in the cover 18. A locking nut 19 is provided.

FIG. 1.



279,818. George, H. Oct. 27, 1926, [*Convention date*]. *Drawings to Specification.*

Heat-transmitting media.—A furnace is heated by molten tin which, in turn, is heated by electricity. The tin may be contained in a bath into which a crucible is immersed, or may be circulated from a separate vessel to the furnace. At the end of an operation, the tin may be withdrawn from one furnace and led to another.

The Specification as open to inspection under Sect. 91 (3) (a) states that gallium may be used instead of tin. This subject-matter does not appear in the Specification as accepted.

279,913. Anderson, R. W. April 27, 1926.

FIG.6.

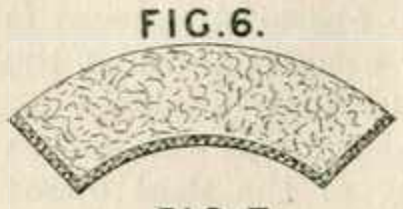


FIG.7.

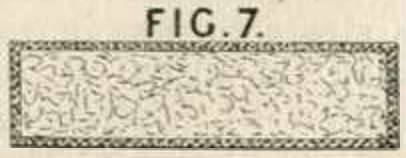
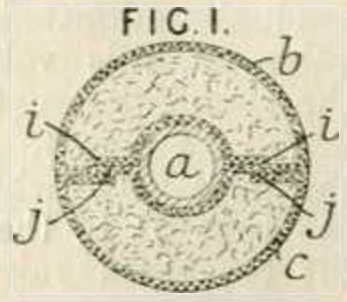


FIG.1.



Non-conducting coverings. — An insulating covering for pipes and other bodies comprises a shell of cement concrete or the like in contact with the pipe or other body, and a filling or backing of hydrated magnesium carbonate with or without asbestos. The steam pipe *a*, Fig. 1, is insulated by two concrete shells *b*, *c*, containing a mixture of hydrated magnesium carbonate and asbestos applied in a pasty state and allowed to set. The joints between the shells are stepped at *i*, *j*, and the two halves may be secured by canvas sheeting or metal straps. The asbestos may be in small proportion or may be omitted. The outer concrete shell may be omitted, in which case the surface may be protected with asbestos cloth, mill-board, cement or other material. Modifications are described for the insulation of pipe flanges, and also for use as sectional units as shown in Figs. 6, 7.

280,323. British Thomson-Houston Co., Ltd., (*General Electric Co.*). Sept. 15, 1926.

FIG.1.

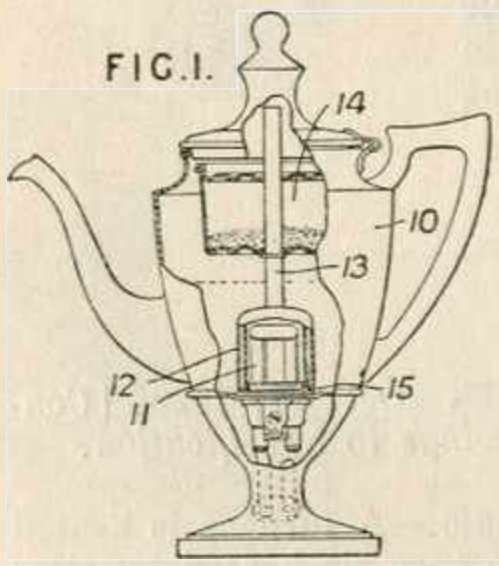
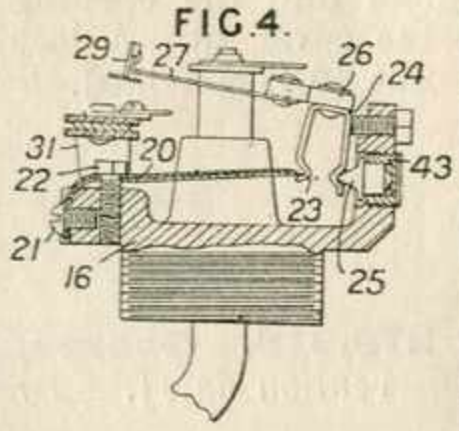


FIG.4.



Thermostats.—A bimetallic thermostatic switch which is adapted to be moved quickly from one position to another, is applied to an electric coffee percolater. A container 10 is provided with an electric heater 11 enclosed in a cap 12 having a tube 13 extending upwards through a coffee container 14. The water enters through an opening 15 and is forced upwards by steam pressure in the usual manner. The thermostatic device which is shown inverted in Fig. 4, comprises a support 16 adapted to be screwed upwards into the base of the vessel 10. A bimetallic strip 20 is fixed at one end by a screw 21, and adjusted by a screw 22. The fixed end is wider than the movable end. The latter rests in a bearing 23 in a **U**-shaped resilient member 24 supported on a knife edge 25 which is adjustable by means of a screw 43. The parts are so arranged that at a predetermined temperature the bearing 23 lies on a line joining the bearing 25 and the effective point of support of the strip 20. An insulating block 26 carries a flexible switch arm 27 with a contact 29 which bridges two contacts on the support 31. The contact 29 is loosely supported on the arm 27. The spring 24 causes a snap action of the switch when the strip 20 passes the dead centre. The range of temperature between the point at which the circuit is opened and the point at which it is closed again may be adjusted by the screw 43. Modifications are described in which the strip 20 has a **U**-bend and the spring 24 is omitted, and in which helical springs are substituted for the spring 24. Specification 222,535, [*Class* 38 (v), Electric switches &c.], is referred to.

280,415. Marks, E. C. R., (*Nelson Corporation, H.*). March 1, 1927.

Radiators. — A radiator comprises a wedge-shaped core through which a heating fluid is passed and flanged-plates 9 which are threaded on to the core and maintained in position by a key 12. In a modification, the plates are provided with additional flanges at their outer vertical edges. In another arrangement, the plates are formed with central flanges 23, Fig. 12, having projections 24 forming sockets for the ends of the flanges of adjoining plates.

FIG.3.

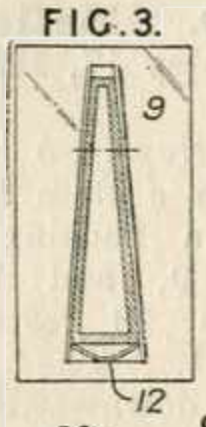
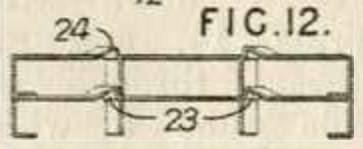


FIG.4.

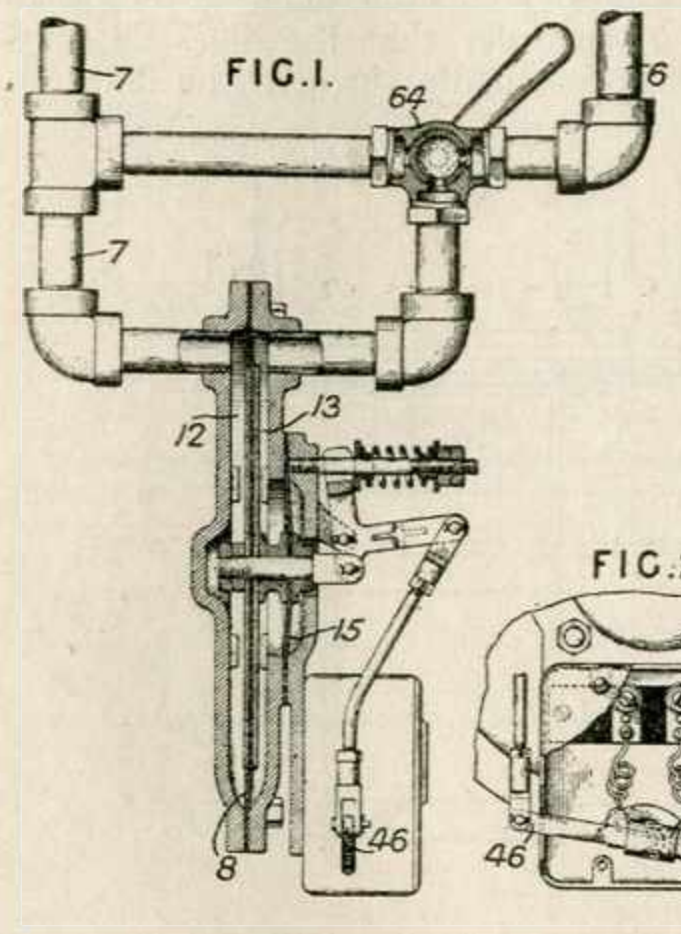
FIG.12.



280,426. Marks, E. C. R., (*Dunham Co., Ltd., C. A.*). April 4, 1927.

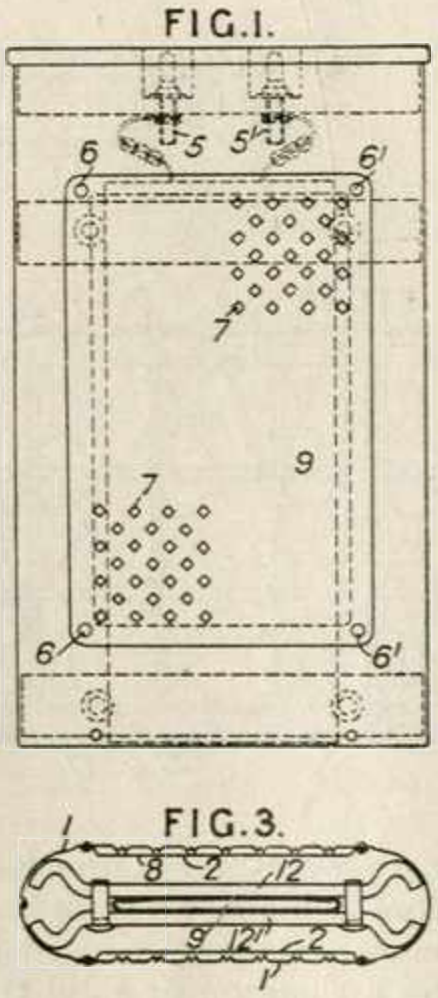
Heating by circulation of fluids.—A differential pressure controller, operable for example to control the pressure in the supply and return mains of a vacuum steam heating system by starting and stopping the vacuum pump producing the circulation, comprises a pair of connected diaphragms &c. 8, 15, Fig. 1, forming chambers 12, 13 in a casing which are open to the higher and lower vacuum while the diaphragm 15 is externally open to atmospheric pressure. The resultant motion of the diaphragms is communicated to a lever 46 operating a mercury switch, Fig. 2, comprising a pair of contacts, 52, 53 sealed into a tube containing a globule of mer-

cury. The tube is carried by the lever and a snap movement is given to the lever by a spring 57. The diaphragm chambers 12, 13 are connected to the high and low vacua through pipes 7, 6, a



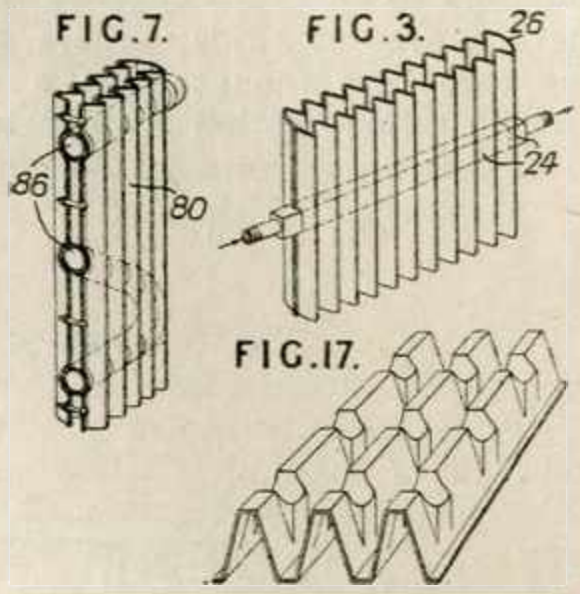
three-way valve 64 being interposed so that the pipe 6 may be cut off and the pipe 7 connected to both chambers, the device then acting as a single diaphragm controller. The diaphragm motion is transmitted through a bell-crank lever.

280,589. Sigg, Ltd. Nov. 15, 1926, [*Convention date*].



Bed warmers; foot warmers.—A heating device, applicable as a bed or foot warmer, is provided with double walls 1, 2, on two sides, riveted together at 6, 6¹, the walls 1 being perforated at 7 by pressing in the material to form tongues 8 which are in contact with the wall 2. An electric heater 9 is connected to plugs 5, 5¹, and is held between clips 12, 12¹ in the centre of a heat retaining mass of "silicium" or steatite.

280,642. Ellis, R. E., (*Murray, T.*) Aug. 18, 1926.



Radiators.—A continuous jointless tube 24, 86 for heating or cooling medium extends laterally with respect to the radiator, and has attached thereto a corrugated radiating structure 26, 80 formed in one piece. The tubes may be of round or square section and straight or curved and the radiating plates may be welded, soldered, bolted, or otherwise secured to make good heat-conducting contact. The radiating sheets form flues through which air can circulate. Fig. 17 shows a modified radiating sheet. The tubes may contain electric heating elements. The application to refrigerating condensers is mentioned.

280,653. Barker, J. H. Aug. 25, 1926.

Heating systems.—Cordite discs 28 are moved intermittently through a chamber or oven 10 on a heated bed 4, Figs. 3 and 5, by means of pushers 25 loosely mounted on transverse bars 19 carried by trucks provided with a reciprocating movement. The hollow bed 4, which is adapted to be heated by steam, hot water, or oil, has a top plate 27 and is mounted upon girders 3 carried by pillars. Above the bed is a hood 9 composed of iron plates forming an oven 10 divided into a number of compartments by partitions 14. The trucks, each of which consists of a pair of angle-irons 17, Figs. 12 and 13, braced together by metal strips 18 and transverse rods or tubes 19, are adapted to reciprocate on rollers 20 mounted on angle-irons 16 fixed to the partitions 14, and side rollers 22 are provided to centralize the trucks. If desired, the angle-irons 16 may be dispensed with and the truck frames may slide on rollers mounted directly on the partitions 14. The pushers 25, loosely mounted on the rods 19, are in the form of pawls, a pair of which is adapted to engage the periphery of each disc 28. Three longitudinal rows of cordite discs are provided in each compartment of the oven, and these rows are spaced apart by means of members 26 fixed on the bed-plate 27. The angle-irons 17 are extended as at 17ˣ, Fig. 5, and are pivotally connected to bell-crank levers 29, 37, the arms 37 of which are weighted. Motion

is imparted to the trucks by means of cams 40 engaging the arms 29 of the bell-crank levers, and the cams are so arranged that whilst certain of the trucks move outwards, others move inwards. The cams are mounted on a shaft 41, Fig. 3, to which rotary motion is imparted by an electric motor through worm gear 44, 46, or from a driven pulley 50 through spur gear 51, 52, 53 and worm gear 44, 46. Other reciprocating means may, however, be provided. At the delivery end of the machine the bed-plate 27, which projects beyond the hood 9, is provided with holes 59 in order that the discs 28 may be caused to drop vertically through the holes on to

FIG. 3.

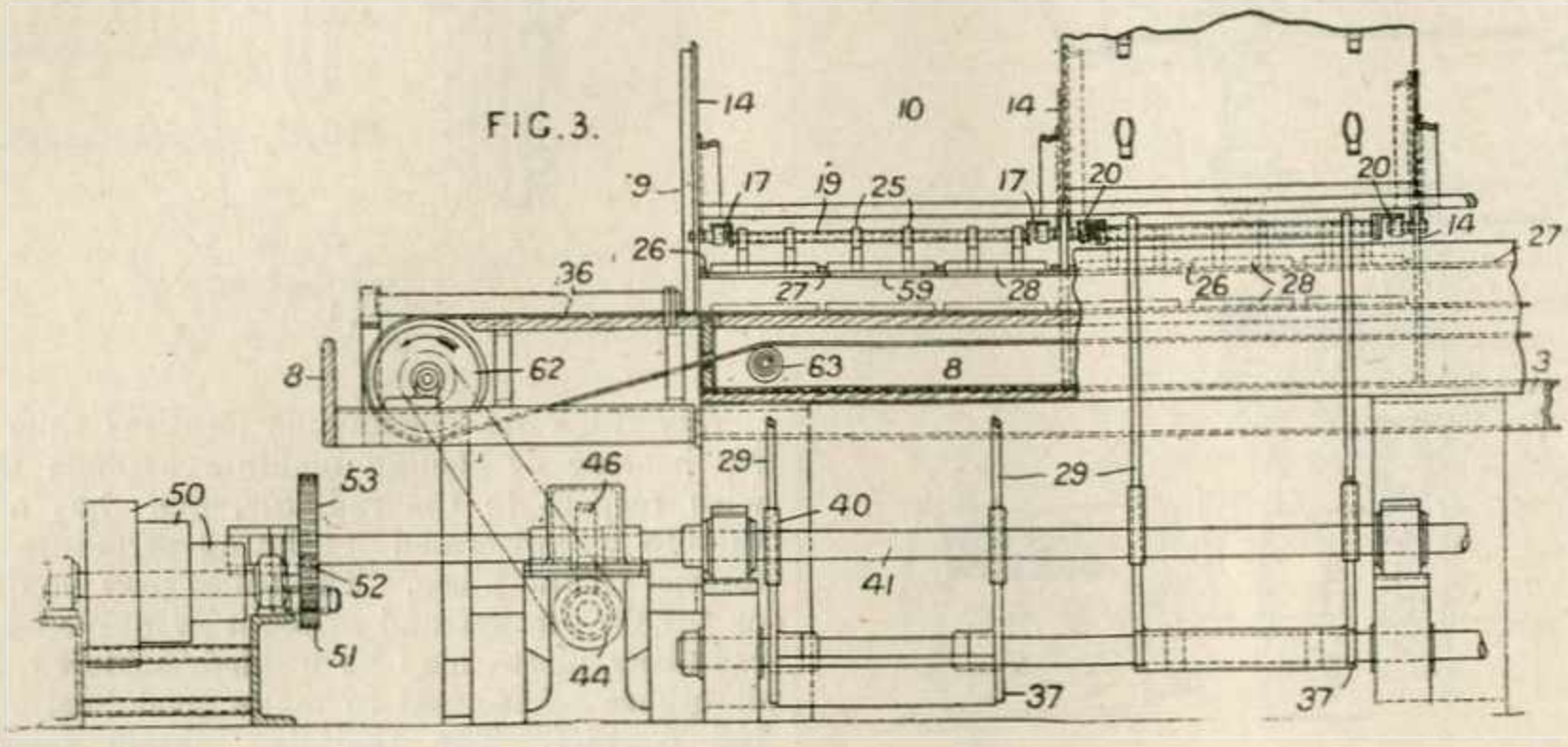


FIG. 5

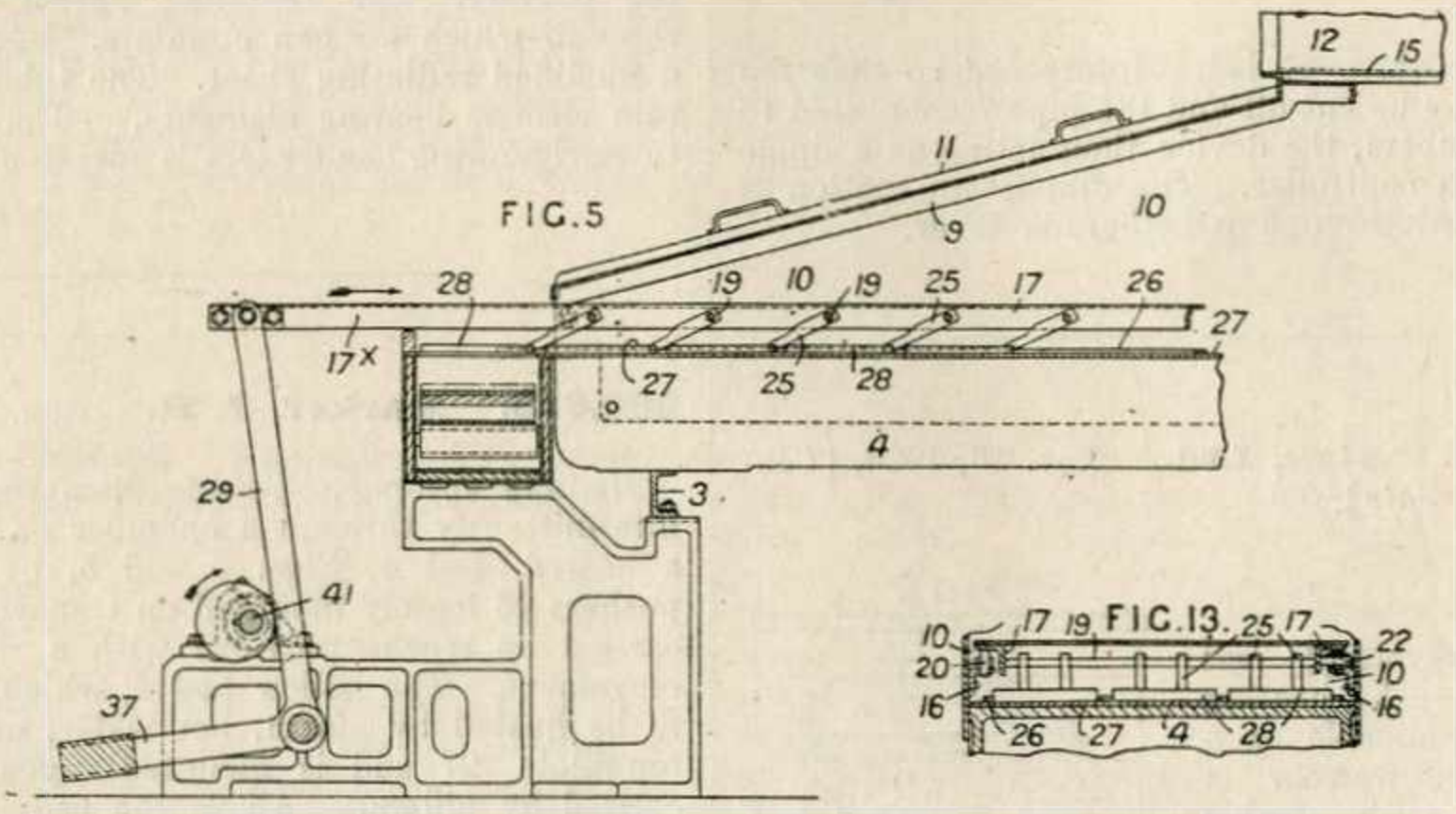
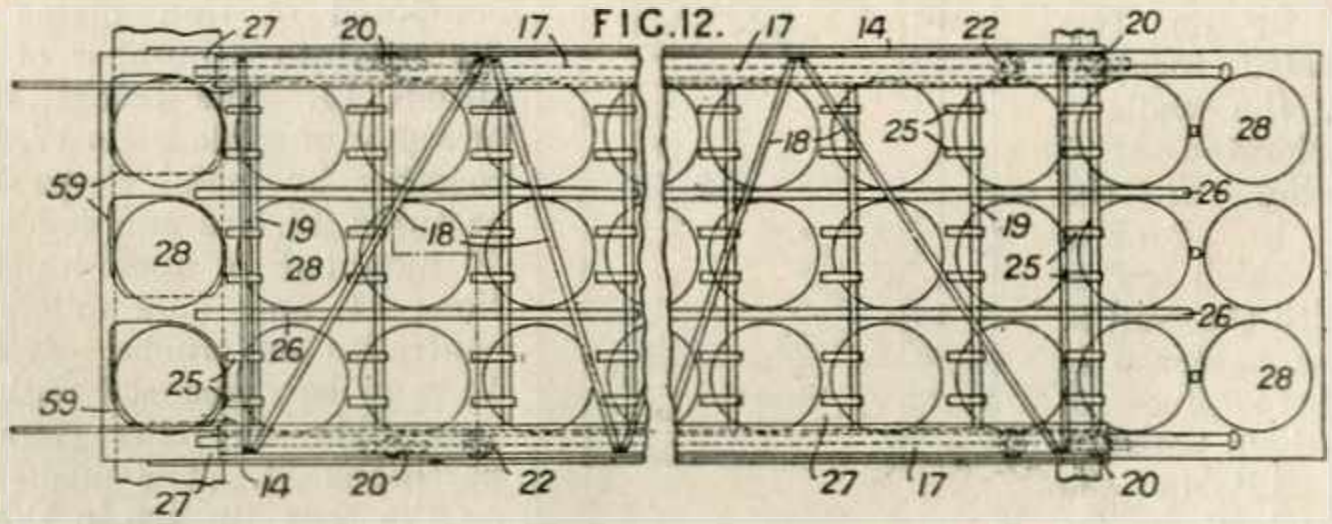


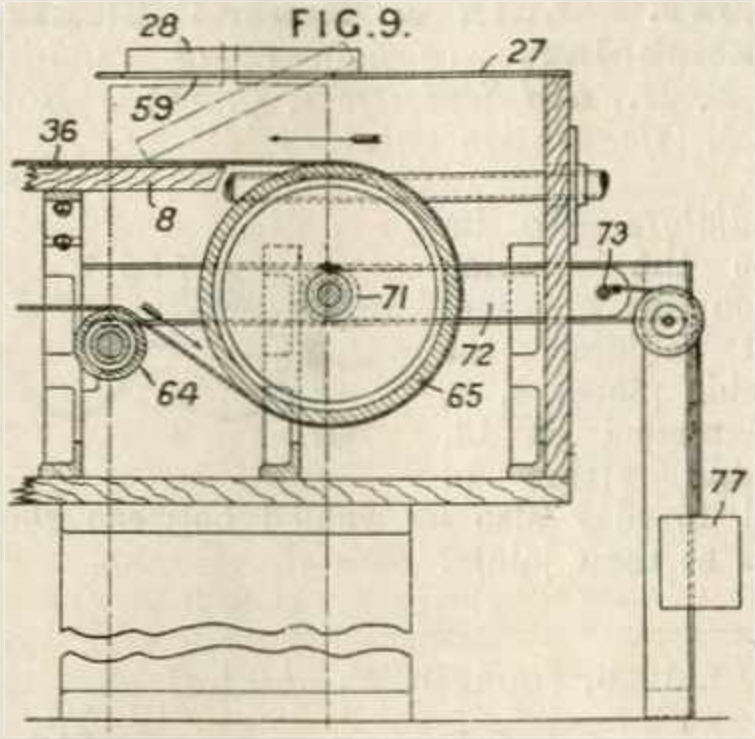
FIG. 13.

FIG. 12.



a delivery band 36 in a trough 8, Fig. 3. A guide is provided above the upper surface of the travelling band 36 for deflecting the discs on to a table. The endless band 36 passes over pulleys 62 - - 65, Figs. 3 and 9. The pulley 62 is mounted in a sliding member adjusted by a screw, and the pulley 65, Fig. 9, is carried in bearings 71 formed in a pair of plates 72 sliding in grooves and connected by a transverse rod 73, from which a weight 77 is suspended. The pushers 25 may consist of two vertical sides having a skeleton or solid transverse bottom in which is an opening, and one end of each vertical side may be inclined and be shaped like a pawl with a pair of hooks. Each of the compartments of the oven is provided with a cover 11, Fig. 5, and

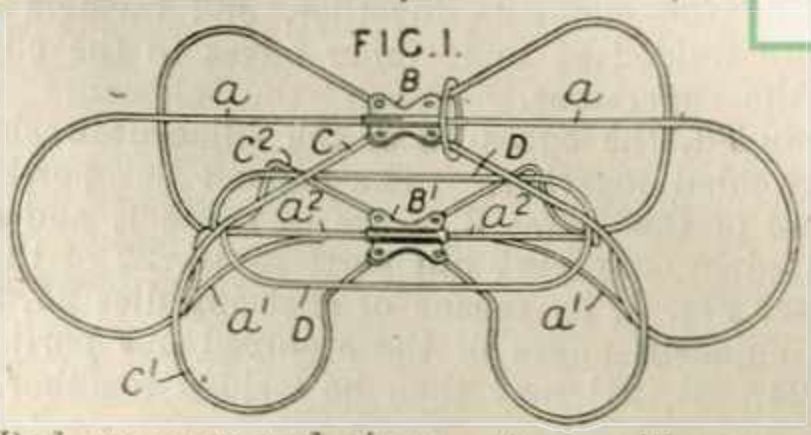
FIG. 9.



a flue 12, and at the junction of the hood 9 and the flue 12 a perforated paper disc 15 may be arranged. Specification 275,743 is referred to.

280,680. Bearder, S. Oct. 6, 1926.

FIG. 1.



Bed warmers and airers.—A cage-like structure for supporting a bed-warming device such as a hot water bottle comprises a horizontal wire *a* with two curved end portions a^1 connected to a lower horizontal portion a^2. Other similar diagonal members *c*, c^1, c^2 are all connected together by plates B, B^1, the lower bent portions forming feet or supports. Two additional wires D are provided, which with the wires c^2 form a support for the heating device and hold it out of contact with the bedding. The device may be folded into a plane parallel to the wire *a* when not in use.

280,683. Lloyd, H. J. Oct. 8, 1926.

FIG. 5.

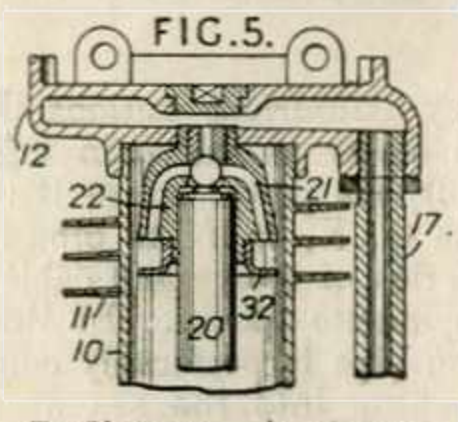
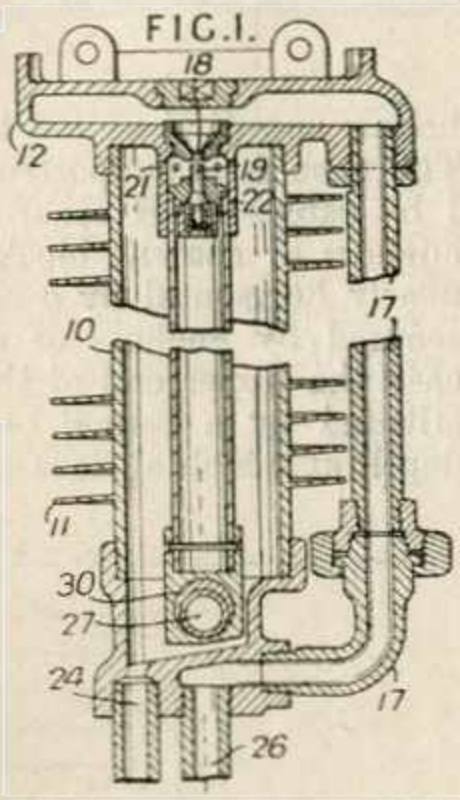


FIG. 1.



Radiators.—A steam-heated radiator for railway vehicles is provided with thermostatic control and with a hot plate for heating a cooking vessel. A vertical barrel 10 has radiating ribs 11 and is screwed into a cap 12 the upper surface of which is shaped to receive a cooking vessel. Steam is admitted through pipes 26, 17 to the cap 12 and thence through port 18 controlled by valve 19 operated by an expanding tube 20. The steam passes through radial openings 21 into the barrel 10 and passes downwards to the outlet 24. The radiator is adapted to be fitted to pipes passing through the floor. The thermostat and valve are adjusted to or from the seating by means of an eccentric 30 mounted on a spindle 27 operated by an external handle. In a modification, a circular baffle plate 32, Fig. 5, may be attached to the fitting 22 so as to leave a narrow passage between its edge and the wall of the barrel 10, whereby the steam is directed downwards in close contact with the wall to secure better exchange of heat. The baffle plate may be radial or cylindrical, and the passages 21 may be inclined downwards. The lower end of the thermostat may abut against a coaxial adjusting screw, and a valve may be provided to control the pipe 17.

280,884. Dutrieux, P. Nov. 16, 1926, [*Convention date*].

FIG. 2.

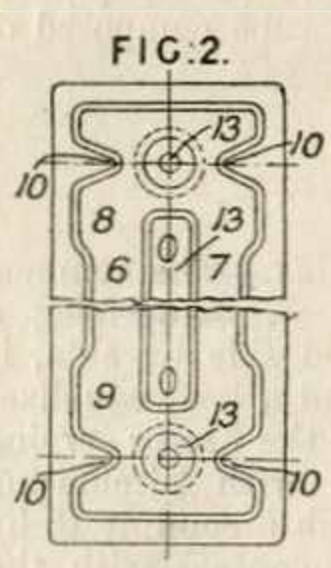


FIG. 5.

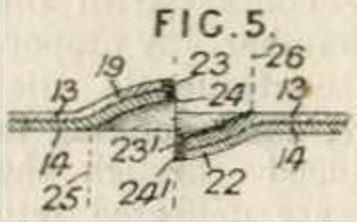
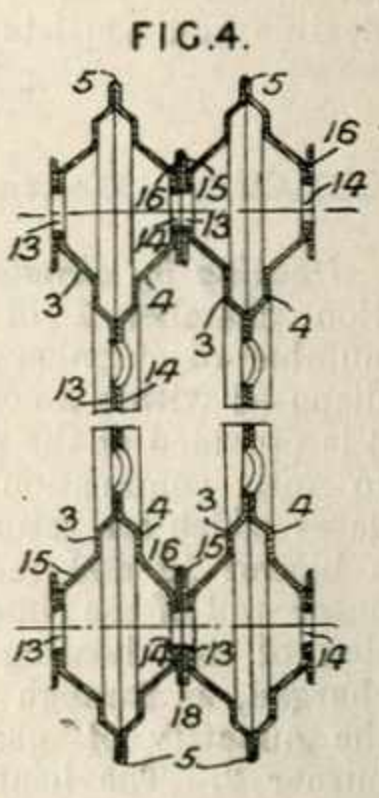


FIG. 4.



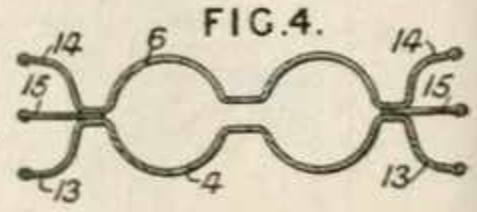
Radiators.—Radiator elements are each constructed of two plates of sheet metal 3, 4, welded at the edges 5, the plates being stamped so as to constitute two tubular portions 6, 7 communicating at 8, 9. Rigidity is increased by indenta-

tions 10. Apertures 13, 14 are formed for connecting the elements together, and washers 15, 16 are welded at their inner edges to the edges of the apertures. When the elements are assembled, the edges 18 of the adjacent washers are welded together. The central flat portions 13, 14 of the plates 3, 4 are in contact, and are secured by stamping out portions 19, 22 of these plates, Fig. 5, by means of shearing dies 25, 26. The adjacent edges of the stamped out portions 23, 24, 23^1, 24^1 may then be welded together.

280,918. Luth & Roséns Elektriska Aktiebolag, (Assignees of *Lindström, A. F. H., and Segerström, C. D.*). Nov. 19, 1926, [*Convention date*].

Radiators.—To increase the heating surface of a sheet metal radiator, the two side plates 4, 6, are extended at 13, 14, and strips of metal 15 may also be welded between the two plates at their joints.

FIG. 4.



280,938. Boucherot, P., and **Claude, G.** Nov. 18, 1926, [*Convention date*].

Solar and natural heat, utilizing.—A submarine pipe for drawing cold water from a depth below the surface of the sea for the purpose of cooling settlements in hot countries, or for producing power with the air of hot water from the surface, is constructed so that the weight of the pipe at all points is substantially equal to the weight of the water displaced and its cross-section is such that it gives maximum resistance to sagging. For this purpose the pipe may consist of wooden staves P, Fig. 3, held together by hoops Q of **T, I** or **U** section, or of sheet steel rings R of rectangular section welded together or filled with a stuffing S of impregnated wood. In this form the steel annuli may be wholly closed and contain compressed air or wood, the inner and outer walls of the annuli being curved inwards as shown in Fig. 6 or outwards. In another form sheet steel rings are welded together and strengthened by girders on the outside. This pipe may be balanced in the water by floats consisting of metal vessels containing air or other gas. The top end of the pipe is flexible and consists of a steel tube composed of

FIG. 4.

FIG. 3.

FIG. 1.

FIG. 6.

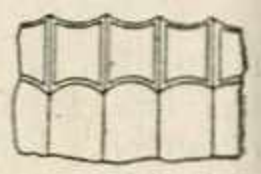
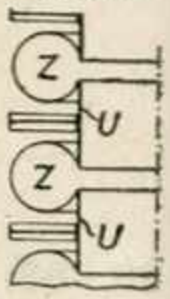


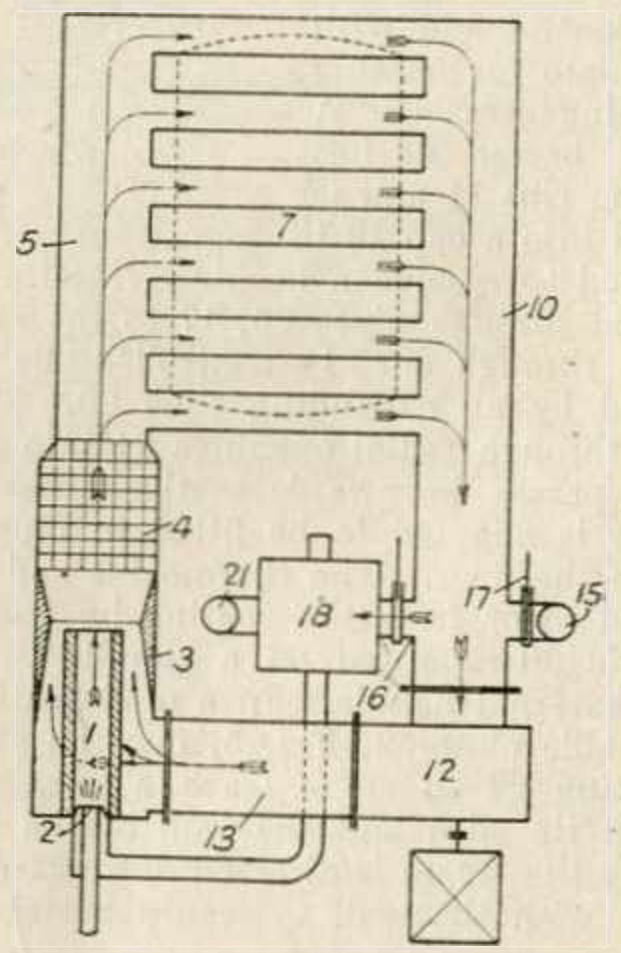
FIG. 8.



hollow annuli Z united by cylindrical sections U. The tube A is supported either as shown in Fig. 1 by cables F, H securing the power house B to anchors or cement blocks G, K, or if the pipe is nearly horizontal by a series of buoys and cables secured by anchors or concrete blocks. In this case the upper end of the pipe is preferably constituted by a tunnel opening into the sea at a depth at which surface movements are not felt.

281,028. Besta, A. Sept. 1, 1926.

Heating by circulation of fluids.—The combustion chamber 1 of a heater 5, comprising a number of chambers 7 arranged side by side, is disposed within a conduit 3, and a heat equalizer 4 is provided at the entrance to the heater serving to mix combustion products with circulating gases which are returned through a conduit 13 by a blower 12 and re-heated by contact with the outer wall of the combustion chamber. A proportion of the heating gases is continuously discharged, as through a valve 17, corresponding to the quantity of gases introduced through the burner 2. The heating gases are deflected into small streams which flow in parallel courses over the separate surfaces to be heated at such a velocity that the whole heater is uniformly heated. The conduit 10 in which the streams re-



unite for return to the blower is connected alternatively with a pipe 15 in which the valve 17 is located or with a pipe 16 leading to a waste heat utilizing apparatus 18 in which air or gas to the burner 2 may be heated.

281,341. Electroflo Meters Co., Ltd., (Assignees of *Republic Flow Meters Co.*). Nov. 29, 1926, [*Convention date*].

Thermostats.—A heat-sensitive element operating by the differential expansion of solids is caused to vary the resistance of an electric circuit including indicating and/or recording instruments. The thermostat within the furnace &c. 38 comprises coaxial tubes 34, 39 having different coefficients of expansion and connected together at one end by a pin &c. 42. The tube 34 extends to the indicator while the tube 39 is joined to a rod 40, preferably of the same material as the tube 34. The rod 40 is clamped at its outer end by screws 41 to a tube 35 extending between the furnace and the casing 10 containing the indicating means and the outer end of the tube 34 is arranged to actuate the indicator. The casing 10 contains a cup 11 to which it is connected electrically, and the cup receive a hollow plunger 12 of insulating material which rests on mercury 13. Secured within the hollow part of the plunger is a rod 15 on which is wound a resistance 16 the upper end of which is connected to a terminal 18 mounted on but insulated from the casing 10. Pivoted on a bracket 22 within the casing is a bell-crank lever 23 the horizontal arm of which carries an adjustable carrier 25 through which passes a screw 27 bearing on the upper end of the plunger 12, while the vertical arm of the lever carries a screw 31 bearing on a plug 32 secured to the end of the tube 34. Expansion of the tube thus rotates the lever 23 causing the plunger 12 to be depressed into the cup 11 with consequent rise of the mercury around the resistance 16. The variation in this resistance is indicated on a suitable instrument which may be graduated to read temperature directly. A bye-pass tube 19 having a conducting wire 20 in its upper end may be connected to the well 11 so that when the mercury reaches this wire a circuit is completed for sounding an alarm or for operating means for controlling the temperature within the furnace &c.

FIG. 1.

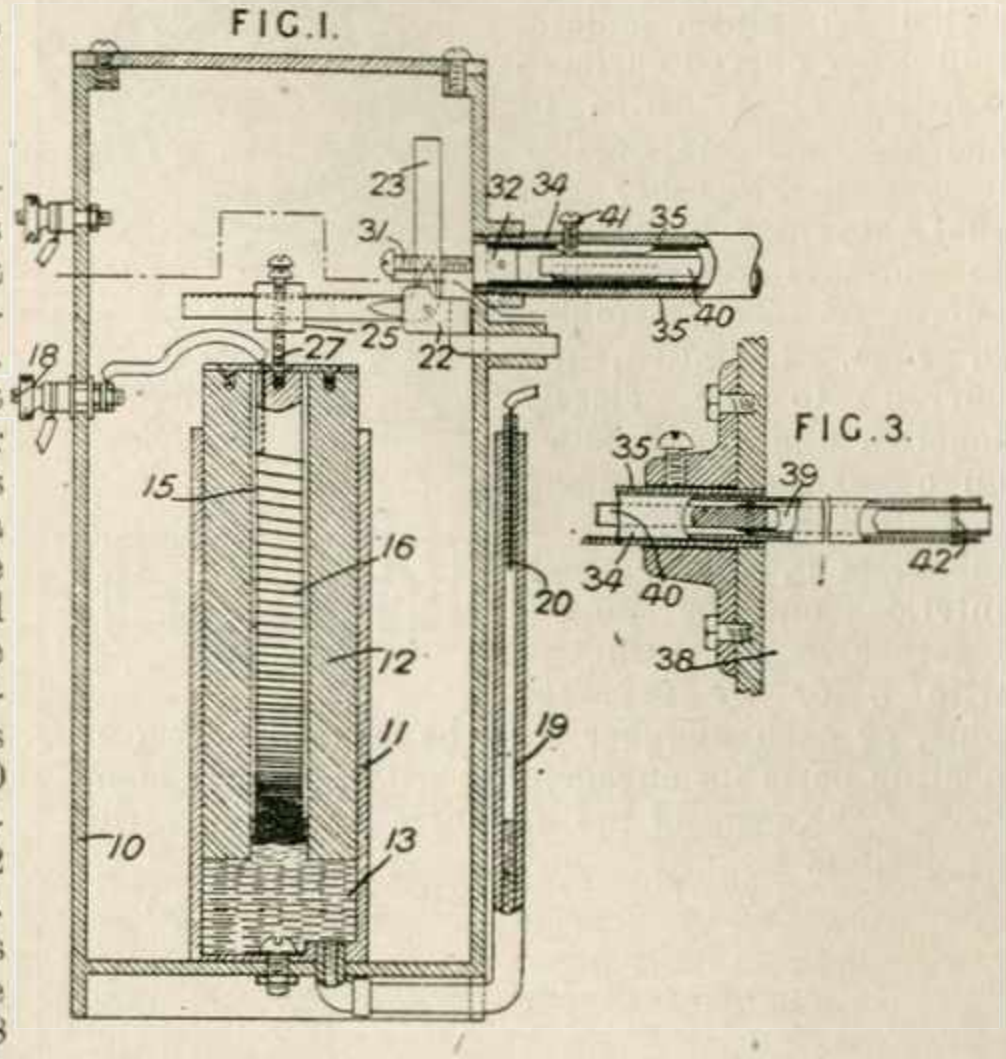


FIG. 3.

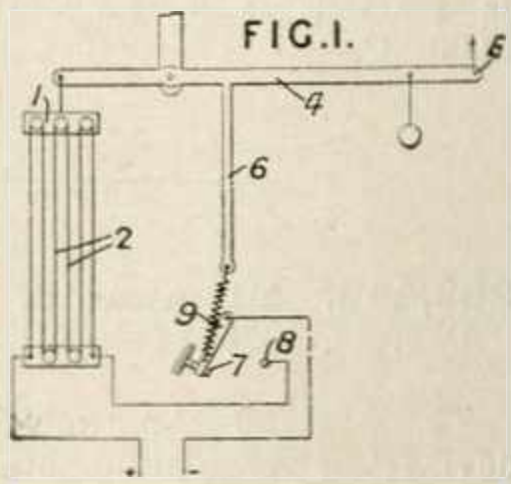
281,490. Gossler, C. O. Jan. 4, 1927. *Drawings to Specification.*

Nonconducting coverings. — Spun glass is arranged for heat insulating purposes in superposed layers, the filaments in each layer lying parallel to one another, but those of different layers crossing at an angle. The superposed layers are not united, but the composite body may be impregnated on one or both surfaces with cementing material, or some or all layers may be so impregnated with substances such as water glass, gelatine, or rubber solution. The material so formed may be wrapped around a pipe, in which case the superposed layers slip relatively to one another. The whole may be covered by strips of fabric.

281,917. Apthorpe, W. H., and **Cambridge Instrument Co., Ltd.** March 22, 1927.

Thermostats. — A motor for driving a recording apparatus in which the record is made by periodic marking on a moving chart and producing motion by the alternate heating and cooling of a metallic member consists of a wire 2, Fig. 1, heated electrically and kept in tension by a movable abutment 1 attached to one end of a pioted lever 4 from the other end 5 of which reciprocating motion is taken.

FIG. 1.



282,006. Dyckerhoff, E., and **Schmidt, E.** Dec. 8, 1926, [*Convention date*]. *Void* [*Published under Sect.* 91 *of the Acts*].

Nonconducting coverings for heat.—A device for supporting heat insulation on pipes, boilers, and other curved surfaces consists of a series of spacing members flexibly connected together so that they may be applied to surfaces of different curvature. The members *b*, Figs. 2 and 3, are curved to fit closely together and are threaded on a flexible metal band *a*. Alternatively, the members *b*, Fig. 5, may interlock and be hinged together by a continuous wire *a* or by separate pins, or each member may be formed with connecting parts for engagement with adjacent members. The form of the members *b* may be varied as desired.

FIG. 2.

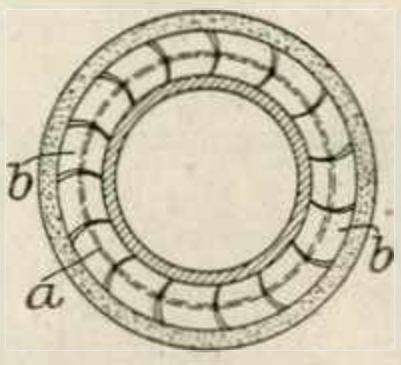


FIG. 3.

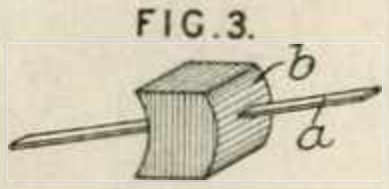
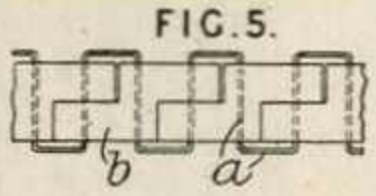


FIG. 5.

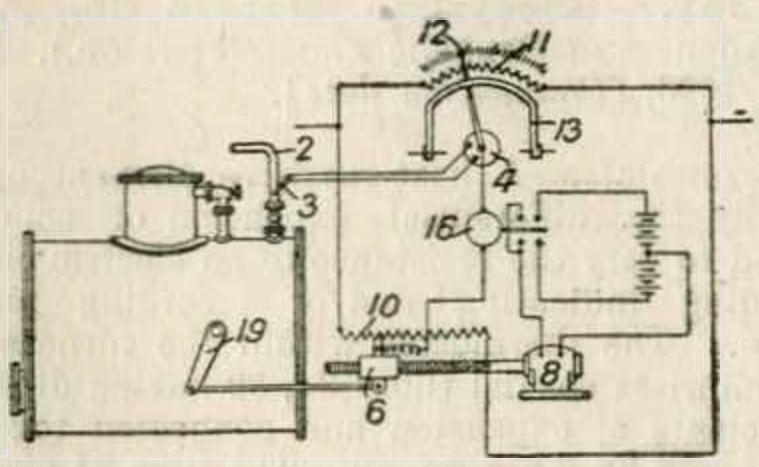


282,402. Singer, F. Dec. 17, 1926, [*Convention date*].

Nonconducting coverings.—Materials for heat insulators consisting of double silicates of the type RO Al_2O_3 $2SiO_2$ are produced by reacting the oxides or oxysalts of divalent metals (such as magnesium, calcium, barium, strontium, zinc and divalent iron), or mixtures thereof, with alumina and silica at temperatures below the fusion point of the mixture, and preferably at temperatures at least 50° C. below the fusion point, the value of the latter being taken as the softening point of the Seger-core. In an example, a mixture comprising 10-20 parts of magnesium oxide, 33-43 parts of alumina, and 40-50 parts of silica is reacted at a temperature somewhat above 1000° C.

282,442. Siemens & Halske Akt.-Ges. Dec. 18, 1926, [*Convention date*].

Thermostats.—An automatic electrical relay device for regulating steam boilers, e.g. the travelling grate, the flue dampers, the feed water valves or the like, in response to temperature variations, is illustrated in its application to the regulation of a flue damper attached to the lever 19, controlling the superheat of steam drawn off through a pipe 2. A thermocouple 3 operates a temperature indicator 4, the pointer 12 of which moves close to a resistance 11. The pointer 12 and relay 16 form the bridge connection of a Wheatstone bridge, the two arms of which are constituted by the resistances 10, 11. A member 13 is pressed down on the pointer 12 at regular intervals, but if the steam is at the desired temperature there is no current through the relay



16. If the pointer 12 is deflected, it will be pressed on to the resistance 11 at a point which will unbalance the bridge, the relay 16 will be energized, and the motor 8 rotated to move the slider 6 and arm 19. The pointer 6 is moved over the resistance 10 till the bridge is again balanced and the motor is no longer rotated.

282,676. International General Electric Co., Inc., (Assignees of *Allgemeine Elektricitäts-Ges.*). Dec. 24, 1926, [*Convention date*].

FIG. 1.

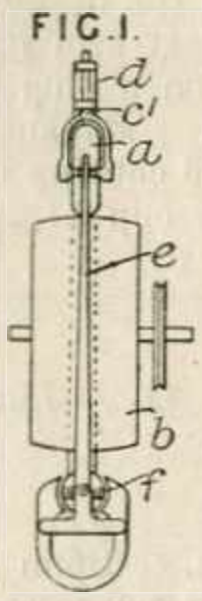
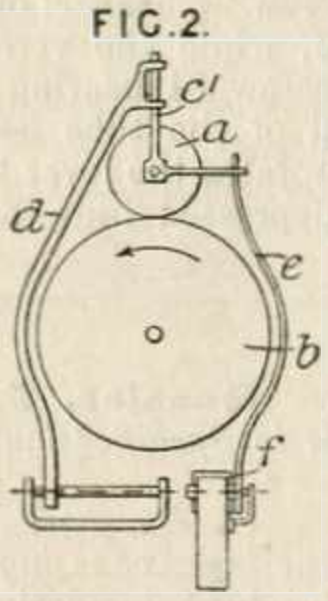
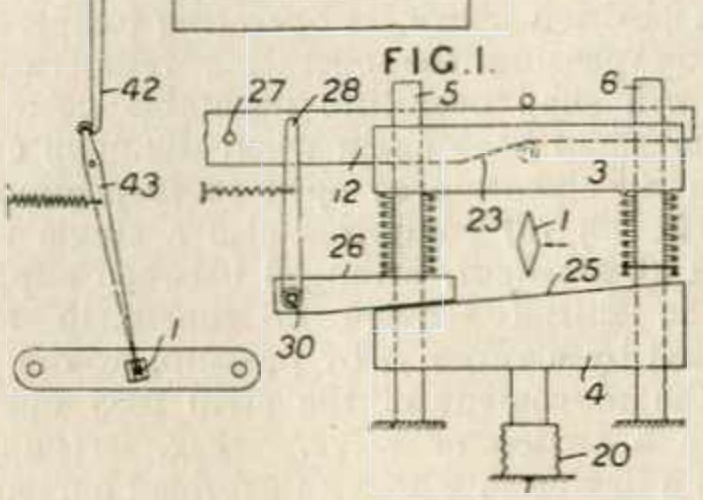


FIG. 2.



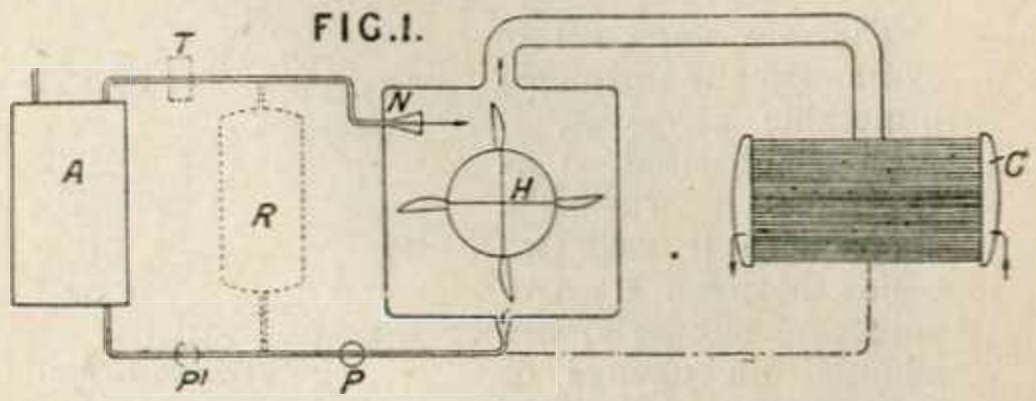
Thermostats.—A roller *a* running on a surface such as that of a drum *b* is rotated about the axis c^1 of its support by the arm *e* of a measuring device such as a voltmeter *f*. The resulting lateral motion may be employed to actuate a valve, electrical resistance or other regulating device through the supporting arm *d*. The drum may be non-cylindrical and a rise and fall of the roller may operate the regulator, the contour of the drum being varied across its width to cause varied reciprocation of the roller when turned. The arm *e* may be actuated by a bimetallic strip for controlling temperature.

282,739. Siemens - Schuckertwerke Akt.-Ges., (Assignees of *Siemens-Schuckertwerke Ges.*). Dec. 24, 1926, [*Convention date*].



Thermostats. — Consists of a mechanical relay for use with control devices, more particularly for steam boilers, of the kind in which the controlling force is exercised at prescribed time intervals only and comprising a reciprocating member the movement of which is transmitted to a second or driven member to an extent which is variable in accordance with the indication of the thermopile, C O_2 meter, pressure gauge or other sensitive instrument employed, and consists of means for fixing the driven member in its adjusted position during a part of the regulating process. Fig. 1 shows the main arrangement and Fig. 3 a preliminary relay which is used where the strength of the sensitive member is very small. The needle 1, Fig. 1, has a range of movement between bars 3, 4, slidable parallel to themselves on guides 5, 6. The bar 3 is moved by means of a reciprocating rod 12 and a cam face 23 and, according to the position of the needle 1 with respect to the sloping face 25 of the bar 4, compresses more or less a chamber 20 containing the pressure fluid by which the relay piston of the setting device is operated. The bar 4 is locked during return of the bar 3, to leave the needle 1 free to take up a new position, by means of a locking device comprising a clamp 26 carrying, by means of a clamping coupling 30 or the like, an arm 28. On the rod 12 moving to the right a pin 27 on it engages the arm 28 and releases the clamp 26, which is therefore pushed down with the bar 4. On the reverse movement of the rod 12 the clamp 26 becomes locked in its lower position. The rod 12 is reciprocated at regular intervals by means of a motor-driven piston and hydraulic transmission. In the preliminary relay, Fig. 3, the same principle is employed, but the needle 39 of the sensitive instrument moves over a fixed bar 38 and only part of the predetermined downward movement due to the cam member (here a rotating cam 31) is imparted to the coacting bar 35, the remainder of such movement being taken up by a spring 34 (to an extent depending on the position of the needle with respect to the sloping face 40 of the bar 35). The bar 35 is connected by linkage 41, 42, 43 to the needle 1 of Fig. 1.

282,773. Marguerre, F. Dec. 23, 1926, [*Convention date*]. *Addition to* 282,692, [*Class* 110 (iii), Turbines &c.]. *Void* [*Published under Sect.* 91 *of the Acts*].



Solar heat, utilizing. — Water is heated in a vessel which may be enclosed and blackened or provided with glass walls and may be associated with mirrors. If the sun's rays have direct access to the water, the latter may be blackened. The heated water is used to produce motive power as described in the parent Specification. Water from the heater A passes to a nozzle N of a pelton-wheel H and the steam of the exhaust is led to a condenser C. The condensate and the water of the exhaust are pumped back by a pump P. A storer R, thermostat T and a second pump P^1 may be used. The thermostat controls the pump P^1 and water is delivered to or extracted from the base of the storer according to whether the pump P delivers faster or slower than the pump P^1. The motor may comprise a pelton wheel, an axial flow turbine and a second pelton wheel in series.

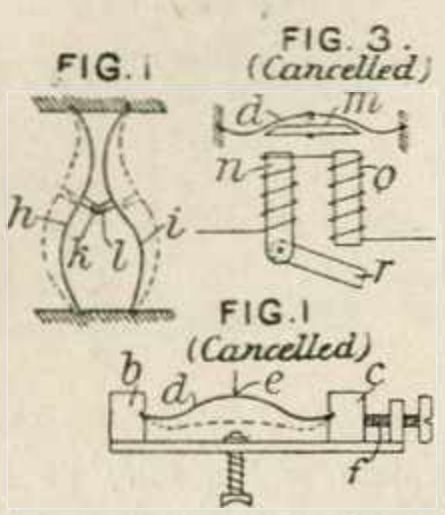
282,810. British Thomson-Houston Co., Ltd., (Assignees of *Barringer, L. E.*). Dec. 29, 1926, [*Convention date*].

Nonconducting coverings for heat. — Nonconducting coverings for refrigerators consist of slabs, tiles, &c. formed of a mineral composition having a coating of resin consisting of polyhydric alcohol and a polybasic acid, such as glycerol and phthalic anhydride. The body portion of the slab &c. may include asbestos in its composition and be formed as described in Specification 19035/05, [*Class* 70, Indiarubber &c.]. The body may also consist of asbestos bonded with Portland cement or magnesium hydroxide, or water glass with various mineral fillers may be employed. The resin may be coloured with a dye and be applied either as a powder or by dipping, painting or spraying. The coating is converted to a hard condition by baking the coated article at a temperature of 150° to 200° C., and this treatment may be carried out in

stages. When the coating is in powder form the article to be coated is heated to 200° C. A priming coat of clear resin may be followed by coats of resin containing a filler or pigment. The resin may be associated with a plasticizer such as indene, indene polymer, diethyl-phthalate, dibutyl phthalate, glycol diacetate, benzyl alcohol, benzyl benzoate, benzyl acetate, tricresyl phosphate, anisol, ethyl lactate, triacetin *o*-cresyl benzoate, &c. The resin may be that described in Specifications 3271/13 and 8417/13, [both in *Class* 70, Indiarubber &c.].

282,827. International General Electric Co., Inc., (Assignees of *Allgemeine Elektricitäts-Ges.*). Dec. 30, 1926, [*Convention date*].

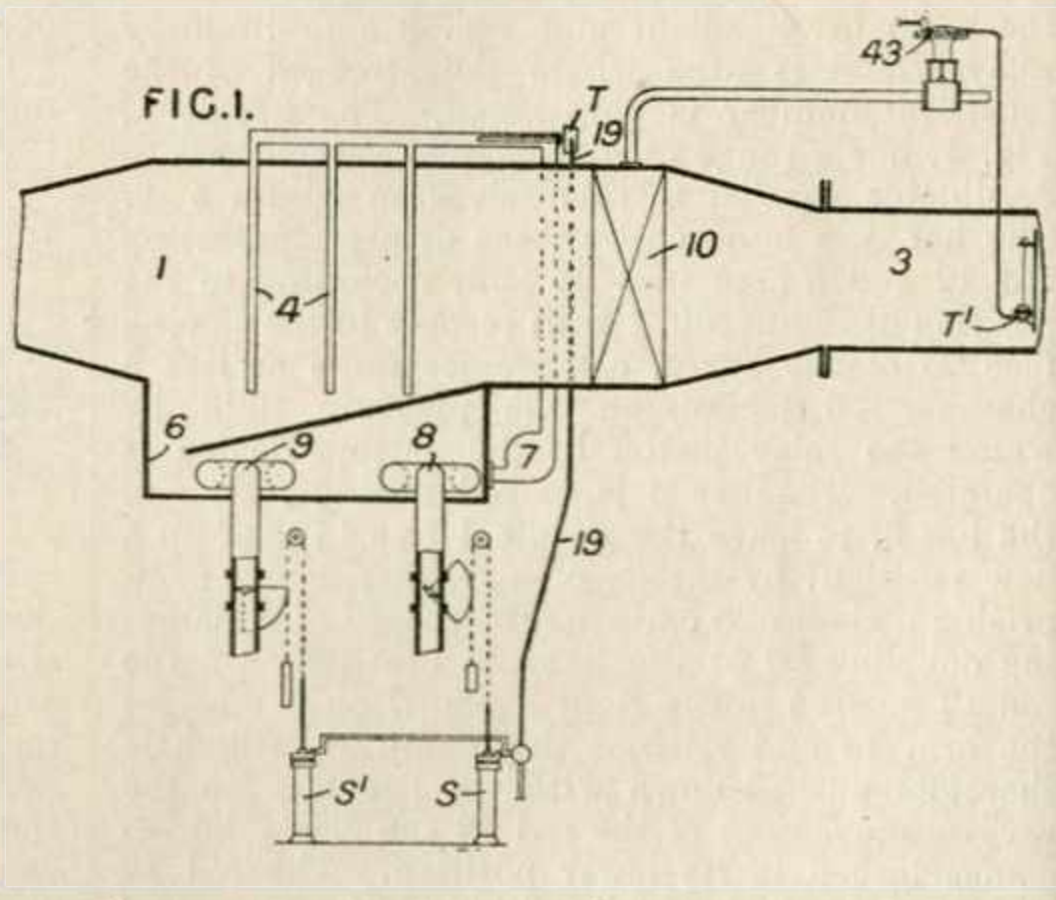
Thermostats. — Two symmetrically arranged bimetallic strips *h*, *i*, each constructed so as to have a wave-like shape with at least two bends between its two points of supports, are adapted on change of temperature to operate or release a switch &c. On change of temperature each strip snaps over from the position shown in full lines to that shown in dotted lines or vice versa, thereby closing or opening contacts *k*, *l*. The initial tension of the strip may be adjusted by altering the distance between the points of support or by auxiliary spring &c. Each strip may be arranged to have for all temperatures only one stable position or it may have two stable positions for all temperatures below its operating temperature and one stable position above its operating temperature so that on passing the operating temperature the strip will snap over into its stable position and will not snap back again when the strip cools.



The Specification as open to inspection under Sect. 91 (3) (a) comprises also a single strip *d*, Fig. 1 (*Cancelled*), arranged between supports *b*, *c*. The initial tension of the strip may be adjusted by a screw *f*, by pressure at the point *e* and the movement of the strip may operate or release a switch or valve. Fig. 3 (*Cancelled*), shows a device in which an overload current heats the strip *d* and causes an armature *m* to engage an electromagnet *n*, *o* the reluctance of the magnetic circuit of which is thereby so reduced that its main armature *r* is attracted and a switch or circuit-breaker operated. This subject-matter does not appear in the Specification as accepted.

282,915. British Arca Regulators, Ltd., and **Lindsay, T.** Oct. 9, 1926.

Thermostats. — A heater 10 for moistened air &c. is arranged near the outlet 3 of a spray washer 1 and controlled by a temperature regulator T^1 as described in Specification 206,154, and a relay valve 43 as described in Specification 251,392, [*Class* 135, Valves &c.].



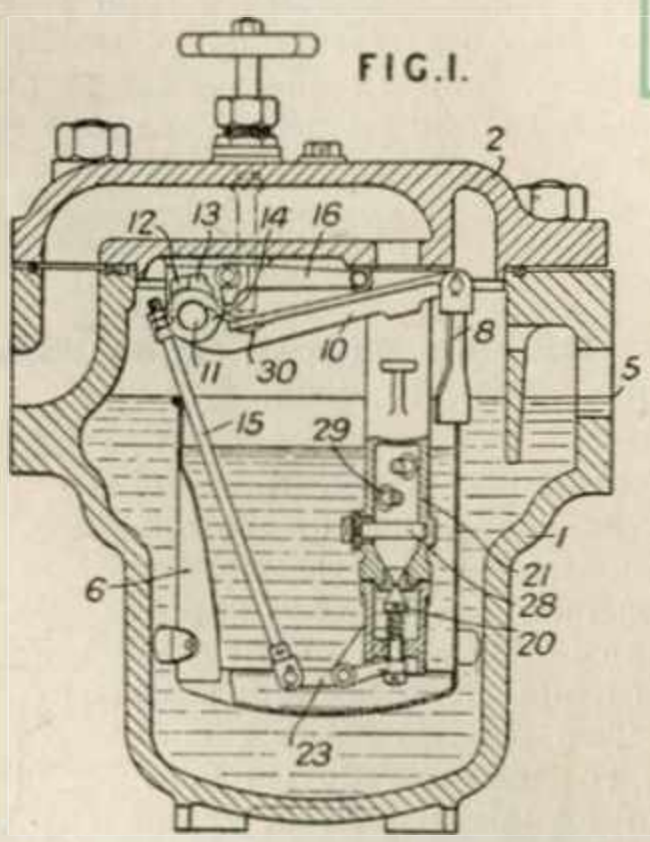
283,055. Westfelt, A. U. May 28, 1927.

Nonconducting coverings for heat. — A heat-insulating material consists of waterglass which is subjected to a high temperature, so that it undergoes a considerable increase of volume. The waterglass, before it is heated, is mixed with a substance which develops gas when heated, such as potassium chlorate. In order to make the material more solid, pulverized incombustible material, such as a silicate, may be mixed with the waterglass.

283,079. Plummer, C. St. C., and **Kermode, W. M.** July 12, 1927.

Steam traps.—A steam trap of the bucket float type is provided with a discharge valve at the lower end of the discharge pipe which extends into the bucket, the valve being actuated through trip mechanism. The casing 1 is provided with a detachable cover 2 carrying the mechanism, and with inlet 5 and outlet 30. The bucket 6 carries an arm 8 to which is pivoted a lever 10 mounted on a fixed pivot 11. A projection 12 on the lever 10 is adapted to coact with a projection 13 on a sleeve also mounted on the pivot 11. A second projection on the sleeve actuates the pull rod 15 which operates the discharge valve 20. When the bucket fills and sinks, the valve 20 is opened by means of the levers 10, 15, 23, and the gravity-actuated trip lever 16 engages with a corresponding projection on the sleeve 14 to hold the valve open until the bucket is emptied. The valve is held open until the bucket rises and releases the trip lever 16. Renewable baffle pins 28, 29 may be provided in the discharge pipe 21 to break up the discharged jet.

FIG. 1.

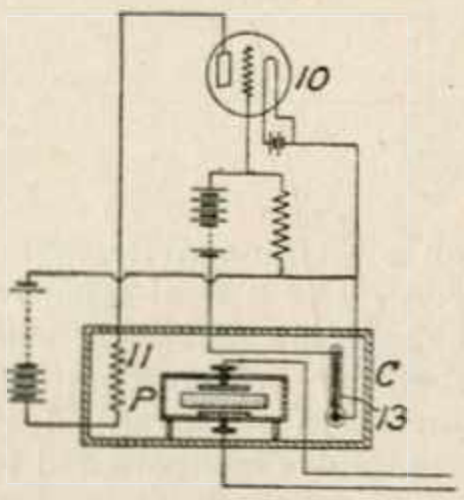


283,436. Bowen, J. Aug. 23, 1927.
Drawings to Specification.

Thermostats.—A Bourdon tube subject to temperature variations and employed to actuate a valve, contains methyl alcohol.

283,596. Marconi's Wireless Telegraph Co., Ltd., (Assignees of *Hansell, C. W.*). Jan. 15, 1927, [*Convention date*].

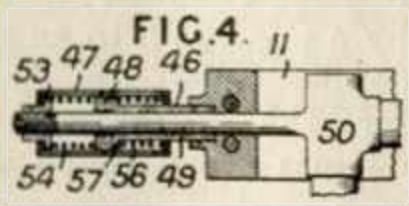
Thermostats. — A piezo-electric resonator P is mounted in a casing C provided with heating means 11 and automatic control means to maintain the temperature constant. The Figure shows a thermometer 13 adapted at a predetermined temperature to apply a large negative bias to a thermionic valve 10 to cut off the anode current through the heating resistance 11.



283,604. Marks, E. C. R., (*Northern Equipment Co.*). July 14, 1926.

Thermostats.—To prevent damage to the thermostatic tube of a boiler water regulator due to abnormal expansion or contraction, the lower end 50 is secured to the frame 11 by a rod 49, Fig. 4, which may move inwards and outwards against the compression of springs 54, 56. The spring 54 is compressed between a flange 53 on the end of the rod 49 and a nut 48 secured to a cylinder 47 around the springs. The spring 56 is compressed between a flange 57 on a tube 46 secured to the frame and the inner end of the cylinder 47. The frame carrying the thermostatic tube may be formed of two channel irons bolted together.

FIG. 4.



283,631. Poole, H. J. Oct. 11, 1926.
Drawings to Specification.

Thermostats.—One end of a zinc rod is positioned according to the required temperature by a pivoted lever with a screw adjustment.

283,784. Claus, B. June 7, 1927.

FIG. 1.

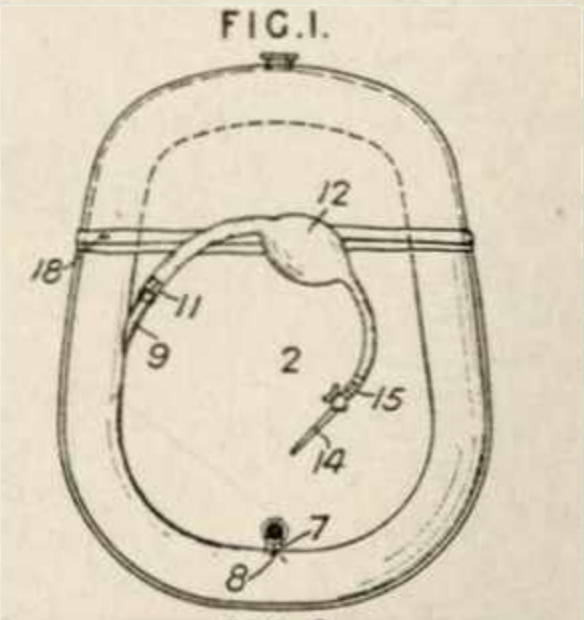
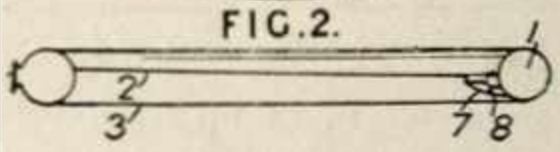


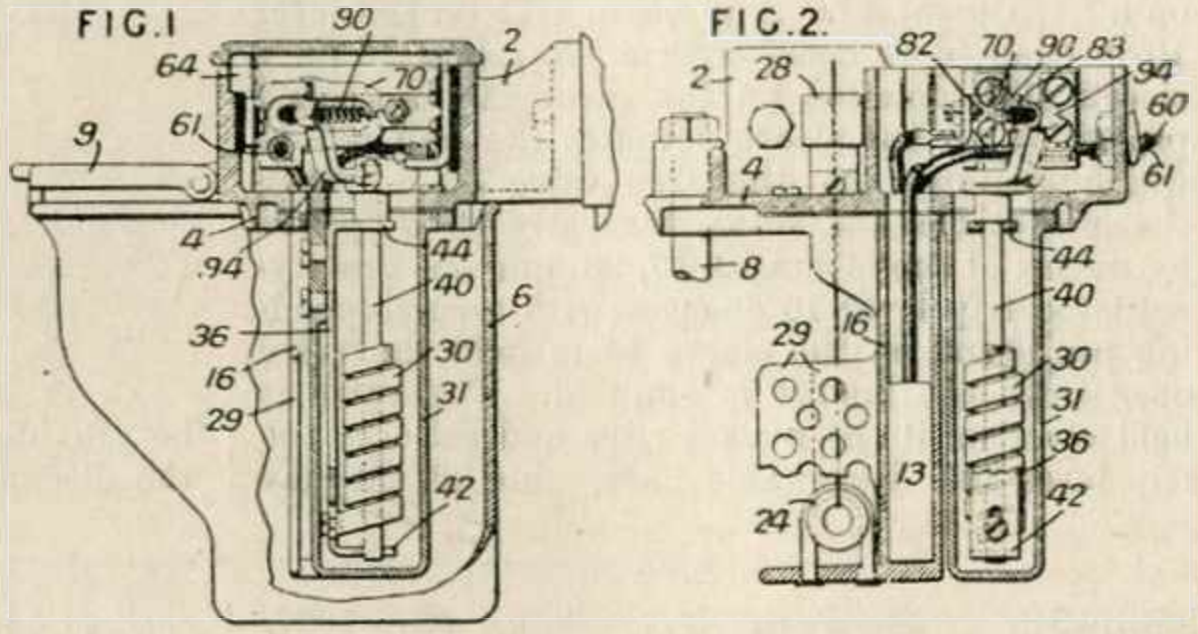
FIG. 2.



Hot-water bottles.—A hot-water bottle, applic-

able also as a bidet comprises a tube 1, Figs. 1 and 2 bent into oval form and plates 2, 3. A suction tube 9, bulb 12 and nozzle 14 are provided, and used liquid returns to the tube through a fitting 7, valves 11, 15 and 8 being provided. A rubber cover engages a bead on the outer side of the tube 1, and a rubber strap 18 is utilized to hold the lower portion in laid back position.

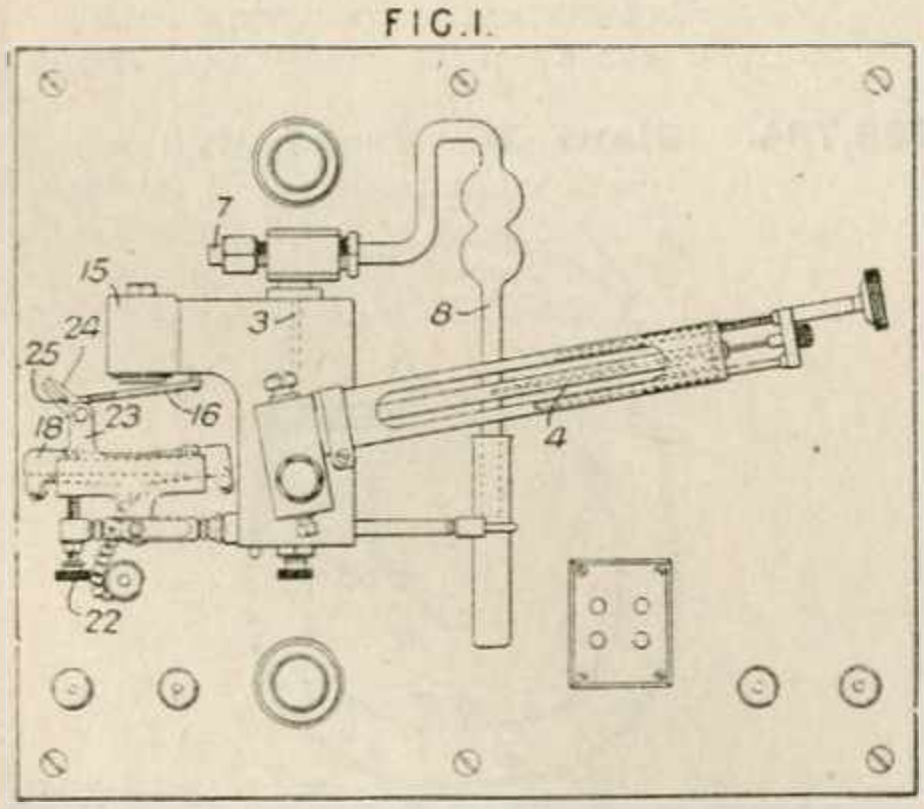
283,983. British United Shoe Machinery Co., Ltd., (*United Shoe Machinery Corporation*). Sept. 15, 1926.



Thermostats. — Apparatus for heating wax comprises a thermostatically-controlled electric heating device depending into the wax-pot, to keep the temperature of the wax between certain definite adjustable limits. Two electric heating coils 13 and a thermostatic device comprising an expansion coil of metal 30 are placed respectively in two spaced apart vertical columns 16, 31, depending from a cover plate 4 into the wax pot 6 of a sewing machine. The heating coils 13 are connected in parallel across mains 60, 61, and the thermostat 30 controls a switch member 70 to cut one of the coils suddenly out of circuit when the temperature rises above a certain limit, and to return it suddenly into circuit when the temperature falls below another limit. One end of the thermostatic coil 30 is clamped to a bracket 36 mounted rigidly in the column 31 and the other end is secured to a vertical shaft 40 journaled in horizontal lugs 42, 44 at the top and bottom of the bracket 36. Rotation of the shaft 40 is transmitted by an arm 94 and a coiled spring 90 to move the pivoted switch member 70 suddenly into and out of contact with adjustable stud members 82, 83 enclosed in a casing 64 on the cover plate 4 to cut out of and put in circuit respectively, one of the heating coils 13. The setting of the arm 94 relatively to shaft 40 may be adjusted to change the limiting temperatures within which the thermostat acts without changing the range of temperature. Specifications 22546/12, 107,655; and 257,262, [*Class* 39 (iii), Heating by electricity], are referred to.

284,008. Freeman, N. H. Oct. 19, 1926.

FIG.1.

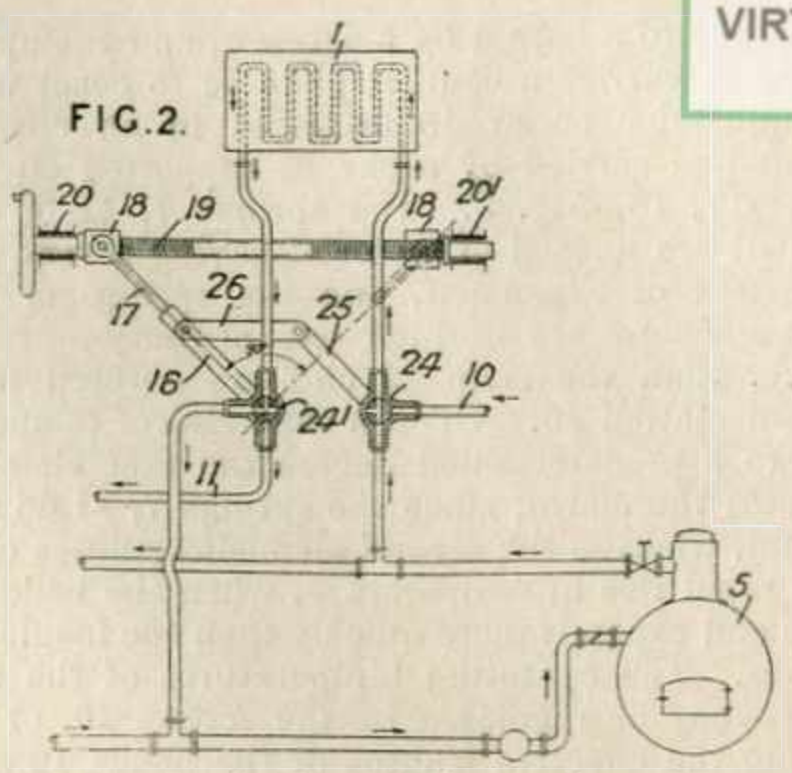


Thermostats. — In temperature - controlling means for furnace chambers &c. and having a tilting mercury switch, such as 18, operated by an electromagnetic arrangement as 15, 16 under control of a heat-sensitive element, the operative connection between the electromagnet and the mercury switch comprises co-operating cam-like members so arranged that their arcuate movements are compounded to impart a rocking movement to the switch, such movement being positive in both directions, and also adjustable in extent by relative adjustment of the said co-operating members. The hinged armature 16 has a pin 25 engaging a slotted arm 24, which is angularly adjustable in bracket arms 23 forming part of the pivoted cradle of the switch 18. The pivotal movement of the switch is limited by an adjusting screw 22. The connection 7 from a heat-sensitive device, such as a gas holder in a furnace chamber, leads to a sealing means 8, and by a passage 3 to an angularly adjustable mercury contact tube 4 controlling the operating current for the electromagnet 15. Such controlling devices are adapted more particularly to operate as a control intermediate of the device described in Specification 175,024 and an adjustable fuel valve as described in Specification 282,864, [*Class* 135, Valves &c.].

284,214. Dürst, T. Jan. 24, 1927, [*Convention date*].

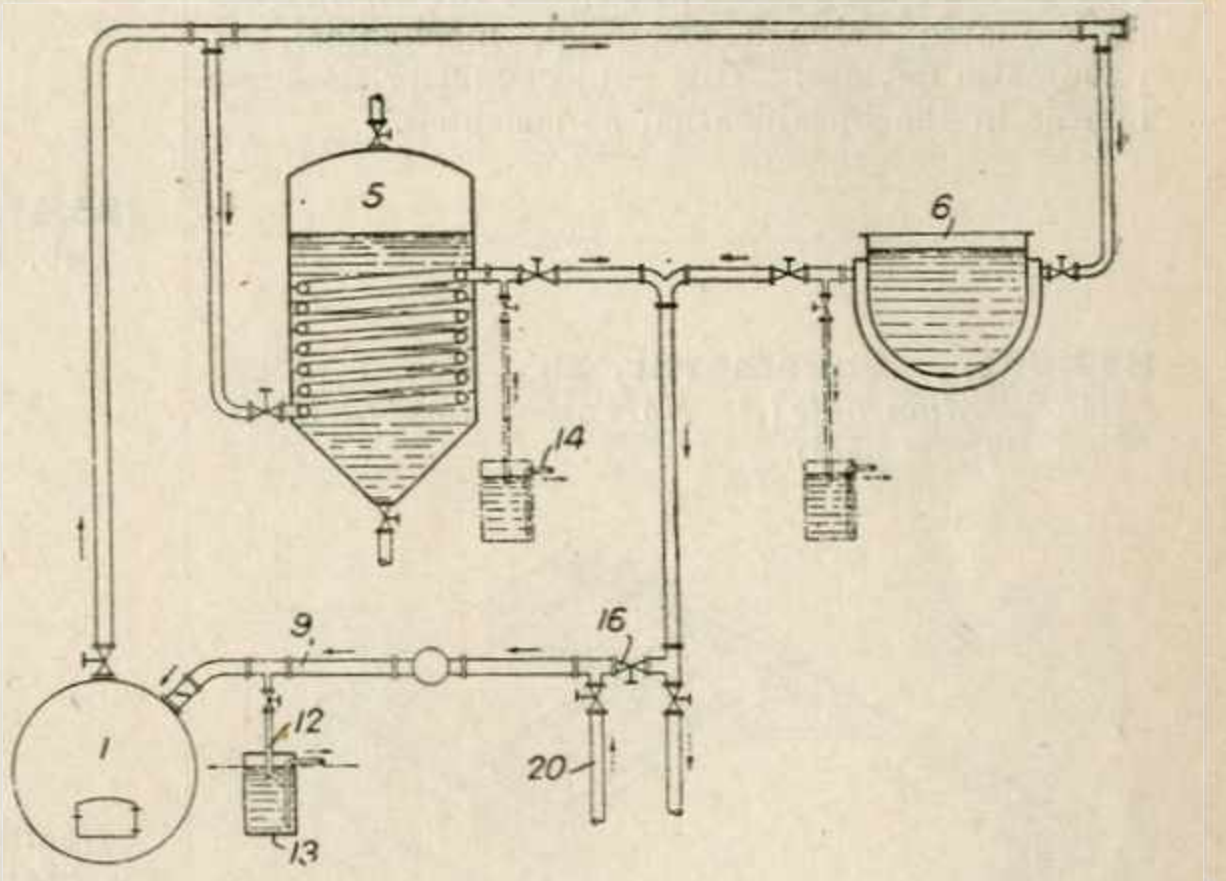
Heating by circulation of fluids.—In apparatus requiring an alternate supply of heating and cooling medium, for example, hot plates employed in the vulcanization of rubber, the manufacture of laminated wood, artificial leather, belting, &c., the supply is controlled by two interconnected three-way cocks connected respectively to the inlet of the apparatus, the hot and cold supply, and the outlet of the apparatus, the hot and cold return. Cocks 24, 24¹, connected by links 25, 26, 16, are operated by a rod 17 telescoping in the link 16, and mounted on a block 18 working between stops 20, 20¹ or a screwed rod 19. In the position shown, the apparatus 1 is in the circuit of the boiler 5. By traversing the block 18, the heating medium is shut off, and the apparatus is put into communication with supply and return pipes 10, 11 for the cold medium.

FIG. 2.



284,215. Dürst, T. Jan. 24, 1927, [*Convention date*].

Heating by circulation of fluids.—In a steam or hot water circulation system for the treatment of materials used in the manufacture of cellulose, oils, soap &c., the presence of impurities in the return water due to leakages in the system is indicated by allowing a small quantity of water to flow continuously from the return pipe 9 through a tube 12 into a glass or other vessel 13 containing pure water. When impurities are detected, a valve 16 in the return pipe is closed, and the boiler 1 is supplied with fresh water through a pipe 20. Water overflows from the vessel 13 through a tube 14. Separate vessels 13 may be provided to receive water from the return pipe adjacent to each of the treatment vessels 5, 6.



284,266. Siemens - Schuckertwerke Akt.-Ges., (Assignees of *Siemens-Schuckertwerke Ges.*). Jan. 26, 1927, [*Convention date*]. *Void* [*Published under Sect. 91 of the Acts*]. *Drawings to Specification.*

Nonconducting coverings for heat.—Apparatus, pipe lines, and the like, are protected against loss of heat by an air jacket subdivided into compartments which are preferably such that the heat passes through them in succession from the hot wall. The surfaces of the dividing walls may be formed as reflectors.

284,650. Picard, J., and **Tournadre, A.** Feb. 2, 1927, [*Convention date*].

Thermostats.—An apparatus for giving warning either of rapid heating or of a slow rise to a predetermined temperature comprises a pair of elements, Fig. 1, each comprising a band 12 of highly expansible material stretched between a pair of curved springs 7, 11. The lower spring 7 of each element

FIG. 1.

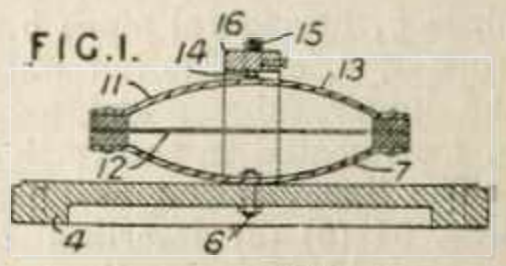
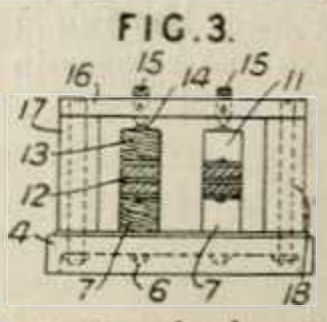


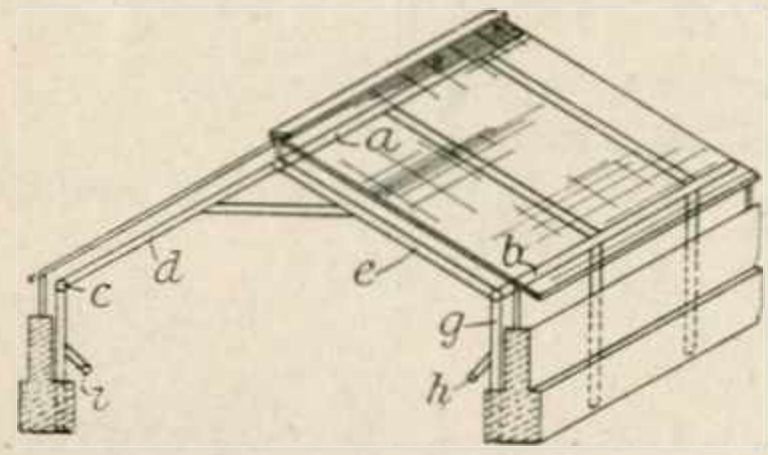
FIG. 3.



...ured to a base 4 by a screw 6, and the upper spring 11 carries a contact plate 14 to coact with an adjustable screw 15 arranged in an electric circuit and carried by a bar 16 supported on uprights 17, 18, Fig. 3. The springs 7, 11 of one element are formed of material having a very low coefficient of expansion, and the springs of the other element are of high expansibility but are thicker than the strip 12 and are covered with heat-insulation 13. Upon a slow rise of temperature to a predetermined degree the first element operates the alarm, since the springs 7, 11 do not expand, whereas the second element operates only on a rapid rise in temperature, when the band 12 heats and expands more quickly than the insulated springs. The operating temperatures of the elements may be regulated by the screws 15, or by varying the effective lengths of the bands 12 and springs 7, 11.

The Specification as open to inspection under Sect. 91 (3) (a) comprises also a construction wherein the apparatus comprises one only of the elements, or wherein the two elements are arranged in separate circuits. It states also that each element may comprise the band 12 and one only of the spring strips, and that the alarm may be actuated through electrical, mechanical, or pneumatic devices. This subject-matter does not appear in the Specification as accepted.

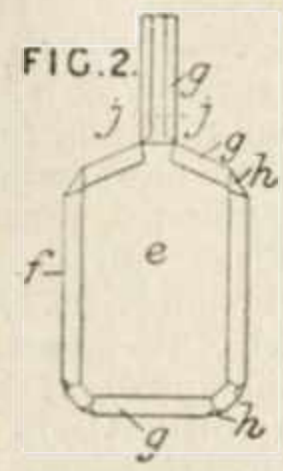
284,671. Engelhardt, E. Feb. 3, 1927, [*Convention date*]. *No Patent granted (Sealing fee not paid).*



Heating systems. — The whole of the tubular framework of a greenhouse, hothouse, conservatory or the like is adapted to serve as the hot water heating system and comprises vertical pipes *g*, horizontal pipes *b*, *c* and the roof framework *a*, *d*, *e*. The hot water is supplied through the upper tube *a* and exhausted through tubes *h*, *i* connected to the vertical tube *g*.

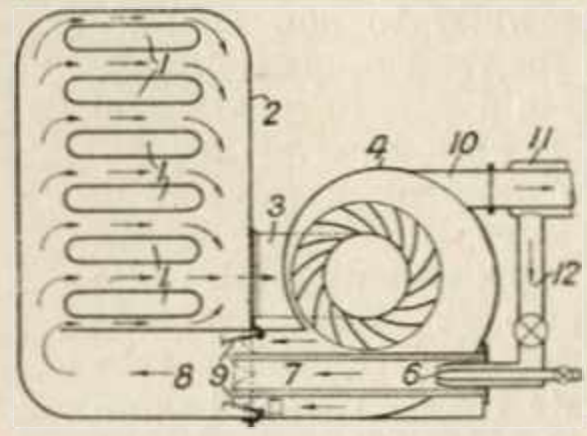
The Specification as open to inspection under Sect. 91 (3) (a) describes also the use of steam as the heating medium. This subject-matter does not appear in the Specification as accepted.

285,193. Knopf, J. Dec. 2, 1926.



Hot-water bottles. — Rubber hot-water bottles are provided with a separate inner lining. The rubber body is moulded in the usual way and removed from the core, and a separate lining of woven or other material, coated or not with rubber solution, is inserted in the bottle and inflated to obtain good contact. The lining may have a neck for inflation, which afterwards strengthens the neck of the bottle. A lining may be made of two pieces of textile material *e*, *f*, the latter having flaps *g* cemented to the part *e*. The corners are turned over and cemented at *h*. The lining may be rolled up and inserted through the neck into the body, and after inflation, the neck is cut off at *j*. In a modification, an indiarubber lining may be formed by dipping, or from sheet rubber, and then cemented and inserted into the bottle.

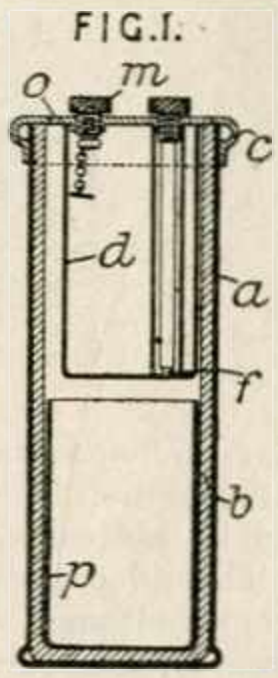
285,475. Chemisch - Technische Ges. Feb. 18, 1927, [*Convention date*].



Heating by circulation of fluids.—In apparatus for heating by repeated circulation of hot gases, the burner 6 for re-heating the circulating gas stream is arranged on the casing of the fan 4 which effects the circulation. The invention is shown as applied to the heating of retorts 1 disposed within a chamber 2 which is formed with a passage 8 for the entry of the hot gases and with an outlet pipe 3 leading to the fan 4. The burner 6 is surrounded by a tube 7 projecting into the conduit 8, the passage of the gases from the fan around the tube 7 being controlled by dampers 9. The gas displaced from the circuit by the fresh gases from the burner 6 escapes through a pipe 10 which is surrounded by a chamber 11 serving to heat the air supplied through a valved pipe 12 to the burner.

285,511. Gyorgy, K. Feb. 18, 1928. [*A Specification was laid open to inspection under Sect.* 91 *of the Acts, Feb. 20, 1928*].

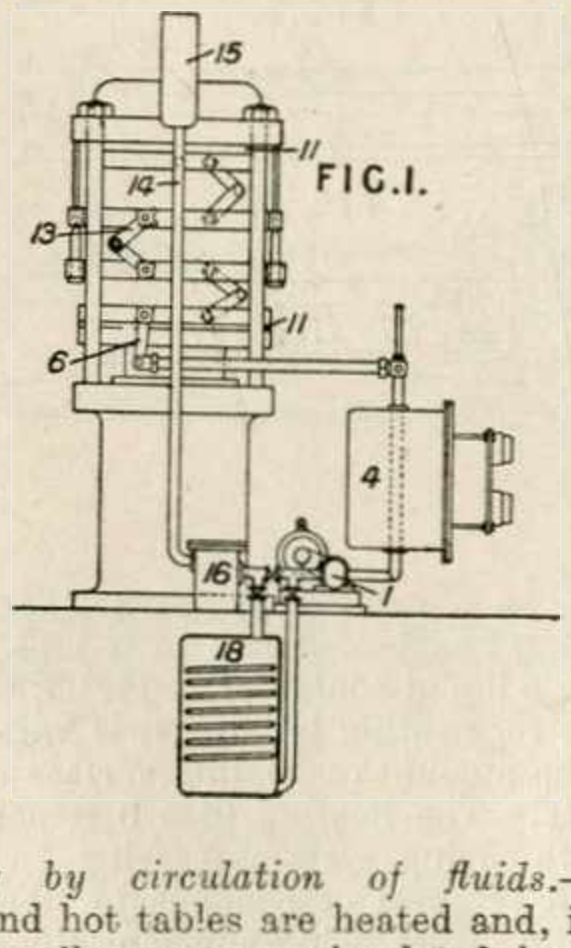
FIG.I.



Heating by chemical action.—A device for heating or cooling by chemical reaction comprises a metal vessel *a* lined internally with non-conducting material *b* which also serves as a heat accumulator, and closed by a cover *c* carrying a water container *d*. The lower container *p* is filled with quicklime when employed as a heater, and water is admitted to it by opening a screw-down needle valve *f*. A filling screw *m* is provided, and also an aperture *o* to allow the escape of vapour. The apparatus is arranged within an outer vessel which may contain pieces of canvas, cloth, felt, or the like, which on being heated, may be applied to the human body. The apparatus may also be used for cooling by employing substances which absorb heat, e.g., ammonium nitrate and water.

286,024. Brown, Sir A. W. Dec. 13, 1926.

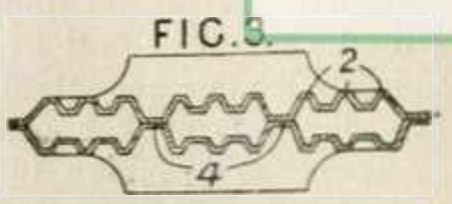
FIG.I.



Heating by circulation of fluids.—Presses, platens, and hot tables are heated and, if desired, cooled, by oil or grease circulated by a pump. A pump 1 is arranged in circuit with an electric heater 4, jointed pipes 6, 13, an expansion vessel 15, return pipe 14, and filter 16; cocks are provided by means of which a cooler 18 may be put into the circuit. Heat insulating plates 11 are preferably provided. Specification 258,977, [*Class* 39 (iii), Heating by electricity], is referred to.

286,538. Tellander, G. R. July

FIG.3.



Radiators.—A radiator of sheet metal is constructed of two halves welded together at the edges. Each half is provided with a large number of corrugations 2 arranged in groups separated by wider depressions 4 which may be deeper than the others. The two halves may also be spot- or seam-welded at 4. In a modification, the bottom of the corrugations 2 in the two halves may meet.

286,618. Akt.-Ges. Brown, Boveri, et Cie. March 5, 1927, [*Convention date*]. *Void* [*Published under Sect.* 91 *of the Acts*].

Nonconducting coverings for heat.—A method of insulating a surface or of obtaining a heat insulating material comprises packing granulated cork between a mould and a casing or between the surface to be protected and a casing and expanding the cork between the rigid walls by heat, for example by blowing hot air through the mass.

286,782. Barty, T., Brackenbury, A. G., and **Westinghouse Brake & Saxby Signal Co., Ltd.** Dec. 9, 1926.

FIG.3.

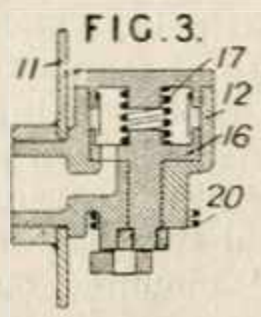
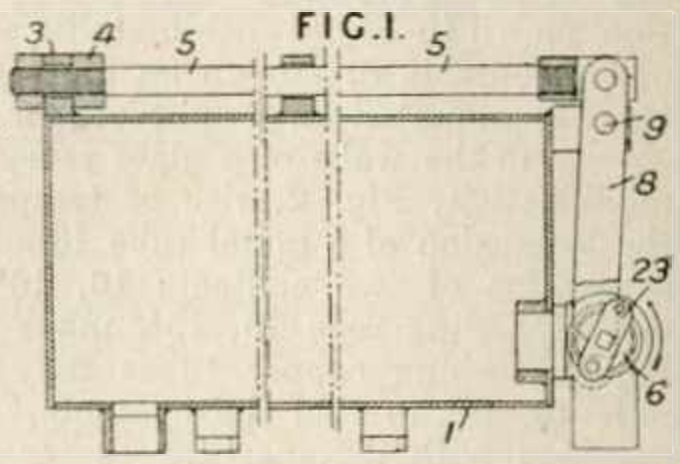


FIG.I.

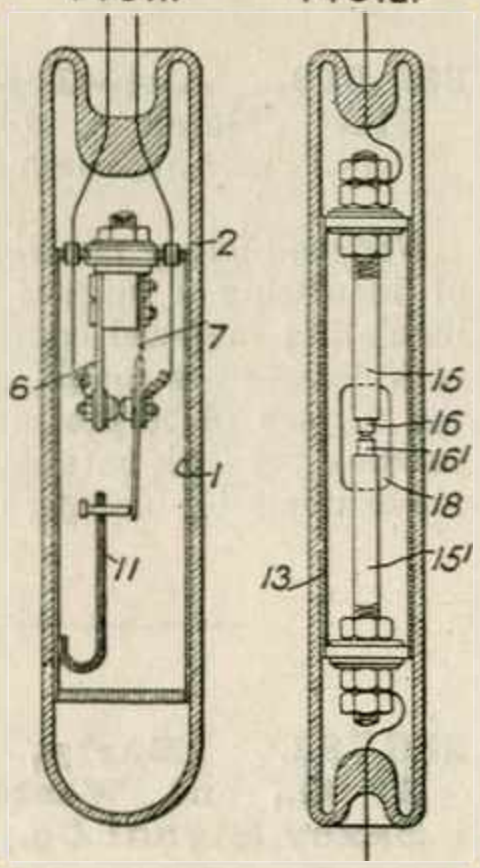


Radiators.—Steam heating apparatus for railway carriages is provided with a control valve operated by the expansion of the heater relatively to that of an external rod or wire. The body 1 is provided with a lug 3 at one end to which a rod 5 is adjustably attached by nuts 4. The rod operates a lever 8 pivoted at 9, which controls the valve 6 through a crank 23. The valve 6 comprises a casing 12 mounted on the end 11 of the heater and providing a seating for the rotary valve member 16 which is pressed against it by a spring 17. An external spring 20 is provided to return the valve to the position shown. In a modification, an expansion rod arranged within the heater is adapted to operate a valve of the lift type by reason of its expansion relatively to an external rod or rods. A cam adjustment may be provided for the valve, which may be operated by the

...anism described in Specification 202,817 or 268,551. Another construction is described in which the outer end of the expansion rod is provided with an eccentric stud which bears against an inclined lever connected to the external rod or wire. The valve is adjusted by rotating the rod. In other forms, multiplying levers may be used.

287,453. Aktiebolaget Birka Regulator. March 19, 1927, [*Convention date*].

FIG.1. FIG.2.

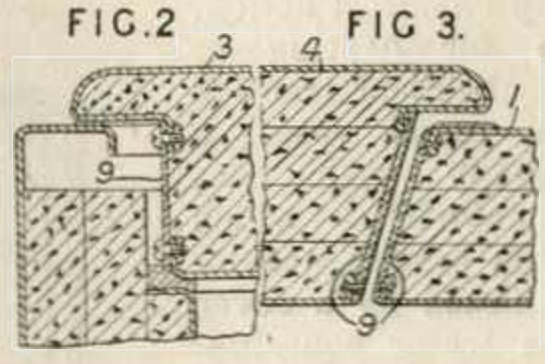


Thermostats. —In thermal switches in which the contacts are enclosed in an evacuated or gas-filled receptacle, the thermal element is arranged in effective heat-conducting connection with the walls of the receptacle, so that it responds readily to changes of temperature outside the receptacle, whether these changes are atmospheric or produced by a heating coil wound round the receptacle. According to the construction shown in Fig. 1, a bimetallic strip 11, which opens contacts 6, 7 upon an increase of temperature, is mounted on a split copper tube 1 fitting closely to the walls of a glass receptacle 2. In a modification, Fig. 2, rise of temperature causes the expansion of a metal tube 13 and thereby the separation of two contacts 16, 16¹ mounted on non-expanding rods 15, 15¹, made e.g. of invar. Heat-absorbing copper tubes may surround the rods 15, 15¹ to cool the contacts. The tube is provided with an aperture 18 for observing the contacts. In another modification, the rods 15, 15¹ of Fig. 2 are made hook-shaped so that expansion of the tube 13 opens the contacts 16, 16¹. When an external heating coil is wound round the receptacle, the coil can be protected by surrounding it with an insulating cylinder.

The Specification as open to inspection under Sect. 91 (3) (a) describes also a modification in which the metal tubes 1 or 13 themselves form the body of the receptacle and are provided with end pieces of glass. This subject-matter does not appear in the Specification as accepted.

288,576. British Thomson-Houston Co., Ltd., (Assignees of *Knight, J. L.*). April 12, 1927, [*Convention date*].

FIG.2 FIG 3.



Nonconducting coverings for heat.—A refrigerator cabinet 1 and its cover 3 are formed of spaced metal plates packed with granulated cork or cork slab and connected by strips 9 of heat insulating material such as synthetic resin. The door 4, Fig. 3, is similarly constructed, the corners being lined with thin strips of monel metal at the places of contact between the door and the casing. The cabinet may be provided with double hinged doors without a central post between them.

288,650. Castellazzi, A. April 15, 1927, [*Convention date*].

FIG.1.

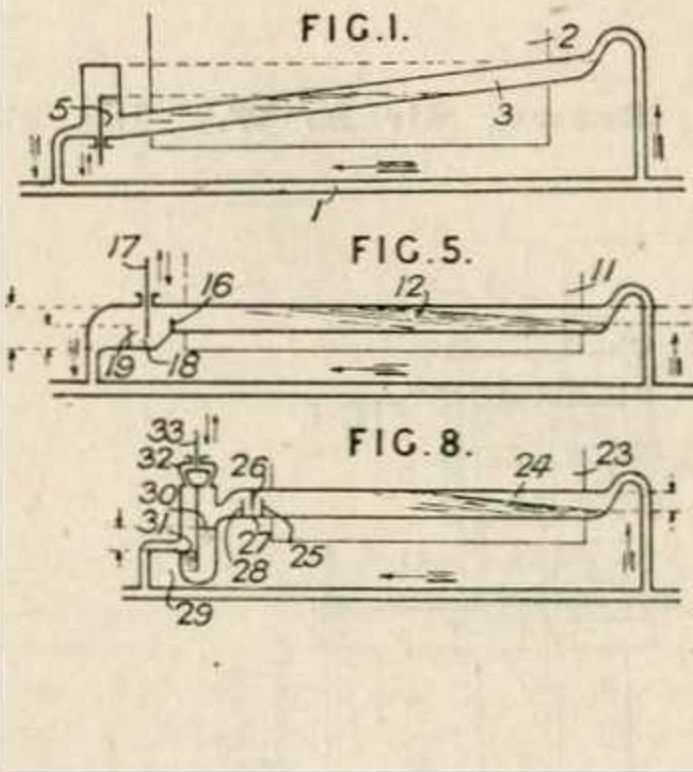


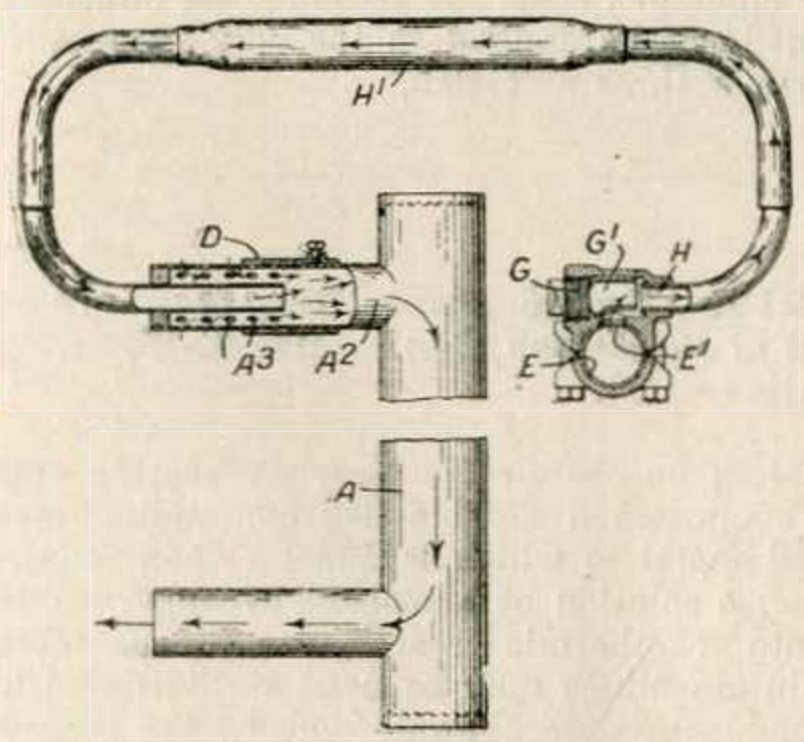
FIG.5.

FIG.8.

Heating by circulation of steam; thermostats.—The heating effect of steam in a pipe 3, 12, 24, traversing a liquid-container 2, 11, 23, for example a radiator for heating buildings, is varied by controlling the amount of heating surface covered by condensate. The heating pipe 3 is connected at its ends to piping systems serving for supply of steam and removal of condensate, the pressures at inlet and outlet being substantially equal. In the examples the heaters are connected in parallel with a single steam main serving both purposes. The heating pipes may be inclined, Fig. 1, or horizontal, Figs. 5 and 8. The control may be effected (1) by discharging the condensate from the heating body by an overflow, the sill level of which can be altered; (2) by discharging the condensate through an opening having a given pass-

age area and working with a given head; (3) by discharging the condensate through an opening of determined area delivering into a space which is maintained at a given pressure. In carrying out (1) the variable weir may be obtained by a sliding plate 5, Fig. 1, the steam pipe 1 serving also for carrying away condensate being connected to the heating body at each end. In place of a sliding plate a flexible tube or movable inverted **U**-pipe may be used. Fig. 5 shows a method of carrying out (2), a sliding plate 17 controlling an aperture 18, weirs 16, 19 being also provided. A rotating cylindrical valve or a flexible tube may replace the weir 19. The method (3) may be carried out as shown in Fig. 8, in which diaphragms 25, 26, 28 are provided in the heating body 24, the aperture 27 being of definite area. An outlet siphon 29 is provided with long and short branches 30, 31 which can be put into communication by passages in a valved tube 32. This valve 33 will control the difference in pressure in the two branches of the siphon, and hence the rate of outflow of condensate in conjunction with the fixed aperture 27. The heating effect may be varied automatically according to the temperature of the liquid heated, or at will from some distant point. Fig. 9 shows a liquid, for example mercury, filled bulb 42 in connection with which is a glass tube 41 having a plunger 40 operating a plunger 38 which controls the passage 34 connecting the two branches of the siphon 29, Fig. 8. If the bulb 42 is immersed in the liquid to be heated the temperature will be kept constant. If the bulb is not so immersed but is surrounded by an electric heating-resistance, control of the valve and hence of the heating may be effected from a distance and may be exerted over one or more heating bodies simultaneously.

289,319. Argen Car Heater, Ltd., and **Ionides, A. G.** Sept. 1, 1927.

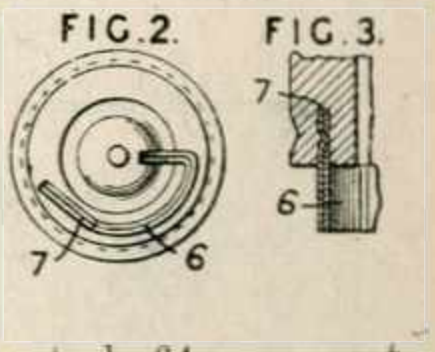


Heating buildings, ships, and vehicles. — In a heating device particularly applicable to motor vehicles, part or the whole of the exhausts gases are passed through an injector whereby cool air is drawn in, and the mixture passes through a heater in the vehicle. The air inlet may be valve-controlled, or the injector nozzle may be valve controlled, or their relative positions may be varied to vary the amount of cool air drawn in. Means may also be provided to control the quantity of exhaust gas passing to the injector, either manually or thermostatically, and the cool air inlet may also be thermostatically controlled. The inlet A^2 to the heater A is perforated at A^3 and provided with an adjustable regulating sleeve D. The exhaust pipe E is provided with a branch H controlled by a threaded plug G having a slotted sleeve portion G^1 which may be rotated to cover partly the aperture E^1. A silencer H^1 may be provided in the pipe H. Means may be provided to impart a swirling motion to the gases entering the heater.

289,676. Zarfel, C., and **Stroever, W. D.** July 14, 1927.

Nonconducting coverings for heat.—In the production of a heat-insulating material, waste tanbark or the bark of coniferae and foliage trees is boiled for 2-3 hours in a closed vessel containing soda lye of 3-4 per cent, and the boiled mass is freed from the lye, rinsed with cold water, ground and finally formed into solid bodies. Pulp fibres may be added to the initial material for reducing the hardness of the finished product. Specifications 8493/86, [*Class* 96, Paper &c.], 12159/86, 7058/89, 20613/99, 12324/12, and 261,959, [all in *Class* 70, Indiarubber &c.], are referred to.

289,758. Schlaich, H. April 30, 1927, [*Convention date*].

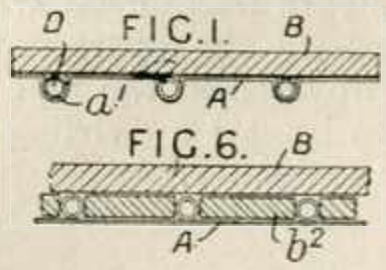


Thermostats.—The terminal 6 attached to a sparking plug casing is bimetallic; the outer strip consists of material known under the Registered Trade Mark "Invar," an alloy containing nickel 36 per cent, steel 64 per cent approximately.

In the Specification as open to inspection under Sect. 91 (3) (a) this material is referred to under the Registered Trade Mark, "Invar." The inner strip consists of an alloy having the constituent proportions—carbon 0.50, manganese 0.70, silicon 0.75, chromium 8.00, nickel 22.00 copper 2.00 cobalt 1·00, and iron 64·05. This material has a substantially uniform coefficient of expansion. Below 100° C. the coefficient of the nickel-steel alloy is very small; from 100° C. to 300° C. it

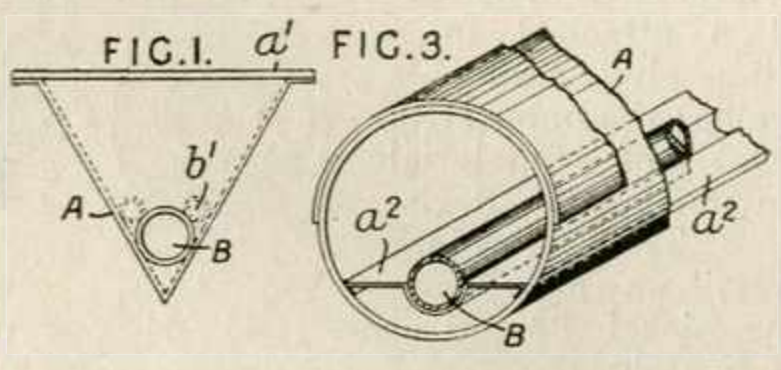
rapidly increases, and above the latter temperature is substantially uniform and equal to that of the other component throughout the whole of its range. Hence the size of the spark gap reaches its maximum at about 300° C.

289,924. Musgrave, J. L., Herring, E., and **Crittall & Co., Ltd., R.** Jan. 29, 1927.



Heating and cooling buildings.—In a system for heating or cooling buildings, of the kind in which the heating or cooling pipes are embedded in the walls, floors, or ceilings, a frame or casing A of sheet metal, asbestos, or the like, is formed with channels a^1 to receive the pipes D, and covered with slabs of cork or other insulating material B. In a modification (Fig. 2, not shown), the frame A may be flat, and the channels a^1 may be formed separately and form conduits for the pipes. The space between the pipe and channel may be filled with a cement. The frame may be flanged at the edges to retain the insulating slabs (Fig. 4, not shown), or the frame may entirely enclose the pipes and insulating material (Fig. 5, not shown) an air space being left between the frame and insulating material. A layer of metal or non-conducting material may be placed between the pipes and cork slabs. In another form, Fig. 6, the frame A is flat, and the grooves for the pipes are formed between blocks of insulating material b^2. In another alternative (Fig. 7, not shown) the grooves may be formed in the slabs B of insulating material.

289,927. Musgrave, J. L., and **Crittall & Co., Ltd., R.** Jan. 31, 1927.



Heating and cooling buildings.—Heating or cooling pipes B pass through a hollow body A of **V**-shape, closed at the ends, and a heat distributor b^1, in the form of short lengths of copper tube, is provided. A cover a^1 of insulating material or metal completes the casing. Alternatively the heat distributor may be in the form of a bent metal plate. The casing A may be circular, and the pipe B may be supported in it near the bottom by a plate a^2 which also distributes the heat. The casing may be filled with non-conducting material.

289,932. Lessing, R. Jan. 31, 1927.

Heating systems.—Fuel, ore, or other briquettes are subjected to baking temperatures while embedded in granular or coarsely powdered material, being fed into and preferably removed from the oven or retort while embedded. Metal shot, iron ore, coke breeze, coarse sand or pebbles, anthracite duff, or metallic granules as of aluminium, or mixtures thereof may be used as the embedding material. Briquettes of anthracite smalls treated according to the process of Specification 286,336, [*Class* 50, Fuel, Manufacture of], are fed with about half their own volume of loose material to the top of a vertical retort heated to raise the temperature of the charge to about 250° C. The granular material after separation from the briquettes at the bottom of the retort may be returned without cooling to the top. Steam or gas may be passed into the retort to equalize the temperatures between the retort wall and the middle of the charge.

290,042. Laurie, A. P. May 12, 1927.

Nonconducting coverings for sound.—A slab for walls &c. consists of an asbestos cement sheet coated with a mixture of granulated cork and silicate of soda. The asbestos cement sheet may be coated with a thin layer of silicate of soda before the application of the cork composition. After drying the slab, it may be waterproofed by soaking in a bath of calcium chloride and subsequently washing with water, and in this case the asbestos cement sheet may be coated with a solution of calcium chloride before applying the coating of silicate of soda. A second sheet of asbestos cement may be applied to the cork composition to form a three-part slab.

290,212. Radio Pack Co., Ges., (Assignees of *Reichmann, W.*). May 9, 1927, [*Convention date*].

Heating by chemical action.—A heating appliance comprises a flexible bag containing finely-divided metal to which is added, when required for use, a solution of a reagent capable of entering into exothermic reaction with the metal. Aluminium filings may be used as the metal filling, and potassium chloride may be the reagent; the latter is preferably kept in the form of tablets of a size adapted to the desired degree of heating.

The Specification as open to inspection under Sect. 91 (3) (a) also includes the following:—

The heater 4, Fig. 2 (*Cancelled*), consists of a waterproof bag containing iron &c. filings 12 mixed with coal dust, and a salt solution is added to react with the iron when heat generation is desired; potassium, calcium, or ammonium chloride may be used. Menthol may also be

FIG. 2. (*Cancelled*)

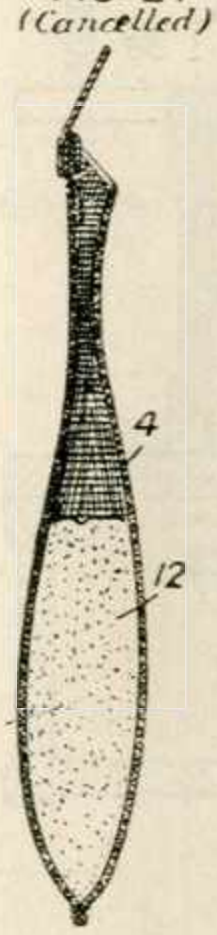


FIG. 3. (*Cancelled*)

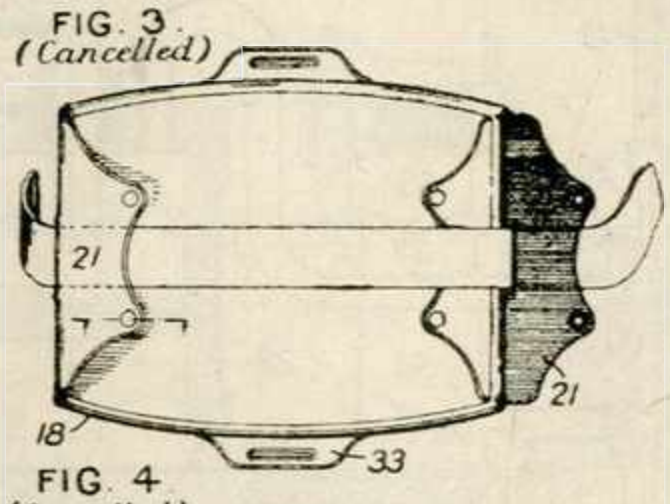
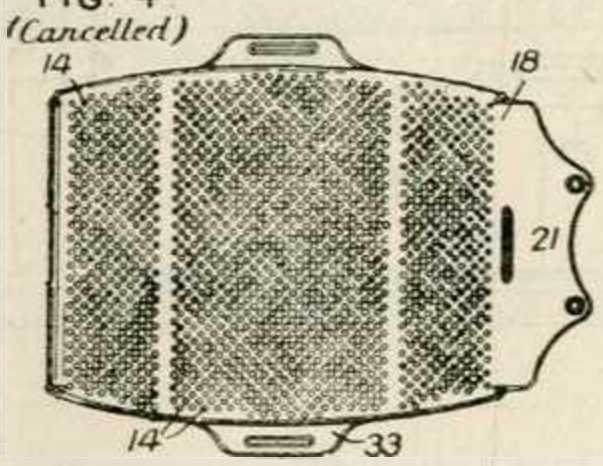


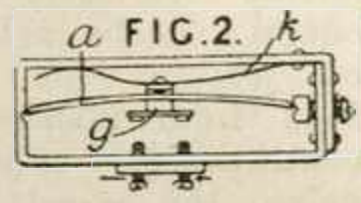
FIG. 4 (*Cancelled*)



placed in the bag to soothe the user. The envelope 18, Figs. 3 and 4 (*Cancelled*), has opening-flaps 21 at each end, and its outer faces are formed with groups of projecting studs 14 to protect the user from burns and to facilitate rubbing &c. when used separately from the heater. Tabs 33 enable the appliance to be secured to the body by a strap. This subject-matter does not appear in the Specification as accepted.

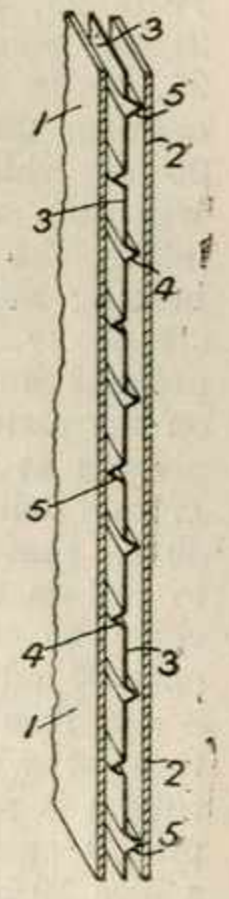
290,260. International General Electric Co., Inc., (Assignees of *Elektrobeheizung Ges.*). May 11, 1927, [*Convention date*]. *Void* [*Published under Sect.* 91 *of the Acts*].

Thermostats.—A bimetallic member *a* is mounted with one edge in a rigid frame and its other edge in an adjustable bearing whereby the operative temperature may be regulated.



290,340. South Metropolitan Gas Co., Chandler, D., and **Thomas, J. S. G.** Feb. 9, 1927.

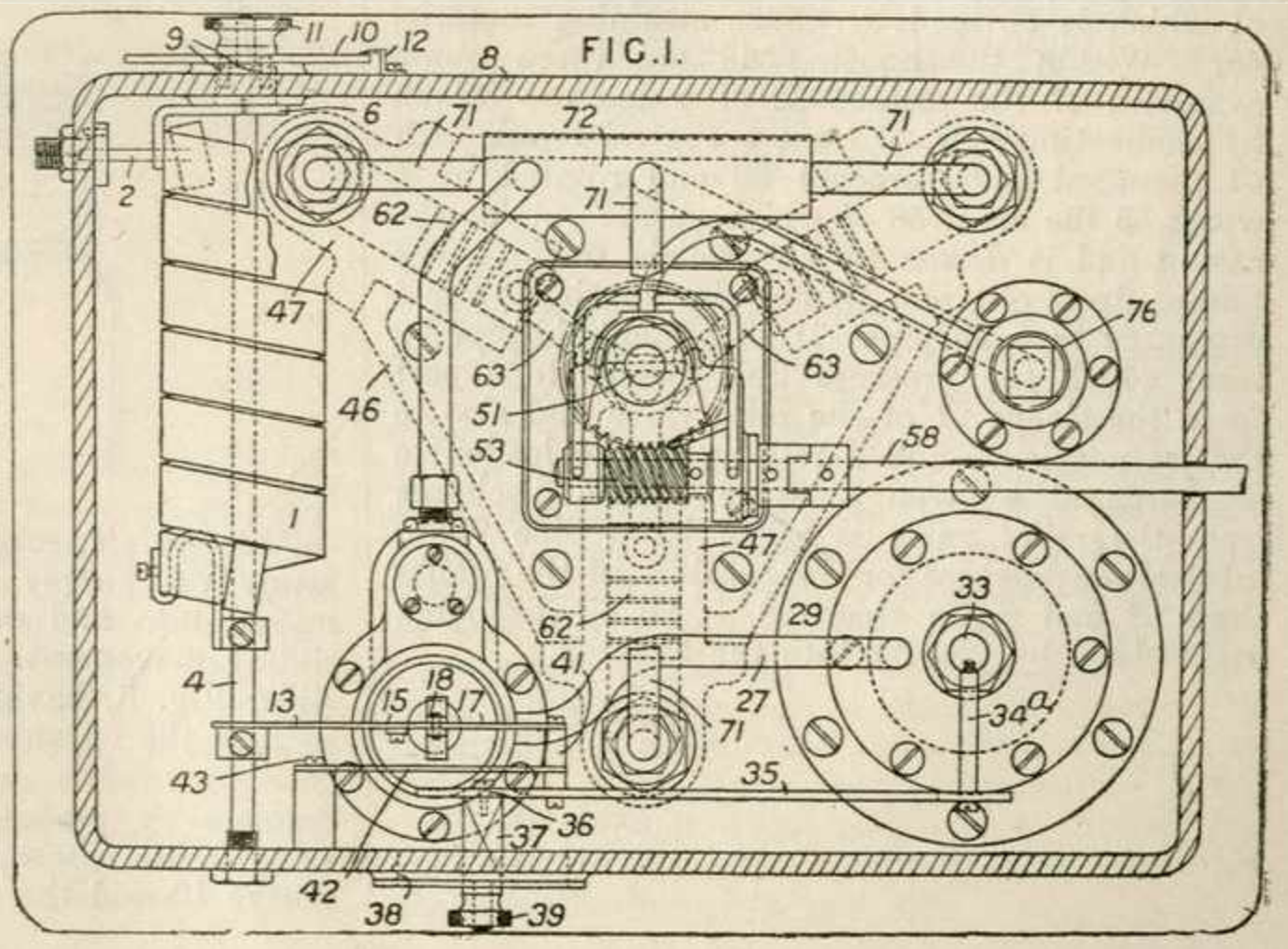
Nonconducting coverings. — A heat-insulating means for cooking-stoves &c. comprises one or more sheets 3 of polished metal, not less than 0.4 mm. thick, arranged between inner and outer casing walls 1, 2. In the form shown, the sheet is provided with spaced corrugations 4, 5 which divide the space into horizontal compartments, the corrugations 4 extending close to, but not into contact with, the walls, whilst the remainder extend up to the walls to position the sheet.



290,402. Sandison, A. G. S., and **Electroflo Meters Co., Ltd.** March 17, 1927.

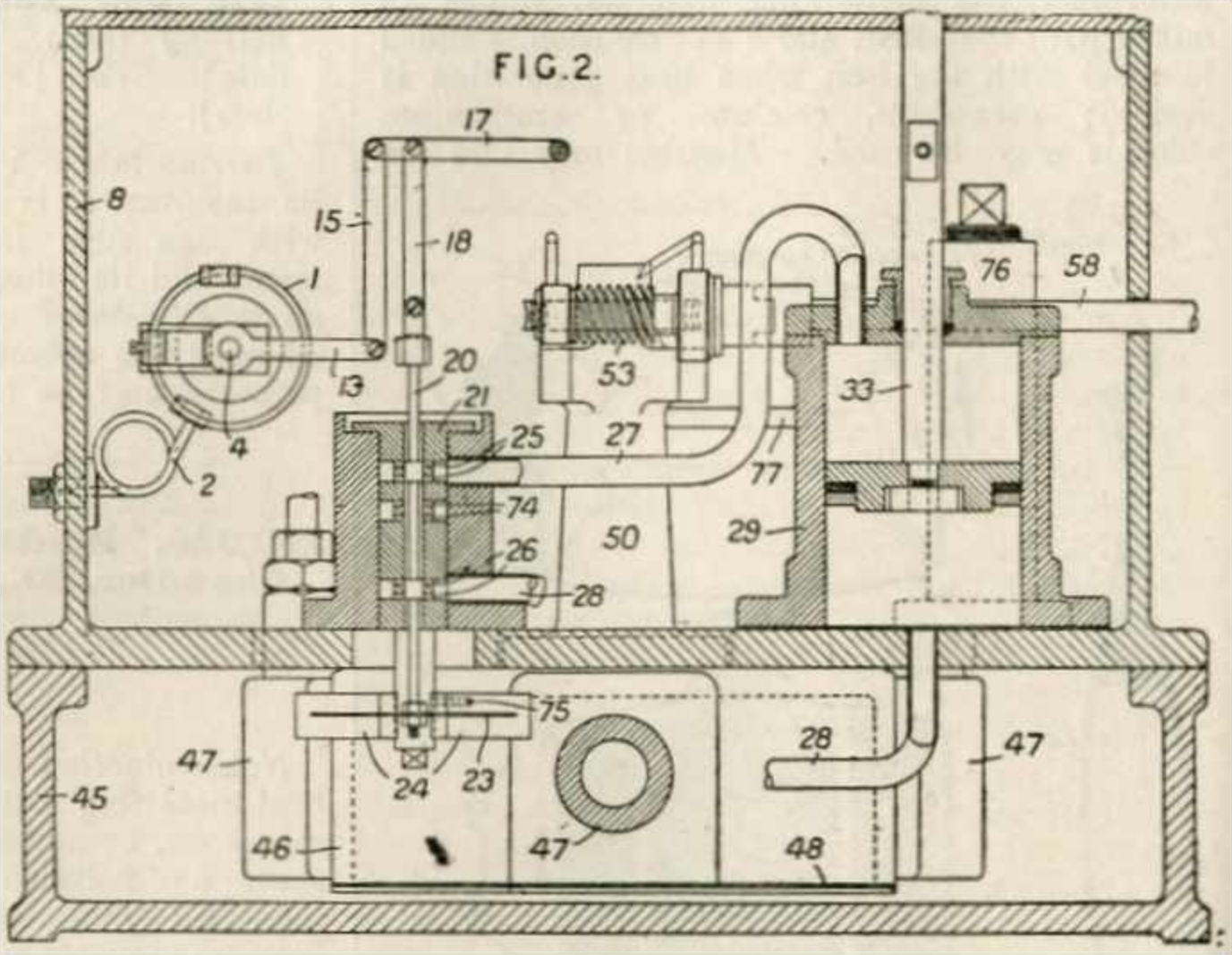
Thermostats.—In apparatus comprising a temperature responsive member which displaces a pilot valve governing the admission of pressure fluid to a servomotor controlling heating fluid or electricity, the pilot valve and its seating have a continuous relative rotation to lessen longitudinal friction. A bulb containing expansible fluid is located in the enclosure to be controlled and connected by a tube 2 to a helical Bourdon tube 1 adjustably secured to the casing 8 at one end and fixed to a spindle 4 at the free end. An arm 13 is attached to the spindle 4 and connected by links 15,

FIG. 1.



18 with the pilot valve comprising a piston valve 20 working in a sleeve 21. At its lower end the pilot valve carries a disc 23 having a series of vanes 24 adapted to be acted upon by jets of the pressure fluid from nozzles 75 to continuously rotate the valve, the speed of rotation being limited by the drag of the vanes which are totally immersed in the oil or other fluid in a tank 45. The disc 23 also damps longitudinal movement of the pilot valve. Ports 25, 26 in the sleeve 21 are connected by tubes 27, 28 to the servo-motor cylinder 29 the piston-rod 33 of which is connected with the means for regulating the supply of the heating medium, e.g. fuel, steam or electricity. To prevent hunting a pin 34a on the piston rod 33 engages a link 35 adjustably pivoted at 36 and connected at 41 with the link 17 and with a link 42 pivoted to the casing at 43 so that movement of the servo-motor tends to restore the pilot valve to neutral position. To vary the sensitivity the link 35 is pivoted on a post 37 adjustable along a slot 38 in the casing 8 and fixed by a nut 39. To alter the temperature at which control is effected the Bourdon tube 1 is secured to a rotatable support 6 having pins 9 passing through the casing and engaging a disc 10 having a scale of temperature engraved upon it and registering with an index 12. A nut 11 clamps the support 6 and disc 10 in the adjusted position. The casing 8 is secured to the tank 45 containing the oil or other fluid and enclosing a pump housing 46 the open under side of which is covered by gauze straining material 48. Within the housing 48 are three pump cylinders 47 the pistons 62 of which are driven by connecting-rods 63 from a central crank-shaft 51 mounted in a bracket 50 and rotated by a worm 53 the shaft 58 of which passes outside the casing and is driven by an electric motor. The pumps draw oil from within the housing 46 and discharge through pipes 71 to a manifold pipe 72 from which the pressure fluid passes to a port 74 in the sleeve 21 of the pilot valve and also to the jet nozzle 75 and a relief valve 76 loaded to discharge at a given pressure. The discharge from the relief valve is taken by a pipe 77 to lubricating passages for the bearings of the crank-shaft 51 and worm shaft 58. All oil discharge drains back by gravity into the tank 45.

FIG.2.



290,423. Thomas, A. J., and **Stow, A. A.** April 11, 1927.

FIG.1

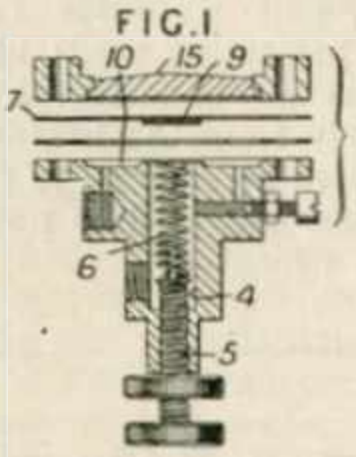


FIG.3.

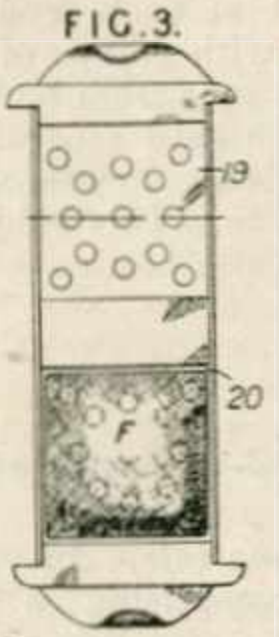
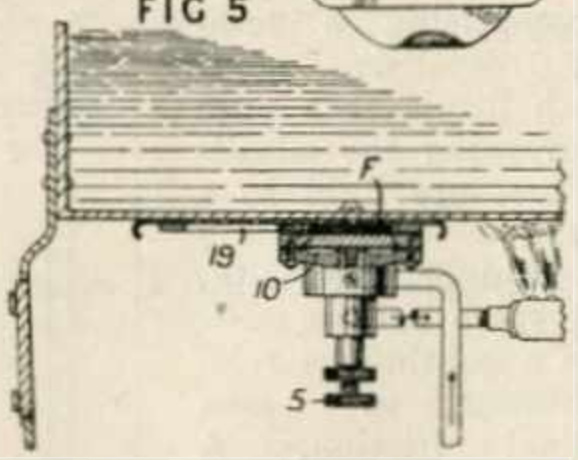


FIG 5

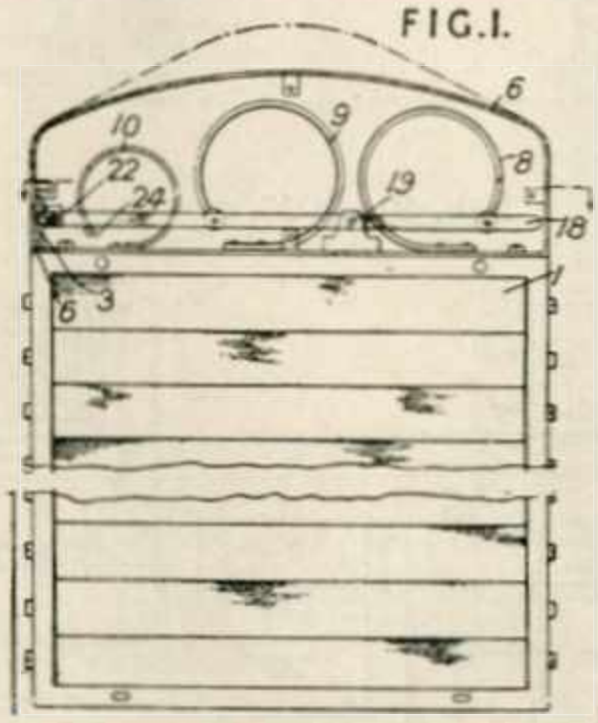


Thermostats.—An expansible capsule for regulating the supply of gas to a burner can be moved into and out of operative position by a sliding movement. The capsule F is borne in a slide, Fig. 3, having two alternative beds 19, 20 so that the capsule can be moved into operative position over a movable plate 15, Fig. 1, to regulate by pressure on the diaphragm 7 and valve 9, the passage of gas between an annular groove 10 and the central hole 4. The parts are

shown detached in Fig. 1. An adjustment of the operation is furnished through the screw 5 and spring 6. In a modification, the capsule carrier is circular and any one of a series of capsules disposed in beds around the outer edge, may be slid into operative position by rotating the disc on a central pivot.

290,698. Miller, F. W. Jan. 19, 1927.

FIG. 1.



Thermostats.—One or more bi-metallic strip thermostats lying and moving in a plane parallel to a motor-car radiator are employed to regulate the air-admission shutter of the radiator. Preferably two main strips 8, 9 are employed, acting in the same sense on opposite ends of a lever 18 pivoted to the shutter frame at 19 and connected at its end 22 to a vertically sliding bar 3 actuating the louvres 1. In addition, a smaller bi-metallic strip 10 may be employed to assist the closing movement, its free end 24 engaging below the lever 18 so that it is effective only in closing the louvres. If desired a spring may be used in place of the small thermostat 10, and the louvres may be actuated through two bars, one at each side. The thermostats may be arranged above the shutter frame in a housing 6 with a detachable front plate.

290,868. Berlin, D. W. Aug. 18, 1927.

Radiators having corrugated walls, adapted to be interengaged so as to constitute passages for the medium and having self-locking means, are assembled by springing opposing corrugations into one another or by sliding endwise the locking means preventing opening under internal pressure. Means may be provided for preventing collapse under external pressure. In the examples, Fig. 2 shows single corrugated plates 4, 5 inter-engaged, Fig. 4 shows plates with engaged channel-section parts 14. In Fig. 10 engaging parts 64, 67 are formed on the corrugated plates,

FIG. 2.

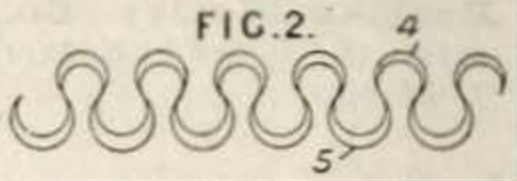
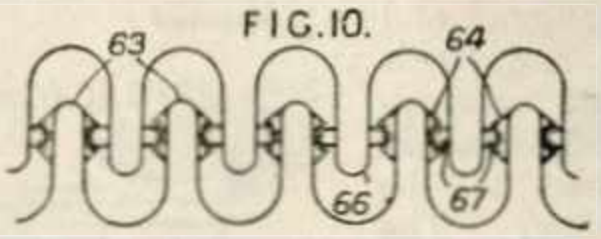


FIG. 4.

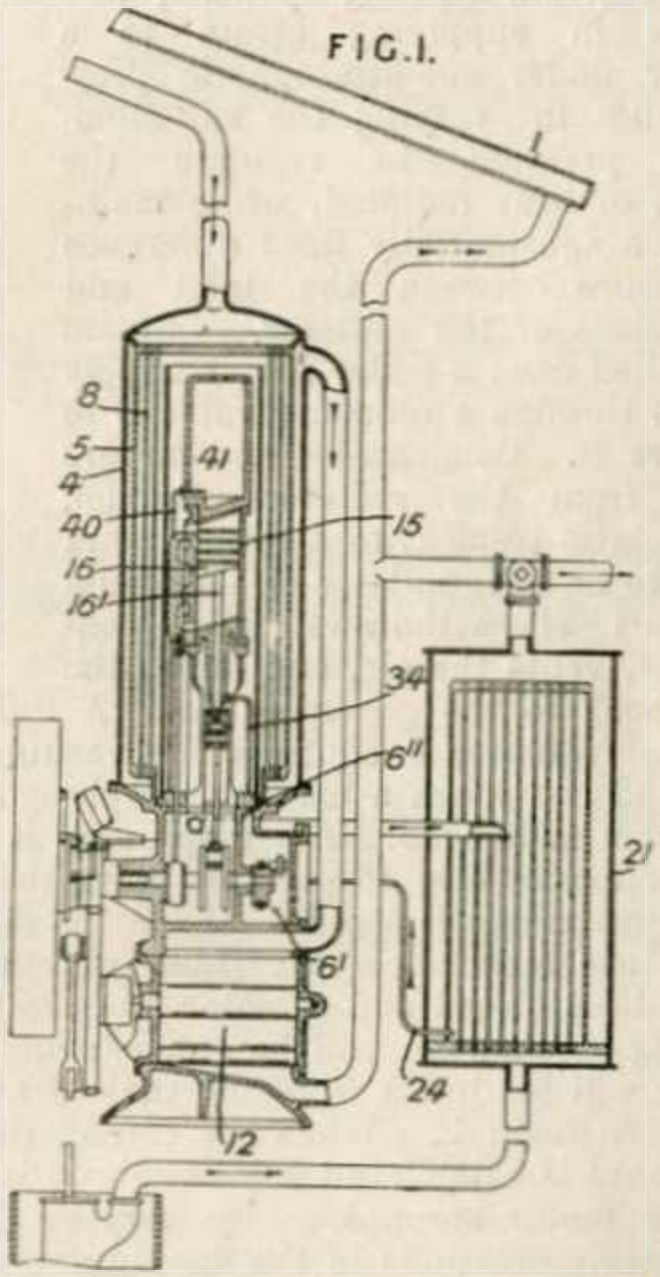
FIG. 10.



which may also have bosses on the parts 63, 66 to support the walls against external pressure.

290,981. Romagnoli, T. May 21, 1927, [*Convention date*].

FIG. 1.



Solar heat, utilizing.—A vapour engine is arranged within a chamber in which methyl chloride or other liquid is vaporized by the circulaton of water heated by the sun's rays, the vapour being supplied to the engine and the exhaust condensed and returned to the vaporizer. Water heated in a sheet metal casing 1, Fig. 1, directed towards the sun is circulated by a pump 12 first downwardly through tubes 8 traversing a chamber 5 enclosing a vapour engine 15, and then upwardly through a casing 4 around the chamber. A sealing and lubricating liquid, e.g. glycerine, is introduced into a chamber 6^1 in the crank case and into the bottom of the vaporizing chamber, which is in communication with the chamber 6^1 through a port 6^{11}.

291,076. Bastian-Morley Co., (Assignees of *Lonergan, S. J., and Ginther, H. E.*). May 28, 1927. [*Convention date*].

Thermostats.—One end of a non-expansible rod 24 bears against valve operating mechanism and the other end 32 is fixed to an expansible tube 25 which is also secured to the valve casing. The end 32 of the members 24, 25 is subjected to the heat from a pilot flame 4^a.

FIG. 3.

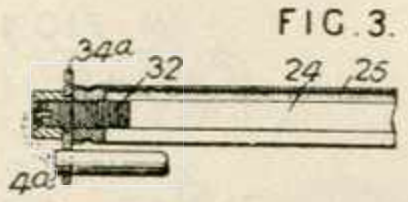
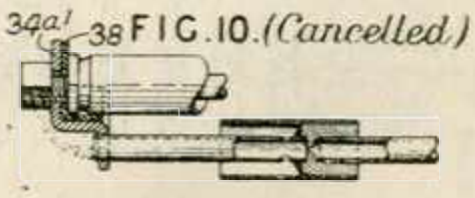


FIG. 10. *(Cancelled.)*

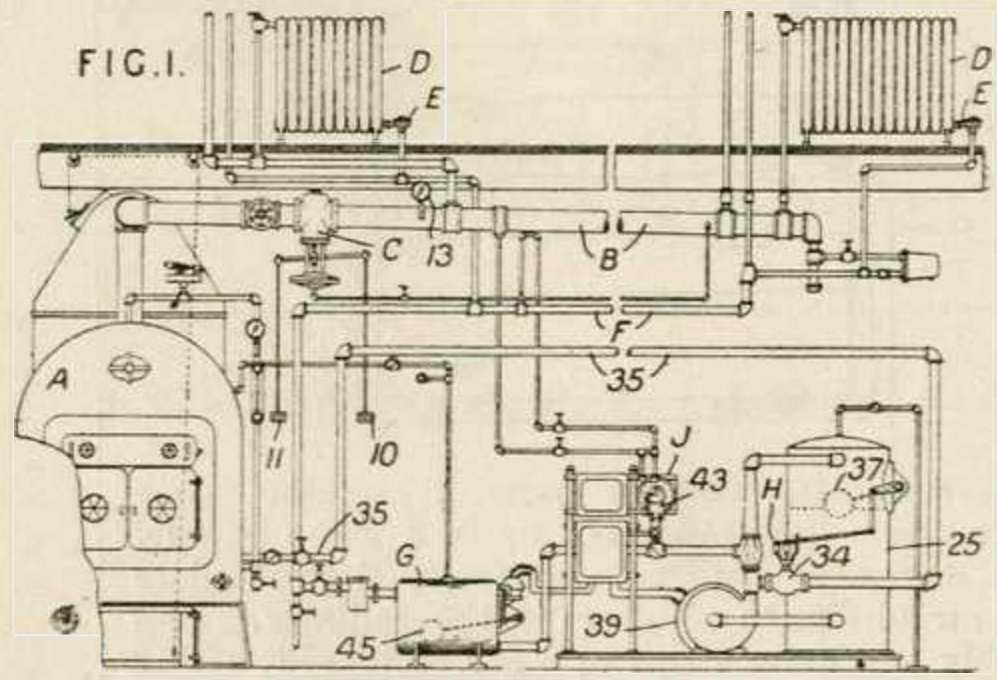


The Specification as open to inspection under Sect. 91 (3) (a) describes means for preventing overheating of the tube 25 by a guard plate 34^a, or 34^{a1}, Fig. 10, (*Cancelled*), with or without a layer of insulating material 38. This subject-matter does not appear in the Specification as accepted.

291,134. Marks, E. C. R., (*Dunham Co., Ltd., C. A.*). Feb. 21, 1927.

Heating buildings. — Relates to vacuum steam heating systems, and consists in supplying steam to a radiator under sub-atmospheric pressure and in varying the sub-atmospheric pressure to regulate the amount of heat radiated, while maintaining a substantially fixed difference in pressure between the inlet and outlet sides of the radiator. Steam is supplied from a boiler A to a supply main B through a reducing valve C to radiators D. Condensates and air are drawn from the radiators through thermostatic traps E to a return main F and to an accumulator G. Vacuum apparatus H withdraws the condensates, vents the air, and forces the water back to the generator A. A differential pressure regulator J controls the vacuum apparatus and comprises a movable diaphragm which operates a switch 43. The diaphragm is subject on its opposite side to pressure from the supply and return mains B and F. When the difference in pressure falls below a certain minimum, the switch 43 is closed and a motor 39 operating the pumping mechanism will be started, and liquids and air will be drawn from the tank G and from the return main F. When the correct difference of pressure is established the switch 43 is opened and the motor stopped. By varying the sub-atmospheric pressures in the supply mains B the temperature of the steam delivered to the radiators is varied. These pressures are controlled by the valve C which has balance weights 10, 11 adjusted to maintain the desired degree of vacuum, which is indicated by a pressure gauge 13. The vacuum apparatus H comprises a tank 25 the liquid level in which is controlled by a ball 37. When the level reaches a certain height the valve 34 is opened and water is forced through the pipe 35 to the boiler. The level in the tank G is controlled by a ball 45 which controls the motor 39 which discharges the contents into the tank 25. The reducing valve C is adjusted to maintain the desired degree of vacuum in the supply main B, and consequently the temperature of steam delivered to the radiators D. In a modification for small installations such as household systems, the boiler is heated by an automatic gas heater, and the degree of vacuum in the system is controlled by the application of heat to the boiler. The mechanism H in this system only withdraws air and the condensate is arranged to gravitate back to the boiler. The radiators emit heat at a rate just sufficient to replace heat lost from the building and occasional manual adjustments of the fire-controls or reducing valve are only necessary to meet changes in weather conditions.

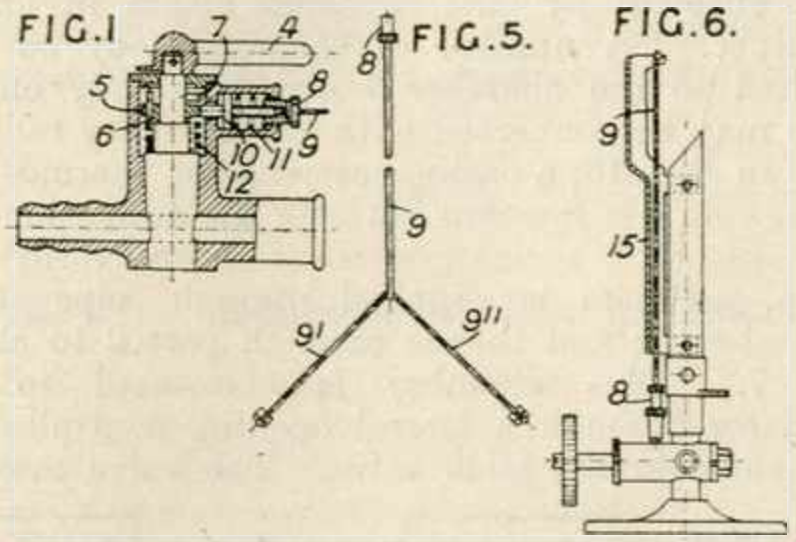
FIG. 1.



291,309. Herszlik, T. Dec. 16, 1927.

Thermostats. — A means for automatically closing a gas burner upon the extinction of the flame comprises a notched disc 5, Fig. 1, loosely mounted on the cock spindle, and a pawl or brake 10 adapted to engage therewith to hold the disc in the in-operative position with the cock open. An extension of the pawl is connected by a screw nipple 8 with an expansible

heat-sensitive element in the form of a one-part thin member, such as a wire or strip 9, preferably of chrome-nickel; the strip is disposed near the flame and is under tension by means of a spring 11 to prevent bending or sagging. The notched disc 5 is subject to the action of a torsion spring 12 and, when released actuates the cock by contact of a pin 6 thereon with a lateral pin 7 on the cock spindle; the cock itself is left

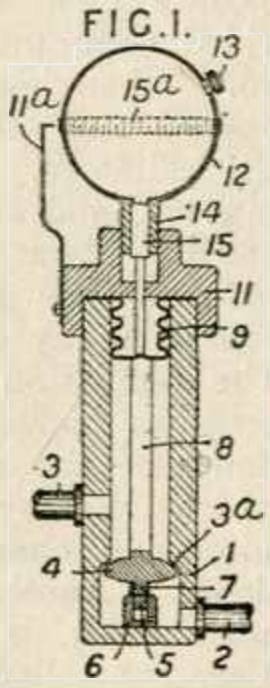


free for adjustment by means of the handle 4. The heat sensitive element 9 may be forked, as shown, at 9^{1}, 9^{11}, Fig. 5, in proximity with the flame. As applied to a laboratory Bünsen burner as shown in Fig. 6, the element 9 is fixed to a sheet metal shield 15 open at the top so that the upper part only of the element is heated by the flame whereby on the flame being extinguished, or in case of back fire, the gas supply cock is closed.

291,450. Hammer, W. June 2, 1927, [*Convention date*]. *Drawings to Specification.*

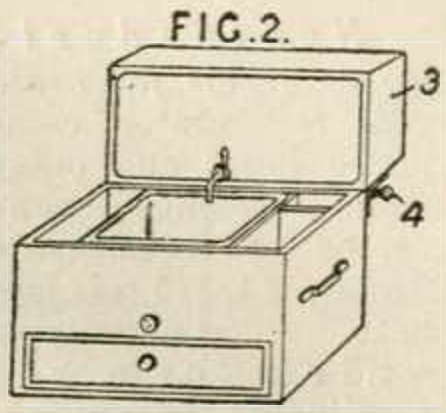
Heat-transmitting media.—The crucible of a smelting, annealing, or hardening furnace is heated by immersion in a bath of molten iron, tin or lead in which electric currents are induced. The boiling point of the bath may be increased by the introduction of nitrogen under pressure.

291,669. Berkel, W. A. van. Oct. 20, 1927.



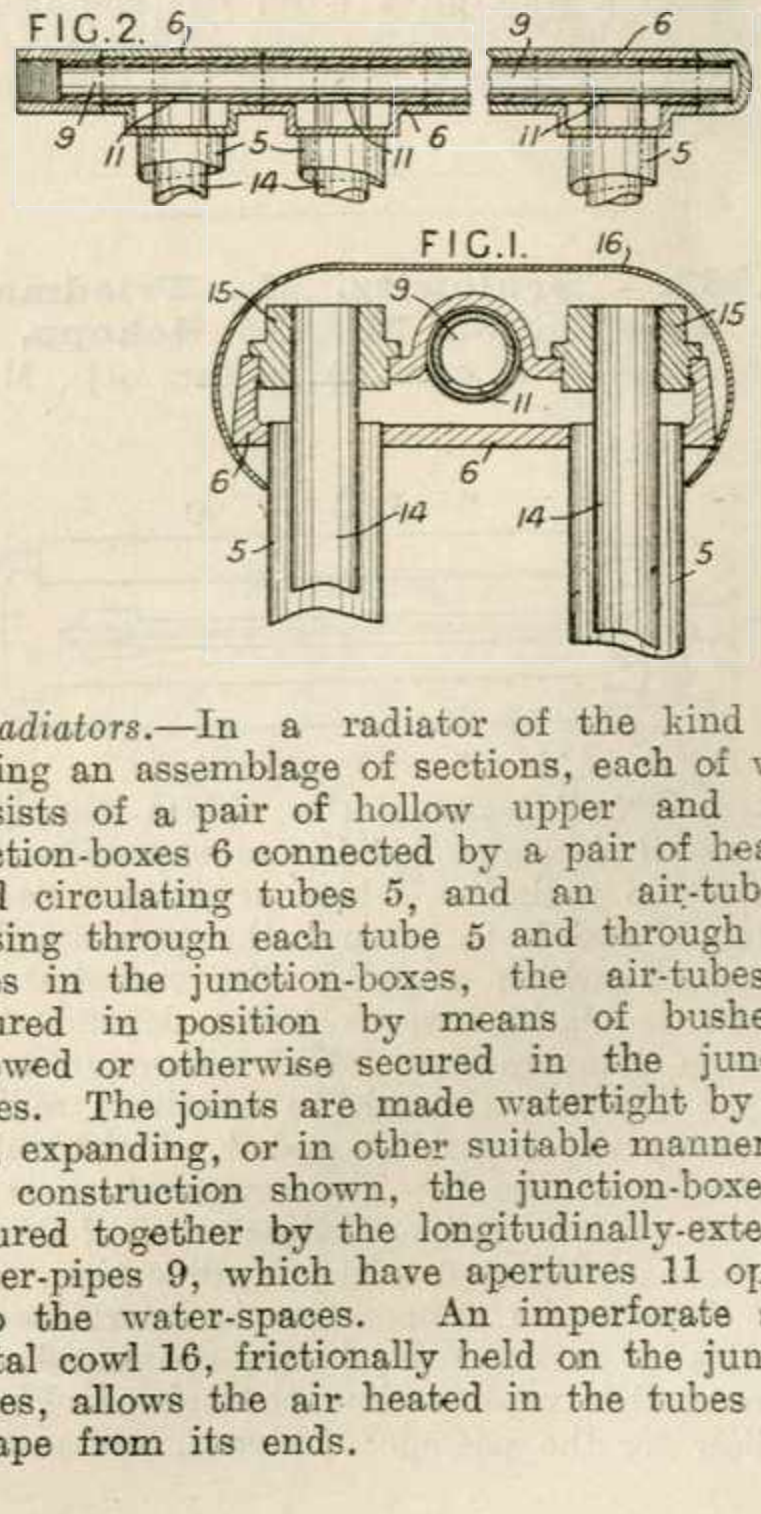
Thermostats. — A valve 4 regulating the flow of a cooling or heating fluid is controlled by a temperature - sensitive medium contained in a non-flexible reservoir 12 and acting on a plunger 15 abutting on a flexible partition 9 against the other side of which the rod 8 of the valve abuts. By screwing the neck 14 of the spherical reservoir 12 more or less into a cover 11 which clamps in place the flexible partition 9 the position of the valve can be adjusted, and a scale 15^{a} on the reservoir co-operates with a fixed pointer to give temperature readings corresponding to the different positions of the reservoir. A filling plug 13 is provided on the reservoir 12 for the introduction of the sensitive medium.

292,316. Hales, E. May 9, 1927.



Footwarmers; bed-warmers.—The hollow lid 3 of a wash basin for use on a motor vehicle serves as a hot water tank, and is secured detachably by a hinge pin 4. When detached the lid may be used as a foot-warmer, or, according to the Provisional Specification, as a bed-warmer.

292,364. Tod, Ltd., D., and **Tod, D. V.** Nov. 24, 1927.



Radiators.—In a radiator of the kind comprising an assemblage of sections, each of which consists of a pair of hollow upper and lower junction-boxes 6 connected by a pair of heating-fluid circulating tubes 5, and an air-tube 14 passing through each tube 5 and through apertures in the junction-boxes, the air-tubes are secured in position by means of bushes 15 screwed or otherwise secured in the junction-boxes. The joints are made watertight by brazing, expanding, or in other suitable manner. In the construction shown, the junction-boxes are secured together by the longitudinally-extending water-pipes 9, which have apertures 11 opening into the water-spaces. An imperforate sheet-metal cowl 16, frictionally held on the junction-boxes, allows the air heated in the tubes 14 to escape from its ends.

292,541. British Thomson-Houston Co., Ltd., (Assignees of *Randolph, C. P.*). June 21, 1927, [*Convention date*].

FIG.4.

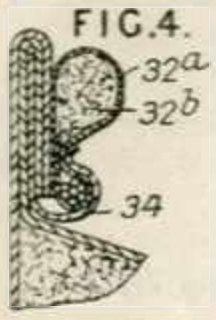
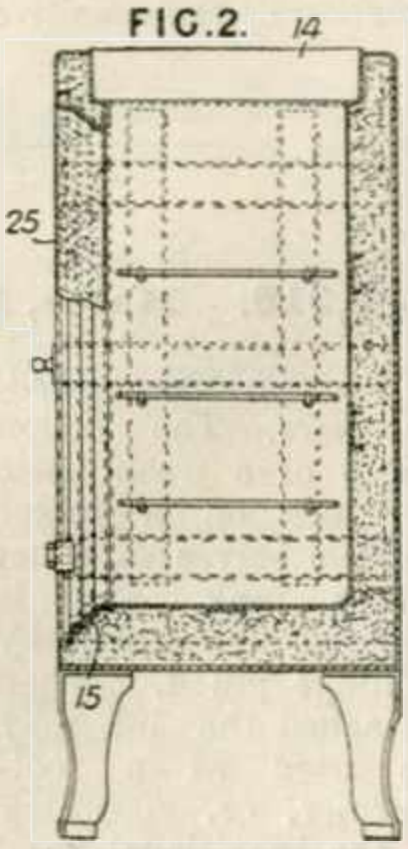


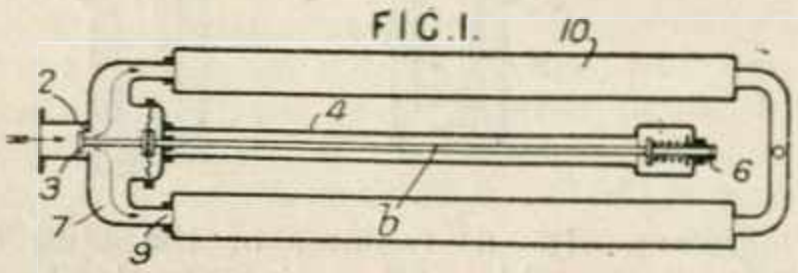
FIG.2.



Nonconducting coverings for heat. —A refrigerator comprises inner and outer metal casings connected by metal alloy frames 14, 15 of low heat conductivity which form respectively the support for the refrigerating mechanism and the lining for the door 25. The frames are welded &c. to the casings and the space between the casings is tightly packed with insulating material such as balsa wool. The refrigerator may be strengthened by angles welded to the exterior and the interior of the inner and outer casings respectively. The door is provided with packing consistng of loose hemp threads 32^b, Fig. 4, enclosed in a waterproof cover 32^a and held in a metal clip 34. Specifications 18676/11, [*Class* 82, Metals and alloys], 20940/07 and 288,576 are referred to.

292,662. Srulowitz, H., Friedmann, L., Friedmann, M., and **Schopp, N.,** (*trading as* Friedmann, A., [Firm of]). March 19, 1927.

FIG.1.



Heating buildings. — The steam supply to radiators 10 is controlled by an expanding tube 4 subject to radiation, which actuates a valve 3 through a rod *b* to control the pressure in a chamber 7 which supplies the radiators, the pressure regulating means being dependent on the room temperature. The steam from the chamber 7 passes through an auxiliary radiator 5 enclosing the expanding rod 4 which controls the admission port 2. The temperature is determined by a preliminary adjustment of the rod 4 by means of lever 6. In a modification, (Fig. 2, not shown), the temperature is determined by the adjustment of a valve in the opening 9, Fig. 1. In another modification, the tube 4, Fig. 4, is hollow for the passage of steam, and a valve 15 is provided controlling the ports 8, 9, 16. When the opening 9 is closed and 16 open, steam passes through the tube 4, thus expanding it and closing the admission valve. In another modification, (Fig. 9, not shown), the admission ports to the tube 4 are in the chamber 7, and the temperature is determined by a valve in the outlet of the chamber 7. In another modification, (Fig. 10, not shown), either the admission pressure may be regulated as above, or the regulation may be effected by the exhaust steam in known manner. A number of radiators may be connected to the chamber 7 of which only one or two may be connected with the auxiliary radiator 5. In Fig. 13, a casing carrying the thermostatic device 4, 5 is inserted between the admission and exhaust of a radiator element in the form of a loop. Steam is supplied through pipe 1 to chamber 32 and thence through port 2 to chamber 7. This chamber is connected to the radiator through a lateral opening controlled by a hand-operated slide valve. The valve member

FIG.2.

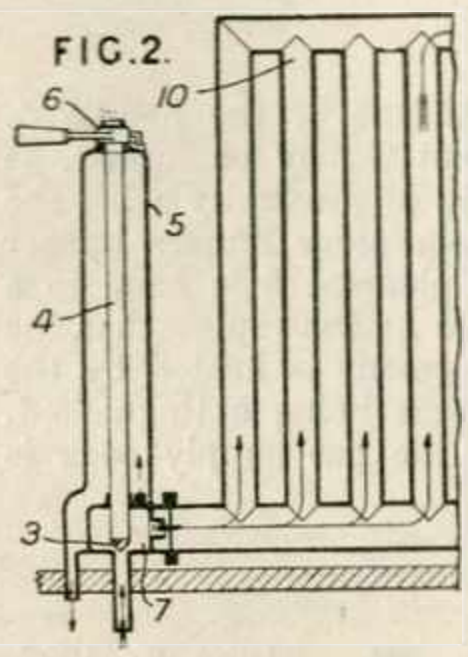


FIG.4.

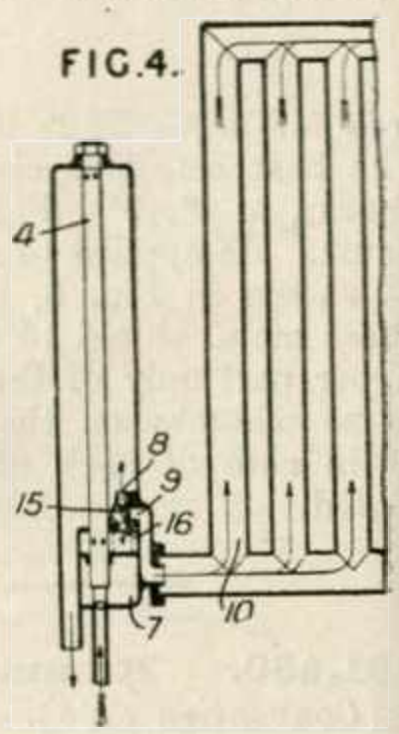
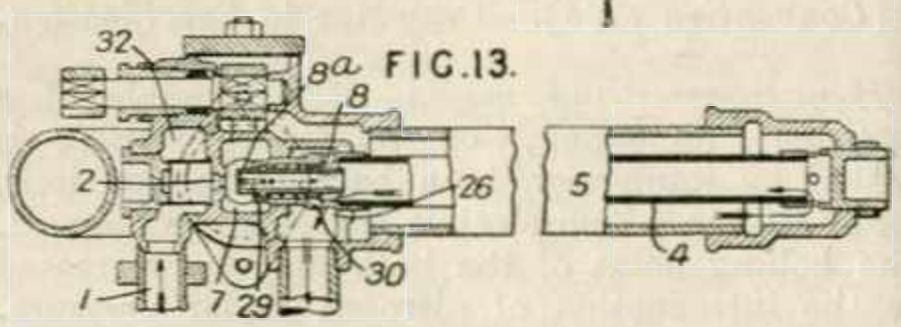


FIG.13.

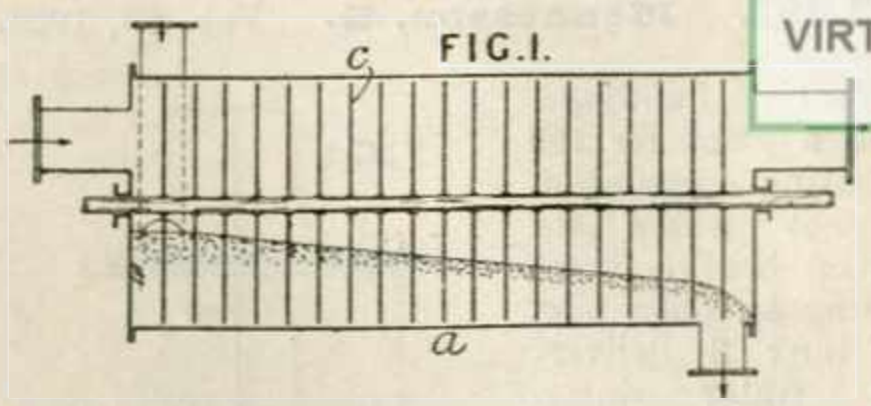


29 consists of a short tubular piece within the end 30 of the expansion tube 4, and pressed outwards by a spring which prevents damage on over-expansion of the tube 4. Steam is admitted to the tube through openings 8^a just behind the closure member, and openings 8 are also provided communicating with the exhaust chamber 26. When heating is started, the slide valve is opened and steam passes through chamber 7 to the radiators. This exerts a suction on the openings 8^a, and steam passes from the radiator exhaust outward through tube 5 and inward through tube 4 so that the thermostatic valve is controlled by exhaust steam in known manner. The admission valve is then partly closed, and pressure increases in chamber 7, so that steam flows in the reverse direction through tube 4 which thereby controls the pressure in the admission chamber 7 as in previous modifications. Another modification (Figs. 16 - - 22, not shown), is described in which the openings 8 are controlled by the hand-operated slide valve.

293,147. Trocknungs-, Verschwelungs-, und Vergasungs-Ges., and **Honigman, L.** April 22, 1927.

Heating granular material. — Heat is transferred from hot gases passing through the upper part of a stationary cylinder *a* to granular material to be dried &c. passing through the lower part by perforate plates *c*, mounted upon a rotary or oscillating shaft. In a modification, the material is heated in a rotary drum disposed between fixed end-plates having inlet and outlet openings for the heating gases and the material, the perforate plates being secured to the drum and a central displacement cylinder.

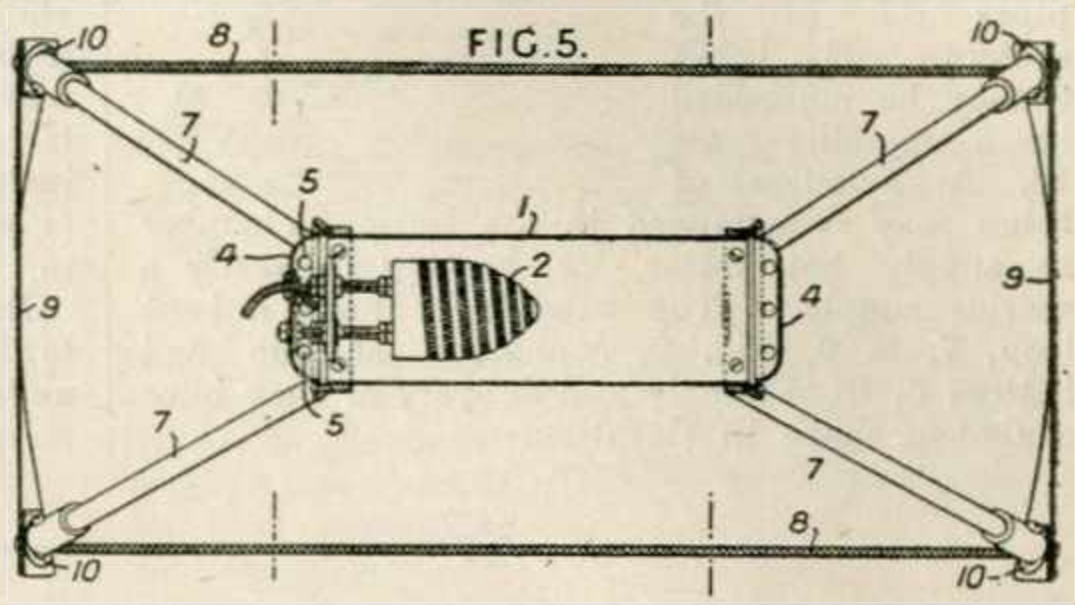
FIG. 1.



293,177. Sturge, W. H., and **Barratt, S. H. H.** June 7, 1927.

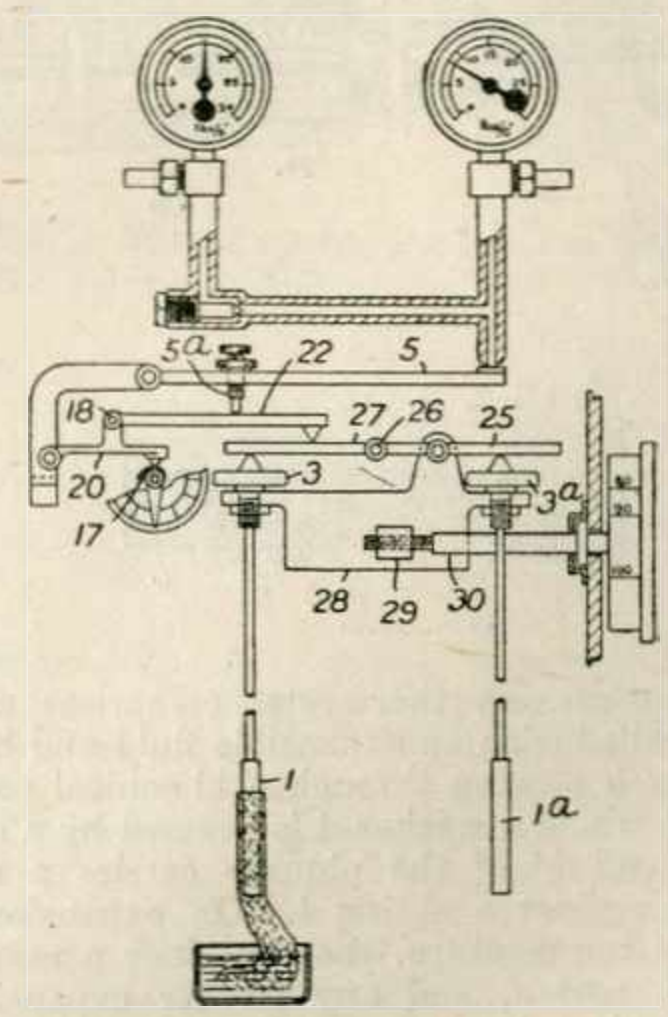
Bed-warmers.—In a warmer comprising a heating element 2 housed in a metal container mounted in a frame or cage, the element is short compared with the casing and is situated at a considerable distance from one end thereof so that the casing is heated partly by radiation and party by conduction. The main portion of the casing is imperforate, the perforations 5 being confined to the end caps 4 or to part of the peripheral wall. The enclosing cage may be rigid and made of wicker work or may be collapsable and comprise hinged stays if joined by longitudinal cords 8 or detachable bars, and engaging eyes 10 in squares 9 of fabric in the open position.

FIG. 5.



293,272. Wingfield, B. R., and **Wingfield, B. T.** Jan. 14, 1928.

Thermostats.—An automatic regulator of the type described in Specification 291,923, [*Class* 135, Valves &c.], has the pilot valve controlled by means whereby variations in pressure, temperature or differential pressure are so regulated that they bear a fixed but adjustable relation to variations in a second pressure, temperature or differential pressure. The Figure shows the application of the invention to a humidity regulator. The control valve 5 is provided with an adjustable tappet 5*a* bearing on a lever 22 pivoted at 18 to a lever 20 resting at one end on an adjusting cam 17. The free end of the lever 22 rests on a lever 27 pivoted at 26 to a lever 25 carried by a frame 28 adjustable relative to the lever 22 by a screw 30 engaging a nut 29. The actuating capsules 3, 3*a* communicating with the wet and dry bulbs 1, 1*a* or other sources of pressure act on the levers 27 and 25 respectively.



293,282. Mennesson, G. Feb. 23, 1928.

Heating buildings.—In a plant for the pulsating circulation of hot water for central heating comprising an open supply tank 3 delivering water intermittently through a disc-valve 20 into heating-tubes 9 in a furnace 1, the capacity of these tubes is arranged to be at least equal to the capacity of the main vertical distributing pipes 11 of the system. The tubes 9 may be embedded in a metallic mass 16. A second set of tubes may be arranged in the furnace chamber to supply hot water for heating indirectly a service supply. The tubes may form a bent loop, 7, 8, 9, Fig. 3, connected at top and bottom 6, 10 to supply and delivery or may have a zig-zag shape in elevation.

FIG.1.

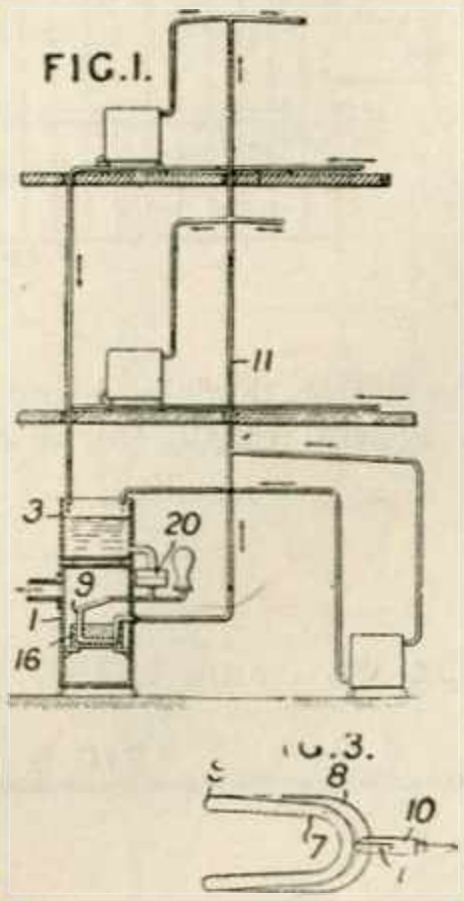
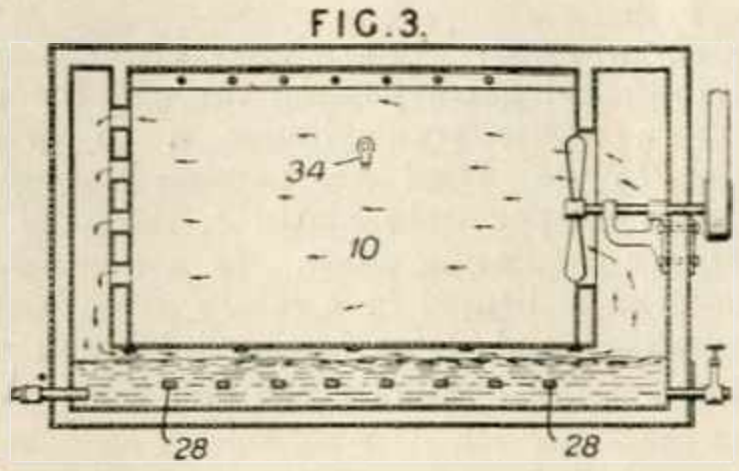


FIG.3.

293,471. Industrial Dryer Corporation, (Assignees of *Harris, G. D.*). July 8, 1927, [*Convention date*].

FIG.3.



Thermostats.—In humidifying and conditioning apparatus, a thermostatic valve controls the admission of fresh cold water to a space below the conditioning chamber 10. An additional thermostatic control 34 within the chamber may be associated with controls for allowing current to traverse submerged heating coils 28 for predetermining time periods; indicating lamps may be included in the circuits. Specification 293,692, [*Class* 55 (ii), Gas manufacture &c.], is referred to.

Reference has been directed by the Comptroller to Specification 264,538, *(as open to inspection under Sect.* 91 (3) (a), [*Class* 55 (ii), Gas manufacture &c.].

293,930. Royer, G. G. May 3, 1927.

FIG.3.

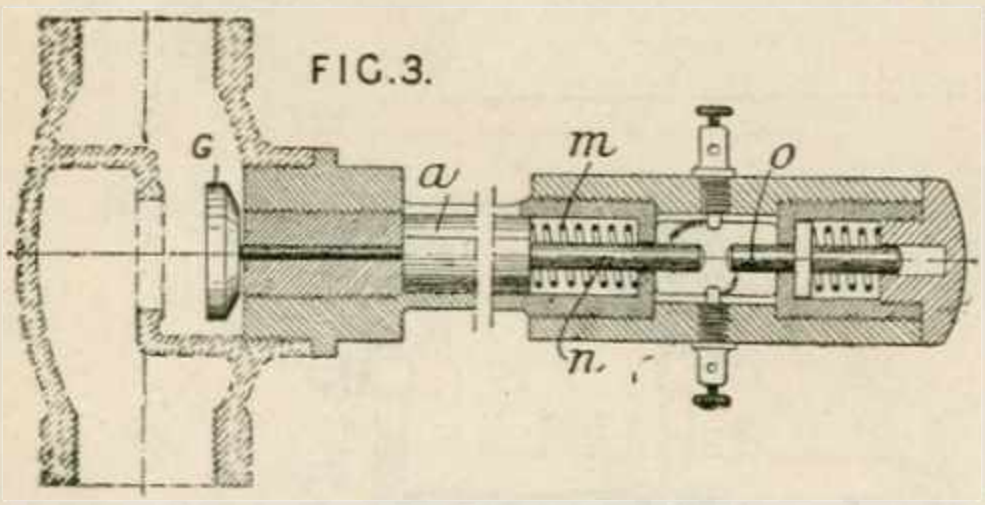
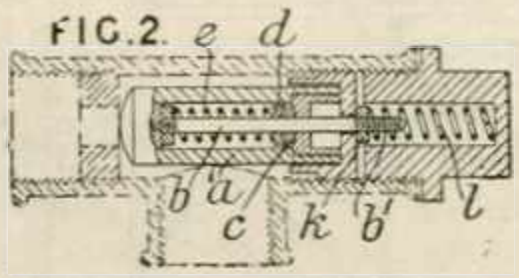


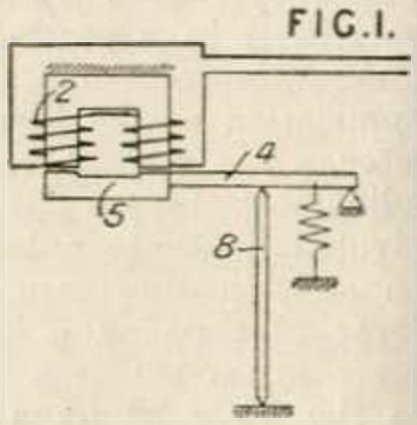
FIG.2.



Thermostats.—A thermostat comprises a container *a* filled with an expansible fluid and having a plunger *b* passing through a bi-conical packing *c* against which a washer *d* is pressed by a spring *e*. The end b^1 of the plunger carries a nut *k* abutting against a spring *l*. On expansion due to rise of temperature, the container *a* moves to close the port *e*, and any further expansion is then absorbed by a movement of the plunger against the spring *l*, so that no damage is caused. In a modification, Fig. 3, the container *a* is normally fixed and the valve G is carried by the plunger. Any expansion after the valve closes is absorbed by movement of the container against a spring *m*. At the same time, the contacts *n*, *o* are closed, and an alarm signal operated. The springs *l*, *m* are sufficiently strong to resist deformation under normal working.

294,505. Kieback, E., and **Peter, P.** Feb. 14, 1927.

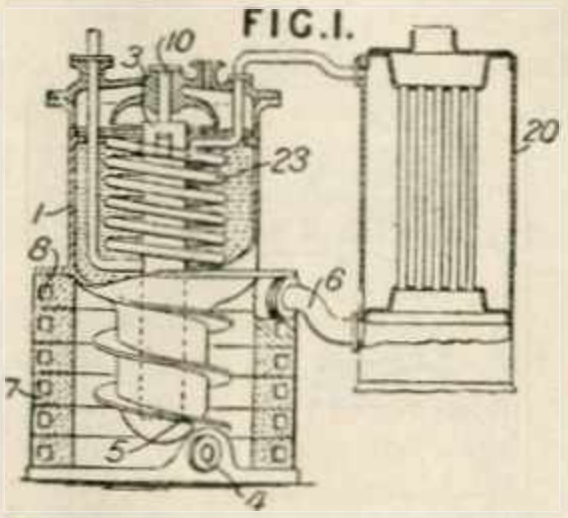
FIG.1.



Thermostats.—In a thermostat operated by electromagnetic regulating apparatus of the type in which the distance between an electromagnet and its armature is altered to produce variations in the current circulating in the magnet coils, which current effects the regulation, the armature or the magnet is carried on a lever pivoted on a knife-edge, and the motion of the moving part is confined to the range in which the change of current is substantially proportioned to the displacement. An expansion-element 8 moves a lever 4 carrying the armature 5 of an electromagnet 2, the current in the coils of the magnet operating heat-controlling apparatus.

294,697. Hammond, C. F., and **Shackleton, W.** Feb. 2, 1927.

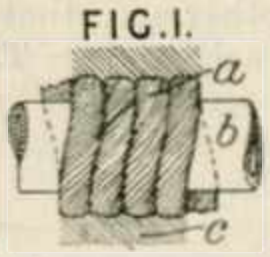
FIG. 1.



Heating granular material.—The apparatus comprises an externally heated pot containing liquid such as molten metal, and a submerged, open-ended pipe to the lower end of which material is admitted to produce an "air lift" action and induce circulation of the liquid. The pot 1 is formed with a well having helical ribs 5, arranged in a firebrick combustion chamber 7 with channels 8 for preheating the air supplied to a burner 4. The aerating medium, e.g. steam or water, is supplied through a pipe 10 to the lower end of the pipe 3, so that the molten metal is raised and overflows at the top. The combustion gases pass through a pipe 6 to a steam generator 20, and the steam is superheated by passing it through a pipe coil 23 in the molten metal. The furnace wall may be composed of segments 7 having channels 8 forming annular ducts for preheating the air. The ducts are in communication with those above and below, so that a continuous channel is formed. Specification 278,768 is referred to in the Provisional Specification.

294,728. Garratt, H. H., and **Hope & Sons, Ltd., H.** May 17, 1927.

FIG. 1.

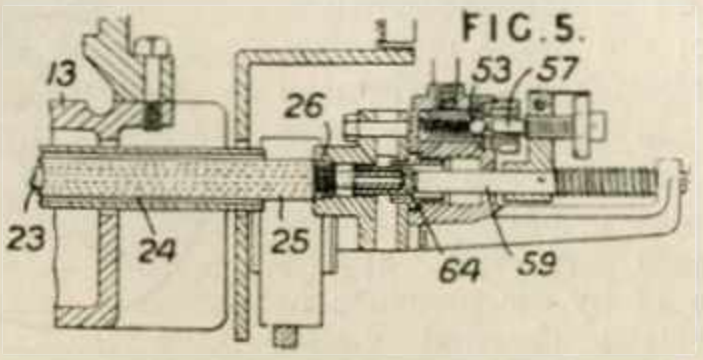


Radiators.—In the heating or cooling of buildings by means of pipes embedded in the walls, ceilings, or floors, cracking of the plaster is avoided by wrapping the pipes *b* with metallic shavings or thin ribbons *a* before embedding them in plaster *c*.

294,775. British Hartford-Fairmont Syndicate, Ltd., (*Hartford-Empire Co.*). Aug. 4, 1927.

Thermostats. — A heat-sensitive element for controlling the supply of fuel to an oil burner comprises a nickel tube 24 surrounding and fixed at one end to a rod 23 of fused quartz, the tube 24 being secured at the other end to a bracket 26 having an aperture through which passes the free end of the rod 23. This end carries a thimble

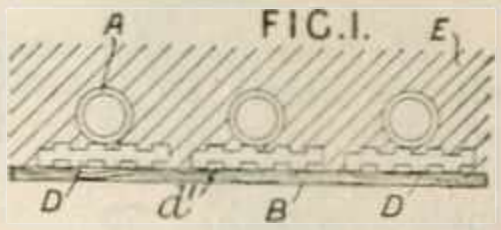
FIG. 5.



64 in contact with a spring plunger 59 which controls a pneumatic system for operating a valve in the fuel pipe.

295,086. Musgrave, J. L., and **Crittall & Co., Ltd., R.** May 26, 1927. *Addition to* 278,229.

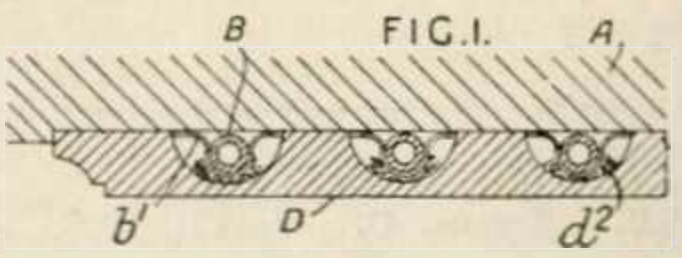
FIG. 1.



Radiators. — The panel heating and cooling system described in the parent Specification is modified by supporting the pipes on continuous lines of tiles, which are themselves supported by the temporary shuttering until the concrete or the like has set. In Fig. 1, the pipes A are supported on lines of tiles D of such width that adjacent lines are not far apart. The shuttering B is removed after the material E has set, and the finishing plaster then applied, the corrugations d^1 acting as keys. Alternatively, the lines of tiles may be transverse to the pipes.

295,094. Musgrave, J. L., and **Crittall, R. G.** June 1, 1927.

FIG. 1.

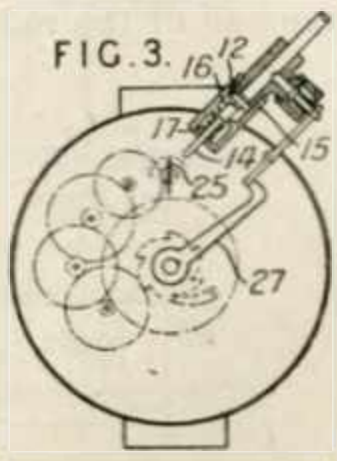


Radiators.—In the "panel" system of heating and cooling buildings, the pipes are enclosed, after erection, with a heat-conducting cover, contact being made by a small quantity of plastic material between the pipe and cover. The pipes B are secured by straps b^1 to the structure A, and then enclosed in a cover D previously formed of plastic or other material. Plastic material d^2 ensures the transmission of heat from the pipes to the cover. In an alternative form, the cover may be of metal, without grooves or channels, but including a small quantity of plastic material between each pipe and the cover.

295,181. Langer, R. Jan. 5, 1928.

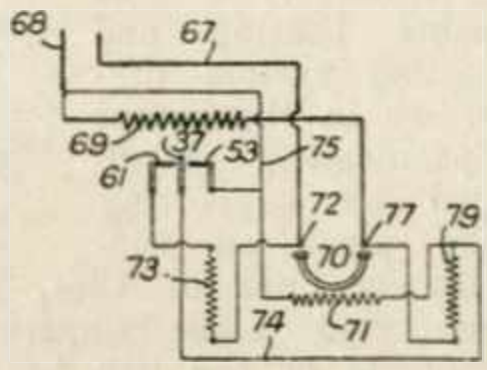
Thermostats.—Means for automatically closing a gas cock on accidental extinction of the flame comprises a clockwork train, the fan brake 25 of which is held by a detent rod 14 connected to a piston 12 forced outwards against spring action 17 by air pressure in an airtight thermal vessel exposed to the heat of the flame. A conical sealing surface 16 on the piston forms a seal on the partition 15 to prevent escape of air past the piston. To guard against overpressure a spring-pressed relief valve is provided.

FIG. 3.



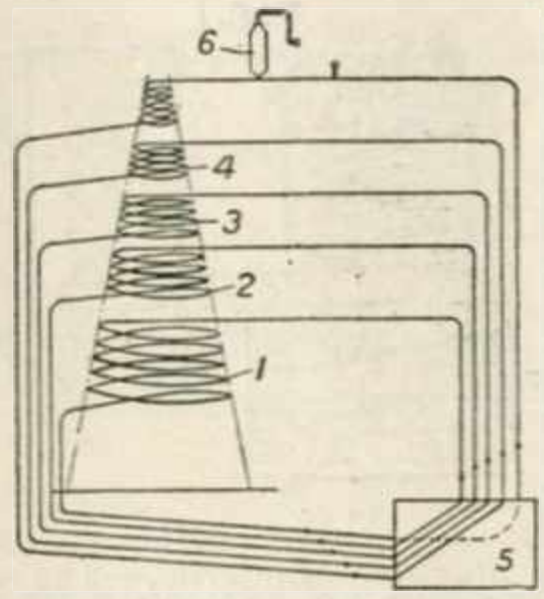
295,310. Fairweather, H. G. C., (*Wilcolator Co.*). Feb. 7, 1927. *Divided on* 292,192, [*Class* 38 (v), Electric switches &c.].

Thermostats.—An electric heater 69 is supplied from mains 67, 68, through a main switch 70 closed by a solenoid 71. When the heater is not energized, the thermal element 37 of a thermal switch lies against the contact 61 whereby the circuit is completed through 72, resistance 73, contacts 61, 37, line 74, solenoid 71 and line 75. This energizes the solenoid 71 and closes the main switch 70. When the element 37 leaves the contact 71 due to increase of temperature, the solenoid still remains energized through circuit 72, 77, resistance 79, solenoid 71, and line 75. When the element 37 reaches the contact 53, the solenoid 71 is short circuited through line 74 and contacts 37, 53, and the main switch 70 is opened.



295,482. Lyon, C. July 4, 1927.

Heating by circulation of fluids.—Hay, straw, beet, or the like are stacked about a cage in which is disposed a number of groups of coiled pipes 1 - - 4, the coils either tapering as shown or successively being of less diameter towards the top of the stack. A heating medium such as water, steam or air is passed through these coils and through corresponding sets of coils in a furnace 5 the arrangement being such that the medium passes through one group of coils in the stack, thence to the furnace, thence to the coils of the next succeeding group in the stack then back to the furnace and so forth. An expansion chamber 6 is preferably provided at the top of the system. Water heated to a temperature



exceeding 100° C. is preferably used as the heating medium.

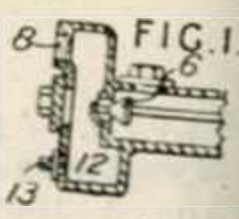
295,628. British Thomson-Houston Co., Ltd., (Assignees of *Watson, H. L.*). Aug. 15, 1927, [*Convention date*].

Nonconducting coverings for heat.—A porous silica product, impervious to moisture and of low specific gravity, is used as a heat insulator for refrigerators and furnaces. Quartz sand is heated to about 1700° C., is kept at this temperature for about half-an-hour, and is then cooled to room temperature. The resulting loose granular mass, which is either cristobalite or tridymite, is mixed with a shellac solution, is moulded to shape, and is then heated slowly to about 400° C. to evaporate the solvent of the binder and to decompose and carbonize the shellac. The product is next heated rapidly to about 1750° C. to eliminate the binder residue and to seal over the exterior surface of the moulded mass. The binder leaves little or no residue and produces the multiplicity of small cavities which are not connected with one another so that the material is impervious to moisture. The material is stated to have a specific gravity of 0.6 or less.

295,663. Gass, W. G. May 13, 1927.

Steam traps.—In a steam trap, shown as of the expansion type, a dirt catcher is made in one therewith or attached thereto to form a single appliance. In the form shown dirt, passing to the trap valve 6 with steam entering at 8, is retained in the chamber 12 and can be blown out at intervals through the plug hole 13 in the side of the chamber.

FIG. 1.



295,801. Lyon, C. July 4, 1927.

Heating by circulation of fluids.—Hay, straw, beet, or the like are dried by being formed into a stack around heating coils or radiators preferably enshrouded by a conical or other shaped grille, the coils being heated by water circulation and the water circulating being at a pressure above atmospheric, and being maintained above 100° C. Air is forced from below over the coils and through the stack. Devices may be provided to check the heating of the water or to prevent its circulation should the air current be stopped. The heating pipes are preferably arranged in concentric co-axial groups each group being connected to a similar group in a furnace so that water passes in series through a group in the furnace, a group in the stack, the next group in the furnace, the next in the stack and so on. An expansion chamber may be provided at the highest point of the system.

296,086. Maschinenfabrik Augsburg-Nürnberg Akt.-Ges. Aug. 26, 1927, [*Convention date*].

FIG. 1.

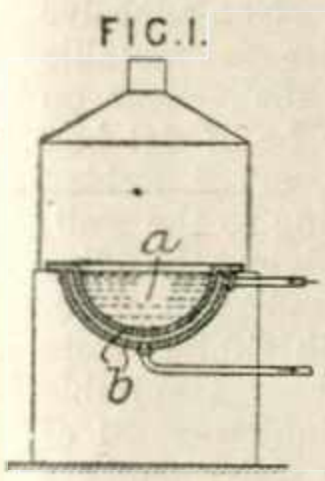
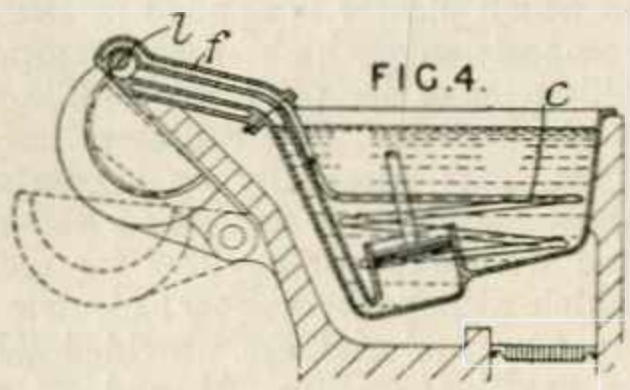


FIG. 4.

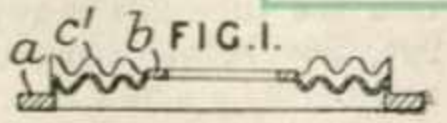


Heat-transmitting media.—Metal-pots for composing, stereotype-casting, and like machines are heated by means of the saturated vapour of a liquid, the boiling-point of which is near the temperature of casting, and the steam pressure of which is only a few atmospheres at the casting temperature. By this means, not only the melting-zone proper, but also the remoter parts of the pot, and particularly the delivery parts, are sufficiently heated. The liquids used may be calcium chloride, tetraline, aniline, melted naphthalene, paraffin, or mercury. The metal-pot *a*, Fig. 1, may have double walls *b*, the saturated vapour being supplied to the intervening space from a central boiler, which may serve a number of pots. Alternatively, the space between the double walls may be partly filled with the heating-liquid, and the pot heated from the outside. The vapour may be passed through a heating coil *c*, Fig. 4, immersed in the metal to be melted, and, in the case of a pot having a nozzle *f* controlled by a valve *l*, the heating-coil may be connected to the jacket-cavities of the nozzle.

296,493. Sadd, J. A. June 14, 1927.

Thermostats. — A diaphragm for use with thermostatic control apparatus has the surface wholly or in part corrugated in two directions at right angles. In the form shown the corrugated part c^1 is bounded at its inner and outer parts by flat annuli *a*, *b*. The corrugations are preferably curved to a sine wave formation.

FIG. 1.



296,973. Bastian-Morley Co., (Assignees of *Morley, J. P., and Lonergan, S. J.*). Sept. 10, 1927, [*Convention date*].

FIG. 5.

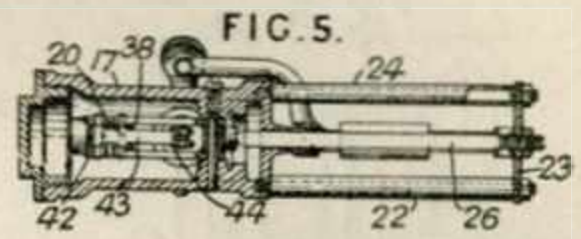


FIG. 13.

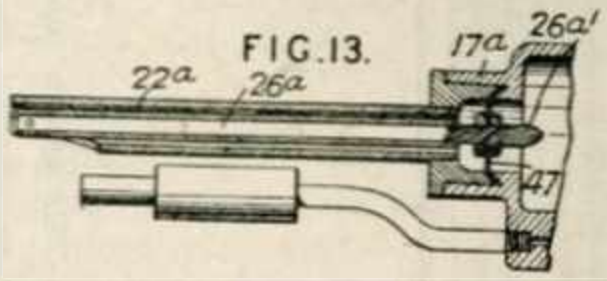
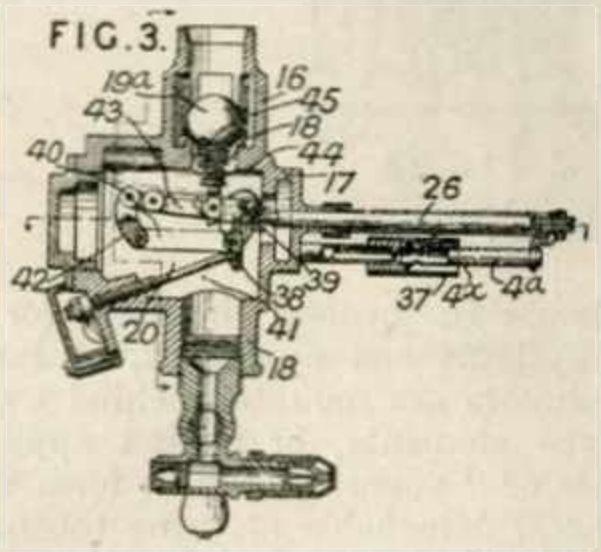


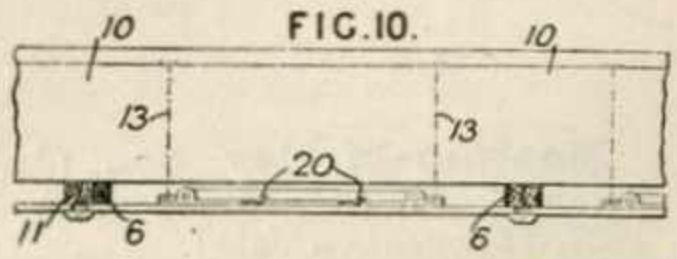
FIG. 3.

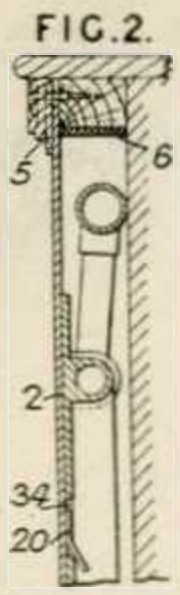


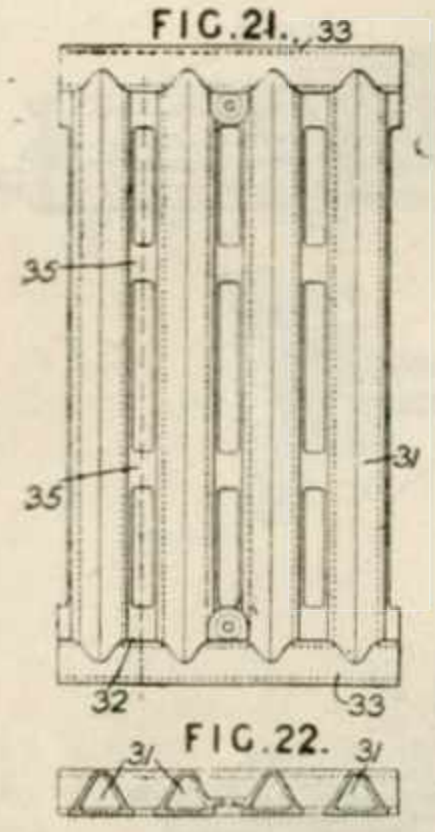
Thermostats.—A valve operating mechanism comprises a casing 17 having inlet and outlet connections 16, 18 for a fluid, a thermostat element 22 of low expansibility carried by the casing 17 and an element 26 of high expansibility connected to the part 22. The element 26 projects into the casing 17 and controls the operating mechanism 20 of a valve 19^a and is under the action of a pilot flame 4^a so that if the latter fails the valve 19^a closes. The thermostat element 22 of low expansibility comprises two rods 22, Fig. 5, surrounded by sleeves 24 of the same material and connected to the casing 17 at one end and to a cross head 23 at the other end. One end of the expansible element 26 is adjustably secured to the cross head 23 and the other end projects into the casing 17 and engages a lever mechanism connected to the ball valve 19^a. In a modification, the sleeves 24 are omitted. In another modification, the non-expansible element is a sleeve 22^a, Fig. 13, having a part cut away adjacent the pilot flame. The expansible member 26^a is a tube having a thrust

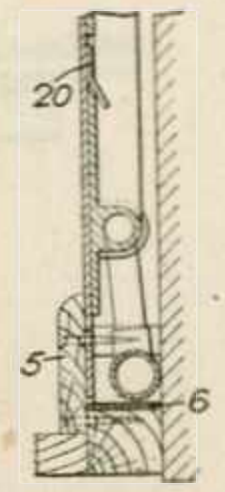
member 26^{a1} for engaging the valve operating mechanism. In a modification of this construction the tube 26^a is replaced by a rod, the parts 22^a, 26^a being connected together in gas-tight manner by a screw cap.

297,043. Austen, F. H. May 9, 1927.



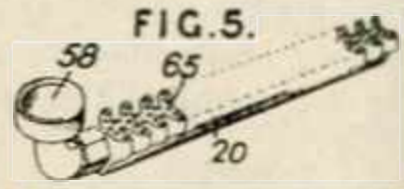






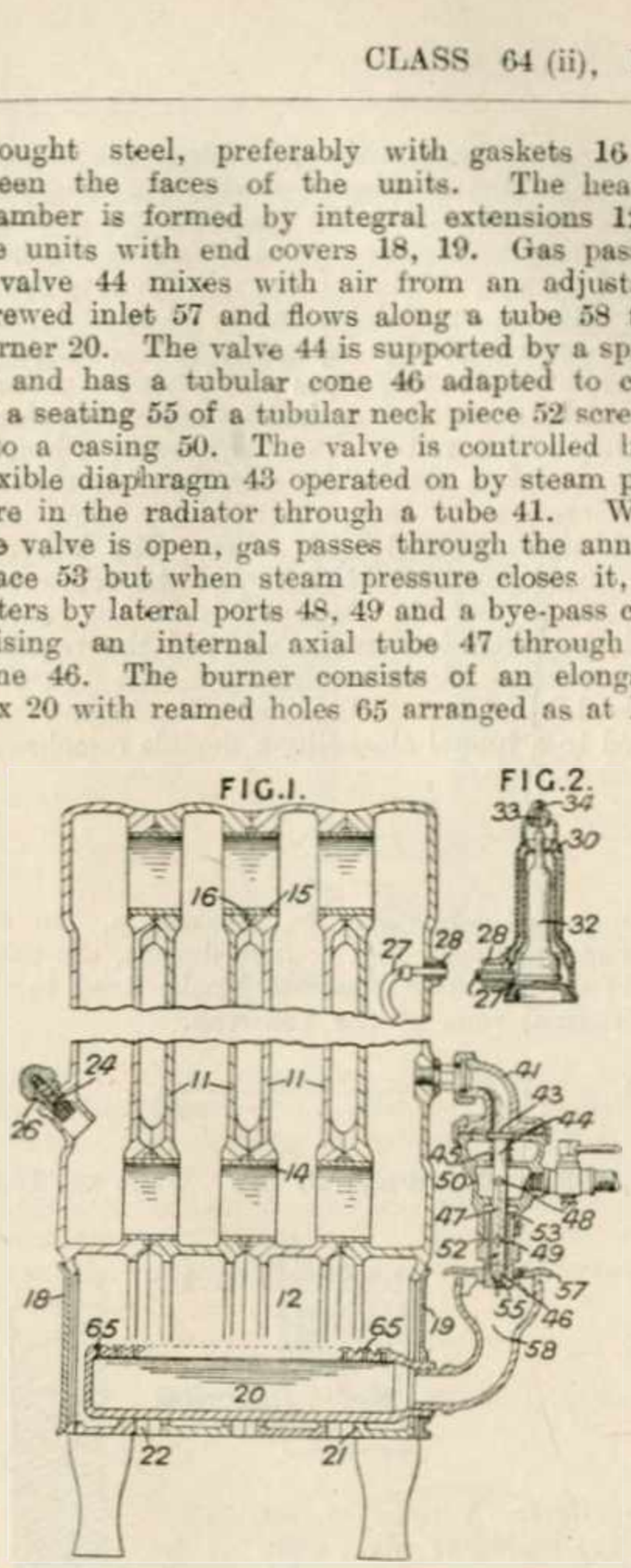
Radiators.—In central heating (or cooling) radiator systems and apparatus, of the kind in which radiators are mounted behind wall or ceiling surface elements, or behind applied panel-like sheets or "veneers," which form the radiating surfaces, detachable securing means are provided within the area of the radiator unit and are adapted to fix the veneer evenly and maintain it in heat-transferance relationship with the radiator. Warping of the sheet or veneer is thus prevented, and accessibility to the radiator is provided for. Fig. 2 shows a radiator arranged in front of a wall and having secured to the front face a veneer 2 forming a dado. The veneer is provided with integral or attached clips 20 having inclined portions engaging the edges of slots 34 in the front of the radiator, the veneer being removable on lifting. The edges of the veneer are held, with provision for expansion, under mouldings 5, and heat-insulating material 6 is preferably provided round the margin of the space containing the radiator. In a similar manner radiators may be arranged behind veneers forming a false front to a wall, the face of which may be recessed partially to accommodate the radiator in order to economize space. New walls may be formed with recesses 7, Fig. 5, to accommodate the radiator, the veneer 2 meeting the plaster 8 and the joint being covered by moulding 5. The sides, or sides and back, of the recess may be lined with heat-insulating material 6. Similar constructions are described in connection with radiators mounted between ceiling joists, Fig. 10, showing a form in which the radiator is suspended from the joists 10 by adjustable bolts or links 13, the veneers being secured to distance pieces 11 on the underside of the joists; in a modification, the radiators are similarly suspended from a supplementary slotted box girder secured to the underside of the joists. The clips 20 for securing the veneer are preferably of spring metal arranged to exert a wedging action; they may engage parts of the radiator, or may extend between radiator units or through slots therein to parts or wall brackets positioned to receive them; they may also be provided, in addition, outside the area of the radiator. The veneers may also be secured by screws passing through apertures in a radiator, or between adjacent radiator elements, into plugs &c. in the wall. The use of engaging studs and keyhole slots on the veneers and radiators is also referred to. The veneers themselves may be of any material, such as sheet metal, plywood, stone or mineral substance, cement asbestos sheeting, or composition boards; or they may be of a composite nature, for example, a base of metal with a covering of wood, paper &c.; they may also be formed from an expanded metal or like support to which plaster is applied *in situ*. Non-adhesive composition, which may comprise a metallic filling, may be used for bedding the veneer on to the radiator. The radiators may be of flat box form, cast integrally or in parts, or of welded sheet metal, with flanges for securing to the wall, and with slots or cavities for receiving the clips which attach the veneer; electric radiators of refractory material are provided with similar slots or cavities. Figs. 21 and 22 show a suitable form of cast radiator comprising fluid ways 31 of triangular or **D** section united by web members 32 and connected to headers 33, one face of the radiator being a plane surface. Slots formed in the web provide bar members 35 which may be engaged by the clips securing the veneer. Radiators may also be formed of bent piping of **D** or other flat-sided section providing a flat face adjacent the veneer; the pipe coils may be welded or cast in one with a facing plate. The radiators may be resiliently mounted in relation to the veneers in the manner described in Specification 298,069. The back of the radiator may be exposed in order to heat an adjacent room or passage. The invention may be applied to radiating devices imitating articles of furniture.

297,080. Moser, A. D. Sept. 14, 1927, [*Convention date*].



Radiators. — A radiator containing gas-heated fluid for rooms comprises tubular cast iron units 11 held assembled at top and bottom by pressed-in tubular thimbles 14, 15 of

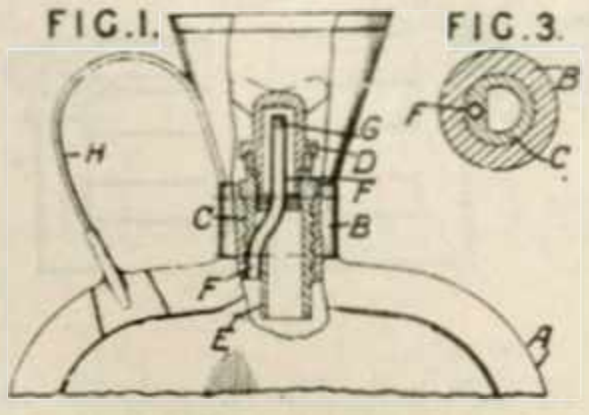
wrought steel, preferably with gaskets 16 between the faces of the units. The heating chamber is formed by integral extensions 12 of the units with end covers 18, 19. Gas passing a valve 44 mixes with air from an adjustable screwed inlet 57 and flows along a tube 58 to a burner 20. The valve 44 is supported by a spring 45 and has a tubular cone 46 adapted to close on a seating 55 of a tubular neck piece 52 screwed into a casing 50. The valve is controlled by a flexible diaphragm 43 operated on by steam pressure in the radiator through a tube 41. When the valve is open, gas passes through the annular space 53 but when steam pressure closes it, gas enters by lateral ports 48, 49 and a bye-pass comprising an internal axial tube 47 through the cone 46. The burner consists of an elongated box 20 with reamed holes 65 arranged as at Fig.



5, and rests on projections 21 on the base of the heating chamber, into which air is admitted only by slots 22 at the bottom of the units. Two end units carry legs and one carries an adjustable spring-pressed ball safety valve 24 with a depending steam pipe 26. On cooling, internal pressure falls, and a float 32 with a pin 33 normally closing a valve 34 also falls, and air is admitted to the radiator by the valve 34, holes 30 in a partition dividing the valve into two chambers and by pipes 27, 28 connecting the valve with the radiator. On heating, air escapes and finally steam enters and condenses under the float 32 to lift it and close the valve. The condensed water returns by pipe 27, and the valve is held closed by internal pressure. The water level in the radiator is kept below the valves and pipe 41.

297,140. Macfarlane, H. June 15, 1927.

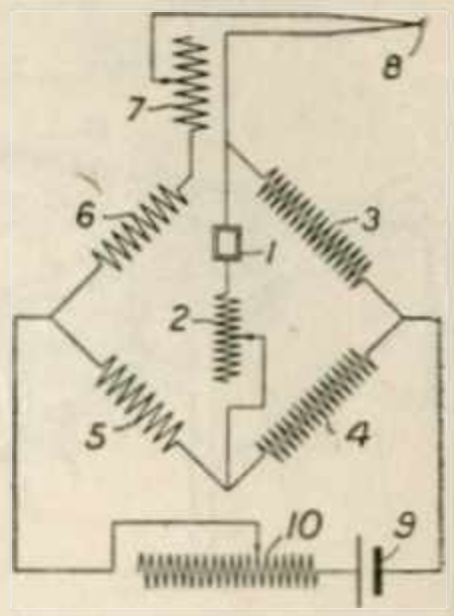
Hot-water bottles.—The neck B of a hot-water bottle A contains a ferrule C threaded to receive a cap D. The inner end of the ferrule is flattened at E, and carries a vent pipe F extending upwards and having a lateral orifice G. The extension of the ferrule at E beyond the end of



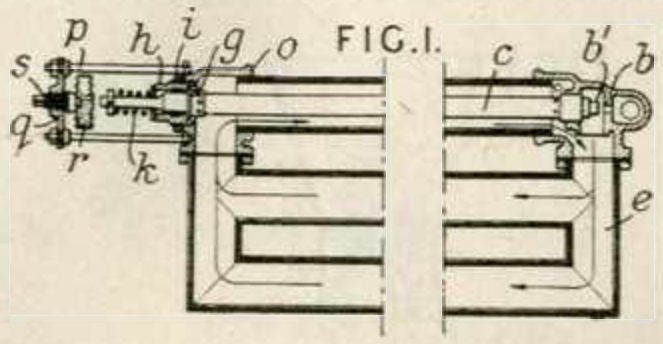
the pipe F, and the arrangement of the inner end of the pipe F next to the handle H ensures the free escape of air during filling.

297,261. Lloyd, G. E., and **Electrofio Meters Co., Ltd.** Dec. 23, 1927.

Thermostats. — In order to give a warning of the breakage of a thermocouple pyrometer, the thermocouple and its deflecting instrument are arranged in a normally balanced Wheatstone bridge system supplied from an independent source of E.M.F. in such a way that the bridge becomes unbalanced when the thermocouple breaks, and an increase in the reading of the deflecting instrument results. The thermocouple 8 in series with an adjustable resistance 7 and fixed resistance 6 is arranged as one arm of the bridge of which the other arms comprise fixed high resistances 3, 4, 5. The galvanometer &c. 1 is arranged in series with an adjustable resistance 2 across the bridge to which current is supplied by a battery &c. 9 in series with an adjustable resistance 10. The bridge is initially balanced by adjusting the resistance 7 until no change in the deflection of the galvanometer occurs when the circuit of the battery 9 is made or broken. The normal pyrometer circuit then comprises the thermocouple 8, galvanometer 1 and resistances 2, 5, 6, 7. Should the thermocouple break the bridge is thrown out of balance and the resulting increase in the deflection of the galvanometer gives warning of the breakage. The invention is particularly applicable to systems in which the galvanometer controls, through a relay &c., the supply of heating medium to an enclosure. In such a system the increase of the deflection consequent upon breakage of the thermocouple results in the supply of heating medium being cut off.

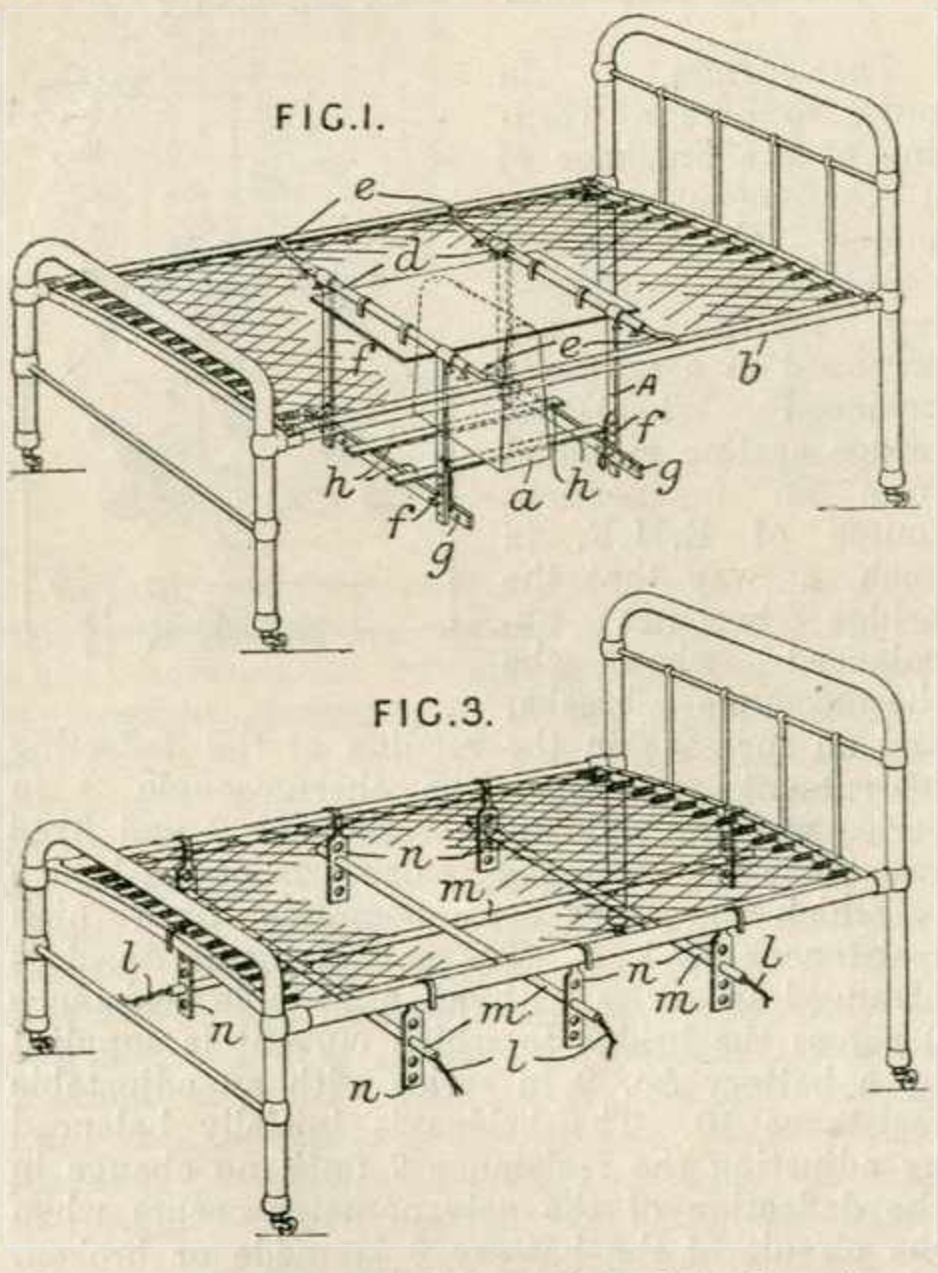


297,601. Imray, O. Y., (*Friedmann, L., Friedman, M., and Schopp, N.*, (trading as *Friedmann, A.*, [*Firm of*]. Dec. 2, 1927.



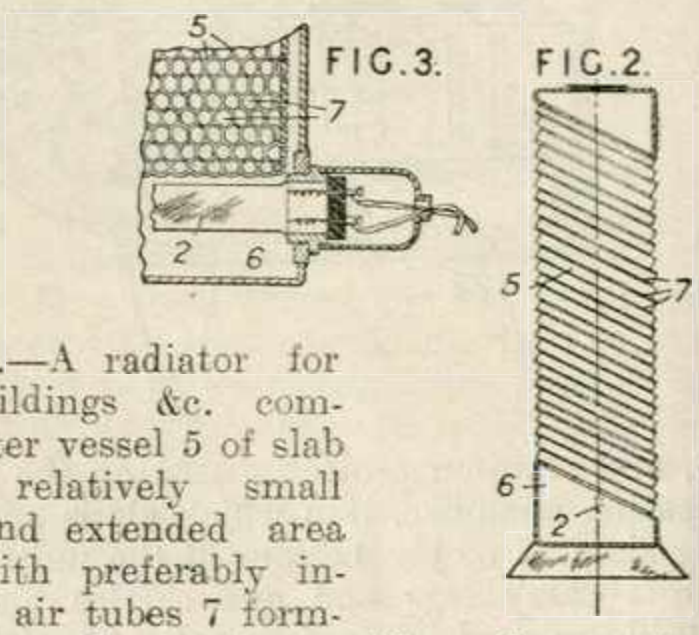
Heating buildings.—The supply of steam to heating pipes *e* is controlled by two thermostats, one *r* exposed to the temperature of the room and adapted to act upon the other thermostat *c* exposed to the steam in the pipes, sufficient dead path or play being allowed between the thermostats or in the members transmitting the movements to ensure that the thermostat *r* does not act on the thermostat *c* until the room has been heated to approximately the required temperature. The steam inlet valve *b*, b^1 is under the direct control of the expansion tube *c* disposed in one of the heating pipes and having a collar *g* pressed by a spring *k* against an adjustable sleeve *h* secured by a nut *i*. Bolts *p* fixed to a head *o* support a plate *q* to which is adjustably secured by a screw *s* the room thermostat *r* comprising an elastic box filled with ether. The sleeve *h* is adjusted to about 100° C. and the screw *s* is adjusted so that the thermostats do not contact until the room has nearly reached the required temperature. In a modification, the box *r* is replaced by a vessel filled with liquid and connected to a funnel closed by a flexible membrane.

297,604. Bruce, W. A. Dec. 14, 1927.



Bed-warmers and airers.—A bedstead, sofa, or like article of furniture is warmed or aired by means of an adjustable heater below. One or more radiators *a*, Fig. 1, heated by electricity, gas, steam, or liquid fuel, are carried by a frame A consisting of horizontal tubes *d*, the ends *e* of which rest on the bed rails *b*, vertical members *f* adjustable on the tubes *d*, horizontal bars *g* adjustable on the members *f*, and horizontal bars *h* supporting the radiator. A controlling switch for the heater may be arranged on the bedstead. In a modification, Fig. 3, electric heating elements *l* are arranged in tubes *m* supported adjustably in brackets *n*. In another modification, Fig. 5, (not shown), the tubes *m* are supported in concrete blocks fixed to the longitudinal rails of the bedstead.

297,788. Oatway, J. W. June 28, 1927.



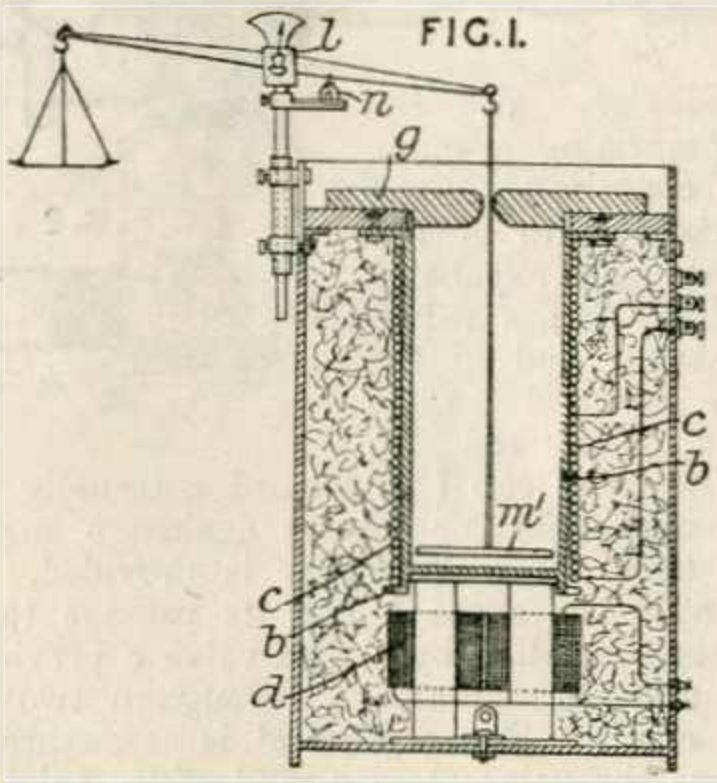
Radiators.—A radiator for heating buildings &c. comprises a water vessel 5 of slab form, of relatively small thickness and extended area provided with preferably inclined open air tubes 7 forming a honeycomb structure with a clear water-space 6 below, directly heated and communicating with the top and bottom of the cellular radiating structure. The heating means 2 may be electrical as shown. Specification 112,537, [*Class* 64 (iii), Surface apparatus &c.], is referred to.

297,826. Infra Soc. Anon., (Assignees of *Sorrel, V., and Lafont, A.*). Sept. 29, 1927, [*Convention date*].

Thermostats.—An electric resistance furnace is controlled by means comprising a balance *l* from one arm of which a magnetic body m^1 is suspended in the heating chamber in the field of a magnet *d*. When the body m^1

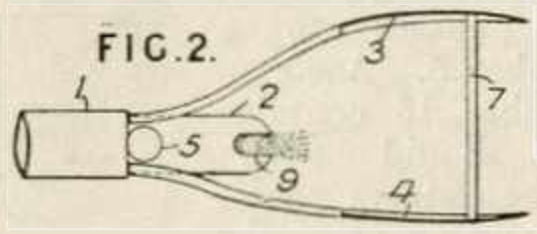
attains a temperature at which its magnetic properties disappear the arm of the balance rises and the switch *n* is opened to vary the heating effect directly or through a relay. The variation may be produced by altering series connections to parallel, by altering star connections to delta, by interposition of a resistance, by altering transformer connections or by means of an induction regulator. By choosing a suitable material for the body m^1 the temperature of the furnace can be kept constant or can increase very slowly after the critical point is reached. The body m^1 may be constituted by the material to be treated.

FIG. 1.



297,843. Horlacher, A. von. Sept. 29, 1927, [*Convention date*].

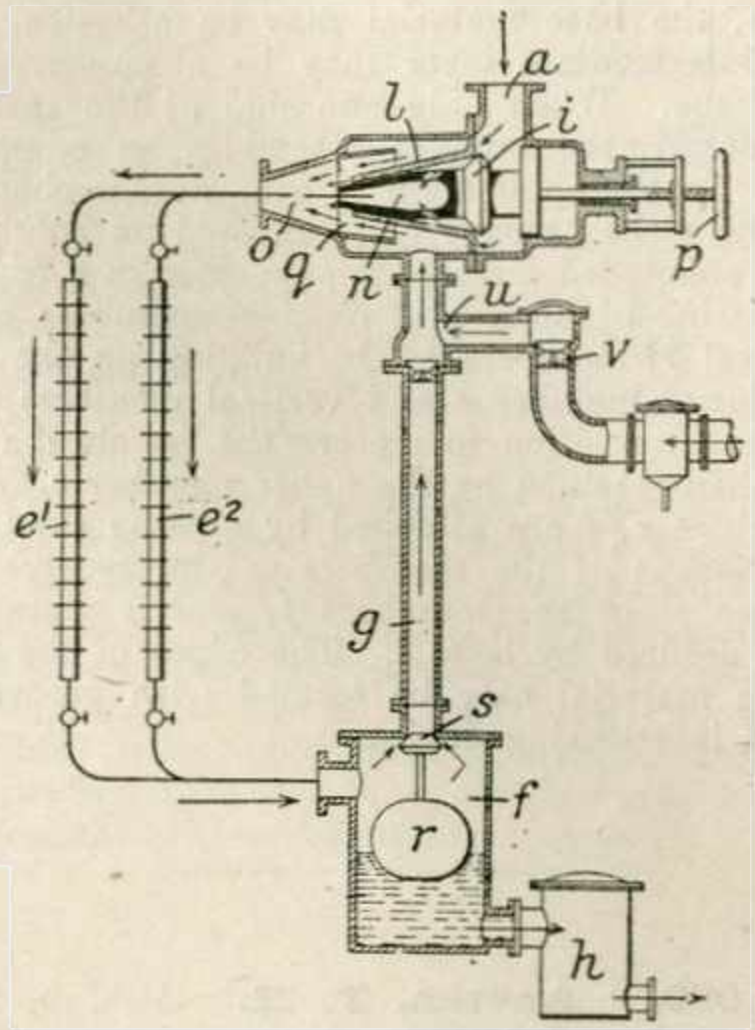
FIG. 2.



Bed-warmers and airers.—A device for warming beds by means of hot air comprises a tube 1 connected to a hot-air supply, terminating in a nozzle 2 having a semi-circular opening 9. The bed clothes are held away from the nozzle by plates 3, 4, which may be perforated, and which may be supported by struts 7. A handle 5 is provided.

297,859. Miersbe, A. June 27, 1927.

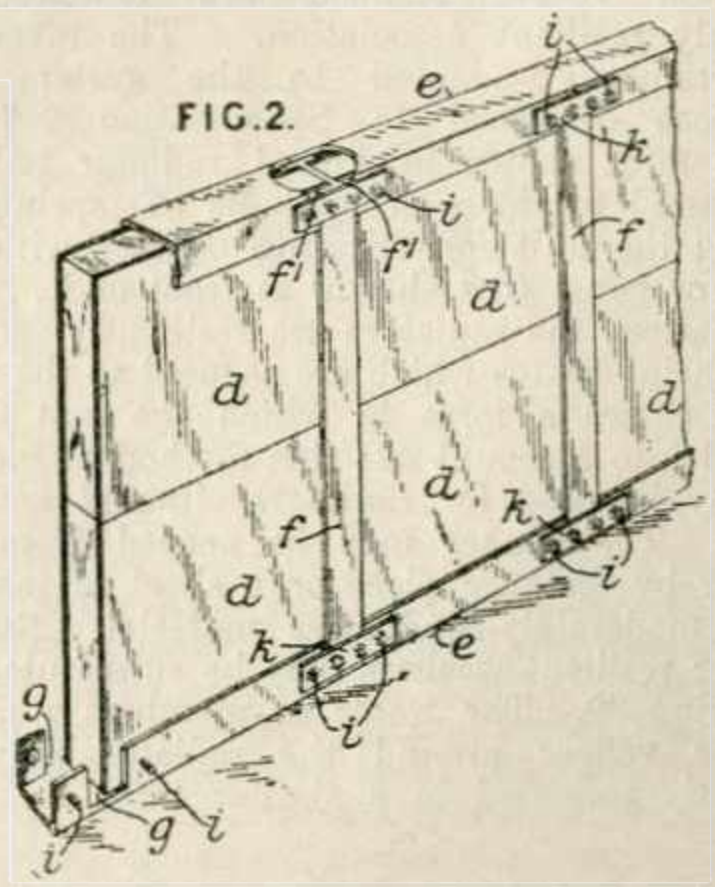
Heating systems.—A steam heating system employs an injector with concentric nozzles for increasing the circulation. Steam enters the pipe *a*, passes through the injector to the radiators e^1, e^2, and thence to a water separator *f*. The steam returns through pipe *g* to the injector, and water of condensation is removed through vessel *h*. A float valve *r*, *s* is provided to close the pipe *g* when condensate accumulates to a predetermined level. A hand-controlled valve *i* is provided, so that, when open, steam flows through the annular passage *l* and also through the hollow core *n* to the space *o*, while the returned steam is drawn through the annular



passage *q*. When the valve *i* is partly closed, the area of the passage *l* is diminished, and a larger proportion of steam flows through the core *n*, thus maintaining the suction on the pipe *g*. The exhaust from a steam engine may also be utilized by passing it through a pipe *u* having a non-return valve *v*.

297,867. Mead, A. A., and **Mead, McLean, & Co., Ltd.** June 29, 1927.

FIG. 2.



Nonconducting coverings for heat and sound.—Thin metal veneers are attached to relatively

thick slabs, tiles, or the like, which may be employed for heat or sound insulating, by means of an intermediate layer of material impregnated with glue or cement, against which the metal is closely pressed. The veneers may be thin iron sheets which may be enamelled on one or both sides, the base material may be asbestos, and the intermediate layer may be absorbent paper or tissue. When only one side of the metal is enamelled, the product resembles an enamelled tile. In the application to cold storage chamber, several slabs or panels *d*, veneered on both sides with enamelled metal, are supported in a framing consisting of horizontal channel members *e* and vertical **H**-members *f*. In building up the wall, the lower member *e* and vertical members *f* are placed in position to receive the panels *d* which are then retained by the upper member *e*. The members *e*, *f* are attached by cutting slots *g* in the flanges of the members *e* to receive the flanges f^1 of the members *f*, and a plate *k* is then secured by bolts *i*. The edges of the insulating material may be formed with grooves or other interlocking devices.

298,069. Austen, F. H. Feb. 9, 1928.
Divided on 297,043.

FIG. 3.

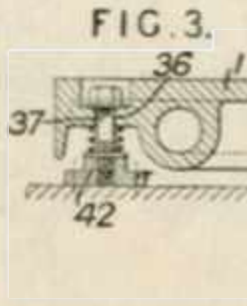
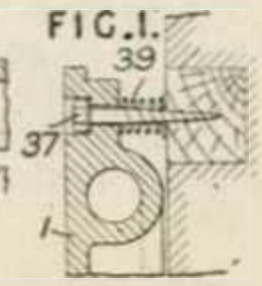


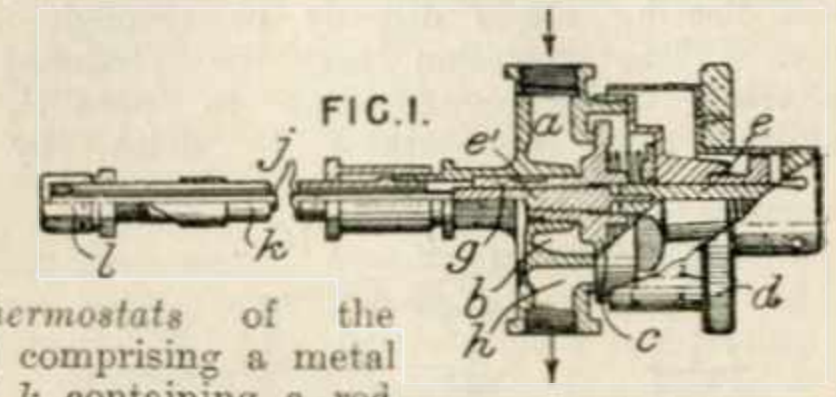
FIG. 1.



Radiators.—In heating systems in which radiator units are mounted behind wall-surface elements, sheets, or "veneers," the radiator unit and veneer element are mounted in relatively resilient association. The invention is particularly adapted to the system and appliances described in Specification 297,043. In the form shown in Fig. 1 radiator units 1 are secured to the wall by bolts 37, springs 39 pressing the unit forward into contact with the veneer or panel (not shown) in front of it. In a modification, the radiators are resiliently secured to mounting plates which are secured to the wall. Fig. 3 shows a form in which the bolt 36 is screwed into a mount 42; this method of mounting may be used for radiators situated beneath floors. The veneer may be spaced from the radiator by distance piece or a sheet of insulating or moderately-conductive material. Rubber or other resilient washers may be substituted for the spring 39. The frame or members supporting the veneer around the radiator may be resiliently mounted in a similar way.

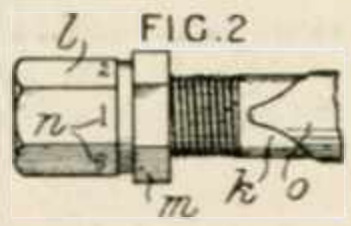
298,293. British Brass Fittings, Ltd., and **Sperryn, G. N.** July 20, 1927.

FIG. 1.



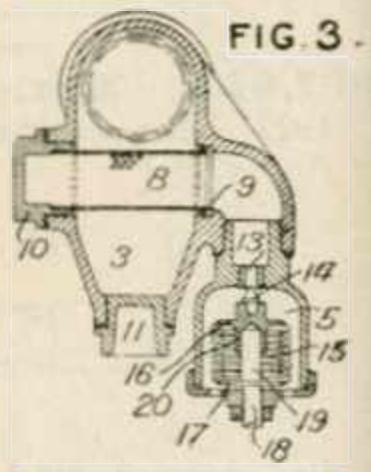
Thermostats of the kind comprising a metal tube *k* containing a rod *j* of metal with a low coefficient of expansion controlling a gas valve, carry at the end of the tube a screwed cap *l* abutting the rod to adjust it. The cap *l* is formed externally with flats *n* numbered for setting against a mark *o* on the tube. A lock nut *m* is provided. Gas enters at *a* the space *b* and its passage to the tube *h* is controlled by a disc valve *c* previously set by a hand regulator *d* through a two part spindle *e*, e^1. The section e^1 is screwthreaded to engage the valve stem *g*, and slides axially in respect of the section *e* and turns therewith.

FIG. 2.



298,299. Peters & Co., Ltd., G. D., and **Chattaway, H. A.** July 22, 1927.

FIG. 3.



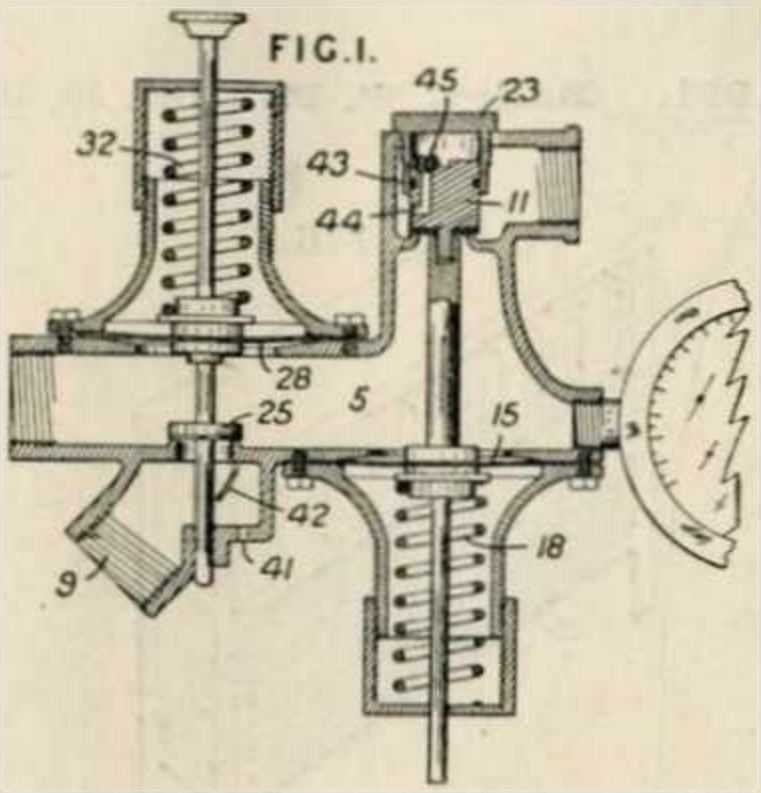
Steam traps.—A steam trap comprises an inlet chamber 3 provided with a cylindrical strainer 8 through which steam or condensate passes to a valve chamber 5. A corrugated member 15 contains a volatile liquid which expands when steam passes over it, and causes the valve 14 to close the passage 13. The lower plate 17 of the member 15 carries a screwed spindle 18 by which it may be adjusted in the casing, and a guide spindle 19 engaging in a sleeve 20 carried by the upper plate 16. The strainer 8 is carried by a cap 10 and at its other end carries a ring 9 which fits into the casing. Sediment is drawn off by removing a plug 11 or other closure.

298,805. Griffiths, W. J. Dec. 8, 1927.

Heating by water circulation.—A control for hot-water heating systems has valves 11, 25 connected by their stems to diaphragms 15, 28 forming part of the wall of a central chamber 5,

the ports of which are controlled by the valves. Springs 18, 32, the pressure of which can be regulated, control the diaphragms, spring 18 tending to open the valve 11 while spring 32

FIG. 1.

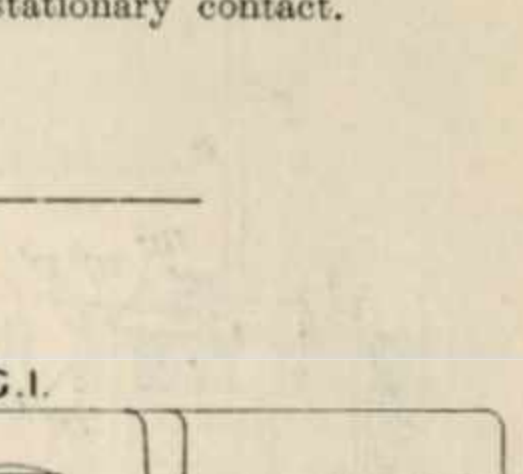


tends to keep valve 25 closed. In use valve 11 admits water to the system if the pressure is low while valve 25 acts as an excess pressure relief valve. Specification 275,501 is referred to.

298,897. International General Electric Co., Inc., (Assignees of *Allgemeine Elektricitäts-Ges.*). Oct. 15, 1927, [*Convention date*].

Thermostats.—The heat-sensitive member of a thermal switch is embedded in a mass *m* which when cold or of normal room temperature is solid, but when heated is yielding, that is to say, soft or liquid. A suitable substance is a mixture of bitumen and mineral oils. The Figure shows a bimetallic coil *b* the outer end of which is connected to the vessel *g* and the inner end of which is connected to an axle *a* carrying a contact arm *k*. Current flowing through the coil *b* heats it and the mass *m*, which when sufficiently soft allows the coil to turn the axle *a* and bring the arm *k* into engagement with a stationary contact.

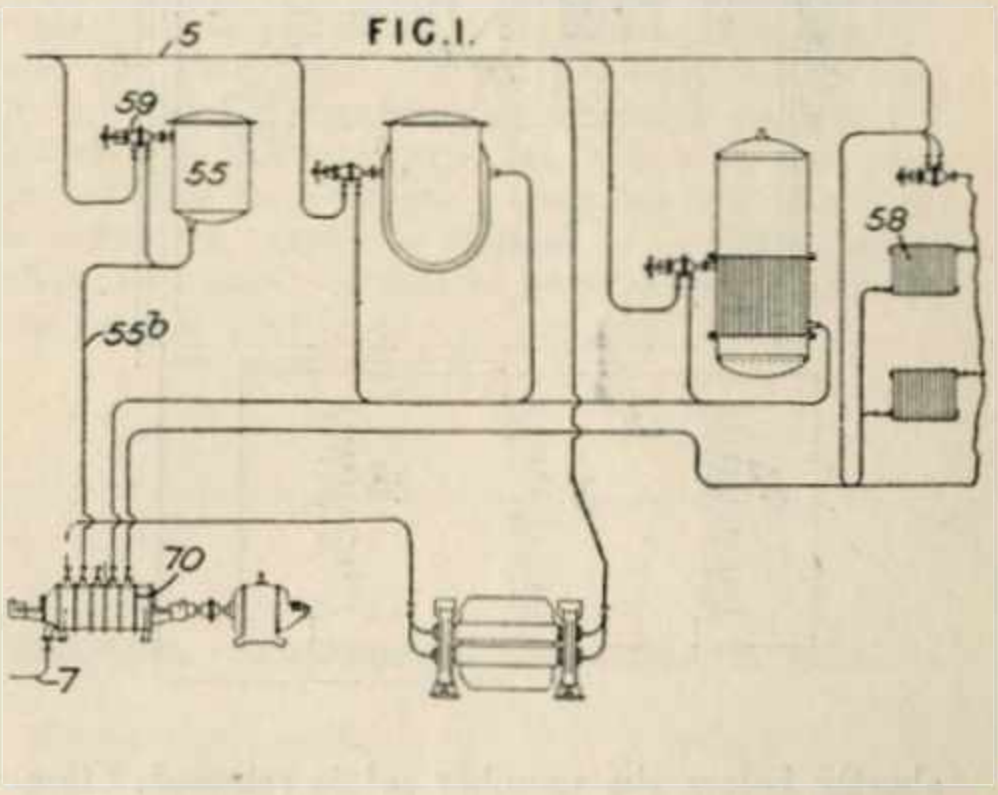
FIG. 1.



299,272. Brandt, H. Aug. 9, 1927.
Divided on 302,621.

Heating by circulation of fluids.—In a hot-water circulation system having flow and return mains 5, 7 connected to a high-pressure boiler and supplying a number of heat consumers 55 - - 58 connected across the mains, water is supplied to the consumers through injectors 59 in which the high-pressure water from the flow main is mixed with lower pressure water drawn from the return branches 55b of the consumers. The valves controlling the supplies of high pressure and return water to an injector are so connected that they may be operated simultaneously. Return branches containing water under different pressures are connected to different stages of a multistage pump 70, or are provided with separate pumps adapted to raise the pressures in the branches up to that in the return main.

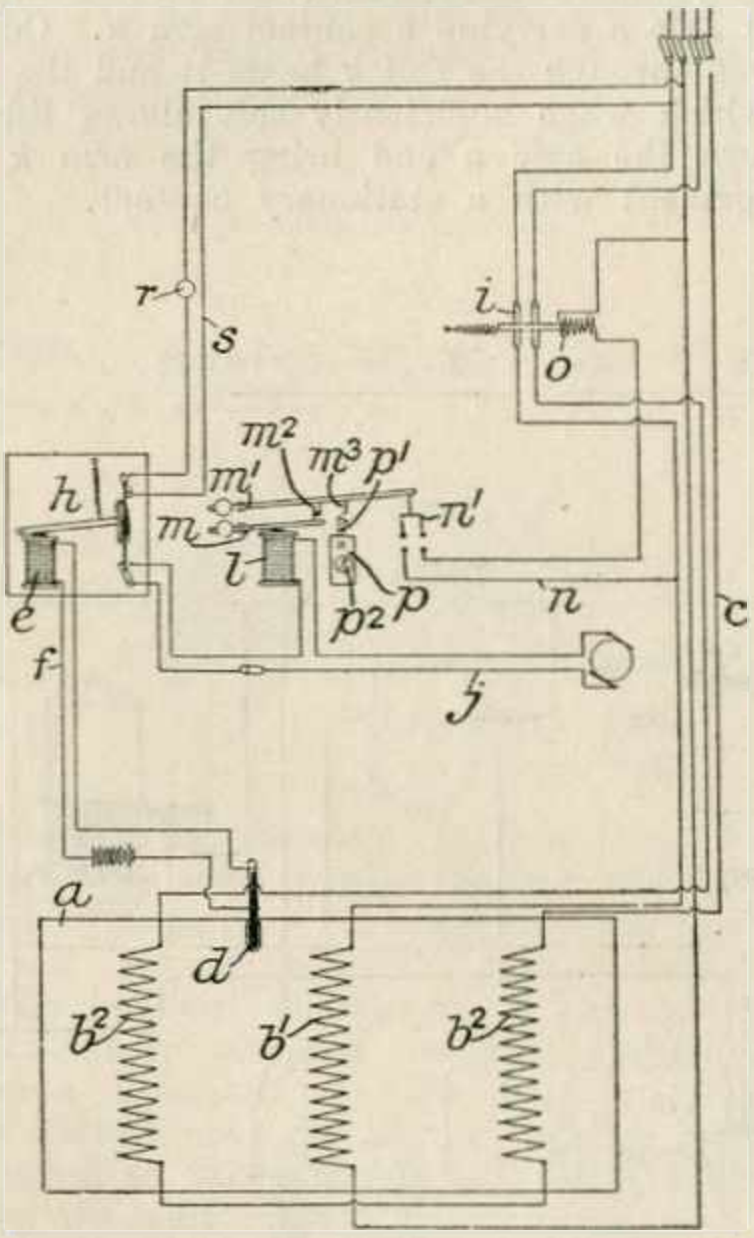
FIG. 1.



299,714. Weill, L. D. Oct. 28, 1927, [*Convention date*].

Thermostats.—Maximum temperature is regulated by means which interrupts or modifies the source of heat at a predetermined limit, and additional means are provided to maintain the interruption for a determinable period. In the application to an electric furnace *a*, heating resistances b^1, b^2 are supplied with biphase current, and a heat-sensitive device *d* is provided, connected by a circuit *j* to an electromagnet *e*. When the electromagnet *e* is de-energized, its armature *h* opens the circuit *j* of another electromagnet *l*, the armature *m* of which controls the circuit *n* of an electromagnetic switch *i*, *o*, which is adapted to make or break the circuits of the heaters b^1, b^2 to interrupt or reduce the heating. The device which maintains the interruption for a determinable period is associated with the relay *l*, and includes a clock movement *p*. The contact n^1 is carried by a lever m^1 operated

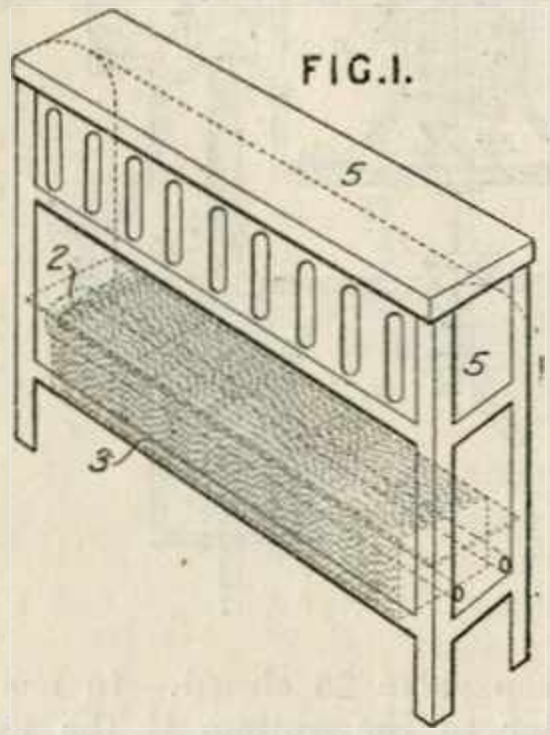
through a pawl m^2 by the lever m. A catch m^3 is also adapted to engage with a pawl p^1, and both levers are provided with counterweights tending to lift them. A signal lamp r may be provided, either in the circuit f or in a shunt s from circuit c, the circuit s being opened or closed by the armature h at the same time as the circuit j. The device d is set at the predetermined temperature, and the device p is set to release the pawl p^1 after a predetermined interval, say 40 seconds after its engagement. When the temperature reaches the required point, the relay e is energized, and consequently the relay l and lamp r. Relay l closes the switch n of the circuit o and thus opens the switch i controlling the heaters. If it is found that the clockwork p releases the pawl p^1 while the lamp r is still lighted, the interruption of the heaters has been insufficient, and the period is adjusted by regulator p^2 until the lamp r is extinguished



shortly before the member m^1 is released. Conversely, if the pawl p^1 is released too long after the lamp r is extinguished, the regulator p^2 is adjusted accordingly. On release of the pawl p^1, the relay is again operative to switch off the current at the predetermined temperature, and the sequence of operations is repeated.

According to the Specification as open to inspection under Sect. 91 (3) (a) the apparatus may be employed to regulate automatically the minimum value of a physical variable, or two similar sets of apparatus may be employed to regulate maximum and minimum. The regulation of pressure, E.M.F., electric current, power, velocity, acceleration, and hygrometric state may be effected with this apparatus. This subject-matter does not appear in the Specification as accepted.

299,991. Bailey, W. M. Oct. 19, 1927.



Radiators.—In an air-heating device of the kind comprising a heating-tube or tubes 2 on which are closely arranged separate flat heat-conducting plates 3, spaced by means of ferrules, the whole being contained in a casing 5 which acts as a flue to cause air to circulate up between the plates, the tubes 2 are provided with electrical heating means. The heaters may comprise cores of insulating material with a winding resistance wire, arranged for independent control, or a single core with a tapped winding may be employed. The tube 2 may contain liquid in which the heating elements are immersed. In place of the **U**-tube shown, a single straight tube, or a bank of tubes, may be employed. One or more suction fans may be arranged in the casing.

300,141. Aktiebolaget Termolit, (Assignees of *Aktiebolaget Malmo Glasbruk*). Nov. 5, 1927, [*Convention date*]. *Void* [*Published under Sect.* 91 *of the Acts*].

Nonconducting coverings for heat and sound.—Waterglass is prepared in the form of hollow globes or balls, for use as an insulating material, by subjecting it to a preliminary drying to obtain a practically solid mass, reducing the mass to grains as by milling, and finally contacting the grains with a heated surface adapted to impart movement to them. For instance, a rotating drum or disc or an inclined metal plate heated to dull redness may be employed. Alternatively, the preliminarily dried waterglass, whilst still fluid, may be passed through a sieve, the drops so formed be further dried, as by a current of hot air, to form solid grains, and the drying of the latter be completed as above described.

300,345. Miller, F. W. Sept. 12, 1927.

FIG. 1.

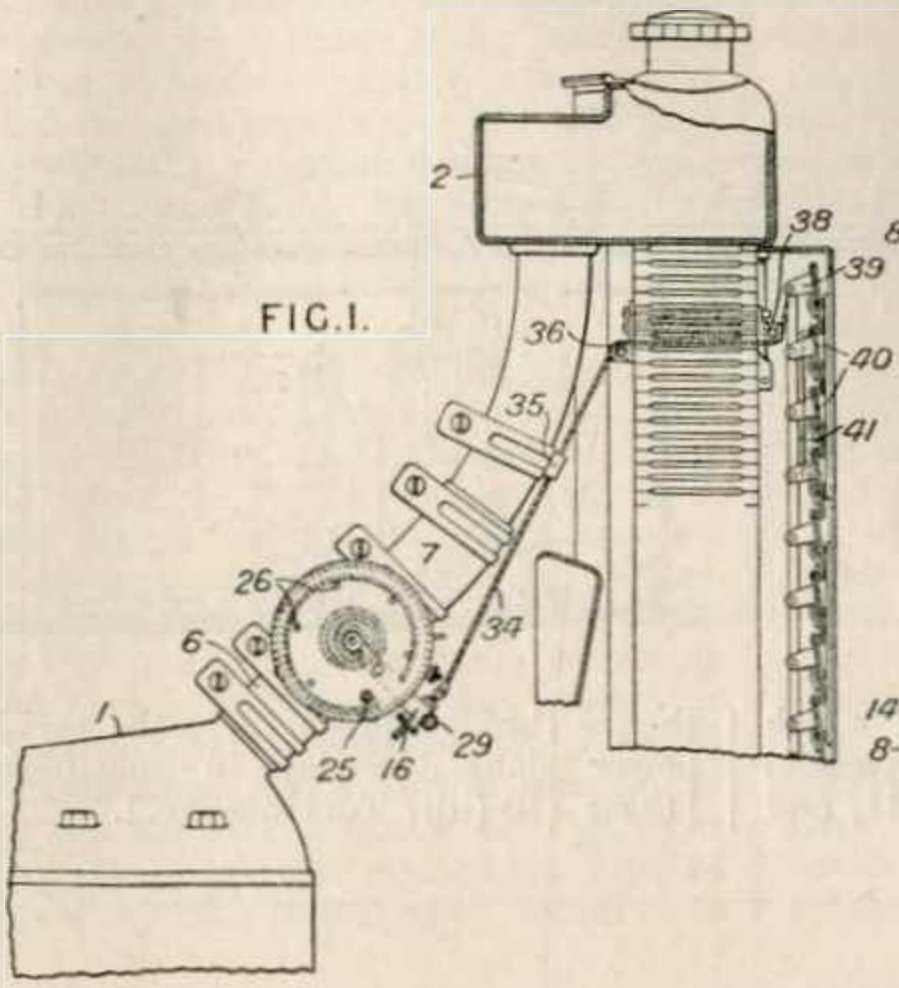


FIG. 2.

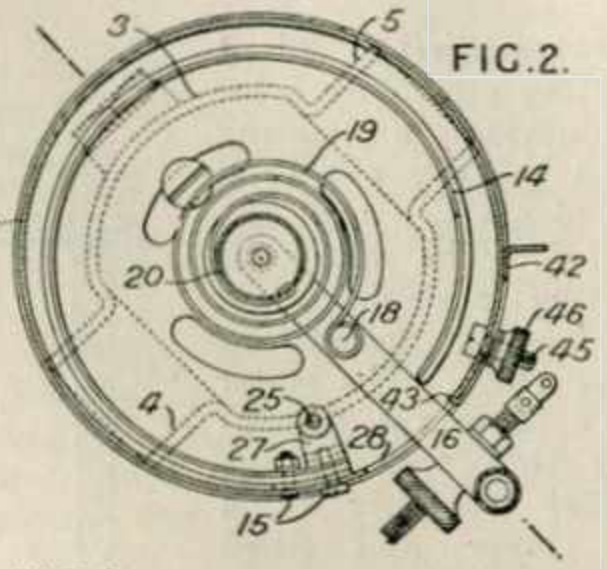
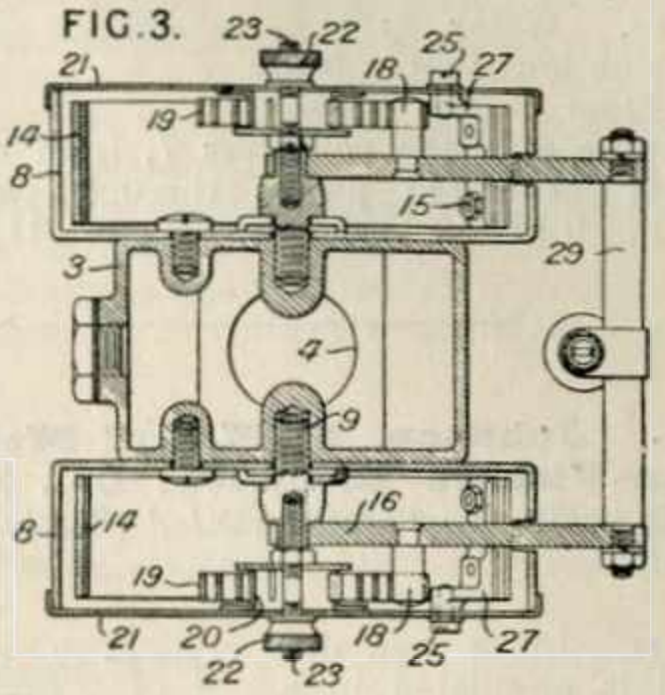


FIG. 3.

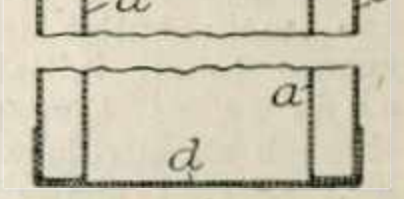


Thermostats. — Bi-metallic strips controlling air-admission shutters 40, Fig. 1, of engine radiators are arranged externally of a metal chamber or conduit included in the water system between the engine 1 and the radiator 2. The metal chamber may consist of a box-like member 3, Figs. 2 and 3, having branches 4, 5 connected by flexible hose pipes 6, 7, Fig. 1, to the engine and radiator, and the bi-metallic strip 14 is housed in a metal casing 8 in contact with the member 3. Preferably two strips and casings are employed as shown, the strips being secured at one end by screws 15 to their casings, with their free ends bearing on arms 16 coupled together outside the casings by a rod 29, which is connected by a chain &c. 34, Fig. 1, to the uppermost shutter arm 39. A volute spring 19 in each casing 8 is secured to a pin 18 on the arm 16 and to a central drum 20, which is secured to the cover 21 of the casing. This cover may be rotated to adjust the spring tension, and be retained in adjusted position by a screw 25 passing through one of several holes 26, Fig. 1, in the cover and entering a lug 27 fixed to the casing wall. The casings are secured to the water chamber by studs 9, Fig. 3, forming pivots for the arms 16, and their covers are clamped by nuts 22 on studs 23 screwed into the ends of studs 9. The chain &c. 34 is adjustably secured to the rod 29, and is guided by a member 35 and pulleys 36, 38. Preferably the shutters are normally held closed by a spring 41 and on rise of temperature the bimetallic strips contract and pull the chain against the action of the volute springs 19 and the spring 41, but as an alternative the shutters may be held open by a spring and closed by the thermostats; or the thermostats may expand when heated. The shutters may be clamped in the open position by holding the arms 16 in a retracted position by means of a slotted arcuate member 42, Fig. 2, having a projecting lug 43 in the slot 28 of the casing 8, and a clamping screw 45, 46. In a modification the water box is placed close to the radiator header, and the thermostat casings are clamped thereto by a central sleeve forming a bearing for a shaft connecting the two arms 16, which do not project outside the casings. Only one volute spring is employed, and the shutter is actuated by a chain adjustably connected to an external arm on the central shaft.

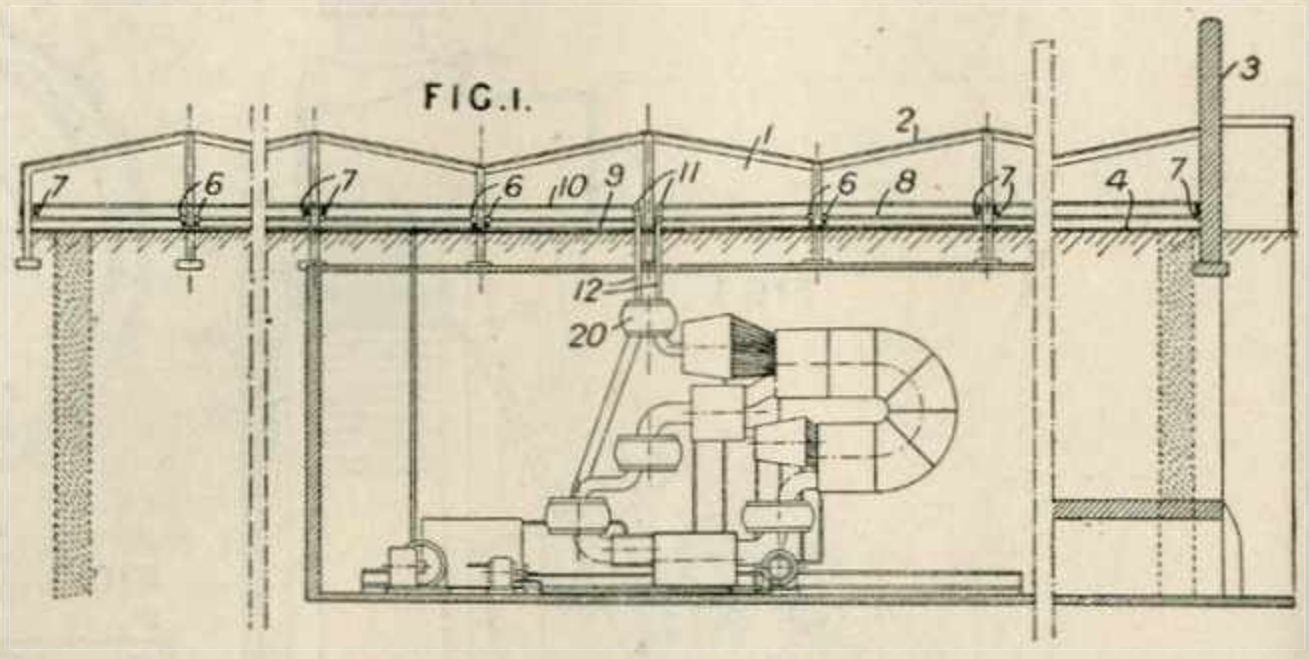
300,420. Collins, L. R. Jan. 3, 1928.

Hot-water bottles.—A rigid hot-water bottle is provided with a recess *a* closed by a cover *d* to receive night attire or other articles to be heated. The stopper *e* is remote from the cover *d*. Chemicals may be employed in the space *c* in place of hot water.

FIG. 1.

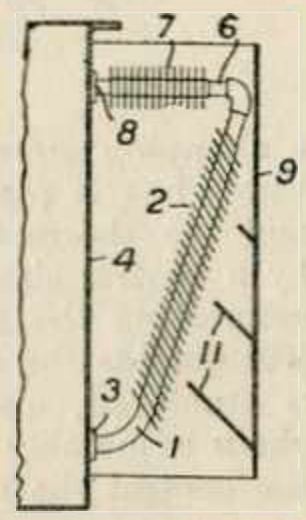


300,995. Spiess, E. Oct. 22, 1927, [*Convention date*]. *Divided on* 299,294, [*Class* 110 (iii), Turbines &c.].



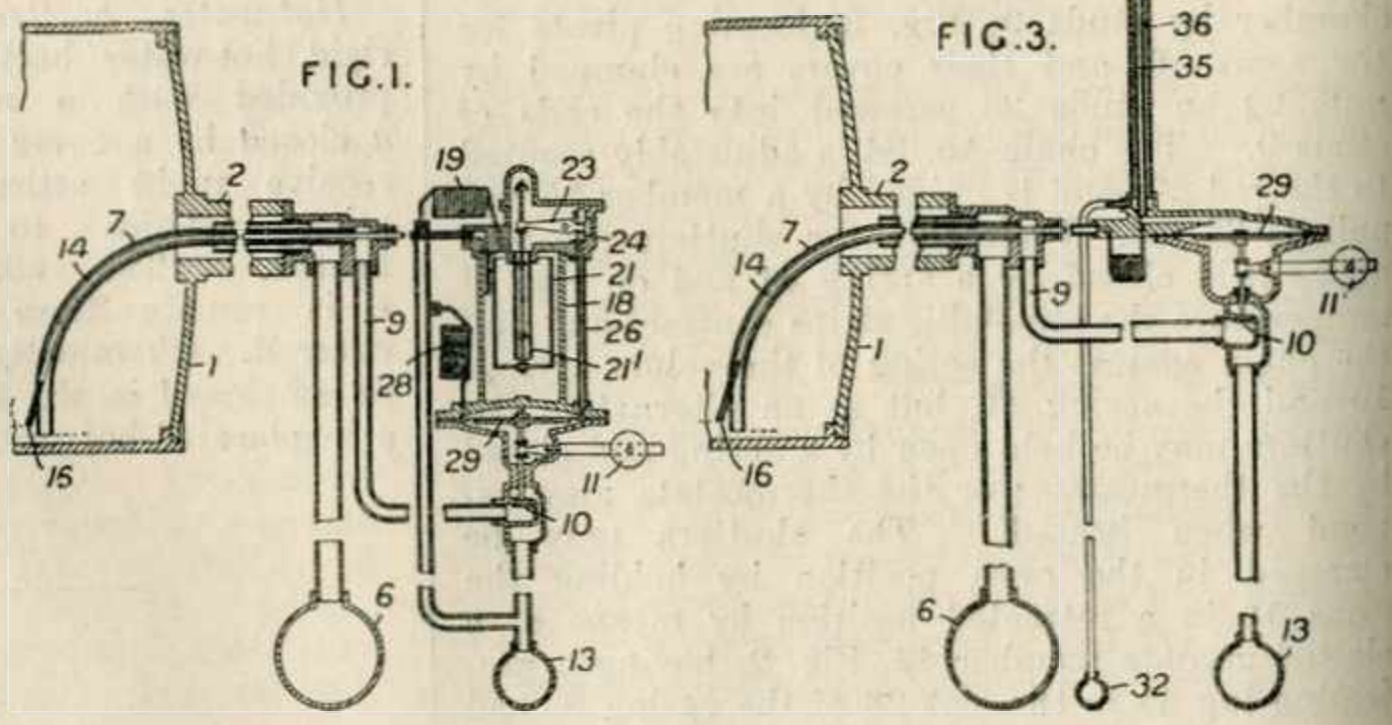
Solar heat, utilizing.—Plant for generating steam by solar heat comprises a heating chamber 1 having a roof 2 and walls of glass, except the north wall 3. The floor 4 is of insulating material, and floor, walls, and framework are painted white. The boiler comprises collectors 6, 7, connected by thin tubes 8 arranged close together in a horizontal layer and filled with water. Water is supplied through lower pipes 9 to the collectors 6 and passes through tubes 8 to the collectors 7, from which the steam generated passes through parallel superheating tubes 10 to steam collectors 11, and thence through pipes 12 to the turbine 20 of the power plant described in Specification 299,294. [*Class* 110 (iii), Turbines &c.].

301,124. Johnson, E. M., and **Metropolitan-Vickers Electrical Co., Ltd.** Aug. 31, 1927. *No Patent granted (Sealing fee not paid).*



Radiators.—In a radiator hot liquid is circulated in a pipe mounted in an inclined position on a tank and having fins inclined to its axis and nearly vertical. A screen 9 open at both ends is mounted on the tank to surround the the pipes, and parallel tongues 11 bent inwards from the screen form baffle plates directing air on the pipes. The fins or gills 2 may be washers strung on to the pipe 1 at an inclination thereto, and the same washer may be common to two or more pipes. Alternatively a strip may be wound edgewise helically on the pipe, or several helices in the form of a multiple thread may be provided. The pipe is mounted in a vertical wall 4 of a tank through glands 3, 8 and includes a horizontal portion 6 preferably with vertical fins 7. Two or more pipes may be connected at top and bottom to common headers, each removably connected by one or more pipes with valves to the wall 4 of the tank.

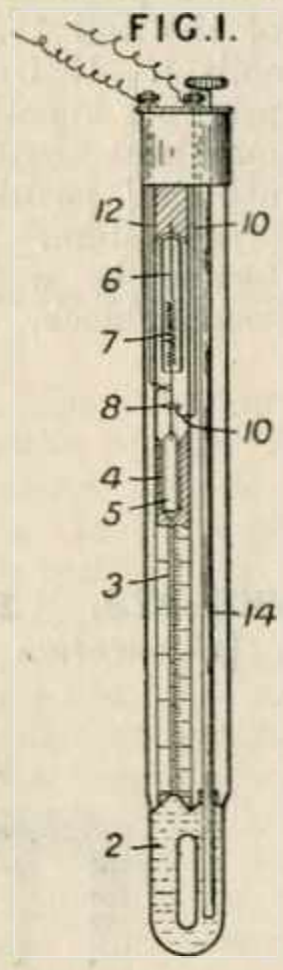
301,213. Irving, R. Bell-, and **Sandwell, P.** Dec. 9, 1927.



Steam traps. — The main condensate outlet of a steam chamber is continuously sealed by the condensate and is normally closed, there being means for opening the main outlet in response to an initial discharge of condensate through an auxiliary outlet. Fig. 1 shows one form of apparatus applied to a rotary paper-drying drum 1, to which steam is supplied through the hollow shaft 2 from a header 6. Extending through the shaft 2 and

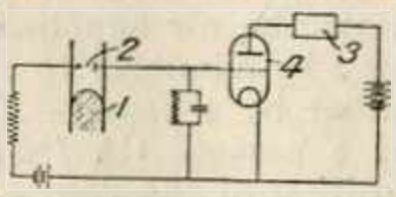
terminating adjacent the bottom of the drum are main and auxiliary condensate discharge pipes 7, 14 respectively, the former being connected by a pipe 9 and through a normally closed valve 10 to a condensate discharge header 13. The pipe 14 is connected to a chamber 18 containing a bucket 21, which is normally maintained floating in the position shown. When the condensate in the drum 1 reaches the end 16 of the pipe 14 it passes up this pipe into the chamber 18, and overflows into and sinks the bucket 21, which through a lever 23 opens a valve 24 and allows liquid to pass from the bucket, through a centre tube 21^1 and pipe 26, to the upper side of a diaphragm 29, which is thus depressed to open the main condensate discharge valve 10. When the fall of the condensate level in the drum 1 uncovers the end of the pipe 14 steam passes up this pipe and forces the condensate from the bucket 21, and the parts return to the position shown, the condensate above the diaphragm 29 being forced out through a choke coil 28 by a counterweight 11. When the end of the pipe 14 is not covered by the condensate steam and accumulated air pass up it to the chamber 18, which is connected to the header 13 through a choke coil 19 which limits the flow. A modification is described in which the space below the diaphragm is in communication with an auxiliary or the main condensate header, instead of with the atmosphere, thus enabling the apparatus to be used whether the dryer pressure is above or below that of the atmosphere. Fig. 3 shows a further modification, in which the condensate passing up the pipe 14 accumulates in a vertical pipe 35 and so produces a head pressure on the diaphragm 29, which is thus caused to open the condensate from the pipe 35 into the surrounding chamber 36, from which it passes to the header 32, the valve 10 being then closed by a counterweight 11. The application of the system to the drying portion of a paper machine is illustrated, the drying drums being in two series, and the condensate from the first being discharged into a low-pressure receiver and used to produce flash steam for heating the second series, the condensate header of which is maintained under a vacuum. Specification 28162/96 is referred to.

301,250. Stuwe, W. Feb. 13, 1928.



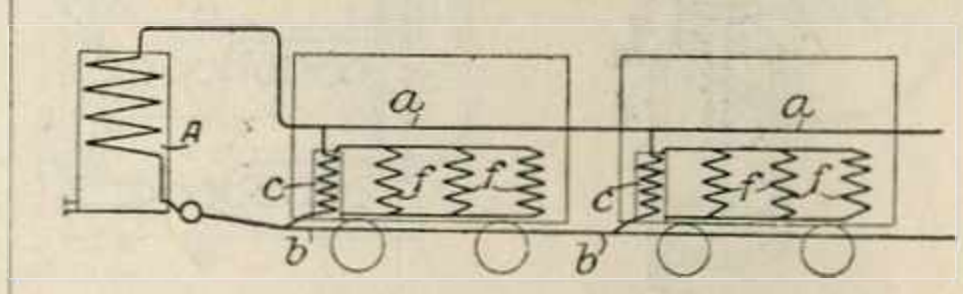
Thermostats.—A thermal switch comprises a thermometer with a capillary tube 3 which expands into a broader tube 4 containing a float 5 carrying a contact 8 and suspended from a wire 6 having a spiral spring 7. With rise of temperature the float 5 is lifted by the mercury or other conducting liquid 2 till the contact disc 8 leaves the fixed contact 10. Current is led to the contact 8 from a supply conductor 12 by means of a flexible wire or chain, or by wire loops. Adjustment for different temperatures is effected by means of a movable graduated glass or china plunger 14 which passes into the mercury 2. The lower end of the thermometer tube may consist of several branches so as to be more sensitive to temperature changes.

301,414. Wright, G. M., and **Smith, S. B.** July 27, 1927. *Divided on* 300,148, [*Class* 40 (iii), Telegraphs, Electric].



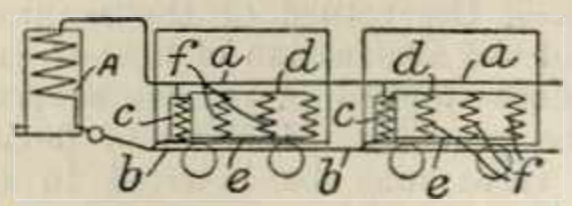
Thermostats.—A mercury-toluene thermostat 1, 2 applies grid-bias to a thermionic valve 4, and a heating-coil is controlled by the anode current of the valve through a relay 3.

301,835. Compagnie des Surchauffeurs. Dec. 6, 1927, [*Convention date*].



Heating vehicles.—A heating boiler A on the locomotive is connected to flow and return pipes *a*, *b*, between which the radiators are connected in series or parallel or series-parallel. Condensation water is returned by thermo-siphon or by a pump, and the boiler is placed at a lower level than the radiators. The radiators *f* may be heated by means of water, steam, or air, in a second closed circuit which is heated by means of the steam which passes through heat interchangers *c* in each vehicle. The system is also applicable for heating road vehicles.

301,836. Compagnie des Surchauffeurs. Dec. 6, 1927, [*Convention date*]. *Void* [*Published under Sect.* 91 *of the Acts*].



Heating vehicles.—Steam is generated in a boiler A and passes into a pipe *a* extending through the vehicles, which feeds the radiators, and the condensed water is returned through pipe *b* to the boiler A. The steam may pass through

an auxiliary heater *c* in each vehicle, and the heat is transferred to water or air circulating in a closed circuit through radiators *f*, connected by pipes *d*, *e*.

301,856. Pfeiffer, W. Dec. 7, 1927, [*Convention date*].

FIG. 1.

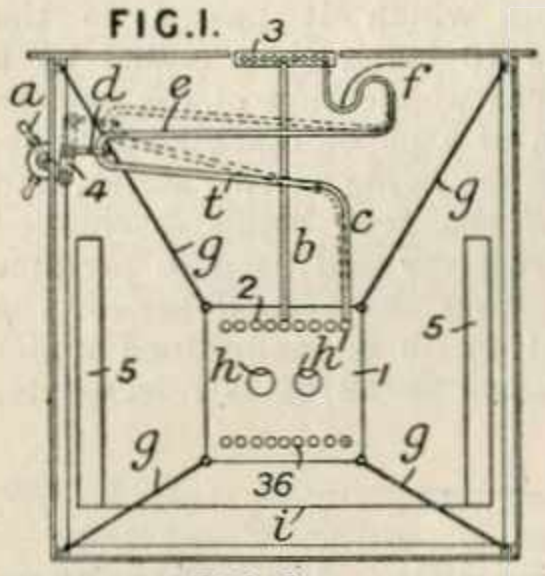


FIG. 2.

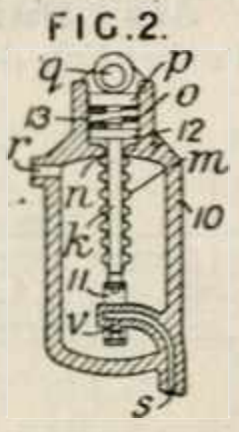
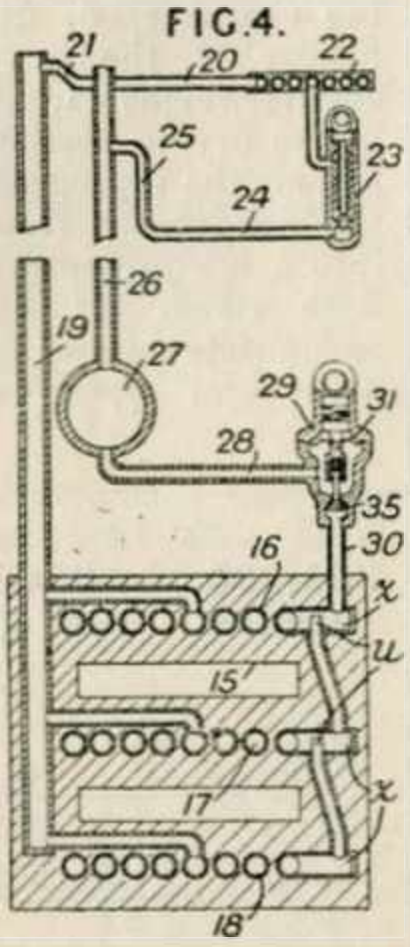


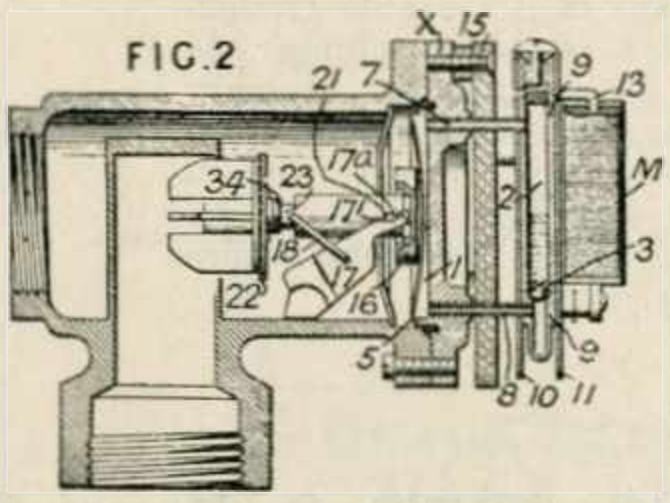
FIG. 4.



Heat-storing apparatus.—In systems of the kind wherein heat is stored in an accumulator block and is withdrawn by the circulation of an evaporated fluid medium, the withdrawal and utilization of heat, are controlled by regulating the return flow of the condensed medium from the heat-utilizing position to the accumulator block. Water, mercury, glycerine, linseed oil and di-phenyl oxide are stated to be suitable media. The accumulator block 1, Fig. 1, is suspended by steel wires or rods *g* to minimize the conduction losses, and fitted with electric heaters *h*, *h*¹. The evaporating coil 2 for the medium is connected by a pipe *b* to the heat-utilizing position 3 which is connected to the coil 2 by flexible return tubes *f*, *e*, *t*, *c*. The return tubes are adjusted by the lever mechanism *a*, 4, *d* so that the inclination of the tube *e* is altered. As shown in full lines the tube *e* permits the condensed medium to gravitate back to the coil 2, and as shown in dotted lines, the return of the medium is prevented and the abstraction of heat from the block 1 is therefore stopped. A reverse evaporating coil 36 may be provided. Instead of flexible return tubes, a valve may be inserted in the return system. The condensate from the heat-utilizing position flows into space 10, Fig. 2, through the pipe *r*. The passage *s* returns to the coil 2 and is controlled by a valve *v* resiliently mounted in a circular yoke 11 connected by a stem *k* to a disc 12 which is slidable in the bore 13 and is pressed downwards by a spring *o* surmounted by a disc *p* in contact with a rotary cam *q*. A tubular member *m* is connected at one end to the stem *k* and at the other end to the valve casing at *n*. The spring *o* tends to open the valve *v* to an extent determined by the setting of the cam *q*. Increase of pressure in the space 10 collapses the membrane *m* and moves the stem *k* upwards against the spring pressure. In an arrangement for central heating, Fig. 4, the accumulator block is heated by combustion products passing through openings 15, the evaporator coils 16, 17, 18 are connected by a rising pipe 19 and branch pipes 20, 21 to the heat-abstracting positions 22 which are connected through valves 23 and bent pipes 24, 25, to the return pipe 26 which leads to a collector 27 connected by a pipe 28 to a control valve 29. The valve 23 is closed positively by the cam and is opened partially, when the cam is adjusted to permit it, by the inherent resilience of the corrugated membrane, and more fully, to varying extents, by the increase in pressure to the valve casing. The valve 29 has a substantially flat member 31 in place of the corrugated sleeve membrane, and the valve 35 is acted upon by a weak compression spring which allows the valve 35 to act as a check to prevent steam from passing directly from the pipe 30 to the pipe 28. The pipe 30 leads to a header *z* of the coil 16 into which projects a tube *u* leading to the header *z* of the coil 17. This arrangement prevents the coils 16, 17 from becoming completely filled and prevents knocking. The main heat storage block may heat another storage block close to the heat-utilizing position by an interconnecting closed pipe system. The heat-utilizing means is then heated by a pipe system associated with the second block.

301,875. Halsey, E. S. Dec. 7, 1927, [*Convention date*].

FIG. 2



Heating buildings.—A steam heating plant, Fig. 1, comprises a basement boiler A, direct-heating radiators B, and a radiator HA which heats the air supplied to the room above. Air may be admitted to the base of the radiator HA either by a passage F leading from the room, or by a passage CA from outside, according to the position of the damper D. A thermal switch T¹ is provided in the room, adapted at a predetermined temperature to close the circuit of an

electromagnet M which controls a fluid pressure device adapted to operate a damper D and thus admit fresh cold air through inlet CA to the radiator HA, and thence into the room. The air from the room is discharged through opening FA. The radiators B are controlled by a thermal switch T which at a predetermined temperature completes the circuit of electromagnets M which control fluid pressure devices adapted to close the steam admission valves V of the radiators. If steam should pass through the outlets E of the radiators while the temperature is still too low, thermal switches T^2 are actuated to close the admission valves V through the same electromagnetic devices. The construction of the valve V is shown in Fig. 2. The casing is closed at its outer end by a plate X to which a flanged snap-action diaphragm 5 is secured so as to enclose a space 1. This space is connected by tubes 7, 8 to a chamber 2 formed by a vertical bore in a square brass column 9, attached to cooling plates 10 of iron and 11 of brass. The lower portion of the chamber 2 contains a ball valve 3 adapted to be lifted by an external electromagnet M, the magnetic circuit of which includes the plate 10, a forked extension of the core 13, and two studs which project inwards through the column 9. A heat-insulating disc 15 is arranged as shown. The chambers 1, 2, contain alcohol, so that when the valve 3 is closed and the diaphragm 5 is subjected to steam heat, the alcohol in chamber 1 is evaporated, and the vapour passes through the tube 7 and condenses in chamber 2 until only vapour remains in chamber 1, and the internal pressure is relatively low. When the thermal switch T or T^1 energizes the electromagnet M, the valve 3 is opened, and alcohol flows into the chamber 1, so that the internal

FIG. I.

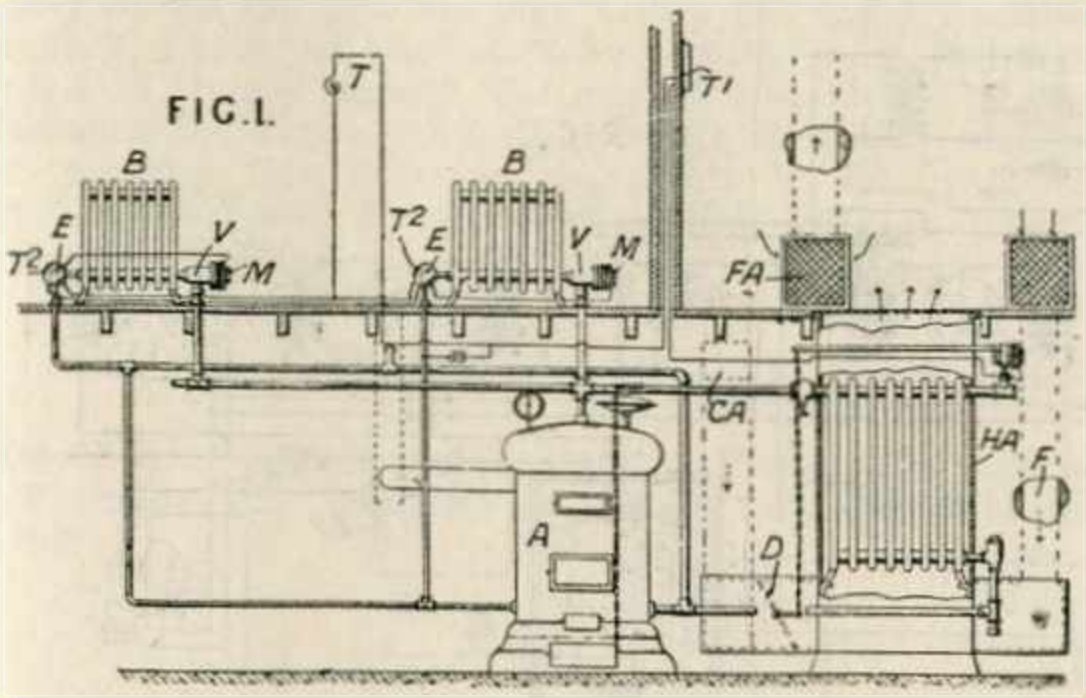


FIG. II.

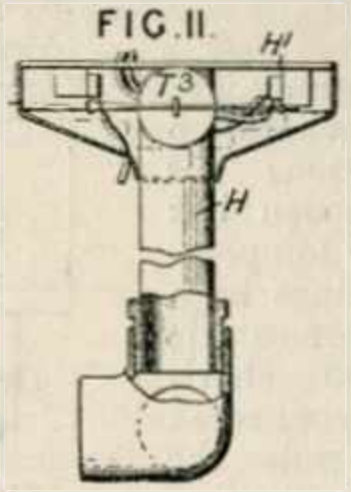
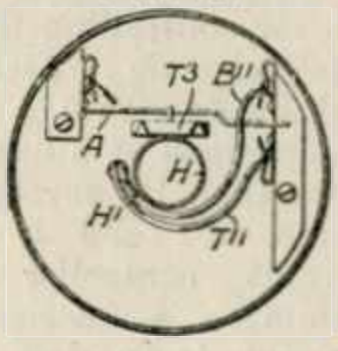


FIG 12.

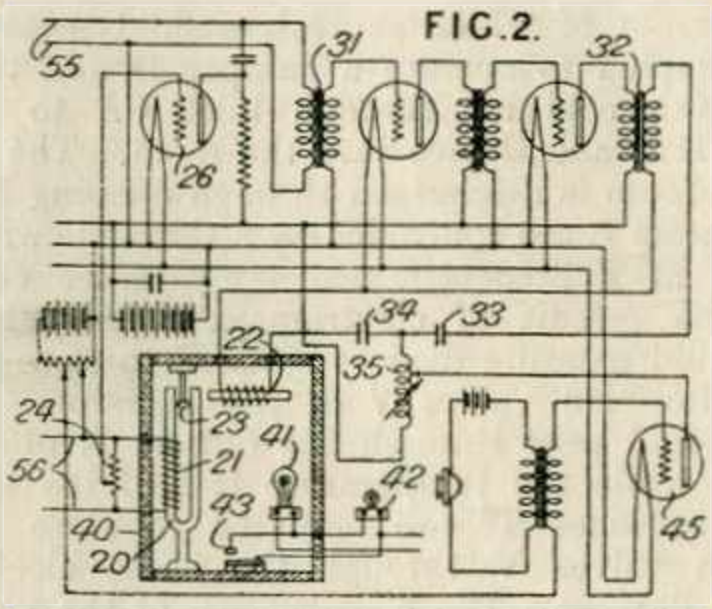


pressure is raised and maintained. The diaphragm 5 is deflected outwards to move the plunger 16 against the points 17^1 of the short arm of a weighted fork lever 17 pivoted at 17*a* on a pin sliding in slots 21. The pin is carried by a spring pressed collar and is maintained in its extreme right hand position during the initial movement of the lever 17 and forked link 18 which operates the valve 22. A rapid closing movement of the valve is thus effected by the toggle action of levers 17, 18, until these levers are in line. The final closing is effected by the movement of the levers as a whole, the pin 17*a* sliding in its slots against the action of the spring. The closure surface of the valve 22 is of yielding material. When the temperature in the room allows the switch T or T^1 to open, the ball valve 3 falls, and the vapour pressure is soon reduced by distillation of the alcohol from chamber 1 to chamber 2, so that the weighted lever 17 opens the steam valve 22. The member 34 carrying the valve is internally threaded to form an adjustable connection with the threaded stem 23, and a locking pin is provided to secure the parts in adjusted position. The device M which actuates the damper D is similar in construction, except for the manner of supplying heat to the alcohol. In this case (Figs. 9 and 10, not shown), the plate X contains an annular chamber which is connected to a steam pipe. The thermal device fitted to the radiator outlet E is illustrated in Figs. 11 and 12. A horizontal tube H is sealed at its outer end by a large cooling disc H^1, adjacent to a thermostatic capsule T^3 or bimetallic device adapted to actuate a switch arm A at a temperature of 160°—180°F. preferably with a snap action. When the radiator is filled with steam, but with no steam passing through the outlet E, the capsule T^3 is at about 110°F. but if steam displaces air out of the horizontal tube H by difference of density, the capsule T^3 is raised to about 210°F., and the arm A is raised to break contact with the wire T^{11} from the room thermostats, and make contact with the wire B^{11} so as to energize the electromagnet M and close the steam supply valve 22 until the plate H^1 has cooled sufficiently to restore normal conditions. The tube H may be in any position so long as the closed end is not lower than the open end.

301,926. Westinghouse Electric & Manufacturing Co., (Assignees of *Wolf, L. J.*). Dec. 9, 1927, [*Convention date*].

Thermostats.—A tuning-fork 20, for regulating the frequency of an electric oscillation generator, is enclosed in a thermally-insulated case 40 heated by a lamp 41 which is in series with an external indicating-lamp 42. The indicator is shunted by a thermal switch 43. When the switch is open, the indicator is bright, and the heating-effect reduced. When the switch is closed, the heating-effect of the lamp 41 is increased, and the indicator 42 is dim. Failure of the current supply is indicated by the extinction of the indicator 42.

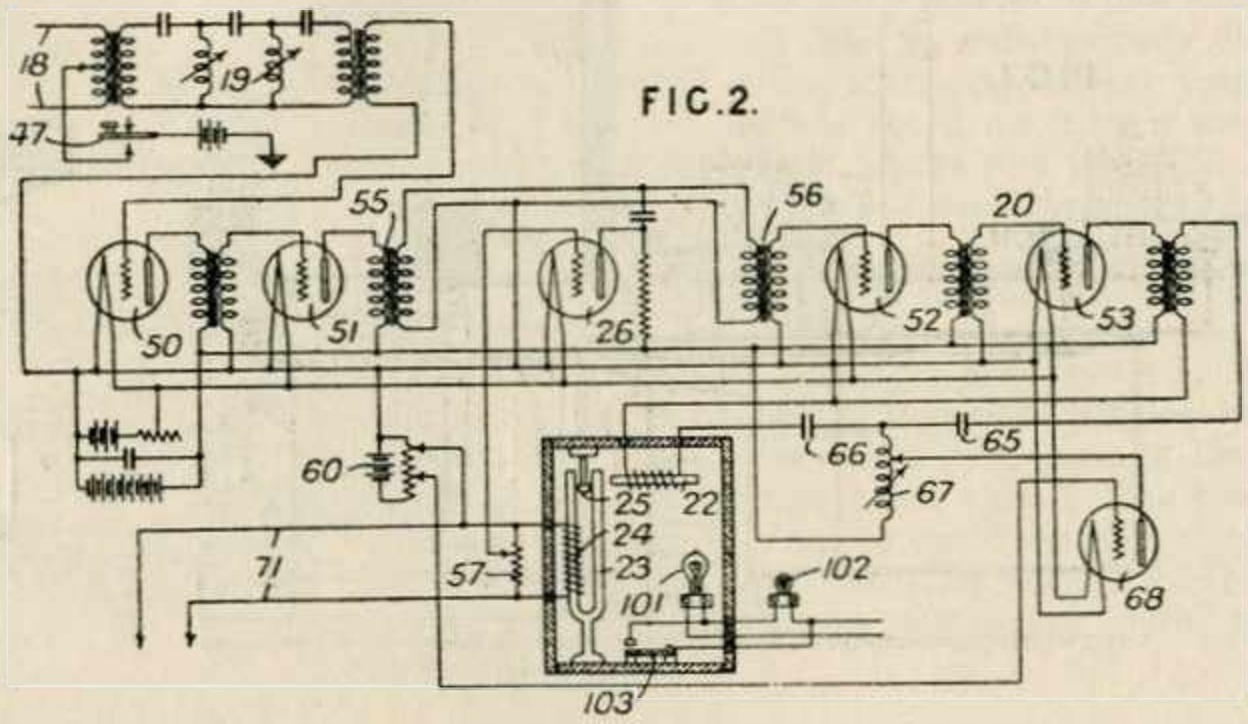
FIG.2.



301,927. Westinghouse Electric & Manufacturing Co., (Assignees of *Wolf, L. J.*). Dec. 9, 1927, [*Convention date*].

Thermostats.—A tuning-fork 23 for controlling the generation of electric oscillations is arranged within a wooden box maintained at a higher temperature than its surroundings by a lamp 101 and a thermostatic circuit controller 103 short-circuits a series-connected second lamp 102 outside the box when the temperature falls.

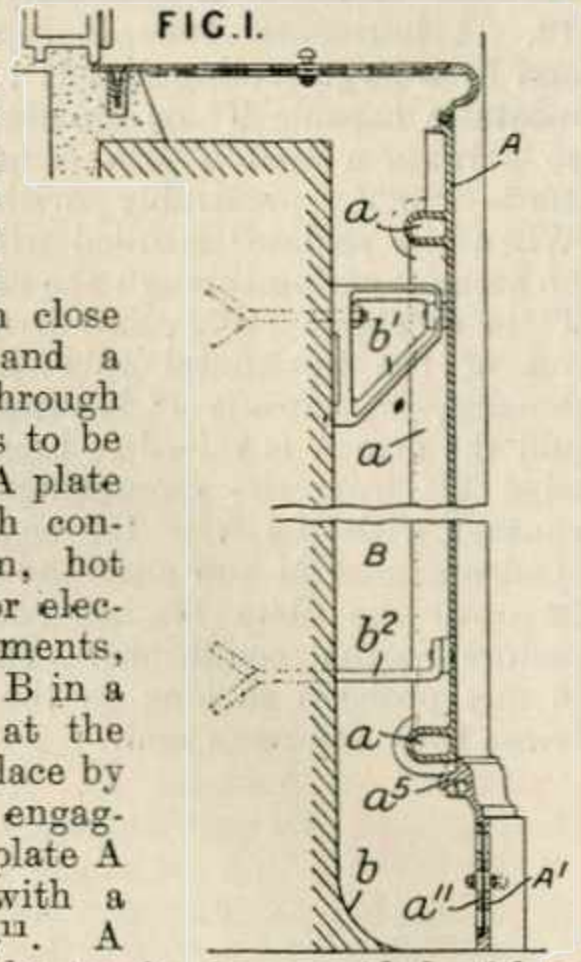
FIG.2.



302,073. Case, W. G. Jan. 23, 1928.

Radiators. — A heating or cooling device for buildings is provided with an extensive flat radiating plate having the heating passages cast or in close contact with it, and a space at the back through which air may pass to be heated or cooled. A plate A is provided with conduits *a* for steam, hot water, hot gases, or electrical heating elements, and closes a recess B in a wall. A grid A^1 at the bottom is held in place by hooked portions a^5 engaging in slots in the plate A and is provided with a regulating slide a^{11}. A horizontal grid at the top is also provided with a regulating slide a^{11}. The plate A is supported by brackets b^1, b^2, and the bottom of the space B is curved at *b* to facilitate cleaning. The grid A^1 may be placed at the back of the space B instead of the front.

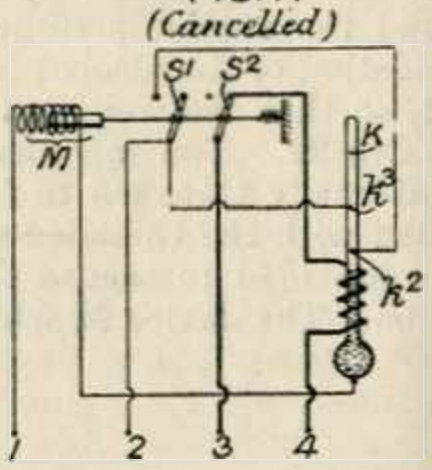
FIG.1.



302,344. Akt.-Ges. der Maschinenfabriken Escher, Wyss, et Cie. Dec. 15, 1927, [*Convention date*].

Thermostats. — A means for maintaining temperature between limits k^2, k^3 on a thermometer K includes a relay M which is actuated to break the the main heating or consuming circuit 3, 4 when the top limit k^3 is reached and is only de-energized to allow this circuit to be remade when the lower limit k^2 is reached. This is achieved by connecting the points k^2, k^3 by a

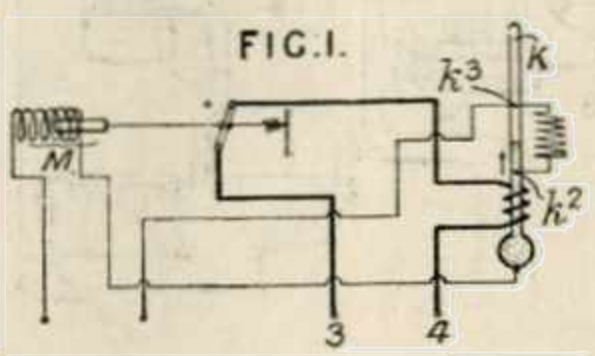
FIG.1.
(Cancelled)



resistance so proportioned that the current through the relay M by way of contact k^2 and the resistance is insufficient to actuate the relay but is sufficient to retain it actuated.

The Specification, as open to inspection under Sect. 91 (3) (a) describes a construction viz : that shown in the Fig. 1 (cancelled) in which when the mercury in the thermometer K reaches the

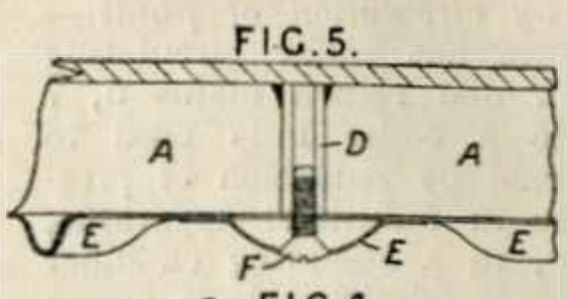
FIG.1.



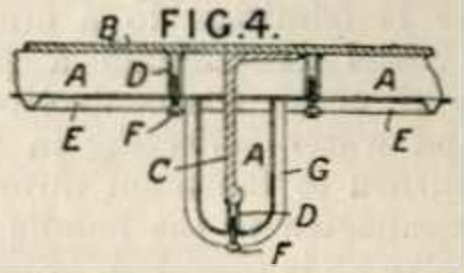
point k^3 a secondary circuit between the points 1, 2 is closed to the relay M, the core of which then moves to the left and not only breaks the main circuit 3, 4 at s^2 but also completes a maintaining circuit at s^1 and through the contact k^2 which maintains the current through the coil M while the mercury falls between the points k^3, k^2. This subject-matter does not appear in the Specification as accepted.

302,449. Bean, A. Aug. 18, 1928.

FIG.5.



B, FIG.4.



Nonconducting coverings for heat. — Sheet asbestos or other sheet insulating material A is placed against the panelling or deck B of a ship and is secured by screws F engaging in tubes D welded to the deck B and passing through the sheets A, and through galvanized straps E. Channel or angle irons C may be surrounded by insulation A, Fig. 4, held in position by a cover G which is secured by a screw F passing into a tube D welded to the angle iron.

302,454. Etablissements Poulenc Frères, and **Chagnaud, A.** Oct. 28, 1927.

FIG.2.

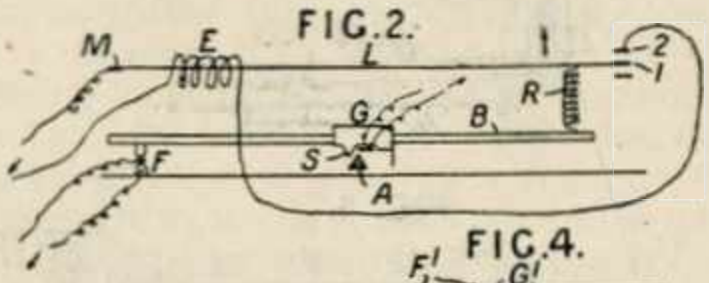
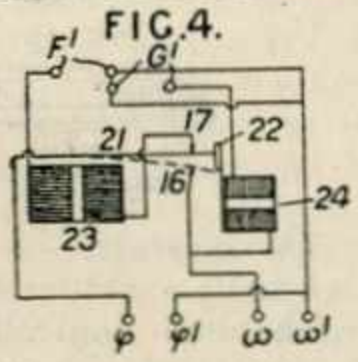


FIG.4.

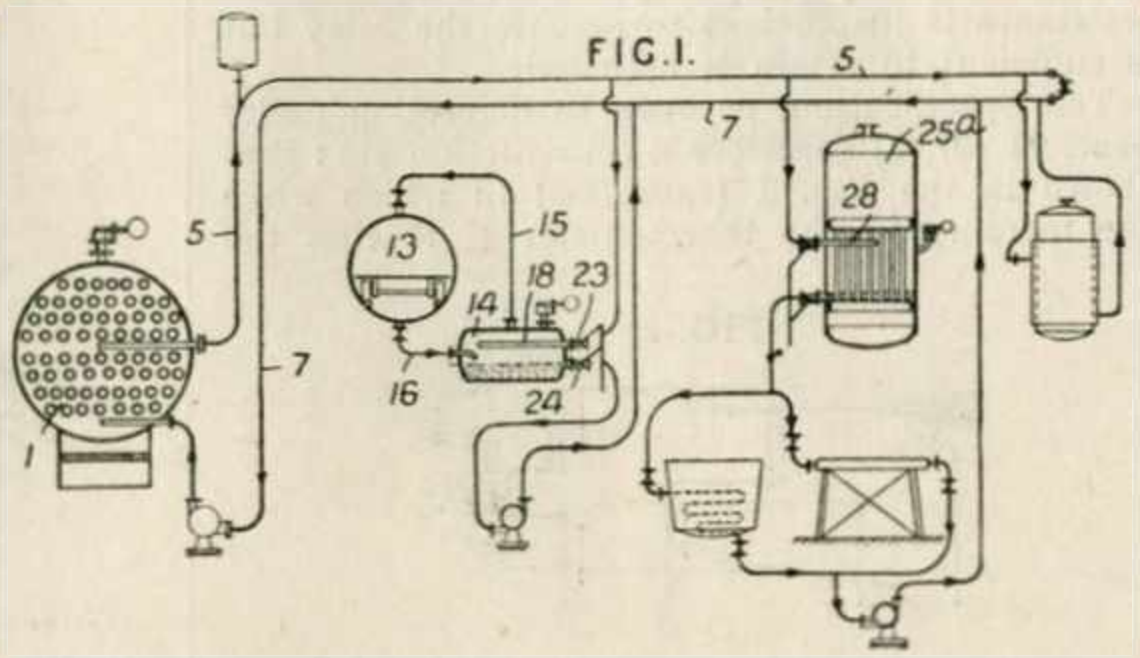


Thermostats.—A device for controlling temperature employs an indicating device such as a galvanometer and a member which reciprocates in a direction at right angles to the pointer so as to contact with it and thereby complete an electric circuit when the pointer is in a predetermined position, another electric circuit being completed independently of the pointer when the pointer is in any other position. The indicating pointer A, Fig. 2, which may be controlled by a thermo-electric couple in a furnace, moves in a horizontal plane immediately below a vertically reciprocating bar B. The bar B carries a slider with a pair of contacts G, while another pair of contacts F are arranged below the bar. The slider is so arranged that when the temperature is too high, the pointer passes below the contacts G which are thereby closed and the temperature reduced. If the pointer is clear of the slider as the result of the temperature being too low, the bar B descends sufficiently to close the contacts F and increase the heating. A knife edge S is provided on the slider, so that if the pointer A is immediately below it, it is deflected either to left or right to close contacts F or G. The bar B is reciprocated by means of a bimetallic strip L fixed at M and having a heating resistance E connected to the electric supply circuit independently of the galvanometer circuit. The strip L when cool completes the heating circuit through contacts 1, 2, and when heated by the coil E is deflected downwards to break the circuit. The strip L rocks the bar B through a spring R, or by completing the circuit of electromagnets, or otherwise. Fig. 4 indicates the circuit arrangement, in which ω, ω^1 are the terminals connected to the furnace heater, and ϕ, ϕ^1 are the mains terminals. The armature 21 of an electromagnet 23 co-operates with a latch 22 forming the armature of an electromagnet 24. Terminals F^1, and G^1 are associated with the contacts F, G, of Fig. 2. If the furnace is too cold, the contacts F^1, F^1 are closed, completing the circuit ϕ^1, ω^1 F^1, F^1, 23, 17, 21, ϕ, whereby the magnet 23 is energized to close contact 16. This completes circuit ϕ, 21, 16, ω, and increases the heating. The same result would follow if the armature 21 were latched in contact with 16 when the contacts F^1, F^1 were closed. If the furnace is too hot, the contacts G, G^1 are closed, completing the circuit through magnet 24 and releasing the latch 22 so that the circuit to the heater is broken. Repeated closures of contacts G^1, G^1 then have no effect until the contacts F^1, F^1 have again been closed.

302,621. Brandt, H. Aug. 9, 1927.

Heating by circulation of fluids.—High pressure hot water circulating through flow and return mains 5, 7 connected to a boiler 1 is used to generate steam by reduction of pressure for use in industrial apparatus, for example, in a steaming chamber 13. Water is admitted to a steam generating vessel 14 through a perforated pipe 18 under the control of a valve 23, and water collecting in the vessel is returned to the main through a valve 24 connected to the handle by which the valve 23 is operated. Steam is led off from the generating vessel through a pipe 15 and water of condensation is returned from the steaming chamber or the like through a pipe 16. Steam for heating a tubular evaporator 25a is generated inside the evaporator by the reduction of pressure of hot water introduced through a pipe 28. Condensed steam from the evaporator is passed through further heating appliances before returning to the main. The steam-generating vessel 14 may be surrounded by a heating jacket connected to the flow and return mains, and the condensate in the chamber 13 may be led off outside the circulation system. Specifications 2987/79 and 11389/88 are referred to.

FIG. 1.

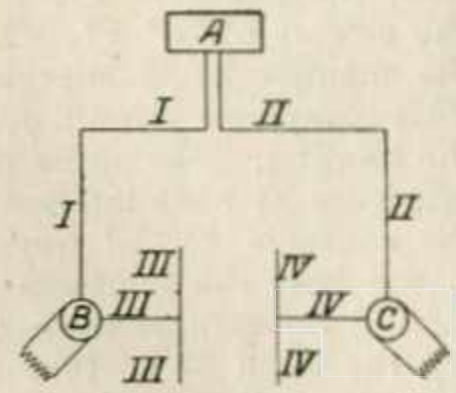


302,639. Brandt, H. Aug. 9, 1927. *Divided on* 302,621. *Drawings to Specification.*

Heating by circulation of fluids.—In a high-pressure hot-water circulation system in which steam is generated for heating purposes by the reduction of pressure of the hot water, as described in Specification 302,621, the valve controlling the supply of hot water to the steam generating chamber is connected for simultaneous operation with the valve controlling the discharge of water from the chamber, or is operated automatically in accordance with the pressure in the chamber. Specification 2987/79 also is referred to.

302,691. Schiele, E. L. R. A., and **Wittenburg, F. H.,** (*trading as* Meyer, R. O., [Firm of]), and **Margolis, A.** Dec. 20, 1927, [*Convention date*].

Heating by circulation of fluids. — In a system of heat and power transmission by means of steam, an electricity works A utilizes steam at 30 atmospheres pressure, and delivers it at 5 atmospheres pressure to pipe lines I, II, from which it is supplied to consumers. The steam pressure at B may still be 3 atmospheres, and it may then be utilized in an electric generator which delivers it at 0.5 atmosphere to a pipe line III. A hot water distributing system IV may be connected at C.



302,736. Bastian-Morley Co., (Assignees of *Lonergan, S. J., and Ginther, H. E.*). May 28, 1927, [*Convention date*]. *Divided on* 291,076.

FIG 5.

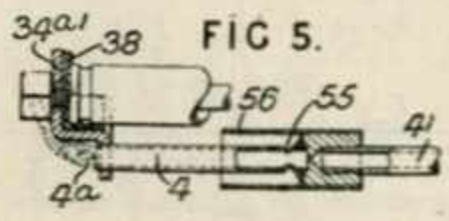
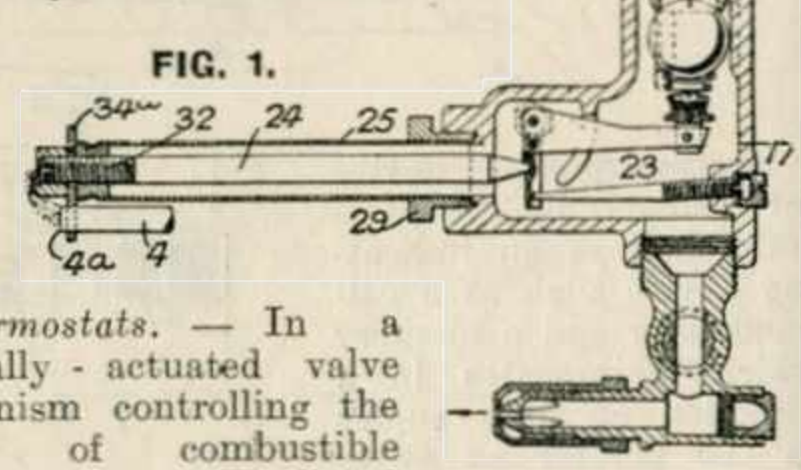
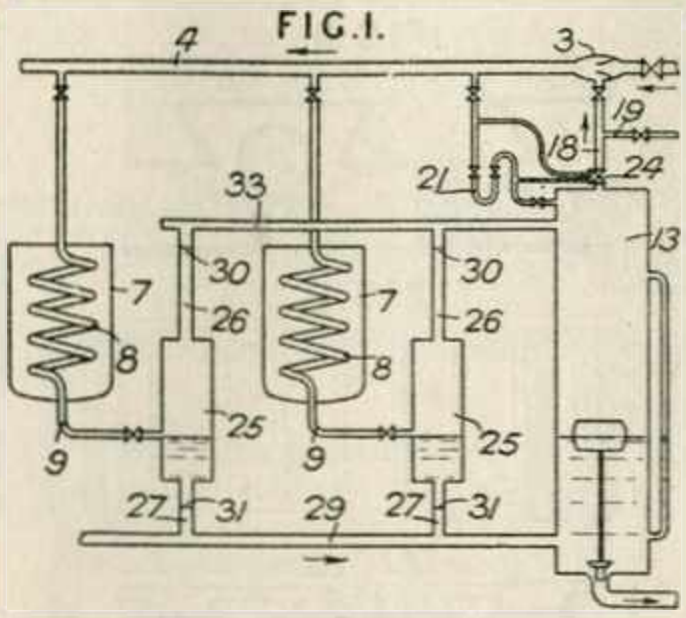


FIG. 1.



Thermostats. — In a thermally-actuated valve mechanism controlling the supply of combustible medium to a burner and dependent upon the heat from a pilot jet, means are provided to prevent overheating of the thermal elements by the pilot flame. A valve 22 is controlled by non-expansible and expansible members 24, 25, one end of the rod 24 engaging a linkage 23 connected to the valve 22 and the other end 32 being fixed to the tube 25, which is secured to the valve casing 17 by a nut 29. The end 32 of the members 24, 25 is under the action of a pilot flame 4^a so that normally the valve 22 is open, but should the pilot flame fail the valve 22 closes. overheating of the tube 25 is prevented by a guard plate 34^a, or 34^{a1}, with or without a layer of insulating material 38, such as asbestos.

302,903. Rosenblad, C. Dec. 22, 1927, [*Convention date*].



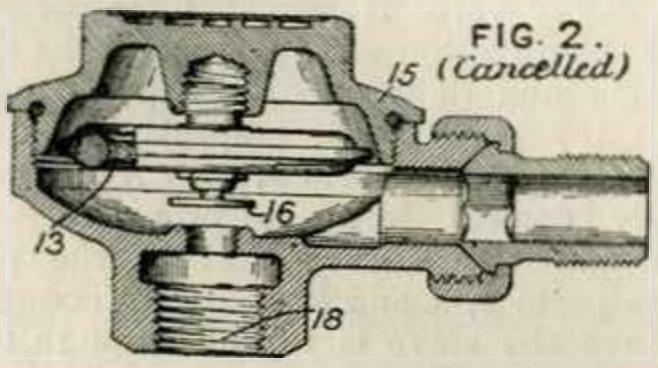
Heating systems and apparatus.—In steam heated apparatus e.g., boiling, evaporating, or drying apparatus, in which a number of units are connected in parallel between supply and return pipes, the excess steam being returned or otherwise used, the outlet from each apparatus to the return pipe is throttled to prevent any return flow of the condensate. A separator is provided in each outlet, and is connected to a common condensate main and a common steam outlet main. Steam passes through an injector 3 to a pipe 4 which supplies heaters 8 associated with boiling, evaporating, or drying apparatus. Steam separators 25 are provided in each outlet 9, and the steam and condensate outlets 26, 27 are throttled at 30, 31. Steam and condensate pass into common mains 33, 29 respectively, and thence to a receiver 13. In the event of the orifice 31 being blocked, condensate will pass with the steam into the receiver 13. The separated steam passes through a pipe 18 either to the injector 3 for return to the system, or to the pipe 19 for use in some other steam-consuming device. A valve 24 is provided to regulate the pressure difference between the pipe 4 and the receiver 13. The valve 24 may be automatically controlled by the pressures on the two sides, and a pressure gauge 21 may be provided. In the event of any abnormal reduction of pressure in the apparatus 7 the throttles prevent a large back flow of condensate. In a modification, the throttles 31 in the outlets from the condensate separators may be replaced by **U**-shaped water seals.

The Specification as open to inspection under Sect. 91 (3) (a) describes a modification Fig. 1 (cancelled) not shown, in which the heating devices discharge directly through a throttle into a common main leading to a common separator corresponding to the receiver 13. This subject-matter does not appear in the Specification as accepted.

303,159. Dunham Co., Ltd., C. A., (Assignees of *Crosthwait, D. N., and Dunham, C. A.*). Dec. 30, 1927, [*Convention date*].

Steam traps.—In a steam trap employing an outlet valve operated by a thermostatic capsule containing a volatile liquid, a liquid mixture is employed having a vapour pressure in excess of that of saturated steam by an approximately constant amount. The liquid may consist of benzene 99.5 per cent by volume, and denatured alcohol 0.5 per cent. The alcohol contains 5 per cent water, the remainder being ethyl alcohol 10 parts, and methyl alcohol 1 part. Specification 241,511 is referred to.

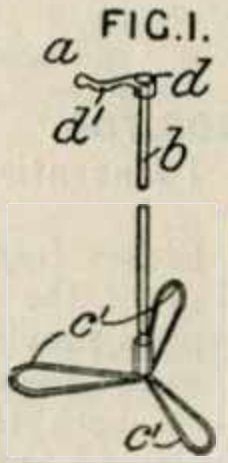
The Specification as open to inspection under Sect. 91 (3) (a) describes also a steam trap suitable for the outlet of a steam-heated radiator comprising a flexible metal capsule 13 containing a volatile liquid and carrying a valve 16 controlling



the outlet 18. The capsule is adjustably mounted in the cover 15 of the casing. Another suitable mixture comprises distilled water 71.5 per cent by volume, denatured alcohol 28 per cent. and benzene 0.5 per cent. The proportions may alternatively be chosen so that there is a gradual increase in the vapour pressure relatively to that of steam, with rise of temperature. The excess of vapour pressure may be about 11lb. per sq. in. This subject-matter does not appear in the Specification as accepted.

303,269. Kermode, G. N. Dec. 30, 1927.

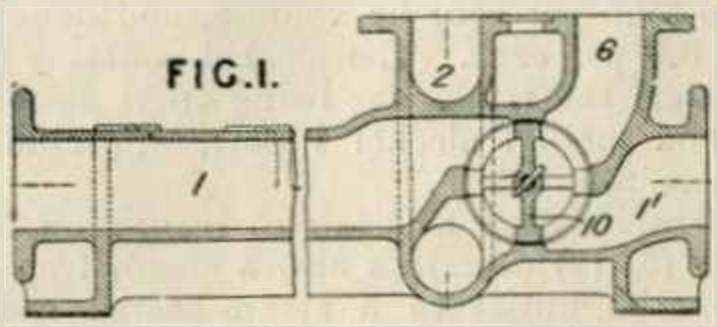
Bed-warmers and airers.— A device for supporting a hot-water bottle in a bed comprises a rod *b* with wire foot supports c^1, and a lateral arm d^1 on which a hot-water bottle may be suspended by means of its handle strap. The lower end of the rod *b* is polysided, and the wire supports are associated with it.



303,593. Campbell, Achnach, & Co., Ltd., and **Campbell, D. C.** Oct. 22, 1927.

Hot-water bottles. — A hot-water bottle 1 is constructed to resemble an animal or nursery figure. The periphery 2 may be of a different colour, and other markings 3 may represent features or limbs. Narrow projecting parts may have the seam carried across the base to exclude the water.

303,596. Holden & Brooke, Ltd., and **Brooke, R. W.** Oct. 27, 1927.



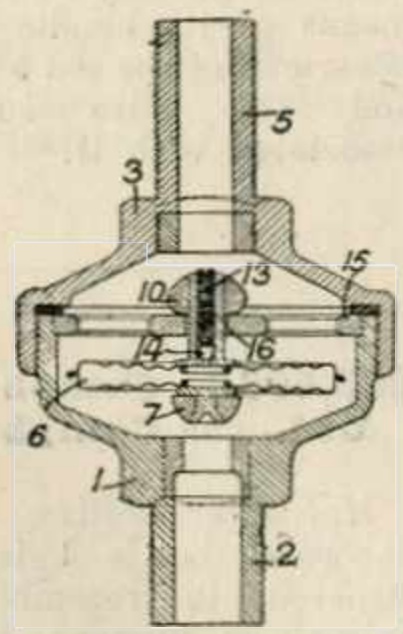
Heating buildings.—In a system for heating buildings by hot water which is circulated by a pump, a 4-way valve is provided for periodically reversing the direction of flow through the system. The suction and delivery of the pump are connected to the ports 2, 6, respectively, and the heating system to the ports 1, 1^1. A rotary valve of slightly conical form is provided with a diametral partition 10, so that in the position shown the ports 2, 1 and 6, 1^1 are in communication. When the valve is turned through 90° the ports 2, 1^1 and 6, 1 are in communication, and the flow through the system is reversed. The valve may be provided with a **U**-leather packing, and the spindle with a stuffing box. Specification 269,984 is referred to.

303,612. Smith, F. D. Nov. 16, 1927.

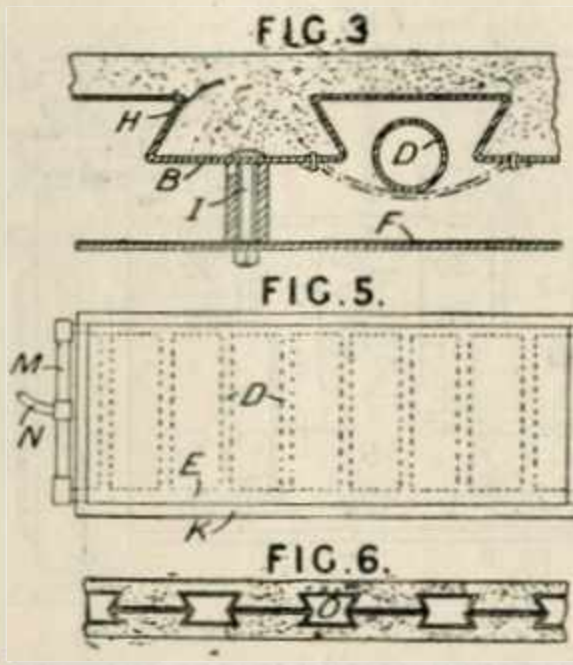
Nonconducting coverings for heat.—Weftless cord cloth for use as lagging material is produced by coating fibrous yarns or metal wires with rubber, twisting or braiding the coated yarns to form ends and finally passing the cords through rolls to form them into a flat web or strip. Specification 269,132 [*Class* 140, Waterproof &c. fabrics], is referred to.

303,754. Ribes, P. C. Jan. 6, 1928, [*Convention date*].

Steam traps.—A steam trap of the thermostatic type is provided with two closure members which close both the inlet and outlet of the trap. The steam pipe 5 is connected to the cover 3 of the trap which is screwed to the body 1 carrying the outlet pipe 2. A capsule 6 carries a closure member 7 on its lower side, and a tube 16 with closure member 10 on its upper side. The tube 16 passes loosely through a supporting plate 15, and the spherical valve members 7, 10 are enabled to adjust themselves to their seatings. The capsule may contain a volatile liquid such as hexane 80 per cent, benzene 20 per cent, which is introduced through the tube 16 and retained by the ball valve 16 and screw 13.



303,768. Barratt, S. H. H. Oct. 8, 1927.



Radiators.—The floors and walls of a railway or road coach or building and of the kind consisting of a corrugated sheet metal support B covered on one side with plastic composition H such as magnesite composition, are heated by pipes D placed at the mouths of the corrugations and supplied with steam or exhaust gases. A base F, such as sheet metal faced with asbestos, is secured by bolts I below the pipes to prevent radiation downwards, and perforations may be made in the layer H to promote radiation to the room or coach. The floor units or panels may be mounted in frames K, Fig. 5, to be fitted on the main structural frame, and the pipes D may be fed by pipes E, M, and a flexible coupling pipe N. In a modification shown in Fig. 6, two units or panels are placed back to back either in contact or spaced apart, thus forming conduits O for the pipes D or to receive hot exhaust gases directly.

304,619. Godfrey, E. L., and **Wrentmore, G. W.** Oct. 15, 1927.

Thermostats.—The temperature in an incubator or other device is regulated by a heat sensitive device adapted to control the air or gas and also to control an electric heater where such is incorporated. A heat sensitive device *a* in the incubator chamber actuates a rod *c* pivoted at *d* and carrying a flue damper *f*. An electric or combustion heater is placed in the chamber *i*, products of combustion escaping through passages *j*, *k*. The rod *c* co-operates with a finger *l*, Fig. 3, adjustably mounted on an arm *m* pivoted at *n*. The opposite end of the arm *m* engages a tappet *o* on a boss *p* which is rigid with a balanced lever *q* carrying contacts *s*, *t*, *u*, which dip into mercury cups. These contacts control heating resistances in parallel. In a modified switch, Fig. 6, contacts *x* are carried by a balanced pivoted arm *z* carrying a pinion which engages with a toothed rack on a lever 3 which is actuated by the rod *c*. In the event of derangement of the switch mechanism, the rod *c* is still free to control the damper. The mercury cups may be of the non-spillable type. The heating resistance may be tapped and connected to the switch so that when

closed the main heater is in circuit, but when the contact is opened, a second element is connected in series. A series of heating elements may be associated with a series of switches. An electric lamp may be employed as a visual indication of the operation of the electric control, and may also

FIG 1.

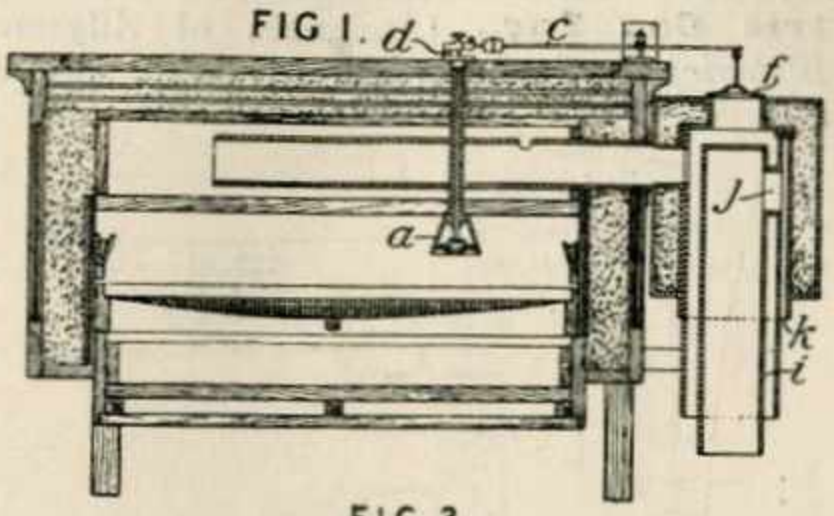


FIG.3.

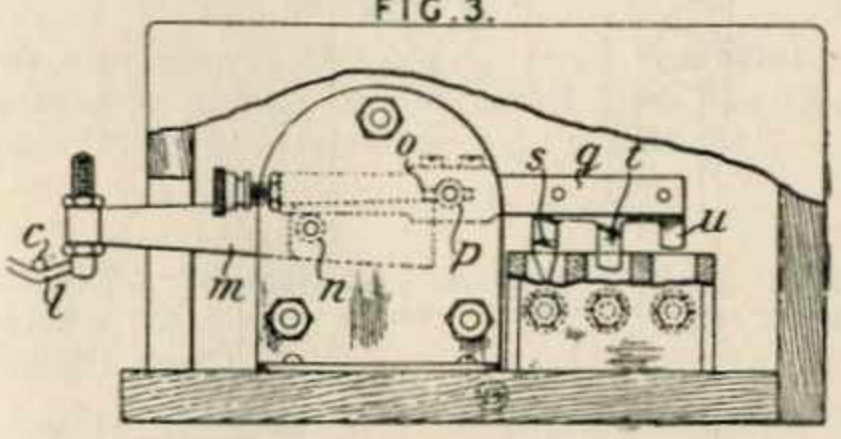
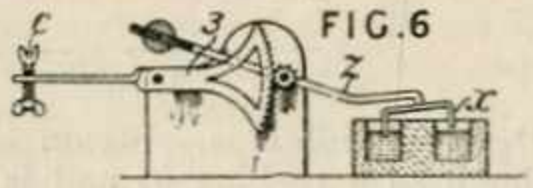


FIG.6



function as a series resistance. The heating resistance may be controlled by a hand-operated rheostat. Condensers may be employed to prevent arcing. Specification 284,373 [*Class* 5 (ii), Housing &c. animals], is referred to.

304,689. Westinghouse Electric & Manufacturing Co., (Assignees of *Ritter, J. G.*). Jan. 24, 1928, [*Convention date*].

FIG.3.

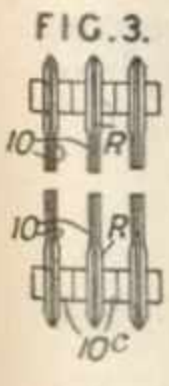


FIG.6. 4 5 R

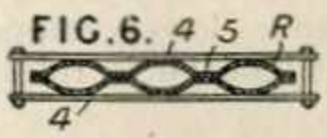


FIG.11. H

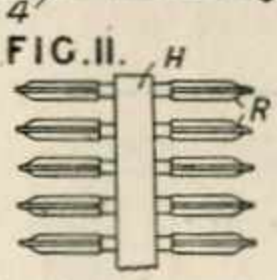
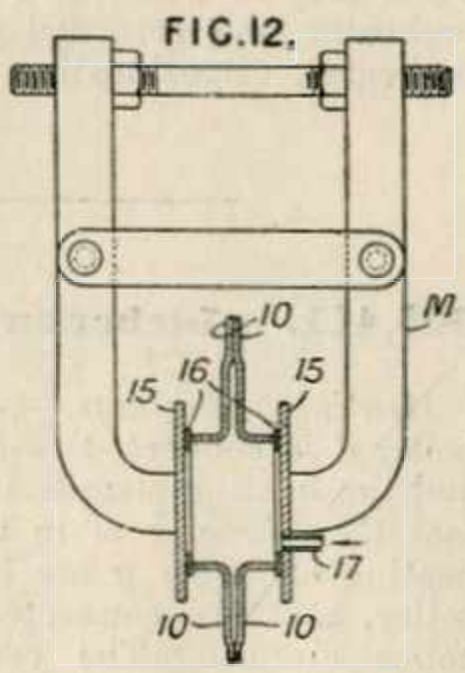


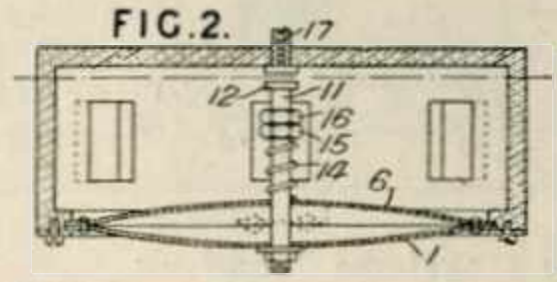
FIG.12.



Radiators.—Flat closed hollow articles such as radiator elements are made by hermetically joining as by welding or brazing shaped flat portions of sheet material along their edges and along several parallel or concentric lines intermediate their edges, and expanding the article to the desired shape by forcing thereinto a fluid at moderate pressure while at least partially unconfined by a shape-determining frame. Two metal sheets are welded together along interior lines 5 and at their edges except at two corners, into which nipples are inserted. The article is then inflated by air or liquid pressure (about 40 lbs. per sq. in) in a frame 4 to form radiator elements R, which are then attached by their nipples to top and bottom headers H, e.g. for cooling transformers. Two metal sheets 10 shaped as in Fig. 12 and welded at their edges face to face, are placed between jaws 15 with gaskets 16 in a frame M and partly inflated by pressure through a duct 17. The edges 10c are then welded to similar edges 10c to form a radiator as in Fig. 3.

304,724. Metropolitan-Vickers Electrical Co., Ltd., (Assignees of *Jackson, R. P.*). Jan. 25, 1928, [*Convention date*].

FIG.2.



Thermostats.—Upon change of temperature, a bimetallic element 6 bends and acts through a spring 14 and rod 11 on a curved diaphragm 1 which, when the spring 14 has been sufficiently strained or relaxed, buckles or unbuckles suddenly so producing a quick closing or opening of contacts 12, 17. The bimetallic element 6 may take the form of a disc or of a star or cross with a number of arms extending outwards from a centre It is clamped to the diaphragm 1 at its edge. The tension of the spring 14 may be adjusted by a nut 15 and locking nut 16.

305,048. Rheinhold & Co. Vereinigte Kieselguhr-und Korkstein-Ges. Jan. 30, 1928, [*Convention date*].

FIG.1.

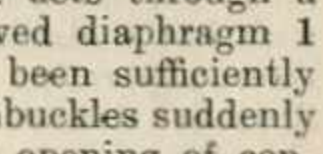
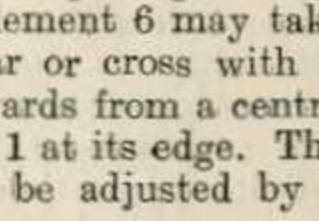


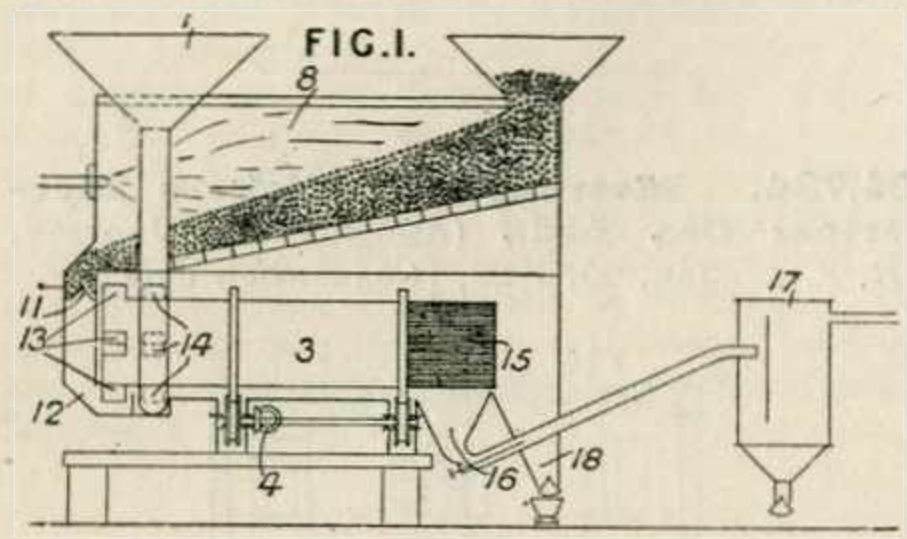
FIG.7.



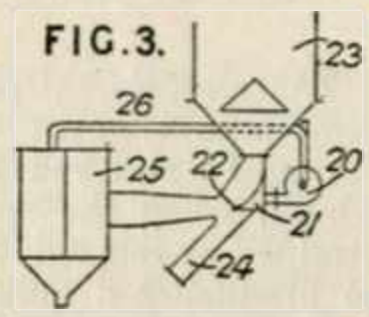
Nonconducting coverings for heat and sound. — A covering which provides air insulation consists of angular members *a*, Fig. 1, of thin sheet metal connected by small rings *b*, so that they may be applied to a surface such as a pipe, Fig. 7. Other connecting devices may be used, such as stamped-out tongues of metal, or a narrow connecting strip of the metal itself which can be bent. The material may be sheet metal, foil, pasteboard, plywood, metal or other fabric. The material is preferably such as will lose a minimum

amount of heat by radiation, and it may be coated with metal for this purpose. The wall may be notched to increase the pliability of the chain when applied, for example, to pipes of different diameter. The points of contact between each member and the surface to be protected are made as few as possible by using straight edges for curved surfaces, and saw-like or curved edges for straight surfaces. Specifications 21113/91 and 1061/14 are referred to.

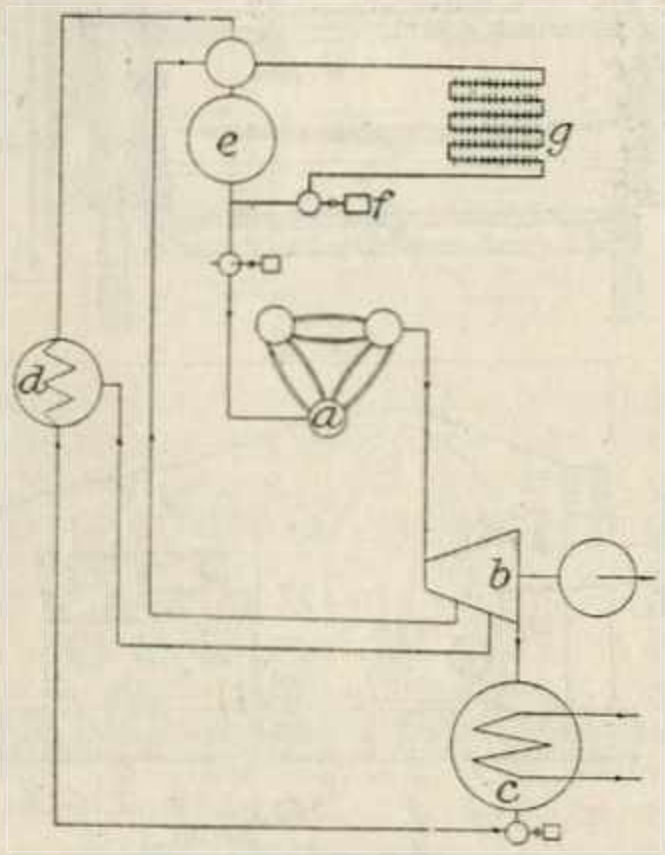
305,106. Morgan, J. S. July 28, 1927.



Heating systems and apparatus.—Materials which are substantially dry to the touch are heated by mixing with hot metallic shot, and then separating the shot. Shot is defined as small objects whose mean diameter is less than one inch. The shot is heated by direct contact with furnace gases in a container 8, Fig. 1, and is fed into a rotating cylindrical shell 3, along with a definite proportion of the material under treatment supplied through a hopper 1. The shot passes into a compartment 12 and is fed by buckets 13, while the material is fed by buckets 14. Powdered coal may be thus treated, and the semi-coke is separated by a sieve 15, passes into a funnel 16, and is carried by the evolved gas to a separator 17, while the shot falls into a shoot 18. The retort 3 is totally enclosed, and is sealed by the columns of shot and coal, while it is rotated through bevel gearing 4. The valve 11 may be omitted if shot of $\frac{1}{16}$ to $\frac{1}{4}$ in. is used. The shot and coke may be separated by blowing with a narrow horizontal jet of gas, which may be the hot distillation gas or cooled gas. In Fig. 3, a fan 20 injects gas into a box 21 through a horizontal jet 22 against material from the retort 23. Coke is carried to a separator 25, and shot falls into a pipe 24. Gas returns to the fan through pipe 26. In a modified form of retort the material and hot shot are fed into an oscillating trough on a horizontal axis, in which the heat treatment takes place. Additional means for agitating the material may also be provided. The metallic shot effects a simultaneous heating and comminution of the material. The shot may be handled pneumatically or magnetically, and may be separated from the material by these means.



305,146. International General Electric Co., Inc., (Assignees of *Allgemeine Elektricitäts-Ges.*). Jan. 31, 1928, [*Convention date*].



Heating buildings.—Steam is supplied from a boiler *a* to a turbine *b*, and is tapped off at two points and supplied to two preheaters *d*, *e*. Condensate from the condenser *c* passes to the surface preheater *d* and then to the direct mixture preheater *e*, and is then returned to the boiler. A branch circuit is connected across the preheater *e* so that hot water may be passed through heat-radiating apparatus *g*, which may heat a ceiling to prevent condensation. A circulating pump *f* is provided if necessary. The water for heating purposes may, alternatively, be taken from feed water accumulators and the circulation may be controlled automatically in accordance with temperature or humidity. In another form, the hot water may be withdrawn from a high temperature preheater and returned to a lower temperature preheater. Specification 17265/00 is referred to.

305,411. Liebenow, W. April 18, 1928.

Heating buildings. — An electrically-heated boiler *d* is connected to a tank *e* and radiator *a*, and the heating elements are controlled by a contact thermometer *m* in the tank. The electric heating elements *g* are built into the lid of the boiler, and are connected by switches *l* to the house circuit. The controlling switch q^1 is carried by a pivoted lever *s* which also carries the armature *q* of an electromagnet *p* energized by a battery *o*. The electromagnet circuit includes the contact thermometer *m* in the tank, and an alternative thermometer *u* in the room adapted to

FIG.1.

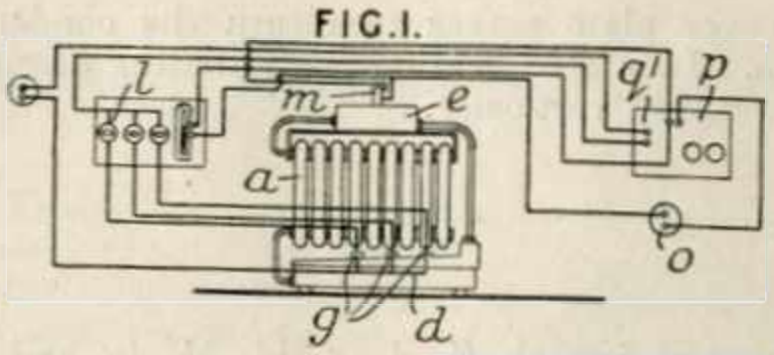
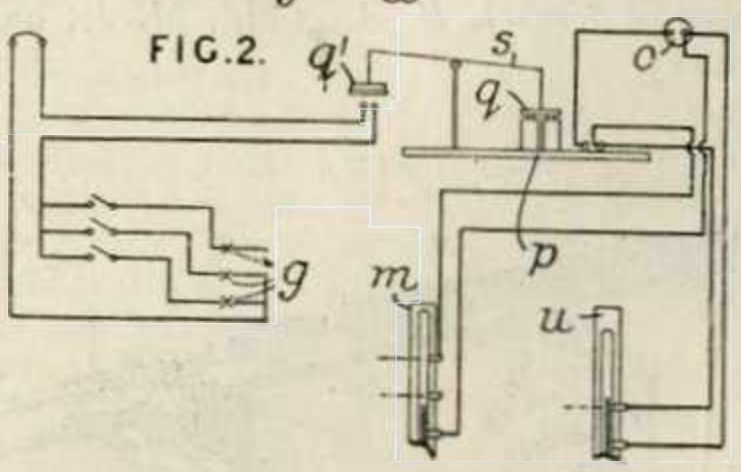


FIG.2.



break the circuit at normal room temperature. The magnet *p* may be energized from the main circuit through a transformer or resistance.

305,577. General Carbonic Co., (Assignees of *Minor, H. R.*). Feb. 7, 1928, [*Convention date*].

Heating systems and apparatus.—Relates to apparatus for heating by steam &c., and of the kind used for vulcanizing rubber, distilling under pressure, and cooking. The heating chamber is first supplied with an inert gas at a controllable pressure and then with steam or like heated gas at a fixed higher pressure, the temperature being controlled by varying the pressure of the inert gas, so that the partial pressure of the steam &c. is thereby varied. In an example, for vulcanizing tyres where it is desired to maintain a bag inside the tyre at 200 lbs. pressure and at a temperature of 260°F., carbon-dioxide gas at 100°F. and 125 lbs. pressure is admitted to the bag and then steam at 200 lbs. pressure. The pressure of the gas when heated by the steam is raised to 180 lbs. so that the partial pressure of the steam is 20 lbs. which corresponds to a temperature of 260°F.

305,659. Soc. du Gaz de Paris. Feb. 10, 1928, [*Convention date*]. *Void* [*Published under Sect.* 91 *of the Acts*].

FIG.3.

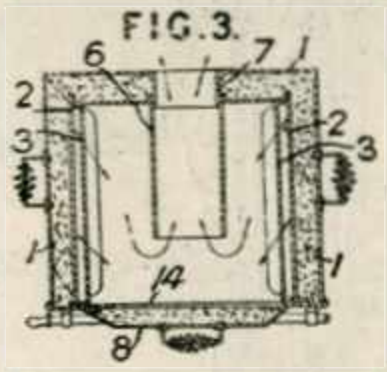
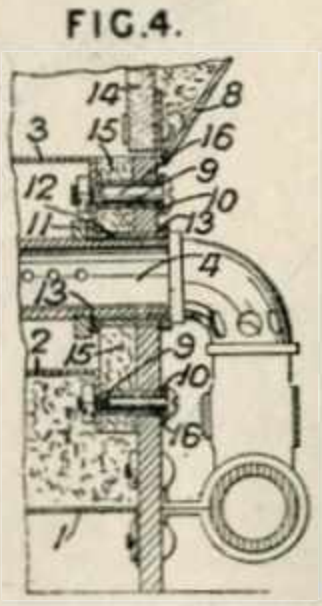


FIG.4.

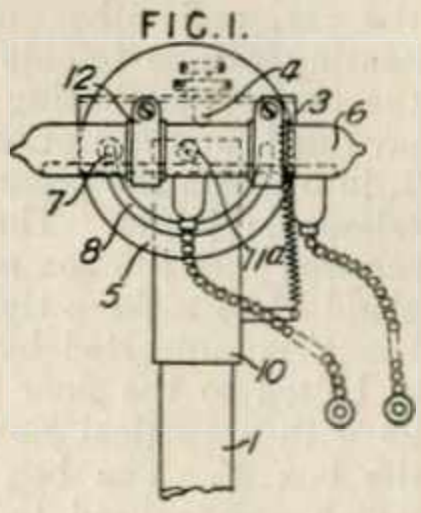


Nonconducting coverings for heat.—The inner and outer casings of a portable gas cooking oven are connected by bolts and nuts associated with tubes and washers of a material which is a bad conductor of heat. The inner casing 2 is provided with side supports 3 for a shelf rack. A gas burner is arranged at the bottom, and the combustion products escape through a horizontal flue 6 which is prolonged by a sleeve 7 of refractory clay. The casings 1 and 2 are connected by a layer of asbestos fibre cement 15 through which pass bolts 16 surrounded by tubes 9 of asbestos and packed by washers 10 of asbestos. The supports 3 are connected to the casing by a similar arrangement, and the space between the two casings is filled with glass wool. The burner 4 is passed through an asbestos tube 12, asbestos washers 13 are provided, and the burner is secured by a nut 11. The face 14 of the door 8 is of asbestos fibre cement.

305,749. Wingfield, B. R., and **Wingfield, B. T.** Dec. 5, 1927.

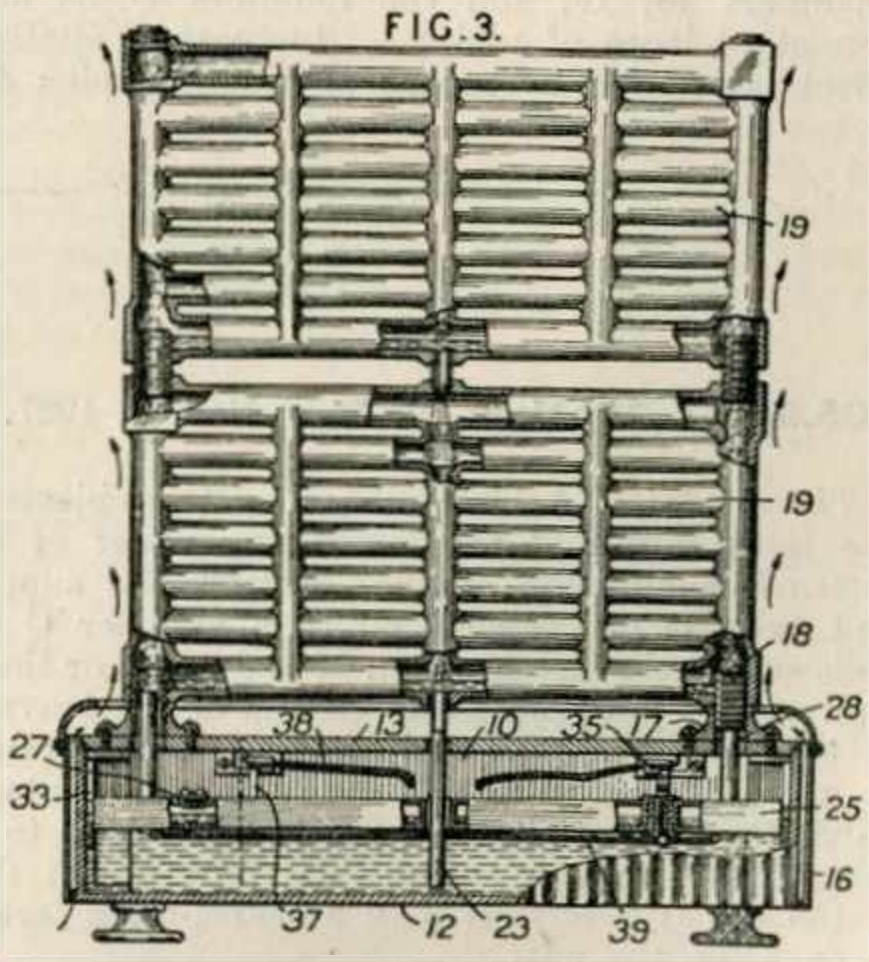
Thermostats. — A heat sensitive device for operating an electric switch may contain liquid such as paraffin or methylated spirit the expansion of which acts through a bellows on a stem the upper end of which operates the switch mechanism.

FIG.1.



305,818. Vigneault, J. Feb. 13, 1928.

FIG.3.

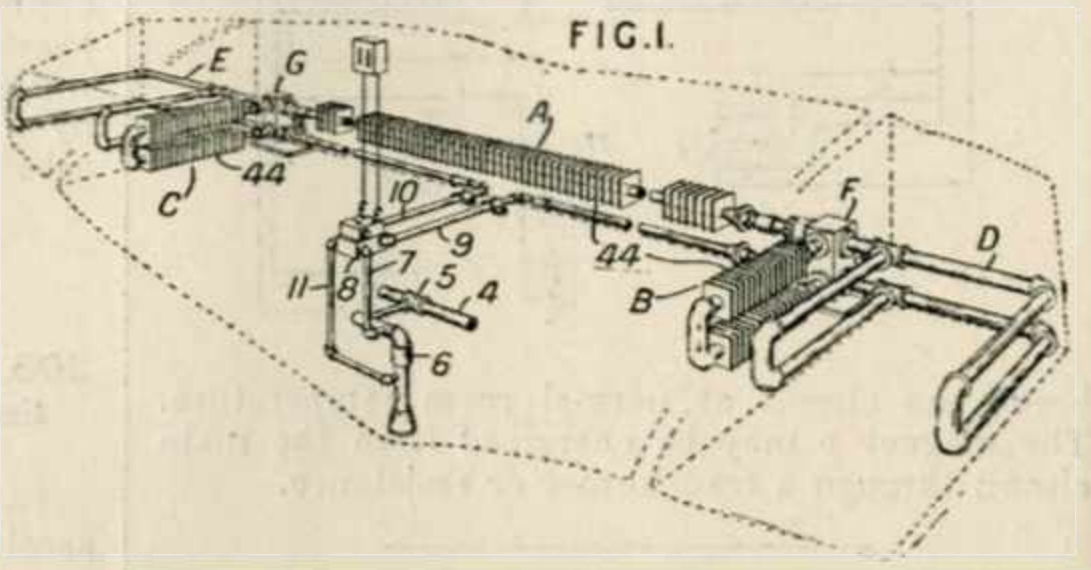


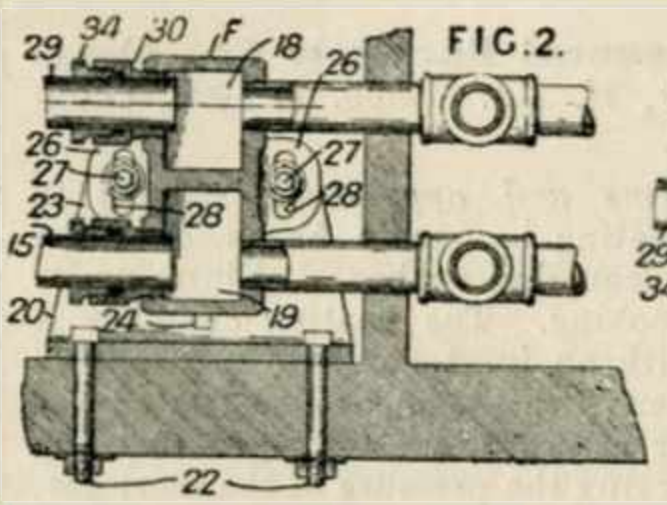
Radiators. — Heat-radiating elements 19 are connected to an electric steam generator 10 surrounded by a casing 16 through which air circulates, and comprising corrugated side and end walls integral with a bottom plate 12. The

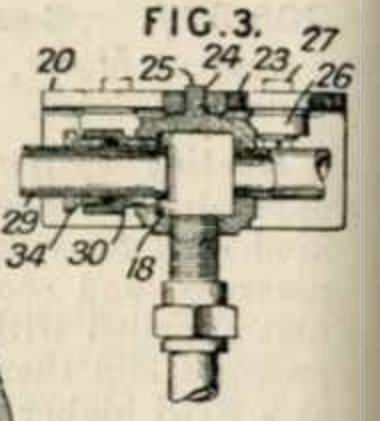
radiating elements are mounted on the cover plate by means of nipples 18 and tubular collars 17. A pipe 23 passing through a central aperture in the cover plate serves to return the condensed steam. In a modification the radiating elements are arranged vertically.

305,936. Vapor Car Heating Co., Inc., (Assignees of *Russel, E. A., Gold, M. J., and Biscayne Trust Co.*). Feb. 11, 1928, [*Convention date*].

Heating vehicles; radiators. — A radiator system for heating railway cars is supplied through pipes having telescopic joints. Steam passes from the train pipe 4 through pipes 5 and 7 to a thermostatic control valve 8, and then through pipe 9 to the radiator system. Steam and condensate return through pipes 10, 11. The heating system consists of pipes A running longitudinally through the car, auxiliary heaters B, C at the ends of the car, and other units D, E for heating compartments at the ends of the car. Distributing boxes F, G are provided, and comprise two chambers 18, 19, Fig. 2, into which the pipes 29, 15 are inserted through telescopic joints. These comprise a thimble 30 screwed into the box and provided with a packing gland 34 to make a tight joint with the pipe. The box F is supported by a bracket 20, Figs. 2 and 3, bolted to the floor at 22, and having a flange 23 with a vertical slot 24 to receive a rib 25 on the box F. The box is provided with lugs 26 which are secured to the flange 23 by bolts 27 passing through elongated holes 28. Vertical adjustment of the box F is thus permitted. The auxiliary radiators B, C, are in the form of loops of piping the ends of which are connected to the chambers 18, 19, and the radiators D, E also consist of loops of piping. Increased radiating effect is secured by means of radiating pins 44, and in a modification, Fig. 5, not shown, the radiators B, C, may comprise a group of four radiating pipes. The radiators B - - E, are short, and do not require telescopic joints.

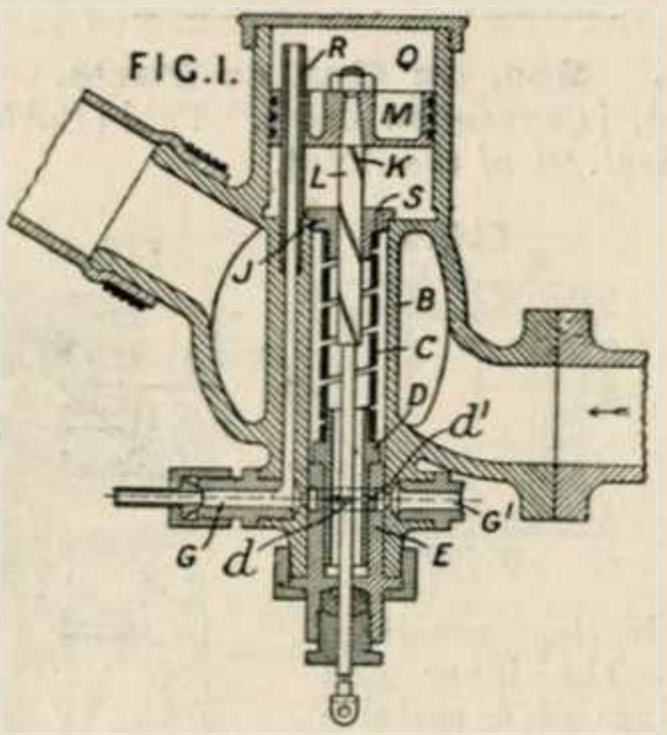






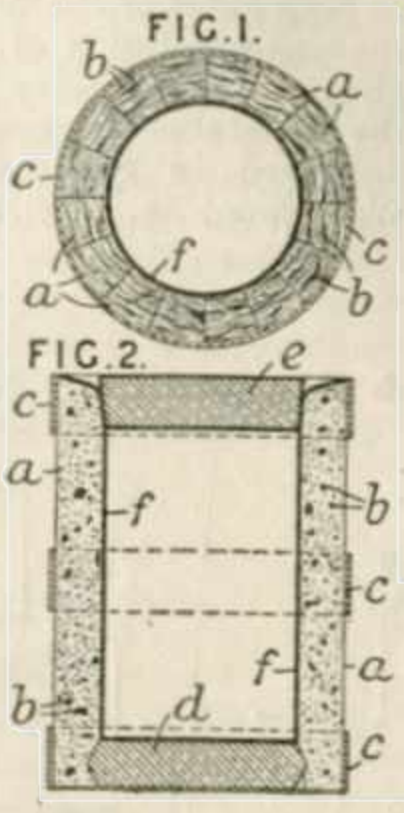
305,962. Walker, C. B. Nov. 5, 1927.

Thermostats.—A bimetallic strip C, subject to the temperature of the circulating water of an internal combustion engine, controls the supply and exhaust of pressure oil to a cylinder Q or bellows and through a piston M and rod L or their equivalent the opening and closing of the louvres of the radiator. The strip is preferably formed as a helix connected at its lower end to a rotary valve D, and is connected at its upper end to a nut J held against longtiudinal movement; the piston rod L is formed with a coarse-pitch screw K engaging the nut.



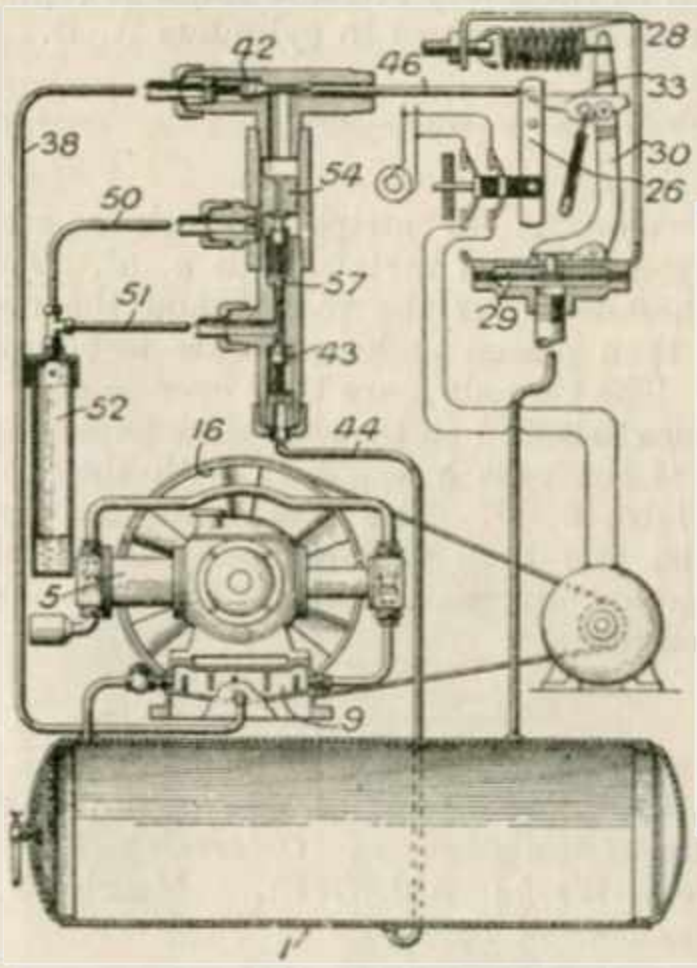
306,011. Marchini, B., (*Passatti, G.*). Nov. 8, 1927.

Nonconducting coverings for heat. — A cylindrical container for an ice cream barrel is built up of segmental parallel strips *a* of cork, with the pores *b* running horizontally, parallel to the surface of the container. The strips may be held together by hoops *c* of metal, and the bottom *d* may be composed of, or lined with strips of cork in the same way as the walls. A stopper *e* is provided, and an internal lining *f* of pitch is applied. The direction of the pores in the cork avoids leakage, and ensures good insulation.



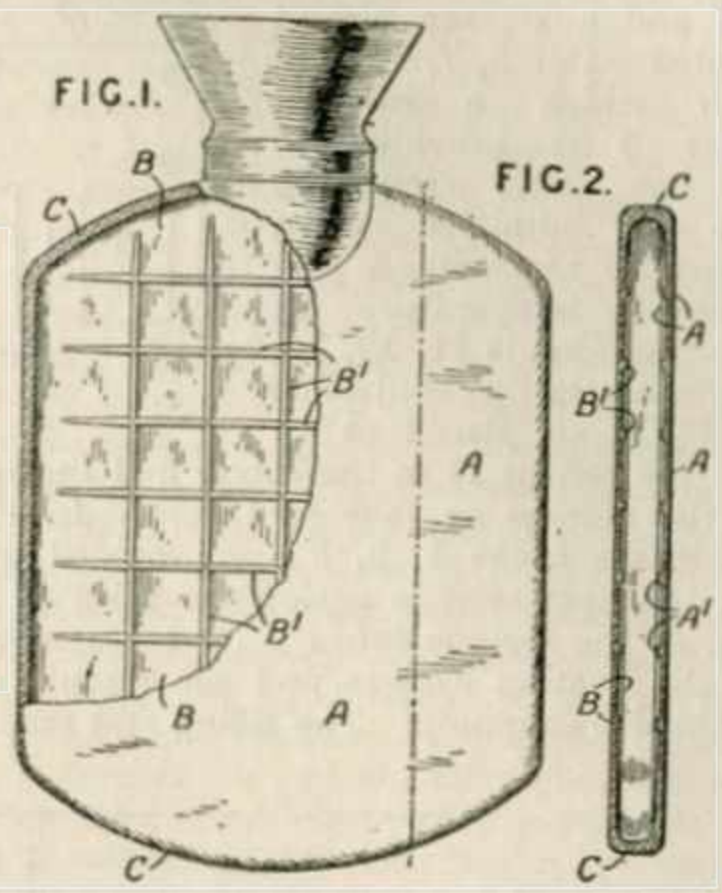
Reference has been directed by the Comptroller to Specification 22262/01, [*Class* 21, Casks &c.].

306,248. Gille, G. W. Jan. 9, 1928.



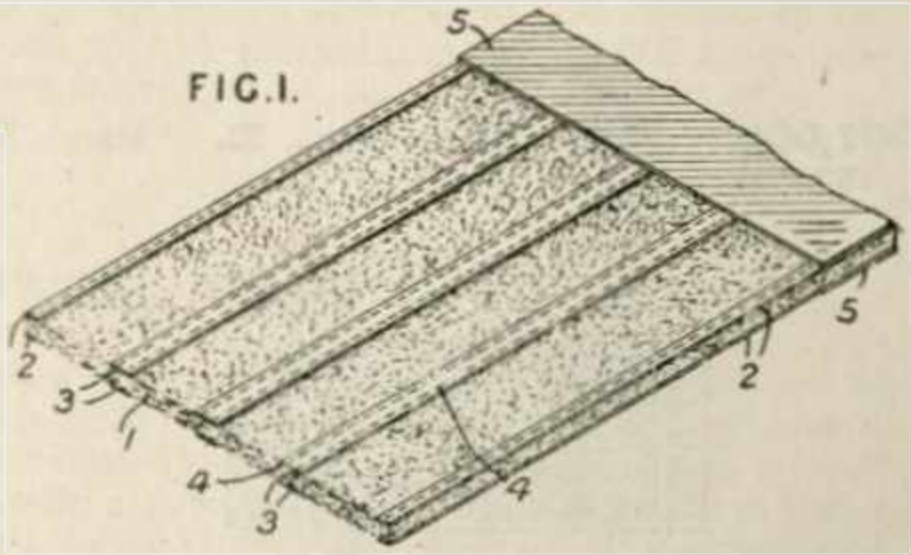
Steam traps.—Valves are opened momentarily to discharge liquid separated from a compressor and storage tank, by means controlled by the tank pressure. The compound compressor 5, driven and cooled by a combined wheel and fan 16, discharges into a chamber 9 wherein water is separated by baffles, the air passing into a tank 1. Pipes 38, 44 lead the water from the baffle chamber and tank to valves 42, 43 controlling the discharge of liquid through pipes, 50, 51 to a vessel 52. The pump is put in and out of action by a lever 26 carrying contacts for the electric circuit, and actuated through a separable link 33 by a bell-crank 30 and a diaphragm 29 subject to the tank pressure. When the pump is put into action by the spring 28 after a fall of pressure, the lever 26 opens the valve 42 through a rod 46. Water is discharged through a bore in a piston 54, and the pipe 50. A valve 57 is also closed, and its stem opens the valve 43, allowing the escape of water from the tank.

306,330. Leyland & Birmingham Rubber Co., Ltd., and **Lunn, R. W.** April 25, 1928.



Hot-water bottles.—A moulded rubber hot-water bottle is provided with relatively thin front and back walls, A, B, and thicker edged walls C, and the inner surfaces of the walls A, B, have intersecting ribs A^1, B^1, which may be reinforced by threads or tapes of woven material. According to the Provisional Specification, the ribs may be on the outer surface.

306,559. Upson Co., (Assignees of *Upson, C. A.*). Feb. 23, 1928, [*Convention date*].



Nonconducting coverings for heat and sound.—Heat and sound insulating material for walls and