

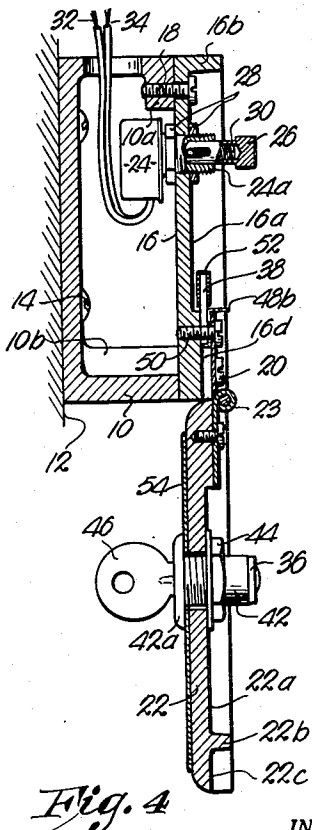
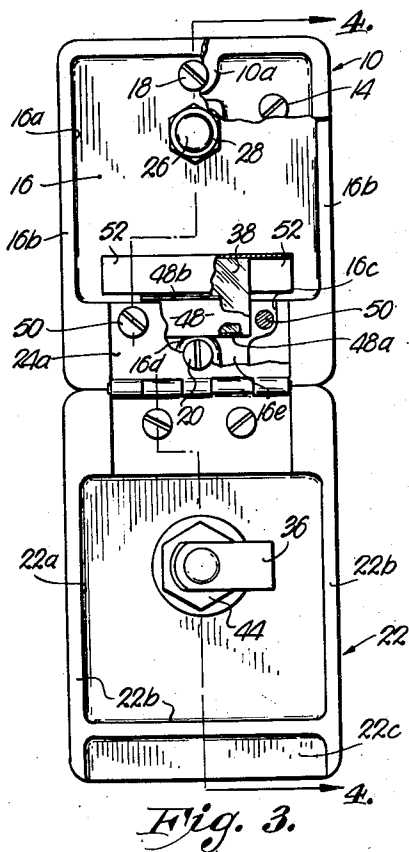
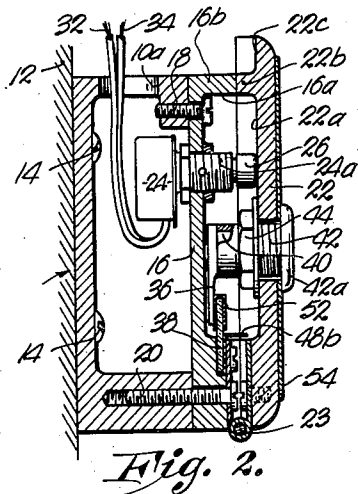
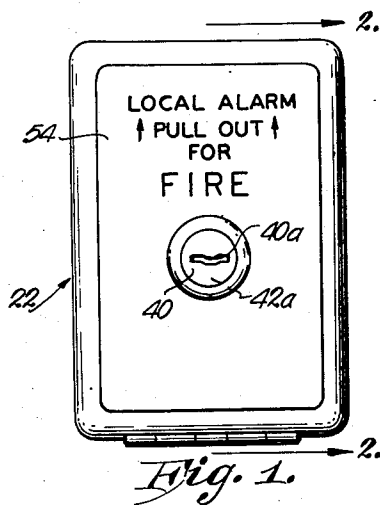
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ALARM STATION

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ALARM STATION

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The present invention relates in general to electrical alarm systems and it deals more particularly with so-called break stations or pull boxes designed to be actuated for the purpose of initiating an alarm.

In the past, stations of the kind in question have been provided with an exposed panel made of glass or like frangible material, which panel can be broken with the aid of a hammer or other suitable tool. In some cases, breaking of the glass merely gives access to mechanism for opening a normally closed door of the box so that the switching apparatus within the box can be operated; in other cases the act of breaking the glass will itself automatically trigger the switch mechanism and thus initiate the alarm without any further operation.

In either case, breaking of the exposed glass panel is something of a hazard, both mental and physical, not to mention the fact that it necessitates provision of a hammer or other suitable tool for doing this—a tool which is unsightly if chained to the box and which, unless chained, is often discovered to be missing when the need for it arises. Also, once the glass is broken, replacing it to recondition the box for future operation is a substantial task.

It is the object of the present invention to overcome these and other shortcomings of existing break stations, while retaining all of their operational advantages.

More specifically, it is my aim to provide an inexpensive and reliable station which is neat and attractive in appearance; which is easy for even the most inexperienced person to operate for the purpose of initiating an alarm but which does not invite mischievous operation; which has no exposed glass subject to accidental breakage and requires no hammer or other glass-breaking equipment; which presents no hazard either mental or physical to the person desiring to operate the station; which is trouble-free and very reliable in operation; which when once tripped to initiate an alarm cannot be reset except by authorized personnel; and which nonetheless can be reconditioned for future operation very quickly, simply and inexpensively.

Other and further objects of the invention, together with the features of novelty whereby the objects are achieved, will appear in the course of the following description.

In the accompanying drawings which form a part of the specification and are to be read in conjunction therewith, and in which like reference numerals are employed to indicate like parts of the various views:

Fig. 1 is a front elevational view of my improved alarm station showing same in closed or non-operative condition;

Fig. 2 is a cross-sectional view taken along the line 2-2 of Fig. 1 in the direction of the arrows;

Fig. 3 is an elevational view corresponding to Fig. 1 but showing the station in open or operative condition, parts having been broken away for purposes of illustration; and

Fig. 4 is a cross-sectional view taken along the line 4-4 of Fig. 3.

Referring more particularly to the drawings, my improved alarm station has a box-like receptacle 10 adapted to be secured to a wall or other support 12 by means of screws 14 extending through suitable holes in one side of the box. The opposite side is covered by a stationary upright plate or base member 16, this being secured in place by screws 18 and 20 extending through holes in the plate into threaded bosses 10a and 10b provided in the interior of the receptacle.

As will be seen from Fig. 3, the base plate 16 is generally rectangular in exterior outline and the receptacle 10 to which it is fastened is of matching contour.

A door 22 is arranged normally to cover the exposed side of plate 16 as shown in Figs. 1 and 2, but this is hinged at its lower edge to the plate so that it is adapted to swing outwardly and downwardly about the hinge pin 23 to the depending position illustrated in Figs. 3 and 4. Referring to Fig. 2, it will be seen that the confronting faces of plate 16 and door 22 contain matching recesses 16a and 22a which together form an outer box-like enclosure encircled by the rim portion 16b of the plate and the rim portion 22b of the door.

Within receptacle 10 is a conventional push button switch 24 having a hollow supporting barrel 24a which extends through a hole in plate 16 so that the push button end of the plunger 26 is within the aforementioned enclosure. The exterior of the barrel is threaded and secured in place by nuts 28 on opposite sides of plate 16. As is well known to those familiar with such switches, they are self-contained units having a biasing spring such as 30 which urges the plunger or push button 26 outwardly toward the position illustrated in Fig. 4. When door 22 of my alarm station is closed, it bears against the end of the push button and depresses same against the tension of the spring as shown in Fig. 2, but unless it is forcibly depressed in this fashion, the push button always will occupy its Fig. 4 position.

Switch 24 may either be of the "normally open" or of the "normally closed" type, the choice depending upon the nature of the alarm circuit to be controlled by the switch. In the former case, the contacts within the switch housing are effective to complete an electrical connection between leads 32 and 34 whenever the push button is depressed (Fig. 2) and to interrupt said connection whenever the push button is released (Fig. 4). In the latter case the effect of the switch is just the opposite, that is to say, its contacts complete a connection between conductors 32 and 34 whenever the push button is released (Fig. 4) and they open that connection whenever the push button is depressed. The switch contacts by which the connection is thus opened or closed, as the case may be, have not been illustrated in the drawings, because, as previously mentioned, the switch itself is entirely conventional and well known to those versed in the art.

For holding the door 22 in closed position, it is provided with a rotatable latch finger 36 cooperating with a keeper 38 carried on plate 16. The latch finger is secured to the inner end of the cylinder 40 of a conventional lock whose supporting barrel is received in a hole centrally located in the door. (Nut 44 threaded on the inner end of the barrel is tightened down to draw the integral annular flange on the opposite end of the barrel tightly against the outside face of the door, thereby securing the barrel in place and preventing it from turning in the hole.) It will be understood that the lock cylinder 40 normally is held against rotation in its supporting barrel 42 by means of the lock mechanism; however, the cylinder is provided with a key slot at its exposed end whereby insertion of a proper key releases the mechanism and permits the cylin-

der to be turned 90° by the key. A 90° rotation of a key such as 46, in other words, will swing latch finger 36 clear of keeper 38, permitting the door 22 to open as shown in Figs. 3 and 4.

Referring to the latter figures, the upper wing 24a of the hinge covers a recess 16c in the base member 16, forming an upwardly opening pocket adapted to receive the lower portion of keeper 38. The keeper comprises a small rectangular panel of glass or like frangible material; its thickness is slightly less than that of the pocket or socket in which it is received and beside the glass is a thin sheet metal lifter 48 having at its lower edge a horizontal flange extending under the glass so that it rests upon boss 16d of the base member. At its upper ledge lifter 48 has a horizontal flange 48b projecting in the opposite direction and providing a finger grip to facilitate lifting of the keeper from its socket. Screws 50 not only serve to fasten the upper wing of the hinge to base member 15 but also extend on either side of the glass keeper to prevent lateral shifting thereof. The upper exposed portion of the keeper is shrouded with an inverted channel 52 of thin sheet metal to prevent chipping of the glass by the latch finger 36 as the latter moves into and out of position behind the keeper.

When the door 22 is latched in closed position as shown in Fig. 2, its upper edge projects beyond the upper edge of the base member 16 to form a hand hold 22c, the remaining edges of the door registering with the corresponding edges of base member 16. By gripping the hand hold 22c with the fingers and pulling outwardly thereon, sufficient force can be applied to the door to cause latch 36 to break the frangible keeper 38 whereby the door can be swung open without the aid of key 46. It is in this way that members of the general public are intended to initiate an alarm and a suitable placard 54 carrying the necessary instructions can be cemented or otherwise secured to the face of the door. When the door is swung open in this fashion, the normally depressed push button 26 immediately shifts outwardly under the influence of the coiled compression spring 30 operating switch 24 to initiate the alarm; the open door then will hang downwardly as illustrated in Fig. 4 eliminating any possibility of the push button again being depressed by accident.

The channel-shaped member 52 which normally shrouds the upper portion of keeper 38 serves to distribute the force exerted on the keeper by latch 36 in the course of forcibly opening the door as described above and thereby assists in producing a clean break of the glass. Once broken, the cover cannot be relatched without first installing a new keeper to replace the broken one. To do this, the service man merely raises the lifter 48 with the aid of the forwardly projecting finger grip 48b and this elevates the major remnants of the broken glass keeper, permitting same easily to be removed from the socket or recess behind hinge plate 24a; any small glass fragments or splinters not removed by raising lifter 48 will fall out through the vertical discharge passages 16e on either side of the keeper supporting boss 16d. With the broken glass thus removed, lifter 48 is restored to place and a new glass keeper is slipped in beside it so that the lower edge rests on flange 48a. Then, the channel-shaped shroud 52 is slipped over the upper edge of the new keeper and the door is relatched, using key 46 to turn the latching finger down to a position behind the keeper as shown in Fig. 2.

It will be understood of course that authorized service personnel having possession of key 46 can use the key to unlatch the door and open it at any time without breaking the keeper. Opening of the door not only permits manual actuation of the push button 26 as desired for testing the operation of the alarm circuits but also exposes screws 18 and 20 so that these can be removed preparatory to replacing or repairing switch 24 should this be necessary. It will be obvious of course that all screws

and all means of access to the interior of my alarm station and the components contained therein are covered and concealed when door 22 is closed.

In some alarm installations (for example, in mental hospitals) it is desirable for obvious reasons to make it impossible for patients to initiate an alarm. If such is the case, it is only necessary to substitute a metal keeper 38 for the frangible keeper shown in the drawings. When this is done, it is impossible of course to forcibly open the door 22 but same still may be opened by responsible attendants who are provided with a key 46 capable of unlatching the door. Substitution of a metal keeper for one made of glass or vice versa can be effected very quickly and simply so that a given alarm station can easily be converted for restricted or unrestricted use as may be desired.

I have shown the receptacle 10 mounted on the surface of a wall 12 by means of screws 14 but in some installations it is desirable to wholly recess the receptacle 10 in the wall whereby only the base member 16 and cover 22 project beyond the surface of the wall. This decreases the distance which my station extends into the room and makes the installation somewhat more attractive while at the same time leaving sufficient space behind the hand grip 22c to permit forcible opening of the door in the manner heretofore described. If receptacle 10 is recessed in the wall, the conductors 32, 34 extending from the receptacle through opening 10a will be concealed within the wall. Whether the wiring which connects my station to the balance of the alarm system is concealed within the wall or exposed outside the wall in accordance with the drawings, it usually is desirable that it extend through conventional conduit terminating at the opening 10a in keeping with good electrical wiring practices.

From the foregoing it will be seen that my invention is one well adapted to attain all of the ends and objects hereinbefore set forth together with other advantages which are obvious and which are inherent to the apparatus.

It will be understood that certain features and sub-combinations are of utility and may be employed without reference to other features and sub-combinations. This is contemplated by and is within the scope of the appended claims.

Inasmuch as various possible embodiments of the invention may be made without departing from the scope thereof, it is to be understood that all matter herein set forth or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, I claim:

1. In a device of the character described, a box having a hinged cover, a latch on said cover cooperating with a keeper on said box to normally hold said cover in closed position, means for releasing said latch to permit opening of said cover, said keeper being frangible whereby said cover also can be forcibly opened without a release of said latch, an electrical switch, and an actuating member for said switch controlled by said cover to operate said switch responsive to opening of the cover.

2. A device as in claim 1 wherein said cover has a hand hold by which pressure may be applied to the cover for forcible opening thereof.

3. A device as in claim 1 wherein the edge of said cover opposite its hinge projects beyond the wall of said box to form a hand hold by which pressure may be applied to the cover for forcible opening thereof.

4. A device as in claim 1 wherein said actuating member comprises a spring-biased push button inside said box in a position to be engaged by the cover and depressed against the tension of the spring when said cover is closed.

5. In a device of the character described, a stationary box open on one side thereof and having a hinged door for said side, the lower wall of said box containing a socket opening upwardly into the interior of the box, a keeper

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removably received in said socket and projecting upwardly into the interior of said box, a latch on said door normally engaged with the projecting portion of said keeper to hold the door in closed position, key controlled means for disengaging said latch from said keeper to permit opening of said door, said keeper being frangible whereby said door also can be forcibly opened without disengagement of said latch, an electrical switch, and an actuating member for said switch controlled by said door to operate the switch responsive to opening of the door.

6. A device as in claim 5 wherein said socket contains a lifter having a portion under the base of said frangible keeper and a finger grip portion extending outwardly from said socket to facilitate removal of the remnant portion of said keeper after forcible opening of said door.

7. A device as in claim 5 wherein the edge of said door opposite its hinge projects beyond the outer wall of said box to form a hand hold by which pressure may be applied to the door for forcible opening thereof.

8. A device as in claim 7 wherein said door is hinged to the lower wall of said box to swing downwardly upon opening thereof.

9. In a device of the character described, a stationary box open on one side thereof and having a hinged door for said side, the lower wall of said box containing a socket opening upwardly into the interior of the box, a frangible keeper received in said socket and projecting into the interior of said box, a non-frangible shroud supported on the projecting portion of said keeper and covering same, a key-controlled latch on said door normally engaged with said shroud to hold the door in closed position, an electrical switch, and an actuating member for said switch controlled by said door to operate the switch responsive to opening of the door.

10. In a device of the character described, a base, a cover having a closed position relative to said base, said base and cover being constructed and arranged to form an enclosed space when the cover is in closed position, a socket in said base opening upwardly into said space, a frangible keeper received in said socket and projecting into said space, a key-controlled latch on said cover normally engaged with the projecting portion of said keeper to hold the cover in closed position, a spring-biased push button in said space, said push button being mounted on the base in a position to be engaged by said cover and depressed against the tension of said spring when said cover is in closed position.

11. A device as in claim 10 wherein said socket contains a lifter having a portion under the base of said frangible keeper and a finger grip portion extending outwardly from said socket to facilitate removal of said keeper from the socket.

12. In a device of the character described, a base, a cover having a closed position relative to said base, said base and cover being constructed and arranged to form an enclosed space when the cover is in closed position, a socket in said base opening upwardly into said space, a frangible keeper received in said socket and projecting

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into said space, a non-frangible shroud supported on the projecting portion of said keeper and covering same, a key-controlled latch on said cover normally engaged with said shroud to hold the cover in closed position, a spring-biased push button in said space, said push button being mounted on the base member in a position to be engaged by said cover and depressed against the tension of said spring when said cover is in closed position, and an electrical switch mechanically coupled to said push button so that it is open or closed depending upon whether said push button is or is not depressed.

13. In a device of the character described, a base member, a cover member having a closed position relative to said base member, said members constructed and arranged to form an enclosed space when said cover member is in closed position, a key-controlled latch on one of said members cooperating with a keeper on the other member to normally hold the cover member in closed position, a spring-biased push button in said space, said push button being mounted on the base member in a position to be engaged by said cover member and depressed against the tension of said spring when said cover member is in closed position, said latch being operable to disengage from said keeper to permit opening of said cover and consequent release of said push button, said keeper being frangible whereby said cover also can be forcibly opened without disengagement of said latch, and an electrical switch mechanically coupled to said push button so that it is opened or closed depending upon whether said push button is depressed or released.

14. In a device of the character described, a stationary member having a spring-biased push button thereon, a movable member hinged to said stationary member and having a free end swingable toward said push button to engage and depress same against the tension of the spring, means normally holding said swingable member in said last mentioned position thereby to maintain said push button depressed, said means comprising a latch on one of said members cooperating with a keeper on the other member, key-controlled means for releasing said latch to permit movement of said swingable member away from said push button, said keeper being frangible whereby said swingable member also is forcibly movable away from said push button without a release of said latch, and an electrical switch mechanically coupled to said push button so that it is open or closed depending upon whether said push button is or is not depressed.

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