Aug. 18, 1936. G. C. LAWSON 2,051,725

SWITCH

Filed July 31, 1933

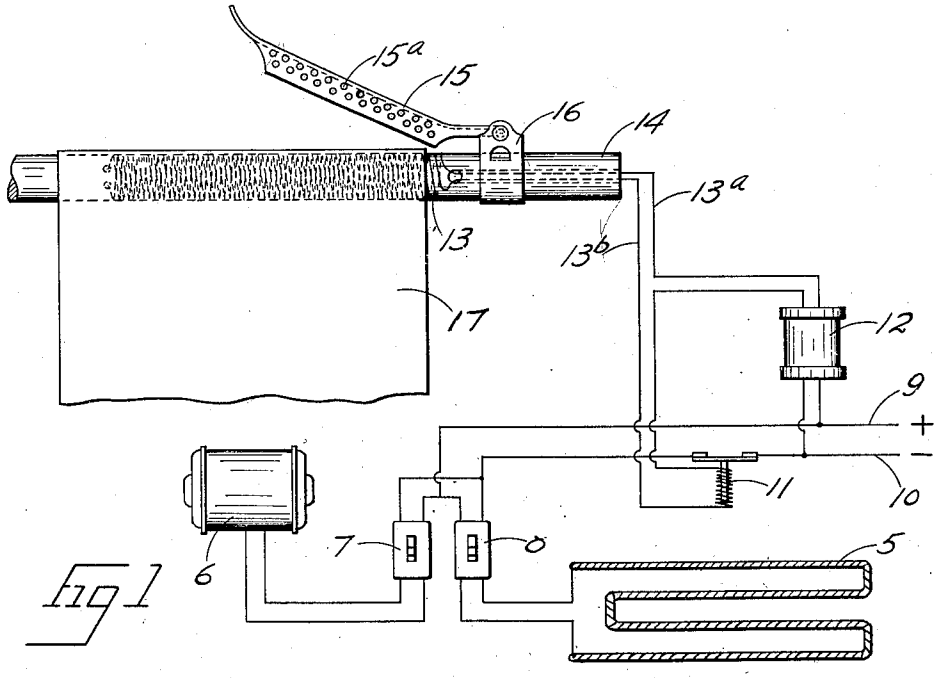


Fig 1

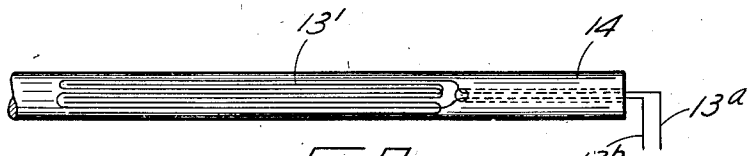


Fig 2

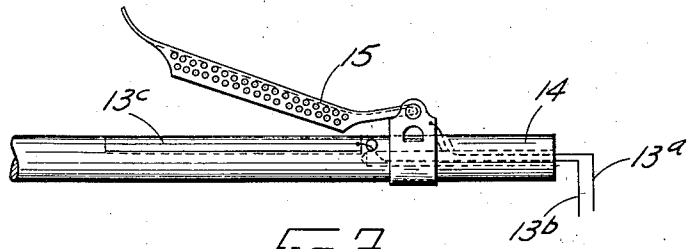


Fig 3

Inventor

GOTTFRID C. LAWSON.

By Richey & Watts

Attorney

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SWITCH

Gottfrid C. Lawson, Canton, Ohio

Application July 31, 1933, Serial No. 682,940

6 Claims. (Cl. 200—52)

This invention relates to an automatic electrical switch or circuit breaker, and the primary object of the same is to provide a simple yet effective means for breaking an electrical circuit within a certain period of time or at the termination or completion of a certain operation, such for example, as a drying or dehydrating operation, without necessitating constant manual attention.

An example of one of the uses to which the improved switch may be applied is in a drying chamber, room or cabinet for drying articles of clothing, such for example as in the drying compartment of the dehydrating and air-conditioning apparatus disclosed in my copending application Serial No. 682,939 filed July 31, 1933. It will be understood, however, that the switch herein disclosed may be used in conjunction with many different types of installations and that the scope of the invention is in nowise limited in this regard.

The foregoing and other objects and advantages will become apparent in view of the following description taken in conjunction with the drawing, wherein:

Figure 1 is a diagrammatic layout of an electrical circuit and apparatus for a drying cabinet having one form of my improved switch operatively associated therewith; and

Figs. 2 and 3 are detail views of modified types of switches or circuit breakers.

An important feature of advantage of the improved switch is the ease with which it may be adapted to practically any type of installation. In Fig. 1, I show the switch operatively associated with an electrical circuit for dehydrating and air-conditioning apparatus such as that disclosed in my copending application above noted. This circuit includes a heating element 5, motor 6, snap switches 7 and 8, and line wires 9 and 10 connected to a source of current which may be either alternating or direct.

The switch proper comprises a coil 13 which is made up of the unconnected terminal extremities of positive and negative wires or conductors 13a and 13b, the latter comprising part of the switch circuit and being wound on a core or analogous support 14 in a manner such as to be relatively close but out of actual contact with one another and are either partially or wholly uninsulated. The core 14 may be one of the hanger rods for articles of clothing used in the drying compartment of the apparatus disclosed in my copending application above noted, or said core may be any other convenient frame or like part which will serve as a support for the coil 13.

A clamp member 15 is pivotally connected to a bracket 16 secured on the rod or core 14, said member preferably being provided with a series of perforations 15a.

The wires 13a and 13b may, if desired, be embedded in the core 14, and thereon a wet cloth or like article capable of absorbing moisture and indicated at 17 is applied and preferably clamped against the coil by means of the clamp 15.

A relay switch 11 is connected into the line 12b and is organized to close the main circuit when energized due to short-circuiting of wires 13a and 13b and to open said circuit when deenergized due to cessation of the short-circuiting action.

When alternating current is used a step-down transformer 12 is interposed in the switch circuit to reduce the voltage from the main circuit to a point commensurate with the capacity of the switch circuit obviously if direct current is used the transformer may be replaced by a suitable resistance.

An example of the operation of the improved switch is as follows:

Let it be assumed that the motor 6 is used to drive an air-circulating fan for a clothes drier and that the heating element 5 serves to heat the air circulating through the drying compartment and apparatus, and further, that the core or rod 14 is positioned in the said compartment. A wet cloth 17 or the like would be clamped on the coil 13 at the beginning of the drying operation, which cloth would short-circuit the terminal extremities of wires 13a and 13b, closing relay switch 11 and consequently the main circuit 9, 10. The cloth 17, being also subjected to the dehydrating action, gradually loses moisture until it reaches a point where the short-circuiting action ceases, whereupon the relay switch 11 is opened, in turn opening the main circuit and stopping motor 6 and cutting off current to the heating element 5. By regulating the amount of moisture content initially carried by the short-circuiting element or cloth 17, the operating time period may be varied as desired. It will be obvious that this could be done by varying the bulk or thickness of the cloth or analogous element so as to regulate its moisture-carrying capacity, or by using different kinds of material capable of absorbing and retaining varying quantities of moisture, and by other methods not here enumerated.

Fig. 2 shows a slight modification in the switch coil, which is indicated at 13'. In this instance a pair of looped strips of conducting material are embedded in the core 14, said strips being free

or unconnected at one end and at their opposite ends connecting with the switch circuit wires 13a, 13b. The operation is the same as in Fig. 1.

In Fig. 3, a further modification in structure is shown, the switch wire 13a connecting with the clamp 15 and the wire 13b with a plate or strip 13c of metal or other suitable conducting material. In this form of switch, the circuit is completed through the clamp bracket 15 until the element 17 becomes sufficiently dry to terminate the short-circuiting action.

Actual experience with the improved switch has demonstrated its practicability. It is simple in construction and operation and may be manufactured at a relatively low cost.

It will be understood that the switch circuit shown in the drawing has been adopted simply for the purposes of illustration and that in certain installations a separate transformer may not be required, and further, that the relay switch may be substituted by means which will perform the desired operation. Also, certain structural variations and modifications may be adopted in the actual switch construction within the scope of the invention as defined by the appended claims.

I claim:

1. In an electrical switch or circuit breaker, a switch circuit including electrical conductors having unconnected terminal extremities spaced such distance as to leave a reduced air gap therebetween, a clamp member, and an absorbent short-circuiting element adapted to be removably clamped against said conductor terminals by said member and temporarily bridge said gap, the circuit being broken through dehydration of said element.

2. In an electrical switch or circuit breaker, a support, a switch circuit including electrical conductors having unconnected terminal extremities arranged on said support in the form of a coil and spaced such distance as to leave a reduced air gap therebetween, an absorbent short-circuiting element for temporarily bridging said gap, the circuit being broken through dehydration of said element, and a clamp for removably holding the said element on said support.

3. In an electrical switch or circuit breaker, a support serving in effect as a core, a switch circuit including electrical conductors having unconnected and uninsulated terminal extremities arranged on said support in the form of a coil and spaced such distance as to leave a reduced air gap therebetween, a perforated clamp member, and a cloth or analogous moisture-absorbing element adapted to be clamped on said support by said member and temporarily bridge said gap, the circuit being broken thru dehydration of said element.

4. In an electrical switch or circuit breaker, a support serving in effect as a core, a switch circuit including electrical conductors, a clamp member associated with said support, one of said conductors being connected to said member and the other being arranged on said support, and a cloth or analogous moisture-absorbing element adapted to be clamped between said member and conductor and complete the circuit therethrough, the circuit being broken thru dehydration of said element.

5. In an electrical switch or circuit breaker, a support having electrical conductors thereon, a moisture-absorbent element draped on the support, and a clamp having electrical conductors separate from said first conductors for clamping the element on the support.

6. An electrical switch or circuit breaker particularly adapted for apparatus for drying clothing comprising a support on which an article of clothing may be hung, a switch circuit including electrical conductors having exposed unconnected terminal wires arranged on said support in the form of a coil, and a wet cloth or analogous article hung on said support, the circuit being broken through dehydration of said article.

GOTTFRID C. LAWSON.