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2,420,481

FUSIBLE FIRE ALARM

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Fig. 1.

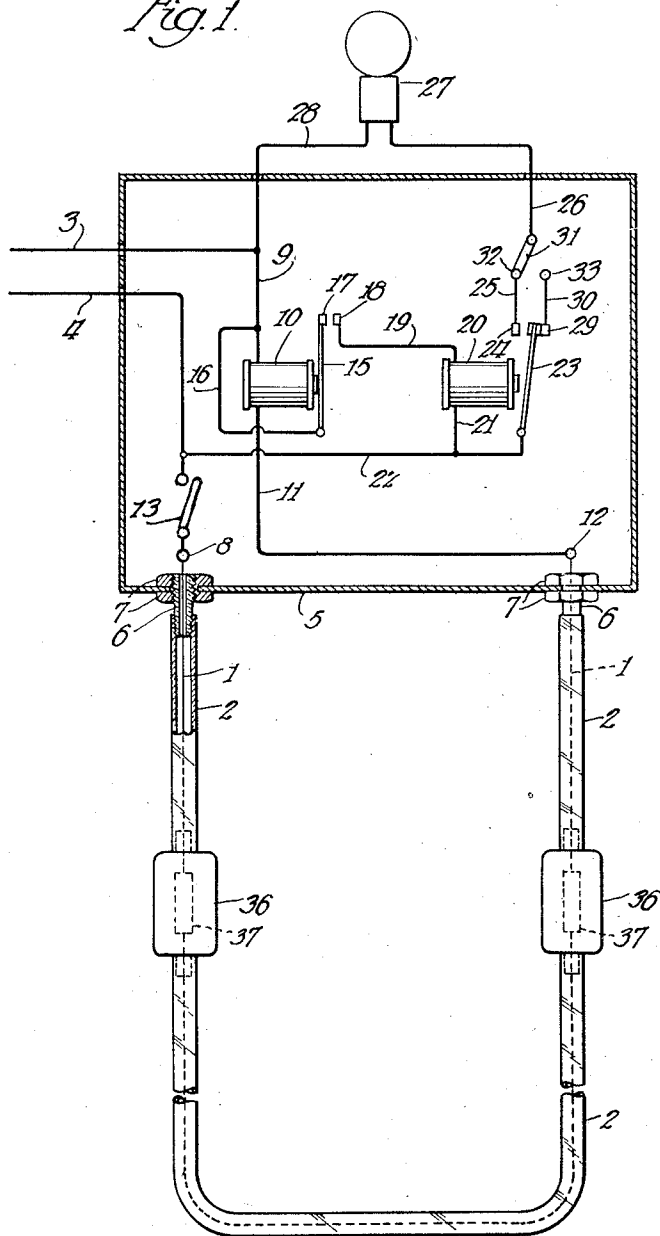
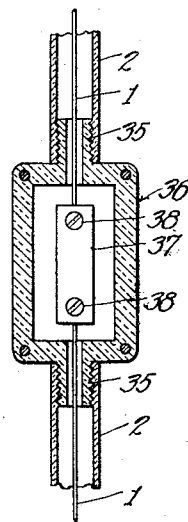


Fig. 2



Witness:
U. Siljander

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UNITED STATES PATENT OFFICE

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FUSIBLE FIRE ALARM

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3 Claims. (Cl. 200—143)

1

Our invention relates to an alarm or signal apparatus, particularly a fire alarm apparatus.

The invention has among its objects the production of a simple, inexpensive, reliable, dependable and efficient device for giving an alarm either audible or visible, or both, in the event of the rise of temperature above a predetermined degree in the vicinity of the apparatus.

More particularly it relates to an apparatus that will be operable to control an alarm device upon the rise in temperature in the protected premises above a predetermined degree, which system and apparatus may be quickly repaired and restored to service after it has been called upon to perform its function. The same is not affected by dampness, weather conditions, normal changes of temperature, gases or fumes, and is not easily injured or rendered inoperative, and not subject to deterioration or affected by vibration.

The apparatus requires a minimum of repairs and services, may be easily and readily tested, and in the event of its functioning, may be readily restored to service to afford the protection required.

Many other objects and advantages of the construction herein shown and described will be obvious to those skilled in the art from the disclosure herein given.

To this end, our invention consists in the novel construction, arrangement and combination of parts herein shown and described, and more particularly pointed out in the claims.

In the drawings, wherein like reference characters indicate like or corresponding parts:

Fig. 1 is a plan view of the apparatus, a portion of the same being shown diagrammatically; and

Fig. 2 illustrates a simple coupling device which may be inserted at any point where it is desired to splice the conduit and conductor wherever required and also to restore service after it has been disarranged.

As shown in Fig. 1, 1 represents a fusible electrical conductor wire of a material which will fuse and fracture at a predetermined temperature. That is to say, a fusible wire of such alloy that it will fuse at the temperature for which it is desired. The same may be produced in the well known manner to be suitable for any temperature. This fusible wire preferably extends continuously about the space to be protected and is arranged in a tube or conduit 2 of plastic composition which also may be of a composition that will fuse and become destroyed at

2

a predetermined desired temperature. In the embodiment of the invention shown, the tubing extends to a box or cabinet 5 generally made of metal and is connected to a wall of the box by fittings or couplings 6 secured to the tubing and to the box 5 by means of nuts 7 or any equivalents. As shown, the fusible wire 1 extends through the wall of the box and may be secured to binding posts as indicated at 8 and 12. Leading into the box are wires 3 and 4 providing a source of uninterrupted electrical current. In the particular wiring diagram shown, the conductor 4 extends to the binding post 8 through a suitable switch 13.

There is provided a closed circuit relay 10 to which extends the conductor 3 and the conductor 11 from the binding post 12. When the circuit through the fusible wire 1 is not broken, the circuit controls the relay 10 to maintain the arm 15 out of engagement with the contact 19. The conductor 3 is shown connected by the lead 16 to the pivoted arm 15. There is also provided a relay 20 which is in a normally open circuit. As shown, there is provided a contact 18 for cooperation with a contact 17 on arm 15 when the relay 10 has been deenergized. Relay 20 is also connected by conductors 21, 22 to the conductor 4. There is provided an arm 23 for the relay 20 arranged to cooperate and contact with the contact member 24 when the relay 20 is energized. Contact 24 is connected to an alarm device, as for example a bell 27, by means of conductors 25, 26, the conductor 23 connecting the alarm device with the conductor 3. We have provided a two-way switch 31 arranged to contact member 32 or contact member 33 which is connected by means of conductor 30 with a contact 29. The switch 31 is provided in the alarm circuit through 23—26 so that the alarm device may be shut off while repairs are being made.

In the event the tube 2 and the fusible wire 1 are destroyed at any point due to heat or rise in temperature, we provide a covered splicing box shown in Fig. 2, in which 36 represents the box to which may be secured to the adjacent severed ends of the tubing and fusible wire, the same being provided with a conductor 37 having binding posts 38. In applying the splicing box, the couplings 35 are inserted in the tube 2 and the ends of the fusible wire 1 connected to the binding posts 38, restoring the circuit. Similar splicing boxes may be provided wherever it is necessary to splice adjacent ends of the fusible wire.

Normally in the closed circuit the same extends through conductor 4, switch 13, binding post 8 and fusible wire 1 throughout the circuit or premises, binding post 12, relay 19, conductor 9 to conductor 2. This energizes the relay 19, maintaining the arm 15 out of contact with contact 18, as shown in Fig. 1. Should the circuit through the fusible wire 1 be broken, the relay 19 is deenergized and the control circuit is then closed between the contacts 17 and 18, and the relay 29 is energized, drawing the arm 23 to bring its contact in engagement with the contact 24. The alarm circuit is then, through conductors 4, 22, arm 23, contact 24, conductor 25, switch 31, conductor 26, alarm 27 and conductor 28 to conductor 3, causing the bell or other alarm device 27 to operate. The same would continue to operate until the switch 31 is moved to contact with contact 33, the arm 23, however, being maintained in operative position to give the alarm when the circuit is restored. The ends of the tube and fusible wire may then be spliced, and as soon as the repair is made the circuit through 26—23 will be restored and the alarm will operate, whereupon the switch 31 is moved to the position shown in Fig. 1 and the alarm is discontinued. The apparatus is now restored until an emergency calls for another alarm. The provision of the switch 13 is to enable the circuit to be tested from time to time to see that the relays and the alarm device are operating.

Having described our invention, it is obvious that various immaterial modifications may be made in the same without departing from the spirit of our invention; hence we do not wish to be understood as limiting ourselves to the exact form, construction, arrangement and combination of parts herein shown and described, or uses mentioned.

What we claim as new and desire to secure by Letters Patent is:

1. In a fire alarm system, several lengths of fusible electrical conductors electrically connected together by connectors to form a continuous electrical conductor adapted to extend through a protected premises, said lengths of electrical conductors each having a fusible tube thereon composed of fusible non-conducting material, and enclosures for said connectors one at each

connector and secured to the adjacent ends of the tubes, said continuous electrical conductor forming part of a relay circuit for controlling an alarm.

2. In a fire alarm system, several lengths of fusible electrical conductors spliced together to form a continuous electrical conductor adapted to extend through a protected premises, said lengths of the electrical conductors each having a fusible tube thereon composed of fusible plastic material, and enclosures one at each splice and secured to the adjacent ends of the tubes, said continuous electrical conductor forming part of a relay circuit for controlling an alarm.

3. In an alarm system, several lengths of fusible electrical conductors, splices of conducting material joining adjacent ends of the conductors, fusible tubes of non-conducting plastic material enclosing said conductors, and enclosures enclosing said splices and secured to the adjacent ends of the fusible tubes, said spliced electrical conductors being adapted to extend through a protected premises and forming part of a circuit for controlling an alarm.

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