Nov. 21, 1933. M. M. BOURBON 1,935,611

OPEN CIRCUIT FIRE ALARM

Filed Sept. 8, 1931 2 Sheets-Sheet 1

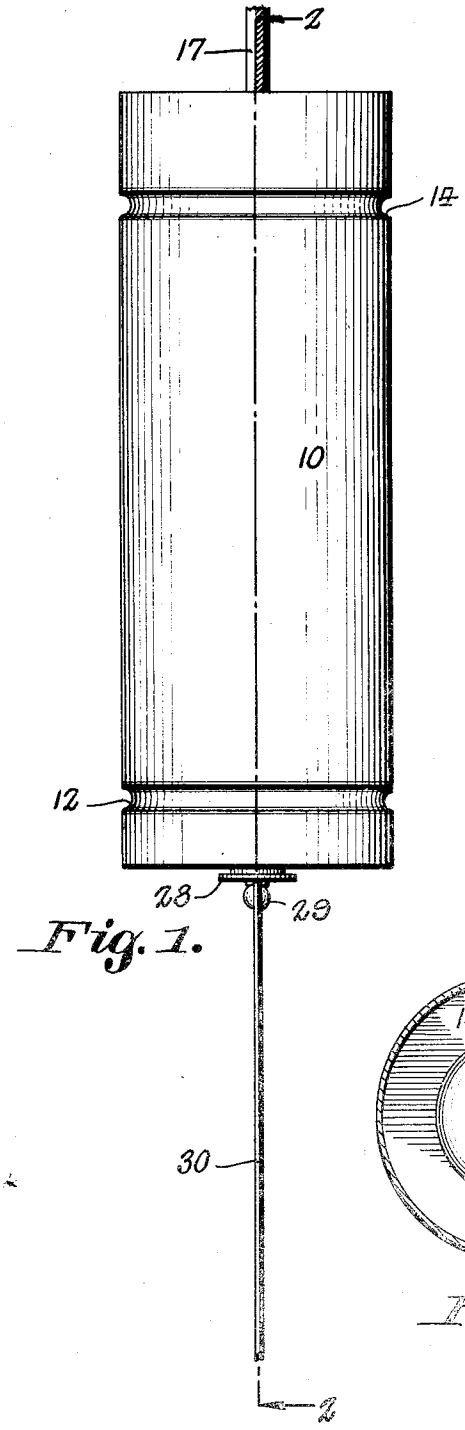


Fig. 1.

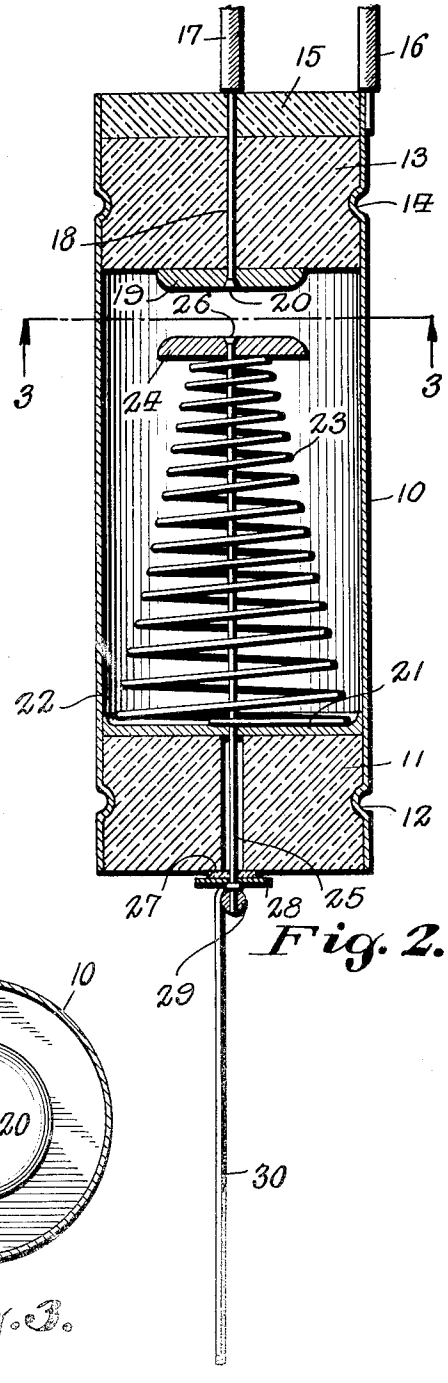


Fig. 2.

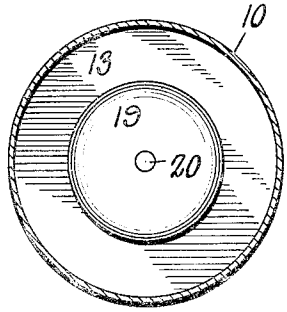


Fig. 3.

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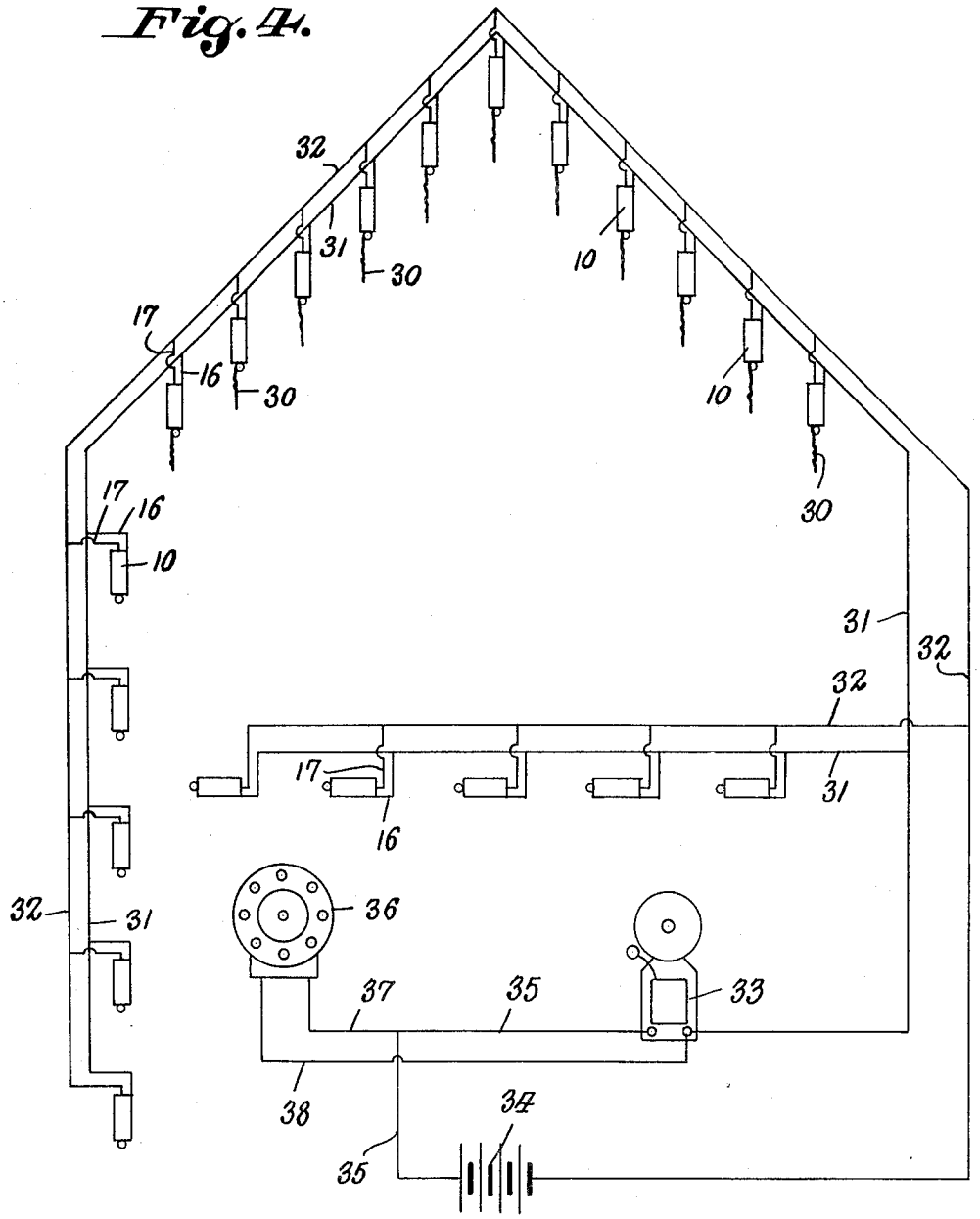
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Fig. 4.



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Patented Nov. 21, 1933 1,935,611

UNITED STATES PATENT OFFICE

1,935,611

OPEN CIRCUIT FIRE ALARM

Max M. Bourbon, Coeur d'Alene, Idaho

Application September 8, 1931. Serial No. 561,735

1 Claim. (Cl. 200—142)

The invention relates to fire alarm apparatus or systems and has for its object the provision of a novel apparatus embodying a series or plurality of normally open circuit closers adapted to be mounted near the roof, in the wall, between the floors or within the floors, in concealed mouldings in rooms, or in fact anywhere else where it is desirable to have circuit closers responsive to fire for closing an alarm circuit and giving a warning of conditions.

An important object of the invention is to provide a circuit closer for this purpose which will be very small and compact and which will moreover be damp-proof and waterproof, of such construction that it will not corrode and become useless after a period of time, and which is additionally of such formation and of such material that it cannot be eaten away by rats, or insects and be thereby rendered useless.

Another object is to provide a circuit closer for a fire alarm aparatus in which the working parts are held in place by a fusible element which need not be directly exposed to fire inasmuch as it is equipped with a priming streamer which will conduct the fire to the fusible elements for insuring release of the mechanism and closing of the circuit.

An additional object is to provide an apparatus of this character which will be extremely simple and inexpensive to manufacture, easy to install at any location, positive in action, efficient and durable in service, and a general improvement in the art.

With the above and other objects and advantages in view, the invention consists in the construction, arrangement and combination of parts to be hereinafter more fully described and claimed, and illustrated in the accompanying drawings, in which

Figure 1 is a side elevation of one of my circuit closers showing it considerably enlarged.

Figure 2 is a longitudinal section taken on the line 2—2 of Figure 1.

Figure 3 is a cross section taken on the line 3—3 of Figure 2, and

Figure 4 is a somewhat diagrammatic view illustrating a possible installation within a building to be protected.

Referring more particularly to the drawings, and particularly Figures 1 to 3, I have shown my novel circuit closer device as comprising an elongated and preferably cylindrical shell or casing 10, preferably of copper having one end closed by a porcelain plug 11 held in place by a crimp 12 in the casing, it being preferable that shellac be interposed between the exterior of the porcelain and the inside wall of the casing to exclude moisture. The other end of the casing is similarly closed by a porcelain plug 13 held in place by a crimp 14 with shellac interposed between the plug and the casing. However, the second mentioned or upper plug 13 does not come all the way to the end of the casing and the slight space which is left is preferably filled with sealing wax indicated at 15. One insulated wire 16 has its extremity bared and suitably riveted to the upper end of the casing 10. Another insulated wire 17 has its end portion bared and extended through the sealing wax 15 and plug 13 as shown at 18. Within the casing and located against the inner side or face of the porcelain plug 13 is a metallic contact 19 of suitable material, for instance brass, through which the wire 18 is passed, the extremity of the wire being upset as at 20 within a recess in the contact so as to provide a flush surface on the latter.

Located within the casing 10 upon the inner face or side of the porcelain plug 11 is a washer or disk 21, preferably of copper having its ends slightly flared as at 22 to insure a close fit within the casing. This washer or disk forms a seat for the larger end of a cone spring 23, preferably of brass, which supports a contact 24 similar to the contact 19. Extending through the center of the porcelain plug 11, the disk 21 and the spring 23 is a wire 25 which has one end extended through the contact 24 and upset within a recess therein as shown at 26 to provide a flush surface. Located against the outside or outer end of the porcelain plug 11 is sealing wax 27 against which is disposed a metallic washer 28 through which the wire 25 extends, the projecting end of the wire being provided with a suitably applied release tip 29 of some readily fusible material. It should of course be understood that the spring 23 is held under tension by the engagement of the tip 29 against the washer 28 so that upon removal or melting of this tip the spring 23 will be released so as to bring the contact 24 into engagement with the contact 19.

An important feature of the invention resides in the provision of a priming streamer cord 30 of readily inflammable material, this cord being attached to the wire 25 between the washer 28 and the tip 29 so as to conduct flame to the tip in the event of a fire and thereby insure melting of the tip.

In Figure 4 I have illustrated possibilities as to the use of my novel circuit closer. This figure indicates, roughly, a cross section through a

building and it will be observed that for instance at an attic ceiling any desired number of my circuit closers 10 may be simply suspended, by means of the wires 16 and 17, from conductors 31 and 32, the joints or splices being of course well insulated. Between the studding in the wall structure the devices 10 may be similarly mounted whereas between the floor and ceiling of the room beneath the devices would be supported horizontally by the simple expedient of laying them upon the laths holding the plaster of the room below. Furthermore it is readily apparent as indicated at the center part of Figure 4 that the circuit closers are well adapted for disposition in a horizontal position within a concealing moulding. This is particularly desirable for the interior of rooms. Where the devices are installed, for instance in an attic or other exposed place it is preferable that the priming streamers 30 be provided and they are so shown at the upper part of Figure 4.

The electrical system involved is very simple as the conductors 31 and 32, regardless of how many are used in the complete installation are connected respectively with a signal bell 33 which may be located at an engine house or any place else, and with a source of current 34, it being of course understood that a bell transformer or the like may be used in place of a battery. The other terminal of the battery is connected by a conductor 35 with the remaining terminal of the electric bell and it may also be preferable to provide an electrically operated siren 36 which may be located at any desired place and which is connected in parallel with the signal bell by conductors 37 and 38.

In the operation it is of course apparent that in the event of a fire the fusible tips of one or more of the circuit closers will melt, releasing the wire 25 and permitting the spring 23 to bring the contact 24 into engagement with the contact 19, thereby closing the circuit through the signal bell and the siren and giving an alarm that there is a fire. Obviously where the priming streamers 30 are used it is not necessary for the fire itself to reach the fusible tips 29 as these streamers will conduct the flame to the tips and insure melting thereof.

From the foregoing description and a study of the drawings it will be apparent that I have thus provided a very simple fire alarm system embodying novel and simple circuit closers having all the advantages pointed out and which will efficiently perform their function. It is believed that the construction, operation and advantages will be readily apparent to one skilled in the art without further explanation.

While I have shown and described the preferred embodiment of the invention, it should be understood that I reserve the right to make all such changes in the arrangement, combination of parts and the details of construction as will not depart from the spirit of the invention or the scope of the subjoined claim.

Having thus described the invention I claim:

A circuit closing switch of the character described comprising an elongated cylindrical casing of conducting material, plugs of insulating material fitting within and closing the ends of the casing, said plugs having peripheral grooves and the casing having inwardly extending beads fitting within said grooves for maintaining the assembled relation, a conductor electrically and mechanically connected with the casing, a contact on the inner face of one plug, a conductor connected with said contact and extending through the adjacent plug, a movable contact located within the casing, a rod secured to said movable contact and extending axially through and beyond the other plug, a spring located within the casing in electrical contact therewith and engaging against said movable contact and tending to urge the same toward the first named contact, a stop washer on the outer end of the second named plug and through which said rod extends, and a fusible metallic tip on the projecting end of the rod engaging against said washer for holding said spring under compression.

MAX M. BOURBON.