

Sept. 9, 1924.

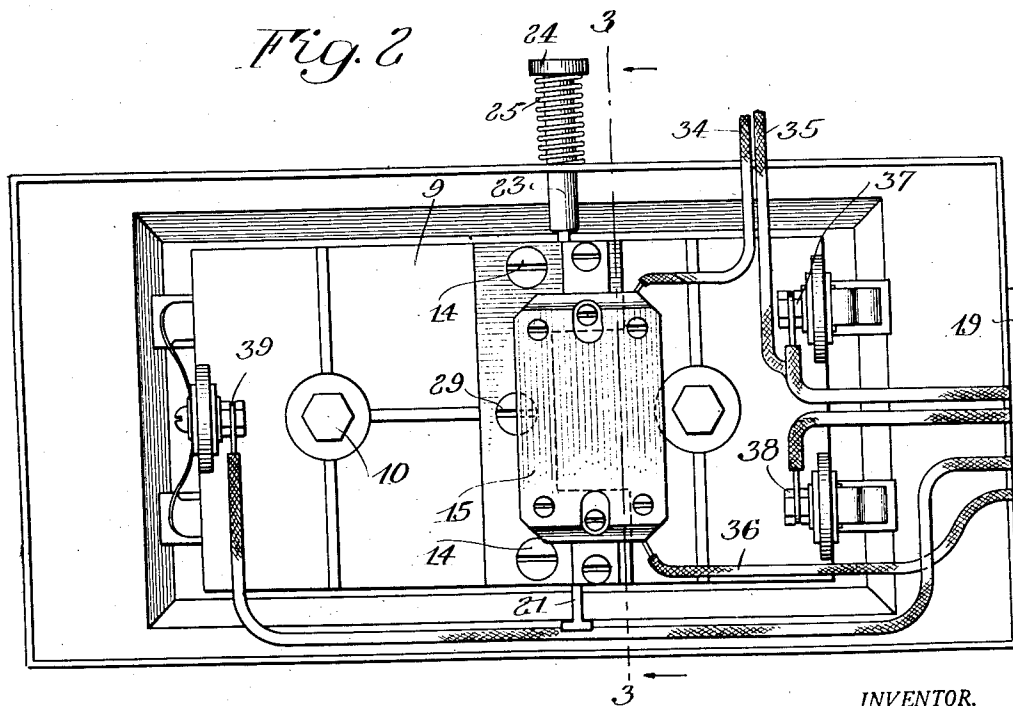
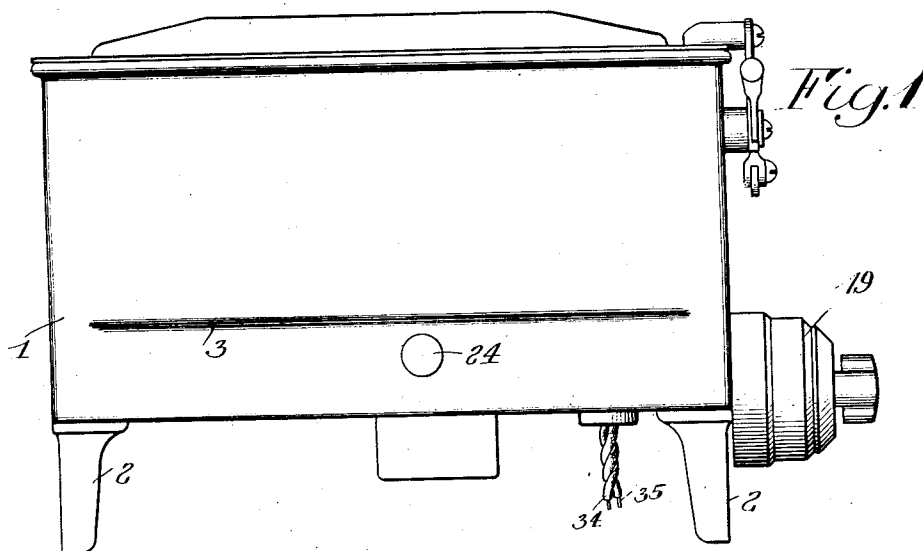
W. B. UNDERWOOD

1,508,035

FUSIBLE SWITCH

Filed Aug. 9, 1922

2 Sheets-Sheet 1



INVENTOR.
Weeden B. Underwood.
BY *Davis & Limino*
ATTORNEYS.

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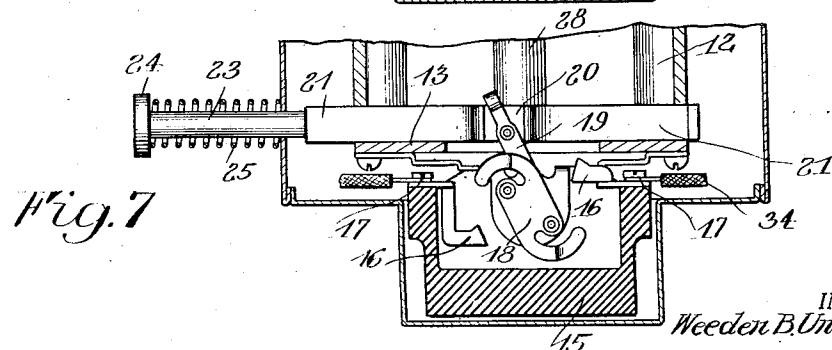
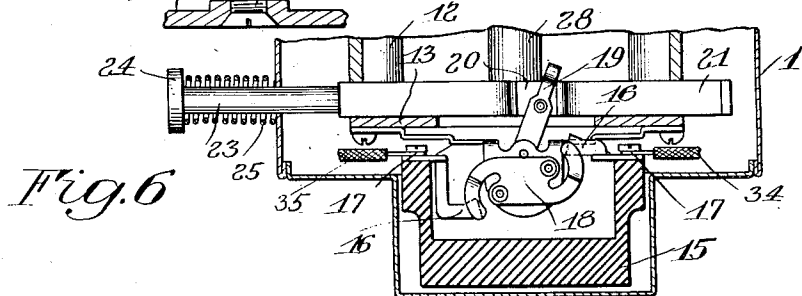
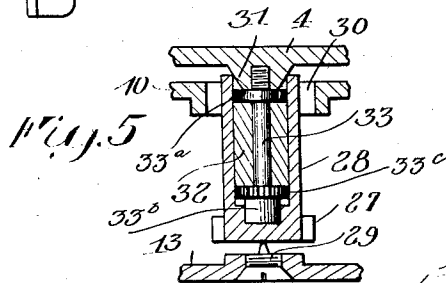
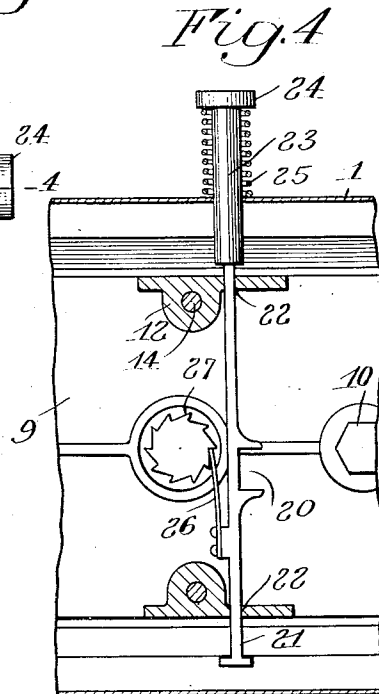
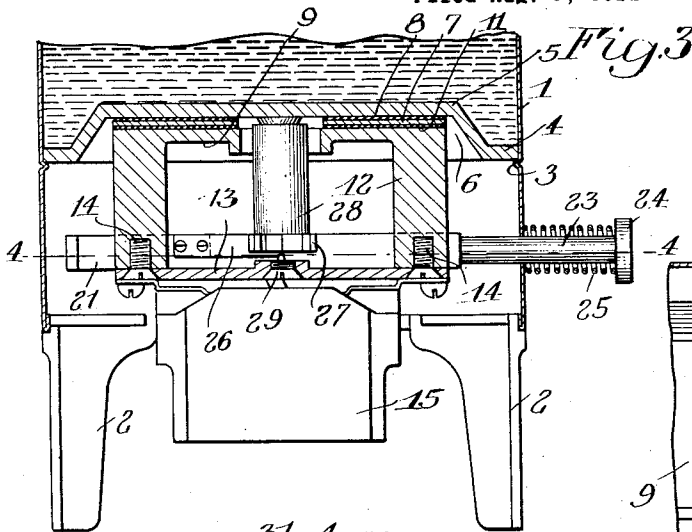
1,508,035

W. B. UNDERWOOD

FUSIBLE SWITCH

Filed Aug. 9, 1922

2 Sheets-Sheet 2



INVENTOR.
Weeden B. Underwood.
BY *Davis & Smith*
ATTORNEYS.

UNITED STATES PATENT OFFICE.

WEEDEN B. UNDERWOOD, OF ROCHESTER, NEW YORK, ASSIGNOR TO WILMOT CASTLE COMPANY, OF ROCHESTER, NEW YORK, A CORPORATION OF NEW YORK.

FUSIBLE SWITCH.

Application filed August 9, 1922. Serial No. 580,767.

To all whom it may concern:

Be it known that I, WEEDEN B. UNDERWOOD, a citizen of the United States, and resident of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Fusible Switches, of which the following is a specification.

The present invention relates to heated containers and more particularly to the type in which a heating element is employed having controlling means which automatically cut off the heat source when the heat in the container becomes excessive. An object of this invention is to provide a bottom wall with a depression or channel adjacent the side walls of the container for maintaining a liquid adjacent the side walls when the main portion of the bottom wall becomes dry, so that the joint or connection between the bottom wall and the side walls will not become loosened by heat applied to the main portion of the bottom wall. Another object of the invention is to provide an improved fusible resisting means for a heat controlling means which moves automatically to cut off heat to the container whenever excessive heat occurs in the container.

To these and other ends, the invention consists of certain parts and combinations of parts, all of which will be hereinafter described, the novel features being pointed out in the appended claims.

In the drawings:

Fig. 1 is a side view of a container embodying the present invention;

Fig. 2 is a bottom view of such a container;

Fig. 3 is a fragmentary section on the line 3—3, Fig. 2;

Fig. 4 is a fragmentary section on the line 4—4, Fig. 3;

Fig. 5 is a sectional view of the fuse device showing the manner of supporting the receptacle in which the fusible material is arranged;

Fig. 6 is a fragmentary sectional view of the manner in which the snap-switch operating slide or motor connects with the snap-switch, the latter being shown in closed position; and

Fig. 7 is a similar view of the snap-switch in open position.

Referring more particularly to the em-

bodiment herein illustrated, 1 indicates a vessel or receptacle which, in this instance, has its side walls formed from sheet metal, said side walls extending upwardly from legs 2, secured by welding or otherwise to the side walls at the corners thereof, and said side walls having also inwardly projecting ribs 3 on which a bottom wall 4 is supported, said bottom wall being soldered to the side walls to prevent any leaks. This bottom wall has an upwardly extending central portion 5 spaced from the side walls of the receptacle on all sides and providing a pocket 6 on the under side of the bottom wall. A heating means such as an electrical heating element 7 of any construction is arranged in the pocket 6 and is insulated from the bottom by insulation 8. A plate 9 is bolted to the bottom at 10 and is insulated from the heating element 7 by insulation 11. This plate 9 also has integral lugs 12, depending therefrom and connected at their lower ends by a bridge piece 13 which is secured in place by screws 14. The bridge piece serves as a support for a snap switch casing 15 formed of insulating material and carrying two contacts 16 connected with terminals and adapted also to be connected by an oscillatory switch member 18, which is normally in closed position and is automatically shifted to open position whenever the heat in the container becomes excessive. The details of this snap switch form no part of the present invention.

The operating member 19 forming part of the snap switch extends upwardly from the casing and into a recess 20 in a slide or motor member 21 which is guided in openings 22 formed in the two depending portions 12 of the plate 9, said slide lying in engagement with the upper surface of the bridge plate 13. This slide has a stem 23 extending through a side wall of the container 1 below the bottom 4 and the end of the stem is provided with a finger piece 24 by which the slide may be pressed inwardly. A helical spring 25 surrounds the spring 23 between the wall of the container 1 and the finger piece 24 and causes the slide to move in the opposite direction to effect the opening of the switch.

With the end in view of holding this switch controlling slide in position, where it will maintain the switch closed until ex-

cessive heat occurs in the container 1, the slide is provided with a spring detent 26 and the end of this detent is adapted to co-operate with ratchet or stop teeth 27, formed on the end of a receptacle 28, this receptacle being supported at its lower end on a screw 29 in the bridge piece 13, and being extended upwardly through an opening 30 in the supporting plate 9 to receive within its open upper end a tapered projection 31 formed on the bottom of the bottom plate 4. Within the receptacle, a readily fusible material 32 is contained and projecting in this readily fusible material 32 is an anchoring member or stem 33, which is secured at its upper end to the bottom 5, preferably in the tapering projection 31 on said bottom. This stem has two cylindrical centering portions 33^a and 33^b which fit the walls of the receptacle and tend to hold the latter in a centered position. The stem also has a toothed portion 33^c between the teeth of which the fusible material 32 passes, in order to establish a connection between the stem and the fusible material and prevent the stem from turning in said fusible material. When the fusible material is hard, it connects the stem 33 with the rotary receptacle 28 and holds such receptacle against turning, so that the latter through the ratchet or stop teeth 27 will hold the slide or motor member in a position where the snap switch is closed, as shown in Fig. 6. However, when excessive heat occurs in the container 1, this fusible material 32 will soften and permit the receptacle 28 to turn and the slide or motor member 19 to move under the influence of the spring 23, thus shifting the snap switch to open position, as shown in Fig. 7.

The current is delivered to the appliance by means of line wires 34 and 35, the former connecting with one of the terminals of the snap switch 18. From the other terminal of the snap switch 18, a conductor 36 leads to the four terminal snap switch 19 which connects with the line wire 35 and also with three terminals 37, 38 and 39 of the heating unit, the heating unit being so formed that portions thereof may be cut out by the four terminal snap switch 19 to vary the amount of heat obtained from such unit.

The operation of the illustrated embodiment of the invention is as follows: Assuming that the slide or motor member 21 has been pressed inwardly against the action of the spring 23, the detent 26 will co-operate with the ratchet or stop wheel 27 and hold the motor member against its normal tendency to move in the opposite direction. In this position, the motor member holds the snap switch 18 closed, as illustrated in Fig. 6. Should the container become over-heated, due to the driving of

the liquid therefrom, except that within the channel about the side walls, the fusible material 32 will melt and the rotary receptacle 28 will turn relatively to the stem 33 under the action of the spring 23, thus permitting the slide or motor member 21 to move to open the switch, as shown in Fig. 7, and cutting off the current to the heating element.

From the foregoing it will be seen that there has been provided an electrically heated container in which the bottom wall is soldered to the side walls and is provided with a channel adjacent said soldered joint to hold liquid, after the central portion of the bottom becomes dry or over-heated under the action of the heating element, thus permitting the heat of the central portion to be communicated to the fusible device which restrains the movement of the motor member that acts to cut off the current to the electrical heating means. The fusible device is of novel construction and embodies a rotary receptacle containing the fusible material and in which a stem depends from the bottom of the container.

What I claim as my invention and desire to secure by Letters Patent is:

1. An electrically heated container having a bottom soldered to the side walls thereof and provided with a central upwardly projecting portion spaced from the side walls to provide a channel in proximity to the side walls the central upwardly projecting portion having a pocket in its underside, heating means having an electrical heating element arranged in the pocket and provided with means having a normal tendency to cut off the heat, and a fuse device for restraining such tendency, subject to the influence of the central portion of the bottom of the conductor, so that when said central portion becomes dry, such fuse device will release the controlling means before the liquid in the channel adjacent the side walls is evaporated.

2. The combination with a container having a bottom, of a stem depending from said bottom, a receptacle rotatably mounted and containing a fusible material in which the stem depends to lock the receptacle to the stem, a heating means for the contents of the container, and means having a normal tendency to cut off said heating means and restrained by said rotary container.

3. The combination with a container having a bottom, of a depending stem on said bottom, a cylindrical portion on said stem, a rotary receptacle having fusible material therein in which the stem depends to lock the receptacle to the stem, said container fitting said cylindrical portion, means for heating the contents of the container, and means for controlling the heating means having a normal tendency to cut off the

heating means and restrained by the rotary container.

4. The combination with a container having a bottom, of an electrical heating element arranged under said bottom and insulated therefrom, a plate secured to said bottom over said heating element, and insulated therefrom, two posts depending from said plate, a bridge piece connecting said posts, a stem depending from said bottom, a receptacle supported by said bridge piece and containing a fusible element in which said stem depends, a switch for controlling said electrical heating element, and means for moving said switch having a normal tendency to move to open the switch, and restrained by said receptacle containing the fusible material.

5. The combination with a container, of

a heating element supported at the bottom of said container, and two elements, one of which is rigidly secured to the bottom and the other of which is rotatably mounted below said bottom, one of said elements being in the form of a receptacle containing a fusible material in which the other element projects.

6. The combination with a container, of a heating element supported by the container, and controlling means for the heating element embodying two elements, one of which is held against turning and the other of which is supported to turn, one of said elements being in the form of a receptacle containing a fusible material in which the other element projects to lock the two elements together.

WEEDEN B. UNDERWOOD.