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J. I. AYER.

SAFETY ATTACHMENT FOR ELECTRICALLY HEATED VESSELS.

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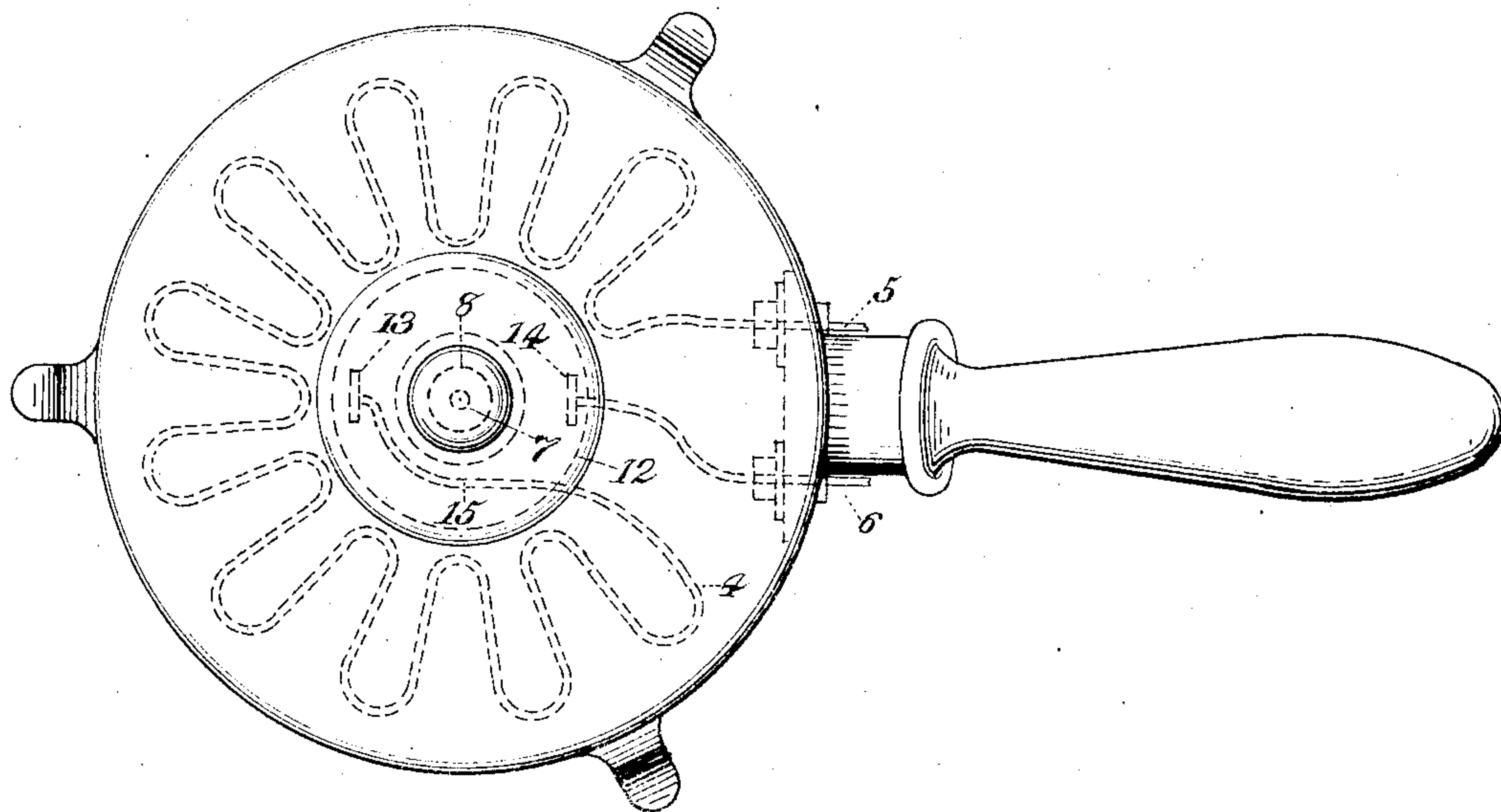


Fig. 1.

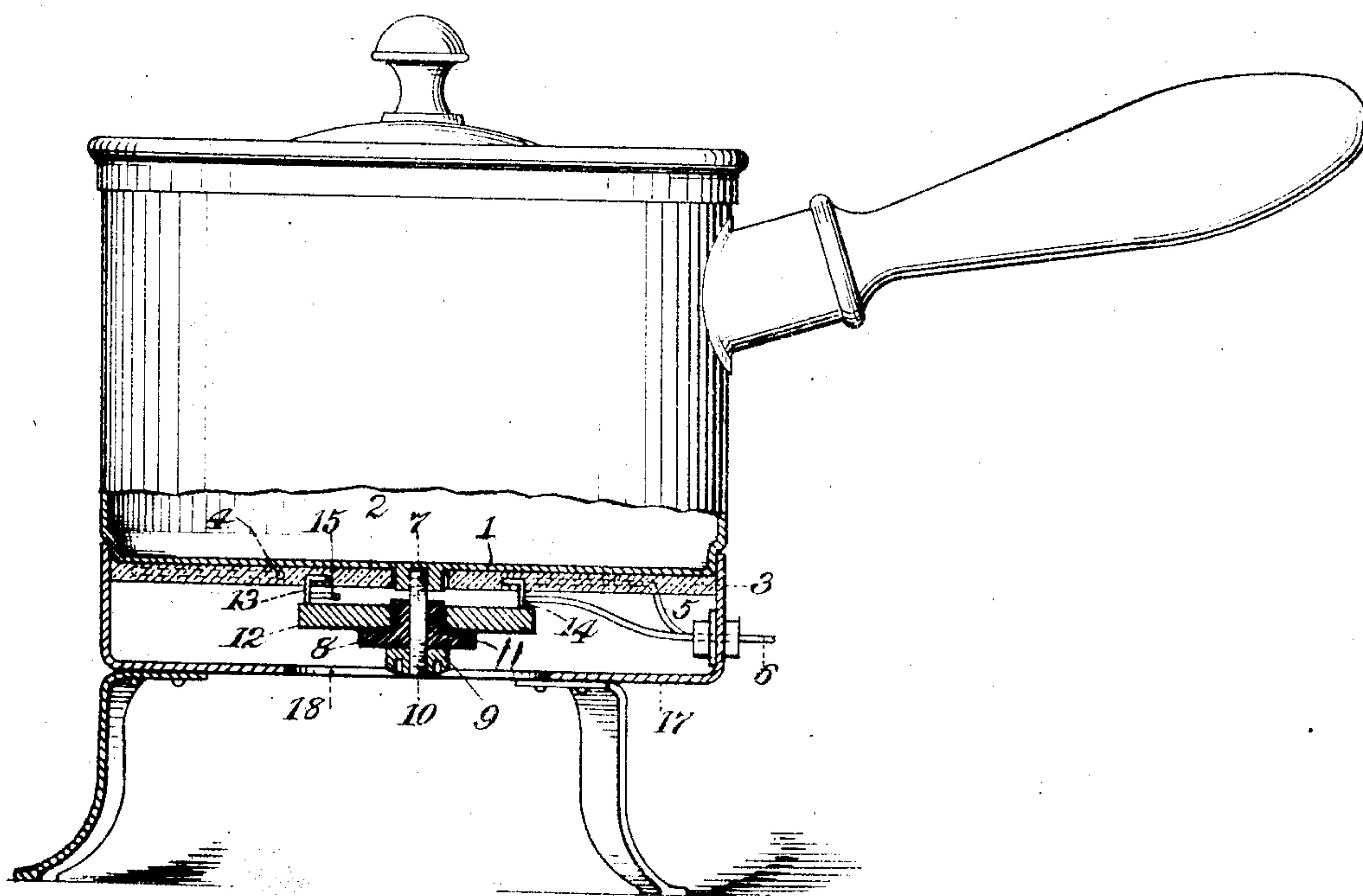


Fig. 2.

Witnesses:
H. E. Remick,
Edward Maxwell

Inventor:
James I. Ayer.
By Geo. H. Maxwell,
Att'y.

UNITED STATES PATENT OFFICE.

JAMES I. AYER, OF CAMBRIDGEPORT, MASSACHUSETTS, ASSIGNOR TO SIMPLEX ELECTRIC HEATING COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

SAFETY ATTACHMENT FOR ELECTRICALLY-HEATED VESSELS.

No. 854,396.

Specification of Letters Patent.

Patented May 21, 1907.

Application filed January 14, 1907. Serial No. 352,150.

To all whom it may concern:

Be it known that I, JAMES I. AYER, a citizen of the United States, residing at Cambridgeport, in the county of Middlesex and State of Massachusetts, have invented an Improvement in Safety Attachments for Electrically-Heated Vessels, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention is a safety appliance or automatic cut out for use with electrically heated apparatus in general, but particularly intended for use in connection with electrically heated apparatus such as is commonly used for domestic purposes. A common experience in connection with devices of this character, such as electrically heated kettles, pots, pans, and other kinds of vessels, tools and appliances, is that the careless servant girl or other user is apt to leave the current turned on too long or when the vessel is without water, for instance, so that the apparatus is quickly overheated and damaged if not ruined.

Accordingly my present invention aims to provide means for automatically preventing the disaster above mentioned, and to this end I provide a heat conveying member, preferably independent of the heating circuit, and located in a normally open chamber said heat conveyer carrying and extending beneath a circuit closer and being provided with heat-operated releasing means for automatically breaking the circuit when the heat conveyer becomes unduly heated.

In the accompanying drawings I have shown a preferred embodiment of my invention in connection with a water heater, although it will be understood that my invention is intended to apply to a wide variety of heating devices, and the invention will be more fully explained in the following description and further defined in the appended claims.

In the drawings, Figure 1 is a top plan view of an electrically heated water cup containing my improvement; and Fig. 2 shows the same in side elevation with the lower portion broken away to exhibit the internal construction more clearly.

As herein shown I have arranged my safety

appliance beneath the bottom 1 of a water heater 2 in connection with the usual heating body or plate composed of insulation 3 containing resistance wire 4, the wire entering the vessel at 5 and leaving at 6. From the bottom 1 I provide a depending post 7 of heat-conducting material, such as copper, and mount loosely thereon an insulator of any suitable kind, herein shown as a lava washer or cap 8, held in place by a fusible retaining nut 9 on the threaded lower end 10 of said heat conveyer 7. The washer 8 is provided with a hub 11 which carries a heavy disk or bar 12 of suitable material to conduct the electric current, being preferably composed of brass or copper and normally in engagement with opposite contact posts 13, 14 connected respectively to the inner end 15 of the heating wire 4 and the outgoing end 6 thereof, so that the circuit is normally completed by the engagement of the heavy bar 12 with the posts 13 and 14. The parts mentioned are inclosed within a supplemental bottom or inclosure 17, which supports the vessel 2, being provided with an opening 18 through which access may readily be had to the contained parts.

The operation of my safety appliance is as follows: As long as the heating conditions and heating effect are normal the current flows through the heating wire 4, end 15, post 13, plate or bar 12, post 14, and wire 6, but the moment that the temperature rises unduly in the heat chamber or apparatus, the temperature of the heat conveyer or copper post 7 immediately rises correspondingly and softens or releases the fusible nut 9, (as I prefer but do not for all purposes limit myself to the fusible release), which permits the connecting bar or plate 12 instantly to fall by its own weight out of circuit closing position with relation to the posts 13 and 14. When it is desired to restore the utensil to operative condition, all that is necessary is simply to replace the plate 12 and insulator 8 and clamp them in position by another fusible nut or by jamming the former nut 9 into holding engagement with the threads of the post 7.

It has been my object to devise a quickly responsive, sensitive, mechanism, and also one that can be readily restored to circuit closing position when operated. The con-

struction is at the same time inexpensive and simple as the parts can be readily stamped out and molded. By having the heat conveying post connected directly with the heated chamber and of sufficient size to convey a considerable amount of heat readily, the apparatus responds directly to the condition of the heated chamber, and by having the connecting bar or plate 12 of relatively large size and weight it operates to break the circuit instantly without serious arcing. The relatively small fusible nut and long bearing of the lava washer also facilitate this result.

As already intimated, certain features of my invention are capable of variation without departing from the spirit and scope of my invention.

My present invention does not depend upon the uncertainties of the heat of an auxiliary chamber as in my Patent No. 839,255 of Dec. 25, 1906, but receives its heat by the heat conveying post 7 directly from the bottom 1 or tool itself. I do not however claim this feature broadly, as this is not new with me, a previous device having been suggested in which a short stud was secured to the bottom of the vessel and connected by a fusible joint with a thumbscrew supporting a circuit-closing plate. My invention however is much more simple in construction and use, as I provide a post or heat conveyor 7 which extends downwardly below the heavy plate 12 in position to enable the user readily to place the nut 9 directed on said post.

Although the nut 9 is called a fusible nut it in fact does not fuse but simply softens sufficiently to permit the weight of the heavy disk or plate 12 to strip it from the threads of the post. Hence when it is to be replaced, a new nut is not necessary but the old nut is simply jammed slightly so as to decrease the opening (enlarged by its softening and stripping) and then secured back in place. This can be repeated indefinitely. The nut 9 is an ordinary nut and for all these reasons is much simpler than the awkward and difficult previous construction referred to.

Having described my invention, what I claim as new and desired to secure by Letters Patent is,

1. An electrically heated apparatus, containing a chamber to be heated, a heating circuit therefor, and an automatic cut out in said circuit, including a post extending out-

side of said chamber for conveying heat from the latter to operate said cut out, and a fusible nut on the outer end of said post, externally of the cut out.

2. An electrically heated device, an electric heating circuit therefor, and an automatic cut-out in said circuit including a heat conveying post, an insulator slidingly mounted on said post, a circuit opener of conductor material carried by said insulator, opposite terminals of said circuit being in position to be engaged by said circuit opener, said post extending through and externally of said insulator, and circuit opener, and a fusible nut on the free end of the post externally of and normally retaining said insulator and circuit opener on said post.

3. An electrically heated apparatus, containing a chamber to be heated, an electric heating circuit therefor, and an automatic gravity cut-out in said circuit comprising a heat conducting post depending from the bottom of said chamber, the lower end of said post being externally accessible and extending below the cut-out when the latter is in operative circuit closing position, a heavily weighted gravity conductor plate mounted transversely of said post normally in circuit closing position and capable of freely sliding longitudinally of said post when released, said post being threaded at its outer end, and a fusible nut normally embracing the threaded end of said post beneath said conductor plate and supporting the latter in circuit closing position.

4. An electrically heated device, having a chamber to be heated, an auxiliary chamber beneath the same, a heating circuit within the latter for heating the former, an external opening in said auxiliary chamber and an automatic cut out in said circuit opposite said opening, including a movable current conductor, a depending post supporting the same, and a fusible nut below said conductor normally retaining said movable current conductor in circuit closing position.

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

JAS. I. AYER.

Witnesses:

ELIZABETH M. CONLIN,
DORA E. PROCTOR