Oct. 9, 1951 M. LEVY 2,570,823

AUTOMATIC AND MANUALLY OPERATED
FIRE ALARM SIGNAL STATION

Filed Dec. 12, 1950 2 Sheets-Sheet 1

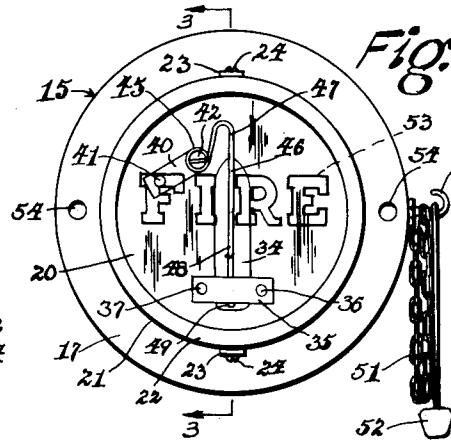


Fig. 1.

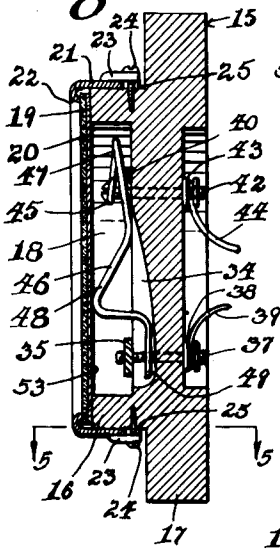


Fig. 3.

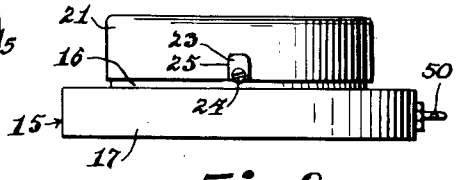


Fig. 2.

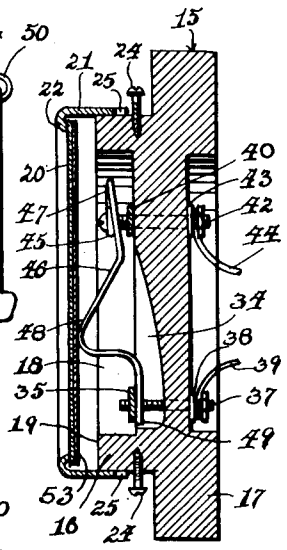


Fig. 4.

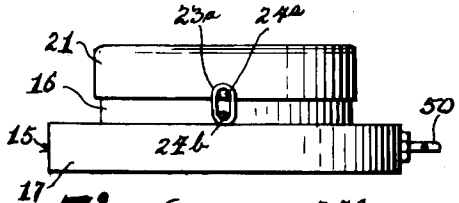


Fig. 6.

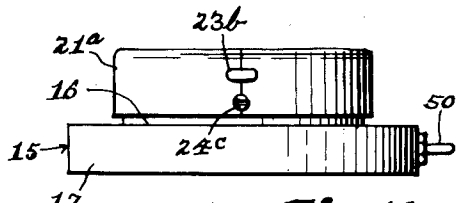


Fig. 7.

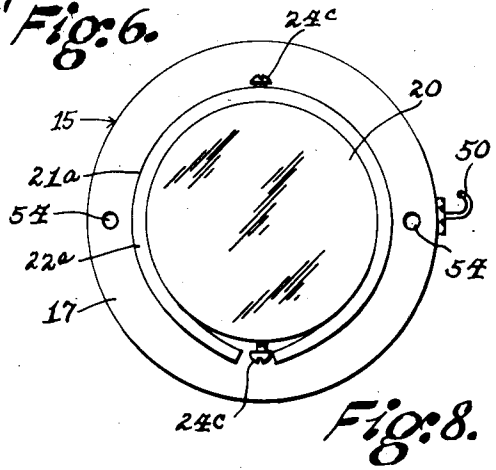


Fig. 8.

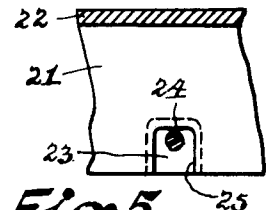


Fig. 5.

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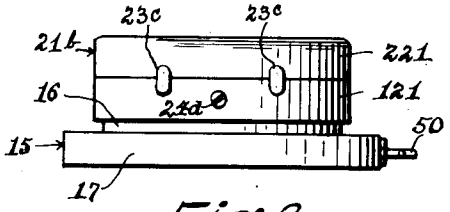


Fig. 9.

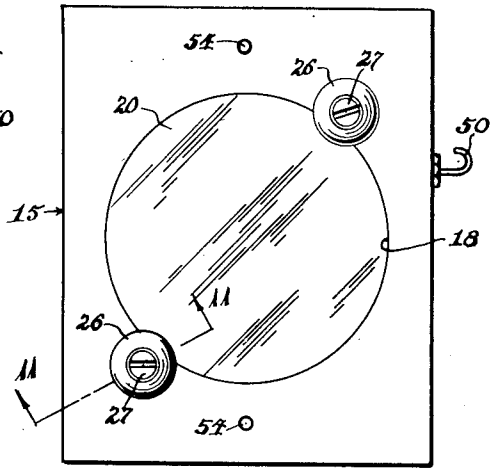
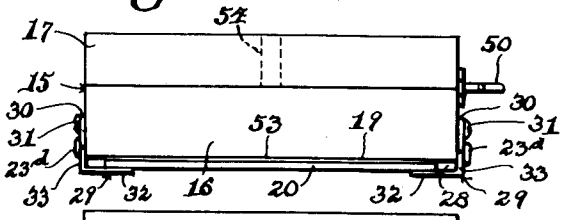


Fig. 10

Fig. 12.



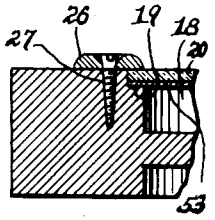


Fig. 11

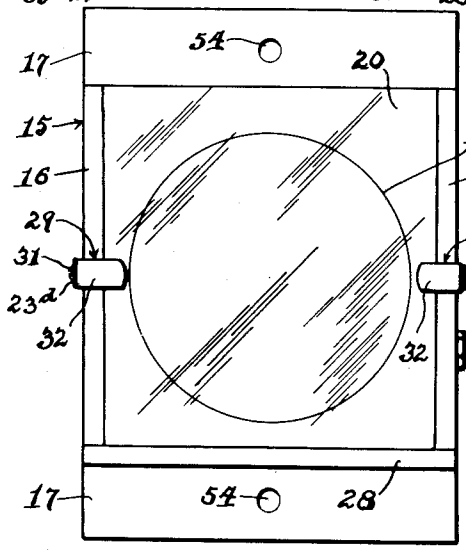


Fig. 13.

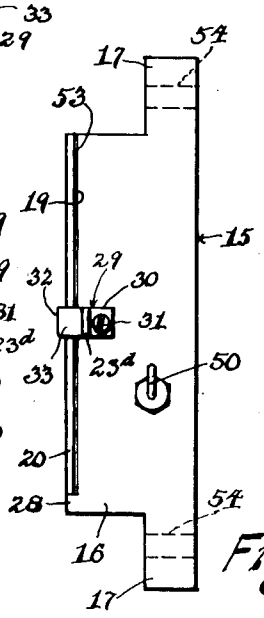


Fig. 14.

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AUTOMATIC AND MANUALLY OPERATED FIRE ALARM SIGNAL STATION

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Application December 12, 1950, Serial No. 200,373

10 Claims. (Cl. 200—142)

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My invention relates to new and useful automatic and manually operated fire alarm stations and, particularly, embodies improvements on the fire alarm signal stations disclosed in my copending patent application Serial No. 147,782, filed March 6, 1950, which has issued as Patent No. 2,545,854, dated March 21, 1951.

One of the objects of the present invention is to produce a fire alarm station including a support for a resilient circuit closer or switch which is normally maintained in an inoperative condition by a fragile and breakable panel held in place by apparatus including fusible means whereby the switch may be released due to the presence of excessive heat in the vicinity of said station when no one is present to break the fragile panel.

Another object of this invention is to produce a fire alarm station of the character mentioned wherein the fragile panel is maintained in place by a ring that, in turn, is normally held in panel holding condition by fusible means.

Another object of the invention is to produce a fire alarm station including a panel holding ring that is releasably held in place by fusible means.

Another object of the invention is to produce a fire alarm station including a sectional ring for holding a fragile panel, which sectional ring is normally held together by fusible means.

A further object of the present invention is to produce a fire alarm station wherein the fragile panel is normally held in place by a fusible element.

A still further object of this invention is to produce a fire alarm station of the kind herein described wherein a switch controlling fragile panel is normally held in place by angle arms including fusible elements.

With the above and other objects in view this invention consists of the details of construction and combination of elements hereinafter set forth and then designated by the claims.

In order that those skilled in the art to which this invention appertains may understand how to make and use the same I will describe several forms in detail referring by numerals to the accompanying drawings forming a part hereof, in which:

Fig. 1 is a front view of one type of automatic and manually operated fire alarm signal station constructed in accordance with my present invention.

Fig. 2 is an edge view thereof looking at the bottom of Fig. 1.

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Fig. 3 is an enlarged sectional view of the same on the line 3—3 of Fig. 1 with the resilient switch arm shown depressed by the fragile panel which is illustrated as held in a retracted position by apparatus including fusible means.

Fig. 4 is a similar view showing the parts released as when the fusible means melts and causing the switch to close.

Fig. 5 is a further enlarged fragmentary section on the line 5—5 of Fig. 3 illustrating one way of assembling the fusible means on a panel holding ring.

Fig. 6 is an edge view of a fire alarm station showing another form of fusible means.

Fig. 7 is a similar view of the station illustrating a laterally split panel holding ring in normal fastened position.

Fig. 8 is a plan view thereof after the fusible means has melted to release the ring after which it springs open.

Fig. 9 is an edge view of the fire station provided with an annually split sectional ring.

Fig. 10 is a plan or face view of a modification illustrating the fusible means as of washer or screw head formation.

Fig. 11 is an enlarged fragmentary detail sectional view on the line 11—11 of Fig. 10.

Fig. 12 an upper edge view of a still further modification form of the invention.

Fig. 13 is a face or plan view thereof, and Fig. 14 is a side edge view of the same.

In carrying out my invention as herein embodied 15 represents a body of suitable size and any desirable shape, preferably, either rectangular or round in plan. The body may be a plain symmetrical block, as shown in Figs. 10 and 11 or may include a waist portion 16 and a lip portion or portions 17 as depicted in the other illustrations, and the lip portion may extend all the way around the waist, Figs. 1 to 9, inclusive, or merely project from a plurality of locations, Figs. 12, 13 and 14.

In the front face of the body is formed a chamber 18 and the surface of said front face surrounding said chamber may constitute the seat 19, Figs. 1–9 and 12–14, for the fragile panel 20, such as glass, or said seat may comprise a recessed shoulder, Figs. 10 and 11. The recessed shoulder seat is approximately the depth of the thickness of the fragile panel 20.

The means for normally holding the fragile panel in place as shown in Figs. 1 to 6 includes an integral ring 21 provided with an inturned flange 22 to engage the outer face of said panel as the ring proper is telescoped over a portion

of the body. As illustrated in Figs. 1–5 fusible means 23 is directly united to the ring annulus at a plurality of locations whereby a fastening device 24, such as a screw, may be projected through each of said fusible means and be connected to the body 15 of the station for attaching the ring to said body with the fragile panel on its seat, Fig. 3. Where the fusible means does not project beyond the inner edge of the ring, portions of the latter are cut out to provide notches 25 open at the inner edge of said ring and the fusible means bridges each of said notches. When the fusible means melts the entire ring and the fragile panel will be released.

As shown in Fig. 6 the fusible means 23*a* comprises a loop or link of fusible wire to be slipped over fastening devices 24*a* and 24*b* on the ring 21 and body 15, respectively.

The structure illustrated in Figs. 7 and 8 includes the split resilient ring 21*a* with the inturned flange 22*a* that is severed on a generally longitudinal line, either straight or diagonal, and the meeting ends are held in abutting relation by the fusible means 23*b* united directly to the ring material and bridging the slit. This ring 21*a* is normally held in place on the station body 15 by fastening devices 24*c* projected through holes in the annulus portion of said ring and the hole at the meeting ends is formed by coinciding notches in said meeting ends so that the latter may separate when released as shown in Fig. 8.

In Fig. 9 I have depicted a sectional ring 21*b* split annularly to provide an inner annulus 121 and an outer annulus 221 with an inturned flange similar to that shown in Figs. 3 and 4. The inner edge of the outer annulus 221 meets the outer edge of the inner annulus 121 and are fastened together at a plurality of locations by fusible means 23*c* bridging the joint between the two sections or annulae. This sectional ring is assembled like those previously described to normally retain the fragile panel in place and said ring 21*c* is secured to the body 15 by fastening devices 24*d* projected through the inner annulus or section 121 and into said body 15. Whenever the fusible means is melted the outer annulus 221 with its flange and the fragile panel will be released from the inner annulus or section 121 which will remain attached to the body 15. The panel holding means of Figs. 10 and 11 includes a plurality of washers or screw heads 226, of fusible material, for the screws 27. The washers or screw haeds are large enough for the perimeters thereof to overlap the edge of the fragile panel while the screws are disposed beyond the boundary of the panel and projected into the body 15 of the station. In this type of invention when the fusible means melts, the fragile panel will be released from the station body.

In the type of device shown in Figs. 12–14 the fragile panel 20 rests on the front face of the station body functioning as a seat and to prevent said panel from accidentally slipping out of place at the lower end of said body a suitable stop 28 is provided and, only for purposes of illustration, this stop is depicted as a rib projecting from the station body, particularly the waist portion 16 thereof, to provide a shoulder against which an edge of the panel rests.

With this type of the device, the fragile panel 20 is releasably held in place by sectional angle arms 29. Each arm comprises a shank 30, secured to a side of the station body by a fastening means 31, and a finger 32 having a branch 33 at right angles to said finger and arranged in endwise abutting relation to the shank 30 to which it is attached by the fusible means 23*d*. Whenever the fusible means 23*d* melts the fingers 32 will separate from the shanks 30 to release the fragile panel while said shanks remain attached to the station body.

An electric switch is mounted in the body chamber 18 and includes a resilient movable contact member or arm which is held in an open or retracted position by the fragile panel and will be released when said panel is either broken or detached from the station body to permit said resilient contact member or arm to close an alarm circuit.

For purposes of illustration I will describe in some detail the structure disclosed in the aforementioned copending patent application, now Patent No. 2,545,854, with particular attention directed to the switch mechanism. A cavity 34 is formed in the bottom of the body chamber 18 and this cavity is bridged by a stationary contact member 35 preferably in the form of a plate of good electric conductivity securely and positively fastened in place by screws 36 and 37 projected through the back of the body and threaded into stationary contact member to hold it fast against the bottom of the chamber 6. The screw 37 is of sufficient length to accommodate a washer 38 and a conductor 39 of an electric alarm system including a signal means, such as a bell.

On the bottom of the chamber 18 is mounted an anchor plate 40 which is secured in place by screws 41 and 42 projected through the back of the body and threaded into the anchor plate 40 and one of said screws, as 42, is long enough to accommodate a washer 43 and a conductor 44 of the electric alarm system as well as the eye 45, of the stiff, strong, single strand spring wire movable contact member or arm 46.

The movable contact member 26, as stated above, is formed from strong spring wire fashioned to provide the eye 45 at one end from which the wire extends outwardly and then bent back as a U-shaped loop 47 to one side of said eye with the branches of said loop in the same plane as the coil of the eye. From the U-shaped loop the wire is bent outward and then inward to provide an elbow 48, the legs of which diverge, and finally the free end of said wire is bent to lie in a plane parallel with the plane of the branches of the U-shaped loop 47 to form the contact terminal 49.

The movable contact member 46 is fastened to the anchor plate 40 by the screw 42 with the contact terminal end 49 projecting into the cavity 34 and in back of the stationary contact member 35. The cavity 34 is of sufficient depth to allow a limited oscillatory movement of the contact terminal end of the movable contact member 46 whereby said end may be moved out of engagement with the stationary contact member 35 under certain conditions. Also, the elbow 48 is of such dimensions that when the contact terminal end 49 of the movable contact member is in engagement with the under side of the stationary contact member 35 said elbow 48 projects outside of the plane of the seat 19, Fig. 4. Therefore, when the elbow is in or inside of the plane of the seat, as when retracted by the panel 20 resting on said seat 19, the contact terminal end 49 will be out of engagement with the stationary contact member 35, Fig. 3.

For convenience, a hook **50** may be fastened to the body **15**, as at one side thereof, and one end of a flexible means **51**, such as a chain, also secured to said body **15**, as by the hook, and to the free end of said flexible means is attached a hammer member **52**, ordinarily suspended from the hook and used for breaking the fragile panel **20**.

In order to identify the device as a fire alarm station, a label **53**, either transparent or opaque, may be placed in back of the fragile panel **20**, said label having the word "Fire" or equivalent information or additional wording delineated thereon or the desired information and directions depicted in any other suitable manner.

In practice, the device is completely assembled including the mounting of the fragile panel so that the movable spring contact member is depressed or retracted, as illustrated in Fig. 3. When the station is installed, the wires **39** and **44** are connected in a circuit including a source of electricity and an alarm device, such as a bell, which is the usual custom and the body fastened to a support, such as a wall, by fastening devices, such as screws, projected through the holes **54** and into the support.

In case of fire in the vicinity of a fire alarm station, and before anyone is aware thereof or in proximity to the station, the fusible means will be melted by the higher than normal degree of heat to release the fragile panel which, in turn, will remove the pressure on the resilient movable switch member or arm and permit it to spring outwardly into engagement with the stationary contact member thereby completing the alarm circuit to actuate the alarm means. On the other hand if a person becomes aware of a fire in a building equipped with such a station and can reach the station he can break the fragile panel which will also release the pressure on the movable switch member and allow it to operate for actuating the signal means.

The pressure of the movable member of the switch against the panel will sever the bonding effect of the fusible means as it begins to soften so that said panel will move away from its seat before said fusible means has actually completely melted, and the parts can be so arranged that if the fusible means at only one point or at one side of the panel fuses said panel will tilt sufficiently to cause the switch to close.

The device can be readily and easily tested without damage thereto by jurisdictional safety authorities by merely loosening or withdrawing the screws in some of the forms of the invention, or removing the links **23***a* of Fig. 6, or sliding the panel from beneath the angle arms **29**, Fig. 13. After the test the parts can be replaced immediately and the appliance will be ready for future operation.

It is to be understood that all types of the fire alarm station disclosed include automatic switch mechanisms, such as particularly illustrated in connection with Figs. 1–4, or equivalents thereof. This device is a safety appliance and may be operated manually although it also will become operative automatically in the presence of above normal heat for any preselected locality as the melting point of the fusible means can be regulated in any well known manner.

Of course I do not wish to be limited to the exact details of construction herein shown and described as these may be varied within the scope of the appended claims without departing from the spirit of my invention.

Having described my invention what I claim as new and useful is:

1. An automatic and manually operated fire alarm station comprising a body with a chamber open at the front surrounded by a panel seat, an electric switch located within said chamber and including a movable member constantly urged towards the open front and having a portion projecting beyond the seat when the switch is closed, a fragile panel to rest on said seat and engage the projecting portion of the movable member to depress the latter for opening the switch, and means engaging said panel and connected to said body and including fusible means to be melted for releasing the fragile panel which is also capable of being broken, either the releasing or breaking of the panel liberating the movable member of the switch.

2. An automatic and manually operated fire alarm station comprising a body with a chamber open at the front surrounded by a panel seat, an electric switch within said chamber and including a resilient movable member, a fragile panel to rest on the seat and cooperate with the movable member to maintain the switch open, said panel, if broken, releasing the movable member to close the switch, and fusible means connected with the body and engaging said panel to normally hold the latter in place on its seat, said fusible means when melted under the action of heat releasing the panel and the releasing of said panel freeing the movable member of the electric switch to close the latter.

3. In a device of the kind described, a chambered body housing an electric switch normally resiliently urged towards a closed position, a fragile panel mounted on said body to normally maintain the switch open, said panel, if broken, releasing the switch so it closes, and panel holding means, including fusible means, attached to the body and embracing the panel to normally hold the latter in place and release the same under action of heat to release the switch without breaking the panel whereby the switch closes.

4. An automatic and manually operated fire alarm station comprising a body with a chamber open at the front end which front end is surrounded by a panel seat, an electric switch including a resilient movable member located within said chamber, a fragile panel cooperating with the movable member to hold the switch open when said panel is mounted against the seat, a ring embracing the panel adjacent the edge thereof, and means, including fusible means, to attach said ring to said body, the breaking of the panel or bodily release thereof through the action of heat liberating the movable member of the switch to close the latter.

5. The structure according to claim 4 wherein the means to attach the ring to the body consists of fusible means united with said ring, and fastening devices projecting through the fusible means into said body and free of the ring.

6. An automatic and manually operated fire alarm station comprising a body with a chamber having an open end at the front of said body which open end is surrounded by a panel seat, an electric switch including a resilient movable member located within said chamber, a fragile panel cooperating with the movable member to hold the switch open when said panel is mounted against said seat, a split ring embracing the panel adjacent the edge thereof, means to anchor said ring on the body to hold the panel on its seat, and fusible means to connect parts of

the ring together, the breaking of the panel or bodily release thereof through melting of the fusible means liberating the movable member of the switch to close the latter.

7. The structure according to claim 6 wherein the ring is split substantially longitudinally and fusible means joins the meeting ends of said ring.

8. The structure according to claim 6 wherein the ring is split annularly to form two annulae and the fusible means joins said annulae in longitudinally abutting relation.

9. The combination with a body having a chamber with an open end at the front of said body which open end is surrounded by a panel seat, an electric switch including a resilient movable member located within said chamber, a fragile panel cooperating with the movable member to hold the switch open when said panel is mounted against said seat, and means to hold said panel against the seat, said means consisting of angle arms each including a shank secured to the body, a limb and a finger, the latter overlying the panel and fusible means joining the limb to the shank in endwise abutting relation, the breaking of the panel or bodily release thereof with the finger and its limb through

melting of the fusible means liberating the movable member of the switch to close the latter.

10. The combination with a body having a chamber with an open end at the front of said body which open end is surrounded by a panel seat, an electric switch including a resilient movable member located within said chamber, a fragile panel cooperating with the movable member to hold the switch open when said panel is mounted against said seat, and means to hold said panel against the seat, said means consisting of a number of screws projected into the front face of the body adjacent the edge of the fragile panel, and a head of low fusible material on each screw and overlapping the exterior face of said panel.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
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