June 21, 1955 H. MILKS 2,711,459

CIRCUIT CLOSER FOR FIRE ALARM SYSTEMS

Filed Aug. 10, 1953

Fig. 1.

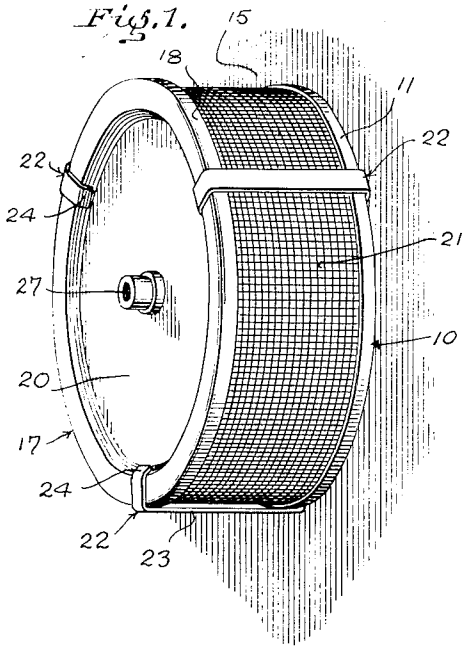


Fig. 2.

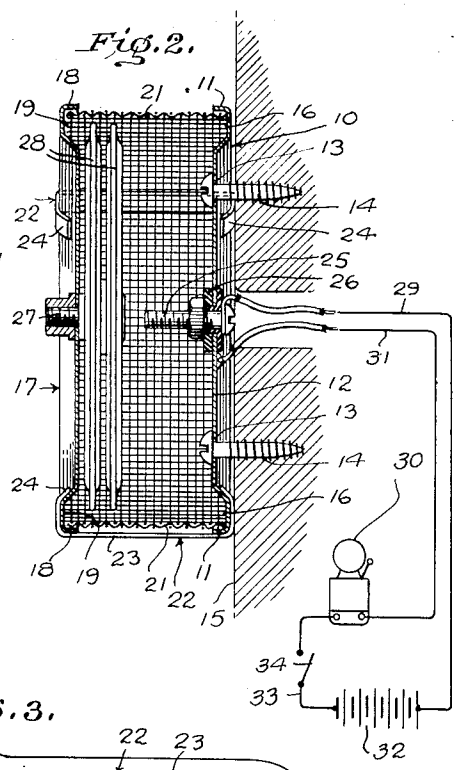
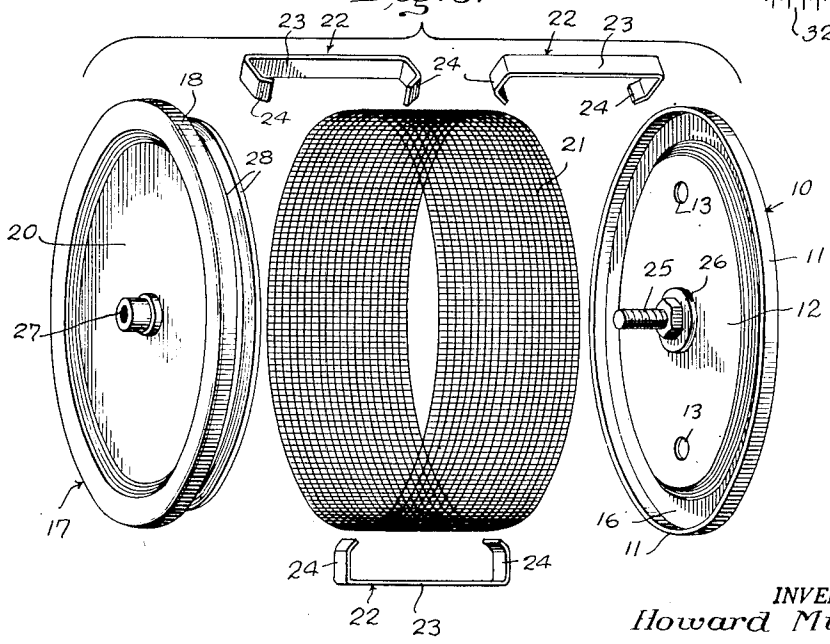


Fig. 3.



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CIRCUIT CLOSER FOR FIRE ALARM SYSTEMS

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4 Claims. (Cl. 200—140)

The present invention relates to a circuit closer for fire alarm systems and it consists in the combinations, constructions and arrangements of parts herein described and claimed.

Generally there is provided a very simple and inexpensive circuit closer used in conjunction with a battery or other source of electrical current and an alarm device such as a bell or siren and which acts to close a circuit including the source of current and the alarm when the temperature in a room reaches an excessive degree. The device consists essentially of an open-ended cylindrical screen which is mounted at each of its open ends in circumferential channels formed in a pair of end plates. The innermost of the two end plates is adapted to be attached to the wall of a room and is centrally provided with a fixed contact member while the outer of the end plates is provided upon its inner face with a pair of heat-expansible elements. A series of novel clips interconnect the end plates to hold the entire assembly together.

It is accordingly an object of the invention to provide a novel circuit closer for fire alarm systems.

Another object of the invention is to provide, in a device of the character set forth, a novel cylindrical screen forming a part of the invention.

Another object of the invention is to provide, in a a device of the character set forth, novel dished end plates forming parts of the invention.

A further object of the invention is to provide, in a device of the character set forth, novel clips forming a part of the invention.

A further object of the invention is to provide a device of the character set forth which is simple in construction, inexpensive to manufacture and yet effective and efficient in use.

Other and further objects of the invention will become apparent from a reading of the following specification taken in conjunction with the drawing, in which:

Figure 1 is a perspective view of an embodiment of the invention,

Figure 2 is a vertical sectional view, partly schematic, of the device illustrated in Figure 1, and

Figure 3 is an exploded perspective view of the device illustrated in Figures 1 and 2.

Referring more particularly to the drawing, there is shown therein a circuit closer of the character set forth comprising an inner circular end plate generally designated at 10 and which is provided with a forwardly extending flange 11 and a forwardly dished body 12 which is provided with a pair of diametrically disposed openings 13 for the reception therethrough of screws 14 whereby the same may be mounted, for example, upon a wall 15 or the like. It will be seen that a channel 16 is formed by the peripheral edge of the body 12 and the inner face of the flange 11. There is also provided an outer circular end plate which is generally designated at 17 and which is provided at its peripheral edge with a rearwardly

extending flange 18 which forms a channel 19 with a rearwardly dished circular body portion 20.

An open-ended cylindrical screen 21 has its edges positioned in the channels 16 and 19 and is held in a unitary manner with the end plates 10 and 17 by a series of clips each generally designated at 22. By reference to Figure 3 it will be seen that each of the clips 22 is composed of an elongated body 23 having integrally formed at each end thereof an inturned hook 24. It will be seen by reference to Figure 2, for example, that the hooks 24 engage over the rear faces of the channels 19 and 16 to hold the device in assembled condition.

Centrally extending through the plate 10 is a fixed contact member 25 which is held out of electrical contact with the plate 10 by suitable insulation indicated at 26. Affixed centrally upon the rearward face of the plate 17 by means of a screw 27 or the like is a pair of heat-expansible diaphragms 28 which are formed of any suitable metallic substance such as copper, for example. A wire 29 interconnects the contact member 25 with an alarm member 30 while a wire 31 interconnects the plate 10 with a battery 32, the battery 32 being, in turn, connected with the alarm 30 by a wire 33 having a switch 34 therein.

In operation, it will be apparent that the device may be quickly and easily assembled by placing the cylinder 21 in the grooves 16 and 19 of the plates 10 and 17, respectively, and thereafter mounting the clips 22 thereover in the manner above described, the plate 10 first having been affixed to the wall 15 by means of the screws 14. It will be apparent that when the temperature in a room reaches a predetermined level that the heat-expansible diaphragms 28 will have expanded until the same are in abutting contact with the fixed contact member 25 thus completing an electrical circuit including the fixed contact member 25, the wire 31, the battery 32, the wire 33 and switch 34 (assuming the latter to be in closed condition), the alarm 30, the wire 29, the plate 10, the cylinder 21 and clips 22, the plate 17 and the diaphragms 28. Upon the temperature again lowering itself to a normal figure, it will be apparent that the diaphragms 28 will contract thus bringing the same out of contact with the fixed member 25 and thus opening the aforesaid circuit. The switch 34 is provided for manually placing the device in operative or inoperative condition, as desired.

While I have herein described a specific form which the invention may take, it will be understood that changes and modifications may be made by those skilled in the art which still fall within the spirit and scope of the appended claims.

What is claimed is:

1. A device of the character described comprising an outer circular plate, an inner circular plate, an open-ended cylindrical screen interposed between said plates, a fixed electrical contact member carried by said inner plate and extending toward said outer plate, a heat-expansible element carried by said outer plate and adapted, when expanded, to abut said fixed contact member, and removable means interconnecting said plates and said cylinder, said means including a circular dished portion in each plate, said dished portions extending toward each other, a flange formed on the periphery of each plate, said flanges extending toward each other and forming channels with their respective dished portions, said channels each being adapted to receive therein one end of said cylinder, and a plurality of clips each interconnecting said plates.

2. A device as defined in claim 1 wherein each of said clips is provided with an elongated body portion and an integrally formed inturned hook at each end of said body, said hooks each adapted to encompass the rear face of a channel of one of said plates, and said body

portion adapted to extend longitudinally outwardly of said cylinder.

3. A device of the character described comprising a pair of circular end plates having at their peripheries annular flanges that are directed toward each other, an open-ended cylindrical screen interposed between said end plates and having the circular end portions thereof confined within the annular flanges of said plates, a fixed electrical contact carried by one of said end plates and positioned within said cylindrical screen, a heat-expansible element carried by the other of said end plates and also within said cylindrical screen, said heat-expansible element being adapted, when expanded, to abut said fixed contact, and a plurality of detachable members engaging both of said end plates and holding said plates against the ends of said cylindrical screen and thereby utilizing said screen as a spacer for positioning said fixed electrical contact relative to said heat-expansible element.

4. A device of the character described comprising a pair of circular end plates each having an annular recess

formed in its inner face adjacent its periphery, an open-ended cylindrical screen interposed between said end plates and having the circular end portions thereof received in the annular recesses in said plates, a fixed electrical contact carried by one of said end plates and positioned within said cylindrical screen, a heat-expansible element carried by the other of said end plates and also within said cylindrical screen, said heat-expansible element being adapted, when expanded, to abut said fixed contact, and a plurality of detachable members that hold said end plates against the ends of said cylindrical screen and thereby utiltize said screen as a spacer for positioning said fixed electrical contact relative to said heat-expansible element.

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