

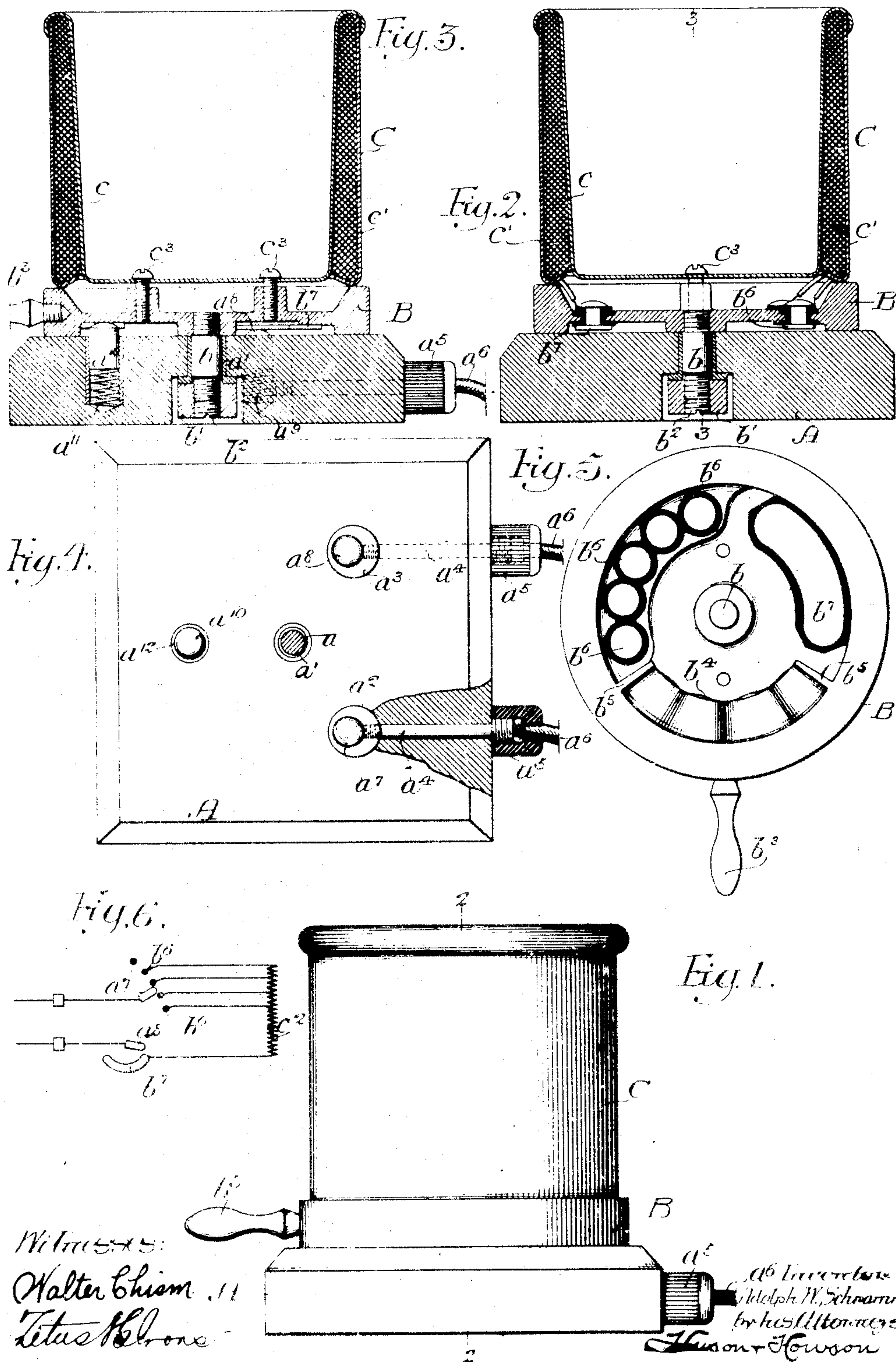
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A. W. SCHRAMM.

WATER HEATER.

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WATER-HEATER.

No. 883,490.

Specification of Letters Patent.

Patented March 31, 1908.

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To all whom it may concern:

Be it known that I, ADOLPH W. SCHRAMM, a citizen of the United States, residing in Riverton, New Jersey, have invented certain

5 Improvements in Water-Heaters, of which the following is a specification.

My invention relates particularly to electrical apparatus designed to heat a glass or other vessel containing liquid, one object

10 being to simplify the construction of the device as well as to so arrange and construct the various parts that the likelihood of their getting out of order shall be reduced to a minimum.

15 Another object of the invention is to provide a simple and compact device for regulating the flow of current to the heating device intended for the reception of the liquid containing vessel to be heated.

20 These objects and other advantageous ends I secure as hereinafter set forth, reference being had to the accompanying drawings, in which,

Figure 1, is a side elevation of my improved

25 water heater; Fig. 2, is a vertical section of the heater, taken on the line 2—2, Fig. 1; Fig. 3, is a vertical section of the heater, taken on the line 3—3, Fig. 2; Fig. 4, is a plan of the base block on which the main portion of the heater is mounted; Fig. 5, is an inverted

30 plan of the plate upon which the heating cup is mounted, illustrating the arrangement of the contacts and ratchet thereon, and Fig. 6, is a diagrammatic illustration of the electrical connections of my device.

In the above drawings A is a block or plate of marble, slate or other non-conducting material upon which is mounted a plate, B

usually of metal, carrying the heating cup C.

40 The base block has a central vertically extending hole *a* for the reception of a pivot pin *b*, and this latter has one end threaded into the cup supporting plate B while its opposite end is also threaded for the reception

45 of a nut *b'* placed within an enlarged portion of the hole *a*. There is preferably mounted in this hole a bushing *a'* provided with a flange as shown, which bears against the face of the nut *b'*. In order that there may be no

50 possibility of this nut working loose from the threaded end of the spindle *b*, I make this end of such a length that it extends but part

way through the nut, and provide a jam screw *b²* which is set up within the nut *b'* so as to forcibly engage said spindle end.

At three points equally distant from each other and from the central hole *a*, I provide additional recesses or holes in the base block A and in two of these mount metallic cylinders or plugs *a²* and *a³* which are engaged by

60 rods *a⁴*. These latter extend horizontally through the base block A and are threaded into said plugs as shown in Fig. 4.

The ends of the rods project at one edge of the base block and at this point they are enlarged and threaded for the reception of caps

65 *a⁵* of insulating material such as hard rubber or the like. Each of these caps has extending through it a shouldered and partially threaded passage fitting one of the rods and

70 designed for the reception of an electrical conductor *a⁶* which enters it in line with its threaded portion. The said conductor after being entered into the cup is knotted or

75 turned over, so that when said cap is screwed upon the head of the bolt *a⁴* this enlarged end of the conductor is confined between said head and the shouldered bottom of the recess of the cap so that its good electrical connection with the head is assured, while at the

80 same time, it is firmly held so that it cannot be easily pulled out of the cap.

Inasmuch as the insulation of the conductor is extended up to and within the cap, there are no exposed metallic parts carrying

85 current, though if it be desired to remove or replace the conductors this may be done with the greatest convenience and without dismantling the heater.

Both of the cylinders or plugs *a²* and *a³* are provided with eccentrically placed vertically

90 extending cavities arranged to leave a relatively thick wall for the reception of the threaded ends of the rods *a⁴*. These cavities are respectively provided with plungers

95 *a⁷* and *a⁸* rounded at their upper ends and pressed upwardly by means of springs *a⁹*, so as to project above the surface of the base block A.

The third of the cavities is, as above noted, at the same distance from the central cavity

100 *a* as are the cavities containing the plugs *a²* and *a³*, and it also contains a plunger *a¹⁰* similar to the plungers in the plugs, which is

pressed upwardly by means of a spring a^{11} ; both spring and plunger being preferably within a bushing a^{12} in this recess.

The plate B, is, as above noted, pivotally held to the base block A by means of its spindle b , and is preferably as shown in Fig. 5, of generally circular outline, being provided with a handle b^3 projecting outwardly from one side. Its lower face is recessed and has 0 formed in it a series of ratchet teeth b^4 , as shown in Fig. 5, arranged in an arc of a circle and of generally curved form, their distance from the pivot pin being such as to permit of their being engaged by the plunger a^{10} which 15 serves as a pawl. In the present instance these teeth are formed integral with the casting constituting the plate B and there is at each end of this ratchet a projection b^5 of the plate forming a stop designed to engage the 20 plunger a^{11} and so restrict the pivotal movement of the plate B and its cup C upon the base block A to an arc of about 120° .

Extending through the plate B and in the present instance on the same circular arc as 25 that of the ratchet teeth, are a series of metallic contacts b^6 , which are electrically insulated from the said plate and connected to different points of the heating coil or winding placed on the cup C. This cup, as shown, 30 consists of an inner member c and an outer member c' , spaced some distance from it, there being in the cavity between these two structures any desired form of winding usually consisting of a series of layers of bare 35 wire separated by mica or other suitable insulating material. As illustrated diagrammatically in Fig. 6, this wire c^2 has a number of taps leading to the various contacts b^6 and from one end of it there is a connection extending to a relatively long contact b^7 also 40 mounted upon the plate B concentrically with the contacts b^6 in a position to be engaged by the plunger a^8 . Similarly when the parts are assembled, the contacts b^6 are engaged 45 by the plunger a^7 .

The cup structure is held rigidly to the plate B by means of screws c^3 , as shown in Figs. 2 and 3, there being bosses projecting from the plate for the reception of said 50 screws.

From the above description it will be seen that the plate B with its cup structure C may be moved through an arc of about 120° , thereby causing the plunger a^7 to move over 55 the contacts b^6 while the plunger a^8 remains in engagement with the long contact b^7 . The ratchet teeth b^4 are so designed relatively to their plunger a^{10} and to the various contacts b^6 that said plunger tends to cause the plate B to stop and be held in such positions that some one of the contacts b^6 is fairly engaged by the plunger a^7 . By turning the plate B with its cup structure on the base structure A, it is therefore possible to regu-

late the length of the coil c^2 which is in circuit 65 between the terminals of the device, for under operating conditions the current from one of the conductors a^6 flows through one of the rods a^4 to the plug a^3 from whence it passes through the plunger a^8 to the long 70 contact b^7 and to one end of the heating coil c^2 . After passing through a greater or less length of this coil depending on that one of the contacts b^6 which is engaged by the 75 plunger a^7 , it flows through the second rod a^4 to the second conductor a^6 .

As is obvious, the amount of heating of the cup C may be varied by turning the plate upon its pivot and so varying the length of the coil c^2 which is heated. 80

It is to be noted that one of the contacts b^6 has no connection to the coil c^2 and therefore acts as an off point for the switch.

I claim:

1. The combination in a heater of a supporting structure, and an electrical heating device movably mounted thereon, with current regulating means for said heating device having its parts placed so that it is operated when one of the members of the heater is 85 moved relatively to the other. 90

2. The combination in a heater of a base, a cup structure movably mounted thereon, an electrical heating device for the cup structure, and a regulating device controlled by 95 the movement of said structure relatively to the base.

3. The combination of a base, a cup movably mounted thereon and provided with electrical heating means, a series of contacts 100 attached to the heating means of the cup structure, terminals on the base for the attachment of current conductors, with contact members carried by the base in electrical connection with the terminals and engaging 105 said contacts of the heating means.

4. The combination of a base, a cup structure having electrical heating means, a substantially vertical pivot movably connecting the cup structure to the base, a series of contacts 110 mounted on the cup structure and respectively connected to different points of the heating means, a contact member or members carried by the base so as to be capable of engaging said contacts, with terminals for 115 connecting said parts to a source of current supply.

5. The combination of a base, a cup structure mounted on said base and having electrical heating means, a series of contacts connected to said heating means and carried by the cup structure, a contact member carried by the base so as to be capable of engaging said contacts, with means tending to maintain the cup structure in such position 120 125 relatively to the base that the contact member shall tend to remain in full engagement with each one of the contacts.

6. The combination of a cup structure having a heating device, a series of contacts connected to different points of said device, a base structure, and two contact members carried thereby so as to be capable of engaging the contacts of the cup structure, with a ratchet carried by one of the members comprised by the base and cup structures and a pawl carried by the other member so as to cooperate with the ratchet to maintain the parts in any of a number of positions such that one of the contact members is held in engagement with but a single one of the contacts.

7. The combination of a base structure, a cup structure pivotally mounted thereon and provided with a heating winding, a series of contacts carried by the cup structure and arranged concentrically with the pivot thereof, a series of teeth on the cup structure also concentric with the pivot, and a plurality of spring pressed plungers carried by the base, of which one plunger engages the ratchet teeth and the others engage the contacts, with terminals connected to the plungers.

8. The combination of a base structure, a plate pivotally connected therewith, a cup structure mounted on the plate and having a heating winding, a series of contacts on the plate respectively connected to different points of the winding terminals on the base, and means for directly connecting the terminals with the contacts on the plate.

9. The combination of a base structure, a cup structure movably mounted thereon, a handle for moving said cup structure, electrical heating means for the cup structure, terminals on the base structure for the attachment of current conductors, means for electrically connecting the heating means with said terminals, said heating means being arranged to be regulated when the cup structure is moved relatively to the base.

10. The combination of a base structure, two metallic plugs therein having eccentrically formed cavities, plungers in said cavities, terminals each having a rod screwed into a relatively thick portion of one of said plugs, a cup structure movably mounted on the base, and an electrical heating device therefor having contacts placed to be engaged by said plungers in the plugs.

11. The combination of a base structure, a cup structure mounted thereon, a vertically placed pivot pin connecting said two structures, a nut screwed on the end of the pivot pin, a jam screw entering said nut in a line with said pin, electrical heating means for the cup structure, terminals on the base structure, and means for connecting said terminals with the heating means so as to per-

mit of relative movement of the cup and base structures.

12. The combination of a base structure, a cup structure pivotally mounted thereon, an electrical device for heating said cup structure, a series of contacts connected to different parts of said heating device and mounted on the cup structure concentric with the pivot thereof, two spring actuated plungers carried by the base structure and respectively engaging different ones of said contacts, and terminals electrically connected to said plungers.

13. The combination of a base structure, a cup structure pivotally mounted thereon, an electrical device for heating said cup structure, a series of contacts connected to different parts of said heating device and mounted on the cup structure concentric with the pivot thereof, two spring actuated plungers carried by the base structure and respectively engaging different ones of said contacts, terminals electrically connected to said plungers, and means for maintaining the cup structure in any one of a number of different positions relatively to the base structure.

14. The combination of a base structure, a cup structure mounted thereon, a pivot movably connecting the cup structure and the base structure, a plurality of plungers mounted on the base structure, a series of ratchet teeth carried by the cup structure so as to be engaged by one of the plungers, a relatively long contact on the cup structure placed to be engaged by a second one of the plungers, a series of short contacts placed on the cup structure in position to be engaged by the third plunger, electrical heating means for the cup structure having one end connected to the long contact and connected at intervals to different ones of the short contacts, and terminals on the base structure connected to those of the plungers which engage the contacts.

15. The combination of a base structure, and a cup structure movably mounted thereon, electrical heating means for the cup structure, terminals on the base structure for the attachment of electrical conductors, and a regulating device for said heating means concealed between the cup structure and the base structure, the same being constructed to be operated by moving one of said parts relatively to the other.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

ADOLPH W. SCHRAMM.

Witnesses:

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