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BURGLAR ALARM SWITCH

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Fig. 1

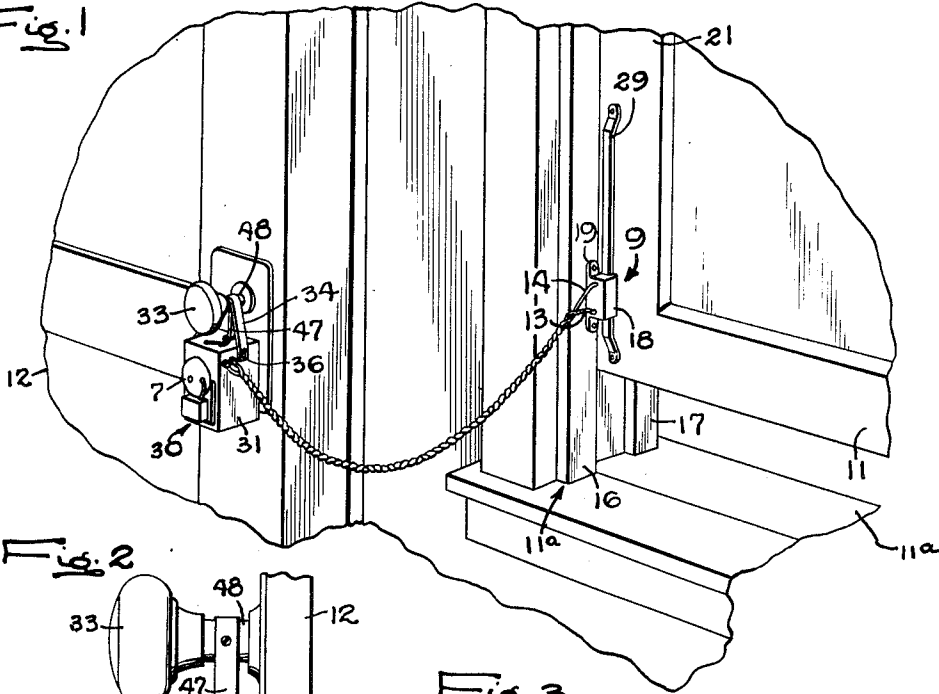


Fig. 2

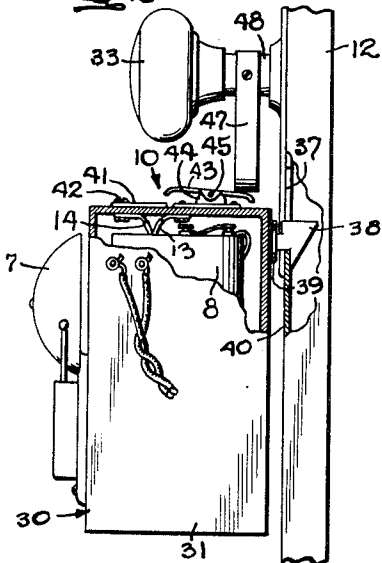


Fig. 3

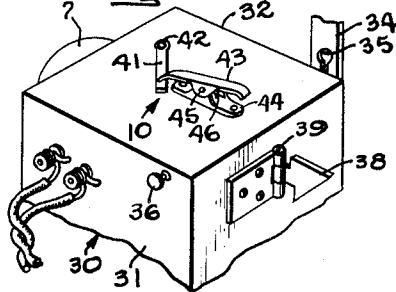


Fig. 4

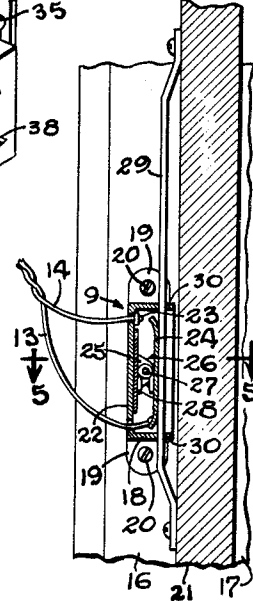


Fig. 5

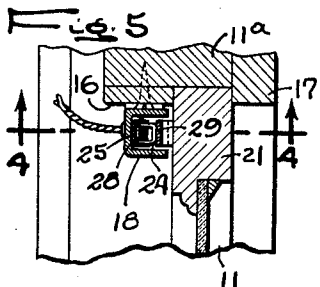
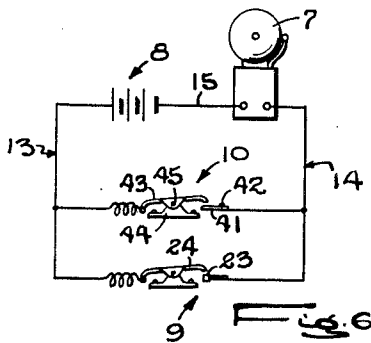


Fig. 6

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BURGLAR ALARM SWITCH

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1 Claim. (Cl. 200—54)

1

The present invention relates to alarm systems, and has reference particularly to burglar alarms for protecting doors, windows and the like against unauthorized entry.

One of the objects of the present invention is to provide a new and improved self-contained alarm unit adapted to be removably supported on the inside of a door in juxtaposition to the door knob, and operable to emit an alarm in the event that the knob is turned.

Another object is to provide a novel alarm-control device operatively associated with a movable window sash, and operable to effect the emission of an alarm in the event that the sash is moved into a predetermined open position.

A further object is to provide a new and improved system in which the aforesaid control device is connected in parallel with the door unit so that movement of either the door knob or window sash will initiate the alarm.

A general object is to provide an alarm system of the foregoing character which is simple and inexpensive in construction, and which is efficient and reliable in operation.

Other objects and advantages will become apparent as the description proceeds.

In the accompanying drawings:

Fig. 1 is a fragmentary perspective view of an alarm system for a door and a window embodying the features of the present invention.

Fig. 2 is a side elevational view, partially in vertical section, of the self-contained door alarm unit.

Fig. 3 is a perspective view of the top end or portion of the door alarm unit.

Fig. 4 is a fragmentary vertical sectional view, taken along line 4—4 of Fig. 5, illustrating the window alarm control device.

Fig. 5 is a fragmentary transverse sectional view taken along line 5—5 of Fig. 4.

Fig. 6 is an electrical circuit diagram for the alarm system.

Referring more particularly to the drawings the burglar alarm system broadly comprises an alarm device operable to emit a signal. Such a device, as shown, may consist of an electric bell 7 adapted to be connected in a circuit with a suitable source of electrical energy, such as a dry-cell battery 8, by means of a control device or any one of a plurality of control devices operatively associated respectively with the entry ways to be protected. In the present instance, two control devices, consisting of electrical switches 9 and 10, are provided for a window sash 11 and a door 12. Preferably, each of the switches 9 and 10 is of the normally closed type, but is set or held in open position, subject to release into closed position if unauthorized entry is attempted.

Referring to Fig. 6, the switches 9 and 10 are connected in parallel across lines 13 and 14. The line 13 is connected to one terminal of the battery

2

8. The other terminal of the battery 8 is connected by a line 15 to one terminal of the bell 7. The line 14 is connected to the other terminal of the bell 7.

5 The window sash 11 is vertically slidable between guide strips 16 and 17 forming part of a frame 11a. The alarm control switch 9 for the window comprises a narrow elongated housing 18, of suitable electrical insulating material, having ears 19 secured by screws 20 to the inner guide strip 16. Thus, the housing projects closely across the inner face of one side frame member 21 of the sash 11. The inner side of the housing 18 next to the face of the sash member 15 21 is open, and the opposite side wall serves as a panel 22. A fixed contact 23, connected to the lead 14, is mounted on the panel 22 within the housing 18. Also mounted within the housing 18 is a movable contact 24 connected to the lead 13. 20 The leads 13 and 14 enter the housing 18 through suitable openings in the panel 22. In the preferred form, the contact 24 consists of an elongated plate pivotally supported on the panel 22 and adapted to assume a vertical position in 25 parallel spaced relation to the face of the sash member 21. To provide a suitable pivotal support, U-shaped brackets 25 and 26 are fixed respectively to the panel 22 and contact plate 24, and have interfitting ears connected by a pintle 30 27. A spring 28 coiled about the pintle 27 tends to bias the upper end of the contact plate 24 toward the fixed contact 23.

An elongated vertical cam bar or strap 29 is suitably attached to the sash member 21 in position to coact with the movable contact plate 24 35 when the sash 11 is moved into closed position. Notches 30 in the upper and lower end walls of the housing 18 adjacent the open side permit entry of the cam bar 29.

40 In operation, when the sash 11 is closed or lowered sufficiently to locate the cam bar 29 in sliding face contact with the contact plate 24, the latter will be held away from the contact 23, as shown in Fig. 4, to interrupt the alarm circuit. 45 However, in the event that the sash 11 is raised sufficiently to move the effective portion of the bar 29 out of the housing 18, and thereby out of engagement with the contact plate 24, the curved upper end of the latter will move into engagement with the contact 23 to close the alarm circuit and sound the alarm. In this position, the contact plate 24 will be slightly inclined. Upon reclosing the sash 11, the cam bar 29 will again enter the space between the contact plate 24 and 55 the face of the sash member 21, and will move the plate into open position.

Having reference to Figs. 1 and 4, it will be noted that the bar 29 is formed to present a long straight cam surface in its central portion. This straight cam surface is disposed parallel to the sash member 21 and the guide strips 16 and 17 so that the spacing between the switch contact

plate 24 and the contiguous portion of the cam surface remains constant as the cam is carried by the switch 9 upon vertical movement of the window sash 11. Because of this structural arrangement, the switch 9 is not only closed when the window is closed but it remains closed when the window is opened a substantial amount for ventilating purposes. From the relationship of the parts shown, it is evident that the length of the straight cam portion of the member 29 is sufficient to permit considerable latitude in the amount the sash can be raised without sounding an alarm. However, in the event the sash 11 is opened beyond its ventilating positions sufficiently to permit entry of an intruder through the window the straight cam portion of the member 29 will pass beyond the switch 9 allowing the switch to close and sound the alarm.

The user of the alarm switch thus provided is not required to keep his windows entirely closed in order to maintain the protection afforded by the alarm system. He can ventilate his house by opening the windows sufficiently to provide adequate ventilation without disturbing the setting of the alarm switch 9. Even with a window open for this purpose the attached switch remains ready to set off the alarm in the event an imposter opens the window further to admit himself into the house.

Considering now the door alarm, the self-contained alarm unit, indicated generally at 30, comprises a casing 31 adapted to enclose the dry cell battery 3 and to support the bell 7. One side wall 32 constitutes a removable panel to afford access to the interior.

The unit 30 is adapted to be associated with the knob 33 of the door 12. Thus, it may be suspended directly from the knob 33 by means of a hanger strap 34 extending thereover and anchored at the ends to opposite sides of the casing 31. To facilitate mounting the unit in position, the ends of the strap 34 are formed with keyhole slots 35 adapted to removably engage headed pins 36 projecting from opposite side walls of the casing 31.

Alternatively, the unit 30 may be suspended from a keyhole 37 when the latter is present. For this purpose, a triangular wing hook 38 is pivotally connected by a curl hinge 39 to the rear wall of the casing 31. The base edge of the wing hook 38 is sufficiently spaced from the hinge 39 to engage the back of the door plate 40 when the wing hook is inserted into the keyhole 37 and lowered. Thus, the unit may be easily and quickly supported on and removed from any door, either by use of the strap 34 or the wing hook 38. As a result, the unit, being portable, self-contained and ready for use, may be used advantageously by travelers, as, for example, on hotel room doors.

The switch 10 is mounted on the top of the casing 31 for coaction with the door knob 33. In the preferred form, the switch 10 comprises a normally stationary contact 41 connected to the lead 14, and pivotally secured in position on a post 42 for adjustment selectively into and out of operative position. The switch 10 also comprises a pivotal or movable contact 43 in the form of a plate connected to the lead 13. More particularly, the plate contact 43 has side lugs intermediate its ends interfitting with lugs on a supporting bracket 44, the lugs being pivotally connected by a pintle 45. A spring 46 coiled about the pintle 45 tends to urge one end of the plate contact 43 toward the contact 41. The other

end of the plate contact constitutes an actuator disposed for interengagement with a depending arm 47 fixed on the knob shaft 48 and hence revoluble thereby if the knob is turned.

In operation, assuming that the contact 41 is adjusted into operative position and that the knob 33 is temporarily turned out of normal rest position, the contact 43 is moved out of engagement with the contact 41 to break the alarm circuit, and then the knob is returned to normal rest position so as to locate the arm 47 over the tail end of the contact 43. As a result, the switch 10 is set in open position. Should the knob 33 now be turned, as in an unauthorized attempt to open the door, the trigger arm 47 will be moved off the contact 43 to trip the latter for immediate movement into engagement with the contact 41, thereby closing the alarm circuit. When an alarm is not desired, the unit 30 may be disabled without being dismantled, merely by swinging the contact 41 into inoperative position, i. e. out from beneath the contact 43.

I claim as my invention:

An electric alarm control switching means for use with a window structure having frame means, and window sash means slidably disposed in said frame means in guided relation thereto, said switching means comprising, in combination, an elongated cam bar having an elongated straight cam surface thereon, and having means at opposite ends thereof for positioning said straight cam surface on said sash means in parallel relation to said frame means and in parallel offset spaced relationship to the sash means, a switch housing having end walls, side walls and a bottom wall arranged in a rectangular box-like construction with one side thereof open, attaching means on said housing for mounting the same on said frame means so that the open side of said housing faces the window sash, said end walls of said housing being notched adjacent said open side to permit entry of said cam bar into said housing between said side walls, a movable switch arm pivotally mounted in said housing intermediate its ends for swinging movement about an axis transverse of said housing, a stationary electrical contact mounted on said bottom wall of said housing and positioned for engagement with one end of said switch arm, and resilient means for forcing said switch arm into engagement with said contact, said switch arm being positioned relative to the notches in the end walls of said housing so that entry of said cam bar into said housing through said notches engages the outer surface of said switch arm moving the latter out of engagement with said stationary contact.

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References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
304,732	Iske	Sept. 9, 1884
627,192	Johnson	June 20, 1899
943,147	Hagerty	Dec. 14, 1909
945,935	Girard	Jan. 11, 1910
1,101,056	Brewster	June 23, 1914
1,107,767	Dick	Aug. 18, 1914
1,110,893	Caulkins	Sept. 15, 1914
1,305,190	Bobo	May 27, 1919
1,484,502	James	Feb. 19, 1924
1,551,512	Goff	Aug. 25, 1925
1,738,243	Hedberg	Dec. 3, 1929
1,974,592	Wolfgangram	Sept. 25, 1934