G. F. HUMPHREYS.

THERMOTIC SWITCH.

APPLICATION FILED MAR. 8, 1912.

1,042,920. Patented Oct. 29, 1912.

Fig. 1.

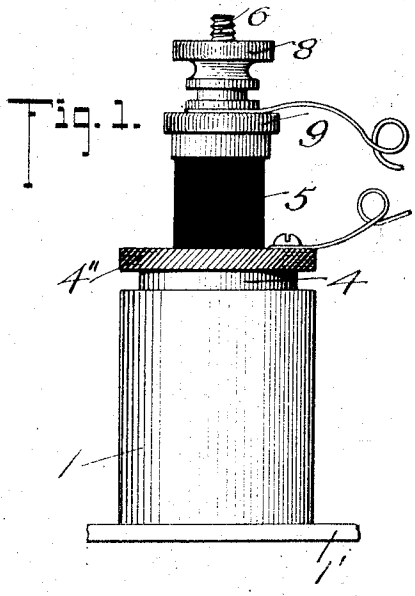


Fig. 2.

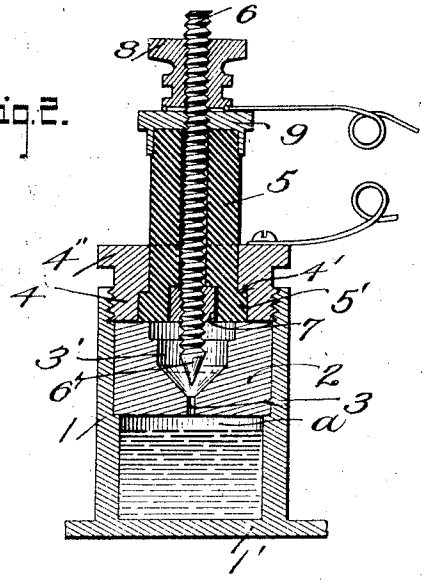
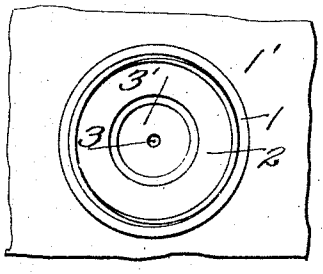


Fig. 3.



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THERMOTIC SWITCH.

1,042,920. Specification of Letters Patent. Patented Oct. 29, 1912.

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To all whom it may concern:

Be it known that I, GUY F. HUMPHREYS, a citizen of the United States, residing at Devils Lake, in the county of Ramsey and State of North Dakota, have invented certain new and useful Improvements in Thermotic Switches, of which the following is a specification.

This invention appertains to switches designed especially for operating signals, alarms, or the like, but adapted for the closing of electric circuits generally.

The present switch is of the thermotic type and comprises essentially a device to be connected to a part which, in use, is heated, the switch operating to close a circuit only when the supporting part has become so hot as to create danger, give rise to possibility of injury thereto, or cause defective or inefficient operation.

The invention involves primarily the peculiar construction of the thermotic switch, the same being simplified so as to permit of ready assemblance of its various parts, and access thereto under practical conditions of service.

For a full understanding of the present invention, reference is to be had to the following description and to the accompanying drawings, in which—

Figure 1 is a side elevation of a switch embodying the invention. Fig. 2 is a vertical sectional view. Fig. 3 is a view looking down upon the mercury reservoir, the parts above the plug being omitted.

Throughout the following detail description and on the several figures of the drawings, similar parts are referred to by like reference characters.

Describing the invention specifically, 1 denotes a reservoir made of conductive material such as any suitable metal and adapted to be attached at its base portion 1′ to a hot box, engine cylinder, or any equivalent device which, in its ordinary use, is subjected to more or less heat.

The reservoir 1 is of somewhat cylindrical shape preferably and it is adapted to contain a small quantity of mercury, as shown in the drawings. The upper portion of the interior of the reservoir is enlarged somewhat so as to receive a plug 2, the lower end of which is seated on the shoulder formed by the lower extremity of said enlarged portion. The plug 2 is formed with a central narrow orifice 3, the upper portion of which communicates with a recess 3′ leading downwardly from the upper side of the plug and forming a shallow basin or pocket.

At its upper end, the reservoir 1 is internally threaded to receive a screw cap 4, the latter being formed with a knurled flange 4″ to facilitate rotation thereof, and also with a central opening having an offset portion 4′ at its inner extremity. Through the central opening of the cap 4 passes an insulating tube 5 formed with a flange 5′ at its lower extremity. A contact rod 6 passes through the tubular portion of the insulating tube 5 and has a clamping nut 7 screwed on its lower end portion and a binding nut 8 screwed on its upper portion. The lower extremity 6′ of the rod 6 is tapered to a contact point, and a metallic cap member 9 is seated over the upper extremity of the insulating tube 5.

In the operation of the invention, a small quantity of mercury is contained by the chamber A of the reservoir 1 and electric circuit wires are connected with the switch, one wire being preferably secured thereto by being clamped between the parts 8 and 9 and the other wire is attached to a part of the device electrically connected with the reservoir 1. As shown, the last mentioned wire is secured by a screw to the cap 4.

It will be apparent that the cap 4 holds the plug 2 in place in the reservoir 1, and in addition, said cap firmly clamps the insulating tube 5 in position on the device by engaging with the flange 5′ of said tube and holding said flange in abutting relation to the plug 2. The contact point 6′ of the rod 6 with the parts arranged as above described, is located in the basin or pocket 3′ of the plug 2 and in the actual use of the device, when the part to which the switch is attached is heated beyond a predetermined degree, the mercury in the chamber A will rise through the orifice 3 and enter the pocket 3′. As soon as the mercury contacts with the contact point 6′, the circuit including the wires electrically connected to the parts 6 and 1 is closed and an alarm or signal, not shown, in said circuit will be sounded. The insulating tube 5 is readily removable from the cap 4 when the latter is detached from the reservoir 1 and the parts 8 and 9 unscrewed from the rod 6. Furthermore, a nice adjustment of the con-

tact point 6′ in relation to the orifice 3 may be readily obtained by manipulation of the clamping nut 7.

Having thus described the invention, what is claimed as new is:

1. A thermotic switch of the class described comprising a reservoir provided with a mercury chamber and an enlarged portion above said chamber, a plug disposed in said enlarged portion and provided with an orifice communicating with the mercury chamber, a screw cap carried by the reservoir and engaging said plug to hold the same in place, an insulating tube passing through said screw cap and clamped thereby against the plug, a contact rod supported by said tube and having a contact point adjacent to the orifice in the plug, and circuit wires electrically connected with said rod and with the reservoir.

2. A thermotic switch of the class described comprising a reservoir provided with a mercury chamber and an enlarged internal portion above said chamber forming an annular shoulder, a plug received in the upper portion of the reservoir and seated against said shoulder at one end, a cap screwed into the upper end of the reservoir and abutting with said plug to hold the same in place, said cap having an opening, the inner end of which is enlarged, an insulating tube passing through the cap and formed with a flange received by the enlarged portion of the opening in the cap and abutting also with the plug, a contact rod passing through the tube and having a contact point at its inner end adjacent to said orifice, a clamping nut applied to the inner portion of said rod and located at the inner end of the insulating tube, a binding nut screwed upon the outer end portion of the rod, and circuit wires one of which is electrically connected to the reservoir and the other of which is connected to the contact rod by means of the clamping nut.

In testimony whereof I affix my signature in presence of two witnesses.

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Witnesses:
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