PATENTS FOR INVENTIONS

ABRIDGMENTS OF SPECIFICATIONS

CLASS 64(ii)

HEATING SYSTEMS AND APPARATUS

[*other than* HEATING LIQUIDS AND GASES *and* SURFACE APPARATUS FOR EFFECTING TRANSFER OF HEAT]

PERIOD—A.D. 1916-20 [100,001–155,800]

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EXPLANATORY NOTE

The contents of this Abridgment Class may be seen from its Subject-matter Index, which is in accordance with the 1910 edition of the *Abridgment-Class and Index Key* (now out of print), as amended up to date, and includes all index headings, subheadings, and subdivisions allotted to this Class, as well as cross-references under them, although there may be no cases affected within the period covered by this volume. A revised edition of the *Abridgment-Class and Index Key* is now in preparation.

It should be borne in mind that the abridgments are merely intended to serve as guides to the Specifications, which must themselves be consulted for the details of any particular invention. Printed Specifications, price 1s., may be purchased at the Patent Office, or ordered by post, no additional charge being made for postage.

Abridgments are printed in the chronological order of the Specifications to which they refer, and this index quotes only the number of each Specification.

NOTE.—The Patent Office does not guarantee the accuracy of its publications, or undertake any responsibility for errors or omissions or their consequences.

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blocks and slabs, (*including* half-sleeves for pipes). 103,839. 107,078. 108,035. 110,194. 112,084. 113,689. 117,037. 118,871. 119,783. 121,593. 136,818. 139,075. 141,322. 142,955. 143,500. 151,738. 154,825.

casings, double walls, cushions, and other hollow coverings containing fibrous, powdered, and like dry packing. 112,147. 114,124. 124,571. 142,955. 146,081. 152,173.

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composed of mineral fibres in combination with other materials. [*No cases.*]
composed solely of materials other than mineral fibres. 101,741. 121,593. 133,484. 134,538. 134,645. 137,054. 141,322.
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not interlaid with sheets of other materials. '15. 431 [*Appx*]. 110,194. 114,675. 119,783.
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single materials used as. '13. 27048 [*Appx*]. '15. 431 [*Appx*]. 114,675. 116,266. 120,691. 130,351. 131,446. 136,818. 143,500. 151,977. 153,030. 154,825.
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vacuum jackets of cold and heat retaining chambers, vessels, and the like. *See* Cold and heat retaining vessels, [*Class* 29].
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counterbalanced-receiver type. 123,618. 136,909.
expansion type. 101,256. 122,117. 132,631. 140,522. 145,536. 148,002. 149,168. 149,700. 150,800.

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separating oil and grease from steam-engine exhaust. *See* Steam-separators &c., [*Class* 123 (iii)].
types not covered by other Key subheadings. 134,280.
valves opening when steam or vacuum is cut off. 107,857. 128,608.
without moving parts other than hand-valves. 108,819. 118,791. 144,270.

Thermostats and other like apparatus for automatically regulating temperature to keep it constant or within certain definite limits.
bimetallic and other compound strips, (curling movement only). 103,213. 108,204. 110,938. 113,758. 122,624. 135,964. 137,249. 137,352. 147,354. 150,879. 152,883. 155,788.
Bourdon and like curled tubes distorted by expansible fluids. 107,655. 129,808. 141,257. 150,394.
capsules and other sealed chambers distorted by expansible fluids, (*other than* curled tubes). 109,624. 109,979. 110,388. 114,231. 118,506. 119,888. 124,971. 125,899. 130,045. 130,458. 132,631. 134,063. 135,668. 136,532. 138,640. 145,536. 147,932. 148,044. 150,394. 154,604. 155,347.
comprising electrical devices other than thermo-electric couples and devices acting by change of electric resistance. 100,252. 100,624. 102,156. 102,538. 107,655. 109,979. 110,053. 110,938. 111,207 114,639. 118,186. 118,272. 118,922. 119,748. 120,412. 120,590. 125,703. 126,719. 127,114. 131,767. 135,668. 135,964. 137,249. 137,352. 139,804. 139,844. 140,103. 140,104. 140,547. 141,257. 144,669. 144,777. 144,778. 147,177. 147,354. 150,355. 150,394. 152,168. 152,218. 152,883. 153,336. 154,604.
electric contact-making details of interest apart from thermostats. *See* Electric switches &c., [*Class* 38 (v)].
comprising thermo-electric couples, thermo-magnetic devices, and devices acting by change of electric resistance. 118,272. 118,922. 119,748. 139,844. 153,336.
fire and temperature alarms. *See* Alarms, Fire &c., Automatic, [*Class* 47 (i)].
freely-expanding fluids, (mercurial and like thermometers, cylinders and pistons, bell and other floats, and the like). 103,196. 108,858. 108,859. 120,590. 127,114. 138,915. 140,103. 143,394.
fusible metal and other material. [*No cases.*]
miscellaneous—
acting by rate of loss of weight. 140,104.
combined with hydrometric apparatus. 102,156.
controlling by simultaneously heating and regulating the temperature of a secondary area from which the rate of loss of heat is variable. 152,218.

Thermostats &c.—*cont.*
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regulating according to predetermined time-temperature curve. 138,640. 139,844.
pilot-valve apparatus for. 102,156. 142,666.
pressure-actuated apparatus. 114,639. 115,504. 125,638. 134,622. 144,777. 150,355. 152,168.
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Thermostats &c.—*cont.*
solids, expanding, (*other than* compound strips). 100,252. 102,156. 102,538. 102,869. 103,437. 107,134. 108,690. 110,344. 111,207. 111,311. 117,799. 118,186. 121,097. 122,117. 125,316. 126,719. 127,241. 137,249. 137,364. 142,666. 143,905. 147,177. 148,482. 149,131. 154,604.
thermometers and pyrometers. *See* Thermometers &c., [*Class* 97 (iii)].

NAME INDEX

The names in *italics* are those of persons by whom inventions have been communicated to the applicants for Letters Patent.

ERRATA

Page 20. Abridgment No. **112,068.** *Delete.*
After date add *No Patent granted (Sealing fee not paid)* to the following abridgments :—**105,735. 112,084. 112,147. 117,094. 118,394. 126,719.**

CLASS 64 (ii)

HEATING SYSTEMS AND APPARATUS

[*other than* HEATING LIQUIDS AND GASES *and* SURFACE APPARATUS FOR EFFECTING TRANSFER OF HEAT]

Patents have been granted in all cases, unless otherwise stated. Drawings accompany the Specification where the abridgment is illustrated, and also where the words *Drawings to Specification* follow the date.

PERIOD 1916—20

100,252. Harvey, J. E. April 3, 1915, [*Convention date*].

Thermostats. — A thermostat acting either directly on a latch holding a switch closed during normal temperatures or through a thermostatic relay, consists of a brass tube 22 brazed or soldered to the under-side of a sterilizing tank, and an iron rod 23 adjustably secured at one of its ends to the brass tube and at the other to a bell-crank. One arm 28*d* Fig. 4 of the bell-crank carries a lever 30 with a notched end 30*a*, the switch 38 when closed by hand by the button 44, engaging in the notch. A spring 40 opens the switch when the latch is released. When a relay is used, the primary thermostat 22, 23 Fig. 9, on excessive temperature closes, through adjustable contacts, a circuit through a heating coil 68 embedded in porcelain &c. The relay thermostat, consisting of a brass tube and iron rod 23¹, is placed inside the porcelain and acts on the latch 90 to allow the spring 40¹ to move the switch arm to open position. The switch carries bridging-contacts 88, 89 for both the primary and relay circuits. The bottom of the casing is removable to give access to the thermostats.

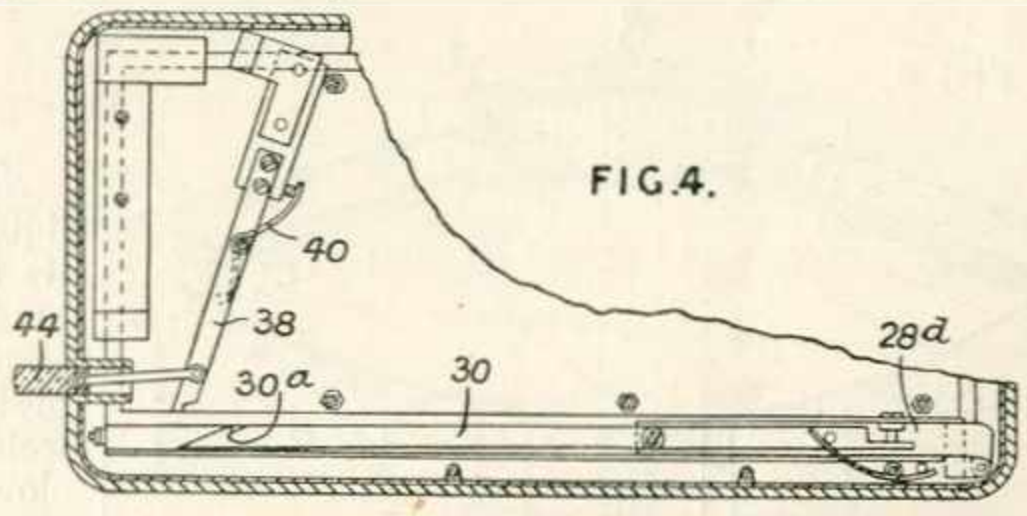


FIG. 4.

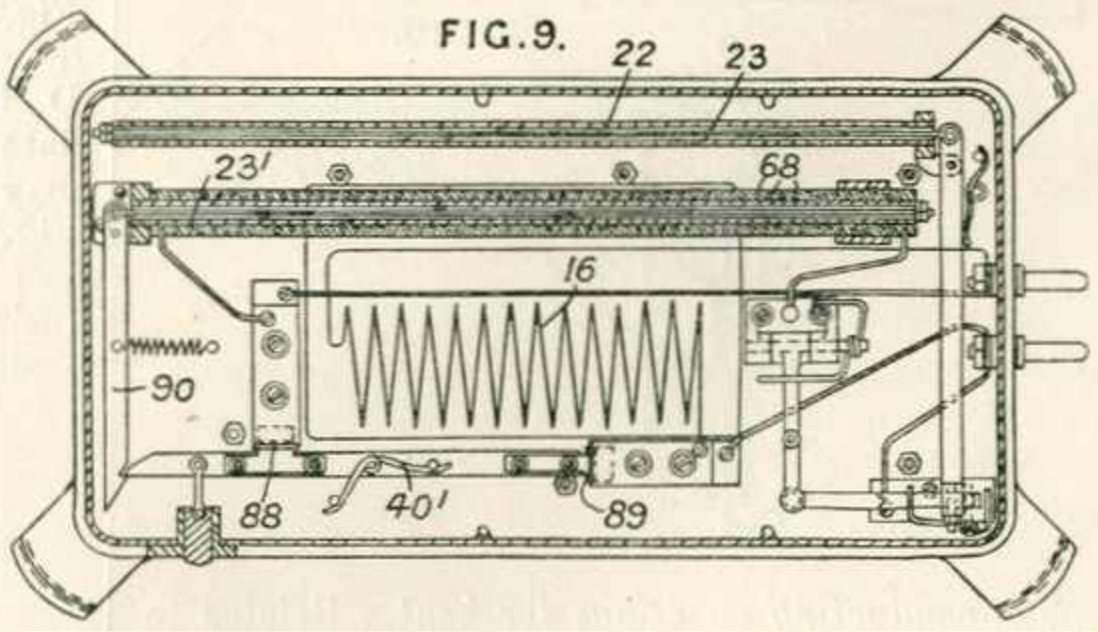
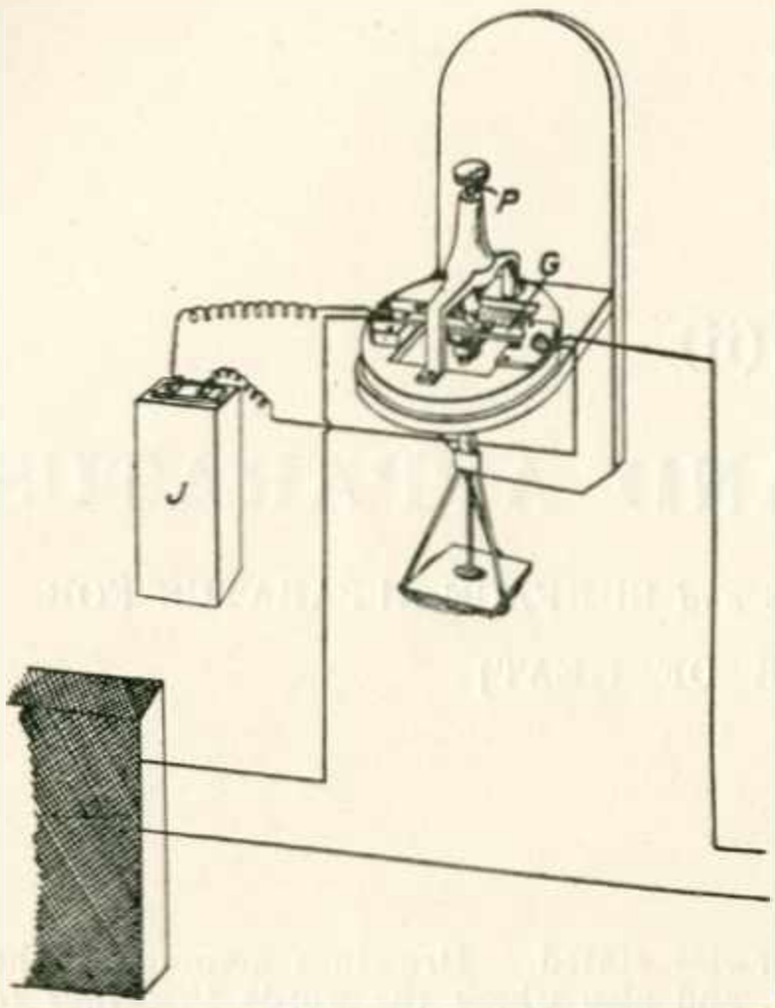


FIG. 9.

500. Wt 58/200. 8/20. C.P.Leam. Ps 5118.

100,624. Kiell, J., and **Stow, A. A.** Feb. 4, 1916.



Thermostats.—A condenser J is placed across the terminals of a switch in the circuit of a radiator, the switch being opened by a thermostat of the mercury-capsule type. An adjusting-screw P is used with a loading-spring for the movable switch-blade G.

100,660. Hutsel, R. March 4, 1916.

FIG.6.

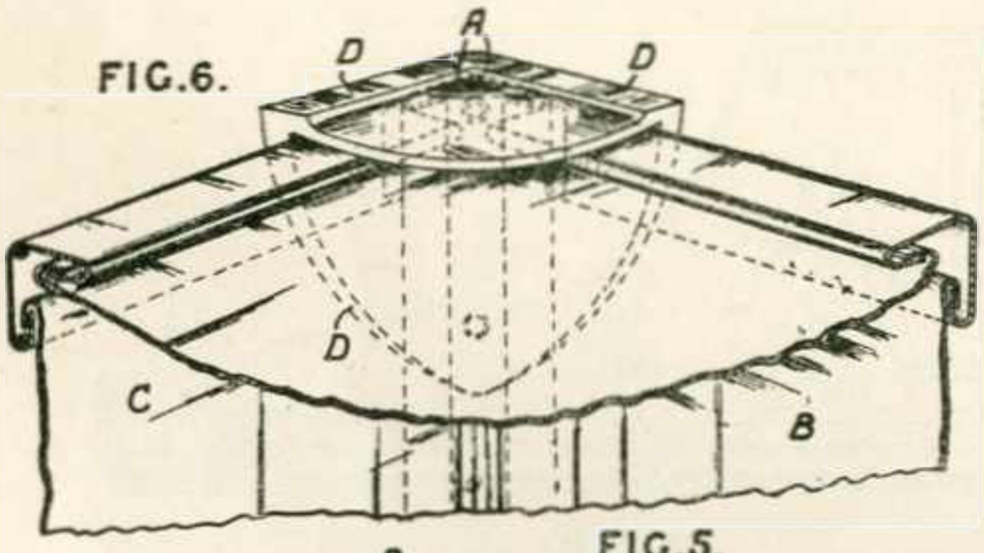


FIG.5.

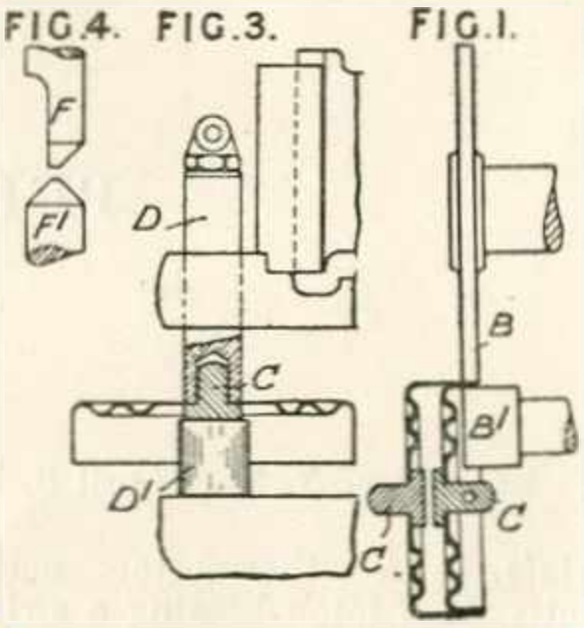
Non-conducting coverings for heat.—Relates to the non-conducting boiler casings or jackets described in Specification 2437/13. To each slide or key-piece A connecting the edges of two side plates B, C of the casing, which carry the non-conducting material, is secured a cap D to cover the top corner.

100,995. Bretteville, G. de. Feb. 9, 1916.
Drawings to Specification.

Bed-warmers.—The bed of a camping attachment for a motor-vehicle is warmed by the provision beneath it of a chamber heated by exhaust gases from the motor either directly or by circulating connexions from an intermediate chamber so heated.

101,256. Steam Fittings Co., and **Wiesengrund, B.** April 13, 1916.

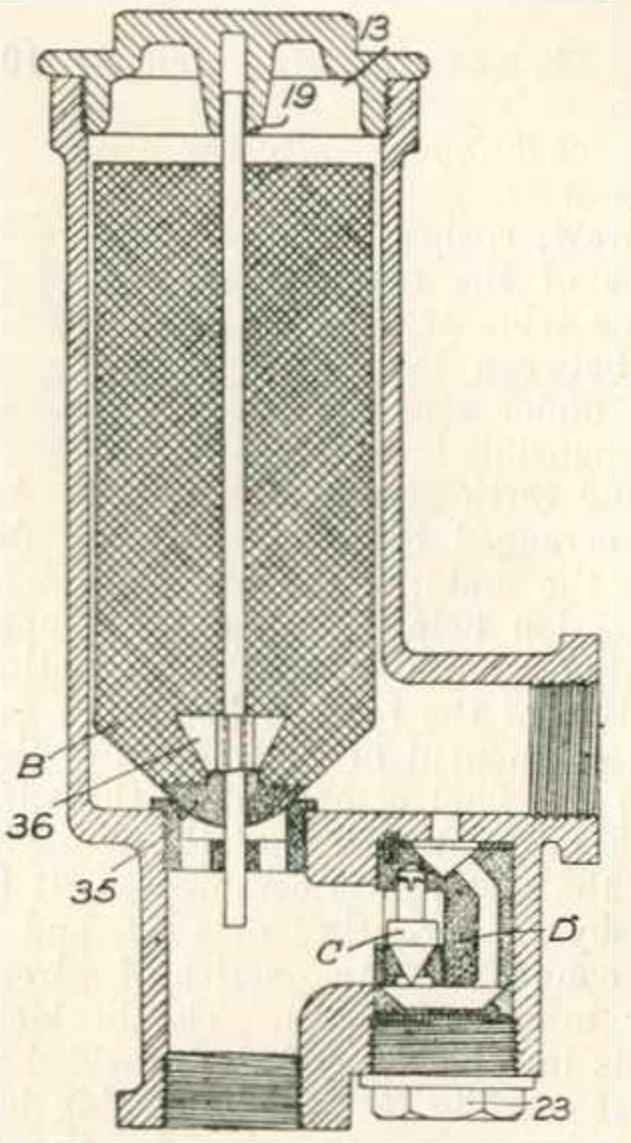
FIG.4. FIG.3. FIG.1.



Steam-traps.—A capsule containing a volatile liquid and its vapour for operating a steam-trap by its expansion and contraction is formed of steel hermetically sealed by welding to enable it to withstand high pressures and temperatures. The edges of the two plates forming the capsule may be welded together by mounting them between two slowly rotating electrodes B, B¹ as shown in Fig. 1. The head of each central steel stud C may be welded to its plate by the use of electrodes D, D¹, the electrode D being hollow to accommodate the stud, as shown in Fig. 3. Spot-welding may be employed, using pointed electrodes F, F¹, Fig. 4, or an arc may be established between a soft-iron electrode and a seam to be welded, the fusing-electrode being passed slowly around the seam with the arc maintained.

101,299. Clark, W. E. Jan. 4, 1916.

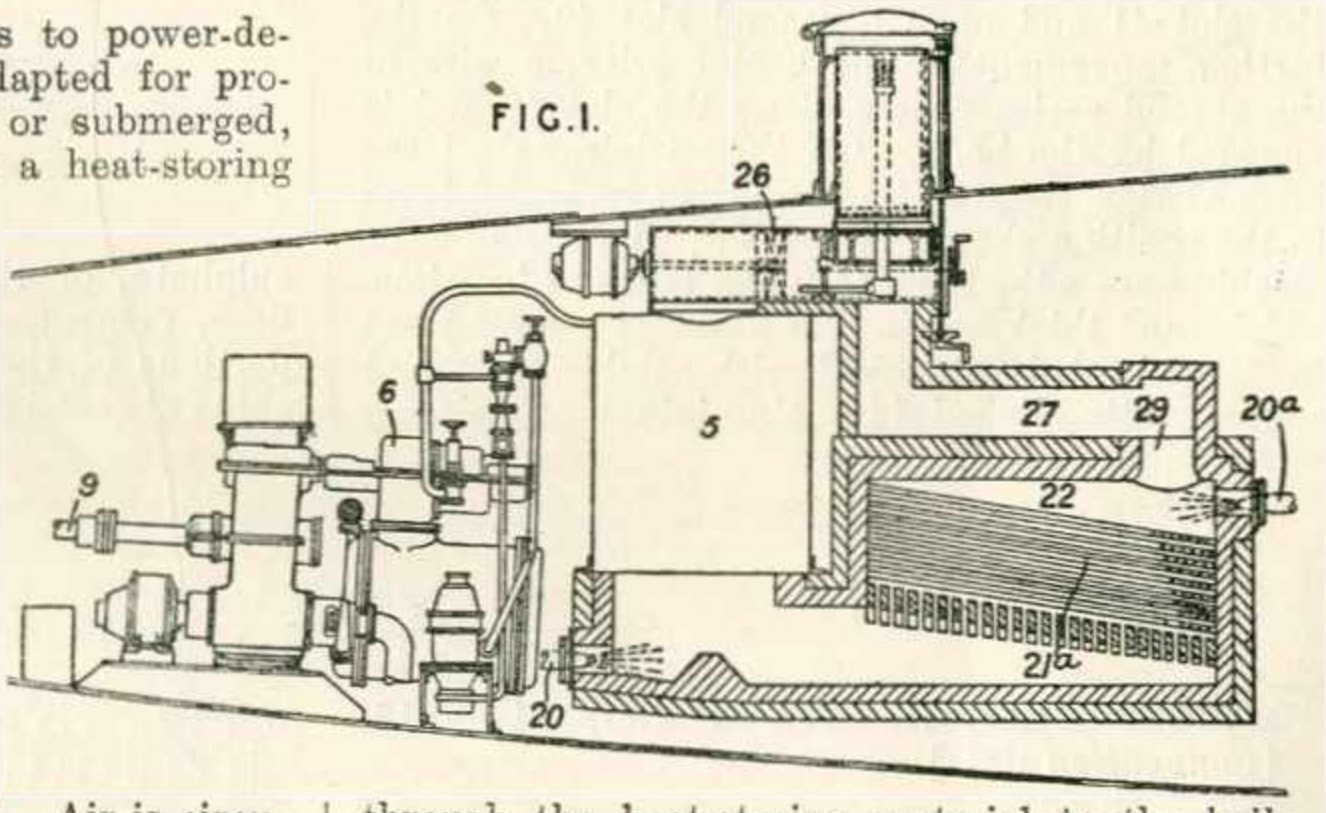
Heating buildings.—Relates to apparatus for increasing the temperature and the circulation in a hot-water heating system, of the kind in which a valve casing placed in the pipe line leading to the expansion tank contains passages controlled by a weighted valve and a check valve, which prevent water from passing to the tank until it reaches a certain pressure and allow it to return to the system when the pressure falls. The cover 13 above the weighted valve B is formed with a guide-socket 19 for the valve stem. The valve head 35 is secured to the body by means of diverging wing-pieces 36. The check valve C is carried in a removable cage D held in position by a screwed plug 23.



101,530. Westinghouse Machine Co., (Assignees of *Kasley, A. T.*). Sept. 22, 1915, [*Convention date*].

Heat-storing apparatus.—Relates to power-developing apparatus particularly adapted for propelling a submarine when awash or submerged, and consists mainly in providing a heat-storing device through which air is caused to circulate in a closed cycle. The flash or other generator 5 supplies steam to the turbine 6 and two oil burners supply heat to the generator directly or after traversing the heat-storing materials 21a which consists of a chequer-work of silica, graphite &c. When the vessel is awash, one or both burners may be used, heat being accumulated in the chambers 22. On submerging, the supply to both burners is cut off and the cap of the funnel closed. Air is circulated by the fan 26 through the passages 27, 29 through the heat-storing material to the boiler, and is returned to the passage 27.

FIG. 1.

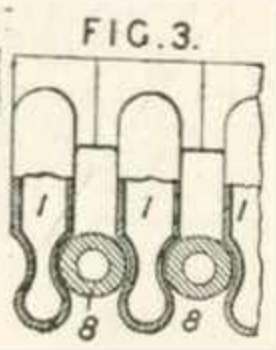


101,577. Lange, J. Feb. 16, 1916.

Radiators. — Heat-storing blocks of fireproof brick or earthenware are loosely inserted between the elements of a radiator and are held in position by means of grooves or projections on the blocks engaging with corresponding projections or grooves on the elements. Blocks of different forms and colours may be combined to give the radiator an ornamental appearance. Short slabs or blocks 8, Fig. 3, of glazed earthenware are inserted from the top of a radiator into grooves formed in the sides of the elements 1. The blocks may be so shaped as to cover the whole face of the radiator, as shown in Fig. 6. The blocks may be inserted from the side of the radiator between horizontal ribs. The ribs may be either integral with, or attached to, the elements. The ends of a radiator may be covered by slabs engaging with projections on the end elements

FIG. 6.

FIG. 3.



101,741. Gekoulin, N. Jan. 27, 1916.

Fire-proof coverings. — In the manufacture of fire-proof coverings &c. from straw, rushes, fascines, &c., bundles of the material are arranged on a table 57, Fig. 3, and thrown in between two series of wires 7, 7¹ under tension, into a vertically expansible box formed of stationary and vertically movable rods 23. A series of rods 25 arranged between the wires descend to compress the material to a certain extent, the final compression being effected by compression bars 19 having a circular translatory motion, the vertical motion of the rods 23 being the same as the vertical component of the motion of the bars 19. During the final compression, the wires are sufficiently strained to allow of the requisite let-off. When the material is compressed, it is held in the box by reciprocating rods 60, and hook-carriers 40 connect the two series of wires 7, 7¹ together by means of hooks. The hook-carriers move in slots in a bar 39 and are provided with a recessed part 47, Fig. 5, which, coming beneath rods 50, serving as a magazine for the hooks, receives one of the hooks. The return movement of the hook-carrier causes the first wire 7 to pass along a slot 41 and to move the hook beneath a plate 48 on the carrier, the passage of the wire 7 having turned a two-armed lever 43, 44 to close the slot 41 and open a second slot 42. On the further movement of the hook-carrier, a wire of the second series passes along the slot 42 and is engaged by the hook. On the withdrawal of the hook-carrier, the wire 7 moves the two-armed lever to the position shown in Fig. 5. The parts of the machine are adjustable to make fabrics of various widths and thicknesses. The fabrics are rendered fireproof by being sprayed with soluble glass and subsequently dipped into aluminium or calcium sulphate, or the straw &c. may be mixed with lime, cement, or other similar binding-material, portions of the mass being thrown into the machine successively to be made into fabric.

FIG. 5.

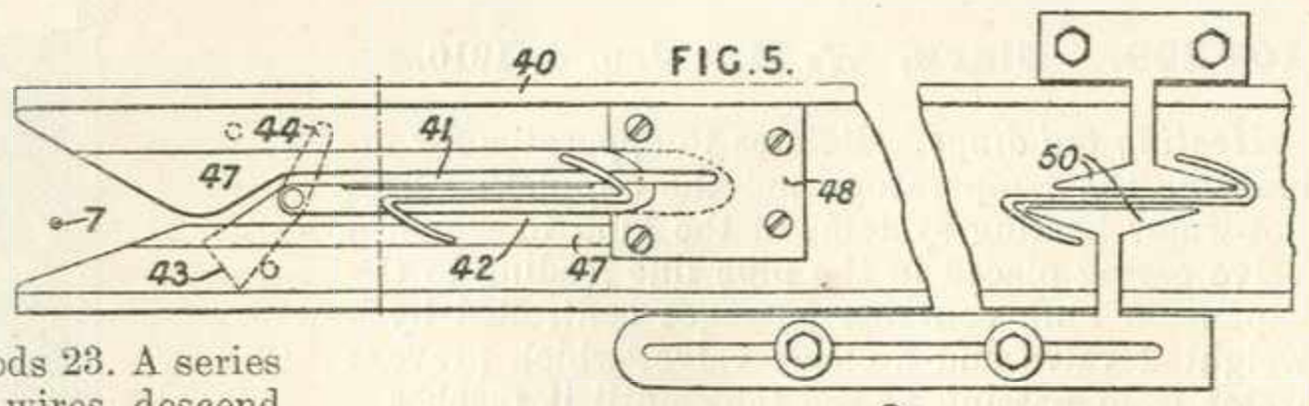
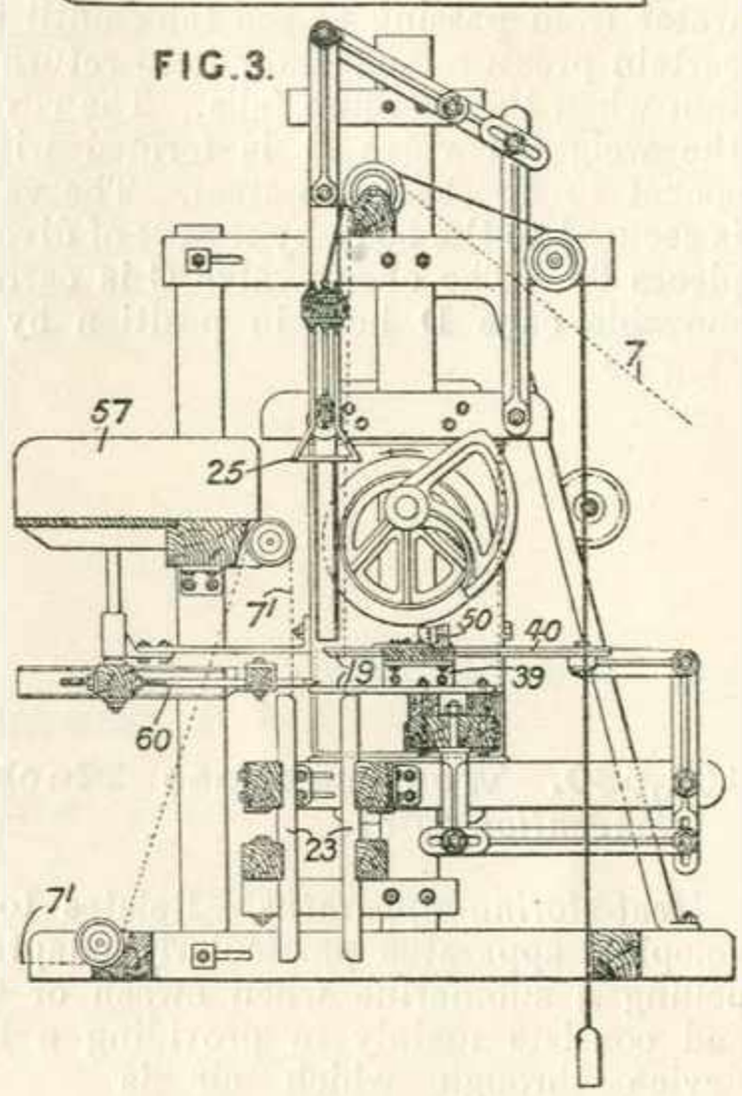


FIG. 3.



101,866. Cardell, O. V. Oct. 21, 1915, [*Convention date*].

Radiators.—Relates to radiators of the type in which the heating-fluid traverses a series of ribbed pipes with end connecting-pieces. To allow for the expansion of the pipes, provision is made for a relative sliding movement between adjacent connecting-pieces. In the example shown in Figs. 1 and 2, in which the connecting-pieces form two vertical pillars, the top pieces 1, 5 are formed with dovetailed grooves engaging corresponding tongues 24, 25 in intermediate connecting-pieces 8, 9 respectively, which are mounted in a similar manner on foot-pieces 17, 21 respectively.

FIG. 1.

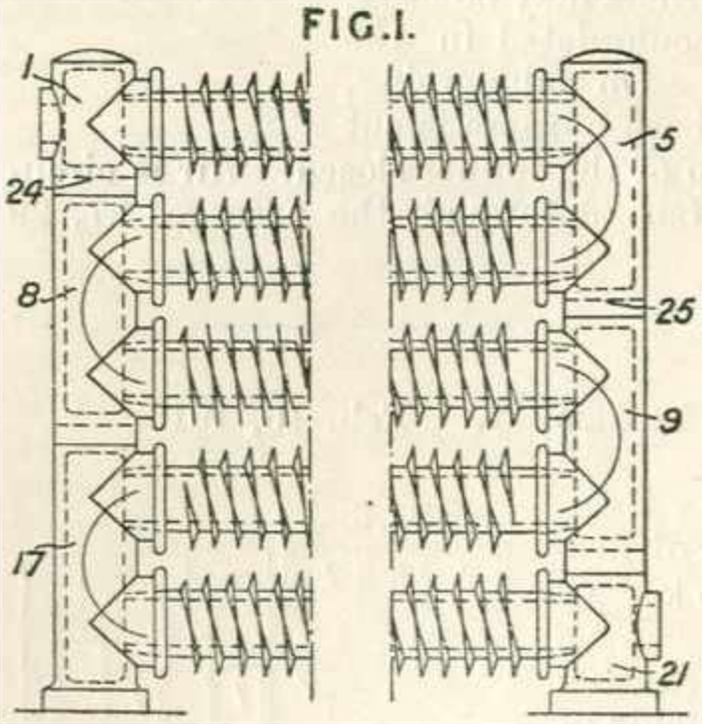
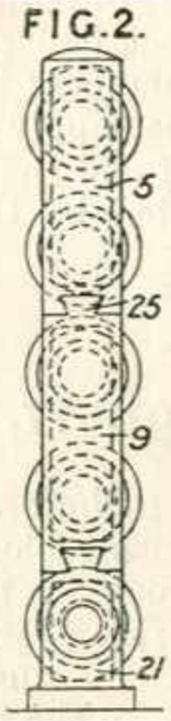


FIG. 2.



102,156. Thompson, A. W., and **Comfort, E. W.** Nov. 10, 1915, [*Convention date*].

FIG.3.

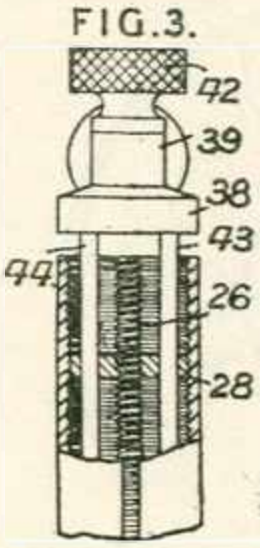


FIG.4.

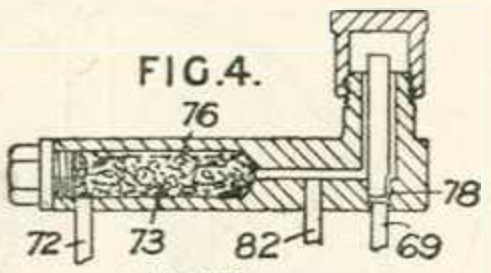


FIG.5.

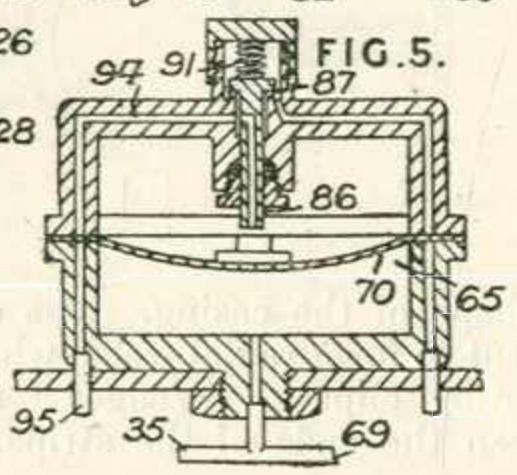
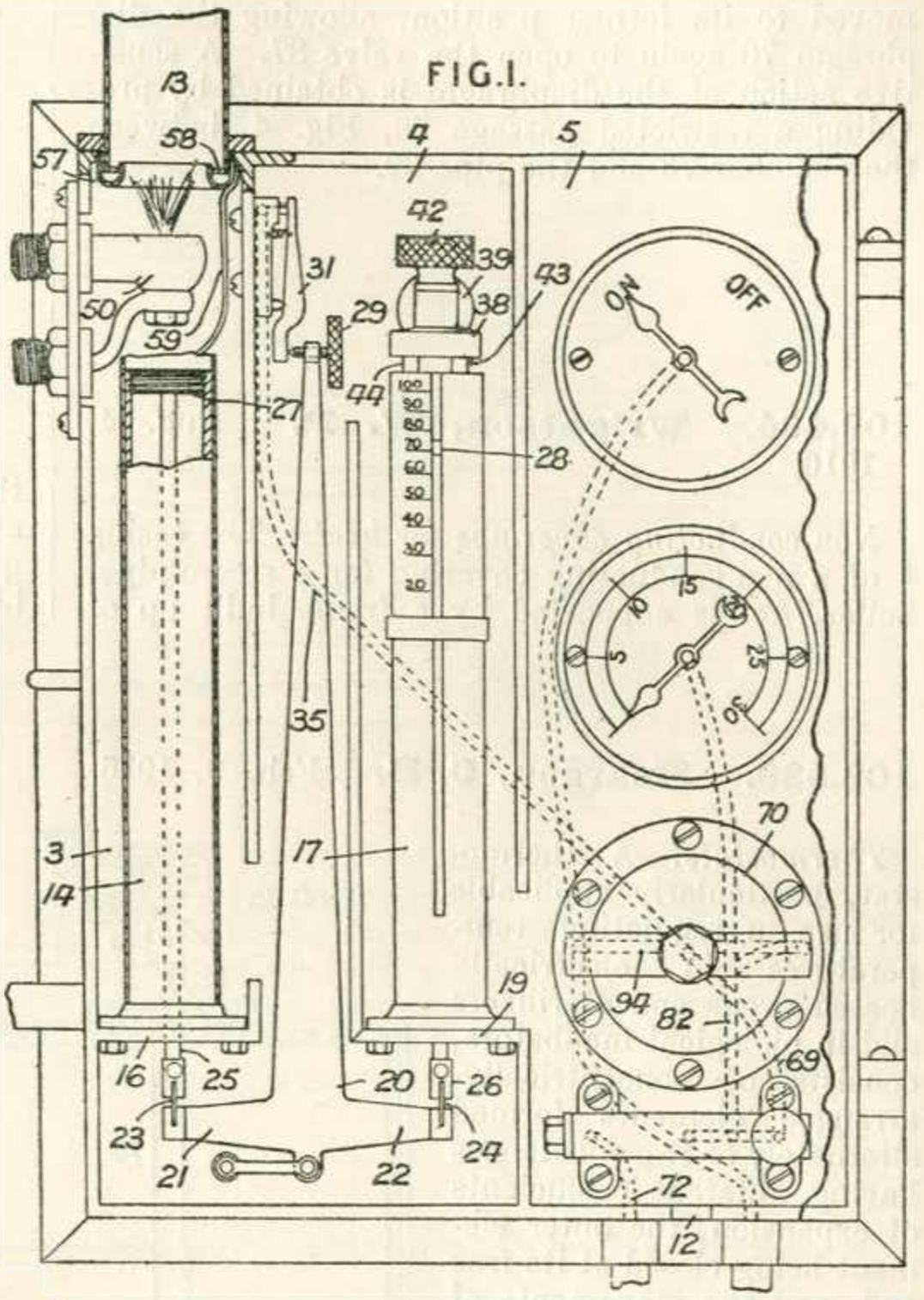


FIG.1.



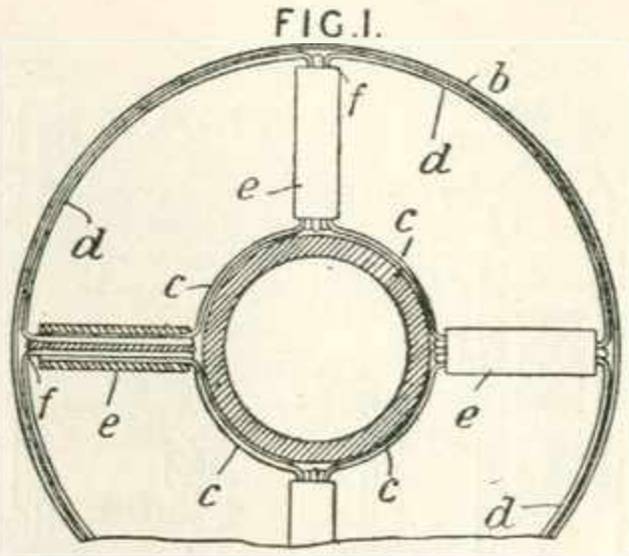
Thermostats. — Relates to hygrometric apparatus of the wet and dry bulb type for controlling automatically the humidity or the temperature of the air in a room. Two expansible members with equal coefficients of expansion are exposed, the one to the dry-bulb temperature, and the other to the wet-bulb temperature of the atmosphere of the room, and the differential expansion of the two members is adapted to control a source of energy for effecting the supply of moisture or heat to the room. The apparatus is mounted in a closed casing divided, as shown in Fig. 1, into communicating compartments 3, 4, 5 containing respectively the wet-bulb device, the dry-bulb device, and indicating and transmitting mechanism. The expansible members of the wet and dry bulb devices respectively are a hollow cylinder 14, preferably of ebonite, seated on a bracket 16, and a similar cylinder 17 seated on a bracket 19. Tht upper ends of the cylinders 14, 17 are internally threaded to receive the externally threaded heads 27, 28 of rods 25, 26 of invar steel or like non-expansible material. The lower ends of the rods 25, 26 are connected by leaf springs 23, 24 to the arms 21, 22 respectively of a lever 20 of inverted-**T** shape, and the upper end of this lever is adapted to bear through a screw 29 on a spring-controlled lever 31 arranged to control the outlet from a compressed-air conduit 35. To permit of vertical movement of the lever 20 when the wet and dry bulb devices expand or contract together, its lower end is connected to the casing by an horizontal link. To enable the effective length of the dry-bulb member 17 to be varied, the head 28 is mounted on the rod 26, as shown in Fig. 3, by forming on the rod 26 a screw-thread of the same pitch as that in the interior of the member 17. The adjustment is effected by rotating a knob 42 attached to a member 38 mounted in a bracket 39, and fitted with rods 43, 44 extending through holes in the head 28. The member 17 is slotted longitudinally and is graduated, as shown in Fig. 1, to indicate the position of adjustment. Air from the room enters the apparatus by an inlet 12 at the base of the compartment 5 and passes out through a conduit 13 at the top of the compartment 3. To maintain the member 14 at the wet-bulb temperature, it is covered with a mantle of filter-paper, muslin, or like material which receives water supplied from a sprayer 50 discharging into the conduit 13. The water passes through a filtering-annulus 58 to a trough 57, and thence by a tube or rod 59 to the mantle. To indicate the wet and dry bulb temperatures, two thermometers are mounted on the door of the casing with the bulbs within the casing, adjacent respectively to the cylinder 14 and to the cylinder 17, the wet bulb having a covering of absorbent material. The valve (not shown) for regulating the supply of moisture or heat to the room is normally closed by compressed air supplied to a conduit 94, 95 through a relay valve 87, Fig. 5, which is normally held open against a spring 91 by compressed air introduced into a chamber 65 behind a diaphragm 70. The compressed air is supplied through a pipe 72, Figs. 1 and 4, to a chamber 73 filled with filtering-material 76, and the filtered air passes by a pipe 82 to the valve 87, and by a pipe 69 to the chamber 65, with which the conduit 35 also communicates. Upon operation of the lever 20 to release air from the conduit 35, the diaphragm 70 is moved away from the stem 86 of the valve 87, allowing the valve to be closed by

the spring 91 and allowing air to escape through the hollow stem 86 from the conduit 94, whereupon the main regulating-valve is opened to supply moisture or heat to the room until the lever 20 is moved to its former position, allowing the diaphragm 70 again to open the valve 87. A sensitive action of the diaphragm is obtained by providing a restricted passage 78, Fig. 4, between the chamber 73 and the pipe 69.

102,464. Wrightson, W. P. Aug. 4, 1916.

Non-conducting coverings for heat.—The casing *b* of a non-conducting covering for a steam-pipe, boiler, &c. is supported by a frame built up of pairs of metal strips, one strip *c* being bent to the shape of the pipe &c., and the other strip *d* to

FIG. 1.



the shape of the casing. The ends of the strips are bent to form radial webs, which are secured together by clips *e*. Wedges *f* may be driven in between the ends of the strips.

102,538. Hearson, C. E. Feb. 9, 1916.

Thermostats.—A thermostat, particularly applicable for use in regulating temperatures in electrically heated ovens and sterilizers and in biological incubators, consists of concentrically-arranged elements formed alternately of two substances having different coefficients of expansion, the outer element being closed at its free end, and the movements of each element being transmitted to the next element by contact only. The thermostat may be used to control electrically-operated cooling means as described in Specification 27370/13, to maintain a temperature within a chamber a certain degree below the atmospheric temperature. A thermostat in an oven 1, Fig. 2, heated electrically in the manner described in Specifications 27909/09, 26831/13, and 26835/13, consists of a brass tube 18, Fig. 3, depending from the top of the oven casing, an inner nickel-steel tube 19 resting on the bottom of the brass tube, a second brass tube 20 depending inside the tube 19, and a nickel-steel rod 21 resting on the bottom of the tube 20. To prevent operation of the thermostat by variations of temperature in the packing space 5 between the oven and the casing, the tube 19 and rod 21 are continued across the space by a brass tube and rod, so that the expansions of the parts in the space neutralize one another. The thermostat rocks a lever 26 carrying a non-conducting pin 29, which, when

FIG. 2.

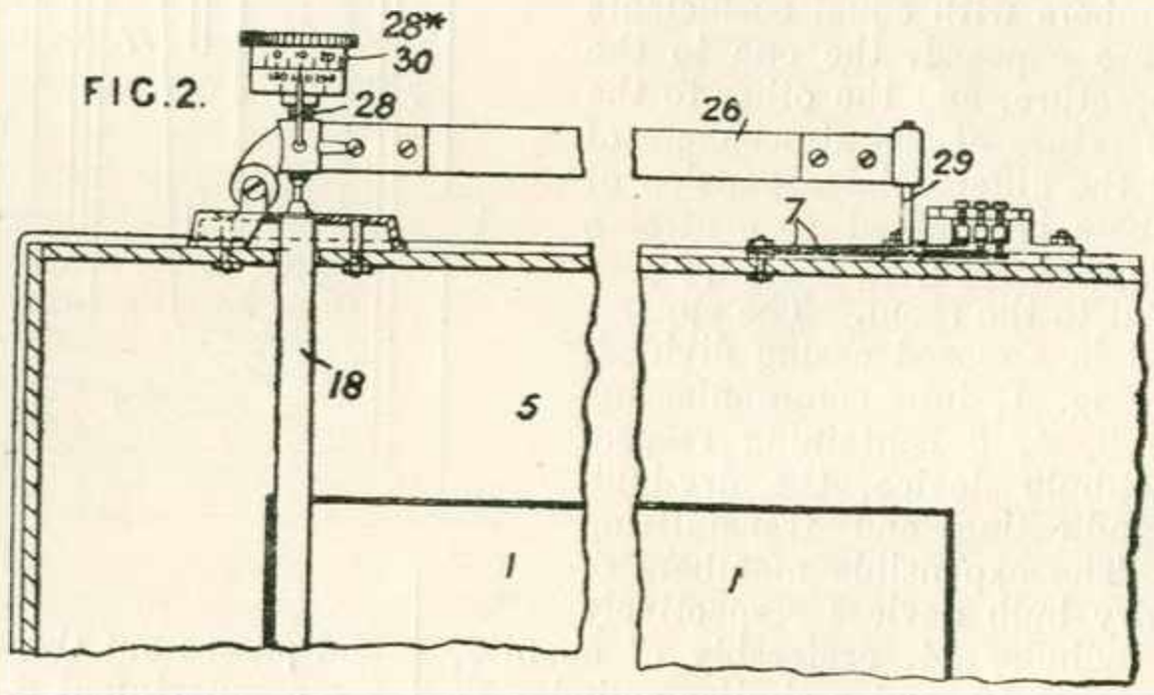
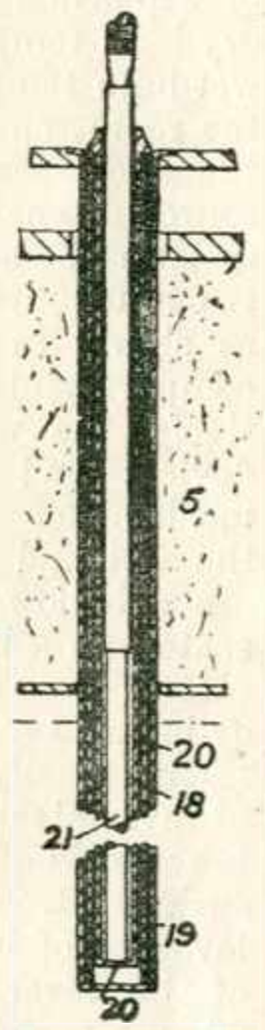
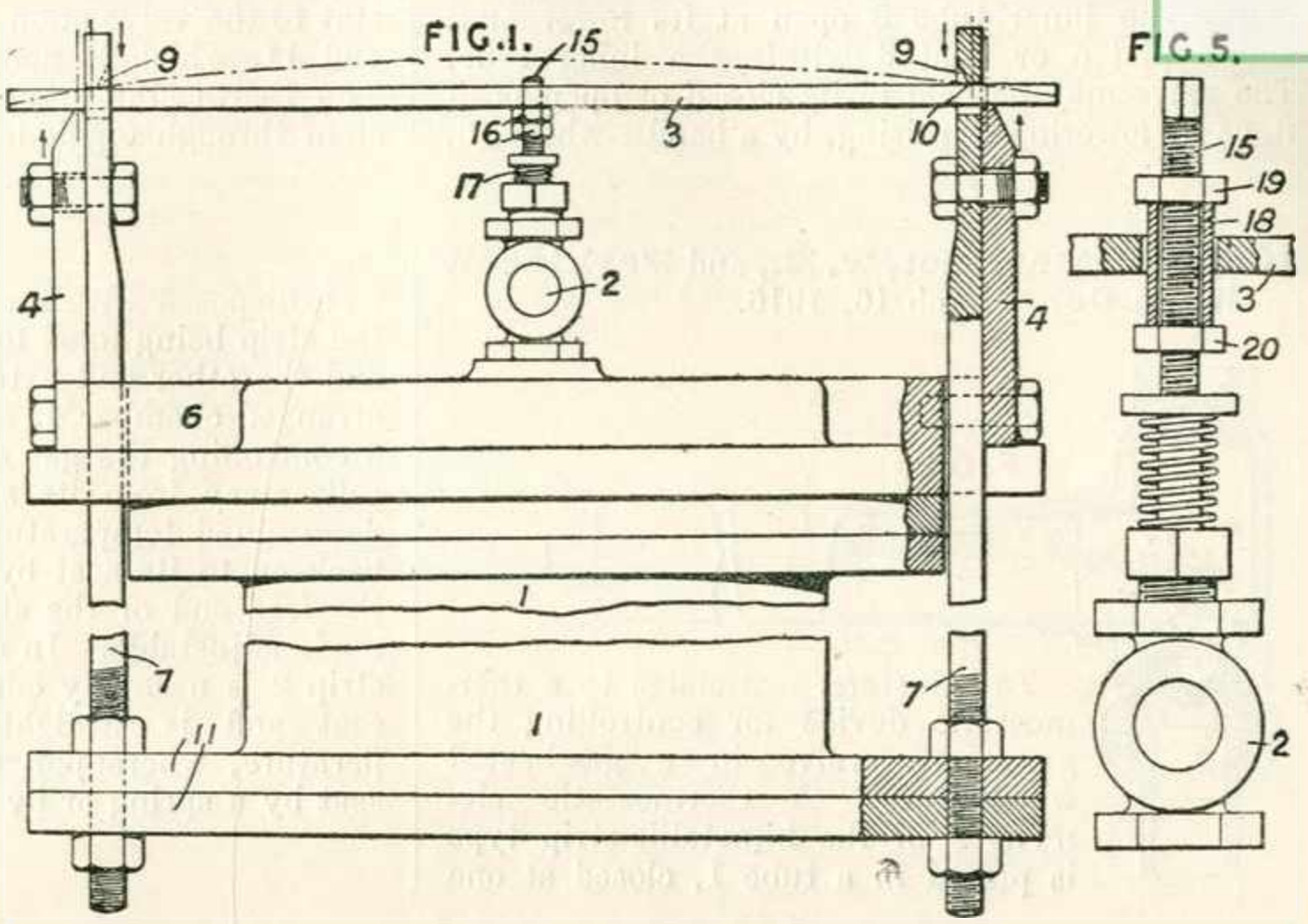


FIG 3.



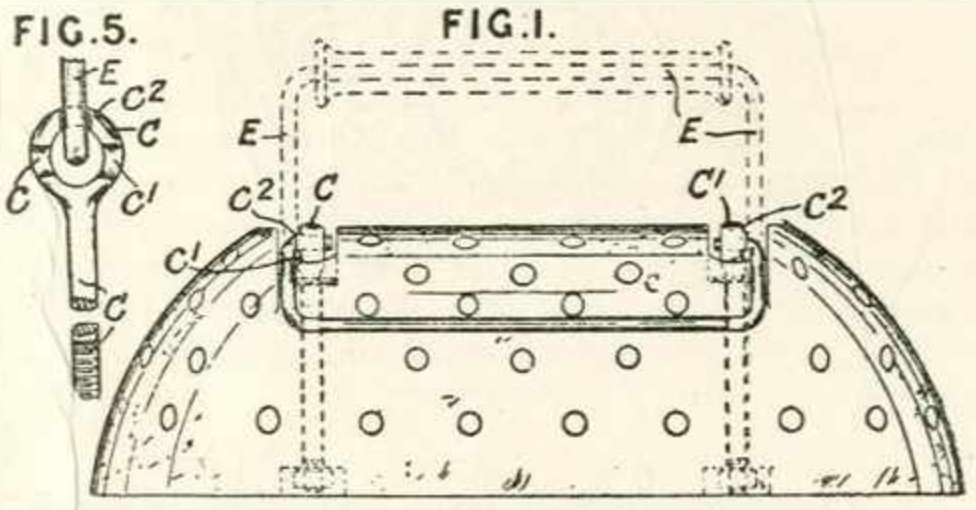
the thermostat allows the lever to fall, depresses successively the spring contact pieces 7 of the heating-circuits. The position of the lever is adjusted by a screwed pin 28 passing through the lever and supporting it upon the inner element of the thermostat. A temperature scale is provided on an adjustable cylinder 30 beneath the pin-head 28* to indicate the temperature at which the apparatus is set. The cylinder is held against the bottom of the pin head by a spring.

102,869. Twells, A. H. April 25, 1916.



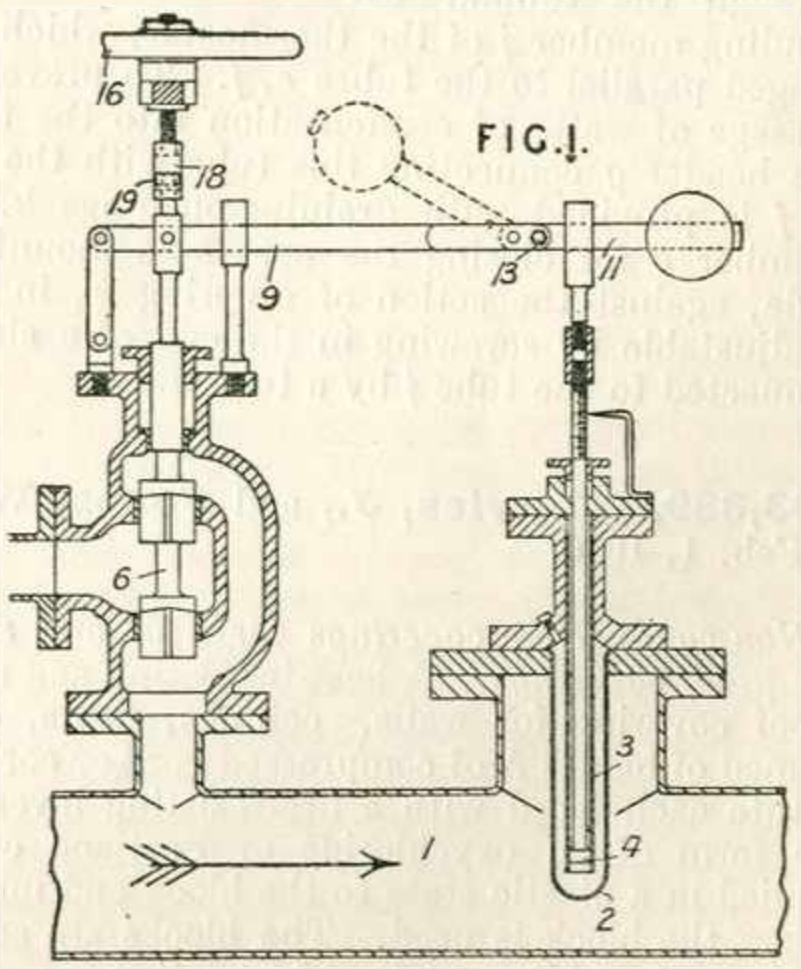
Thermostats. — Relates to the control of the temperature of heaters, such as liquid heaters, steam heaters, radiators, &c. by causing the expansion and contraction of the heated body to actuate a valve supplying the heating-fluid by the bending and straightening of a bar. The bar is supported on one side, and is bent by members bearing on the other side, such members being actuated by the expansion and contraction of the heated body. In one arrangement, Fig. 1, the bar 3, when straight, allows the valve 2 supplying heating-fluid to the body 1 to be held open by a spring 17. The bar bears at its upper side against the upper edges 10 of holes 9 in rods 7 adjustably secured to the base 11 of the body 1, and at its underside rests on members 4 secured to the cover 6 of the body 1. Expansion of the body 1 causes the bar 3 to bend downwardly at the centre to close the valve. In a modification, the bar 3 is normally bent as shown in broken lines, and is straightened by the expansion. Adjustment between the bar 3 and the valve spindle 15 is provided by nuts 16 on the spindle. In a modification, Fig. 5, a sleeve 18 passing through a hole in the bar 3 is disposed between nuts 19, 20 engaging the screwed spindle 15.

102,991. Heron, S. A. July 7, 1916.



Bed-airers; foot-warmers.—Relates to a bed-airer or foot-warmer of the kind comprising a block of refractory material adapted to be heated on a fire or otherwise, and provided with holes or passages through it. The ends of the carrying-handle E are received in mountings provided with notches c, c^1, c^2 serving to lock the handle in position resting on the block or in position for use. The handle may be mounted on the top of the block or at one end, or handles may be provided at both ends. The mountings may be eyes in the heads of bolts C, C^1 passed through, and secured to, the block.

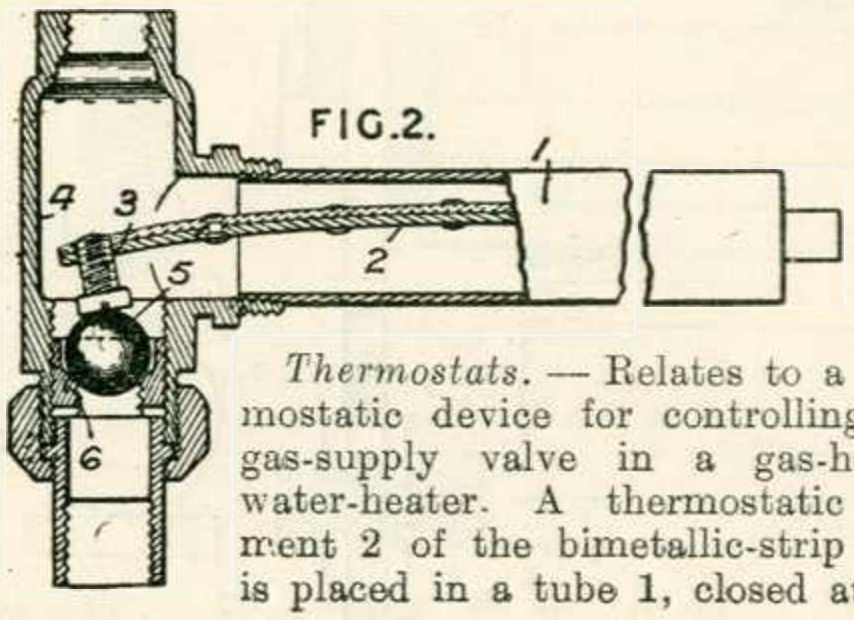
103,196. Parkyn, P. A. W. Feb. 16, 1916.



Thermostats.—Relates to apparatus for regulating the temperature of superheated steam or vapour, of the kind in which a thermostat in the steam or vapour pipe 1 operates a valve 6 controlling the admission of saturated steam or vapour

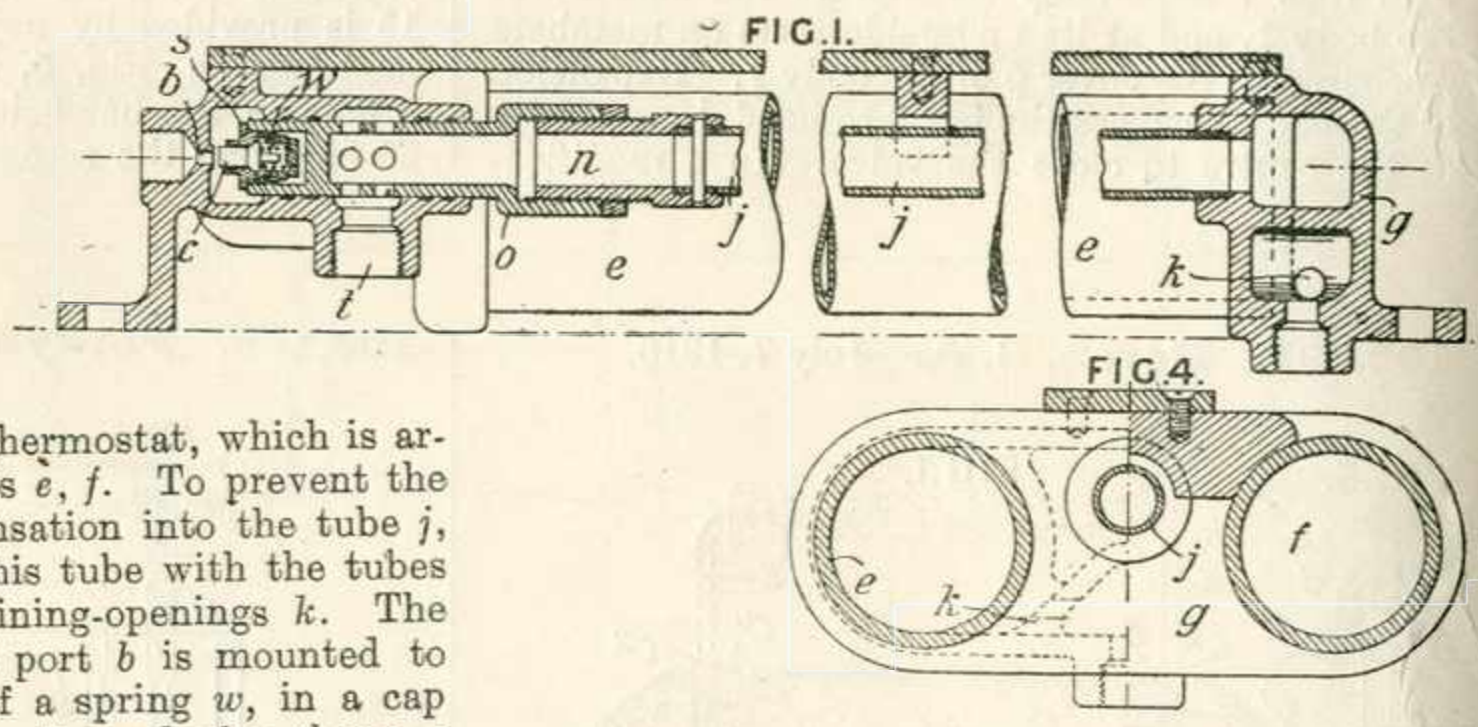
to the pipe. The thermostat consists of an outer tube 2 containing mercury or other expanding substance, an inner tube 3 open at its lower end, and a piston or float 4 within the inner tube. The valve may be held in its closed or open positions by lowering or raising, by a handle-wheel 16, a stirrup-piece 18 engaging with a head 19 on the valve stem. The lever 9 connecting the thermostat to the valve stem has a pivoted and weighted end 11, which is normally locked by a bolt 13. The thermostat may be connected to the valve stem through toggle-levers.

103,213. Barralet, T. E., and **Parkinson Stove Co.** March 16, 1916.



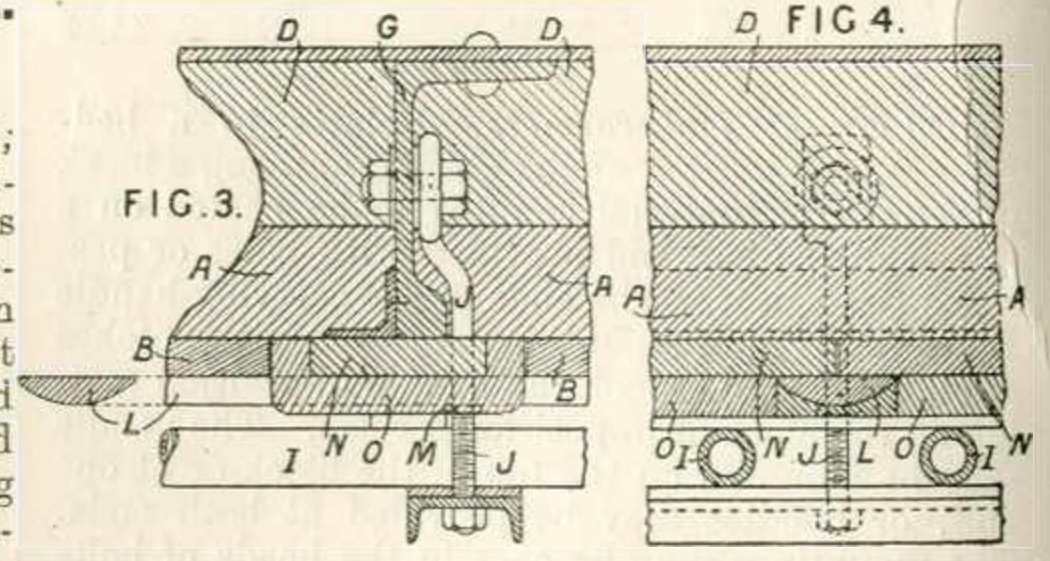
Thermostats. — Relates to a thermostatic device for controlling the gas-supply valve in a gas-heated water-heater. A thermostatic element 2 of the bimetallic-strip type is placed in a tube 1, closed at one end, disposed within the water-heater, one end of the strip being fixed to the closed end of the tube, and the other end extending into an horizontally-arranged chamber 4, where it acts on a ball valve 5 controlling the gas supply. Normally, the ball rolls away from its seat 6; but when the predetermined temperature is reached, it is pushed back on to its seat by a screw 3 projecting from the free end of the strip 2. The valve seat 6 is made adjustable. In a modified arrangement, the strip 2 is normally curved to hold the ball off its seat and is straightened by a rise of temperature, whereupon the ball is returned to its seat by a spring or by gravity.

103,437. Sawyer, R. July 20, 1916.



Radiators; thermostats. —Relates to a radiator of the kind described in Specification 29487/12 in which steam, entering the radiator tubes *e*, *f*, through a thermostatically-controlled port *b*, passes to the outlet *t* through the tubular expanding member *j* of the thermostat, which is arranged parallel to the tubes *e*, *f*. To prevent the passage of water of condensation into the tube *j*, the header *g* connecting this tube with the tubes *e*, *f* is provided with draining-openings *k*. The member *c* for closing the port *b* is mounted to slide, against the action of a spring *w*, in a cap *s* adjustable by screwing in the end of a sleeve *o* connected to the tube *j* by a tube *n*.

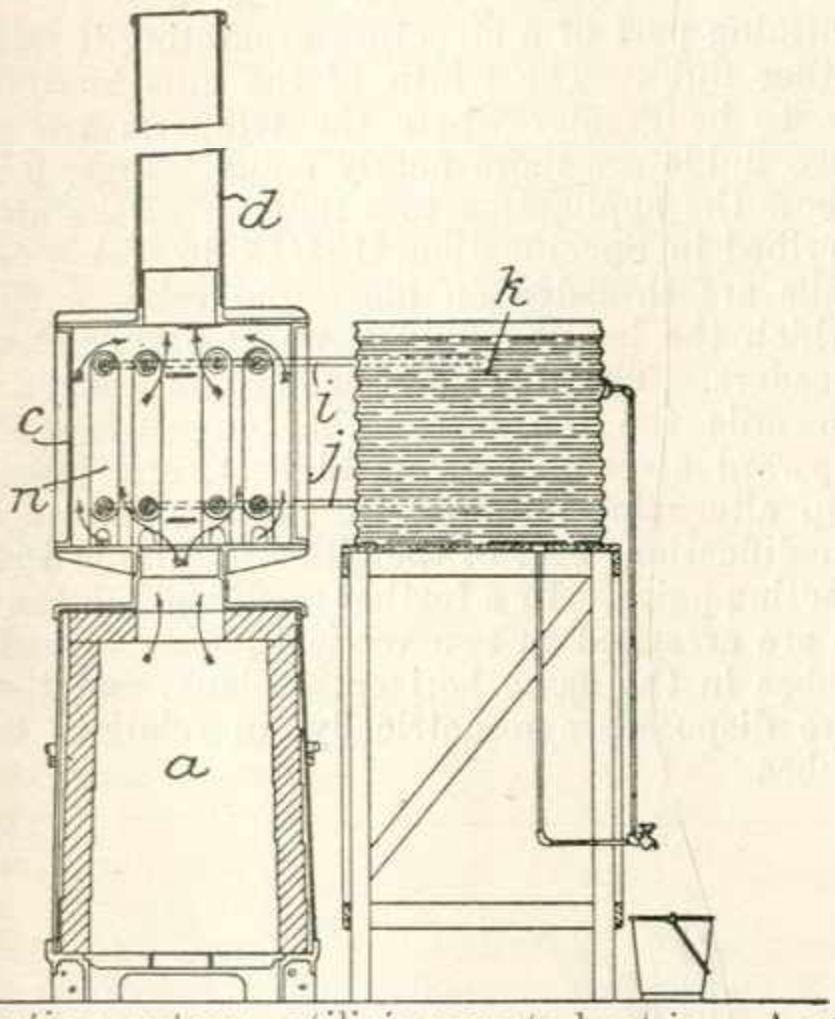
103,839. Davies, J., and **Jones, W. H.** Feb. 1, 1916.



Non-conducting coverings for heat and sound; fire-proof coverings.—A heat-insulating and sound-proof covering for walls, ceilings, floors, &c. is formed of blocks A of compressed cork or cork substitute each faced with a fire-resisting layer B in the form of an oxychloride or Portland cement applied in a plastic state to the block and matured before the block is used. The blocks are secured by cement or bitumen to a foundation comprising one or more layers formed of lengths D of compressed cork &c., the blocks being arranged to break joint with the lengths D. The blocks A are joined together by a cement grouting. The cement for the facing B and the grouting is preferably a mixture of calcined magnesite, chloride of magnesium in solution, and sawdust, hair, or other fibrous material. Compressed cork blocks of various shapes, and similarly faced with an oxychloride or Portland cement, are provided for

covering projecting joists or posts and the angular junctions of the insulation. Figs. 3 and 4 show means for securing the insulation to the ceiling of a cold-storage chamber. Galvanized iron beadings L disposed at right-angles to the joists G are supported by nuts M on hangers J, which are bolted to the joists and support the brine pipes I. The cement layer B adjacent to each joist is cut away, and the spaces so formed are filled by transverse pieces of cork N faced with an oxychloride or Portland cement O. The cement O may be cut away to allow the beading L to overlap adjacent ends of the cork pieces N, cement being afterwards filled into the cavities.

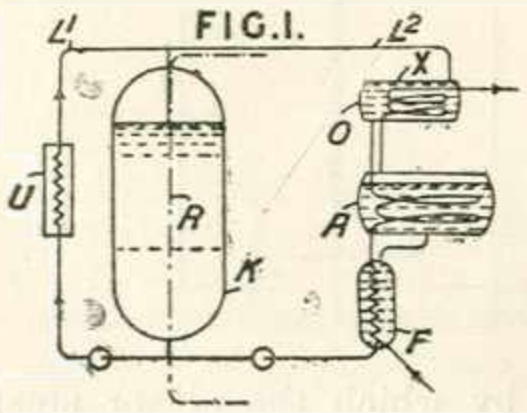
103,875. Watson, G. Aug. 16, 1916.



Heating systems, utilizing waste heat in. A casing *c* removably disposed between a portable refuse-destructor *a* and its chimney *d*, contains water compartments *n* connected in series by tubes. Pipes *i*, *j* connect the compartments *n* to a reservoir *k*, from which the water may be drawn off.

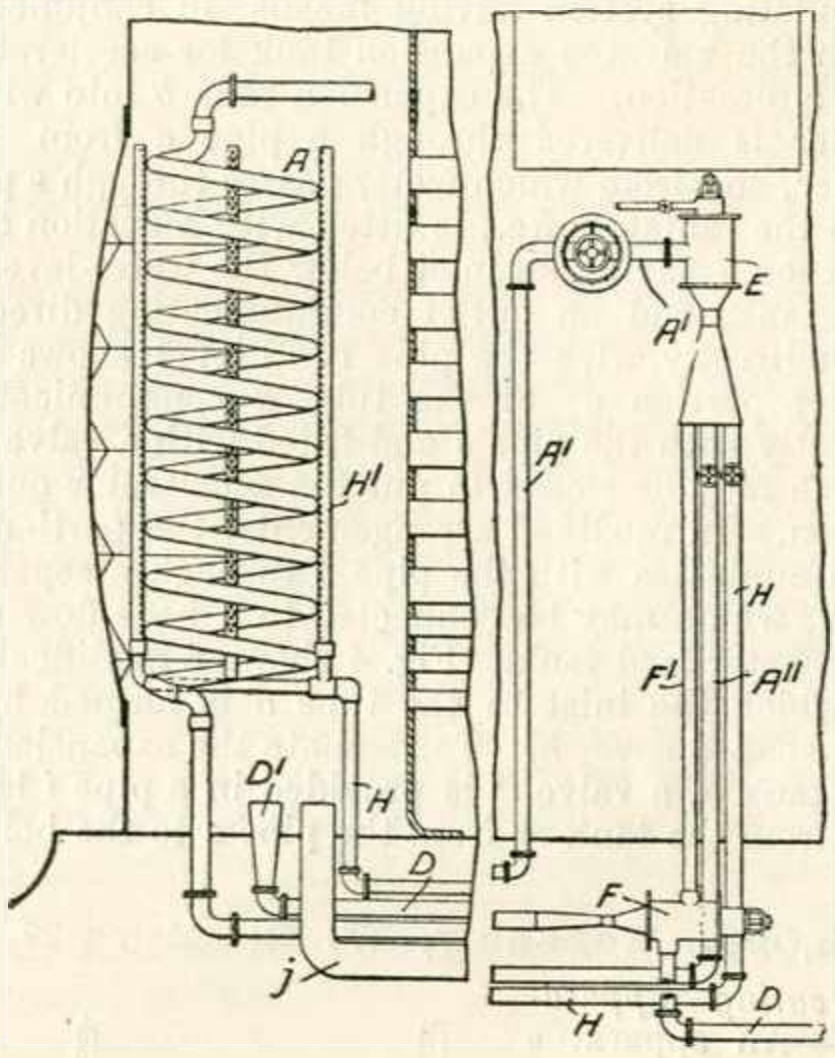
104,006. Ruths, J. K. Feb. 10, 1916, [*Convention date*]. *Void* [*Published under Sect.* 91 *of the Act*].

Heat-storing apparatus. — Apparatus for storing heat for use when required in generating steam comprises a reservoir K containing a liquid having a high boiling-point or a melted solid, pipe connexions



L^1, L^2 being provided for circulating the liquid, when charging the apparatus, through a heater U, and afterwards through the steam-generator F, A, O. A steam-pipe R may be led through the reservoir to assist in heating the liquid. Heat-storing bodies, such as pieces of metal or stone, may be placed in the reservoir. The heated liquid circulates through coils in a feed-heater F and a generating-vessel A, and around the coils X of a steam-superheater.

104,362. Bouhon, L. J. R. Feb. 25, 1916.



Heating vehicles.—Exhaust steam is heated in a coiled tube in a locomotive smoke-box, and is circulated through heaters in the carriages by steam injectors or aspirators. An injector E draws steam from the exhaust pipe *j* through a pipe A^1, and forces it through a pipe A^{11} and a heating-coil A, which is detachably mounted on the smoke-box door. A second injector F, which is operated by exhaust steam taken from the injector E by a pipe F^1, is used to force the steam in the return pipe D through a nozzle or blower D^1 in the smoke-box. Another portion of the exhaust steam from the injector E may be led by a pipe H to perforated cleaning-pipes H^1 around the heating-coil. Thermostatic regulators may be provided to control the passage of exhaust steam direct to the heaters without passing through the heating-coil.

104,548. Gould, H. W., and **Florence, A. P.** March 10, 1916.

FIG. 4.

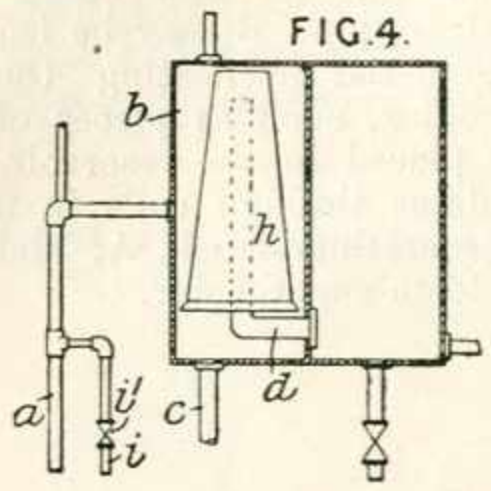
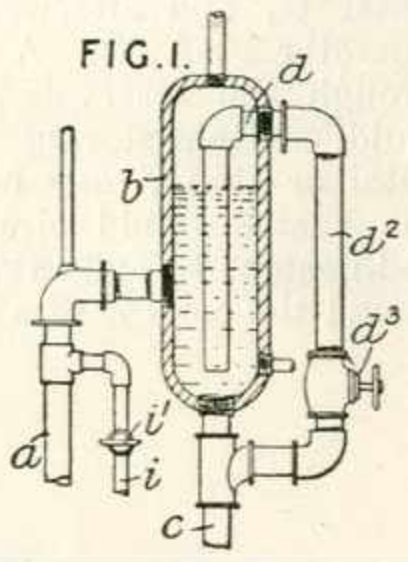


FIG. 1.



Heating buildings &c.—Relates to a hot-water circulating system having means in conjunction with the elevated expansion tank for accelerating the circulation. The expansion tank *b* into which water is delivered through a pipe *a* from the boiler, and from which water passes through a pipe *c* to the radiators &c., is fitted with a suction outlet tube *d* having an inlet below the water-level in the tank, and an outlet communicating directly or indirectly with the pipe *c*. Fig. 1 shows the outlet portion d^2 of the tube *d* communicating directly with the pipe *c* and fitted with a valve d^3, which may be closed to put the accelerator out of action. In modified arrangements, the portion d^2 communicates with the pipe *c* through a separate tank, which may be connected to a back-flow and cold-water feed tank. Fig. 4 shows a modification in which the inlet to the tube *d* is formed by a bell-shaped cover *h*. To regulate the expansion in the tank *b*, a valve i^1 is provided in a pipe *i* leading from the tank or from the pipe *a* to the boiler.

104,721. Pease, E. L. March 11, 1916.

FIG. 4.

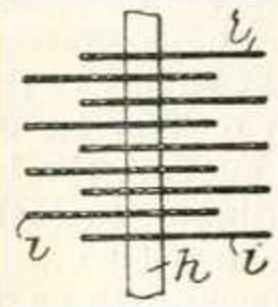


FIG. 5

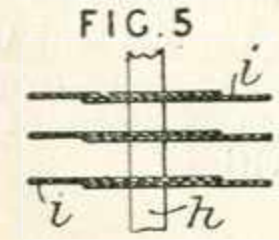
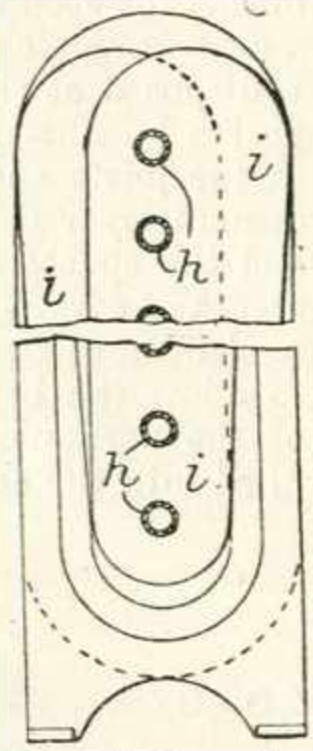


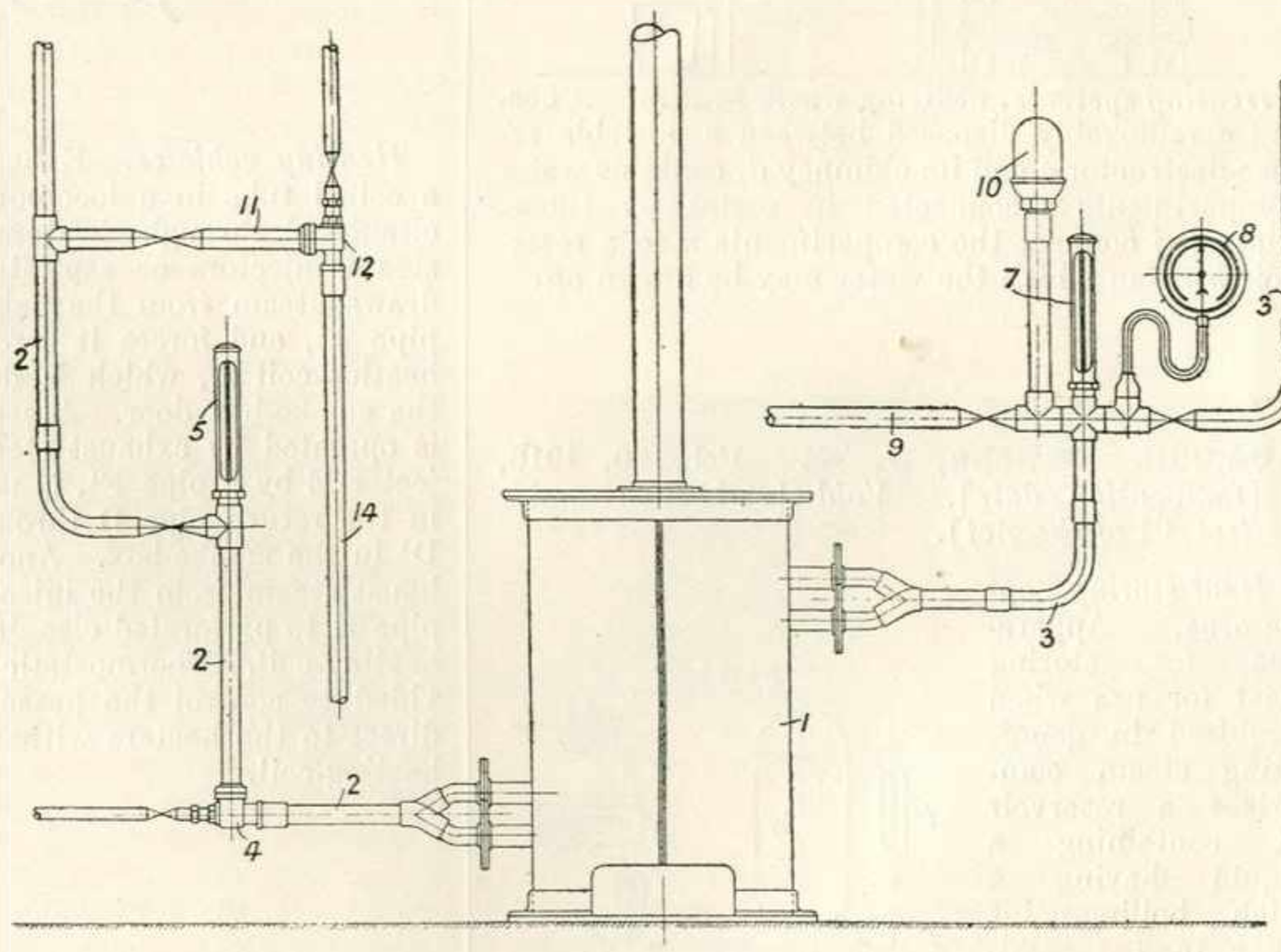
FIG. 3.



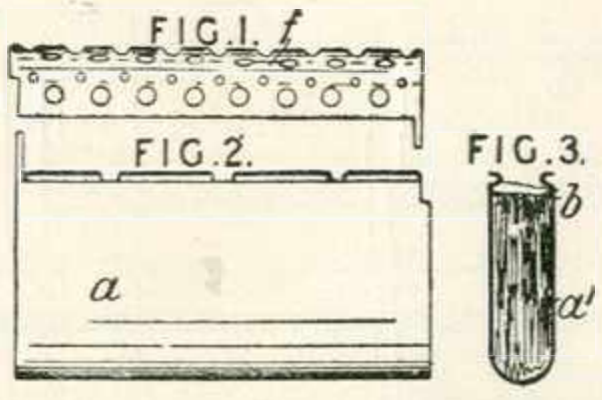
Radiators.—Relates to heat-exchanging apparatus of the kind in which one fluid flows in streams between metal gills forming part of a structure separating it from the other fluid. The width of the gills is so varied as to be greater where the temperatures of the two fluids are more nearly equal. Figs. 3 and 4 show the application to a radiator of the kind described in Specification 4154/15, in which vertical gills are threaded on horizontal tubes *h* through which the heating fluid flows in parallel between headers. The gills *i* are made to increase in width towards the top where the temperature of the upward stream of air is highest, and may overlap alternately on opposite sides as shown. In a modification, Fig. 5, the gills are arranged in contacting pairs. In a further modification, the tubes *h* are arranged in two vertical planes with no two tubes in the same horizontal plane, and the gills are disposed symmetrically in relation to the tubes.

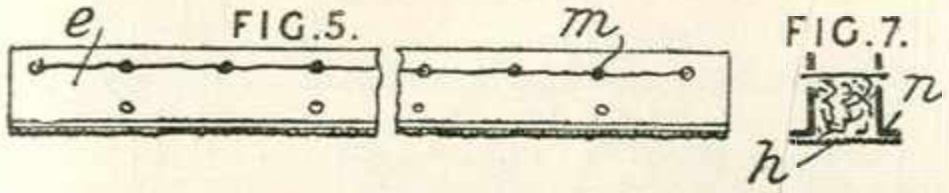
105,096. Renshaw, W. R. March 27, 1916.

Heating - apparatus.—An apparatus for treating chaff or other loosely aggregated material with heated gases or steam comprises a superheater 1 connected on either side by pipes 2, 3 to opposite ends of the vessel containing the chaff &c. The superheater outlet pipe 3 is fitted with a safety-valve 10, thermometer 7, pressure gauge 8, and steam-pipe 9 for controlling the conditions of the gas or steam passing through the chaff. The inlet pipe 2 is also provided with a thermometer 5, and with a pump or a drawing and forcing ejector 4, by which the air or steam is maintained in circulation.



105,388. Martin, J. Walter-. April 10, 1916.



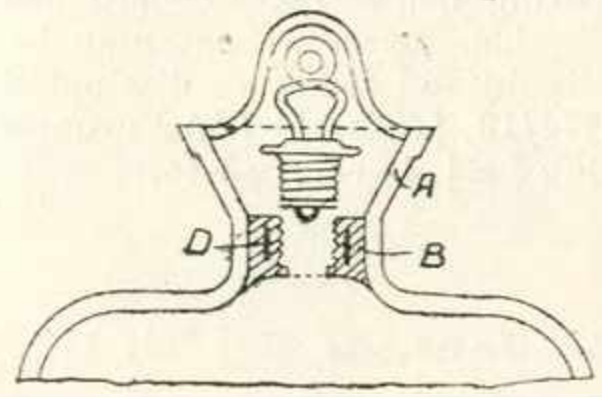


Hand-warmers; footwarmers —A hand or foot warmer of the kind in which heat is produced by platinum or asbestos sponge rendered incandescent by gasolene vapour or the like comprises a flat casing *a*, containing an absorbent a^1 for the gasolene &c. shaped at *b* to form guides to receive the perforated cover *f* and also a slide *e*, *n* carrying the spongy or catalytic substance, which rests on wire-gauze *h* and is held in position by a wire threaded through holes *m*.

105,577. Jones, F. C. Sept. 2, 1916.

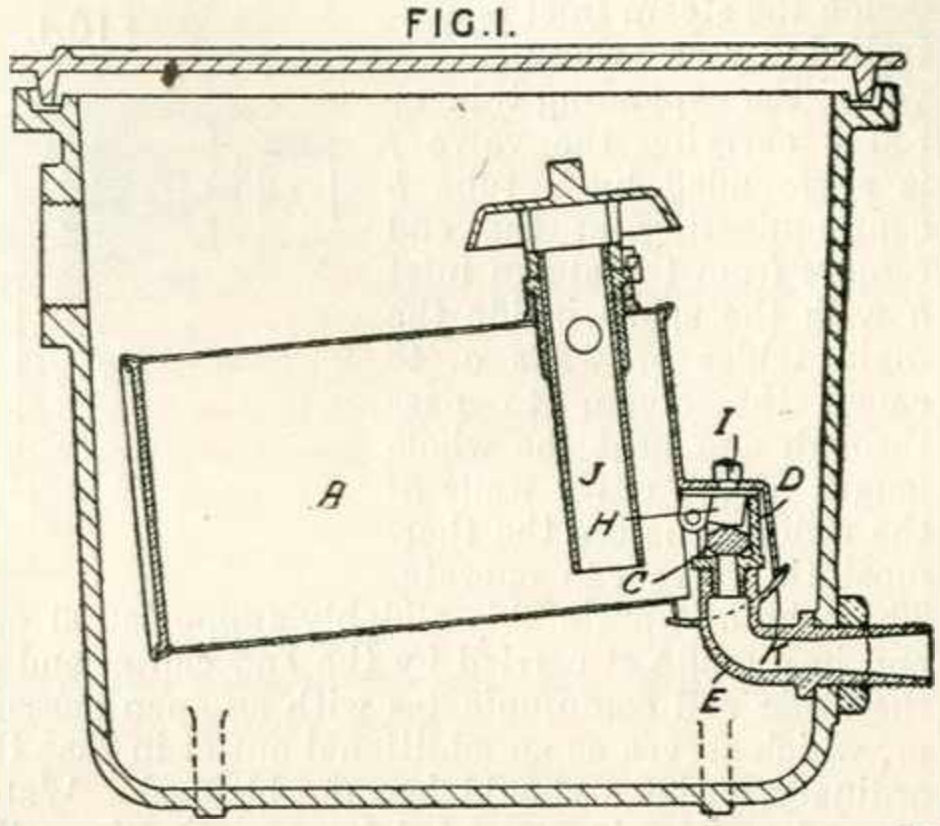
Hot-water bottles. —Relates to seamless hot-water bottles formed from sheets of rubber-coated fabric moulded and vulcanized into one piece under internal fluid pressure, and comprises the jointing of the sheets with a thickening of the rubber at the joint. Fig. 3 shows the edges of the sheets C nearly meeting, and the rubber slightly thickened, Fig. 4 shows the edges nearly meeting and supported by a reinforcing strip of fabric, and Fig. 5 shows a double-lap joint.

105,735. Jones, F. C. Sept. 2, 1916.



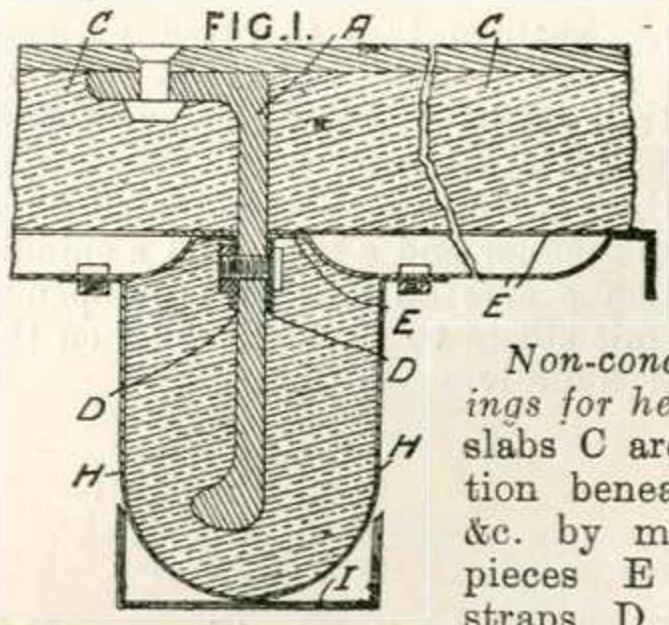
Hot-water bottles.—In a rubber hot-water bottle in which the internally-threaded neck piece B which receives the screwed stopper is made of harder rubber than the rest of the neck A, a reinforcing member D of fabric or of metal is embedded in the hardened rubber.

106,424. Butterworth, H. L., and Lancaster & Tonge. Nov. 22, 1916.



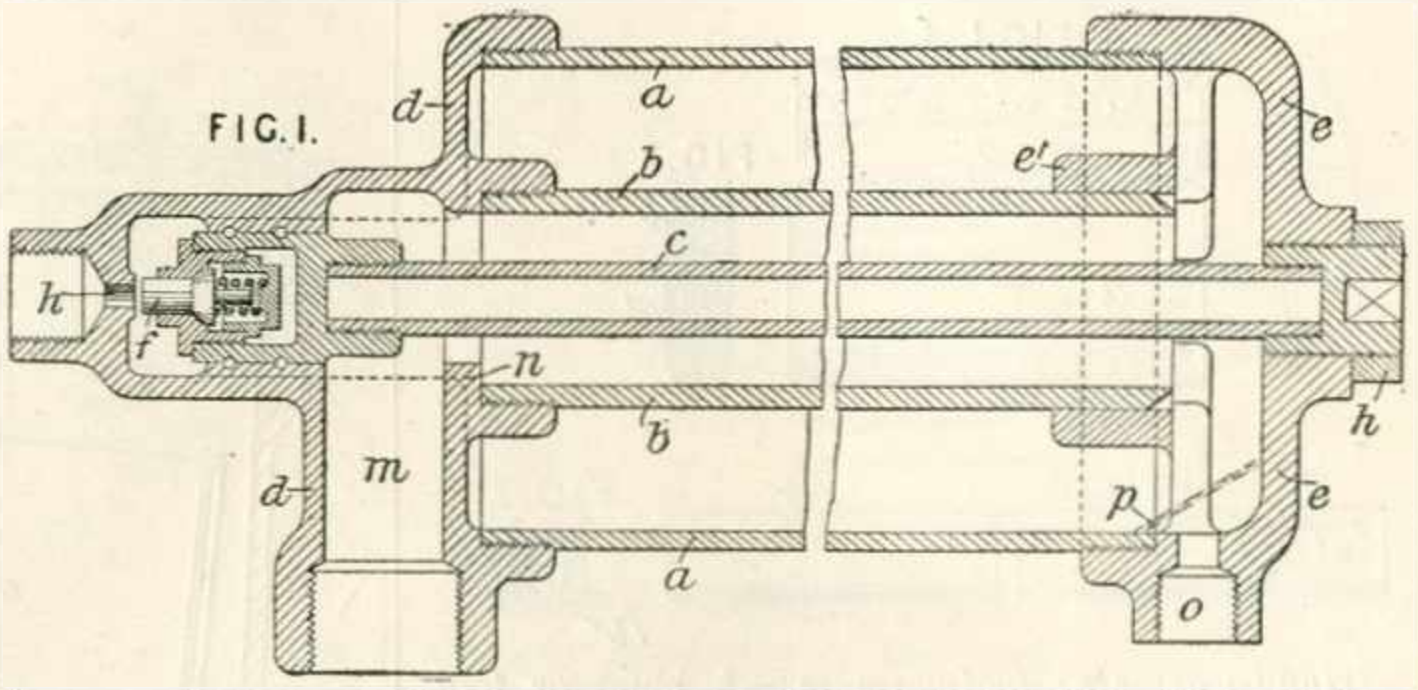
Steam-traps.—A steam-trap of the type described in Specifications 3663/82 and 11234/03, in which an inlet valve is controlled by a floating vessel into which the incoming water flows, has the valve member and seat arranged inside the float and has the corner of the float rounded to engage a curved flange on the valve seat. The vessel A, preferably cylindrical, has a discharge hole in the bottom, and a drum-tube or similar venting device J and is secured by a nut I to a member H pivoted to the valve seat D. The member H is adapted to bear against the valve member *c* to press it against the seat D. The seat is detachably secured to an **L**-shaped member E, fixed to the side of the trap and provided with a curved flange K arranged to co-operate with the rounded corner of the float.

107,078. Bean, A. June 23, 1916.



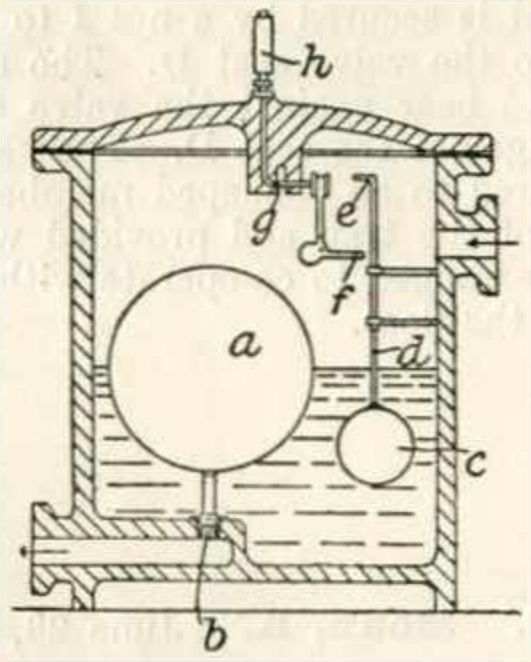
Non-conducting coverings for heat.—Asbestocel slabs C are fixed in position beneath ships decks &c. by means of angle-pieces E and grooved straps D bolted to the beams A, as shown. The grooved straps may be of Vee, channel, half-round or other section. The webs of the beams may be enclosed by casings H, I, filled with asbestos composition.

107,134. Still & Sons, W. M., and **Still, W. C.** Sept. 28, 1916.



Radiators; thermostats.—In a radiator of the type in which the steam inlet is controlled by a thermostatic valve, the expanding tube or rod *c* carrying the valve *f* is surrounded by a tube *b* communicating at the end remote from the steam inlet *h* with the space inside the main tables or walls *a*, to cause the steam to pass through and heat the whole length of the outer walls of the radiator before the thermostatic valve can operate. The tube *b* is preferably slidably supported at one end in a guide e^1 carried by the end cap *e*, and at the other end communicates with an open passage *m*, which serves as an additional outlet in case the ordinary outlet *o* should become blocked Water of condensation is prevented from passing from the inner tube *b* to the passage *m* by a lip or weir *n* formed on the cap *d* adjacent to the end of the inner tube. A screen *p* perforated to allow the passage of water is arranged across the outlet *o* so as to deflect the steam towards the inner tube *b*.

107,199. Schiff & Stern. June 10, 1916, [*Convention date*].



Steam traps.—A steam-trap is fitted with an alarm whistle which sounds when the level of water in the trap falls to such an extent that a free escape of steam takes place. In the arrangement shown, the outlet valve *b* is actuated by a float *a* in known manner and a float *c* on a spindle *d* with projection *e* acts on a lever *f* to open a valve *g* and admit steam to a whistle *h* when the water level falls unduly.

107,301. Haddan, A. J. H., (*Wanger, H.*). Sept. 7, 1916.

Heating systems and apparatus.—The closed tubes of Perkins ovens and like heating appliances are charged with saturated aliphatic hydrocarbons having a boiling point of not less than 180° C., and free from any such hydrocarbon which is solid at 15° C. Suitable material is obtained in the process of refining mineral oils. The object is to obtain the requisite temperatures, say from 250 to 365° C., without undue pressure in the tubes, and to preserve the tube from corrosion.

107,443. Semmler, C. July 24, 1916.

Heating systems.—A liquid with a boiling point of between 100 and 360 degrees centigrade is circulated in the jacket of a cylinder or sliding mouth or in apparatus for cooling coke. It is then used to heat a steam boiler or to heat air for use in blast furnaces &c. Oil of turpentine, aniline, paraffin, calcium chloride solution glycerine and alloys freezing below 360° C. are mentioned as suitable liquids. Excess heat may be extracted from the liquid and stored or dissipated. Specification 23274/13, [*Class* 51 (ii.) Furnaces and kilns for applying &c.], is referred to.

107,655. Jane, A. M. July 11, 1916.

Thermostats.—Electric heating-apparatus of the kind in which the current is automatically switched on and off to keep the temperature within certain limits is provided with a special construction of interrupter. A lever 25 pivoted at 26 carries bridge-pieces 23, 24 moving over contacts 19, 20, 21, 22 adapted to make and break the cir-

cuit through the heating-coils 7, 8, 9, and also a bridge-piece 38 moving over contacts 35, 36, 37 to pass current alternately through the coils 29, 30. These coils move the lever 25, through the core or armature 27, when they are energized through the action of the thermal switch 10, which

FIG.3.

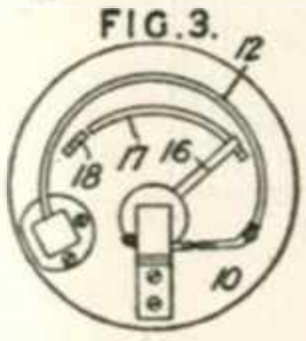


FIG.4.

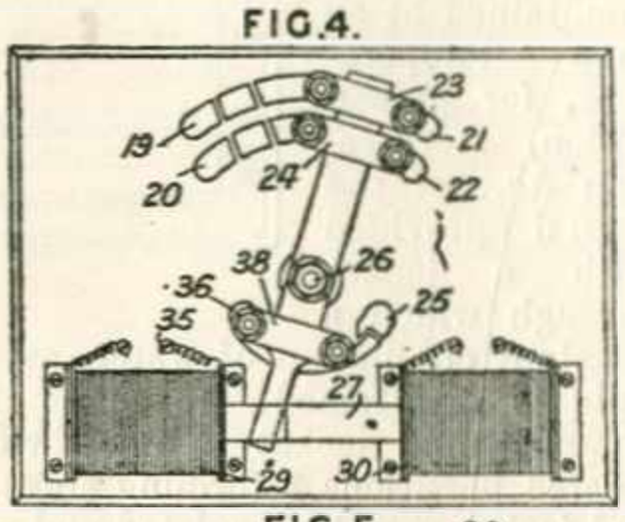
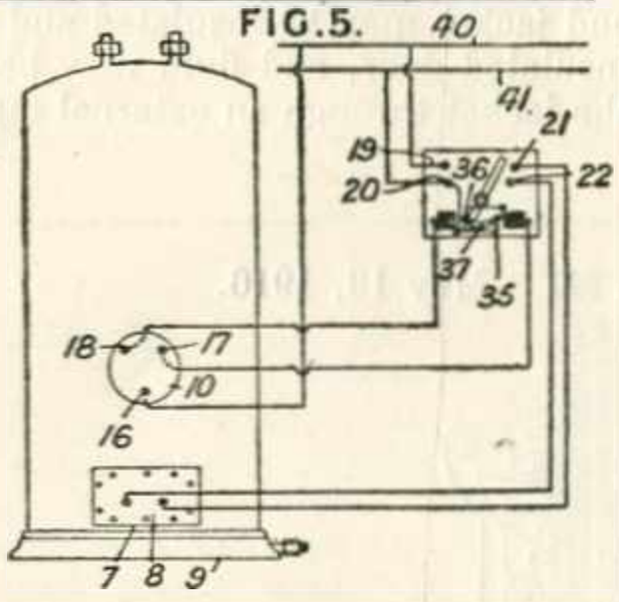


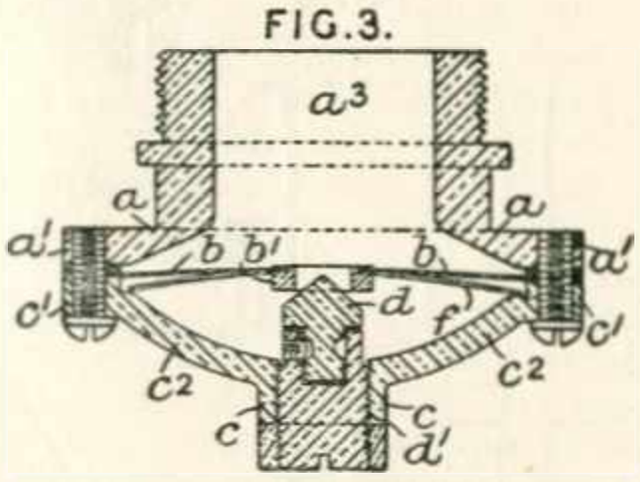
FIG.5.



comprises an arm 16 moving over contacts 17, 18 and actuated by a curved tube 12 into which the heated liquid passes. When the lever 25 is thrown over, the current through the coil is discontinued, the circuit being broken. Fig. 5 shows a diagram of the installation, 40 and 41 being the main conductors.

107,857. Marillier, F. W., and **Champeney, C. C.** Aug. 22, 1916.

FIG.3.



Steam-traps.—A valve device particularly applicable for draining the heating systems used on railway trains comprises a parted diaphragm carrying an annular valve member adapted to be held by the pressure in the system against a fixed or adjustable coned seat secured to the casing. In the form shown in Fig. 3, the valve seat *d* is loosely mounted in a member d^1 screwed into a boss *c*. The boss *c* is connected by arms c^2 to a ring c^1 used for clamping a diaphragm *b* against a flange a^1 formed on the casing *a*. A plate spring *f* comprising either a central or circumferential ring and radial fingers rests on a ledge on the ring c^1 and bears either against the diaphragm or a ledge formed on the valve member b^1. In a modification the valve seat is supported from a bridge in the passage a^3. The valve member may have a guide-ring suspended from suitable arms and working over the cylindrical part of the seat. In a further modification the valve member is extended and externally coned to engage a recess in the adjustable member.

108,035. Filmer, G. B., and **Denton, J. J.** July 22, 1916.

FIG.1.

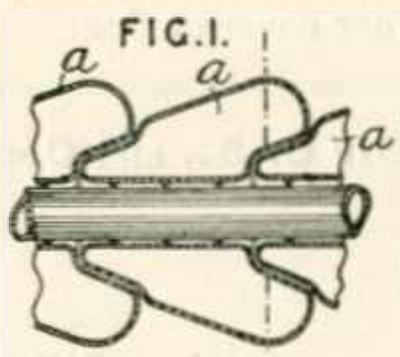


FIG.3.

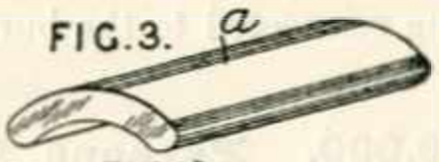


FIG.4.

FIG.8.

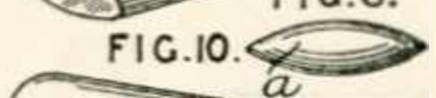


FIG.10.

Non-conducting coverings for heat and sound.—The insulating jackets of pipes, chambers, or vessels are made of a number of separate vacuum cells of any desired shape. Fig. 1 shows a number of vacuum units *a* surrounding a pipe and fitting together at the ends. The vacuum cells may be shaped as shown in Figs. 3, 8, and 10 or they may be of spherical, cylindrical, spiral, cubical, or other shape.

Reference has been directed by the Comptroller to Specifications 20507/02, [*Class* 29, Cooling &c.], 21371/03, 29994/12 *and* 20193/14.

108,204. Etna Lighting & Heating Co., and **Prosser, H. R.** July 31, 1916.

FIG.5

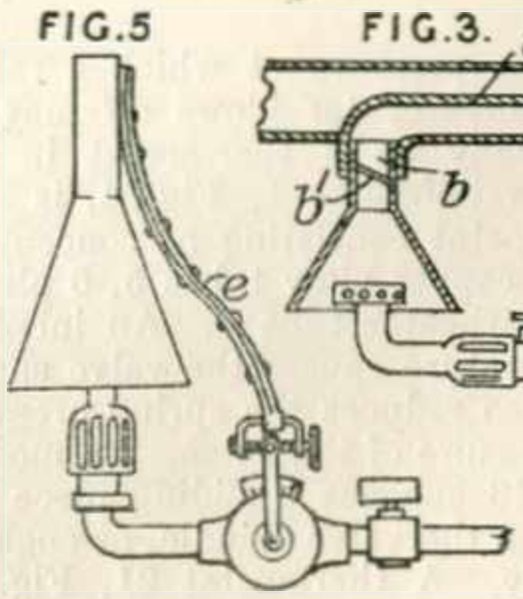
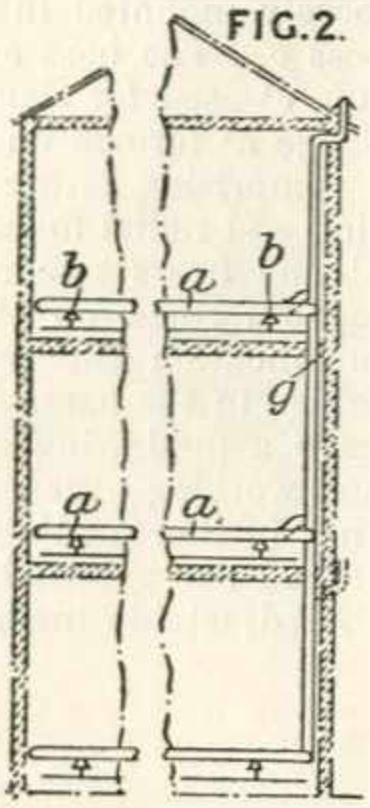


FIG.3.

Heating - apparatus for maintaining store rooms &c. at a regular temperature comprises one or more pipe flues *a* passing around the room and connected to a vertical flue *g*, which pipe flues have a number of openings *b* beneath which are arranged burners or other heating devices. The burners may be regulated by thermostats and the combination products may be caused to circulate through more than one pipe flue by means of dampers. The openings *b* may be fitted with dampers b^1 and covers or extensions *a* extending along the flue. The burners have a needle adjustment which may be controlled by a thermostat, as shown in Fig. 5, the metal strips *e* being connected to the burner cover or flue.

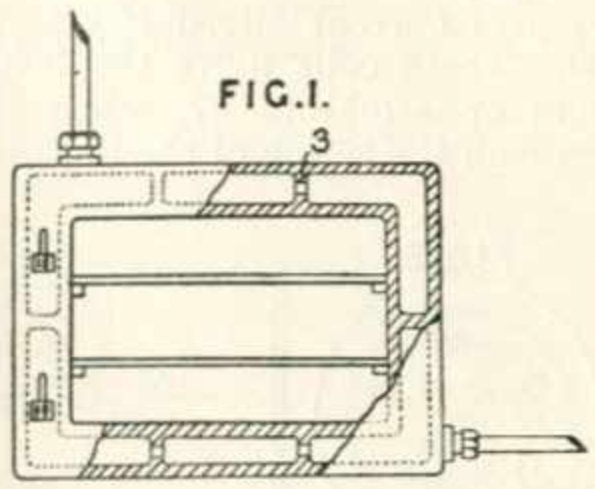
FIG.2.



108,539. Woosey, W. J. Aug. 16, 1916.

Heating - apparatus.—Chambers in which food or other articles are to be maintained at an even temperature, for preservation, sterilization &c., of the kind provided with a jacket through which a constant circulation of water, steam or other hot fluid is maintained, are made by casting the chamber and jacket in one, with integral perforated partitions 3 forming stays. The chamber and jacket may be insulated and provided with an insulated door, and fluid may be withdrawn from the jacket through an external tap.

FIG.1.



108,690. Parsons, Sir C. A., and **Cook, S. S.** May 13, 1916.

FIG.4.

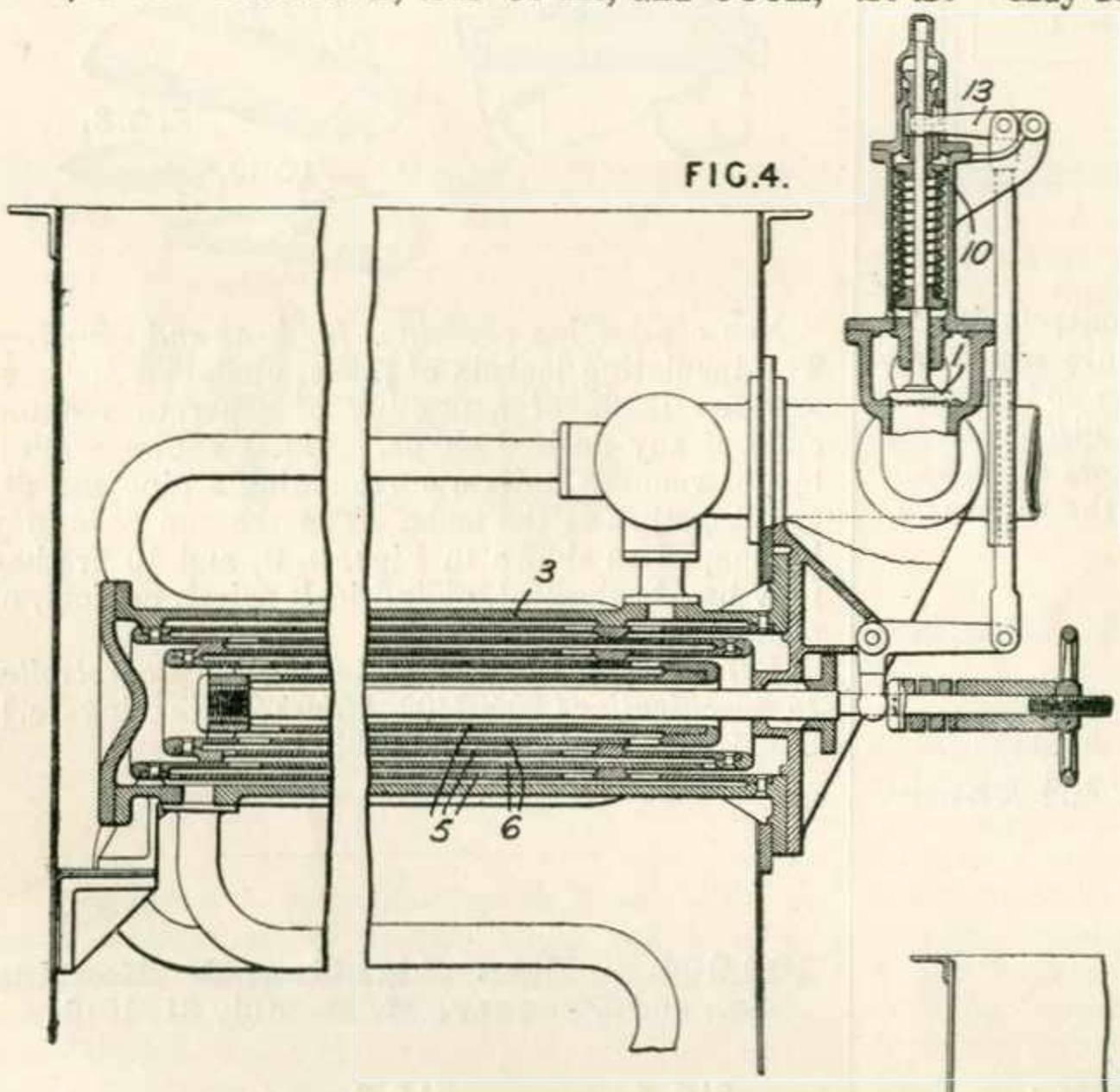
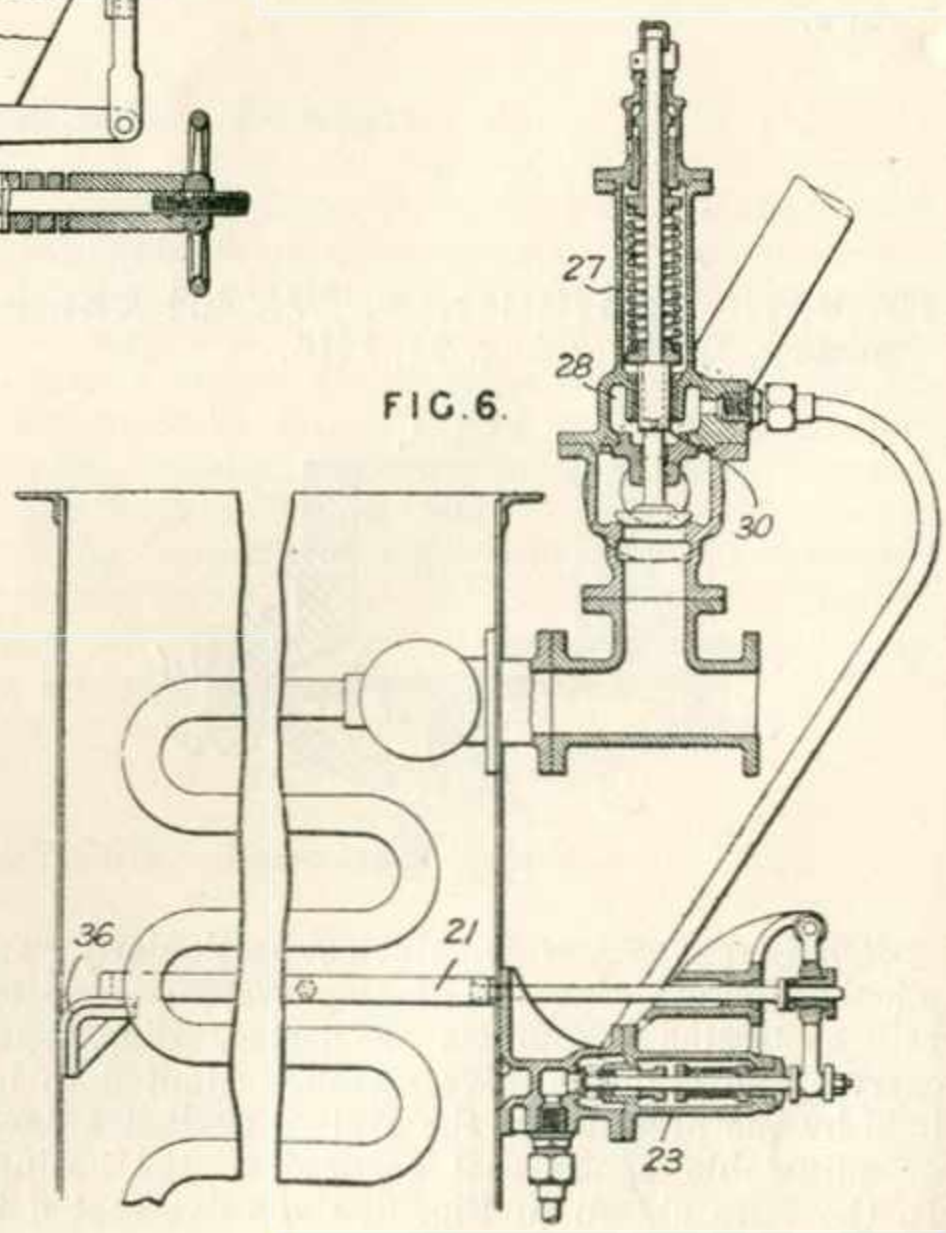


FIG.6.



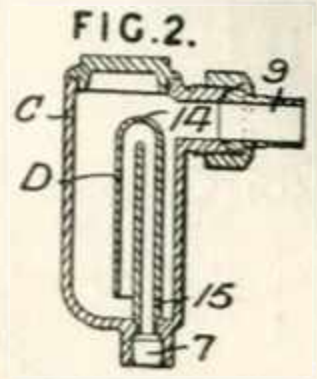
Thermostats.—The pressure at which a relief-valve on a steam-superheater blows off may be adjusted automatically by a thermostat in the superheater. The relief-valve 1, Fig. 4, is controlled by a thermostat consisting of concentric, alternate steel and copper alloy tubes 5, 6 placed in an enlarged superheater tube 3. An increase in the steam temperature causes the valve spring cap 10 to lift, and so reduces the spring pressure and the blow-off pressure of the valve. In modifications, the lever 13 engages a sliding piece between two springs on the valve spindle, or engages the spindle directly. A thermostat 21, Fig. 6,

placed between the superheating tubes consists of a flat bar of alloy riveted at one end to the free end of a double bar which is slidably supported on a bracket 36. The thermostat operates a relay valve 23 controlling the supply of steam through a pipe 27 to a chamber 28 containing an enlargement of the valve spindle 30, the steam pressure acting on the enlargement in opposition to the pressure of the spring.

108,819. Goold, L. W., (*Crosby, A. P., and Price, W. T.*). March 12, 1917.

Heating buildings &c.; radiators.—A return seal for radiators for a vapour heating-system, whereby air is automatically removed from the radiators, comprises a seal C having a siphonic discharge D connected to a radiator at 9 and having a return connection at 7 to the vapour-generator. A small opening 14 is provided in the arch of the siphon so that air is sucked from the radiator intermittently by the operation of the siphonic discharge which is set up by an excess of condensation in the trap. A second small passage 15, located near the bottom of the casing, ensures the emptying of the seal when the radiator is shut off and thereby obviates damage by frost.

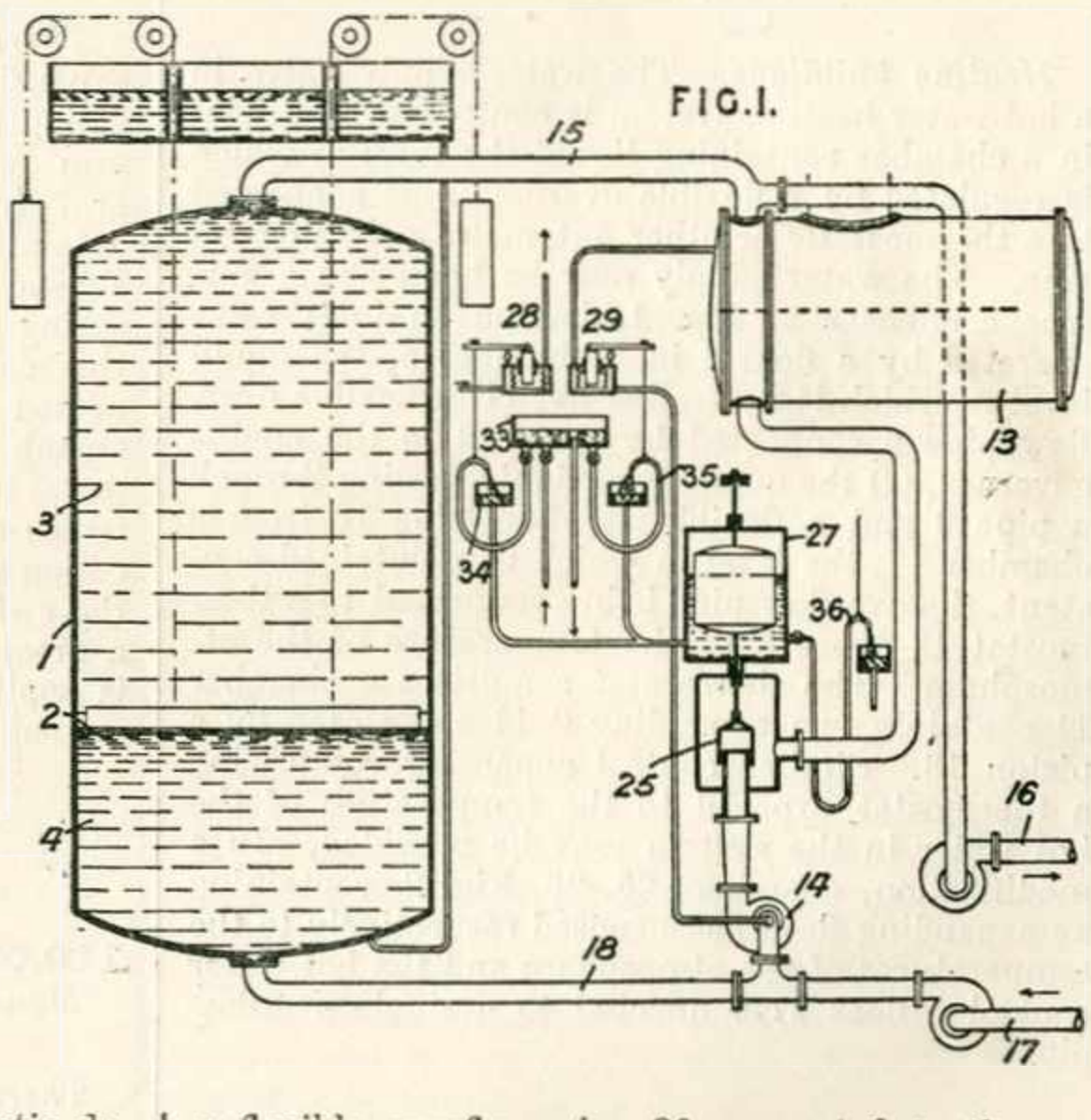
FIG. 2.



108,858. Zublin, W. Aug. 17, 1916, [*Convention date*].

Thermostats.—In a hot-water heating installation comprising a heater such as a surface condenser, and a storage tank connected to the flow and return pipes, the storage tank is divided by a heat insulated piston into an upper hot-water compartment and a lower cold-water compartment; or two tanks may be used. The quantity of water flowing through the distributing-system and through the heating-apparatus is regulated so that when a greater quantity of hot water than is necessary is supplied, the surplus is forced into the hot-water compartment of the storage tank, and when a less quantity is supplied, the surplus cold water is forced into the cold-water compartment. The hot and cold water compartments 3, 4 of the storage tank 1 are connected by pipes 15, 18 to the flow and return pipes 16, 17 of the distributing system. The cold return water is forced by a pump 14 through the condenser 13, from which the heated water is delivered into the flow pipe. A float valve 25 on the delivery pipe of the pump 14 is regulated by thermostatic devices 28, 29 in accordance with the temperature of the atmosphere and of the water flowing from the condenser. The thermostatic devices regulate the height of flexible overflow pipes 35 leading from a water trough 33 and discharging into vessels 34, which open into the float chambers 27. The water level on the float-chamber is further controlled by a flexible overflow pipe 36 connected to the engine governor. The piston 2 may be made of sheet iron or wood and the piston packing may consist of metal or wood sliding-pieces, which are pressed against the walls of the tank by weighted levers. The storage tank may comprise two chambers arranged side by side and having pistons counterbalancing one another.

FIG. 1.



108,859. Zublin, W. Aug. 17, 1916, [*Convention date*].

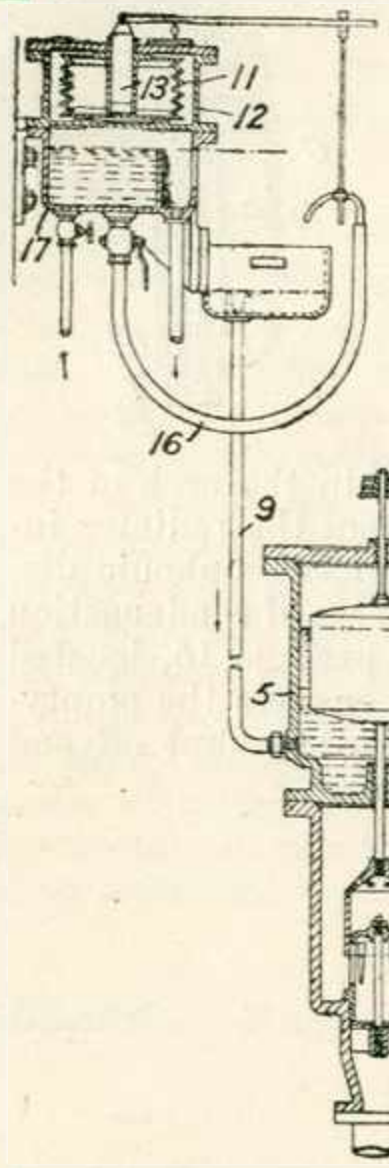


FIG. 1.

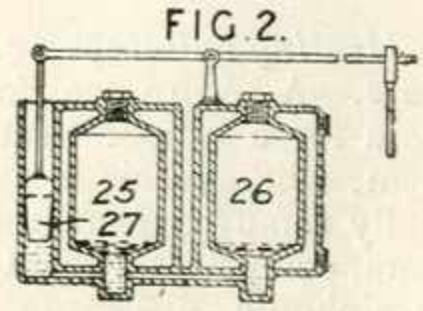


FIG. 2.

Heating buildings.—The water-supply valve in a hot-water heating-system is controlled by a float in a chamber containing liquid the level of which is regulated by a flexible overflow pipe connected to a thermostatic or other automatic adjusting device. The water supply may be heated in a surface condenser 2, Fig. 1, having an inlet valve operated by a float 4 in a chamber 5, the liquid level in which is controlled by, (1) a flexible overflow pipe 6 connected by a rod 8 to the engine governor, (2) the quantity of liquid flowing through a pipe 9 and a flexible overflow pipe 16 from a chamber 17, the level in which is maintained constant, the overflow pipe being connected to a thermostat 12 exposed to the temperature of the atmosphere. The thermostat comprises a chamber 11 containing an expanding fluid and closed by a piston 13. Similar control apparatus comprising a thermostat exposed to the temperature of the hot water in the system may be provided. In a modification, chambers 25, 26, Fig. 2, containing an expanding fluid and exposed respectively to the temperatures of the atmosphere and the hot water control a float 27 connected to a single overflow pipe.

109,943. Whittaker, J. A., and **Chippendale, A.** April 14, 1917.

Steam-traps.—The valve of a steam-trap is actuated by a tilting bucket adapted to tilt about a knife-edge arranged near the top edge of the bucket. The valve member j^1 is secured to a spindle j pivoted to the bucket l at k and provided with guide-wings j^2 working in the outlet tube g. A flange g^1 on the tube g and the valve seat h are held in a recess in the casing by a gland i which is threaded to receive the outlet pipe. The inlet is arranged at d behind a baffle e. A fitting m secured to the bucket bears against the knife edge n^1 on a pin n screwed to the casing and has side wings m^2 adapted to take on either side of the pin n.

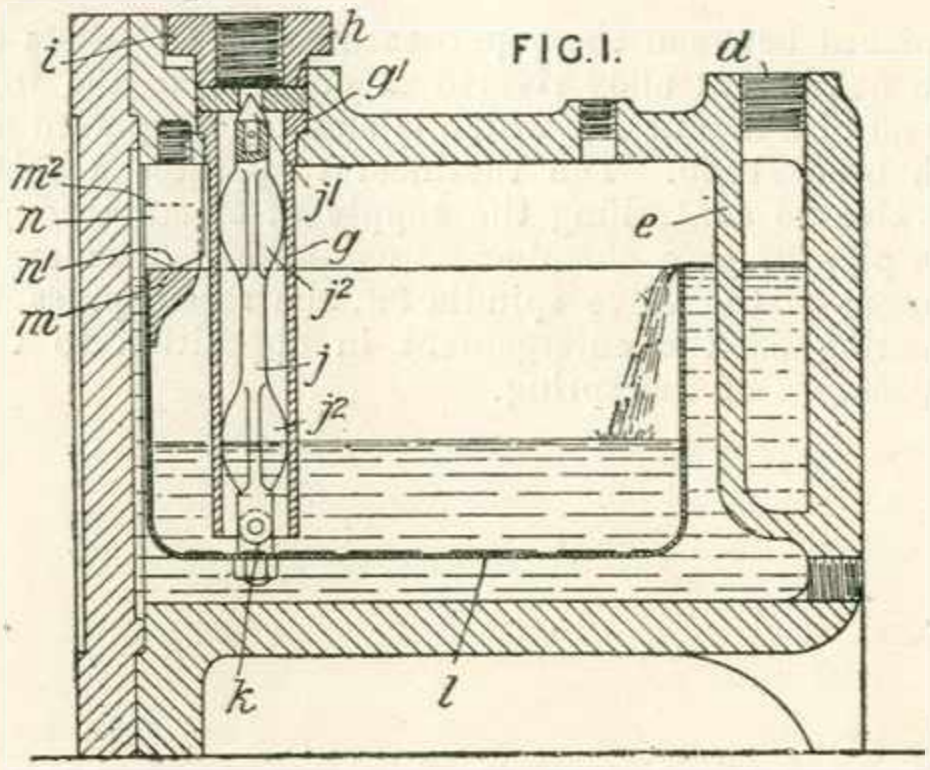


FIG. 1.

109,979. Forbes, Sir C. S. Oct. 10, 1916.

Thermostats. — The expansion of a capsule acting through a spring arm releases a switch arm from a frictional detaining device. As shown in Fig. 1, a spring d pressing upon the capsule a is connected to a pivoted switch arm c with a metal contact f held between a pair of spring contacts h. In the modification shown in Fig. 4, the spring c^1 serves also as the switch arm and is held by a spring catch g^1; a press-button i serves for resetting. The device is applicable for automatically controlling electric heaters, especially for kettles &c.

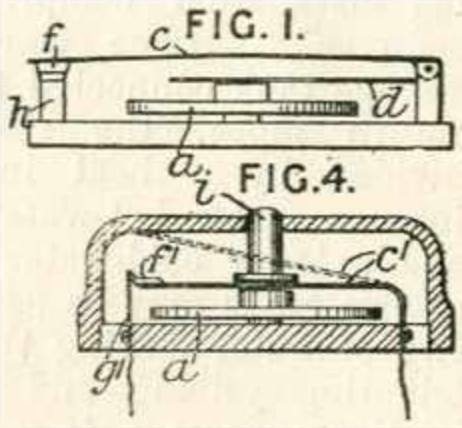


FIG. 1.

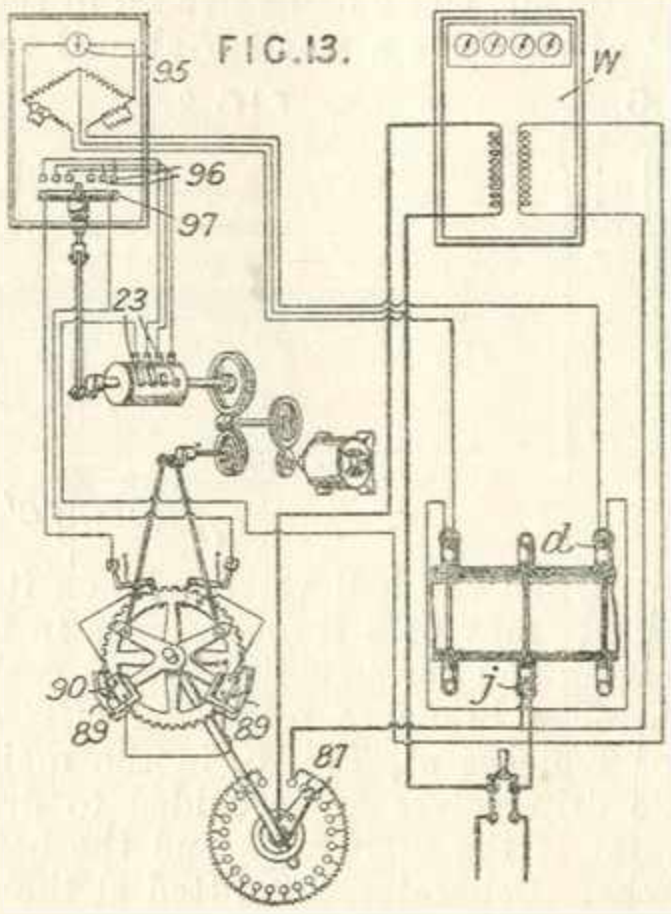
FIG. 4.

110,053. White, A. E., (*Cutler-Hammer Manufacturing Co.*). Nov. 29, 1916.

Thermostats.—The difference of temperature in the coils d is maintained constant by an apparatus similar to that described in Specification 10454/12. The coils d are connected in a Wheatstone bridge the galvanometer needle 95 of which is in the mid position when the predetermined difference of temperature is maintained but when deflected is intermittently clamped between contacts 96, 97 to energize one of two electromagnets 90 which attracts a continuously oscillating pawl 89 and moves the contact arm of the rheostat 87 controlling the current through the heater j. The current through the pawls passes through contact strips 23 of different lengths on a rotating drum, the arrange-

ment being that the pawls are attracted for longer periods for a greater deflection of the drum.

FIG.13.



110,194. Sabine, W. C., and **Guastavino, R.** Oct. 12, 1916.

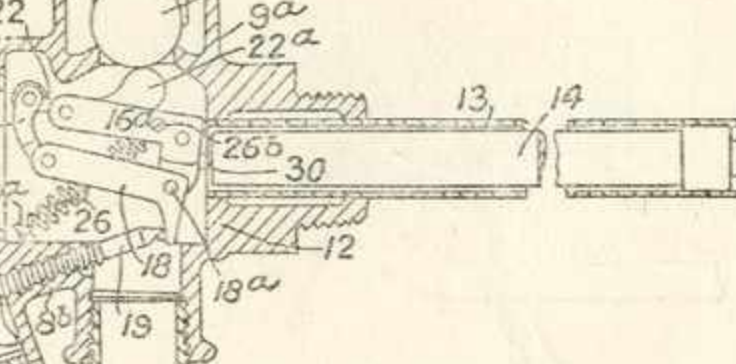
Non-conducting coverings for sound. — A sound-absorbing porous composition for forming or facing walls and ceilings and to be used as an alternative to the porous ceramic material described in Specification 20463/14, [*Class* 20 (ii), Buildings and structures, Miscellaneous accessories &c.], consists of particles of sand, pumice, or crushed rock or brick graded to an approximately uniform size and mixed with just sufficient cement, lime, or plaster that the particles are bonded only at their points of contact and the pores intercommunicate and openly penetrate the exposed surface. As an example, three parts of sand which will just pass through a sieve having twelve meshes to the inch, and one part of cement may be used. The mixture may be moulded and be applied to the wall &c., when set, or it may be spread directly on the wall with a trowel. Two layers of the porous material may be used as shown in Fig. 2, the outer layer A having coarser particles and larger pores than the inner layer B.

FIG 2.

110,230. Pickersgill, A. E., and **Harris, V. R.** Nov. 18, 1916.

Heating by circulation of fluids.—In steam or hot-water heating-installations, the branch flow and return pipes *g*, *h* are connected to a single distributor fitting or tee-piece *a* enlarged at the centre to form a chamber *b* out of which the flow pipe *g* is taken at or near the top and into which the return pipe *b* projects almost to the bottom level of the main, the enlargement allowing the fitting to preserve a bore corresponding to that of the main in spite of the projecting pipe or pipes. In the construction shown in Fig. 1, the pipes *g*, *h* pass through a cover-plate *f* attached to the fitting by screws, but the flow pipe *g* does not project into the chamber *b*. In a modification, both the flow and return pipes project into

FIG.1.



the chamber and are adjustable in the cover-plate. The ends of the pipes are curved so as to receive or discharge the branch steam from or into the direction of the main flow.

110,344. Yoder, C. M. Sept. 30, 1916, [*Convention date*].

FIG.4.

Thermostats. — A thermostat comprises a ball valve 10 adapted to be moved away from a knife-edge seat 9^a by a lever 22 pivoted to a second lever 16^a and connected by a link 16 to a third lever 18. The third lever 18 bears against an adjustable abutment 19 and is pivoted at 18^a to the lever 16^a which in turn is pivoted to the casing. The lever mechanism is loaded by a weight 22^a formed on the lever 22 and by a spring 26 arranged between a hook 26^a on the casing and a cross-pin 26^b on the lever 16^a. One end of each of the levers 16^a and 18 and of the link 16 is bifurcated to receive one or other of the single parts. The abutment 19 is formed on a member screwed through a boss 8^b and provided with an indicator 19^b arranged in a case 23. The thermostat element comprises a copper tube 13 secured to a boss 12 on the casing and adjustably connected at its free end to a rod of porcelain 14 which bears against a projection 30 on the lever 16^a. The ball valve is guided to and from its seat by ribs 11 formed in a enlarged part of the casing.

110,388. Butler, J. B. Oct. 16, 1916.

Thermostats.—Relates to apparatus for controlling the temperature of fluids by automatically proportioning, by means of a thermostat, two supplies at temperatures above and below the required temperature. The apparatus comprises a mixing chamber *i*, containing the thermostat *k*

and having a tubular extension *a* in which is arranged a spring-controlled piston-valve *d* having lateral openings *e*, *f* communicating with and adapted to regulate the supply of fluid from the two supply pipes *b*, *c*. The thermostat shown is of the capsule type and rests on projections or

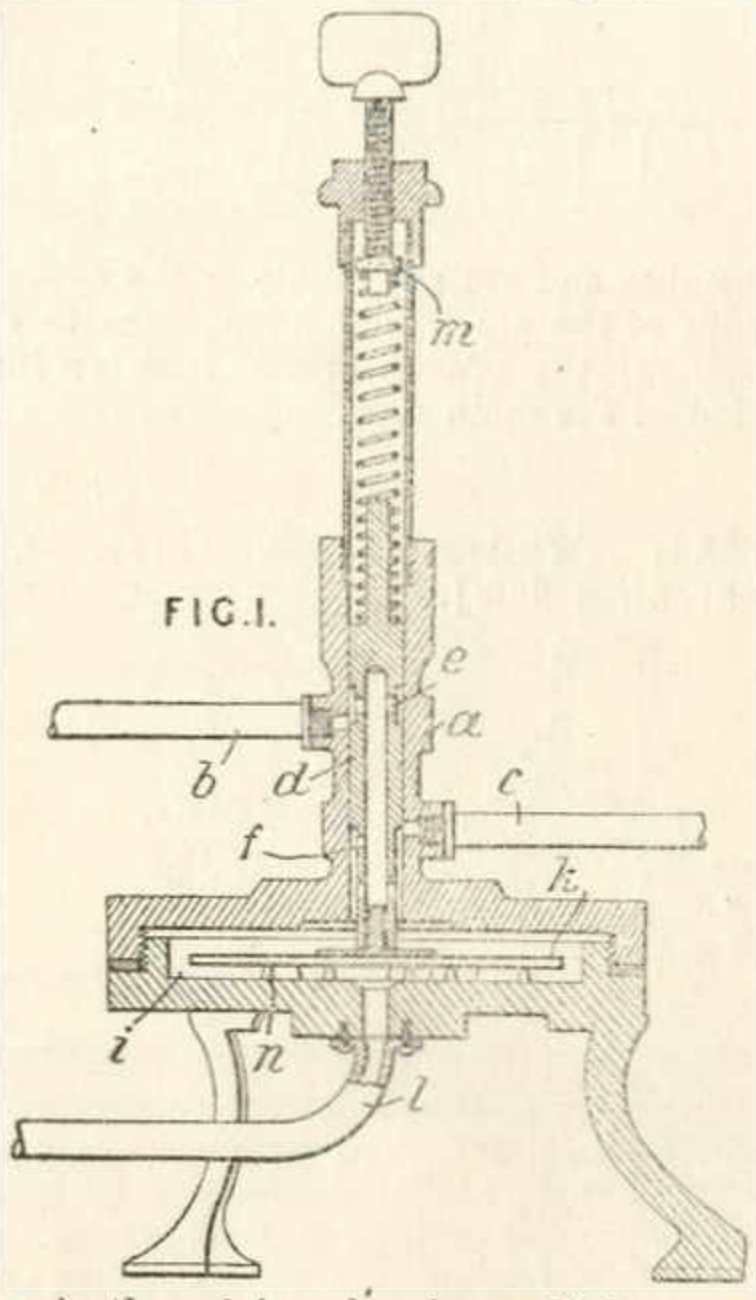


FIG. 1.

baffles *n* in the mixing-chamber, which are so disposed as to cause a thorough mixing of the supplies before they pass to the outlet *l*. The piston-valve *d* bears against the capsule *k*, and the initial tension of the control-spring is adjustable by a screw *m* so that the final temperature of the mixture can be varied.

110,832. Champeney, C. C. Dec. 22, 1916.

Heating vehicles.—Relates to heating systems for railway carriages of the kind comprising radiators open to the atmosphere and supplied with steam by branch pipes having small apertures allowing only the requisite quantity of steam to pass. To utilize the heat of the condensation water in the main pipe, the branch pipes are led off from the bottom of the main pipe so that the water is ejected by the steam into the radiators. The main pipe *a*, Fig. 2, is provided at the bottom with projections a^1, each having a passage placing the pipe in communication with a branch pipe *f* leading to a radia-

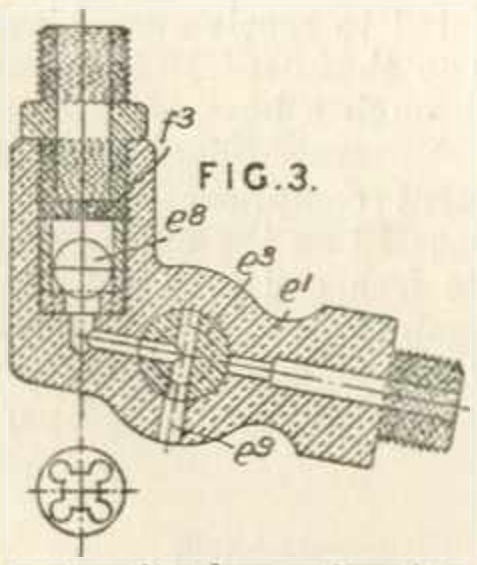


FIG. 3.

tor *d*. A fitting e^1, Fig. 3, screwed into the end of a projection contains a cock e^3 operable from the compartment, and a ball valve e^8, in the upper seating f^3 of which is a small V-shaped recess or

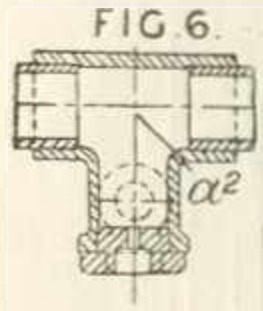


FIG. 6.

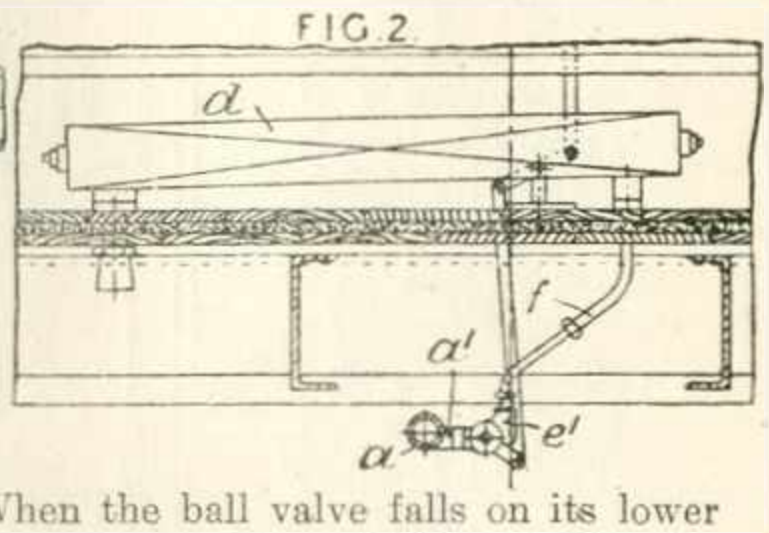


FIG. 2.

aperture. When the ball valve falls on its lower seating, water may pass through holes in the side of the seating and through the central cock to an outlet e^9. The branches may lead off from the bottom of T-pieces a^2, Fig. 6, in the main pipe. Automatic drip valves are provided to drain the lowest parts of the main pipe and the bottom of the T-pieces. Separators are fitted at the ends of a main-pipe length of each carriage.

110,938. Grundy, H. H. Nov. 7, 1916.
Addition to 5311/12.

FIG. 17.

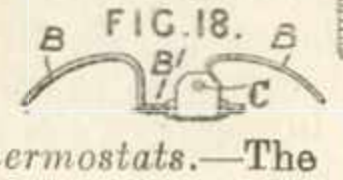


FIG. 18.

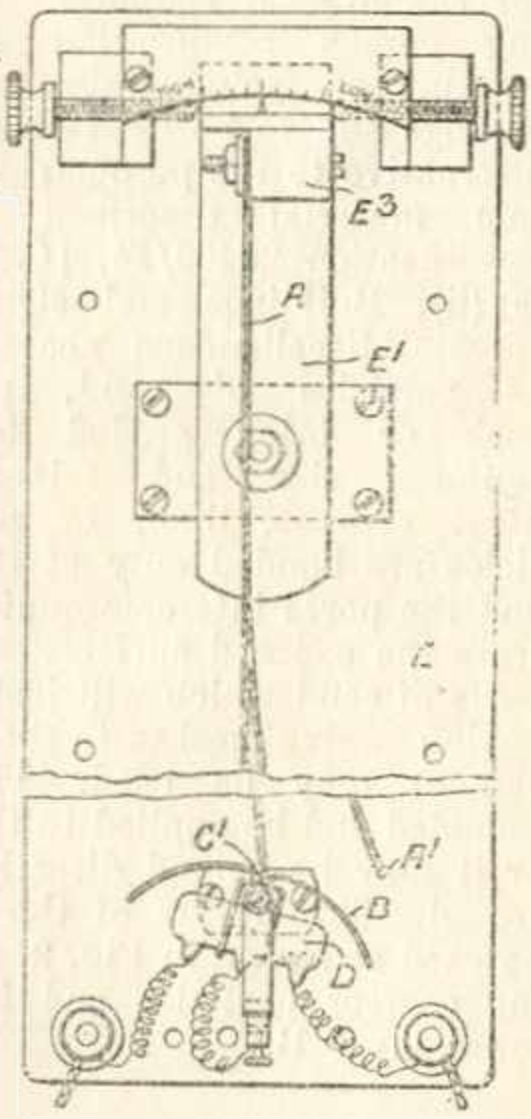


FIG. 1.

Thermostats.—The operating member described in the parent Specification is now in the form of a single bi-metallic strip and is adapted when bent or flexed to trip initially a rocking member constructed so that it overbalances when so tripped. The thermostat proper consists of a single bi-metallic arm A secured to the block E^3 and having a pin A^1 adapted to engage a bifurcated arm B attached to vessel D containing mercury and an inert gas. When the pin has moved the arm B from the position shown in Fig. 1 to just over the horizontal position, the mercury causes the vessel D to overbalance and make the necessary contact for controlling the thermal supply. The vessel D is strapped to a block C^1 carried by the rotatable spindle C while the plate E^1 is mounted to turn on the support E. A modification is described in which similar apparatus is applied to a boiler or cylinder. In order to control the size of the gap B^1 in the member B the adjusting means shown in Figs. 17 and 18 are fitted.

111,207. Hearson, C. E. Feb. 1, 1917.

Thermostats.—In an electric furnace comprising a tubular chamber surrounded by resistance wiring, the expanding part of a thermostat consists of a supporting or enclosing member of the chamber. As shown, a brass tube A, Fig. 2, has end flanges attached to flat rings a, a^1 of uralite or the like. Outer slabs b, b^1 of similar material are bolted to the rings, washers being interposed. A casing f is attached to one end slab b^1 only. This slab is directly hinged to a base i and the other slab b is supported by a vertical yoke j pivoted to the base. On the movable slab b is a lever g^1, Figs. 3 and 4, attached near its pivot by a removable pin to a bar h, situated outside the outer casing. A screw h^4, Fig. 3, with a milled head abutting against the fixed end slab b^1, adjusts a nut h^3 sliding without rotation in a stirrup on the bar h. After a predetermined expansion of the brass tube, the nut h^3 reaches the end of the stirrup and pulls the lever g^1 inwards. An insulating stud on the end of the lever bears against the uppermost of three contact springs g as described in Specifications 26831/13 and 102,538, and can separate one or more of them from overhanging contacts connected to three heater sections, the springs being all connected to one supply terminal.

FIG. 2.

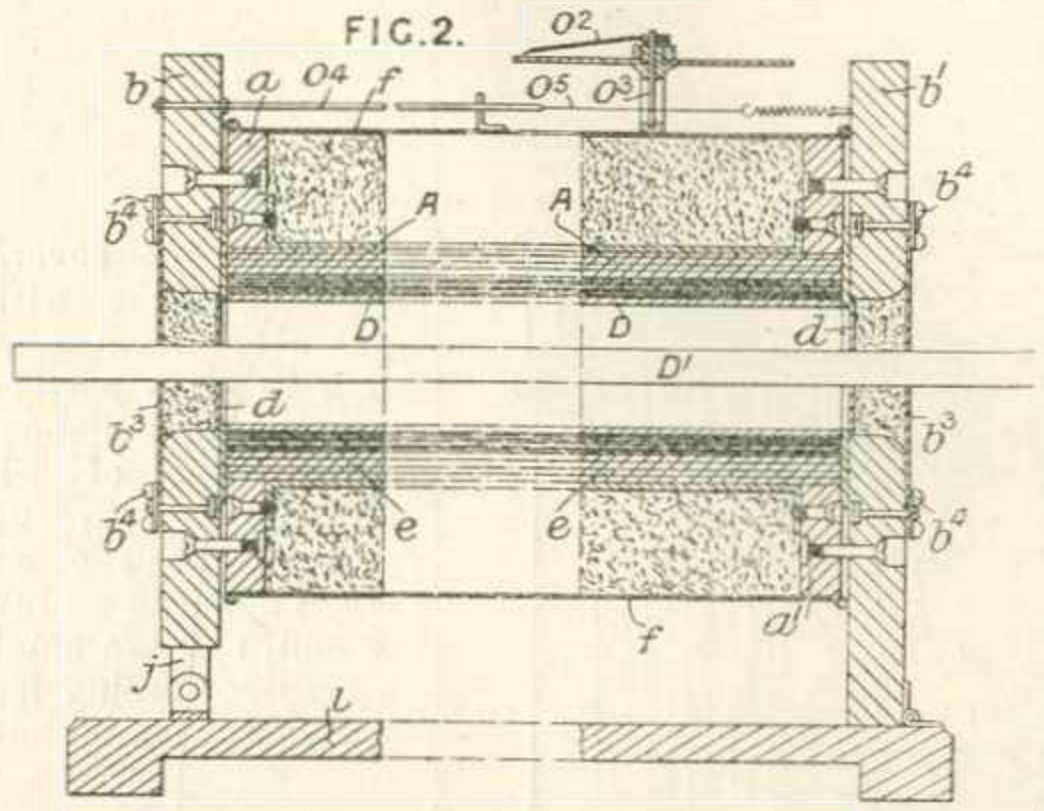


FIG. 3.

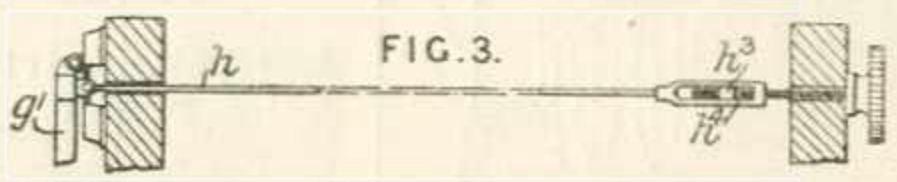
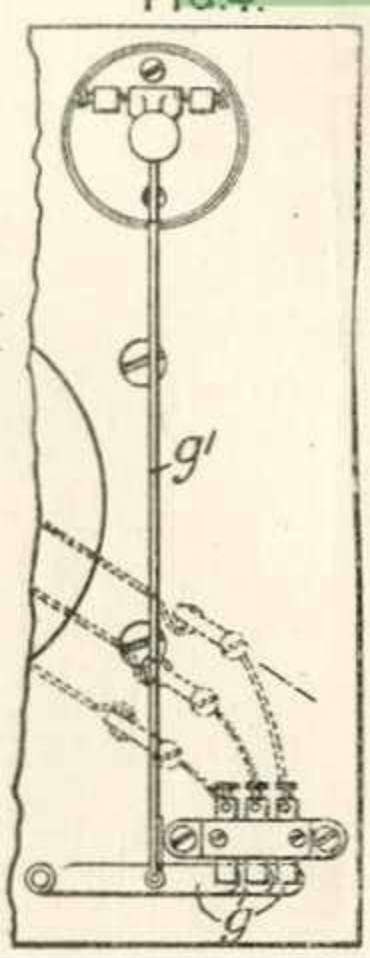


FIG. 4.



111,311. Ahlberg, G. A. F. Sept. 20, 1916.

FIG. 11.

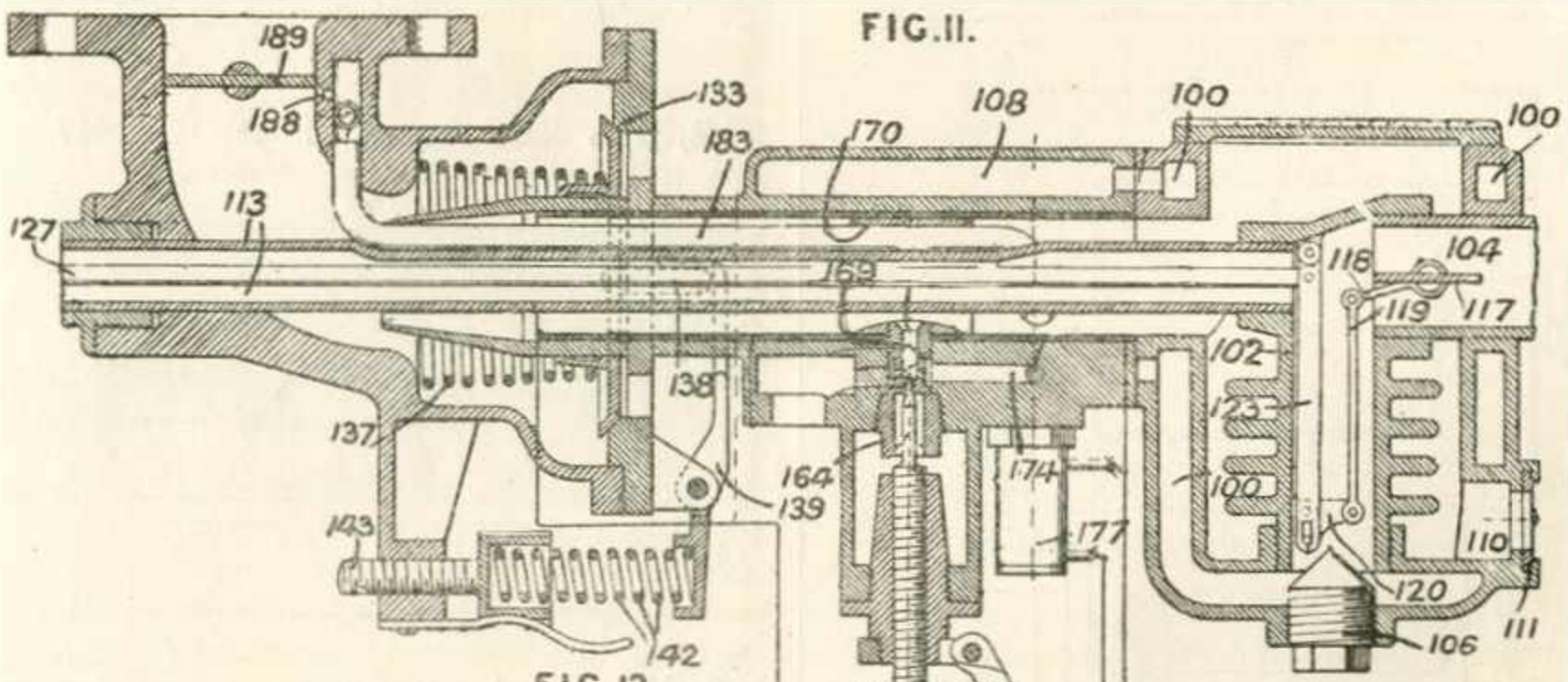
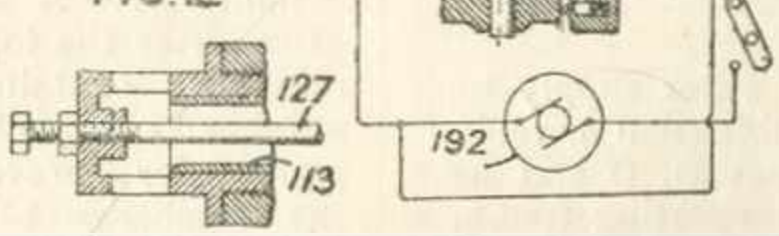


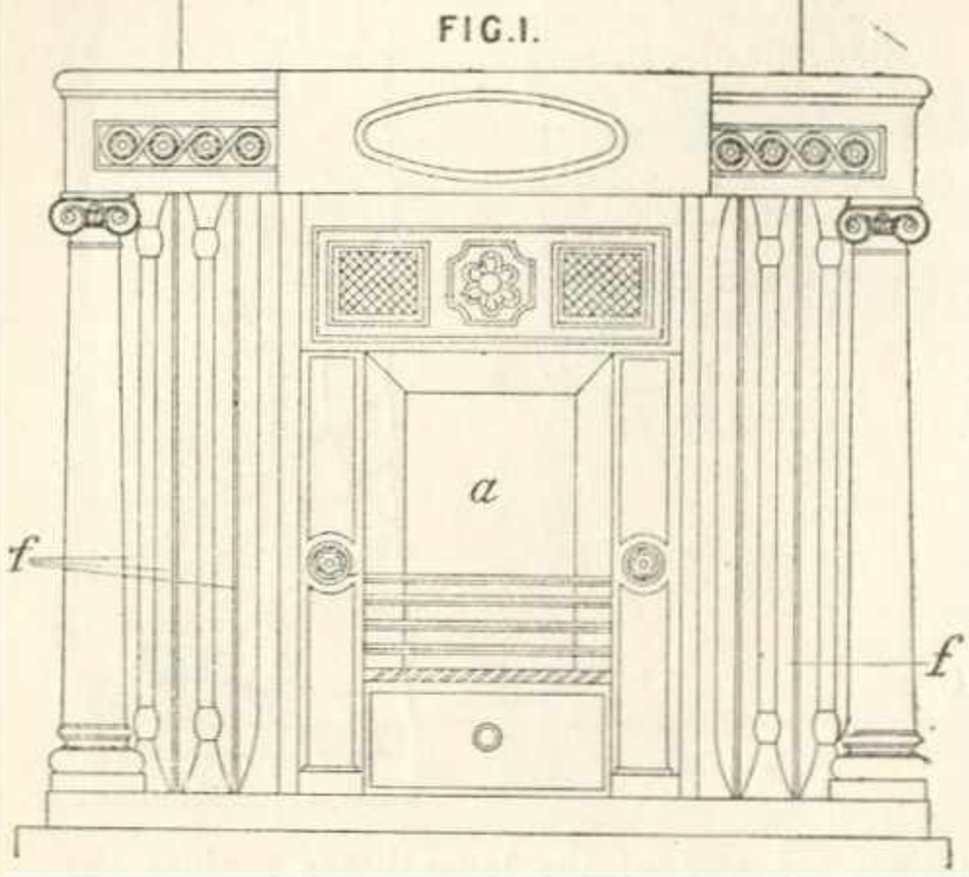
FIG. 12.



Thermostats.—The flow of the exhaust in a carburettor is controlled, so as to maintain the temperature constant, by a valve 117 actuated by the expansion of a rod 127 which is screwed into the end of the tube 113 at one end and, at the other end, is connected to the valve through levers 123, 120, 118 and link 119.

111,836. Sapanet, E. Dec. 2, 1916, [*Convention date*]. *Void* [*Published under Sect.* 91 *of the Act*].

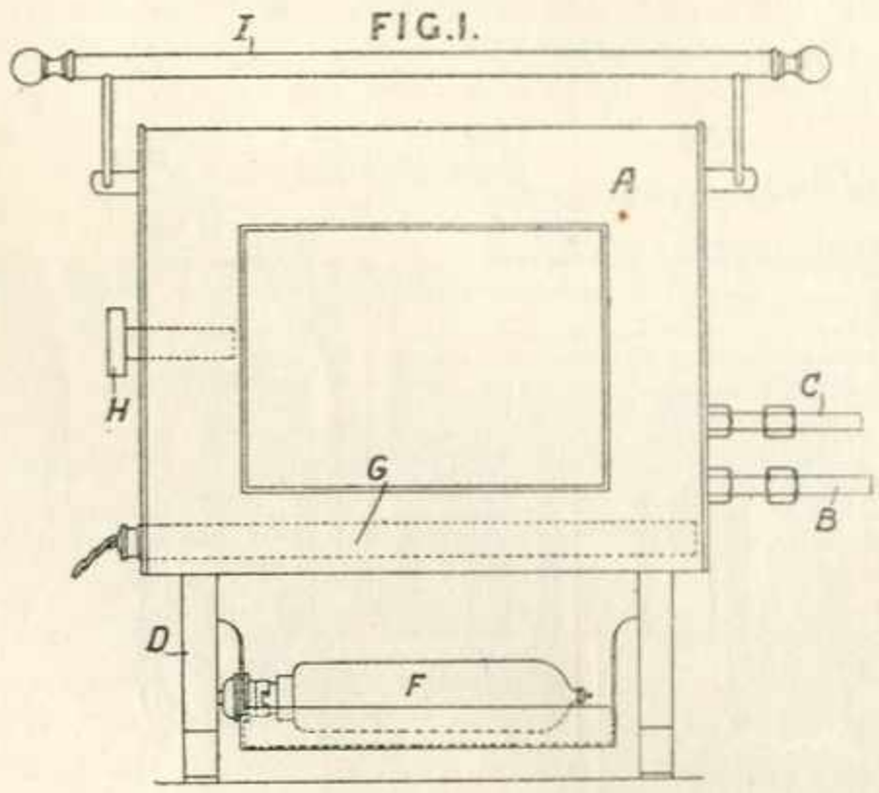
FIG.1.



Radiators.—Hot-water or steam heated radiators *f*, forming part of a central heating system, are arranged at the sides of a fire-place *a* burning solid fuel or gas, or of an electric heater, so that either or both methods of heating may be employed as desired.

112,068. Barr, J. F. March 5, 1917.

FIG.1.



Radiators.—A combined hot-water supply tank and radiator comprises in combination a tank A with inlet and outlet connexions B, C and with depending sides D forming a supporting frame, a towel rail I carried by the tank, an electric radiator F within the supporting frame, electric heating elements G in the tank, and a thermostat H controlling the current supply to the heating elements.

112,084. Clare, G. E. April 20, 1917.

FIG.1.

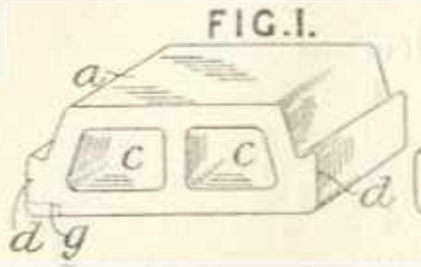
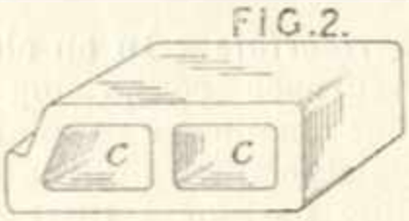
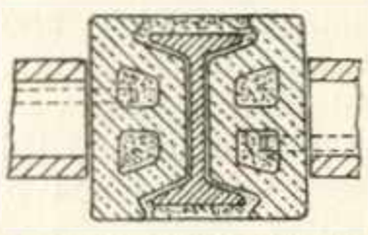


FIG.2.



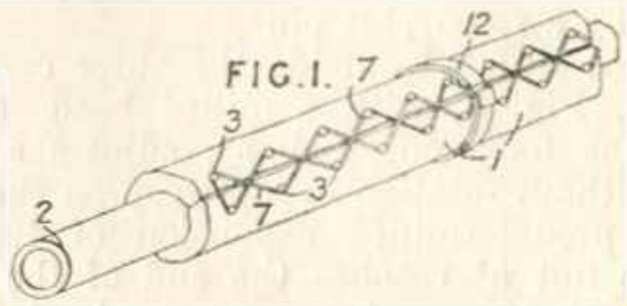
Fire-proof coverings. — Building-blocks with cavities *c* are formed with one or both sides partly sloping and having a flange *d*, the upper edge of which is formed as an upwardly turned lip, as shown in Figs. 1 and 2. The blocks may be laid in an inverted position, or on one side or end, and are applicable, as shown in Fig. 7, as a fireproof casing for steel stanchions. A rabbet *g*, Fig. 1, may be formed on one edge of the block.

FIG.7.



112,147. Birtwistle, M., and **Jones, E.** Dec. 6, 1916.

FIG.1.



Non-conducting coverings for heat.—A non-conducting covering 1 is secured by lacing asbestos twine or fine wire 1 around clips 3 provided along the edges of the covering. The edges of two adjacent lengths of covering around a pipe 2 are clamped together by a metal band 12.

Reference has been directed by the Comptroller to Specifications 9303/88 *and* 14735/02.

112,252. Hook, J. Sept. 19, 1917.

FIG.2.

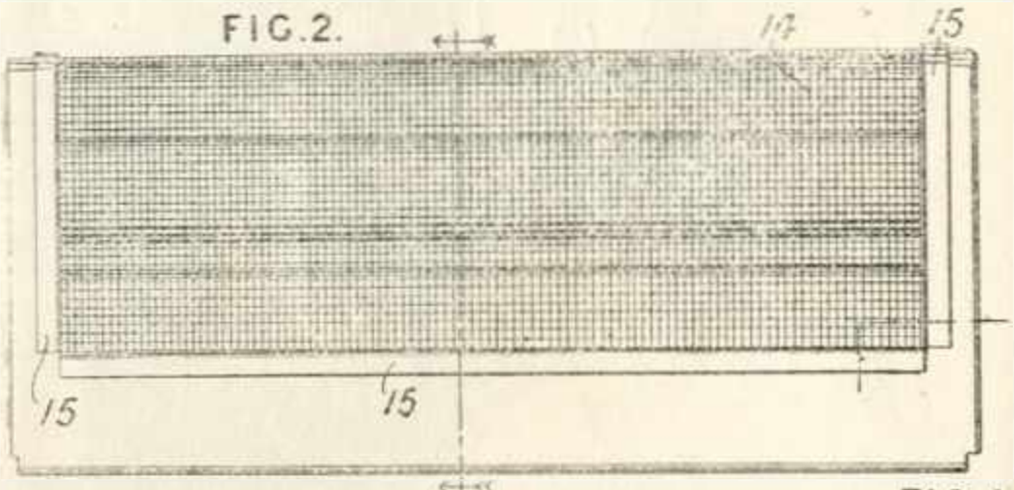
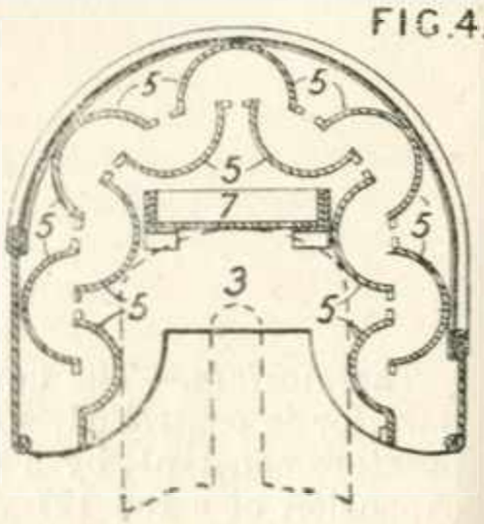


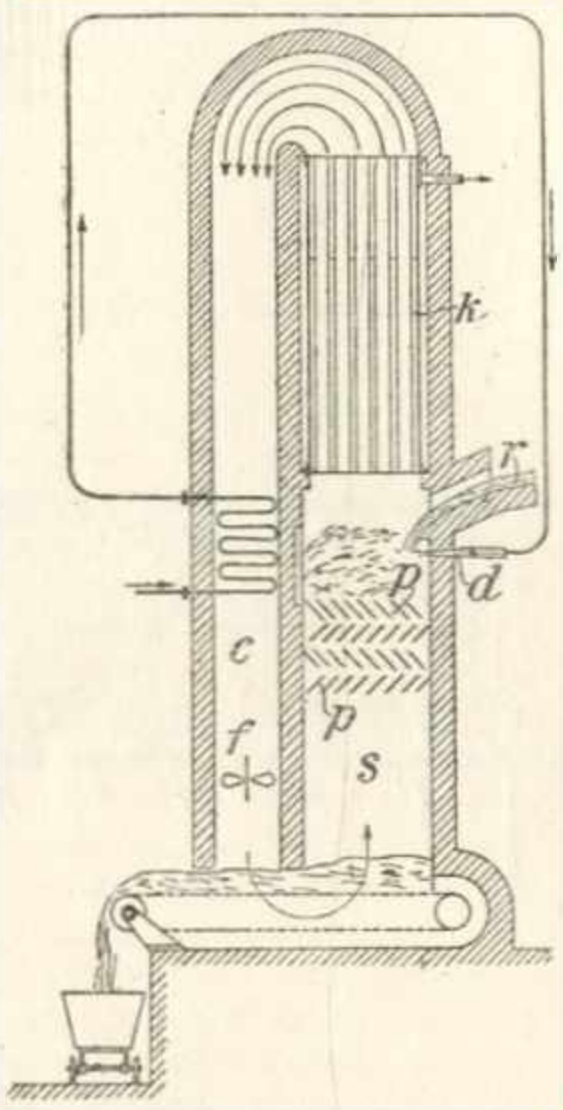
FIG.4.



Radiators.—A cover fitting over the top of a radiator contains a number of deflector-plates for preventing the discharge of soot and dust into the room. The curved deflector plates 5 are held in grooves in the cover end-plates 3. A de-

tachable screen placed over the deflector plates consists of wire netting 14 held in a frame 15. A water pan 7 is supported upon longitudinal L-irons secured to the end-plates.

112,792. Semmler, C. Jan. 6, 1917



Heating systems and apparatus.—The waste heat of slag is utilized by granulating the slag by means of compressed air, then passing additional air through the granulated slag, the resulting hot air being used for heating a boiler, cowper stove, &c., and then again introduced for cooling the slag. The stream of molten slag *r* is granulated by an air jet *d*, and is met by a stream of air as it falls over the baffle-plates *p*. The heated air passes through a boiler *k* or other heat-exchanging apparatus, descends the flue *c*, and re-enters the upcast *s*, being circulated by a fan *f*. The hot-air may be used for heating Cowper stoves or the combustion air therefor. One of the five Cowper stoves usually required for one blast furnace may be heated by the hot air, and serve preliminarily to heat the air for the other stoves.

112,946. Mason, W. K., and **Donoho, C. L.** Jan. 15, 1917, [*Convention date*].

Radiators.—A portable heat generator and radiator comprises a boiler 16, Fig. 3, a radiator consisting of an upper vapour-containing portion 12 of ordinary construction and a lower water-containing portion 12^a, and flow and return pipes 15, 14 connecting the boiler and lower portion of the radiator so as to form a continuous circulating system, the flow pipe 15 being of larger cross-section than the pipe 14 so that the flow always takes place in the required direction when the boiler 16 is heated. The boiler and radiator together form a superstructure which is placed over an open-topped casing 19 containing a burner 17, and the boiler is preferably shaped as shown in Fig. 4, in which 16^b represent elongated arms of the boiler to which the flow and return pipes are connected, and 24 represent flanges for resting on and closing the casing 19. The radiator is supported on feet 13 resting on the flanges 24, and the under surface of the boiler is preferably made concave at the portion 16^a on which the flame impinges. An opening normally covered by a movable door is

FIG.3.

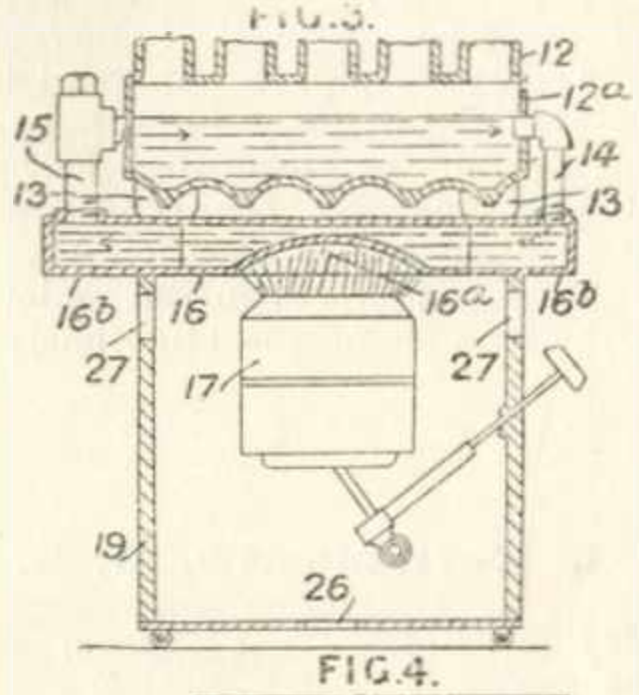
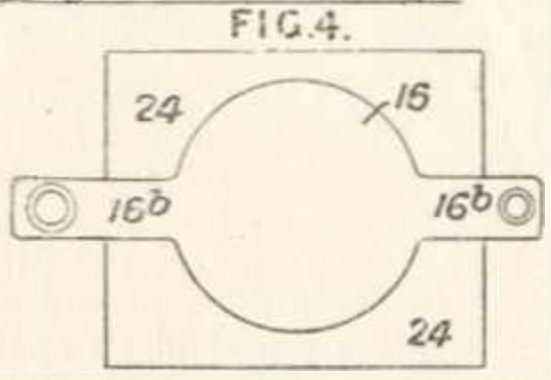


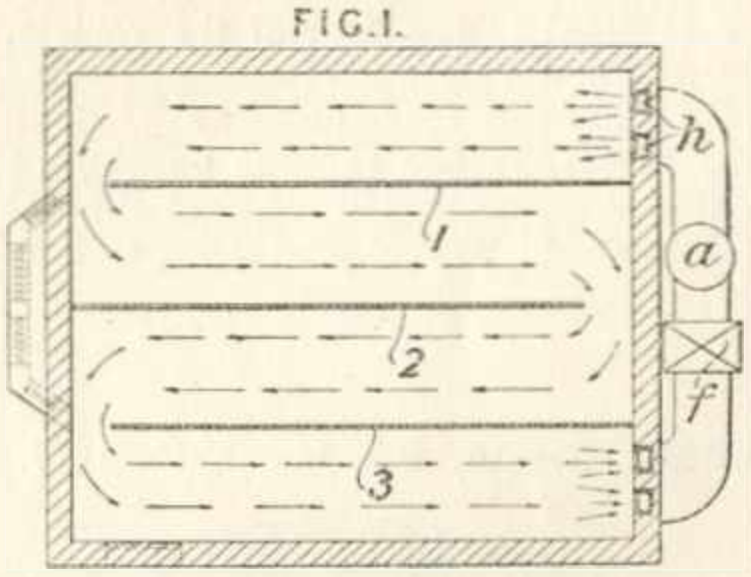
FIG.4.



provided in the casing 19 for permitting access to the burner, while air is admitted to, and the hot air and products of combustion conducted from, the casing through openings 26, 27 respectively.

112,982. Haden, W. N., and **Haden, C. I.,** (*trading as* Haden & Sons, G. N.). Feb. 1, 1917.

FIG.1.

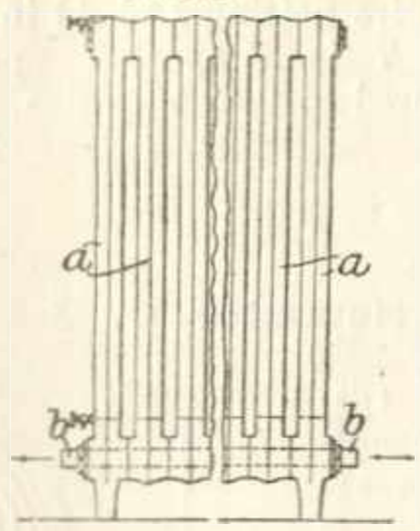


Heating buildings.—Hot air from a heater is circulated continuously to and fro through passages in the floor and back again to the heater. Air from a heater *a* such as is described in Specification 12872/15, [*Class* 64 (i), Heating liquids &c.], is led into hollow blocks *h* fitted on the walls and opening into passages formed in the floor by partitions 1, 2, 3. The air is returned by a fan *f*. Cross partitions may be provided opposite the inlet and outlet openings in the hollow blocks. According to the Provisional Specification, the hollow blocks are of the kind described in Specification 26854/08, [*Class* 87, Moulding &c.]

113,553. Slater & Co., J., and **Mitchell, L. A.** May 16, 1917.

Radiators.—A radiator is heated by steam generated therein from a small quantity of water heated by steam from an external source passed through a pipe or coil immersed in the water. The steam pipe *b* immersed in water in sectional radiator *a* may form a by-pass in a main steam pipe, or steam may be led into one end of the pipe and the condensation water allowed to drain into a reservoir or trap at the other end. The pressure in the radiator may be reduced below that of the atmosphere.

FIG.1.



113,652. Bartholomew, G. A. Feb. 27, 1917.

Heating vehicles. — The exhaust from the engine is used to heat the vehicle by means of radiators, a valve under the control of the driver being provided for deflecting the exhaust to the radiators. The exhaust pipe A, Fig. 2, is fitted with a rotary valve comprising a part K^1 extending into the pipe and an apertured part K^2 working on a fixed apertured plate G. In the position shown, the exhaust is deflected into one or more branch flexible or telescopic pipes C. When the valve is rotated, the member K^2 closes the branch pipes. The valve is rotated by means of a pivoted and slidable pedal provided with retaining teeth. The radiators consist of pipes R, Fig. 8, which are connected by elbows R^1 with the branch pipes C, and are fitted with baffles R^4 carried on a central rod R^5, and with external radiating flanges S. The radiator shown is fitted in the floor of the vehicle, and is enclosed in a double walled casing, the inner wall T being ribbed to form passages T^1 down which the air passes, thence through openings at T^2 to the radiator. The heated air rises through a grid U^1. A modified form is placed under the driver's seat and is enclosed in a single-walled perforated casing.

FIG.8.

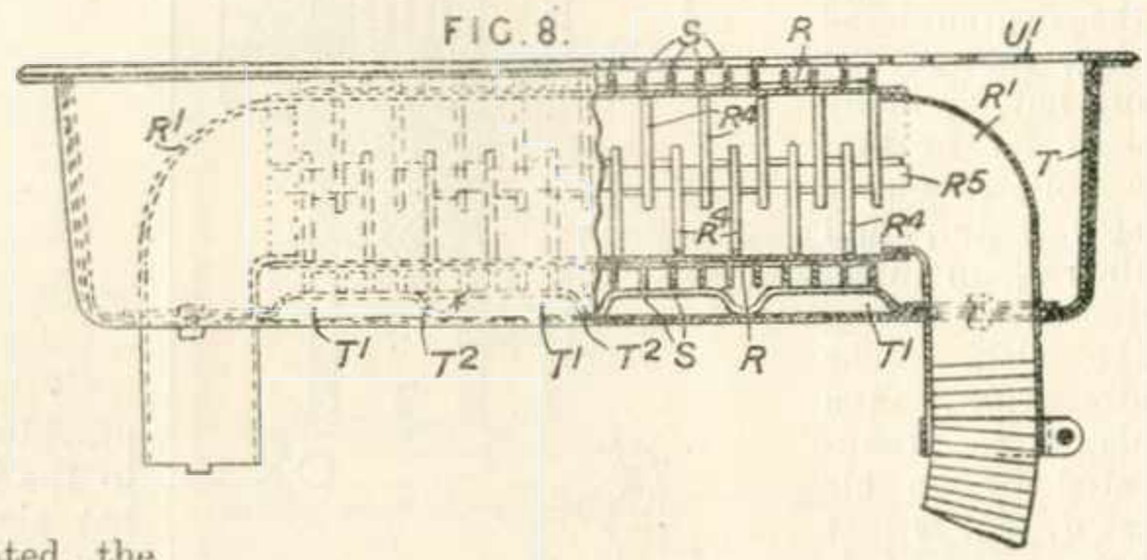
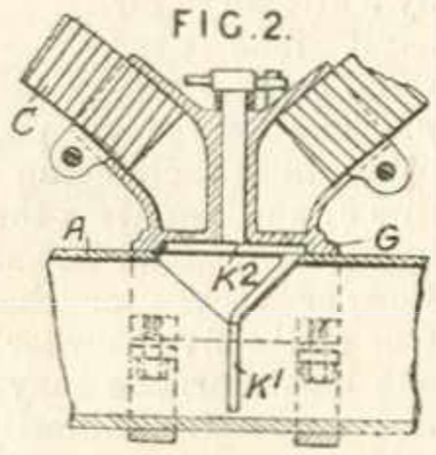
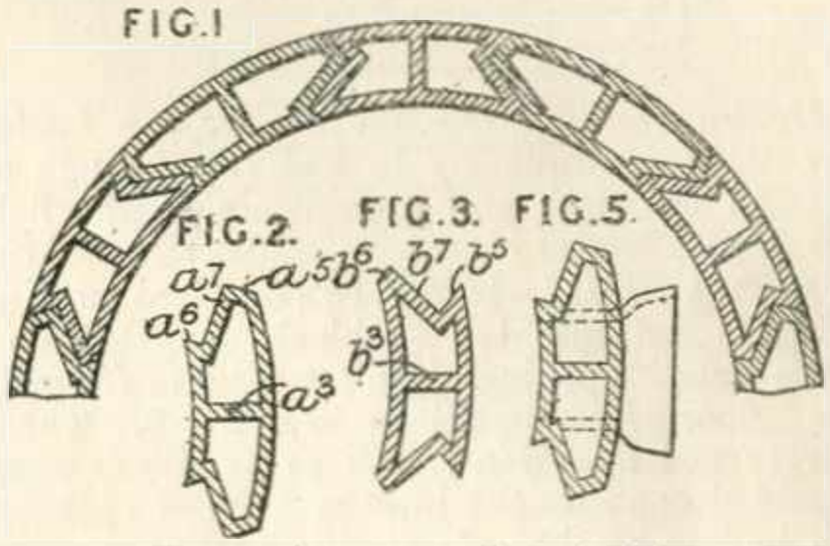


FIG.2.



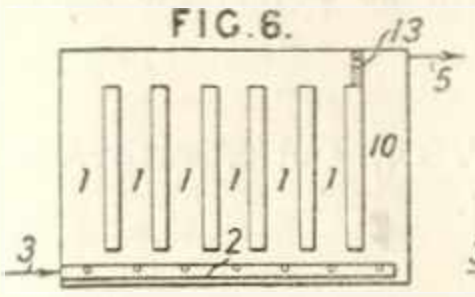
113,689. Dods, A. March 19, 1917.

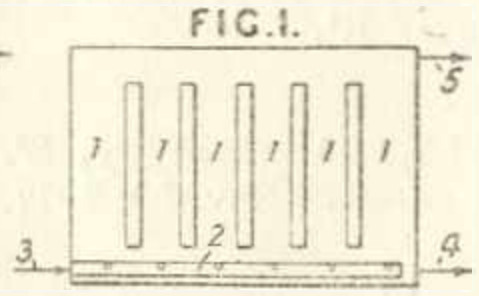
FIG.1



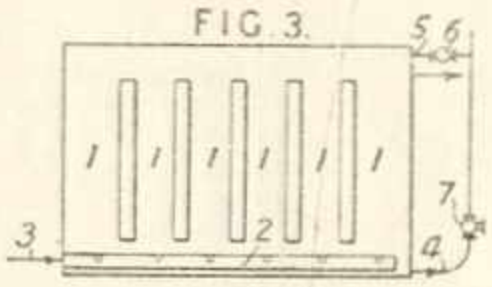
Fire-proof coverings. — Interlocking voussoir blocks for casings for columns &c. are shaped as shown in Figs. 2 and 3, the two shapes of blocks alternating circumferentially as shown in Fig. 1. The pairs of parallel surfaces a^5, a^6, Fig. 2, slope to the centre line towards the outside of the block, and the surfaces a^7 are substantially at right angles to the surfaces a^5, a^6. The surfaces b^5, b^6, b^7, Fig. 3, are shaped to correspond. The blocks may be solid or hollow, and may be provided with central ribs a^3, b^3. A branch pipe, Fig. 5, may be formed integral with one of the blocks or be cemented in a hole therein. The blocks are preferably made of salt glazed vitrified clay, and the zig-zag joints lock the cement between the blocks and prevent leakage.

113,710. Kilburn, B. E. D., (*Sulzer frères, Soc. Anon.*). May 1, 1917.





Heating buildings; radiators. — In order to obtain a more even heating and to facilitate the discharge of air from the heaters or radiators of a hot-water heating system in which the hot water is introduced at the lower end of the heaters, the water is discharged from the heaters both at the upper and lower ends. Fig. 1 illustrates a heater in which the water introduced by an inlet 3 is distributed to the elements 1 by a distributor 2 and discharged at outlets 4, 5, but the distributor 2 may be dispensed with. Air is conveyed from the heater through the upper outlet 5. Valves may be provided in the discharge pipes so as to regulate the temperature of the heater by controlling the total flow of water, and also the relative proportions of water discharged at the upper and lower outlets. In the arrangement shown in Fig. 3, two regulating-valves 6, 7 are provided, the upper one 6 being incapable of being entirely closed so that the discharge of air may always proceed. Instead, a single three-way valve may be arranged at the junction of the two outlet pipes 4, 5, or the two outlet pipes may be chosen of a definite relative cross-section and a single valve arranged beyond the junction of the two pipes 4, 5. In a further modification, Fig. 6, applicable to a heater with or without a distributor 2, the functions of the external discharge pipes 4, 5 are performed by an additional element 10 of the heater which has an open communication with the lower part of the adjacent element, but has a restricted communication 13 at the upper end through which air is discharged.

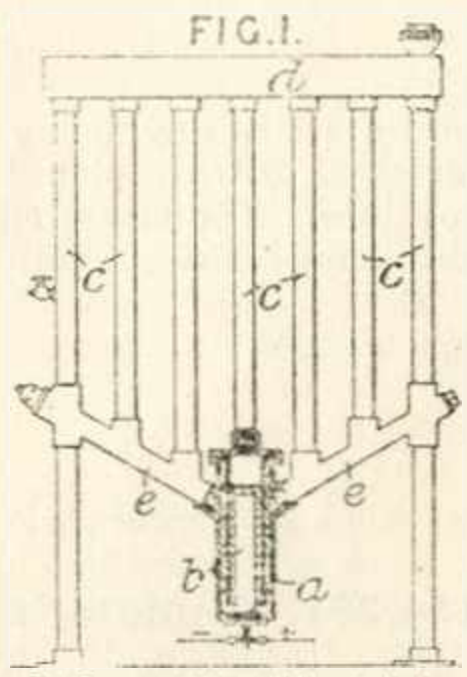


113,758. British Thomson - Houston Co., (*General Electric Co.*). Sept. 18, 1917.

Thermostats.—A thermostatic combination of two metals of different coefficients of expansion, such as invar and brass or leaded brass, is made by heating one metal in a mould, applying a fluxing agent, such as borax, to the heated surface, fusing the fluxed surface, melting on to the fused surface a thin layer of the second metal, fusing the surface of this layer, and pouring on the main body of the second metal in a molten state.

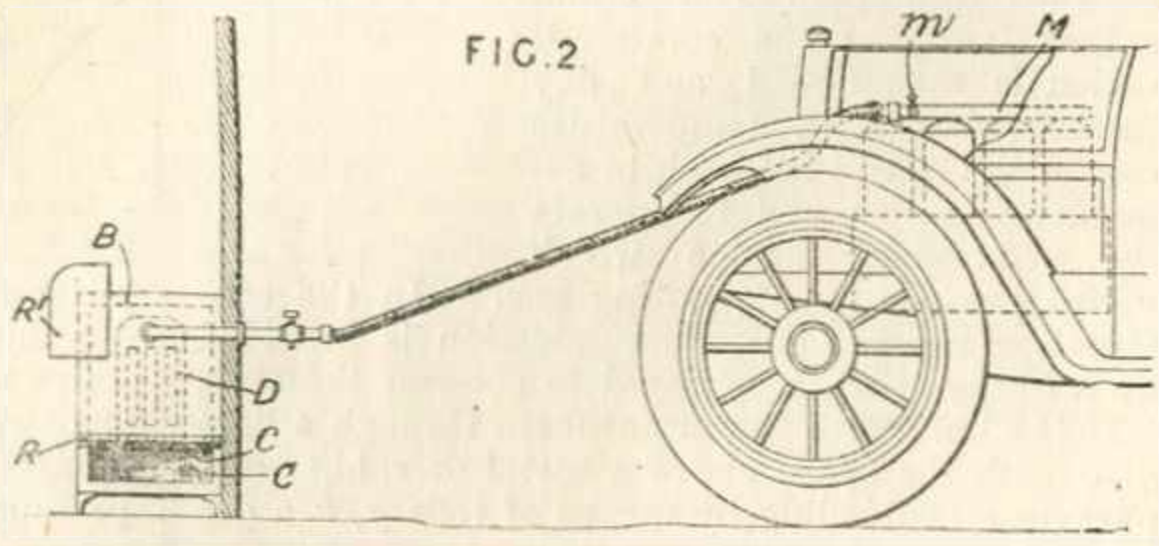
113,840. Benham & Sons, and **Allensby, C. R.** March 8, 1917.

Radiators.—A radiator, towel-drier, or the like is heated by steam or other vapour generated by electricity in a chamber *a* forming an extension at the lower end of one of the sections *c*, the vessel being so connected that the vapour passes to the top of the radiator &c. before distribution to the other sections. The heating element *b* may be of the kind described in Specification 108,045. [*Class* 37, Electricity, measuring &c.]. The vapour passes upwards through the central section to a header, *d*, and the condensed vapour returns through bottom inclined tubes *e* opening into the chamber below the liquid level therein. In an ordinary heating radiator, the boiling chamber is an extension of an end section, communication with the bottom of the adjacent section being closed by a plug.



113,904. Lovell, J. Q. July 6, 1917.

Heating vehicles.—Heating-apparatus for use in motor garages comprises a gas-heated boiler, a steam coil adapted to be placed inside the hood of a car above the level of the steam outlet from the boiler, and a single flexible connexion between the boiler and the coil. A boiler D placed in the chauffeur's room is built up of sections in the manner of a heating-radiator and is enclosed by a casing B. The gas supply to the burner is automatically controlled by the pressure of the



steam generated. Air inlet and outlet openings C, C^1 at the top and bottom of the casing are covered by double screens c, c^1, which are spaced apart, the inner screen preferably being V-shaped. Deflecting-plates R, R^1 are placed over the outside of the openings. The steam coil M is provided with an air-escape valve m. In a modification, Fig. 7, screens c^2, c^3, c^4 are placed across a downwardly-directing air-outlet casing B^1. The deflecting-plate R^2 is provided with an adjustable hinged cover R^3.

FIG. 5.

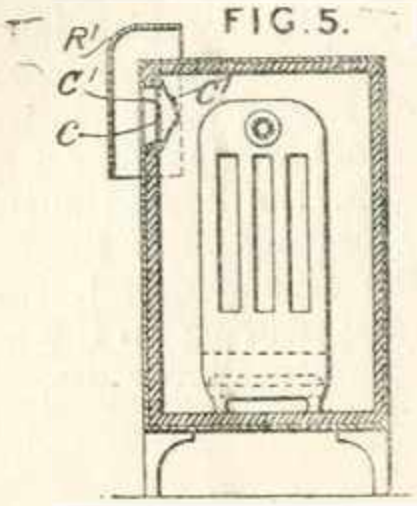
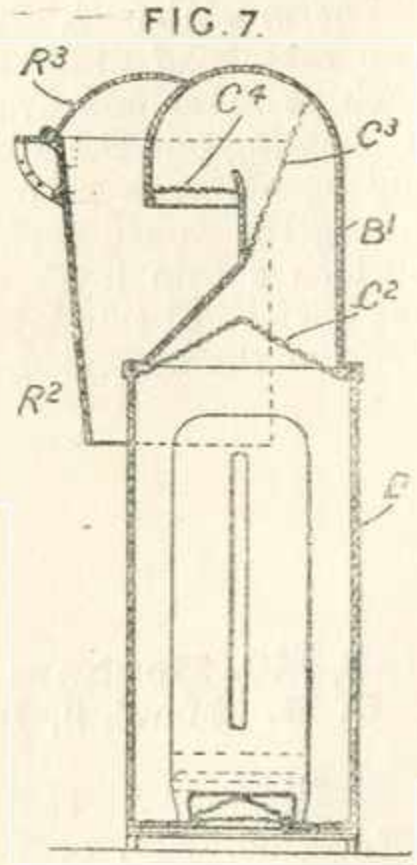
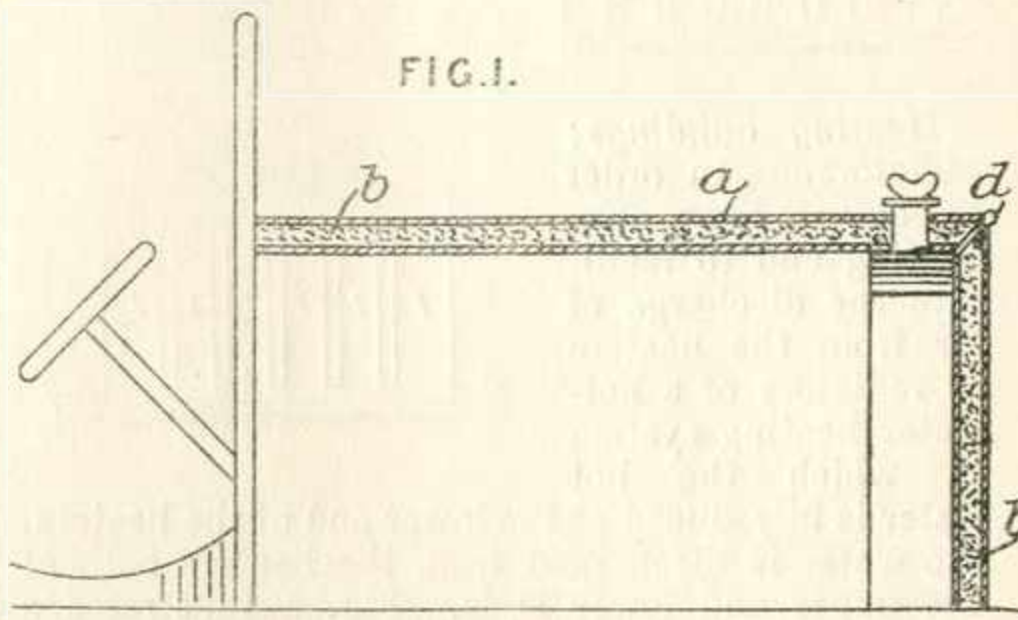


FIG. 7.



114,124. Borley, F. C., and **Patterson, G. A.** Nov. 30, 1917.

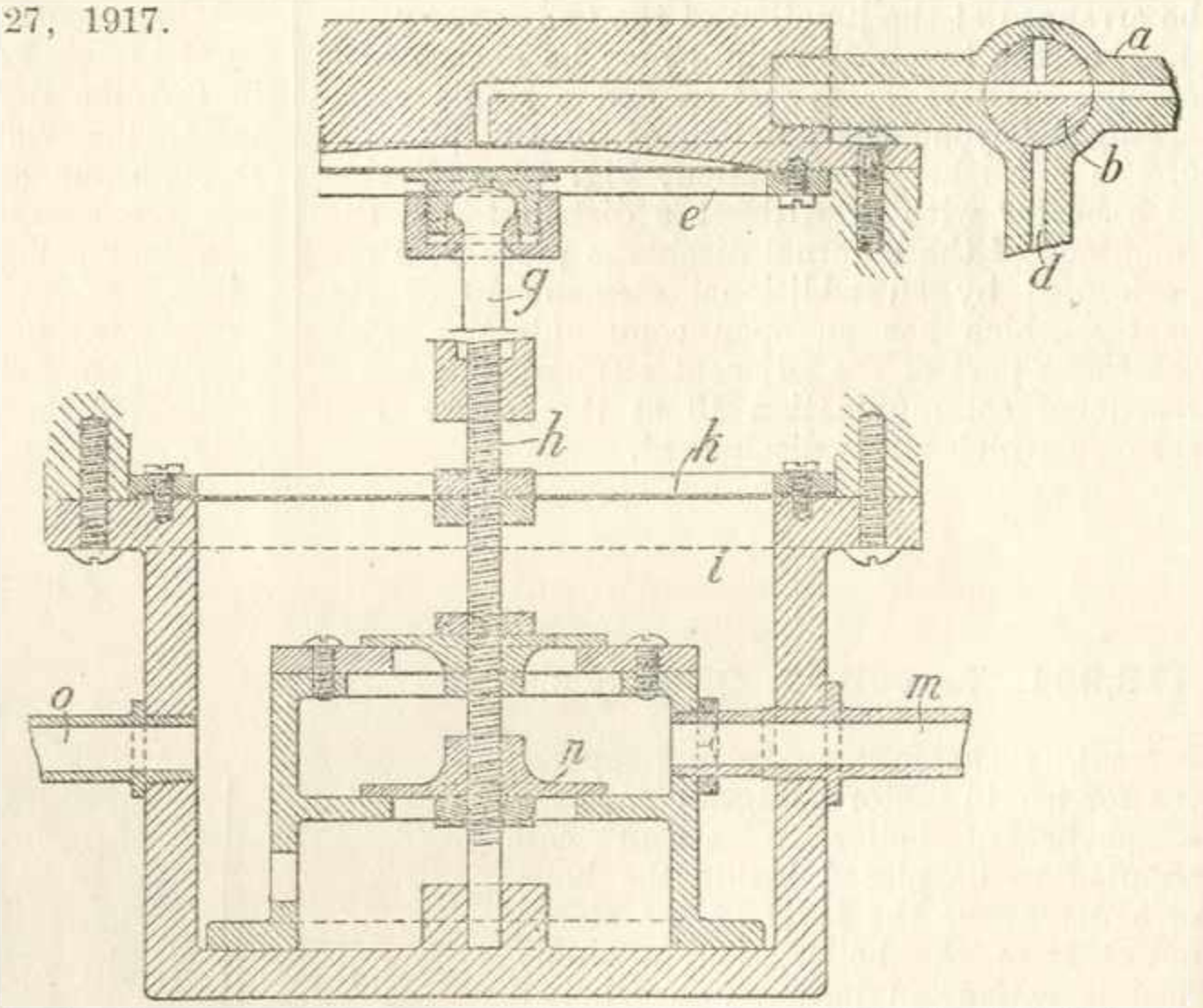
FIG. 1.



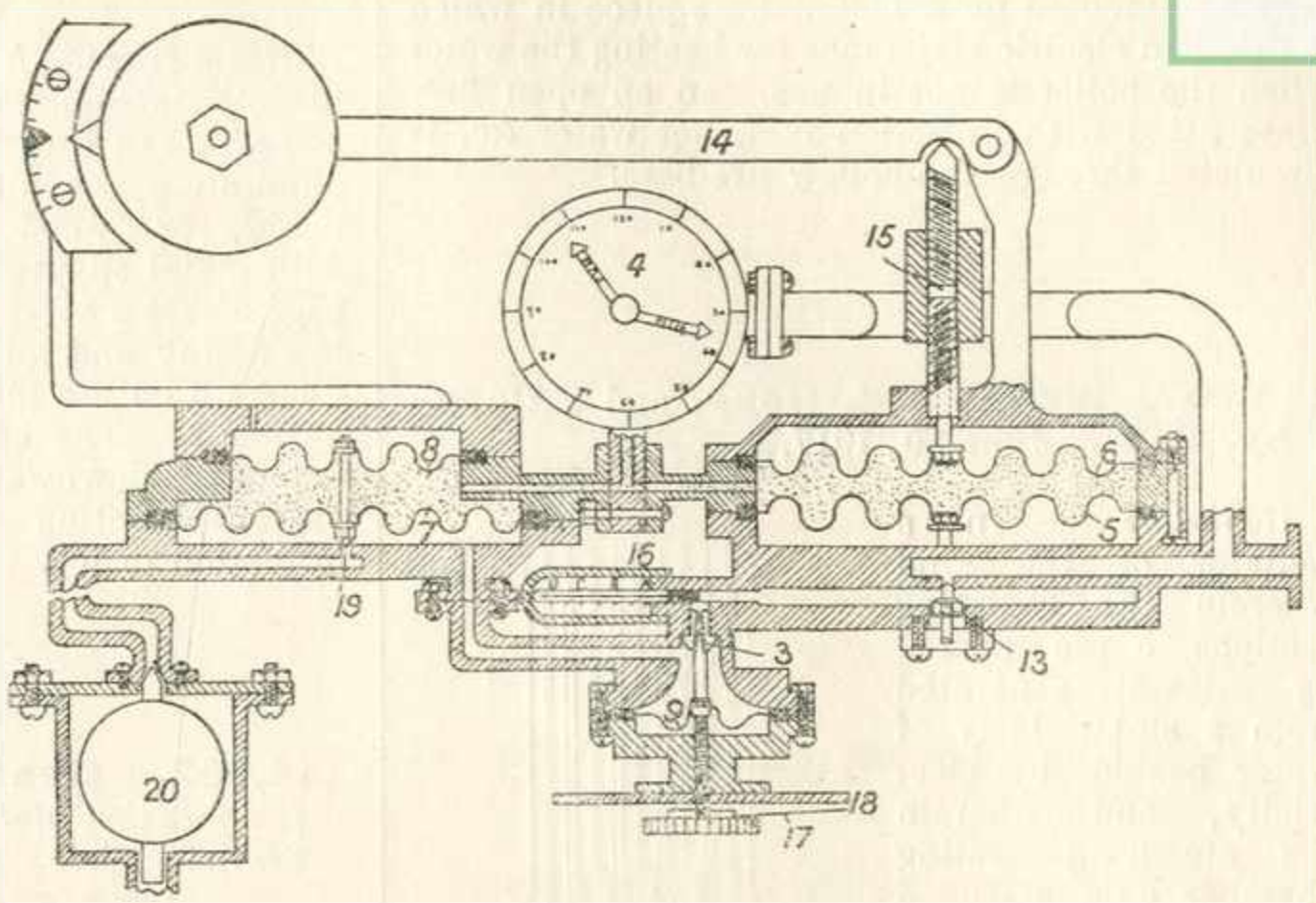
Non-conducting coverings for heat.—A non-conducting covering made in the form of a bag of asbestos cloth *a* filled with silicate cotton *b* and with parts hinged together as at *d* is used to prevent the cooling water of motor car engines from freezing.

114,231. Lundie, A. April 27, 1917.

Thermostats.—In a thermostat of the gas thermometer type for controlling the temperature of an incubator or for similar purposes, a communication, located between the gas containing bulb and the controlling device and adapted to be opened or closed, is afforded between the gas containing bulb and the atmosphere so that the thermostat may be adjusted to work over a wide range of temperatures. In using the thermostat, the incubator with the bulb inside is heated to the required temperature while the communication between the bulb and atmosphere is open; the communication is then closed and any further change in temperature causes the gas in the bulb to expand or contact and to operate the controlling device which varies the supply of heating gas. In the construction shown, the communication is provided by a 3-way valve *b* arranged to connect the stem *a* of the bulb with the atmosphere through a bore *d* or with the space above a metal or rubber diaphragm *e* controlling by means of rods *g*, *h* a gas valve *n* of the balanced-disk type located between the inlet *m* and outlet *o* for the heating gas. The valve *n* is located in a chamber *i* closed by a disk *k* of equal area to the diaphragm *e* in order to compensate for variations in the atmospheric pressure.



114,639. Legg, A. S., and **Bawtree, A. E.** March 6, 1917.



Thermostats. — A valve device applicable for use in conjunction with a pyrometer and electrical apparatus for maintaining a constant temperature in an oxy-acetylene furnace has the load distributed to the various actuating chambers by a continuous non-elastic fluid system, for the purpose of maintaining a constant difference of pressure across a valve controlled orifice The weighted lever 14 acts through the adjustable coupling 15 on a diaphragm or piston 6 adapted to act on the non-elastic fluid, shown in stipple, and load the diaphragm 5 and the differential diaphragms 7, 8. The diaphragm 5 controls the inlet valve 13 while the diaphragms 7, 8 control an outlet valve 19 so as to maintain a constant difference of pressure across a screw adjusted needle valve 3. A thermometer 16 is arranged near the valve 3 which is packed by a diaphragm 9 and is provided with a pointer 17 moving over a scale 18 graduated to show the quantity of gas passing with varying amounts of opening. A pressure gauge 4 is fitted to the inlet and a float actuated non-return valve 20 is fitted to the outlet. In a modification the apparatus is arranged in a casing formed of a single block of metal, and a spring is used in place of the weighted lever. The pressure of the non-elastic fluid is controlled from a distance by a pyrometer in cases where the mechanism is employed for controlling the pressure of gases in an oxy-acetylene furnace.

114,675. Davies, J., Jones, W. H., Davies, J., and **Hale, H. J.** April 18, 1917.

FIG. I.

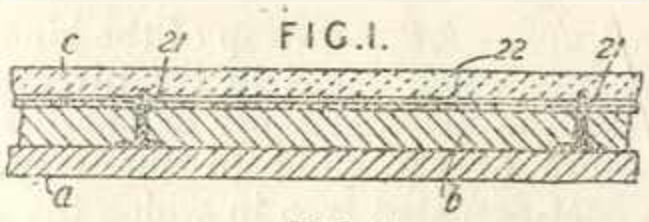
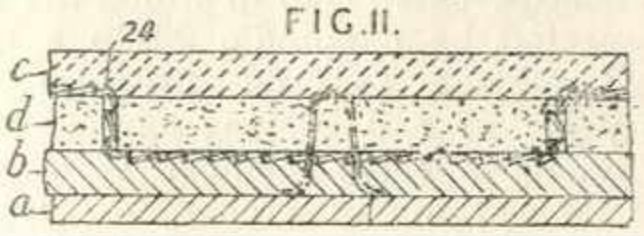
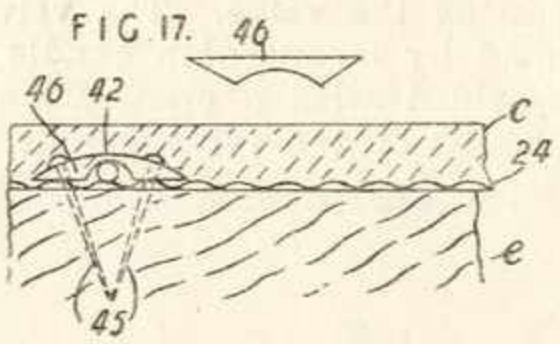


FIG. II.



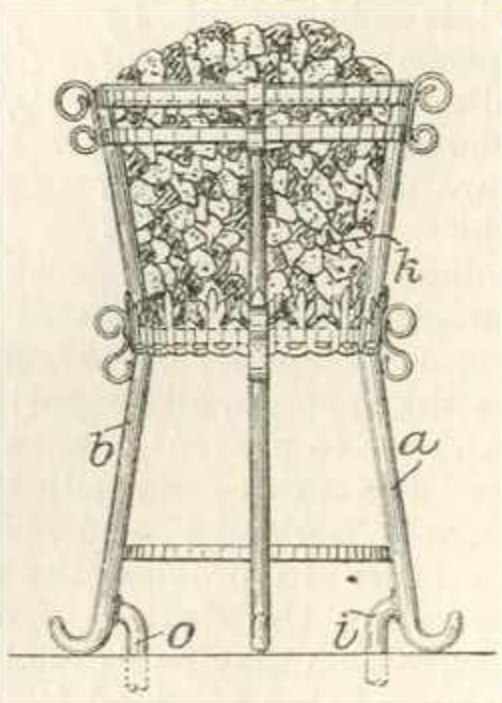
Non-conducting coverings.—A non-conducting covering or insulation for ships' decks, bulkheads, walls, floors, ceilings, &c., comprises a primary covering of cement or bitumen *b*, Fig. 1, over the surface *a* to be covered, an interlaced system of flexible wires and rigid rods 22 supported by angle-bars 21, and a final coating *c* of the composition laid over the wires and rods. The wires and rods may be replaced by metal meshwork which may be nailed direct to the surface, if of wood, or spot welded to the surface, if of metal, and the composition laid over it in a single layer. Or the meshwork may be supported from the surface by metal pins, studs, or angle-brackets secured to the surface or embedded in the primary covering. The meshwork may also be placed over a secondary covering of compressed cork slabs laid whilst the primary covering is still wet; the meshwork is then overlayed with holding wires or laths. In Fig. 11 the meshwork 24 is shown laid alternately over and under adjacent cork slabs *d*. The lower layer *b* of composition may be reinforced with metal meshwork. Fig. 17 shows the meshwork 24 secured directly to a wooden surface *e* by rods 42 held down by clips 46 secured by nails 45.

FIG. 17.



114,763. Berry, H. H. Sept. 17, 1917.

FIG. I.

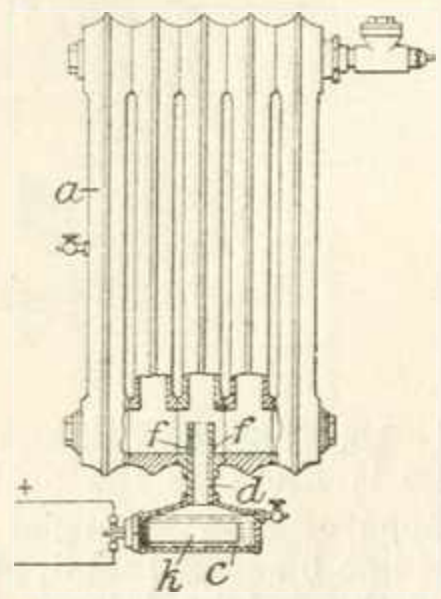


Radiators. — Hot water, hot air, or steam is circulated through hollow framework supporting imitation fuel illuminated by electric lamps, preferably provided with means to produce a flickering effect as described in Specification 108,827, [*Class* 39 (iii), Heating by electricity]. The legs *a*, *b* of a brazier formed of tubes and carrying imitation fuel *k* are connected to a boiler

by flow and return pipes *i*, *o*. The brazier may be mounted on a hollow base-piece in which is fitted an electric resistance for heating the water when the boiler is not in use. In an open fire-grate fitted with imitation fuel, hot water &c. is circulated through the hollow fire-bars.

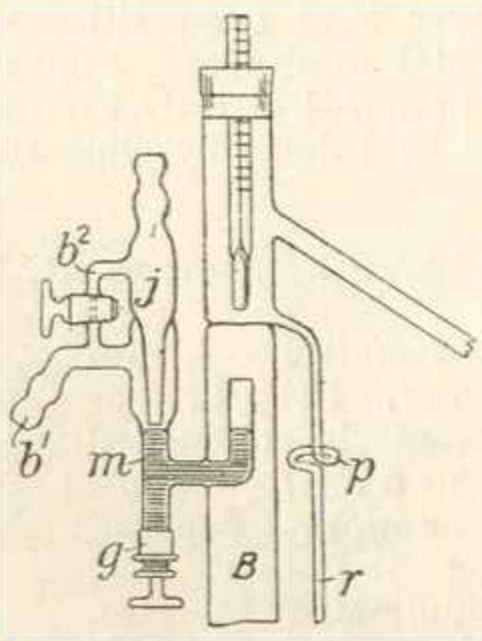
114,807. Benham & Sons, and **Allensby, C. R.** June 30, 1917.

Radiators. — In a radiator of the kind wherein the radiating sections *a* are heated by steam generated from a small body of water heated by electricity, and wherein the steam-generating chamber *c* is arranged below the sections as described in Specification 113,840, the steam-generating chamber communicates with the sections through a single connexion *d* serving both for the flow of steam and the return of water of condensation. The water returns through perforations *f* in the bottom part of the connexion inside the sections. The heating element *k* may be of the kind described in Specification 108,045, [*Class* 37, Electricity, Measuring &c.].



115,504. Bowrey, S. E. May 15, 1917.

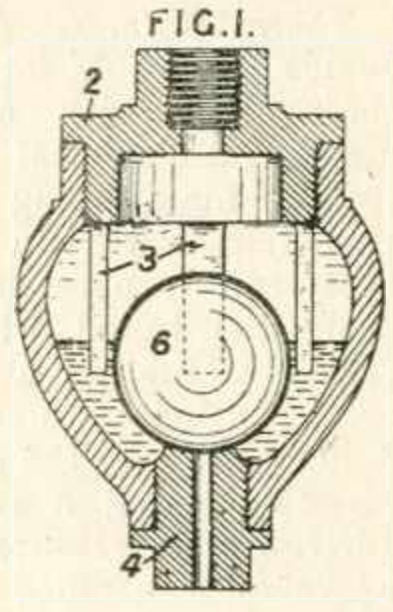
Thermostats. — Gas-heated apparatus for fractional distillation is provided with a regulating-device in which the flow of gas through a jet *j* to a branch pipe b^1 is obstructed by means of mercury or other liquid *m* displaced by the pressure of the vapour in the fractionating-column B operating directly on the surface of the mercury, &c. The regulating-device is arranged so as to be heated by the vapours, either partly (as shown) or wholly, in order to prevent condensation of vapour within it. The device is adjusted by sliding a rod through a gland *g*, and is fitted with a by-pass b^2. In order to provide the necessary pressure for operating the device, a constriction *p* or other obstruction may be formed on the vapour outlet, a reflux *r* being provided for any condensate forming above the constriction.



115,599. Nielsen, E. Dec 17, 1917.

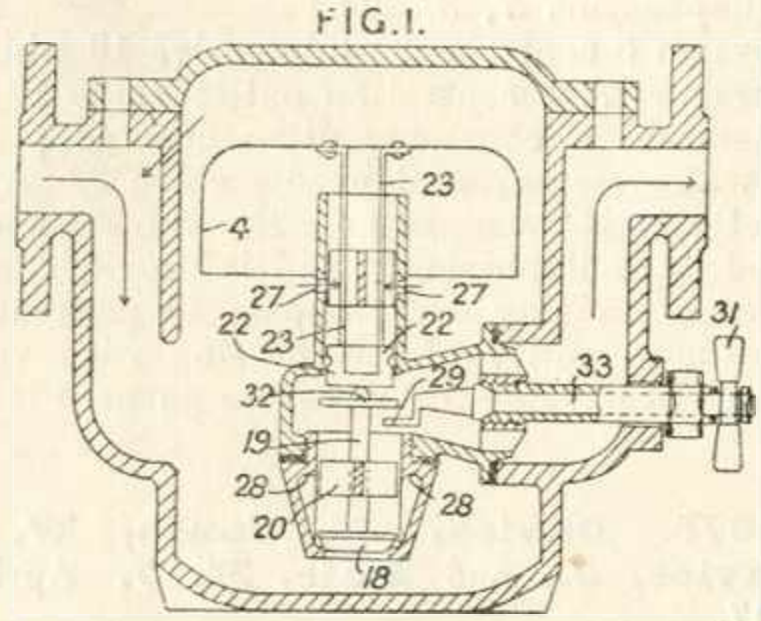
Steam-traps.—A float-actuated steam-trap comprises a ball 6 of leather, aluminium, ebonite, celluloid, or wood coated with metal adapted to engage a seat 4 screwed into the casing and guided by fingers 3 on the inlet connexion 2. The casing is tapered downwards to prevent bursting by the formation of ice.

FIG. 1.



115,637. Gebhardt, W. Feb. 27, 1915, [*Convention date*]. *Void* [*Published under Sect.* 91 *of the Act*].

FIG. 1.



Steam-traps.—A steam-trap of the kind in which the discharge valve opens in the direction of the outflow has the valve member balanced as regards the pressure of the fluid in the trap. Fig. 1 shows a float-actuated trap in which the open float 4 is connected by a spindle 23 to a balancing-piston 22 subject to fluid pressure admitted through ports 27 and bearing against the valve spindle 19. The valve member 18 is guided by a spider 20 working in a chamber fitted with a deflector 28 adapted to reverse the flow of fluid passing the valve. The valve may be raised by hand by means of a handle 31 on a spindle 33 provided with a crank 29 adapted to engage a disk 32 on the valve spindle.

116,266. Titan Co. Aktieselskabet. May 24, 1917, [*Convention date*].

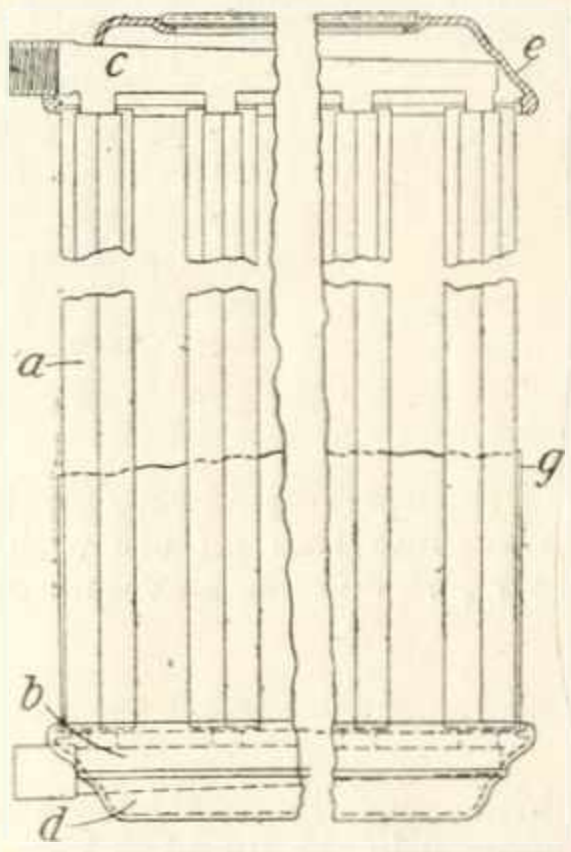
Non-conducting coverings for heat.—Materials for heat-insulating are made from titanium hydrates which have been precipitated from sulphate or other acid solutions, and so contain sulphuric or other acid by treatment with a practically insoluble alkaline earth compound, such as calcium carbonate, to produce an insoluble sulphate &c. and liberate an inert gas so as to render the pro-

duct porous and homogeneous. The proportion of basic substance may be altered in order to obtain, after calcination, a product containing some calcium titanate, if desired. Specification 110,535, [*Class* 1 (iii), Oxides &c., Metallic], is referred to.

The Specification as open to inspection under Sect. 91 (3) (a) comprise also the use of basic material other than that which would cause the evolution of gas during the reaction. This subject-matter does not appear in the Specification as accepted.

116,497. Pouille, C. D. May 30, 1917, [*Convention date*].

FIG.2.

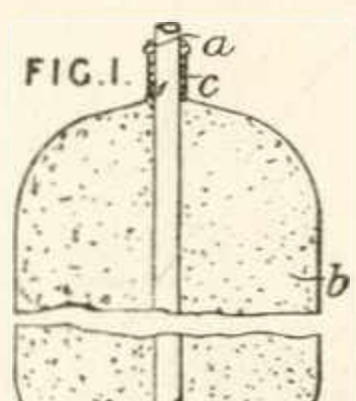


Radiators.—The pressed sheet iron elements *a* are connected to upper and lower sheet iron collectors *c*, *b* by autogenous welding, and covers *e*, *d* formed with openings for the passage of air are fitted over the collectors. A sheet-iron casing *g* extends from the bottom over part of the height of the elements.

116,674. Cain, G., and **Mitcham Rubber Co.** Feb. 12, 1918.

Hot-water bottles.—Relates to the manufacture of seamless rubber hot-water bottles according to the method described for rubber balls in Specification 15058/01, [*Class* 70, India-rubber &c.], in which a core formed of a composition of Paris-white and French chalk is made in a mould on a rod, removed from the mould and dipped into a rubber solution until a coating of the requisite thickness is obtained, the rubber being then vulcanized and the core removed by softening in hot water. In the application of the process to making hot-water bottles, the metal ferrule *c* into which the usual screw stopper fits is mounted on the rod *a* and placed in the mould before running in the composition *b*, so that it subsequently forms a portion of the core on to which the rubber solution adheres and, after the vulcanization of the rubber and removal of the core, remains attached to the bottle.

FIG.1.



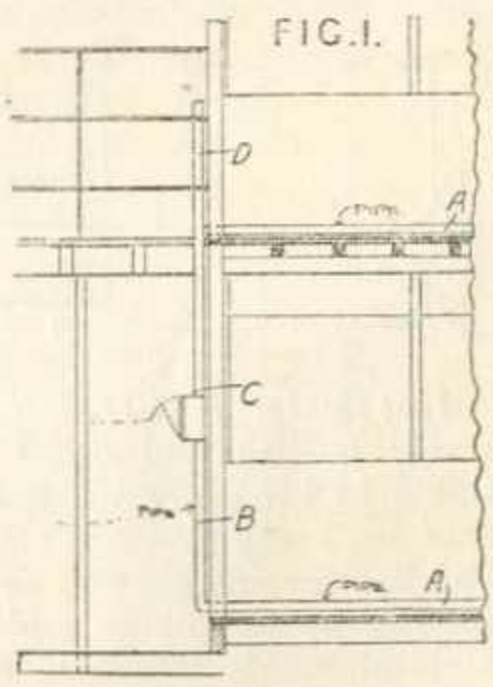
117,037. Instone, W. C. Jan. 4, 1918.

Non-conducting coverings for heat.—A protective covering of sheet metal over the heat-insulating lining of a ship's cold-storage chamber is made continuous by welding the metal plates of the covering in situ. The plates are attached to the lining by coating them and the lining with bitumen, which is softened by heat applied to the plates when they are in position. The lining may be made of slab cork.

117,094. Robinson, J. H. April 3, 1917.

Heating vehicles.—A tramcar or like vehicle is heated by hot water circulating in a continuous pipe circuit, the water being heated by an electric resistance inserted in the pipes, preferably near the bottom of the circuit. The electric heater may be of the kind described in Specification 9522/15, [*Class* 39 (iii), Heating by electricity]. The hot water circulates around a foot-warmer C in the vertical pipe B connecting the pipes A extending along the floors of the car. An extension D of the pipe B serves as an expansion and filling pipe.

FIG.1.



Reference has been directed by the Comptroller to Specification 2567/82, [*Class* 39, Electric lamps &c.].

117,351. Royles, Ltd., Royle, J. J., and **Royle, G. E.** Sept. 26, 1917. *Addition to* 4191/15.

Steam - traps. — A steam - trap adapted to return the water of condensation to the boiler and of the type described in the parent Specification in which steam is admitted or exhausted to or from a low-level trap to force the water into a valve-controlled upper vessel from which it flows by gravity into the boiler has (a) interconnected inlet and exhaust valves actuated by a leaky piston, the inlet valve being between the exhaust valve and the piston while the steam inlet pipe is between the inlet valve and the piston (b) the actuating diaphragm for the valves of the high level box clamped by an annular ring to a dished plate which supports the diaphragm when distended. The exhaust valve i and the inlet valve g which has a cylindrical part g^2 so that the exhaust valve has a wider opening than the inlet valve, are mounted on a spindle g^1 coupled to a leaky piston h. The space behind the piston is adapted to be vented when the trap is full by a lift valve j^2 actuated by tappets on a float lever engaging the spindle j^3. The valve mechanism is secured to a hollow protuberance in the trap casing by a nut f forming part of the exhaust pipe. The valves r^1, r^2 for alternately connecting the upper vessel to the exhaust or to the boiler are actuated by a spindle v having a plate v^1 resting on a diaphragm u in the central aperture of the diaphragm securing ring s^1. When used as a vacuum trap for use with condensers, the valves r^1, r^2 and upper vessel are dispensed with.

FIG. 5.

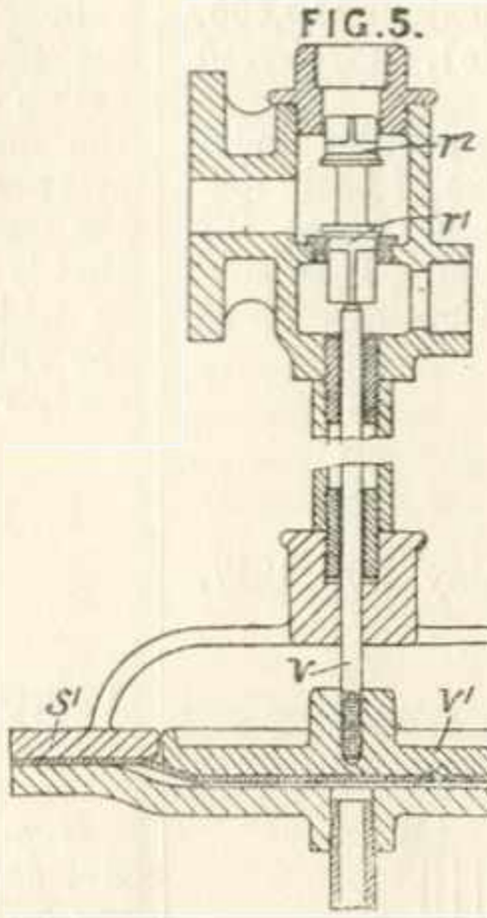
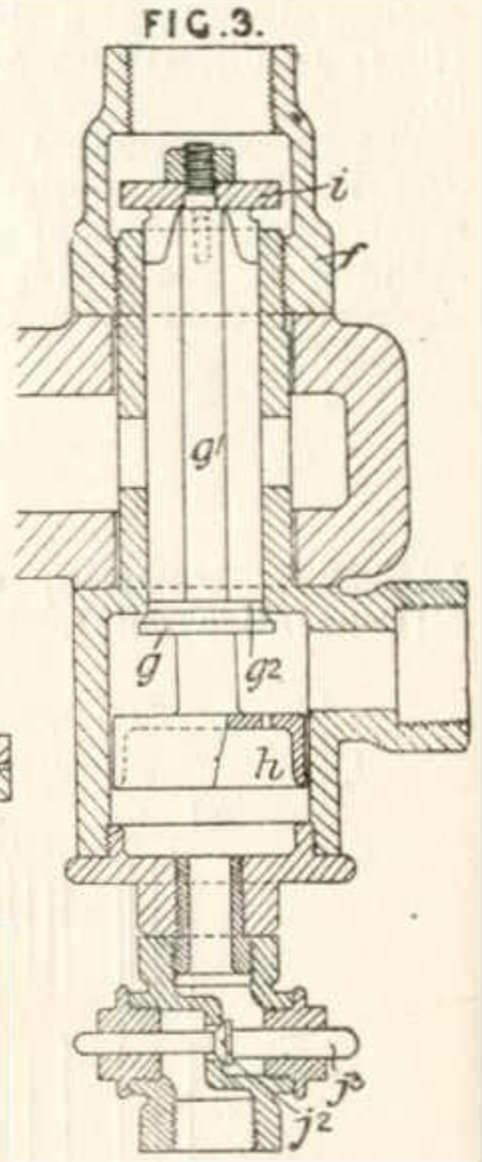
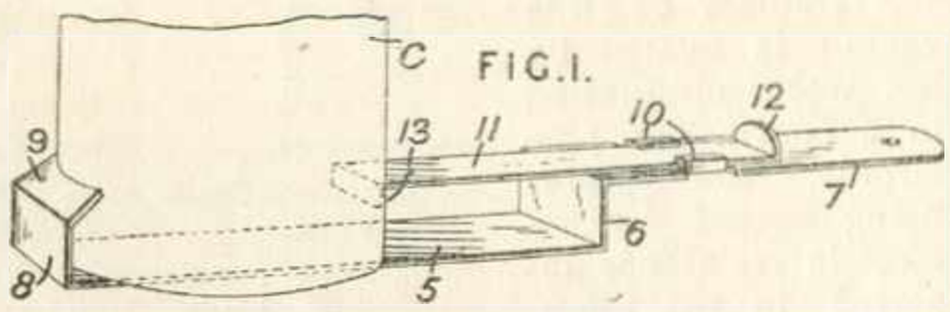


FIG. 3.



117,592. Denton, O. April 17, 1918

FIG. 1.

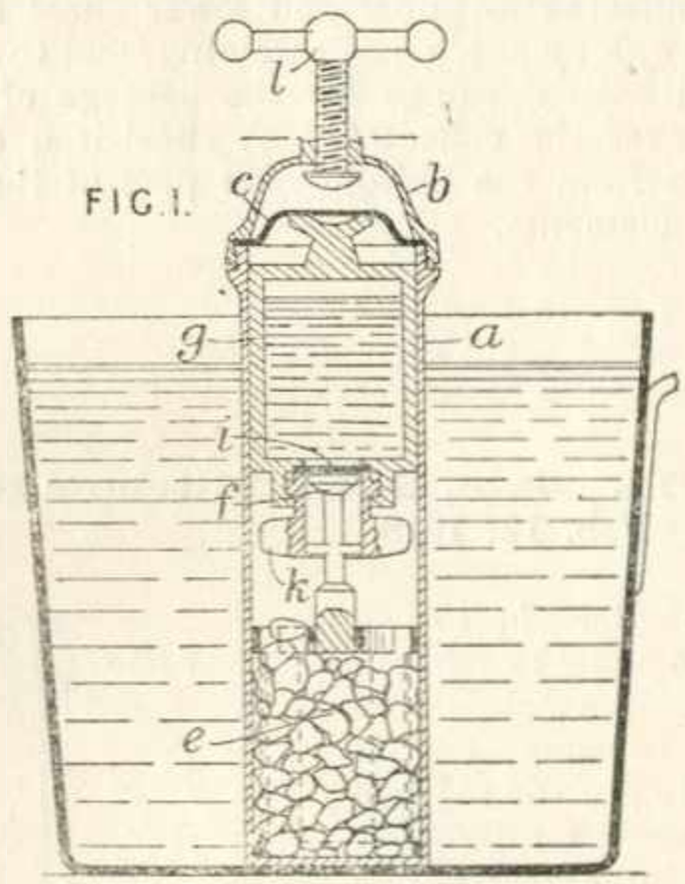


Hot water bottles.—A device for holding hot-water bottles and other containers which are liable to breakage when hot water &c. is poured therein, comprises a metal body-bar 5 bent at one end 8, 9 to engage one side of the container c and having at the other end a handle 7 carrying a slide-plate 11, which is bent at its inner end 13 to engage the opposite side of the container. The plate 11, which has a finger-piece 12 at its outer end, slides between interned flanges 10 on the edges of the handle 7.

117,601. Turrettini, H. July 17, 1917, [*Convention date*].

Heating by chemical action.—A liquid is heated by introducing a determined quantity of acid into a determined quantity of a base contained in a vessel immersed in the liquid. A gas-tight vessel a immersed in the water in a saucepan contains

FIG. 1.



a cage e holding quicklime, above which is a rod and piston f supporting a chamber g containing sulphuric acid and having a lead diaphragm i in its bottom. When the chamber is pressed down-

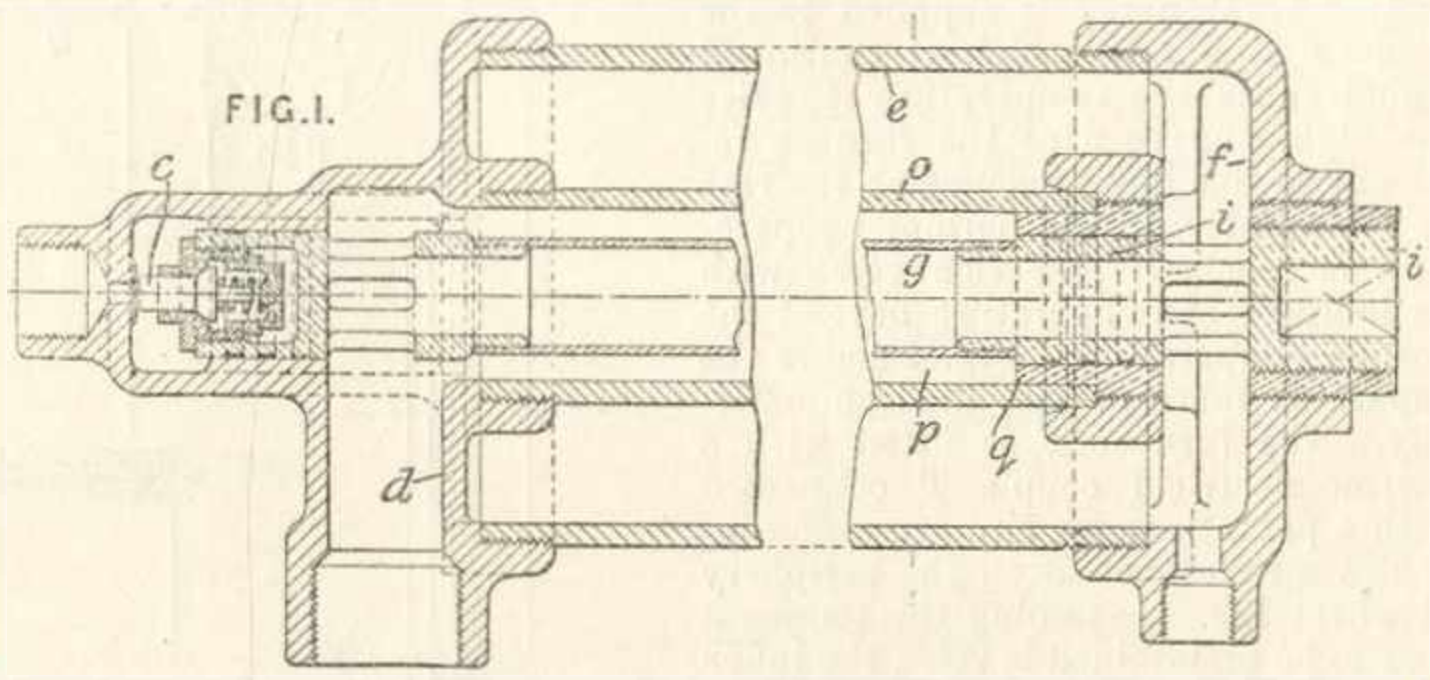
wards by a screw *l*, the piston ruptures the diaphragm and the acid falls upon the quicklime. The top of the chamber is closed by a screw-down cover *b* and a lead cap *c*. The diaphragm is secured by a plug *k* engaging by a bayonet joint with a socket projecting from the chamber.

According to the Specification as open to inspection under Sect. 91 (3) (a), acid may be released by the opening of a cock, or by the rupture of a glass container. This subject-matter does not appear in the Specification as accepted.

117,799. Sawyer, R. May 24, 1918.

Radiators; thermostats. —In a radiator for heating railway carriages &c., of the kind in which steam enters one end of a tubular casing *e* and returns through a central inner tube *g* which acts as the expanding member of a thermostat controlling the steam-supply valve *c*, the central tube is surrounded by a co-axial tube *o* forming an air space *p* open to the atmosphere around the central tube. The valve *c* is arranged and operated as described in Specification 103,437. One end of the tube *o* is screwed into the head *d*, and the other end fits over a sleeve *q* fitting steam tight over the connecting-piece *i* between the inner tube and the head *f*.

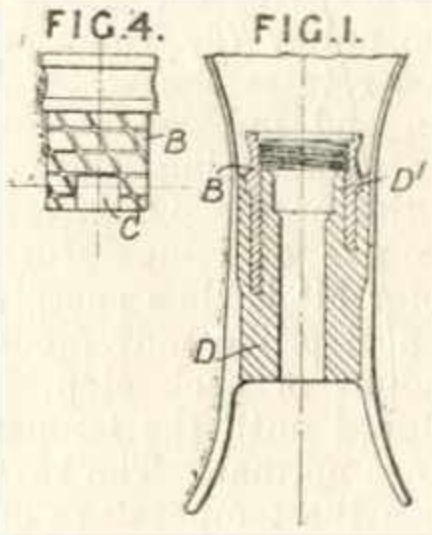
FIG. 1.



118,022. Moor, C. H. Nov. 8, 1917.

Hot-water bottles. — In hot-water bottles, beds, or pillows, the ferrule B for receiving the usual screw stopper is embedded in a rubber socket D formed of two strips joined at their lower or inner ends and extending inside and outside the ferrule, and is provided with a number of castellations C at its lower edge so as to prevent it from turning in the socket D when the stopper is screwed into place. The upper edge D^1 of the rubber inside the ferrule is arranged to contact with the stopper to form a water-tight joint.

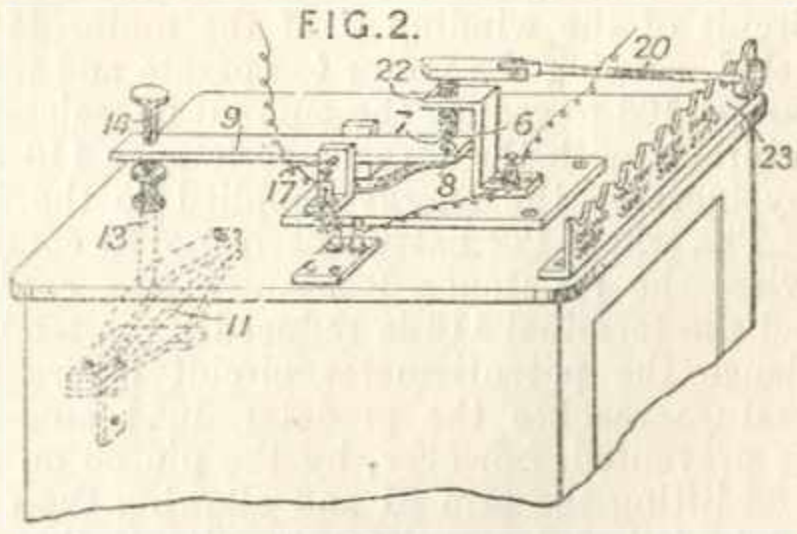
FIG. 4. FIG. 1.



118,186. Kiell, J., and **Stow, A. A.** Oct. 11, 1917.

Thermostats.—An apparatus for regulating the temperature of electrically heated receptacles such as ovens, furnaces, &c. comprises a thermostatic device such as a bow thermostat 11, and, in connexion therewith, for transmitting the movement of the thermostat, a divided rod having a plain portion 13 and an adjustable threaded portion 14 which is carried at one end of a spring-controlled lever 9 pivoted at an intermediate point 17 and carrying a contact 8 at its other end. The contact 7 opposed to the contact 8 is carried by a bracket

FIG. 2.

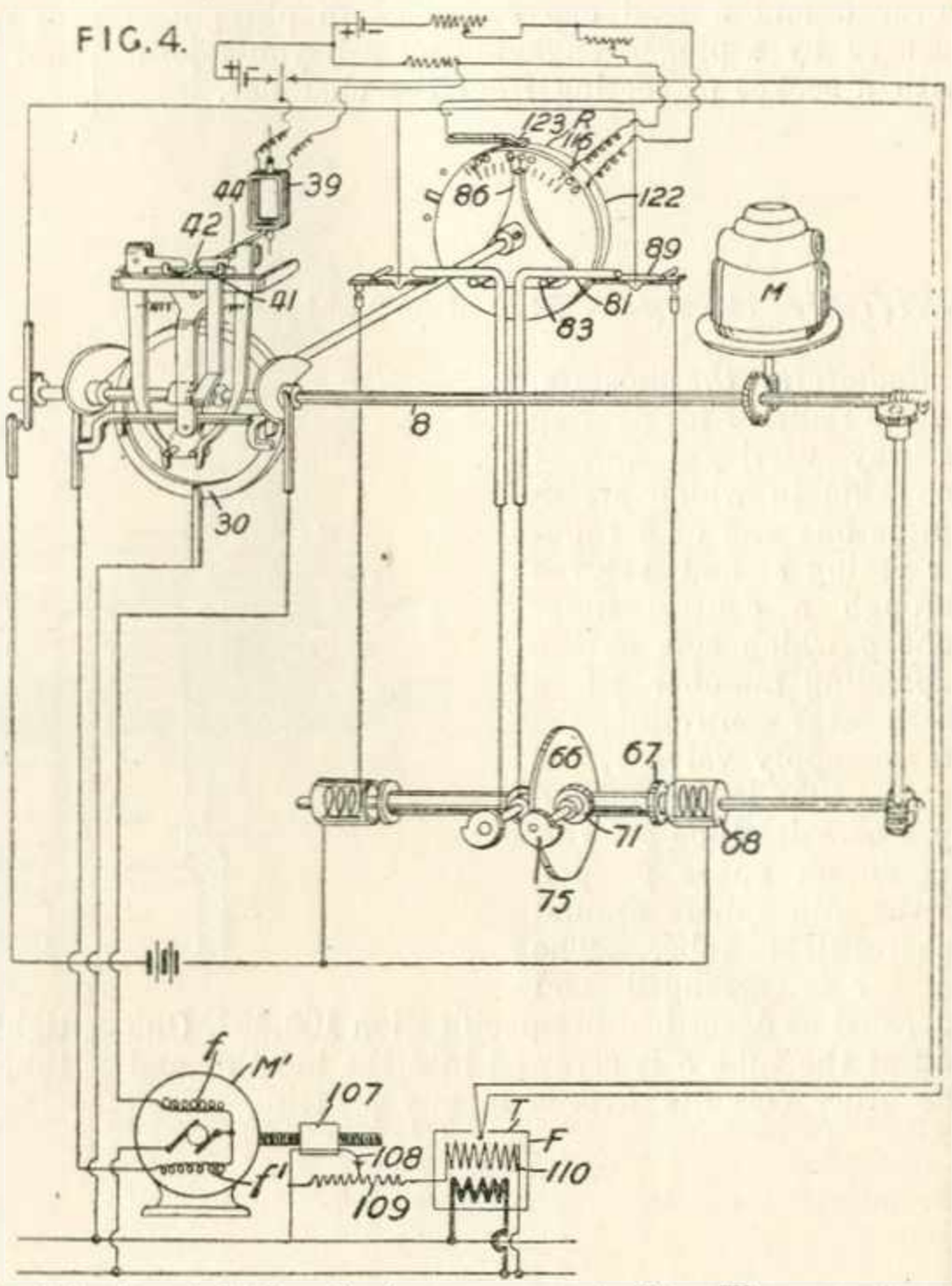


6 and may be either a fixed or, as shown, an adjustable contact screwing into the bracket 6 and operated by a pivoted handle 20 adapted to engage a series of graduated notches in a rack 23. The temperature to which the oven &c. is heated is controlled by adjusting the screw 14, and more delicately by the second screw 22 when such is provided.

118,272. Leeds, M. E. Aug. 1, 1917, [*Convention date*].

Thermostats.—An automatic apparatus for maintaining a predetermined temperature in an electrical furnace comprises means for varying the application of heat at a rate which is dependent on the extent of the departure from the normal temperature and on the rate of change to or from that temperature, so that when the temperature drops below the predetermined temperature energy is supplied to the furnace at a rate which if continued would cause the temperature to rise too high, and then as the furnace responds to this input decreasing the rate of the input until the normal temperature is reached; and vice versa with an increase of temperature beyond the normal temperature. Fig. 4 shows the apparatus more or less diagrammatically. The furnace F is fitted with a thermo-electrical couple T connected with a potentiometer circuit, which includes a resistance R on the periphery of wheel 122. Assuming the temperature to be maintained is 900°, the index 86 is set to 900 on the temperature scale on the wheel 122 and is then fixed to the wheel. When the temperature falls below the 900°, the E.M.F. of the thermo-couple T falls, the potentiometer circuit becomes unbalanced, and consequently the needle 42 of the galvanometer 39 is deflected to the right to an extent depending on the fall of temperature. The needle 42 works in conjunction with a mechanism consisting of a wheel 30, with an automatic clutch, and a series of levers which are continuously rocked by cams on a shaft 8 driven by a motor M. When the needle 42 is deflected to the right, it gets gripped between the surfaces 41, 44 with the result that the wheel 30 is moved counter clockwise, carrying with it the wheel 122. During the movement of the wheels, the circuit of the winding f^1 of the motor M^1 is completed, causing the motor to operate and move the contact 108 to reduce the amount of resistance 109 in circuit with the furnace resistance 110 and thereby increase the energy supplied to the furnace. The wheel 122 having been moved counter clockwise, the resistance R between the contact 123 and the terminal 116 is reduced, thus tending to balance the potentiometer circuit before the temperature reaches the predetermined amount. This is prevented, however, by the pin 83 on the index 86 lifting the arm 81 and allowing the contact 89 to fall and complete the circuit through the right-hand electro-magnet 68. The armature 67 is then attracted, drawing the wheel 66 into contact with the wheel 71 and thus rotating the cam pulley 75, which pulls down the arm 81 and thus rotates the wheel 122 in a clockwise direction and unbalances the potentiometer circuit. The unbalancing, and consequently the deflection of the needle 42, is less than before because of the rise of temperature in the furnace. The motor M^1 is thus energized periodically, resulting in a step-like movement of the contact 108, the amount of each step, however, being gradually reduced until the temperature of the furnace becomes normal. The reverse operation takes place when the temperature of the furnace is too high: the needle 42 then moves to the left the circuit of the winding *f* of the motor M^1 is completed, the wheel 122 is rotated in the clockwise direction, and the resistance 109 is increased. Where the furnace is heated by gas, liquid, or other fuel, the nut member 107 of the motor M^1 will control the supply of such fuel.

FIG. 4.



118,375. Bruce, A. H., and **Baynes, C.**
Nov. 28, 1917.

FIG. 2.

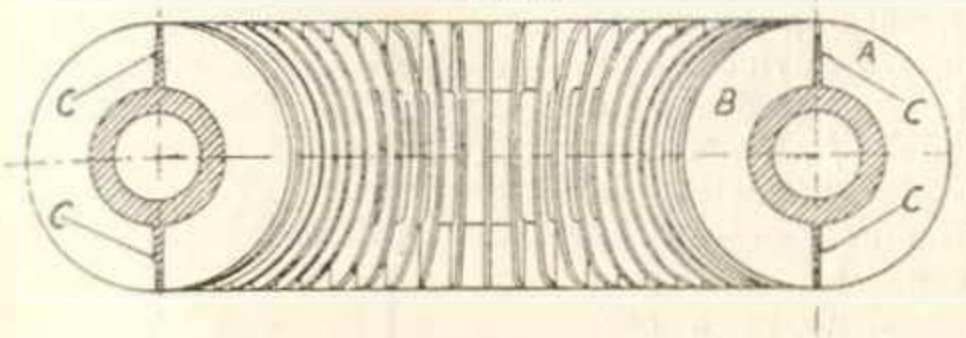
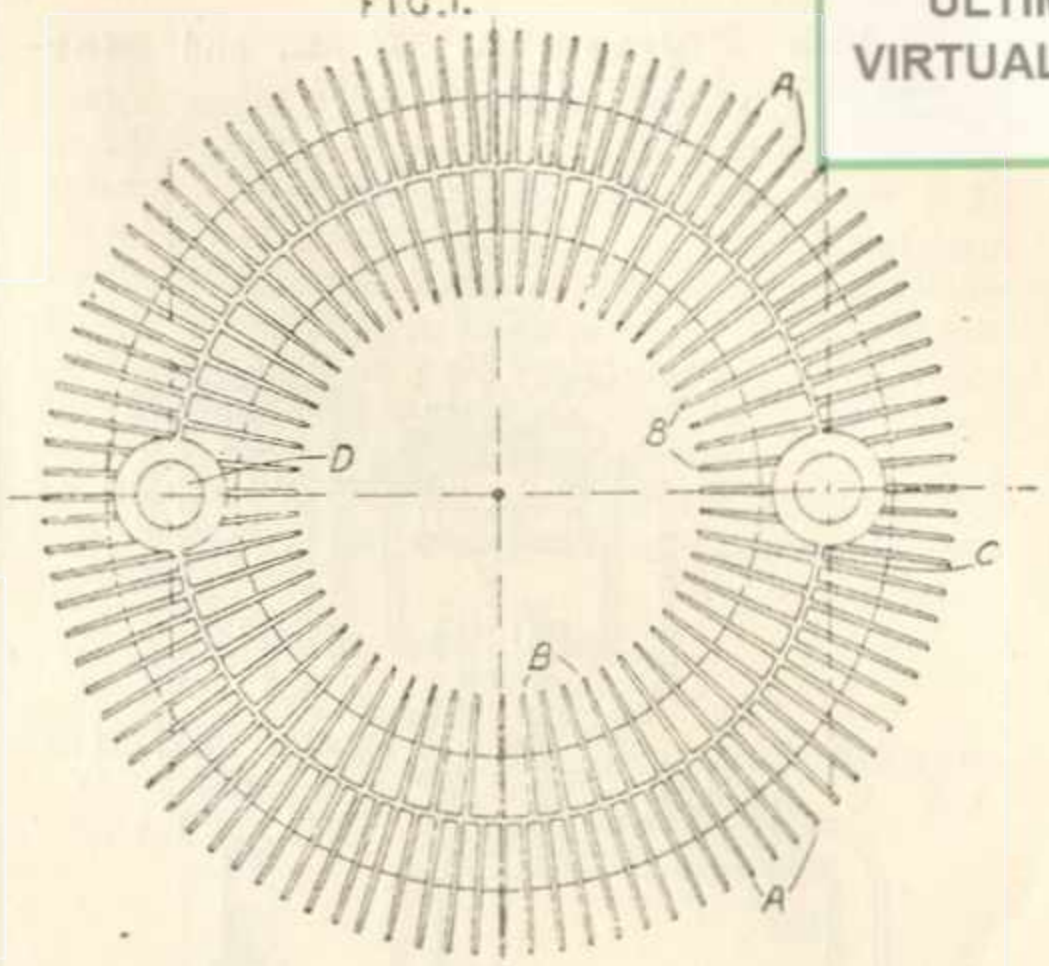


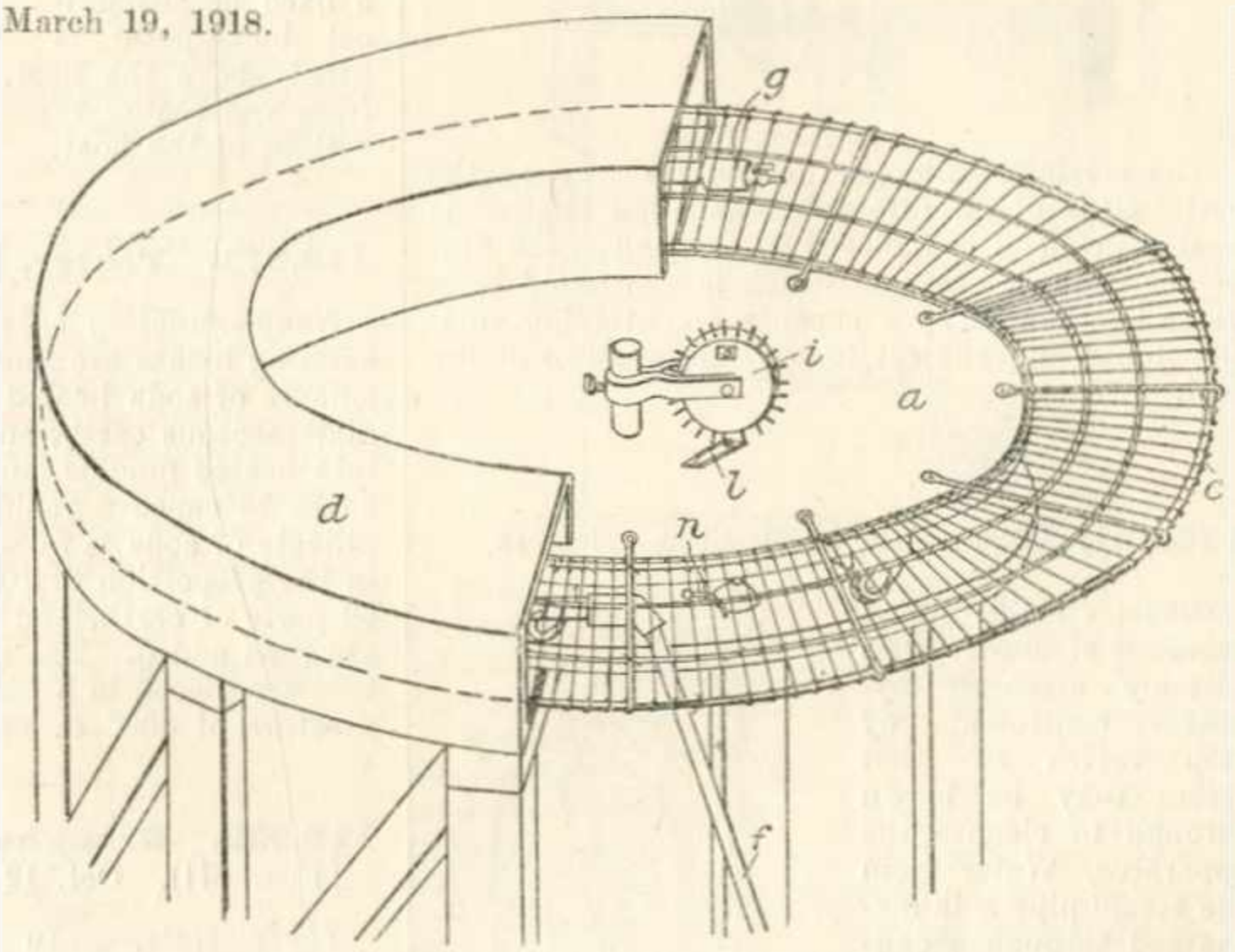
FIG. 1.



Radiators.—A circular or like pipe element is cast with radial ribs A, B, and central longitudinal webs C, a larger number of ribs being formed on the outside of the element than on the inside. Screwed connexions D are provided in the top and bottom of the element.

118,394. Moore, F. March 19, 1918.

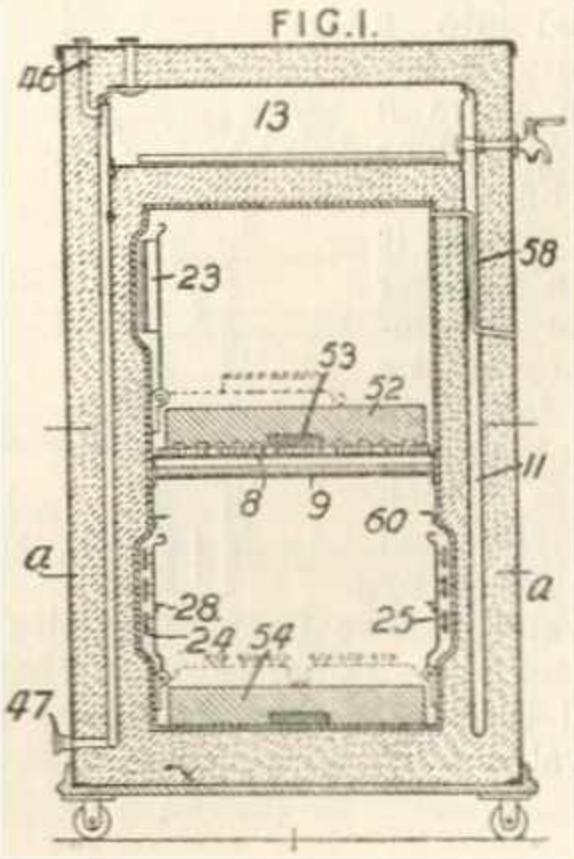
Heating - apparatus.—Relates to apparatus for drying or heating a series of articles in succession after being coated by dipping &c. A rotary table *a* is provided with an annular grid *c* to receive the articles which are carried through an oven *d* heated by a steam &c. pipe *f*, *g*. An indicator *i* actuated by a cam *l* on the table shows the number of revolutions made and an audible alarm *n* is sounded as each revolution is completed. The articles are carried on trays placed on the grid.



118,423. Winterbotham, C. W. June 18, 1917.

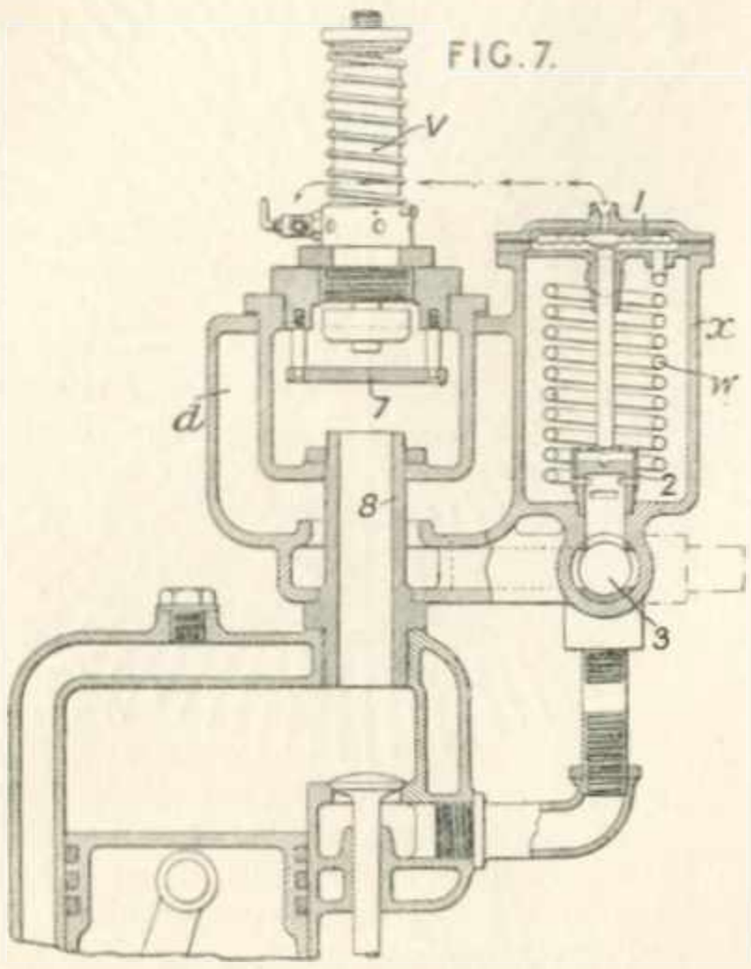
Heat-storing apparatus.—Each compartment of a special oven contains an iron heat-storing block 52 or 54, recessed underneath for an electric heater 53. The lower face of the upper block is grooved to permit air circulation.

FIG. 1.



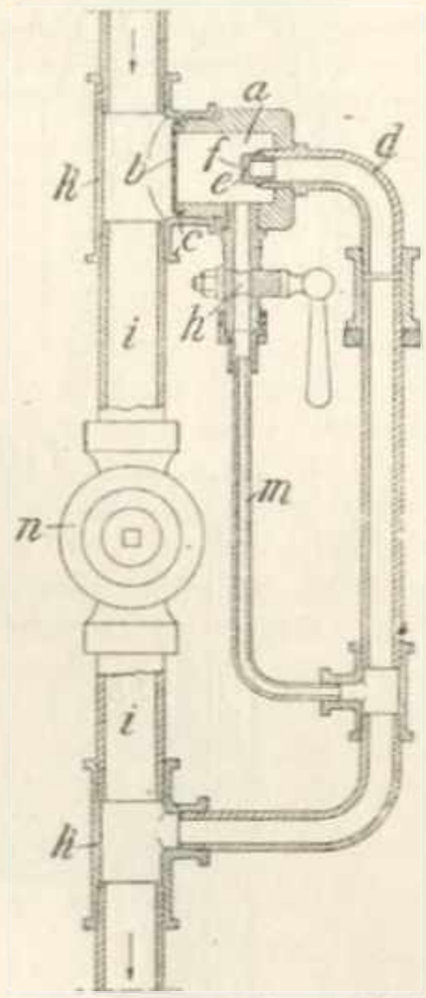
118,506. Pulman, A. H. R., and **Macfarlane, O. P.** Oct. 26, 1917.

FIG. 7.



Thermostats.—Liquid fuel on its way to the carburettor of an internal-combustion engine is heated in a coil *w* enclosed in a casing *x*, the flow of hot exhaust gases to which is controlled by a valve 2 actuated by a capsule 1 containing volatile liquid and subject to the temperature of the fuel.

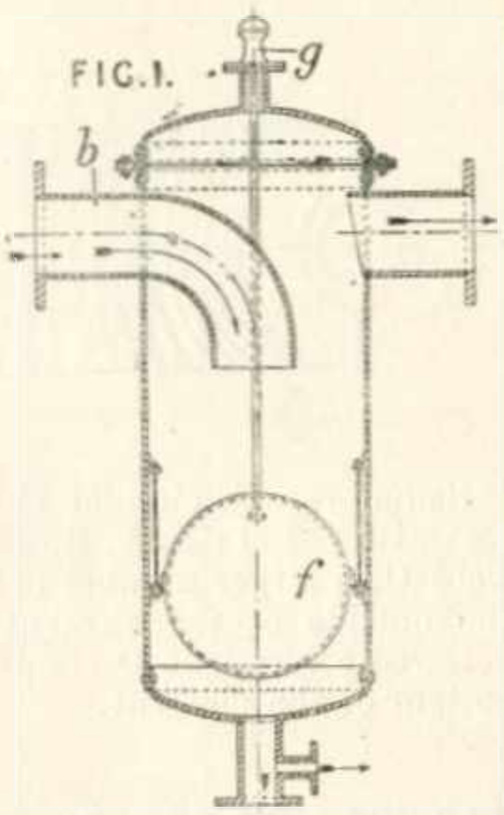
118,791. Brusche, J. S. Feb. 22, 1918.



Steam - traps. — A valveless steam-trap has suitably - arranged by-passes controlled by stop valves so that steam may be blown through to cleanse the apparatus. Water from the steam-pipe *k* is discharged through a calibrated aperture *f* in a plug *e* screwed into a branch *d* forming a by-pass across a valve *n* in the steam-pipe. The inlet to the chamber *a* enclosing the plug *e* is protected by a strainer *b*. The coarser impurities separated by the strainer fall into the pocket *i* above the valve *n*, from which they are removed and the strainer cleaned by opening the valve. The finer impurities which may have passed the strainer into the chamber *a* are discharged through a second by-pass *m* controlled by a valve *h*.

118,842. Pradairol, J. M. July 7, 1917, [*Convention date*].

FIG. 1.

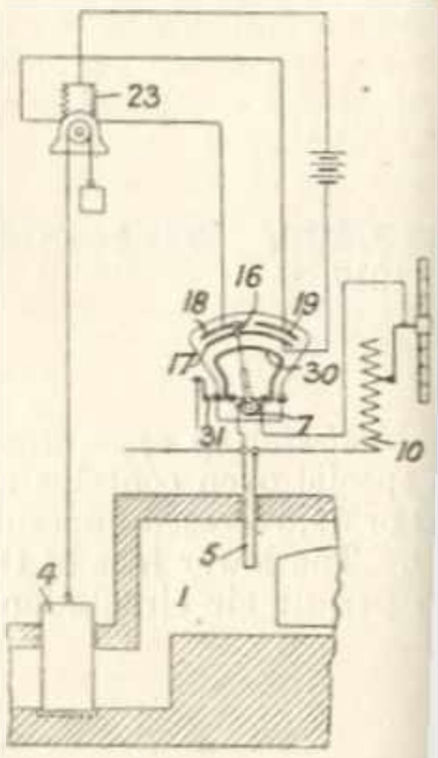


Steam - traps. — A separator is provided with a steam-whistle *g* or other alarm device which is operated by a float *f* when the water collecting in the bottom of the separator casing rises above a certain level. The upper surface of the float forms a baffle against which the steam entering through the downwardly - directed pipe *b* impinges. In a modification, a fixed hemispherical baffle-plate is fitted above the float. The water may escape from the casing through a valve secured to the bottom of the float.

118,871. Foster, E. Aug. 9, 1917.

Non-conducting coverings for heat. — Heat-insulating blocks are made by pouring a mixture of silicate of soda heated so that it becomes liquid, diatomaceous earth, and a small quantity of lime into heated moulds, and then heating the mixture so as to cause a rapid ebullition of the silicate. Silicate of soda is mixed with diatomaceous earth in the proportion of 100 parts of silicate to 40 to 60 parts of earth, and from 2 to 10 parts of lime are then added. The moulds containing the mixture are placed in a furnace 9 heated from a temperature of 400° F. upwards.

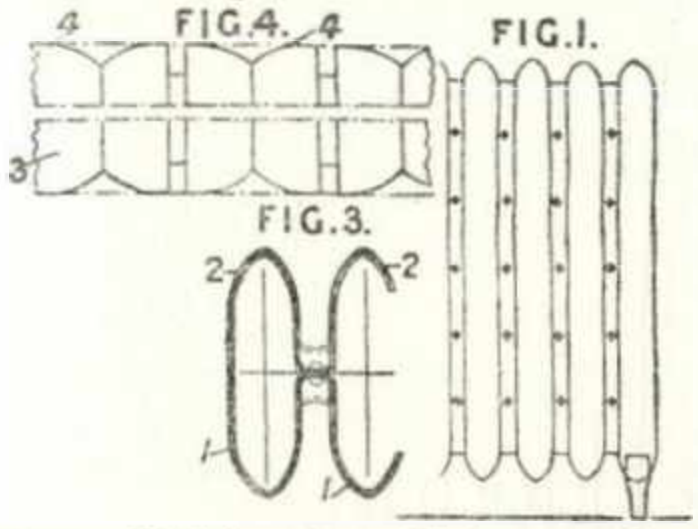
118,922. Brougham, F. J., (*Saurer, A.* [Firm of]). Oct. 12, 1917.



Thermostats. — In apparatus for operating the damper 4 of a furnace 1 by a high-tension motor 23 under the control of a thermo-electric element 5 in the furnace, the movable contact 16 of a switch placed in the motor circuit is operated by the low-tension current of the thermal element and is supported at a distance from the fixed contacts 17, 18, 19 being pressed down upon the fixed con-

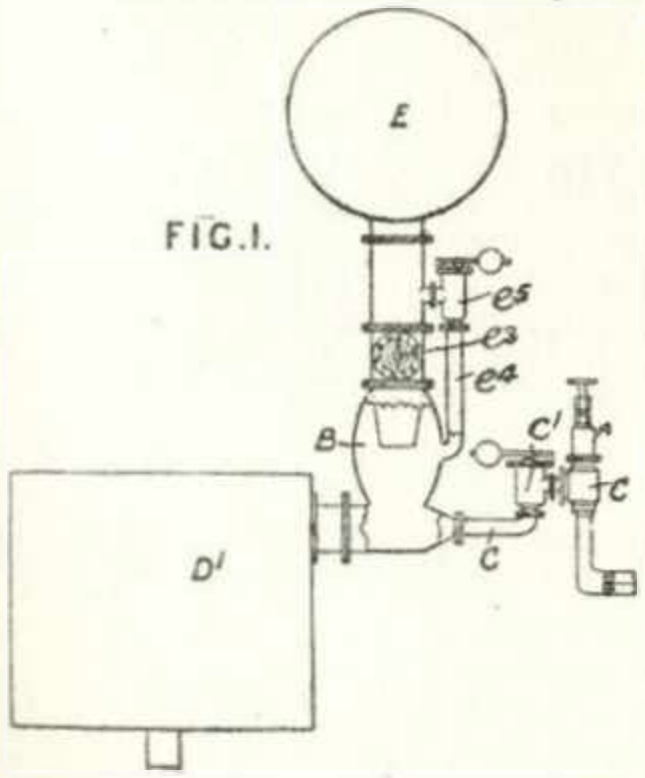
tacts at predetermined intervals by clock-work or other mechanism. The movable contact is rotated in the manner of a galvanometer needle by a coil 7 in the circuit of the thermal-element. An adjustable resistance 10 is provided in the circuit for regulating the operation of the switch. The movable contact is pressed down by a bridge-piece 30 on an axle 31 connected to the clock-work mechanism.

119,448. Cardell, O. V. Sept. 24, 1917, [*Convention date*].



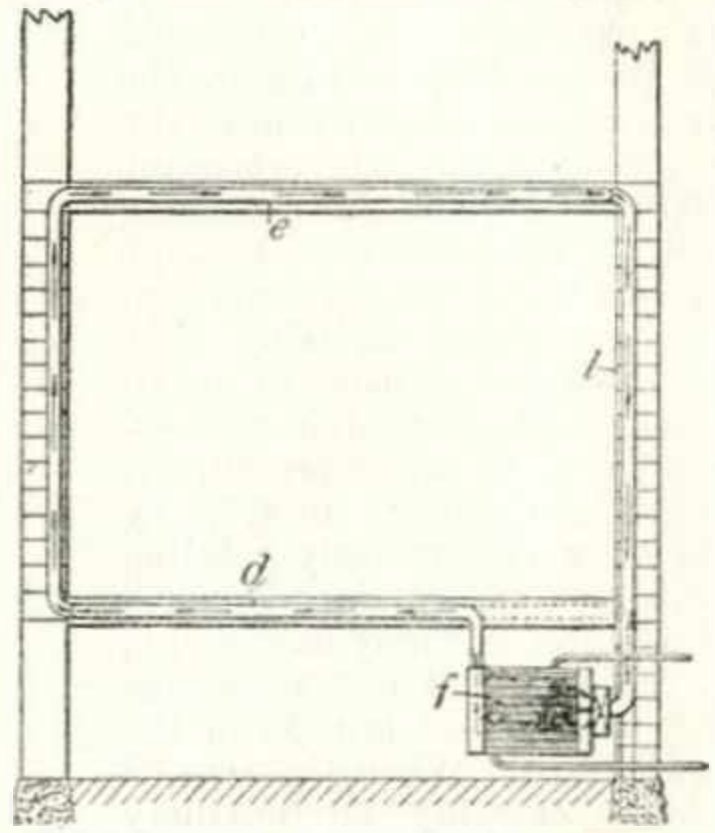
Radiators.—Relates to radiators made of two metal sheets 1, 2, Fig. 3, welded together and each cut out of a rectangular blank 3, Fig. 4, to such a shape that it forms one of the side surfaces of the radiator after being bent in a suitable way. The line 4, Fig. 4, shows the shape to which the blank must be cut to form a radiator of ordinary appearance. According to the invention, the ribs between the sections of the radiator are riveted together except at the top and bottom, where they are bent to form the communication openings between adjacent sections Instead of one sheet for each side, two or more sheets may be used; for small radiators, one sheet may be used to form both sides.

119,494. Bouhon, L. J. R. Sept. 25, 1917.



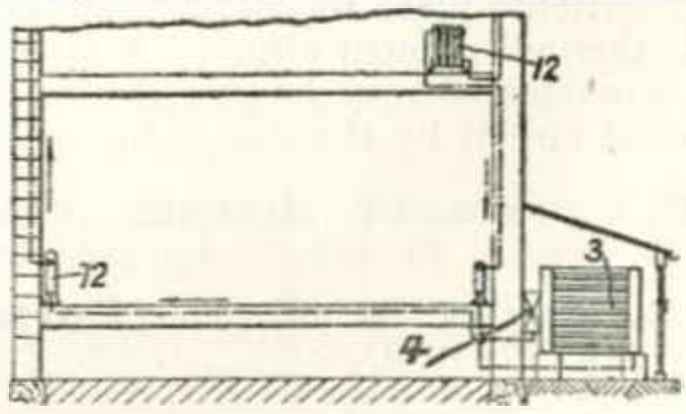
Heating by circulation of fluids.—In apparatus for heating exhaust steam by waste furnace gases and utilizing the regenerated steam for heating and drying purposes, steam is withdrawn from a chamber B between the cylinder D^1 and the condenser E by an aspirator C working with high pressure steam, and the steam, after being heated and utilized, does not pass into the condenser. A stop valve e^3 between the cylinder and the condenser and a loaded valve c^1 between the chamber and the aspirator are so adjusted that at least one-third of the exhaust passes to the condenser. In the event of a breakdown, the valve c^1 closes, and the exhaust enters the condenser through a branch pipe e^4 containing a loaded valve e^5. The steam may be heated in pipe coils placed in the boiler flues between a superheater and an economizer, or in nests of straight pipes placed in a chimney or smoke-stack. The pipes of the steam-heater are cleaned by jets of steam from perforated steam pipes.

119,614. Haden, W. N., and **Haden, C. I.,** (*trading as* Haden & Sons, G. N.). March 13, 1918. *Addition to* 112,982.



Heating buildings.—The system for heating buildings described in the parent Specification is adapted for either cooling or heating. The air circulating in a closed circuit through passages *d*, *e* in the floor and through "flue" blocks *l* in the walls of the building is passed through an interchanger *f*, which may consist of a stack of tubes surrounded by cold or hot water, air, or steam. Or two interchangers may be employed, one for heating and the other for cooling the air, provision being made for rendering one ineffective.

119,673. Haden, W. N., and **Haden, C. I.,** (*trading as* Haden & Sons, G. N.). Sept. 12, 1917.



Heating buildings.—Air circulates in a closed circuit through radiators 12 and heating apparatus 3 consisting of a battery of tubes as described in

Specification 12872/15, [*Class* 64 (i), Heating liquids &c.], the circulation being assisted by a fan 4. The air passages may be formed in the walls of the building by means of the hollow blocks described in Specification 26854/08, [*Class* 87, Moulding &c.].

119,748. Brougham, F. J., (*Saurer, A.* [Firm of]). Nov. 24, 1917. *Addition to* 118,922.

Thermostats.—To control a number of temperature regulators of the kind described in the parent Specification through a single intermittingly operated switch, each regulator is provided with an auxiliary switch so arranged and operated that, every time the contact arm of the single switch is pressed down, one of the thermal elements is connected through its auxiliary switch to the coil operating the contact arm of the single switch, the corresponding motor operating a damper &c. being connected at the same time through the auxiliary switch to the fixed contacts of the single switch. The auxiliary switches consist of partitioned glass tubes 45 containing mercury and mounted on levers 46, 47, adapted to be oscillated in turn by cams 44 on a continuously rotating shaft 43, which also carries a notched disk 34 for intermittingly depressing, through rods 30, 28 and a bridge-piece 26, the contact arm 14 of the single switch 13. When the arm 47 of a lever carrying an auxiliary switch enters a depression 48 in a cam, the switch is tilted and contacts 52 in the circuit of the thermal elements 9 and the contacts 54 in the circuits of the motors 11 are simultaneously closed, so that when the arm 33 of the lever 31 connected to the bridge-piece 26 enters the next notch 35 in the disk 34, thus depressing the contact arm 14, corresponding thermal elements and motor circuits are completed. The motor circuit is finally closed through a mercury switch 56 mounted on the lever 31, the switch consisting of a tube containing mercury and charged with hydrogen to prevent sparking. The cam disks being successively displaced relative to one another, the temperature of each furnace &c. is regulated in turn. Contacts 53 in the auxiliary switches place registering galvanometers 55 in the thermal-element circuits. A visible reading galvanometer 60 may be placed in each thermal-element circuit by the depression of contacts 61.

FIG. 2.

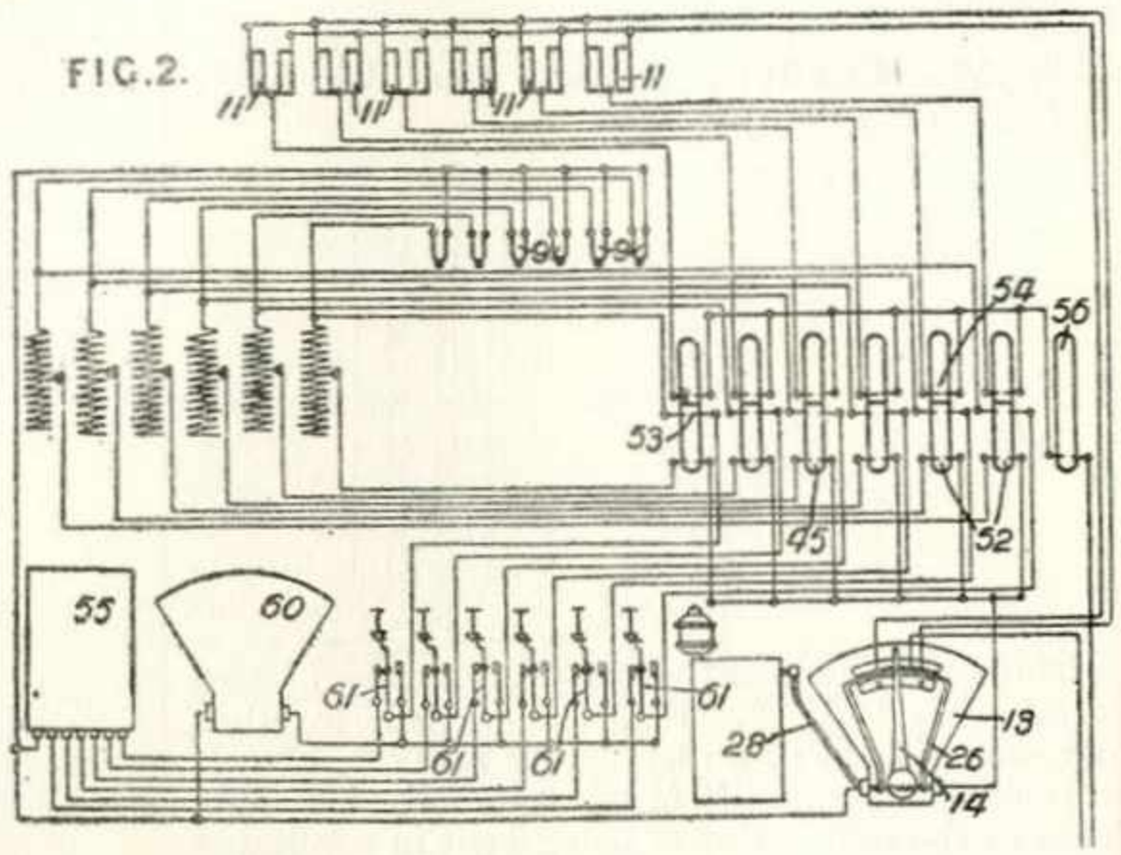


FIG. 10.

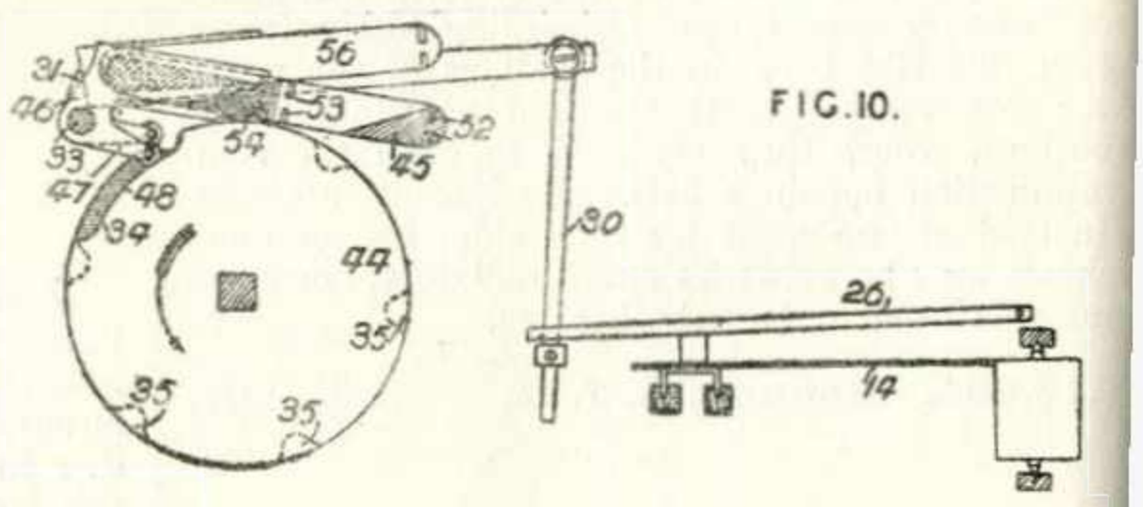
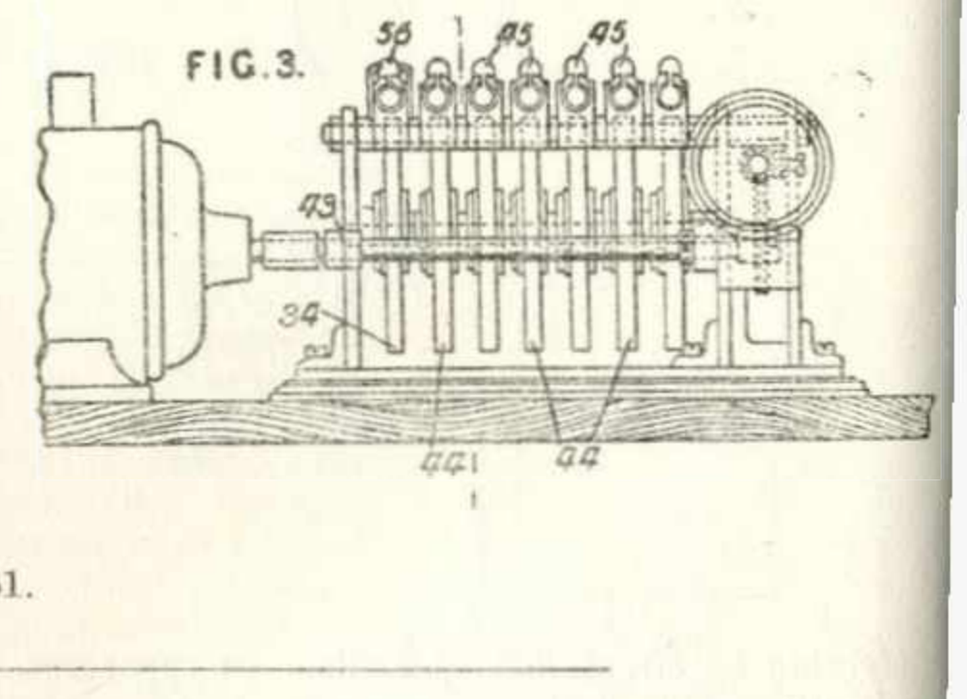


FIG. 3.

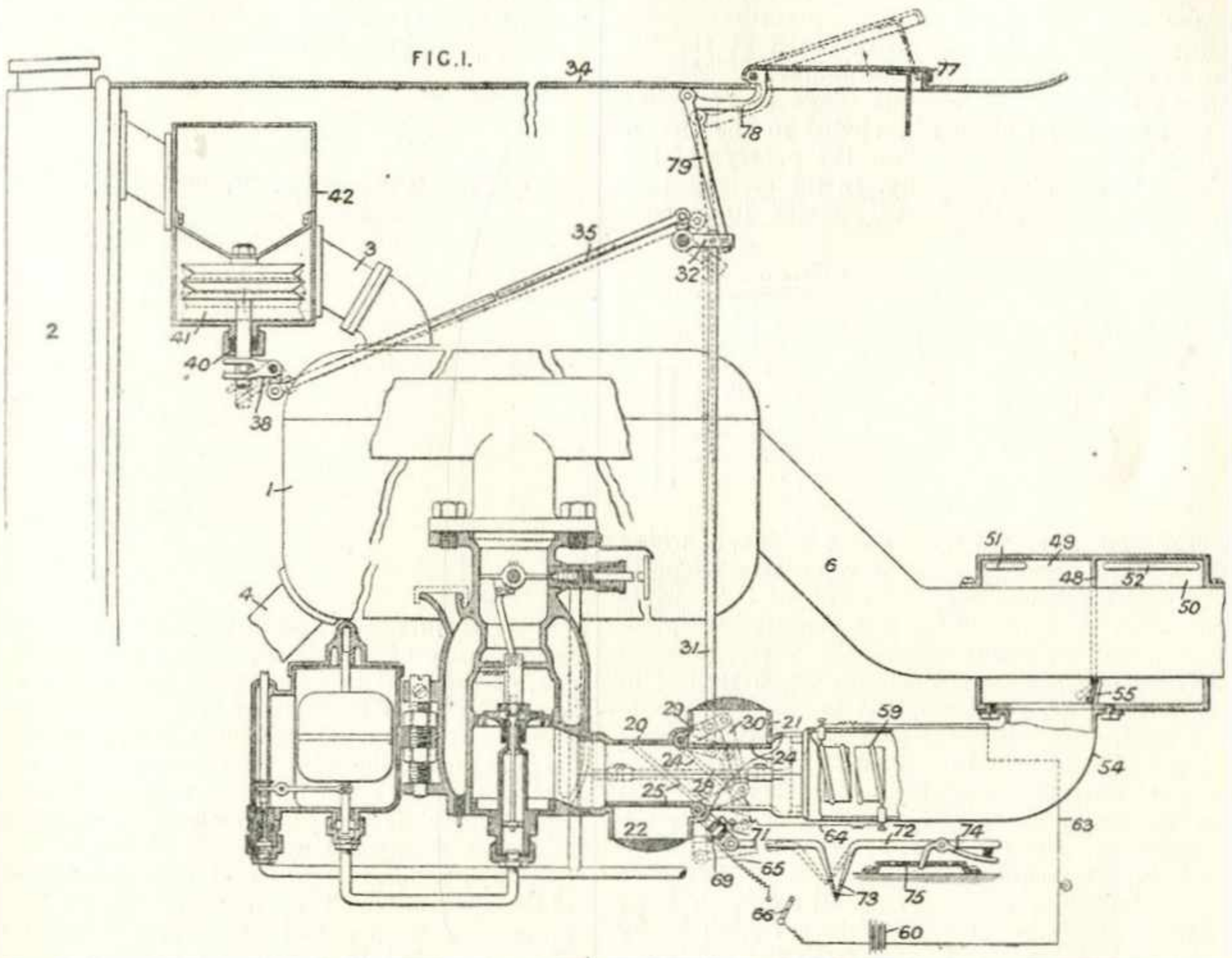


119,783. Surie, L. G., and **Suristone, Ltd.** Jan. 17, 1918.

Non-conducting coverings for heat.—A heat-insulating material is made of granulated cork, cork dust or saw dust, silica wool, dissolved casein, and lime mixed with water. The mixture is moulded in slabs, which are treated in a bath of formaldehyde to harden, and, when dry, treated with calcium tannate to render it damp proof. The ingredients are mixed in about the following proportions,—2 lb. of granulated cork &c., ¼ lb. of silica wool, 1 lb. of casein, ½ lb. of lime, and 5 lb. of water.

119,888. Donning, G. W. Oct. 11, 1917.

FIG. 1.



Thermostats. — In engines for use on motor vehicles, boats, aeroplanes, and like vehicles which, at times, travel in comparatively low temperatures, the air supply is heated by exhaust gases and electrically; the temperature of the air is controlled by a thermostat in accordance with the temperature of the cooling water, of the motor itself, or of the surrounding air; the action of the thermostat may be manually controlled, and, in the case of a motor-vehicle, the bonnet space is ventilated by a valve actuated by the thermostat. The invention is shown applied to a motor-vehicle in which the engine 1 is enclosed in a bonnet 34, the water-cooling system comprising a radiator 2 and pipes 3, 4, of which the pipe 3 includes a box 42 containing a thermostat 41. Air is supplied to the carburettor through pipes 20, 54 from chambers 49, 50 surrounding the exhaust-pipe 6. The chamber 50 is separated from the chamber 49 by a partition 48 with flap-valve 55, and supplies air only when the suction is sufficient to open the valve 55. Air enters the chambers through ports 51, 52. The pipe 20 has two additional inlets 21, 22 provided with hinged valves 24, 25 actuated by arms 29, 28 connected by a link 30. The arm 29 is further connected through a link 31, bell-crank 32, link 35, and bell-crank 38, to the rod 40 of the thermostat 41. Upon an increase of temperature the valves 24, 25 are opened so as to admit cool air through the opening 22 and at the same time allow the hot air from the pipe 54 to escape through the opening 21. An electrical heating-coil 59 supplied with current from a battery 60 through leads 63, 64, 65 may be used at starting or during normal running. The circuit has a hand switch 66 and a spring switch 71 carried by an arm 69 on the spindle of the valve 25. With this arrangement the circuit of the heating-coil is controlled by the thermostat 41, the action of which may be retarded more or less by providing on the arm 69 a rod 72 with a resilient section 73, the outer end of the rod being adjustable by a latch 74 and holes in a fixed part 75. The thermostat may actuate also a valve 77 in the bonnet 34, through links 78, 79. In a modification, the thermostat 41 is mounted directly on the engine cylinders.

120,412. British Thomson - Houston Co., (*General Electric Co.*). Oct. 9, 1917.

Thermostats. — In a temperature regulator or alarm for an electric heating-device such as a radiator, the function of which is the production of heat, or a controlling-resistance such as a vacuum lighting-arrester, in which the production of heat is incidental, the current to the heating-

device 10 is supplied from a generator 11 through the arms of a Wheatstone bridge A, the resistances being subject to the temperature of the heating-device and having different temperature coefficients so that a balance is obtained at the required temperature of the heating-device. At any other temperature, a current tends to flow, but a unidirectional cell 20 is included in the circuit of the heating-device to allow the passage of the current in one direction only. In the arrangement shown in Fig. 1, the heating-device 10 is con-

FIG. 1.

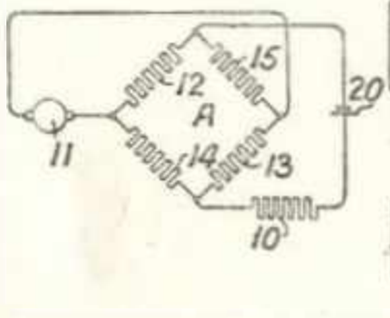
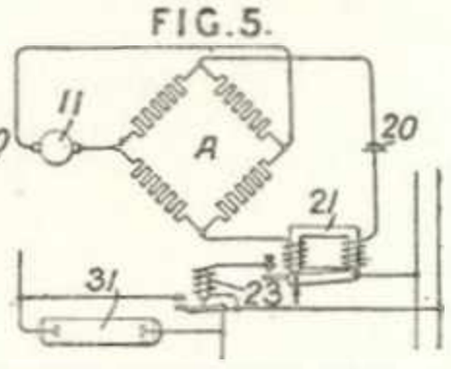


FIG. 5.



nected directly to the Wheatstone bridge, of which the opposite arms 12, 13 have a positive temperature coefficient and may be made of iron, while the other arms 14, 15 have a negative temperature coefficient, and may be made of silicon or an electrolyte. Other arrangements are described in which the current is supplied to the heating-device from an independent source, and the Wheatstone bridge is used to control the current to one or more switches controlling a further switch in the circuit of the heating-device. Thus, in the arrangement shown in Fig. 5, as soon as the temperature of a vacuum lightning-arrester 31 reaches a predetermined value, a sufficient current flows through the relay 21 to actuate a switch 23 by which the current is shunted from the lightning-arrester.

120,540. Friedlander, V. Oct. 16, 1918.

FIG. 1.

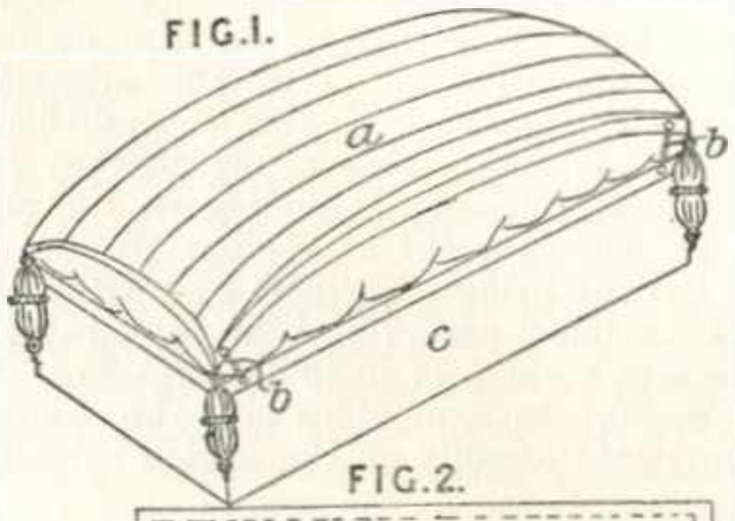
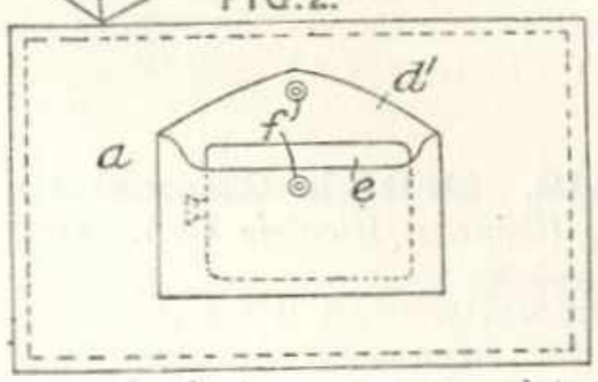


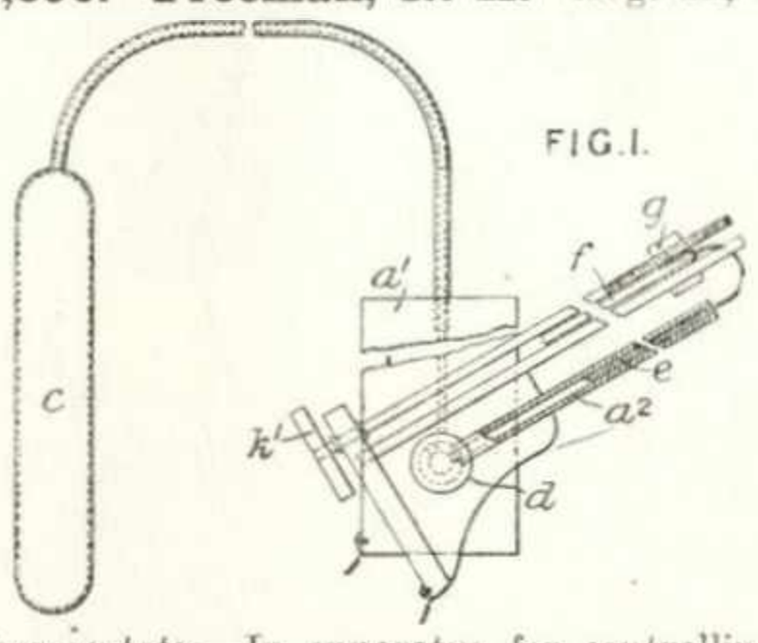
FIG. 2.



Foot-warmers.—A foot-warmer consists of a lower portion or rest *c* and an upper cover *a* comprising an upholstered portion or cushion or quilt adapted to receive in its underside a portable heating-unit, preferably an india-rubber hot-water bottle *e*, secured in place by the flap d^1 and press-button *f*. The corners of the cushion &c. are connected to the rest by flaccid or loose connexions *b* or they may be weighted.

120,590. Freeman, N. H. Aug. 21, 1917.

FIG. 1.



Thermostats.—In apparatus for controlling the temperature of a furnace, oven, or other apparatus, of the kind in which the expansion of air in a vessel due to increase of temperature causes a body of mercury to close an electric circuit, the terminal co-acting with the mercury is adjustable, and the part of the mercury container in which the terminal is placed is inclined to the vertical so as to afford a longer path of travel for the mercury, thus giving greater accuracy of control of the apparatus. The expansion of air in a vessel *c* forces mercury out of a container a^1 into a tube a^2 so mounted in a rotary connexion *d* on the side of the container that its inclination may be adjusted. The wire terminal *e* dipping into the tube is secured by a set-screw in the end of a rod *f* mounted in a sliding carrier *y*, which is adjustable by a screw and hand-wheel k^1. The closure of the electric circuit operates a valve or damper through electro-magnetic devices.

120,691. Illemann, R., and **Montgomerie, J. A.** March 6, 1918.

Non-conducting coverings for heat and sound.—A non-heat-conducting or sound-deadening covering for boilers, steam-pipes, &c. is produced by adding calcined gypsum (plaster of paris) gradually to an excess of water, in the proportions of about 6 parts of water by measure to 1 part of gypsum, agitating the mixture until a plastic spongy mass is obtained, and then evaporating the excess water by the application of heat or under atmospheric conditions so that air enters the cells previously occupied by the excess water to form a porous insulating mass. Small proportions of slaked lime or silicate of soda or both may be added to facilitate setting, and a small proportion of mineral or vegetable fibre to strengthen the material. Specification 1289/70 is referred to.

120,764. Bates, W. R., and **Walker, H. R. L.** Nov. 20, 1917.

FIG. 1.

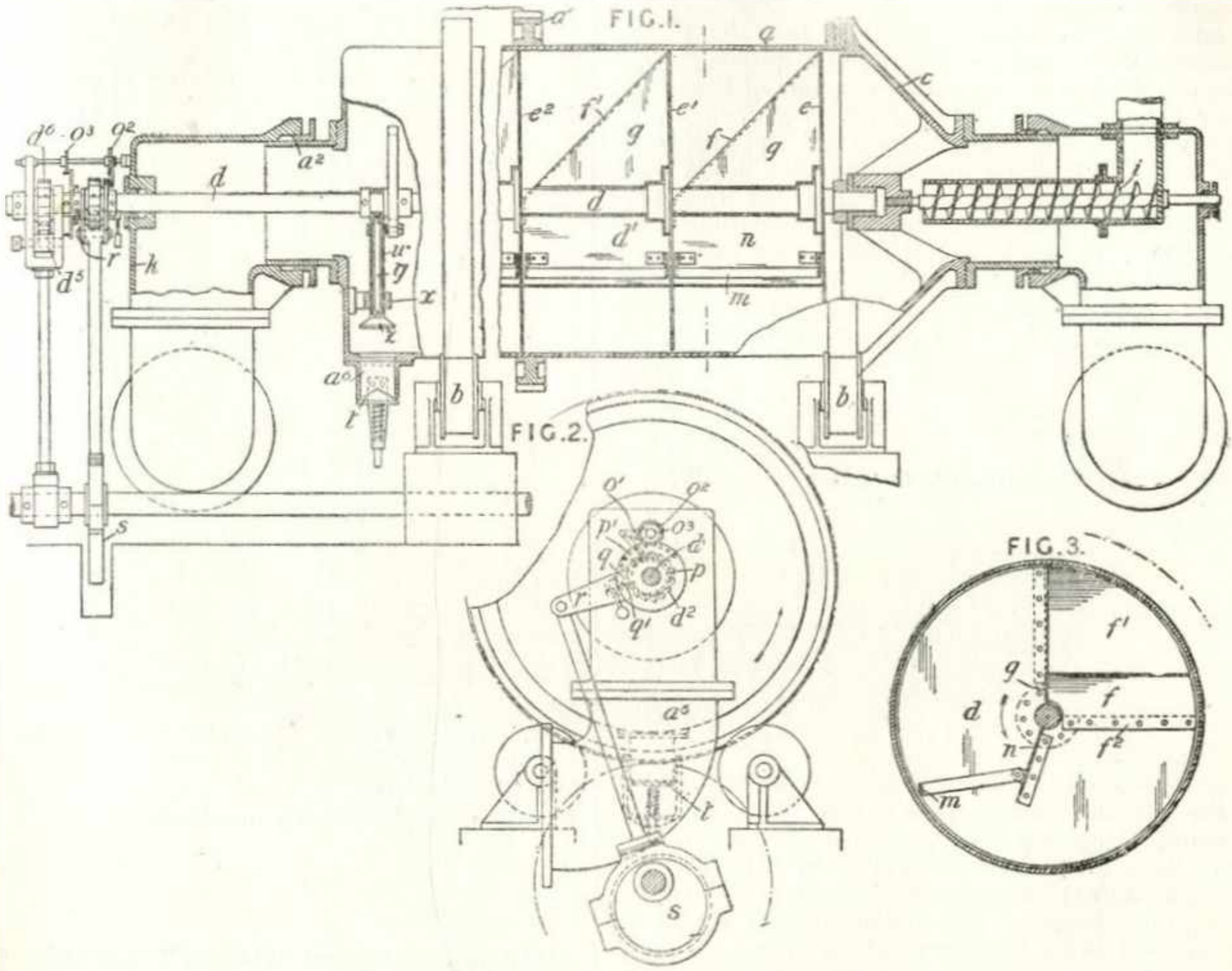


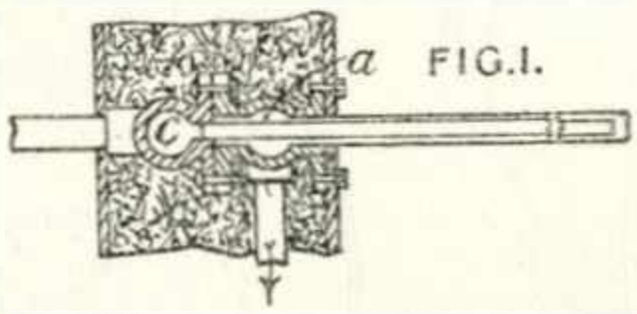
FIG. 2.

FIG. 3.

Heating systems and apparatus. — Relates to conveyers for use in apparatus for drying, mixing, screening, carbonizing, or for treating solids with fluids, and is described by reference to apparatus for removing sulphur from crude coal gas or coke-oven gas by passing the gas over iron oxide. The gas is passed through the pipe k, Fig. 1, into a cylinder a mounted on rollers b and driven through a gear a^1. One end of the cylinder has a conical cover c, on to whnch iron oxide is fed by a worm conveyer i, and at the other end the cylinder is fixed to a pipe a^2 which rotates in the mouth of the pipe k. The cylinder contains a conveyer comprising a series of disks e, e^1, e^2 - -, each with a quadrant removed, Fig. 3, and a series of elliptical sectors f, f^1 - -. The disks are secured to collars d^1 on an intermittently rotated shaft d, and one edge f^2 of each sector is bolted to one of the straight edges of the corresponding quadrant. Triangular iron plates g are fixed to the other edge of each quadrant. Each compartment of the cylinder contains a bar m which is pivoted in a baffle plate n fixed to the disks e, e^1, e^2 - -. In modifications the disks are replaced by inclined elliptical sectors, or the disks have nearly a semicircle removed and the elliptical sectors are correspondingly increased. In operation the conveyer is arranged with the plates f, f^1 - - in the upper part of the cylinder, and the cylinder is rotated continuously, thereby agitating the iron oxide. After a certain number of revolutions of the cylinder the shaft d is rotated once, by the mechanism described below in the opposite direction, and the oxide is shifted from each compartment to the next, that in the compartment nearest the inlet pipe being transferred to the cylindrical cavity d^6. An eccentric s on the driving-shaft of the cylinder a rocks a lever r, Fig. 2, on the shaft d. The lever carries a pivoted pawl q and drives a pawl o^1. The pawl q engages a ratchet-wheel d^2, keyed to the shaft d, when a spring blade q^1 fixed to the pivot of the pawl snaps into a slot in the drum p which is fixed to the pin-wheel p^1 freely mounted on the shaft d. The pawl o^1 engages a ratchet-wheel on a shaft o^2 which carries a disk o^3 having a single tooth for engaging the pin-wheel p^1. A pawl d^5 and ratchet d^6 prevents the shaft from rotating in the same direction as the cylinder. The spent oxide is discharged from the cylindrical cavity a^6 by a plunger z which depresses the spring valve t when the cavity is in the most suitable position. The plunger z is formed on the end of the sleeve w which slides in a collar x mounted on a swivel in the end of the cylinder, and over a rod y pivoted to a collar free on the shaft d. The sleeve w is actuated by an eccentric on the shaft d. If adjacent compartments are charged with different materials, these may be collected unmixed or delivered to form distinct layers at the discharge

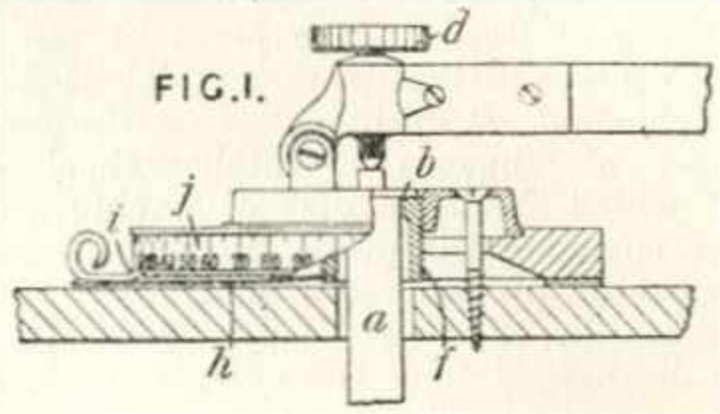
end. When the apparatus is used for carbonizing, the lower part of the cylinder *a* may be heated externally to a temperature which is highest at the discharge end and lowest at the charging end, and the shaft *d* may be slowly rotated continuously. The volatile products may be collected as a whole from one part of the cylinder through the shaft of the conveyer, or separately from each compartment. If the apparatus is used for washing gas, or treating liquid with gases, the disks *e*, e^1, e^2 - - may be in liquid-tight contact with the cylinder at the bottom part, and may be made hollow for being heated or cooled by fluid circulated through the shaft *d*, and may be perforated at parts normally above the liquid level for forming jets of liquid or steam.

121,001. Bynoe, F. O. Dec. 13, 1917.



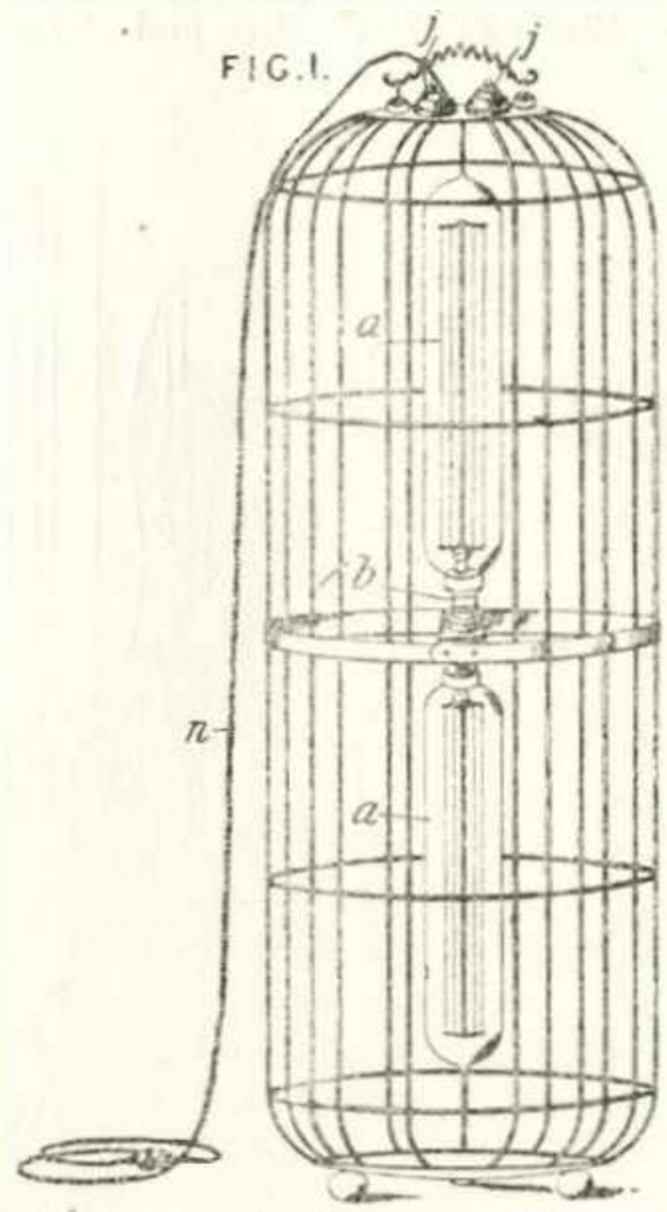
Heating-apparatus.—Field tubes are applied as radiators for heating ovens and hot-chambers, steam, which may be superheated, being supplied to the inner tubes and returning through the annular spaces between the inner and outer tubes. The inlet header *c* has a longitudinal flange to which the inner tubes are attached, and the outlet header *a* has flanges at both sides for attachment respectively of the inner header and the outer tubes. Several such sets of tubes and headers may be applied at the bottom, top and sides of an oven or chamber.

121,097. Hearson, C. E. July 30, 1918.
Addition to 102,538.



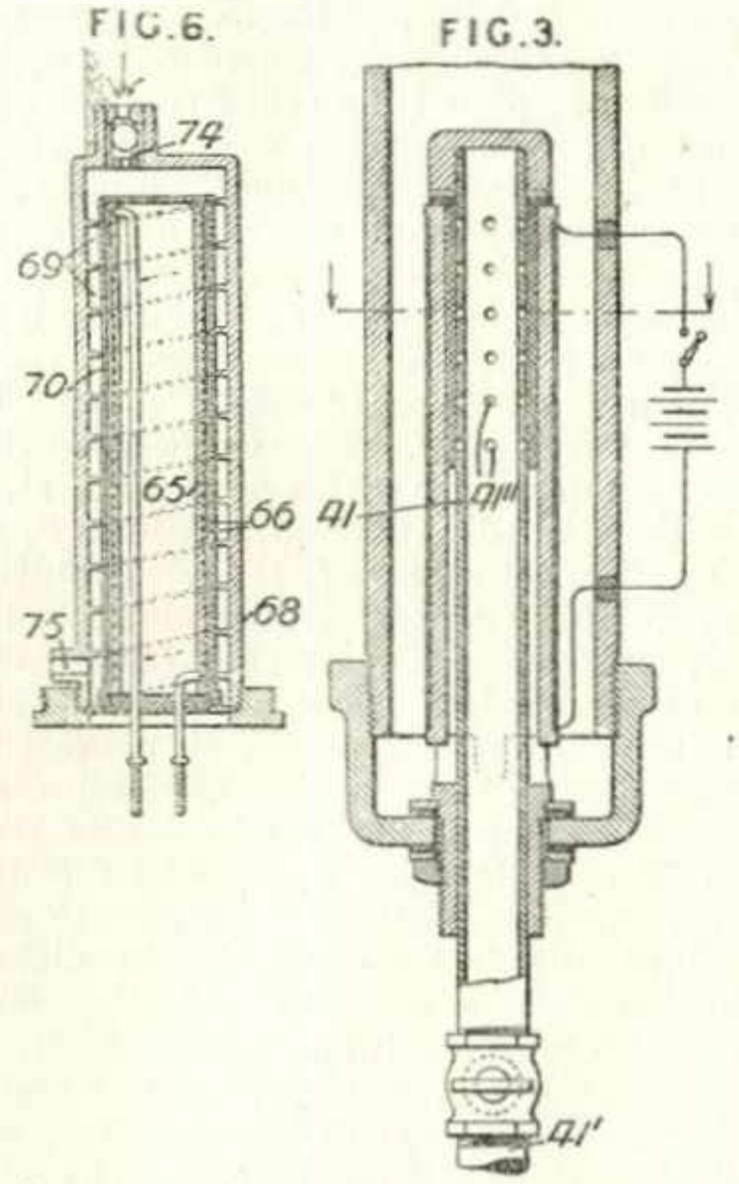
Thermostats.—The apparatus described in the parent Specification is modified so that the thermostat element may be adjustably raised or lowered. The upper end *a* of the thermostat element is supported by a flange *b* on a screwed sleeve *f* which can be adjusted by moving an arm *h* carrying a pointer *i* moving over a scale *j*. Initial adjustment is obtained by the usual screw *d*.

121,219. Hucks, B. C. Jan. 30, 1918.



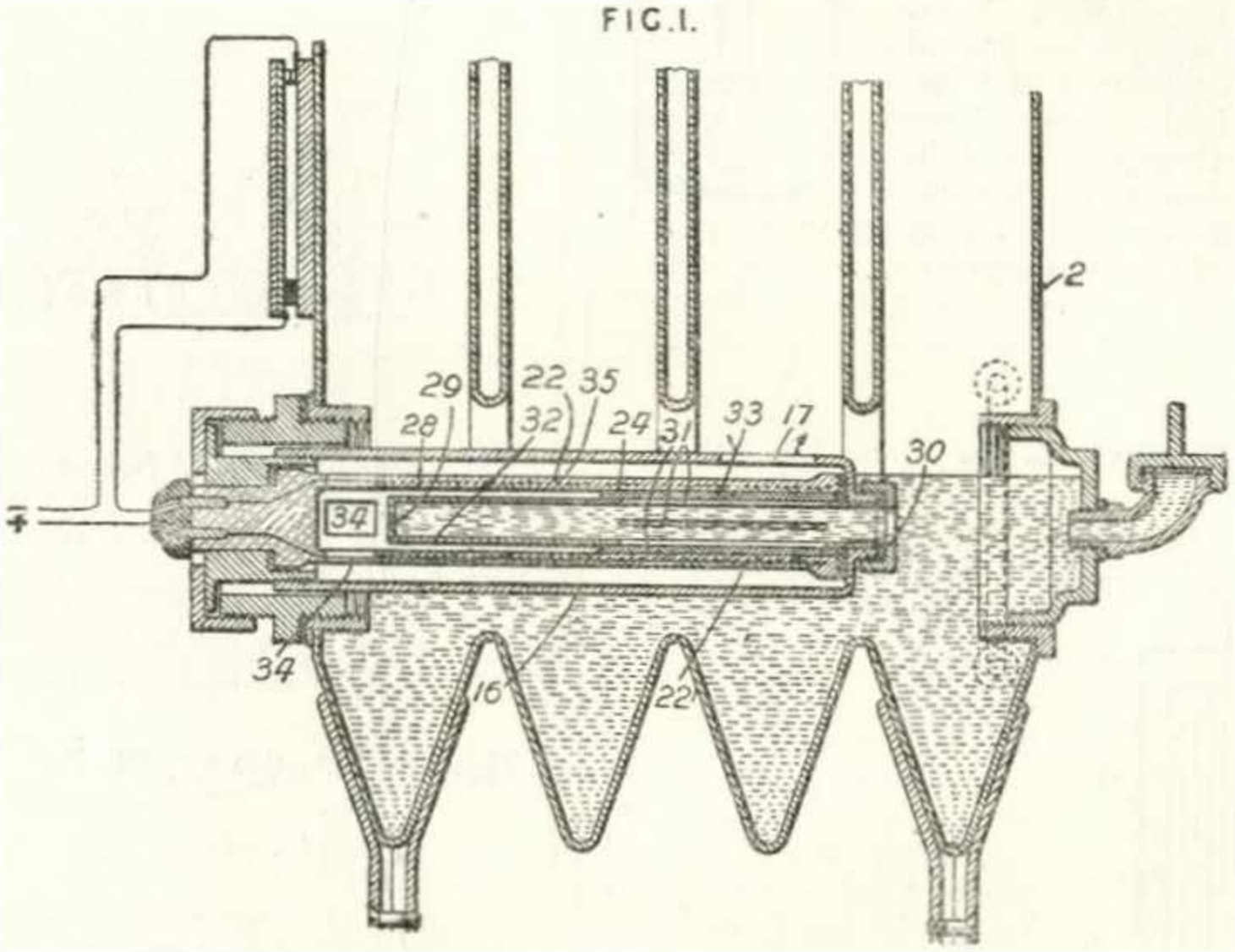
Bed warmers.—An apparatus for warming and airing beds is formed of a wire cage supporting two electric lamps *a*, as shown. Two switches *j* and a connexion *n* are provided.

121,285. Electro Steam Radiator Co., (Assignees of *Lucas, W. B.*). Nov. 30, 1917, [*Convention date*].



Radiators.—Relates to electric steam generators of the type in which the main body of the water is prevented from contacting with the heating surface, and the water is led into contact with the heating surface in small quantities which can be rapidly converted into steam. The invention comprises several constructions in which a tubular heater is employed to one end of which water is supplied, and the steam generated is conducted past the other end whereby it is superheated, the apparatus being used either alone for humidifying the air of a room or combined with a radiator for warming the room. In the construction shown in Fig. 1, the tubular heater 22^1 having heating wires 24 is mounted on an insulator 22 and surrounds an inner tube 28 closed at one end 29 and provided at the other or water-supply end with slots 31 around which is located absorbent material 33. Steam is generated from the material 33 and superheated in the passage 32 between the tubes 22^1 and 28 before it passes through apertures 34 in the tube 22^1 leading to the air, or, as shown, to a radiator 2 which may also have an external supply of steam. The

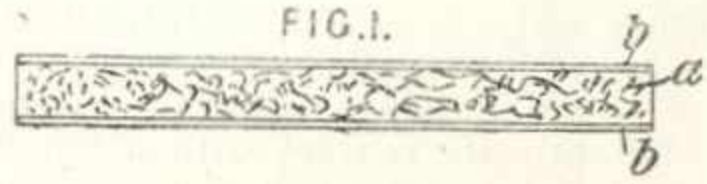
FIG. 1.



heater 22^1 may be surrounded by an outer tube 16 having apertures 17 so that the steam is further superheated in the passage 35 between the tubes 16 and 22^1. The steam-generating device may either be arranged horizontally and the water level maintained above the entrance 30 to the inner tube 28 so that a supply of water is obtained by gravity, or, as in the modified construction shown in Fig. 3, the device may be arranged vertically and the inner tube 41 be connected to a water supply main 41^1 and have the perforations 41^{11} at the end remote from the supply. In another modification, Fig. 6, the water is supplied by gravity and flows through a spiral passage-way 69 between an outer tube 68 and an inner tube 70 surrounding the core 65 carrying the heating wires 66. The water entering at the valved inlet 74 is gradually vaporized and emerges as superheated steam from the outlet 75. In a further modification, constituting a portable humidifier, a wick dipping into a water reservoir is enclosed at its upper end by the tubular heater.

121,593. Hansen, T. Dec. 19, 1917, [*Convention date*]. *Void* [*Published under Sect. 91 of the Act*].

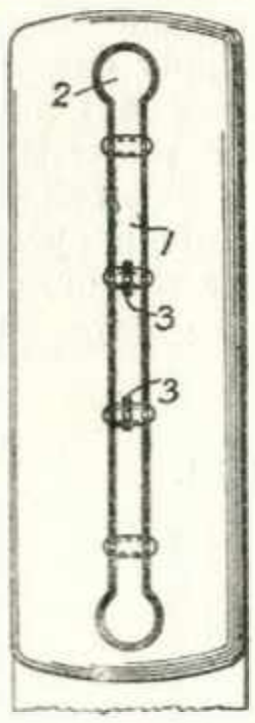
FIG. 1.



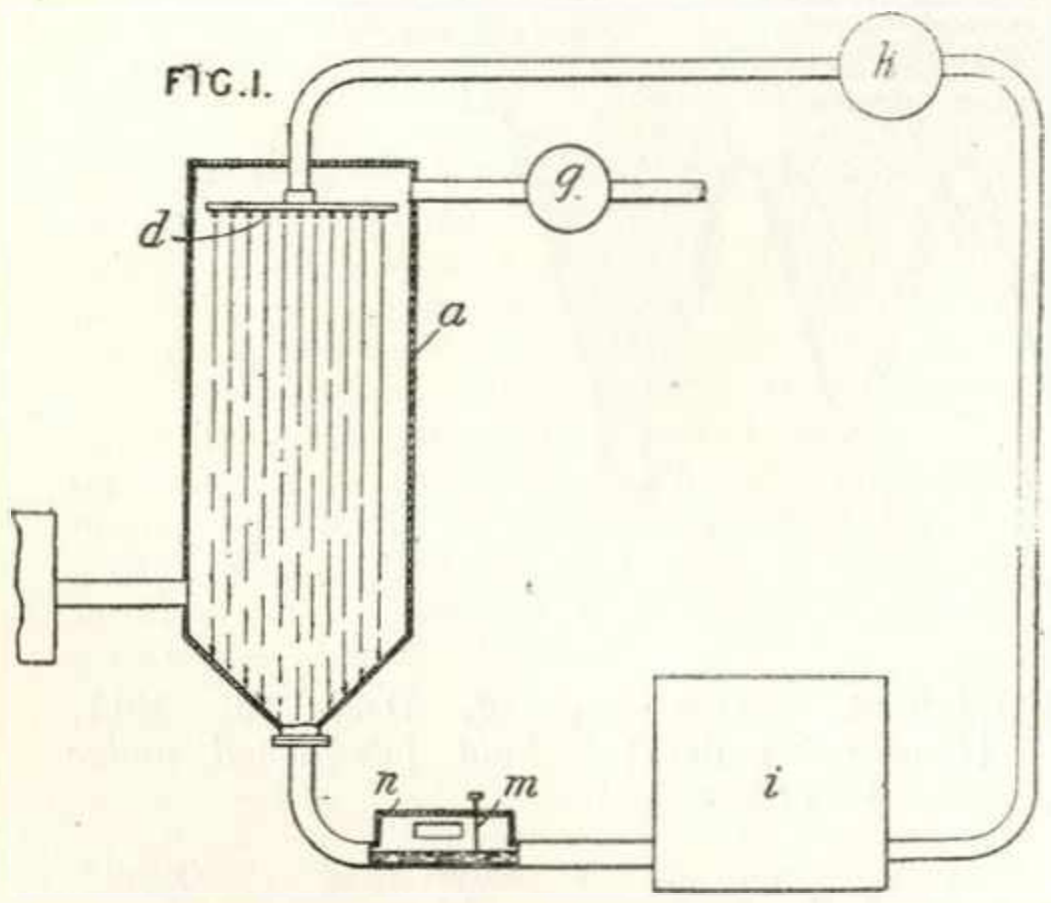
Non-conducting coverings for heat and sound.—A panel or plate for wainscotting or for covering walls, heat conduits, &c. consists of a layer *a* of peat glued to cardboard *b*, the whole being finally compressed. The plates are sound and heat insulators and may be applied to wooden or brick walls.

121,731. Cardell, O. V. Dec. 18, 1917, [*Convention date*]. *Addition to* 119,448.

Radiators.—The radiator described in the parent Specification is modified in that, instead of the portions of the two sides between adjacent sections being riveted in contact for the greater part of their height, a narrow opening 1 is left between these portions extending almost the full height of the radiator and merging at one or both ends into openings 2 of rounded form. Longitudinal stays 3 are passed through the openings 1 and fastened to the end sections of the radiator for strengthening purposes. Some of the rivets passing across the openings 1 may also pass through the stays 3.

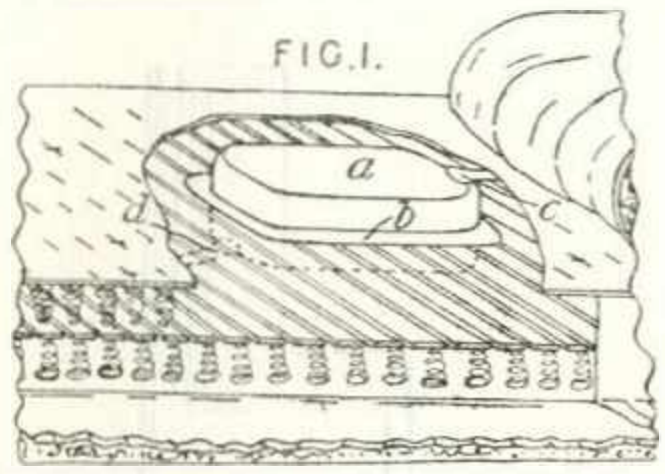


121,752. Pease, E. L. June 22, 1917.



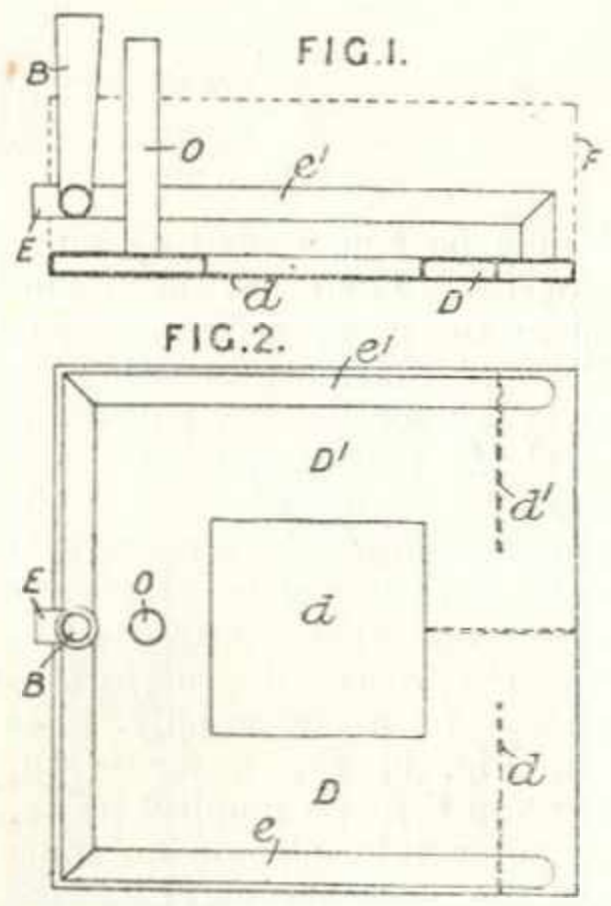
Heating systems and apparatus.—The heat of waste exhaust or furnace gases or of other hot fluids or bodies is utilized by bringing them into direct and intimate contact with a liquid which is not acid and has a much higher boiling-point than water, and which is divided into sprays or films, and then passing the liquid thus heated through heat-exchange apparatus to generate or superheat steam or to heat air or other fluid, the abstraction, transmission, and exchange of heat being effected continuously and at a high temperature. A solution of calcium chloride, creosote, or other liquid falls from spraying nozzles *d* through a tower *a*, up which hot gases are drawn by a suction device *g*. The heated liquid passes through a heat exchanger *i*, for example of the kind described in Specifications 4154/15, 103,492, [*Class* 64 (iii), Surface apparatus &c.], and 104,721, and after giving up its heat is returned to the spraying nozzles by a pump *k*. The hot liquid passes through a box *n* having a side aperature through which solid matter may be removed by a scraper *m*. The gases may be first cooled by passing them through water sprays in a separate tower. Instead of passing through sprays of liquid, the gases may flow over films on rotating disks dipping into the liquid.

121,829. Hilton, J. Jan. 10, 1918.



Hot-water bottles.—A hot-water bottle for warming a mattress is secured to a layer of slats in the mattress by a flange *b* and has an inlet and outlet *c*, *d*.

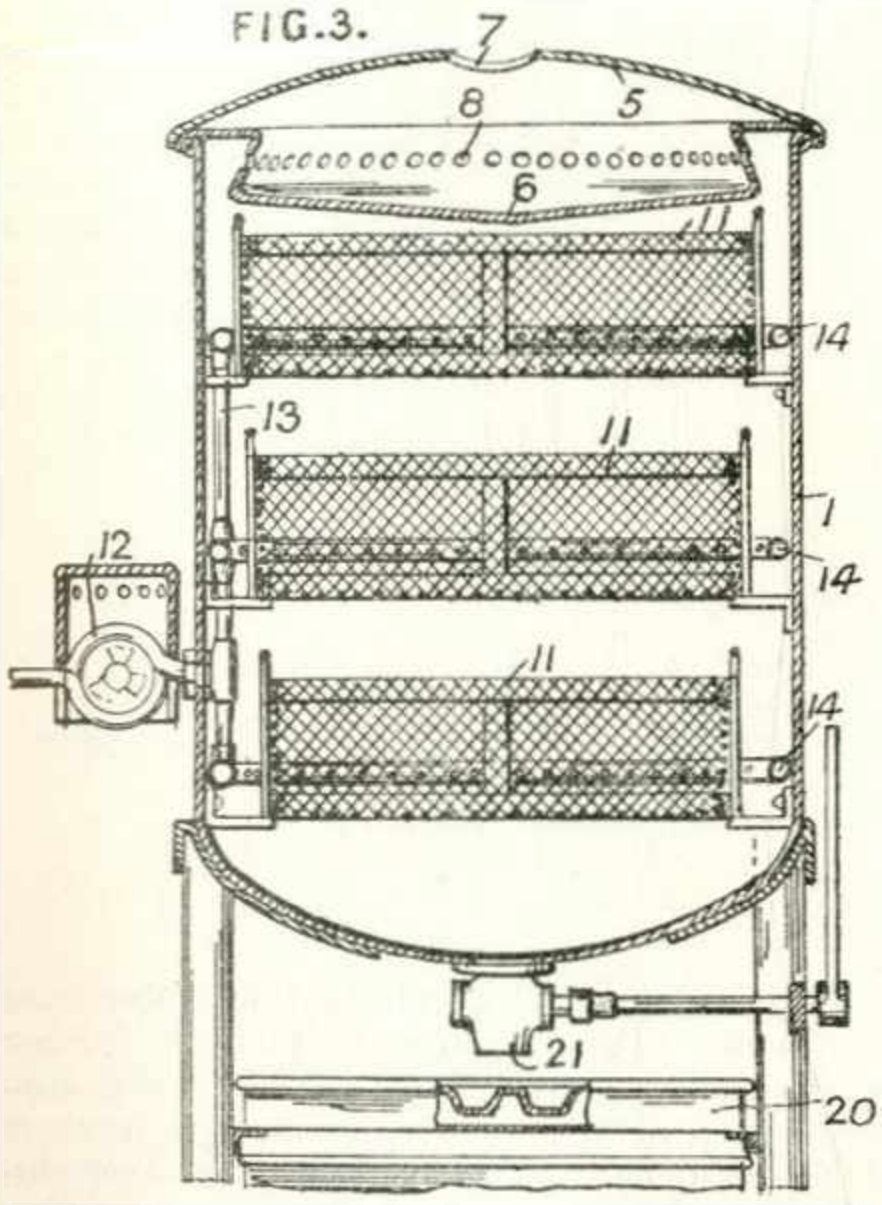
121,832. Godfrey, E. L. Jan. 11, 1918.



Heating systems and apparatus.—A heat radiator or hot-air tank for use in incubators &c. is arranged so that the hot air from the heater is admitted at a point as far removed as possible from that side of the incubator through which the air is supplied. As shown in Figs. 1 and 2, the tank comprises a pair of ducts D, D^1 of rectangular cross-section fitted to a base-plate *d* which forms the lower wall thereof. The hot-air inlet pipe E is connected to pipes *e*, e^1 which conduct

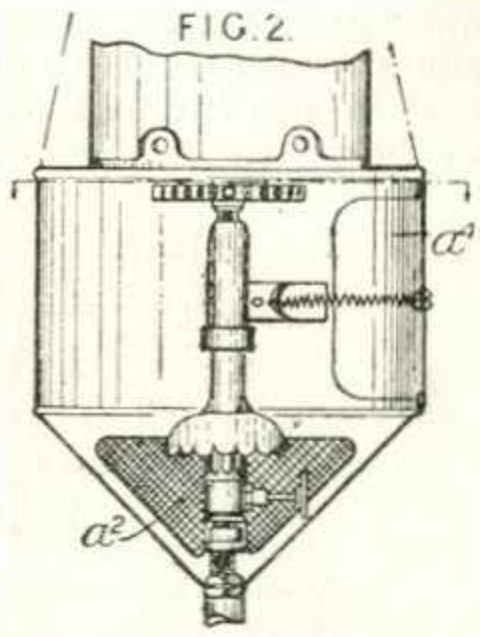
the air to the further end of the ducts, at which point partitions d, d^1 deflect the current. An outlet pipe O is provided and an automatic damper may be arranged on a vertical branch B extending from the inlet pipe E. The upper part of the heater may be packed with asbestos &c. within the casing F.

121,941. Grozier, T. H. Jan. 3, 1918, [*Convention date*].



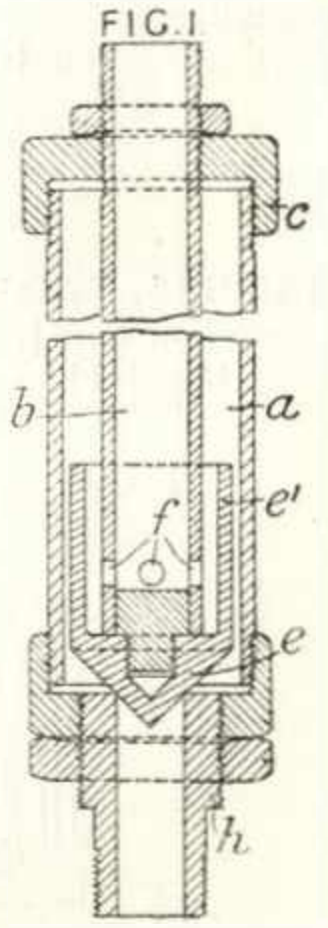
Heating systems and apparatus.—A process for separating the fusible from the infusible parts of old printers' roller composition or analogous substances consists in treating the composition by the direct action of low-pressure superheated steam in a closed vessel and intercepting and vaporizing the water of condensation to prevent its admixture with the recovered composition. The old composition is placed in cages 11 in a vessel 1 to which steam from a superheater 12 is admitted by pipe 13 and perforated pipes 14. The steam passes to the atmosphere through perforations 8 and opening 7 in a two-part cover, the outer part 5 of which is domed or conical so that water of condensation formed thereon runs down into the inner dished part 6 and is again vaporized. The fused composition flows into the bottom of the vessel 1 and is run off as desired into moulds 20 divided into small pockets 21. The moulds may be hollow as shown for the circulation of cooling water. In another form of apparatus, the pipes 13, 14 are omitted and the wall of the vessel 1 is provided with perforations and surrounded by a jacket to which the steam is admitted.

122,016. Prosser, H. R., and **Gons Lighting & Heating Co.** Jan. 9, 1918. *Addition to* 108,204.



Heating buildings.—In apparatus as described in the parent Specification for heating store rooms, garages, &c. by hot air passed through flue pipes, the gas or oil burner or electric heater is enclosed in a casing, the air-inlet openings a^2 of which are covered by wire gauze so as to prevent explosions by the re-ignition of the petrol-laden atmosphere outside the gauze. The casing is preferably of inverted conical form at its lower part, as shown, and is provided with a spring-controlled door a^4 adapted to remain normally in its closed position.

122,117. Scott, W. May 29, 1918.



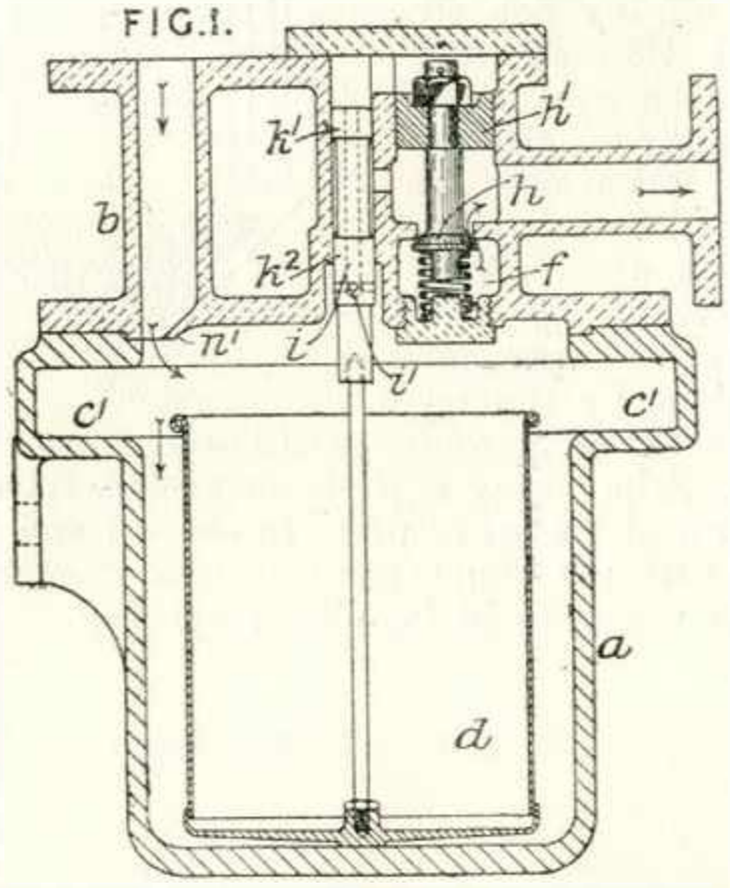
Steam-traps; thermostats. — A thermostatic steam-trap, capable of use also as a thermostatic valve, comprises an inner tube b of copper, brass, &c. screwed into a cap c at the top of an outer tube a of iron, steel, &c., the lower end of the inner tube being fitted with a conical valve e formed with a cup-like extension e^1 which prevents the steam issuing from the tube b from acting directly on the face of the valve e. The valve seats on to a pipe coupling h at the bottom of the outer tube. Holes f are provided in the tube b for passage of steam and water.

122.364. Craig, R. C., and **Bedgood, H. O.** July 18, 1918.

Steam traps.—Relates to drain traps for steam or compressed air of the type in which the main drain valve is operated by the steam or air pressure under the control of a piston pilot valve operated by a bucket float. The water of condensa-

tion is guided by lips n^1 into the space surrounding the float d. When the water overflows into the float d, the float descends quickly by reason of the large volume of water in the enlarged annular part c^1 of the chamber. The fall of the float allows steam or air to pass through the passages i, i^1 in the two-part piston control valve k^1, k^2 to the piston h^1, whereupon the drain valve h is

FIG.1.



opened. The water in the float is then forced out through a dip-pipe communicating with the valve chamber f. The valves are carried in a cover part b of the trap part a.

122,624. Meker, G. Jan. 22, 1918, [*Convention date*]. *Void* [*Published under Sect.* 91 *of the Act*].

FIG.2.

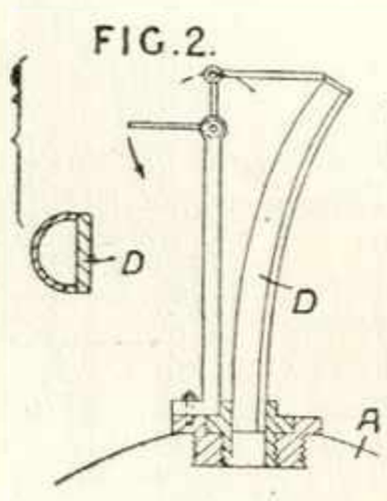
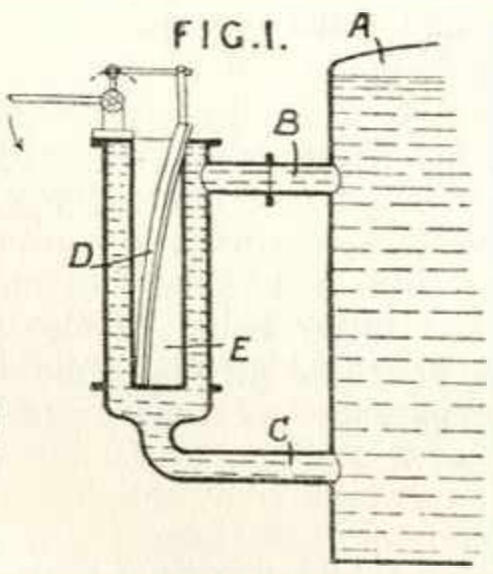
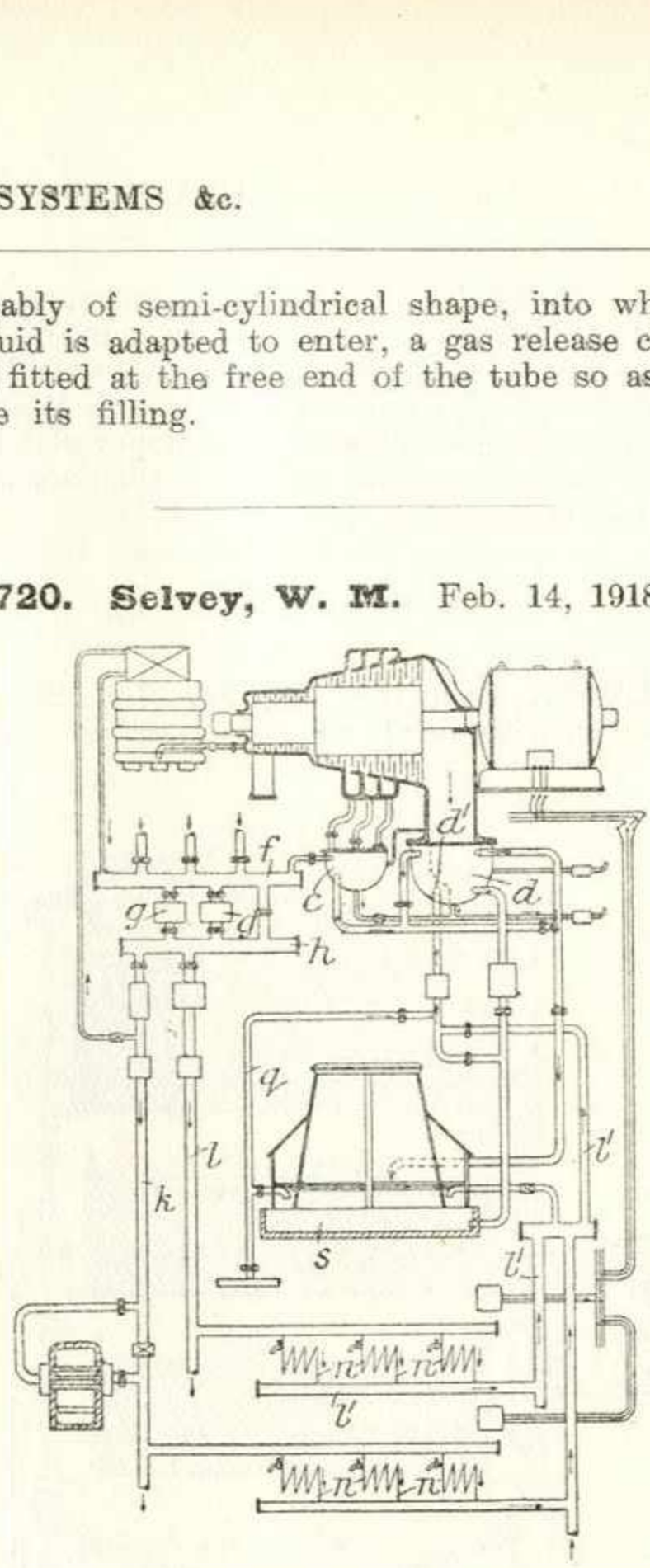


FIG.1.



Thermostats.—In apparatus for regulating the temperature of water boilers &c. by controlling the supply of fuel or air for combustion, a bimetallic strip D, Fig. 1, the free end of which actuates the control valve is secured at the other end in a tube E containing oil or other liquid and immersed in the fluid the temperature of which is to be regulated. Circulation of the liquid in the boiler A past the tube E is ensured by two branch pipes B, C. In a modification, Fig. 2, the bimetallic strip D itself is in the form of a tube, preferably of semi-cylindrical shape, into which the fluid is adapted to enter, a gas release cock being fitted at the free end of the tube so as to ensure its filling.

122,720. Selvey, W. M. Feb. 14, 1918.



Heating buildings.—The circulation water from the condenser of a steam-power plant is further heated to render it available in a hot water supply or heating system by steam, the temperature of which has been lowered below that corresponding to atmosphere pressure by use as a motive fluid. The cooling water from the condenser d of a turbine is passed through an auxiliary condenser c receiving steam from intermediate stages of the turbine. The heated water flows into a reservoir f and then through separators g into a reservoir h, from which it is drawn by pumps and forced through the pipes k, l of the supply or heating system n. Make up water is supplied to the return pipe l^1 of the system through a branch q from the main. The water may pass through an independent section d^1 of the condenser, the body of the condensing water being drawn from the pond s of the cooling tower. The temperature of the water passing through the auxiliary condenser may be maintained constant by thermostatically-operated valves which so control the supply of steam that it is drawn from a higher or lower belt of the turbine. The reservoir f may receive hot water heated by waste heat from other sources.

122,874. Vennell, R. H. Jan. 31, 1918.

Steam-traps.—In a steam-trap having a discharge valve, such as *d*, Fig. 1, operated by a float *g* and counterbalanced lever *e*, the float *g* is arranged independent of or not connected with the lever *e*, and is adapted to impose its weight thereon, in its descent, in order to close the valve *d*. As shown in Fig. 2, a compound lever arrangement *e*, *e*¹ may be used. In both forms, the stem is provided with a valve *i* operated by a screwed spindle *k* to close the opening *j* for permitting access to the interior of the trap for testing whilst still under steam.

FIG. 1.

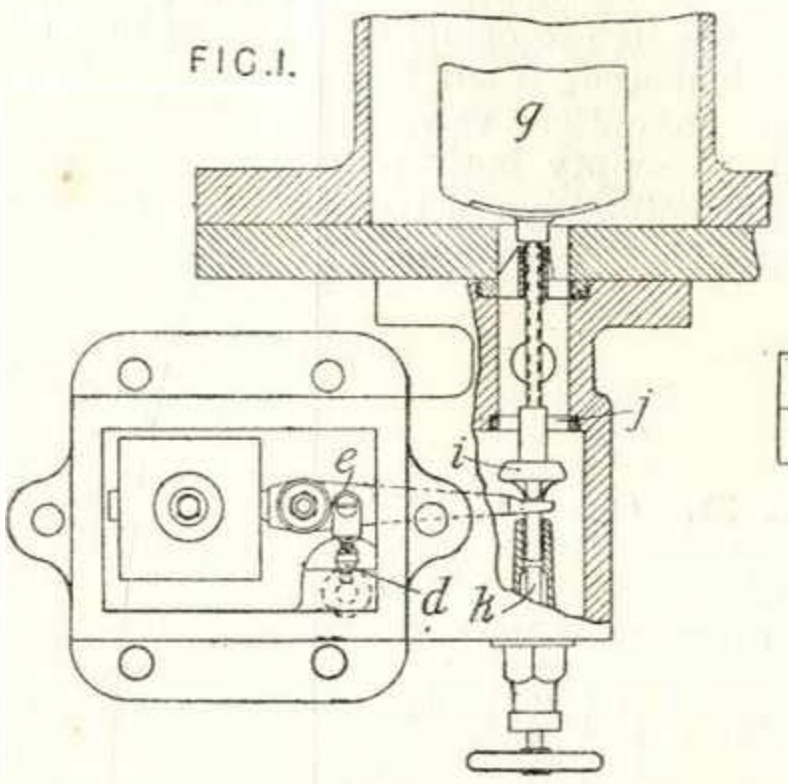
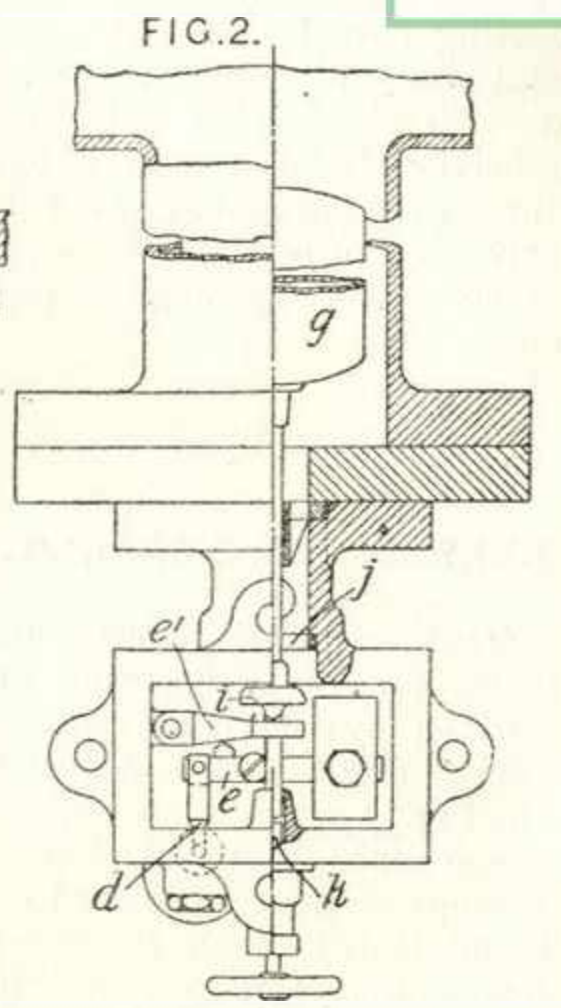


FIG. 2.



123,240. Turrettini, H. May 2, 1918.

FIG. 3.

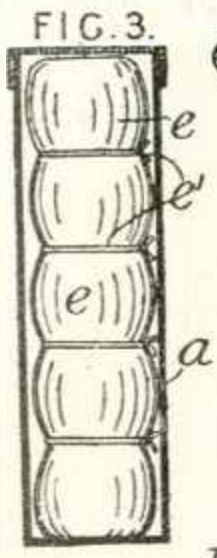
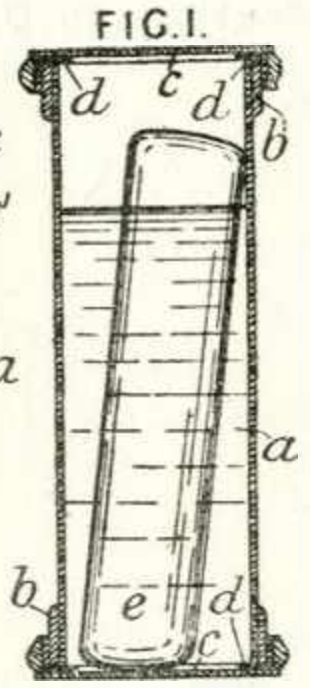


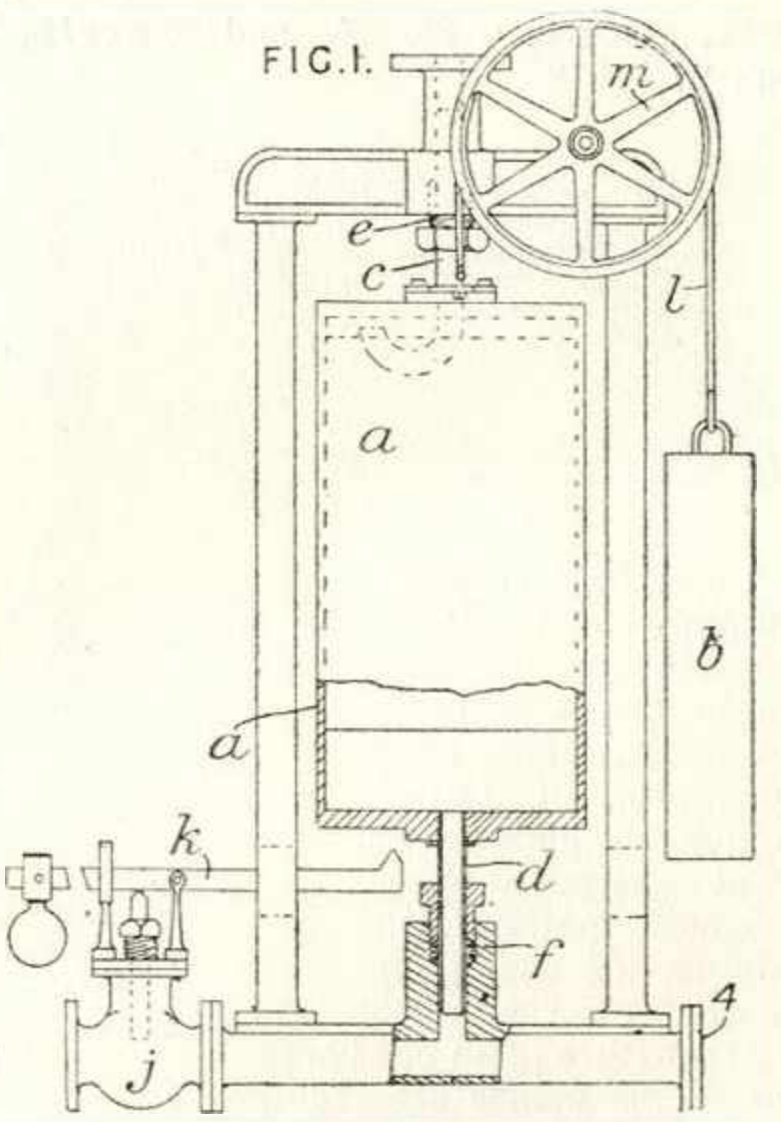
FIG. 1.



Footwarmers; heating by chemical action.—Relates to heating-devices, such as hand-warmers, of the kind in which a quantity of slaked lime in a porous container is adapted to be inserted in a casing containing a proportional quantity of water. In the form shown in Fig. 1, the casing *a* consists of a cylindrical tube closed at each end by a detachable cover *c* engaging a fixed ring *b* and packing *d*. In the construction shown in Fig. 3, the porous container *e* is of cylindrical shape and surrounded by a number of inextensible bands *e*¹ so that after use the container assumes a form, such as that shown, suitable for easy removal from the casing *a*.

123,618. Winson, W. March 19, 1918.

FIG. 1.

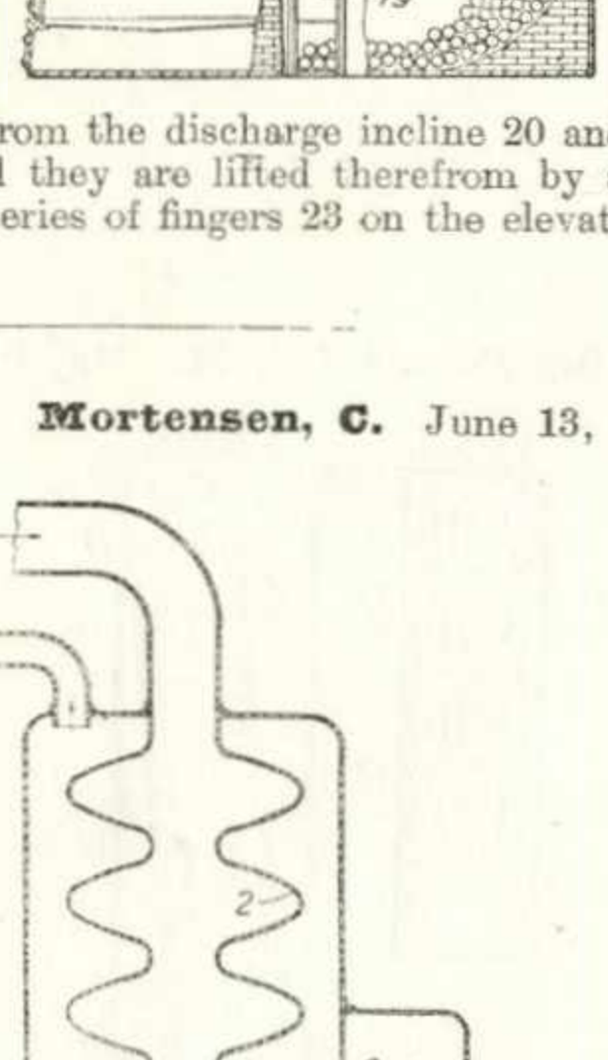


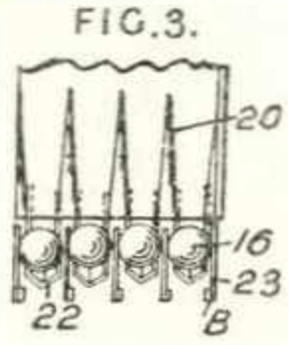
Steam-traps.—A steam-trap of the counterbalanced receiver type has an actuating receiver *a* counterbalanced by a weight *b* attached to a cord *l* passing over a pulley *m* and provided at its upper and lower ends with tubular members *c*, *d* adapted to work through stuffing-boxes *e*, *f* in a fixed casing. The member *c*, which has an upturned bend fitted inside the receiver, is connected to the steam pipe to equalize the steam

pressures in the receiver. The lower part of the casing is connected at 4 to a larger stationary collecting chamber so that, as water collects in the stationary chamber, it also rises in the chamber *a* until the weight *b* is overbalanced, when the receiver falls and actuates an outlet valve *j* through a weighted lever *k* to empty both receivers. In a modification, the actuating receiver is connected by flexible pipes to the stationary one.

123,935. McAdam, A. B. Oct. 11, 1918.

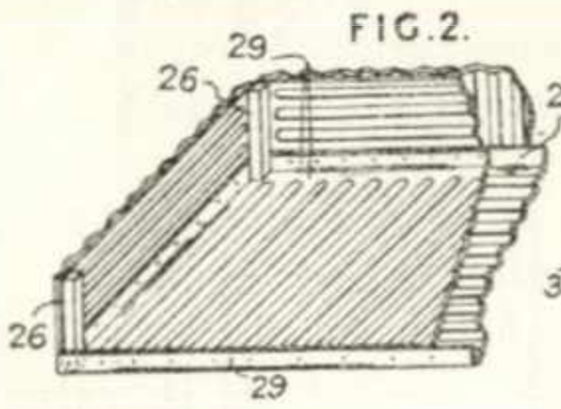
Heating buildings &c.—The rooms of buildings &c. are warmed by the heat radiated from a number of metal balls 16, Fig. 1, which are heated in a furnace A and discharged through a door 19 on to a lifting-device, such as a vertical endless conveyer B, Fig. 2, which carries them to the required height and delivers them on to an inclined guideway C passing through the room to be heated and down which the balls run by gravity. The balls are finally returned to the furnace through an upper door 24. A series of spaced fingers 22, Fig. 3, are arranged to receive

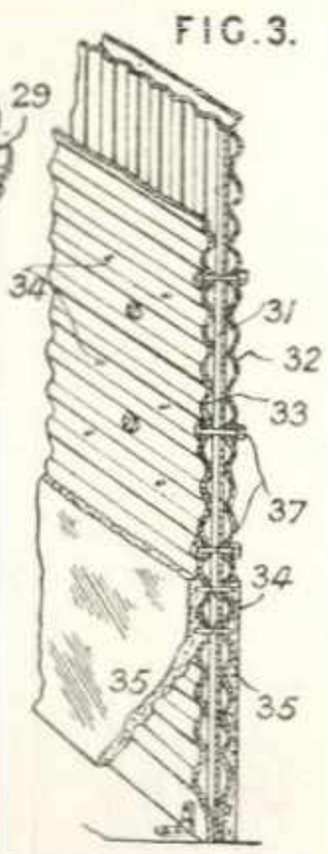




the balls from the discharge incline 20 and retain them until they are lifted therefrom by a corresponding series of fingers 23 on the elevator B.

124,571. Collier, G. H., and **Morris, W.** March 27, 1918.





Non-conducting coverings for heat and sound.—In constructional sheets or panels for use in boxes or cases, and the floors, walls, roofs, partitions, &c., of railway and other vehicles &c. formed of superposed sheets of corrugated material, the corrugations of which are at right-angles to each other, the corrugated sheets are formed with a plain flat border. The flattened margins of the panels are secured to cover posts 26, Fig. 2, in the construction of a box, the sheets forming the bottom having sufficient margin to enable them to be turned up to form an attachment flange 29. In the application to a building-partition shown in Fig. 3, a vertically ribbed sheet 31 is enclosed between horizontally ribbed sheets 32, 33. The interstices between the sheets may be filled in with sawdust, asbestos, &c., to render the partition sound-proof or fire-proof, such material being held in place by the pegs 34. Large areas of partition are secured by bolts 37.

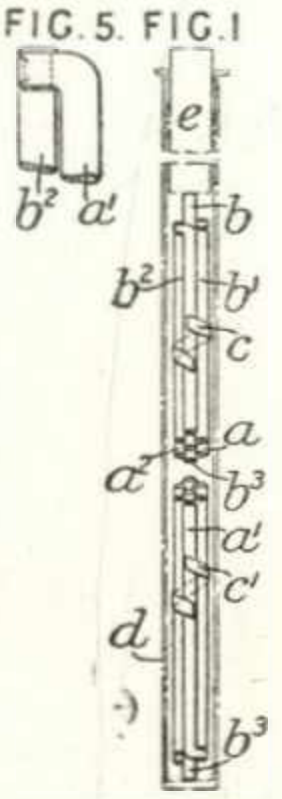
124,971. Mortensen, C. June 13, 1918.

Thermostats.—A cooling-apparatus of the kind fitted with an automatic control for the supply of cooling liquid and particularly adapted for producing distilled water, has a closed receptacle 7 containing air &c. mounted inside the condensing tube 2 and communicating with a second recep-

tacle 9 having a diaphragm 10 for controlling the inlet valve, and arranged within a box forming an extension of the supply pipe 5. The diaphragm is connected to the valve through an adjustable nipple 13 and bent lever 11 pivoted at 12, or by other means.

125,316. Hearson, C. E. Sept. 16, 1918.

FIG. 5. FIG. 1

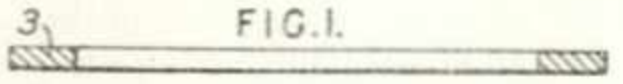


Thermostats.—The units of expanding-rod thermostats of the type operated by the difference in expansion under heat between adjacent members of different material, are made more compact by employing a series of rods side by side of alternate large and small coefficients of expansion and connected in series so that the movement of the final rod is the sum of the differences in expansion of each pair of elements. In the example shown in Fig. 1, circular-section rods are used, the materials being alternately brass and nickel-steel. The central rod b is of steel and is connected at the lower end to the end of a brass rod a, the upper end of which is joined to an adjacent steel rod b^1, the "series" connexion being carried on through the rest of the six surrounding rods a^1, a^2 of brass and b^2, b^3 of steel. The upper end of the steel rod b and the lower end of the steel rod b^3 are free and extend beyond the group. The connexion between the rods is preferably made as shown in Fig. 5, in which a shouldered part of the nickel-steel rod b^2 passes through a hole in the bent over end of the brass rod a^1 and is riveted over. The rods are kept together by clips c, c^1 of strip metal. The whole may be enclosed in a brass tube d depending into the room or chamber, the temperature of which it is desired should govern the operation of the thermostat. The tube then forms one element. In a rise of temperature, the operating rod e falls by an amount equal to the cumulative differences of expansion between four pairs of dissimilar materials. The thermostat may be arranged to work upwards on a rise in temperature. Specifications 102,538 and 121,097 are referred to.

125,638. Aeronautical Instrument Co., and **Brewer, G.** Sept. 27, 1916.

Thermostats.—Elastic rubber diaphragms for pressure-operated mechanism such as that used in instruments for indicating or recording pressure or speed, where exceptional strength combined with sensitiveness is required, are made by securing together superposed stretched sheets of thin rubber, so that the necessary thickness is obtained without diminution of elasticity. A thin sheet of fine rubber 1 is stretched on a board 2 and allowed to remain for some days, when a vulcanite, aluminium, or like ring 3 to form the carrier of the diaphragm is coated with an adhesive and pressed

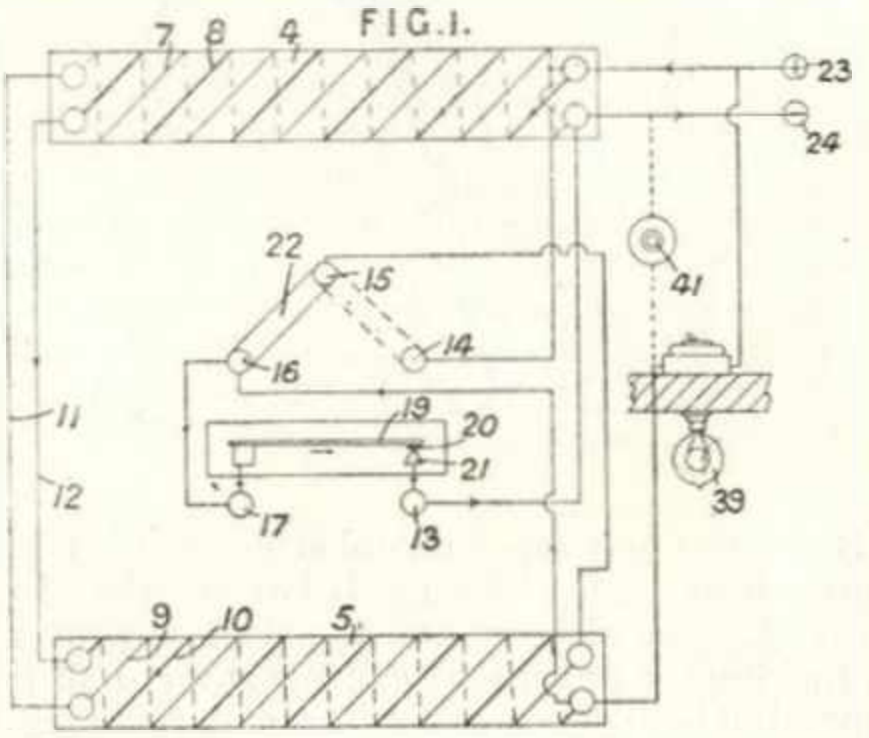
FIG. 1.



on the stretched rubber. After the rubber is properly secured, it is cut from the board 2, and subsequently a second sheet of stretched rubber is similarly secured to the first sheet. Specification 13796/13, [*Class* 106 (ii), Dynamometers &c.], is referred to.

125,703. Forbes, Sir C. S. March 25, 1918.

FIG. 1.

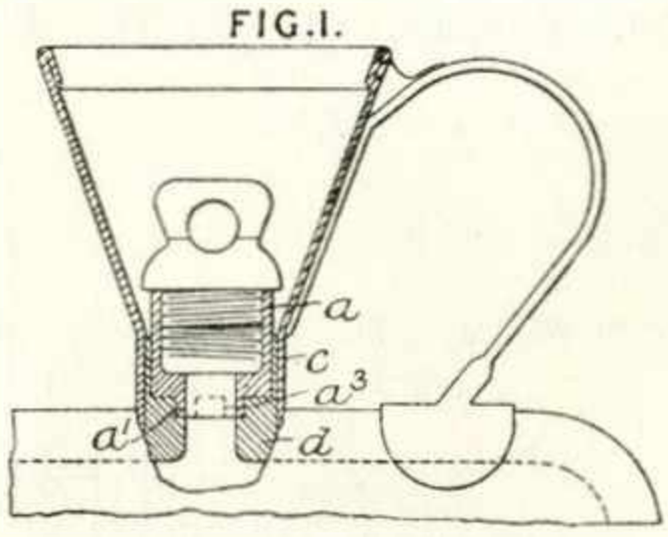


Thermostats.—An electric heater for use with different voltages, and applicable particularly to hatching &c. appliances as described in Specifications 3847/15 and 122,457, [*Class* 39 (iii), Heating by electricity], comprises two separate units 4, 5 each having two windings 7, 8, 9, 10 connected by wires 11, 12; the free ends of the windings are connected to terminals 13, 14, 15, 16, 17, a switch 22 enabling the windings to be connected in series or parallel for high and low voltages respectively, and a thermostatic regulator 19 connected between the terminals 17, 13 keeps the temperature constant by cutting in and out certain of the windings. When the parts are in the positions shown in Fig. 1, the current flows through the windings 8, 10, the windings 7, 9 being short-circuited through the terminal 16 and regulator 19. When the regulator capsule expands and breaks the contact between 20, 21, the windings 7, 9 are thrown into circuit in series with the windings 8, 10. For low voltages, the switch 22 is moved to the position shown by dotted lines. When the regulator 19 is in the posi-

tion shown the two windings 7, 9 and 8, 10 are in parallel, the opening of the regulator by excessive heat cutting out the windings 7, 9. Additional heating units constantly in circuit may also be employed. These are joined in parallel with the main circuit 23, 24 so as to be unaffected by the regulator or the switch 22. In another modification, the regulator is arranged to affect only one of the heating elements 4, 5. A pilot lamp 39 may be included in the circuit to illuminate the interior of the apparatus to be heated and also to indicate by its brilliancy the position of the regulator and switch 22. A switch 41 enables the lamp to be lit when the heating elements are cut out. When the apparatus is used in incubators, all the connexions are placed under an insulating lining on the cover, the heating elements being suspended by means of rods. An egg-testing lamp may also be provided.

125,756. Ingram, A. D. April 25, 1918.

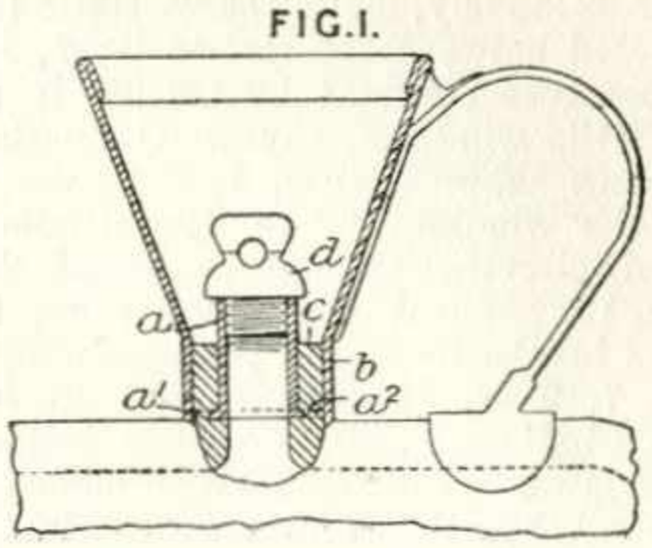
FIG.I.



Hot-water bottles.—In rubber hot-water bottles, water beds, &c., leakage between the metal socket for the stopper and the neck is prevented by making the upper part *a* of the socket a fit or an approximate fit in the neck *c*, and reducing the diameter of the lower part a^1 so as to provide a square shoulder against which the thick rubber *d* abuts. The part a^1 may be cut away as shown at a^3 to receive rubber and thus prevent the socket from turning in the neck.

125,757. Ingram, A. D. April 25, 1918.

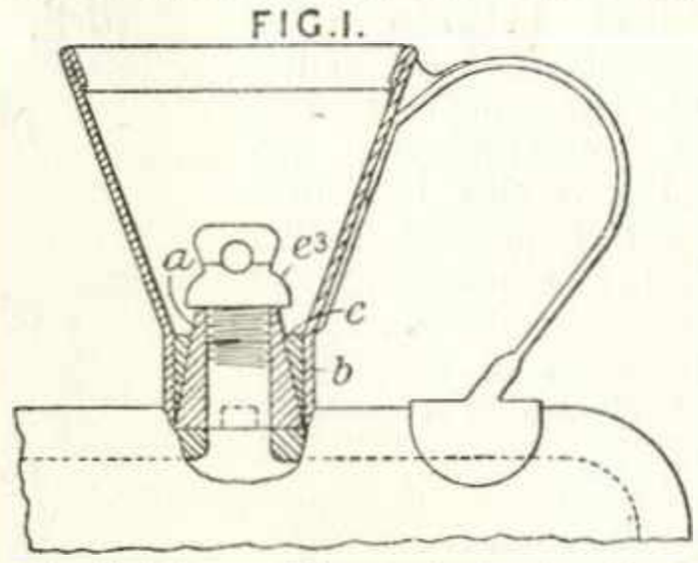
FIG.I.



Hot-water bottles.—The metal socket *a* for the stopper *d* is considerably smaller in diameter than the neck *b*, and is provided at the lower part with a flange a^1 which fits the neck. Rubber *c* fills the space around the socket and covers the lower face of the flange a^1. Holes a^2 may be formed in the flange for the rubber to pass through and thus prevent the socket from turning while the stopper is being screwed up.

125,758. Ingram, A. D. April 25, 1918.

FIG.I.



Hot-water bottles.—The socket *a* for the stopper e^3 is conical on the outside, with the lower end a fit in the neck *b*. The space between the upper part of the socket and the neck is filled in with rubber *c*. Rubber also covers the lower face of the socket. If desired, the socket may be cut away, to prevent it from turning.

125,899. Brooks, H. Nov. 29, 1918.

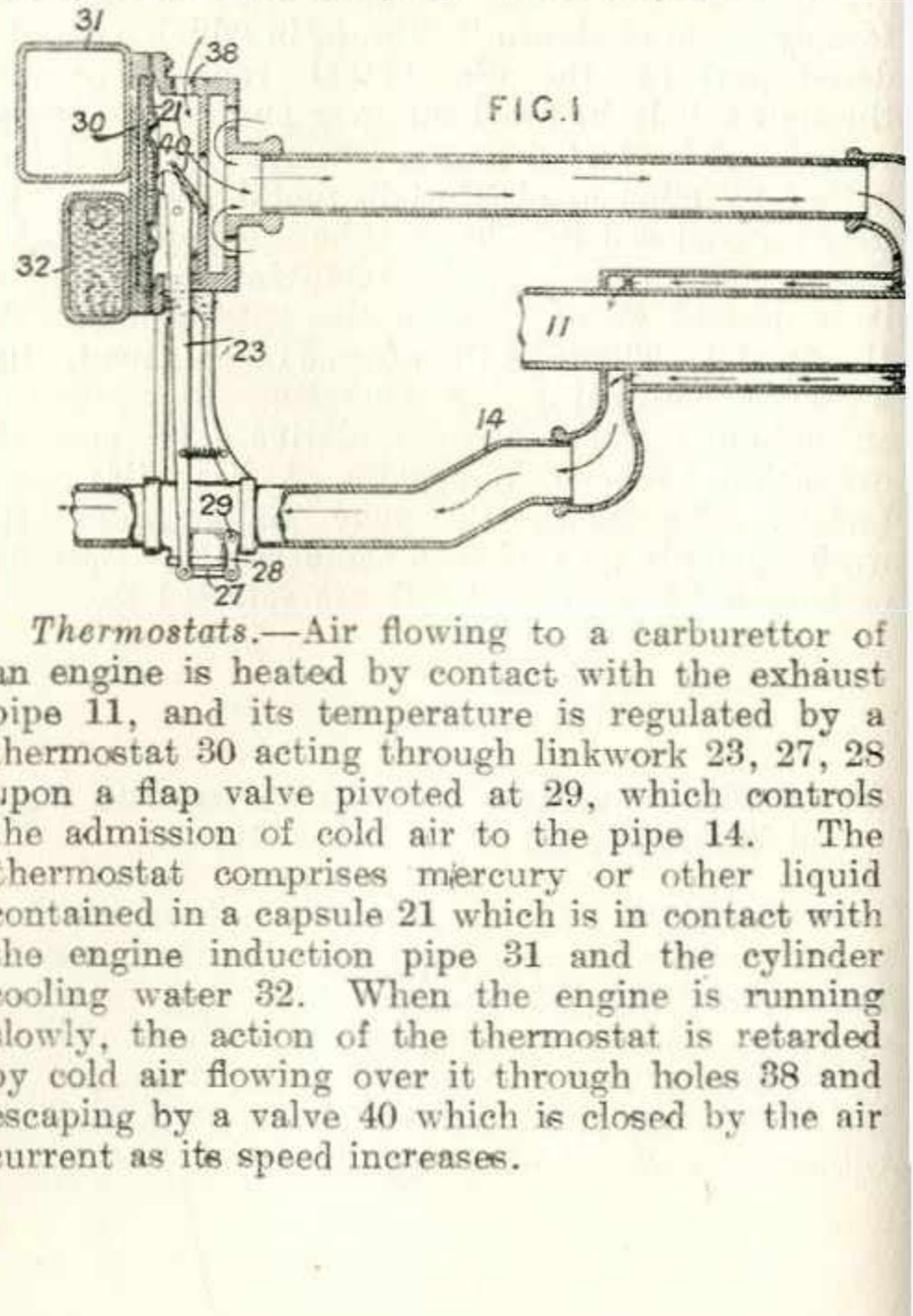
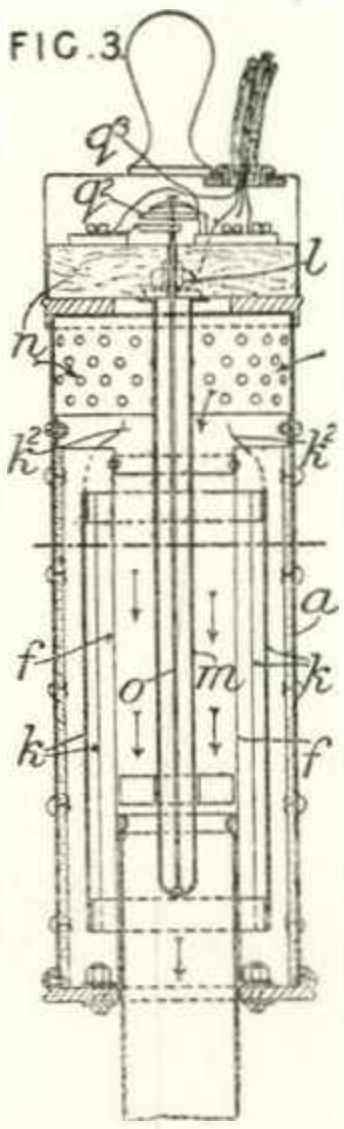


FIG.I

Thermostats.—Air flowing to a carburettor of an engine is heated by contact with the exhaust pipe 11, and its temperature is regulated by a thermostat 30 acting through linkwork 23, 27, 28 upon a flap valve pivoted at 29, which controls the admission of cold air to the pipe 14. The thermostat comprises mercury or other liquid contained in a capsule 21 which is in contact with the engine induction pipe 31 and the cylinder cooling water 32. When the engine is running slowly, the action of the thermostat is retarded by cold air flowing over it through holes 38 and escaping by a valve 40 which is closed by the air current as its speed increases.

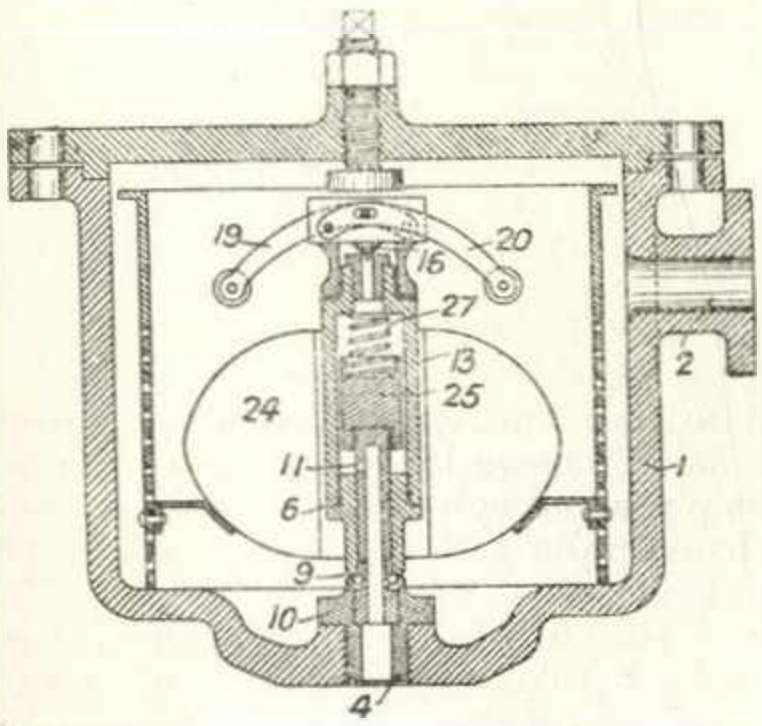
126,719. Nobbs, C. G., and **Falkirk Iron Co.** Feb. 26, 1917.

FIG. 3.



Thermostats.—An electric heater particularly applicable to air or gas intakes of internal-combustion engines is thermostatically controlled. The thermostatic device comprises a tube *m* enclosing a rod *o* which passes through an opening in the block *n* and abuts against one of a pair of contacts q^2, q^3. The heating-circuit may be broken directly or by the actuation of a relay switch by the rod *o*.

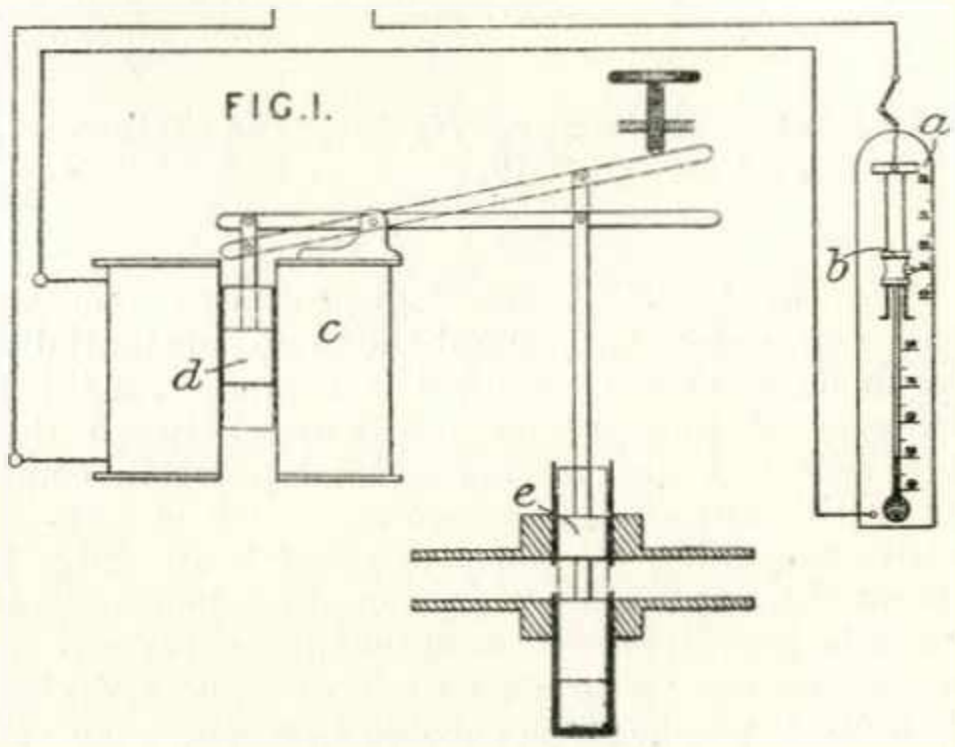
126,963. Lobet, A. July 9, 1917, [*Convention date*].



Steam-traps.—When the trap is not working, or is only under low pressure of steam, the spring 27 keeps the valve 6 and casing 13 raised, and air and condensation water entering at the port 2 can escape through the openings 9 to the outlet 4. As the pressure rises in the vessel 1, the casing 13 is forced downwards, thus closing the valve 6. Water accumulating, the float 24 rises and strikes the levers 19, 20 and opens the valve 16. Steam is thus admitted to the casing 13 above the loosely-fitting piston 25, and the casing again rises and the valve 6 opens. The water escapes and the float drops clear of the levers, allowing the valve 16 to close. The steam inside the casing 13 passes by the piston 25 and through the port 11 and passage 10 to the outlet 4. The pressure of steam again drives the valve 6 on to its seat, and the operations are repeated.

127,114. Williams, W. J. T., and **Sherston, T. P. D.** May 30, 1918.

FIG. 1.



Thermostats.—In apparatus for regulating the temperature of buildings or structures, the valve *e* in the pipe supplying gas to the stove or hot water to the radiators is operated by a plunger *d* in a solenoid *c*, which is connected electrically to a contact thermometer *a*. The contact *b* on the thermometer is placed at the mark indicating the required temperature, so that when the mercury reaches the contact, a circuit is completed, the solenoid is energized, and the valve *e* is closed.

127,241. Courtot, L. May 24, 1918, [*Convention date*]. *Void* [*Published under Sect.* 91 *of the Act*].

FIG. 1.

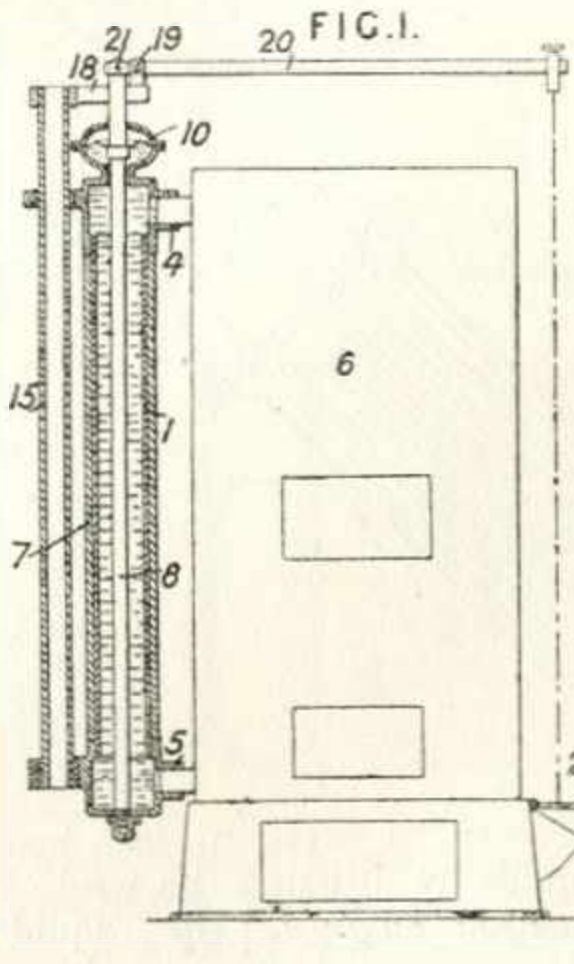
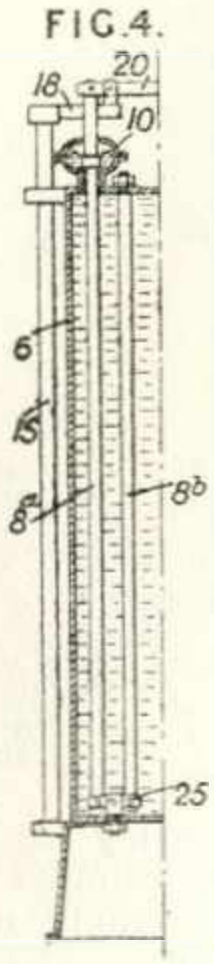


FIG. 4.

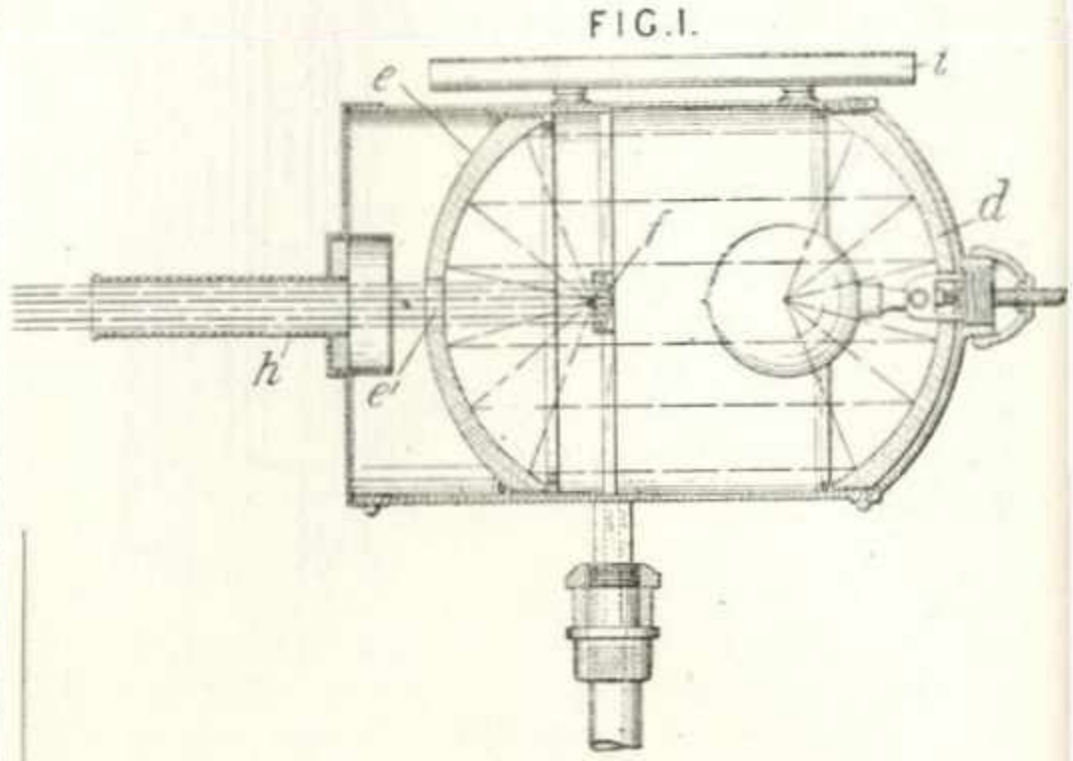


Thermostats.—Described as applied to operating a damper 22 of a boiler 6, a thermostat comprises an expansible rod 8, for example of aluminium, in a tube 1 of less expansibility connected to the water space by passages 4, 5 and surrounded by a non-conductor 7, a rod or tube 15 subjected to external atmospheric temperature, and a lever 20 pivoted to the rod 8 at 21 and the tube 15 at 19 through the arm 18. The rod 8 may be within the boiler itself, and may be in two parts 8^a, 8^b, both of these variations being shown in Fig. 4. The part 8^b is fixed at its upper end and connected to the part 8^a at the lower end through a rocking arm 25. In each case, a flexible diaphragm 10 allows the expansion of the rod 8 without the escape of water. Any other device controlling the temperature of the boiler may be operated.

128,240. Fletcher, J. Y., and **Pitman, C. H.** June 22, 1917.

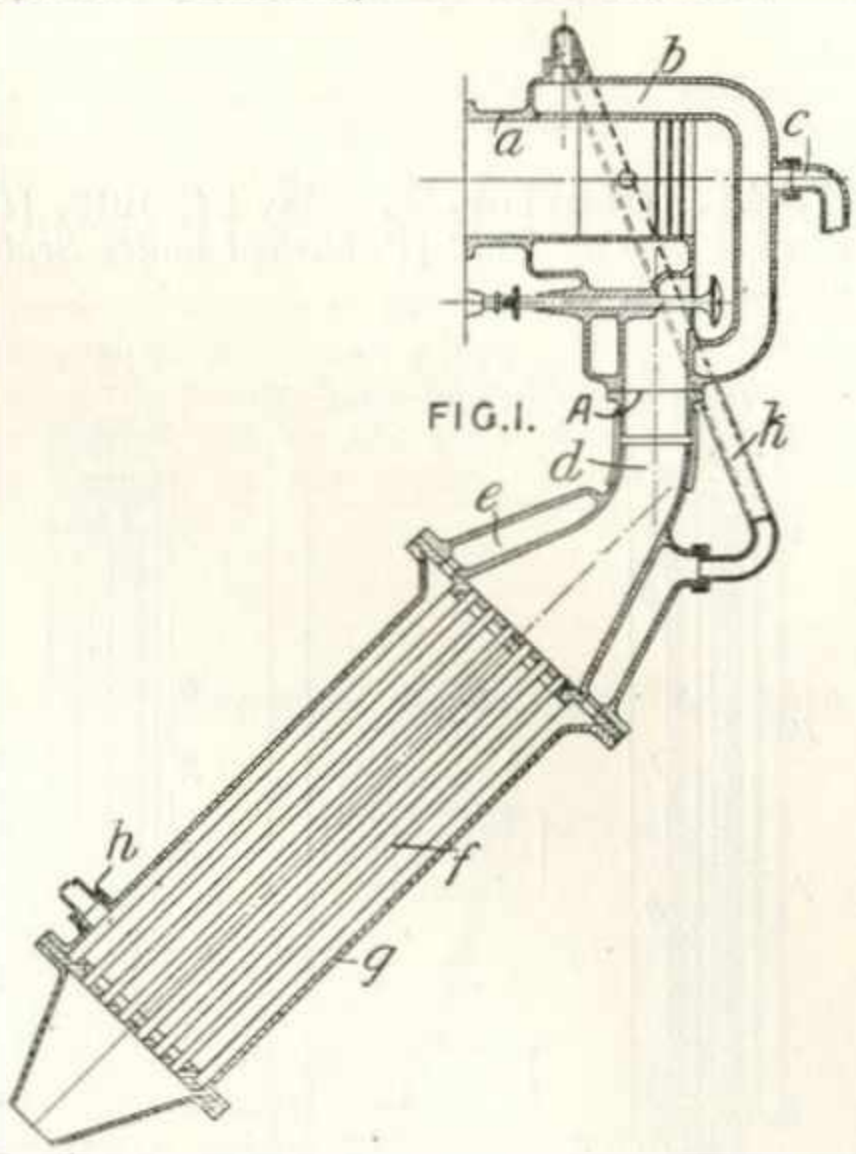
Solar heat, utilizing.—Heat-projecting apparatus comprises two parabolic or substantially parabolic reflectors arranged face to face, a third reflector of smaller size positioned between the two reflectors and having a focal point in common with one of the reflectors, which is formed with an opening for the passage of heat. Fig. 1 shows the application to a signalling-lamp. The lamp is provided with a parabolic reflector *d*, a second reflector *e* arranged opposite the reflector *d*, a small parabolic or substantially parabolic reflector *f* having the same focus as the reflector *e*, a tube *h* preferably painted internally with non-reflecting paint, and a sighting-tube *i*, a central opening e^1 being formed in the reflector *e* opposite the reflector *f*. The interior of the apparatus is painted with a non-reflecting paint. The Provisional Specification states that two 5 in. reflectors may be combined with a reflector having a diameter of $\frac{5}{8}$ in.

FIG. 1.



128,387. Clifford, E. June 18, 1918.

FIG. 1.



Heating liquids.—In a system for heating water or other liquids by utilizing the waste heat of internal-combustion engines, the liquid is caused to flow entirely in the reverse direction to the flow of gases by being passed around the exhaust pipes and cylinder from the cooler end of the exhaust pipes to the cylinder jackets without returning again to the exhaust pipes. In the apparatus shown in Fig. 1, the cylinder *a* is surrounded by a jacket *b* communicating by a pipe *k* with a jacket *e* surrounding the exhaust pipe *d* which flares outwardly, and is preferably of a flattened tubular section. A smoke-tube boiler consisting of a casing *g* and a number of tubes *f*, the total cross-sectional area of which is greater than the cross-sectional area of the exhaust pipe at A is preferably connected to the exhaust pipe *d*. The liquid to be heated is led into the boiler through an inlet *h* at its lower end, passes into the jacket *e*, thence by the pipe *k* to the cylinder jacket *b*, and is finally drawn off at an outlet *c* for heating purposes.