Sept. 29, 1959 J. C. HOLLINGSWORTH 2,907,014

FIRE ALARM

Filed April 27, 1955

Fig. 5

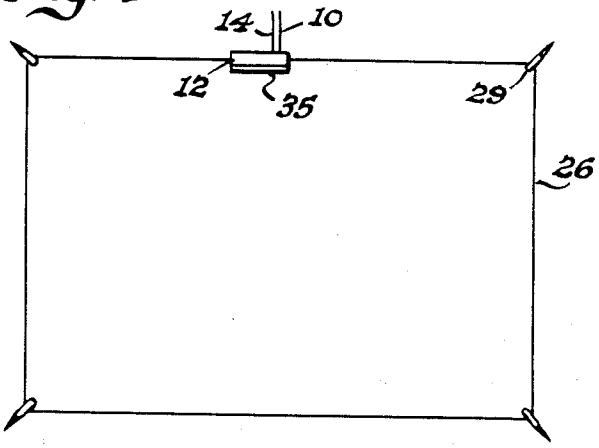


Fig. 2

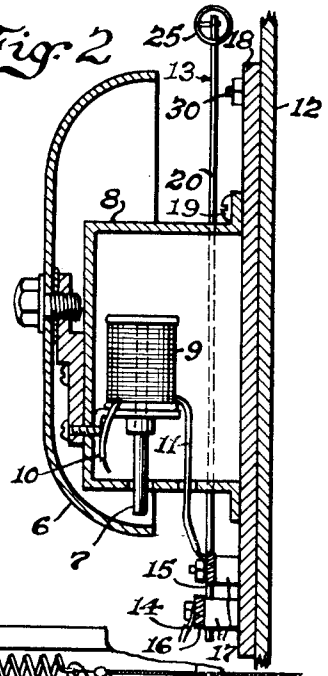


Fig. 1

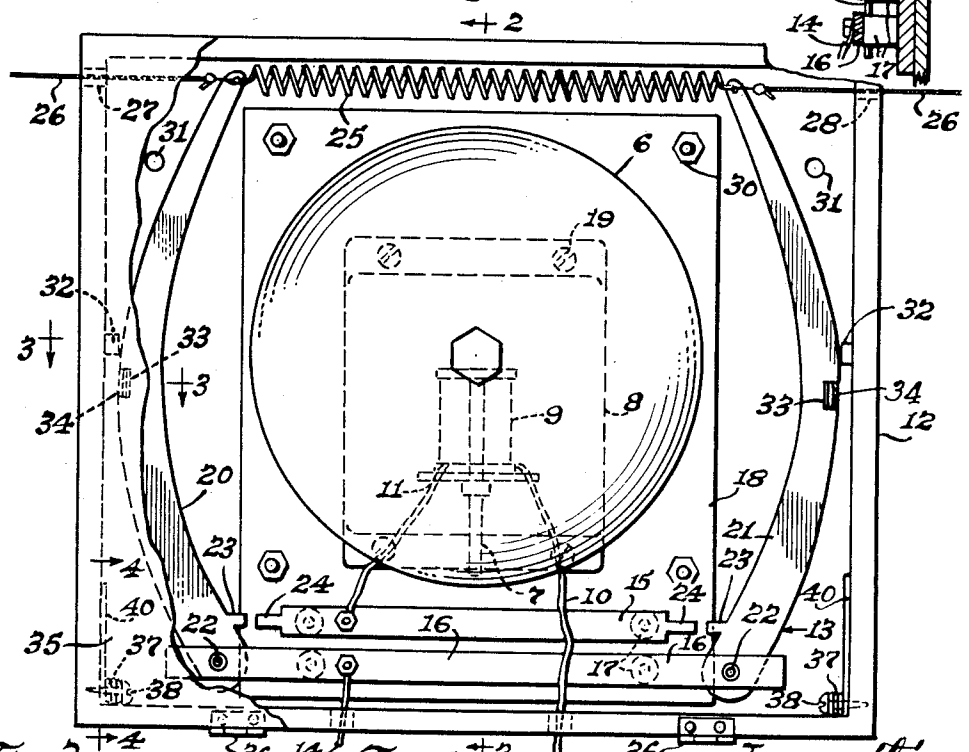


Fig. 3

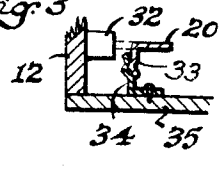
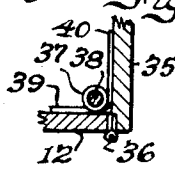


Fig. 4



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FIRE ALARM

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Application April 27, 1955, Serial No. 504,152

1 Claim. (Cl. 340—232)

This invention relates to a new and improved fire alarm.

The principal object of my invention is to provide a fire alarm of simple, practical and economical design, and one that is so constructed that it is certain to operate instantly in the event of fire in the particular room or hallway or other area in a building in which the alarm is installed for fire protection.

A salient feature of the present invention is the employment of a flexible string or cord extending all around a room or all around a hallway or other area in a building, the string or cord being carried on suitable guides on the walls and maintained under tension by a spring that is stretched between the adjoining ends thereof at the alarm box, where a pair of contact arms also connected with the opposite ends of the spring are held by the string out of engagement with fixed contacts only so long as the string remains intact, the spring serving to draw the arms together and close the contacts instantly when the string burns and breaks, whereby to sound the alarm.

Another feature is the provision on the alarm box of a hinged door that has spring means tending to throw it open, the door being releasably latched in closed position by engagement of catches with keepers on the aforementioned contact arms, so that the door will be automatically released at the same time that the alarm is sounded, the contact arms at that time being drawn toward each other by the tension spring and being thereby also disconnected from the spring-pressed door so that the door swings open.

The invention is illustrated in the accompanying drawing, in which—

Fig. 1 is a front view of the fire alarm box showing the cover in closed position but broken away to disclose the alarm mechanism inside the box and the improvements added in accordance with my invention;

Fig. 2 is a section on the line 2—2 of Fig. 1;

Figs. 3 and 4 are sectional details on lines 3—3 and 4—4 of Fig. 1, and

Fig. 5 is a plan view of a typical installation of my improved fire alarm.

The same reference numerals are applied to corresponding parts throughout the views.

Referring first to Fig. 2, the alarm bell 6 and striker 7 are similar to what are disclosed in Edwards Patent No. 2,041,995, the bell being mounted in any suitable way upon a hollow casing 8 which is to a large extent received within the hollow of the bell itself for compactness of construction. Within the casing 8 is mounted the striker mechanism consisting of a solenoid 9 for which the striker 7 serves as an armature so that when the winding of the solenoid is energized from a suitable circuit the striker 7 is reciprocated rapidly and sounds the bell. The winding of the solenoid 9 has terminal conductors 10 and 11 which extend from the casing 8, conductor 10 extending out of the alarm box 12 in which

the alarm bell is housed, as appears in Fig. 1, and conductor 11 extending only to one side of the switch 13, another conductor 14 extending from the other side of the switch out of the alarm box. Conductors 10 and 14 may be connected in any suitable way with a source of electric current supply.

Switch 13 comprises two spaced parallel metallic bars 15 and 16 mounted in insulated relationship to one another by means of insulators 17 on the same panel 18 onto which the bell supporting casing 8 is fastened, as by screws 19. The lower bar 16 has a pair of arms 20 and 21 pivoted on its opposite ends, as indicated at 22, and these arms have projections 23 on their pivoted end portions serving as contacts arranged to engage other contact projections 24 provided on the adjacent ends of the upper bar 15. A coiled tension spring 25 is stretched between the free upper ends of the arms 20—21 and tends normally to close the contacts just mentioned, so as to sound the alarm bell 6, and that is what occurs when the string or cord 26 burns and breaks.

The string or cord 26 is attached at its one end to the upper end of arm 20 and extends through an opening 27 in one side wall of the box 12 and is strung along the walls completely around the entire room, hallway, or other area in the building and back to the other side of the box 12, where it extends through another opening 28 and is attached to the upper end of the arm 21. Suitable guides, such as eyelets 29, may be provided at spaced intervals and especially at the corners of the room for low friction support of the string, and, of course, the string must be drawn up reasonably taut before it is attached to the second arm 21, and the spring 25 must also be stretched enough to maintain the string under tension. The panel 18 previously mentioned is suitably secured to the back wall of box 12, as indicated at 30, and the back wall has holes 31 therein through which screws or bolts may be entered to fasten the box to the wall of the room, wherever the alarm is being installed. Projections 32 on the inside of the side walls of the box limit the outward movement of the arms 20 and 21 and serve to insure proper registration of keeper projections 33 on the arms with spring catch projections 34 provided on the inner side of a door 35 hinged as at 36 to the bottom wall of the box and serving to close the box and conceal the alarm bell 6 and automatic switch 13. One or two grasshopper type torsion springs 37 are provided tending to throw the door open, each of these having its coiled portion mounted on a screw 38 entered in the side wall of the box, as shown, while the arm 39 on one end of the spring bears against the bottom of the box and the arm 40 provided by the other end of the spring bears against the inner side of the door. Hence, when the string 26 burns and breaks, not only is the alarm bell sounded by virtue of the arms 20—21 closing contacts under action of spring 25, but the door 35 is also thrown open by springs 37 at the same time when the arms 20—21 are drawn toward one another and away from the catches 34.

In operation, the string or cord 26 is located usually adjacent the picture molding so it will not show and so that there is nothing to interfere with extending it over one or more doorways. The alarm box 12 is preferably located over a doorway so that the bell will be heard more readily in other parts of the building when the alarm is sounded. The string 26 is selected for its quick charring and burning and may also be impregnated to hasten combustion so that a fire will not get started too well before the heat causes the string to burn and break, sounding the alarm. The automatic opening of the door 35 is advantageous because the mechanism in the box is thereby concealed and protected up to the time

the alarm is operated, and, when that occurs, the open door allows the alarm bell to be heard more readily.

While I have shown a single string extending from its connection with one arm all around the room and back to the box for connection with the other arm it should be clear that two strings can be used, each string holding the one arm to which it is attached in retracted position against the pull of the spring **25** and being anchored at its far end in any suitable way, as for example, to one of the eyelets **29**. In that event, the burning and breaking of either string would still result in the sounding of the alarm because the arm **20** or **21** connected with that string would be released to close the contacts **23** and **24**, even though the other arm was not released.

It is believed the foregoing description conveys a good understanding of the objects and advantages of my invention. The appended claim has been drawn to cover all legitimate modifications and adaptations.

I claim:

A fire alarm device of the character described comprising an open front housing having a vertical back wall, spaced vertical side walls and a horizontal bottom wall, an alarm bell unit mounted in said housing on the back wall and including electromagnetic means for actuation of a reciprocable striker for sounding the bell when the circuit is completed through said electromagnetic means, spaced parallel conductor bars mounted in electrically insulated relation to said housing on the back wall thereof in transverse relationship to the bottom portion of said housing, arms pivotally mounted on the opposite ends of one of said bars and extending upwardly in the opposite side portions of said housing on opposite sides of the alarm bell unit, a tension spring interconnecting the upper ends of said arms tending normally to move the same inwardly toward one another into contact with the opposite ends of the other of said bars so as to complete the electrical circuit through said electromagnetic means and sound the bell, strings of readily combustible material attached to the upper ends of said arms and extending freely from opposite sides of the housing into a room or the like to be protected from fire, said strings being suitably secured holding the arms in retracted position against the action of said spring and being thereby also maintained under tension, a door vertically disposed closing the open front of said housing and hinged to the bottom wall thereof, spring means urging said door normally toward opened position, and interengaging catch means on the opposite side portions of said door and said arms holding the door releasably in closed position until the arms swing inwardly under action of their tension spring to release said door.

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