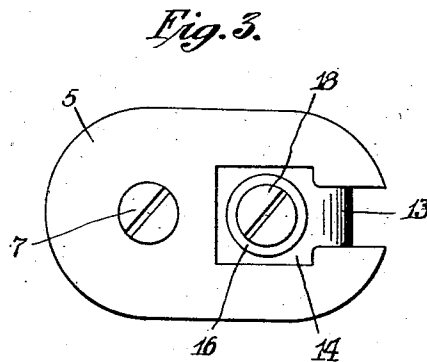
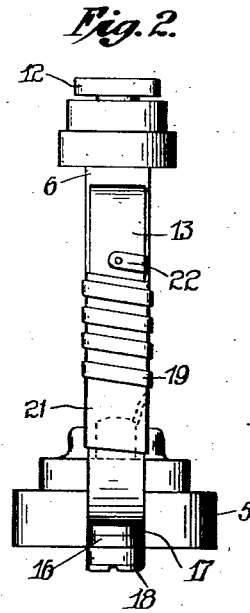
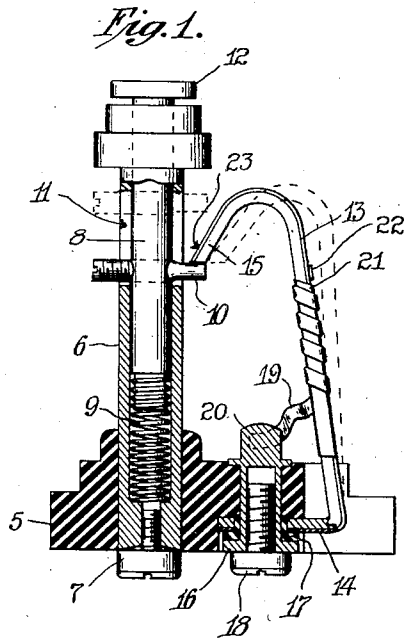


C. E. STAHL.
ELECTRIC SWITCH.
APPLICATION FILED SEPT. 6, 1919.

1,372,207.

Patented Mar. 22, 1921.



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ELECTRIC SWITCH.

1,372,207.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CHARLES E. STAHL, a citizen of the United States of America, residing at Meriden, Connecticut, have invented a new and useful Electric Switch, of which the following is a specification.

My invention relates particularly to thermostatic switches.

The main object is to provide a simple but reliable mechanism which is compact and durable, sensitive yet positive in its automatic release and adapted to be readily reset.

In its preferred form the thermostatic member has a hook-like end whereby the movement of the contact end with relation to the other contact is very slight during the ordinary operation of the system in which the switch is installed, but in which the effective movement of the contact end is more abrupt at higher temperatures. The other contact member in the preferred form consists of an adjustable pin carried by a spring pressed plunger which is adapted to be manually reset after automatic release. The relative movement of the contact pin and the thermostatic element is such that in breaking the circuit any arc which may be formed is drawn across surfaces other than the surfaces which are in contact during current-carrying conditions. Furthermore, the resetting of the device cleans off the surfaces over which the arc is drawn.

Figure 1 is a side view and partial section of a device embodying my invention, showing the parts in full lines in their current-carrying or closed-circuit relation and indicating in dotted lines the position of the contact members when the circuit is opened.

Fig. 2 is an edge view of the same.

Fig. 3 is a bottom plan view.

In this particular form the base 5 is of insulating material in which is molded the tubular post 6 with which one of the circuit wires may be connected by a binding screw 7. In this post is mounted a plunger 8 which is pressed upward by a spring 9. From this plunger extends a contact pin 10 which is preferably adjustable through the plunger. This pin is adapted to travel in the slot 11 of the post 6. The plunger

is preferably provided with a button 12 at its outer end and for pushing the plunger in.

The thermostatic element 13 may be formed of suitable material adapted to be bent or warped by heat. The lower end of this is bent to form a foot 14 which is seated in a recess in the base 5 and the outer end is bent into a hook-like form at 15 to engage the contact pin 10. The foot may be secured in position by a stud 16 which however is insulated from it by a washer 17. A binding screw 18 co-acts with the stud 16 at one end and a resistance strip or wire 19 is electrically connected to the other end. This strip 19 is wound around the main arm of the thermostatic member, being insulated therefrom by a layer of insulating material 21 throughout most of its length and electrically connected at 22.

In the position shown in full lines in the drawing the circuit extends from the binding screw 7 through the tubular post 6, plunger 8, contact pin 10, contact tip 15, the upper end of the arm 13, coiled strip 19 and the stud 16 to the binding screw 18.

As current flows through the switch, the coil 19 heats up the thermostatic arm 13 and causes its upper end to move away from the post 6. At the same time the contact tip 15 moves toward the post although to a somewhat less extent due to the fact that the tip is shorter and the heat is more concentrated in that part of the arm which is surrounded by the coil 19. The parts are so proportioned that at the higher temperatures the radiation from the contact tip 15 is so rapid that the end moves but little relatively to the main body of the thermostatic element (the radiation of course being more rapid at higher temperatures). At the higher temperatures therefore, the movement of the contact tip 15 toward the right is substantially identical with the movement of the main arm 13 and consequently the contact tip is moved quickly away from the contact pin 10 at the time when it is desired that the circuit shall open automatically.

In the circuit-opening movement any arc which is formed will be drawn across the outer end of the contact pin 10 and along the inclined face 23 of the tip of the thermostatic element. The resetting of the switch

when the upper end of the thermostatic element moves back toward the post will cause the outer end of the contact pin 10 to slide down the incline 23, thus scraping the contact element where the arc was formed and keeping the surface bright.

By screwing the pin in or out of the plunger the switch may be adjusted to open at different temperatures.

10 I claim:—

1. In an electric switch, an insulating base, a tubular post carried thereby, a spring pressed plunger operable in said post, a pin projecting from said plunger, a thermostatic element having a main arm mounted alongside of said post and having its tip end engaging the outer face of said pin.

2. In an electric switch, a longitudinally movable member having a transversely extending contact pin, a thermostatic element mounted alongside of said member and having its tip end engaging the outer surface of said pin, the outer wall of said thermostatic element being inclined relative to the direction of movement of said pin.

3. In an electric switch, an insulating base, a tubular post carried thereby, a plunger movable in said post, an adjustable contact member carried by said plunger and a thermostatic arm secured to said base and having a reversely extending end engaging said contact member.

4. In an electric switch, an insulating base, a tubular post carried thereby, a spring pressed plunger reciprocable in said post, a transversely adjustable contact member carried by said post, said plunger being adapted to be set by hand, a thermostatic element secured to said base and having a reversely extending contact tip engaging the outer face of said adjustable contact member, and a resistance coil for heating a part of said thermostatic element.

5. In an electric switch, a spring pressed reciprocable contact, a thermostatic arm arranged adjacent thereto and having a reversely extending contact tip normally engaging said contact, and means for heating a part of said thermostatic element whereby a differential action of the contact tip with respect to the remainder of the ther-

mostatic arm is effected at certain temperatures and the contact tip moves at substantially the same rate as the remainder of the thermostatic arm at higher temperatures.

6. In an electric switch, a spring pressed contact member, a thermostatic arm having its free end extending in the opposite direction to the main portion thereof and adapted to engage said contact member to conduct current therethrough under normal conditions, and means for heating the main portion of said arm so as to move it away from said contact and at the same time move its end toward said contact to avoid breaking the circuit over a certain range of temperatures, the proportions of the parts of said arm and its end being such that its end moves with the main part at temperatures above a predetermined value.

7. In an electric switch, a spring pressed member having a shoulder, a thermostatic arm having its free end extending in the opposite direction to the main portion of said arm and normally engaging said shoulder, and a coil surrounding only a portion of said arm whereby the thermostatic movement of the free end of said arm over a certain range of temperatures is in a direction opposite to the movement of the main portion of said arm, so as, during said range, to retain engagement with said shoulder, and whereby radiation from the end of said arm at higher temperatures causes a differential movement between the main portion and the end of said arm so as to cause the end of said arm to be disengaged from said shoulder.

8. In an electric switch, a spring pressed member having a shoulder, means for manually moving said member and shoulder against the pressure of said spring, a thermostatic arm arranged alongside of said spring pressed member and having its free end extending in the opposite direction to the main portion of said arm and adapted to engage said shoulder, and a heating coil surrounding a portion of the main arm only, whereby there is permitted a differential thermostatic action between the main portion of said arm and the end thereof.

CHARLES E. STAHL.