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ALARM SWITCH

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2 Sheets-Sheet 2

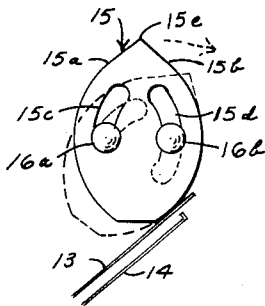
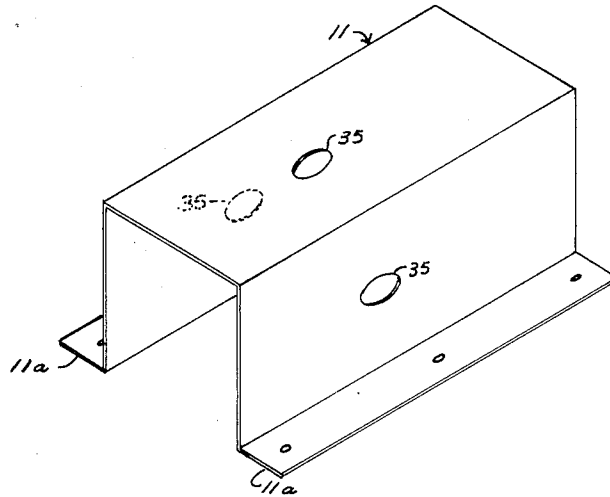


FIG. 9

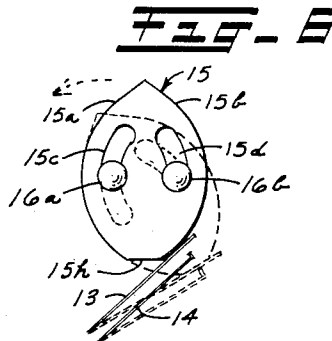


FIG. 10

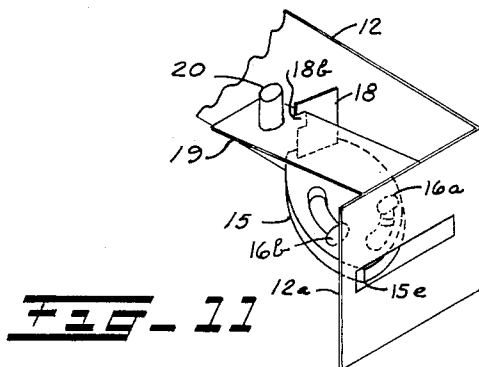


FIG. 11

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ALARM SWITCH

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7 Claims. (Cl. 200—61.62)

This invention relates to switches and is more particularly directed to alarm switches adapted to be actuated upon the opening of a door.

A principal object of the present invention is to provide a switch for a burglar alarm which switch operates the alarm system only upon the opening of the door.

A further object of the present invention is to provide an alarm switch which is sufficiently versatile that it may be mounted on a door or on the wall adjacent the door and can be mounted on doors which swing inwardly or outwardly.

A still further object of the present invention is the provision of an alarm switch described hereinabove which is simple in construction, inexpensive in cost and most efficient in operation.

A still further object of the present invention is to provide an alarm switch having a switch operating plate member pivotally mounted on two pivots whereby upon the swinging of the plate member on one pivot a switch is operated and the alarm is actuated, while upon its swinging on the other pivot, the switch is not closed and the alarm remains unactivated.

With these and other objects in view, the invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawings forming a part of this specification, with the understanding, however, that the invention is not confined to any strict conformity with the showing of the drawings but may be changed or modified so long as such changes or modifications mark no material departure from the salient features of the invention as expressed in the appended claims.

In the drawings:

Figure 1 is a side elevational view of a switch embodying my invention with its cover removed.

Figure 2 is a top plan view partially broken away.

Figure 3 is an end view.

Figure 4 is a cross sectional view taken along the line 4—4 of Figure 2.

Figure 5 is a fragmentary view taken of a door and a switch assembly showing the operation of the switch when the door is closed.

Figure 6 is a similar view showing the operation of the switch as the door swings toward its open position.

Figure 7 is a similar view showing the manner of mounting my switches on two doors that are mounted on a single jamb, wherein the doors swing in the opposite direction to become opened.

Figure 8 is a perspective view of a cover.

Figures 9 and 10 are diagrammatic views of the cam plate showing its operation when pivoted on both of its pivot pins.

Figure 11 is a fragmentary perspective view of the switch showing the operation of the locking blade for rendering the switch inoperative.

Referring now to the drawing wherein like numerals are used to designate similar parts throughout the several views, the numeral 10 refers generally to my switch

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whose mechanism is mounted on a support frame 12, the latter being mountable in a flanged housing 11 in one of varied positions determined by existing conditions as is explained in detail hereinafter.

The support frame 12 which is provided with leg portions 12a and 12b, slotted as at 12c to receive the forward end portion 15e of a cam 15. The cam 15, which is pivotally supported on a bracket 21 secured to the leg portion 12a, is provided with arcuate slots 15c and 15d which receive pivot pins 16a and 16b respectively. The pivot pins 16a and 16b are provided with sleeves 23 and are double headed as best shown by Figure 4 to prevent the separation of the cam 15 and the bracket 21 and to effect a sliding movement of the cam 15 with relation to the bracket 21. Also, the cam 15 is provided with arcuate side walls 15a and 15b which extend to the rear portion thereof, terminating at a non-arcuate cam surface 15h. It is to be noted that the arcuate side wall 15b adjacent the cam portion 15h is an arc of a circle having its center at the pin 16a. Yielding means are provided to maintain the cam 15 in its outwardly extended position comprising a spring 17 having one end engaging a bracket 26 secured to the leg portion 12a of the support frame 12 and its other end to a bracket arm 18a of a bracket 18 secured to the top surface of the cam 15. On the bracket 18 there is a slot 18b adapted to engage the side edge of a lock blade 19 which extends to the leg portion 12a where it is secured as shown. A button 20 is mounted in the lock blade 19 for inactivation of the switch mechanism as is explained in greater detail hereinafter.

Adjacent to the rear portion of the cam 15 extends a pair of leaf spring contacts 13 and 14 in parallel and spaced relation to each other with the spring contact 13 in contact relation with the cam 15. The base portions of the leaf spring blades 13 and 14 are mounted on an insulated terminal post 27 secured to the support frame 12. Not shown are electric wires connected to the leaf spring blades, which wires extend to an alarm actuable upon the closing of an electric circuit when the leaf spring contacts 13 and 14 are brought into contact with each other. The housing 11 which is adapted to receive the switch frame 12 in one of a number of positions as is explained hereinafter is provided with a plurality of bores 35, one bore 35 on each wall of the housing 11 (see Figure 8), to permit the lock blade button 20 to extend therethrough. The bores 35 permit the placing of the frame 12 in any of a number of positions yet permit the button 20 to extend through one of the bores 35. The housing 11 is also provided with lateral extending flanges 11a for securing the housing 11 to a door or wall.

As shown by Figures 5 and 6 the alarm switch 10 is mounted on a door 24 with a striker plate 25 mounted on a jamb or wall 37 adjacent the leg portion 12a of the frame 12. The striker plate 25 engages the forward end portion 15e of the cam 15 to compel the cam 15 to swing about the pivot pins 16a and 16b. Figures 9 and 10 show schematically the action of the cam 15 as the door 24 is swung to its closed and open position as shown by Figures 5 and 6 respectively.

As the door 24 comes toward its closed position as shown by Figure 5, the forward end 15e of the cam 15 engages the striker plate 25 and is made to swing in a clockwise direction as viewed in Figures 5 and 9. The cam 15 will pivot about the pivot pin 16a as its axis of rotation, the pivot pin 16b will slide along the slot 15d and the cam surface 15b will slide along the spring contact 13 without moving the contact 13. The reason the spring contact 13 remains out of contact with the contact 14 is that the cam surface 15b which engages the contact 13 is an arc of a circle whose center is at the pivot pin 16a. Therefore, when the door 24 is swung

to the closed position the contacts 13 and 14 remain open and an alarm would not be sounded.

However, when the door 24 which is closed is now swung outwardly to its open position, the cam 15 will swing in a counter clockwise direction as shown by Figures 6 and 10. The striker plate 25 will now compel the cam 15 to swing about the pivot pin 16b as its axis of rotation and the pivot pin 16a to slide along the slot 15d causing the rear portion 15h of the cam to swing against the spring contact 13 thereby forcing it in the direction of the spring contact 14 to contact same and close the alarm circuit. Therefore, when the door 24 is swung from its closed position toward its open position the contacts 13 and 14 will be closed and an alarm sounded. If it is desired to inactivate the switch 10 in order that no alarm be sounded on any movement of the door 24, a force is applied on the cam surface 15a of the cam 15 at the forward end 15e to cause the cam 15 to swing about the pivot pin 16a as an axis of rotation. Then the button 20 is pushed downwardly to an inward position until the side edge of the lock blade 19 engages the slot 18b of the cam lock 18. The cam 15 is now released and the cam 15 takes the position as shown by Figure 11 with the forward end of the cam 15e extending a slight distance beyond the leg portion 12a. Now as the door 24 swings the striker plate 25 will not engage the forward end 15e of the cam 15. To restore the switch 10 to its operative position, a force is applied on the forward end 15e of the cam 15 compelling the cam 15 to pivot on the pivot pin 16a. The cam lock 18 will swing away from the lock blade 19 releasing same. Since the lock blade 19 is constructed of spring metal, the lock blade 19 will swing upwardly carrying the button 20 outwardly of the housing through one of the bores 35. The spring 17 now forces the cam 15 to swing outwardly on the pivot pin 16a to its operative position as shown by Figures 1-4 inclusive. When the button 20 is in its exposed or outward position as shown by Figure 2, the indication is that the cam 15 is in its operative position, whereas upon the depressing of the button 20 to deactivate the switch 10 as explained hereinabove, the button 20 becomes unexposed indicating the switch 10 is in its non-operative condition.

By providing a housing 11 with a plurality of bores 35, the switch 10 may be utilized on doors swinging in any direction or may be mounted on the jamb adjacent the door (see Fig. 7) without having to make any changes in the switch 10. This is accomplished by varying the position of the frame 12 in the housing 11. For example, in the switch assembly 10 shown in Figures 5 and 6, the frame 12 is positioned within the housing 11 so that its leg portions 12a and 12b extend in a direction away from the door 24 on which the switch is mounted. The button 20 in this instance extends through the bore 35 which is on the top wall of the housing 11.

In the arrangement of the switches assemblies shown by Figure 7, one switch 10 is mounted on an outwardly swinging door 28 and a striker plate 31 secured to a jamb 32. In this switch 10, the frame 12 is so positioned within the housing 11 that its leg portions 12a and also 12b (not shown) extend toward the door 28 on which the switch 10 is mounted. The button (not shown) extends downwardly through the bore 35 on the bottom wall of the housing 11. As the door 28 is swung to its opened position, the cam 12 will pivot on the pivot pin 16b as its center of rotation and the contacts 13 and 14 will become closed. When the door 28 is swung to its closed position, then the cam 15 will pivot on the pivot pin 16a as its center of rotation and the cam surface 15b will merely slide along the contact 13 and not force it outwardly.

As shown by the other switch assembly showing a striker plate 33 mounted on a door 29, the switch 10 may be mounted on a wall 30 adjacent the door 29 if it is not desired to place the switch 10 on the door. When

the door 29 is swung inwardly to open the door, the switch 15 will pivot on its pivot pin 16b as its center of rotation and the spring contacts 13 and 14 will become closed to indicate an alarm. When the door 29 comes to its closed position the cam 15 will pivot on its pivot pin 16a as its center of rotation and the switch contacts 13 and 14 will not be affected.

Having described my invention, what I claim as new is:

1. A switch for an alarm comprising a support having a slot, bracket means mounted on said support adjacent said slot, cam means positioned on said bracket means, said cam means having a portion extending through said slot, a pair of pivot pins mounted on said bracket means, said cam means having a pair of arcuate slots receiving said pivot pins, spring means urging said cam means outwardly in the direction of said slot in said support and a pair of contacts mounted on said support, one of said contacts engaging said cam and the other of said contacts being in spaced relation to said one of said contacts whereby upon the pivotal movement of said cam means said one of said contacts is brought into contact relation with said other of said contacts.

2. A switch for an alarm comprising a support having a slot, bracket means mounted on said support adjacent said slot, cam means positioned on said bracket means, said cam means having a portion extending through said slot, a pair of pivot pins mounted on said bracket means, said cam means having a pair of arcuate slots receiving said pivot pins, spring means urging said cam means outwardly in the direction of said slot in said support and a pair of contacts mounted on said support, one of said contacts engaging said cam, the other of said contacts being in spaced relation to said one of said contacts whereby upon the pivotal movement of said cam means said one of said contacts is brought into contact relation with said other of said contacts, and interengaging means mounted on said support and said cam for locking said switch to prevent the closing of said contacts.

3. A switch for an alarm comprising a support having an end wall, said end wall having a slot, a bracket mounted on said end wall adjacent said slot, a cam plate, said cam plate positioned on said bracket and extending through said slot, said cam plate having a plurality of arcuate slots, pivot pins mounted on said bracket and extending through said arcuate slots, spring means extending between said end wall and said cam plate yielding forcing said cam plate outwardly in the direction of said first named slot and a pair of contacts mounted on said support, one of said contacts engaging said cam plate and the other contact positioned in spaced relation to said one of said contacts whereby upon the pivotal movement of said cam plate on one of said pivot pins said cam forces said one of said contacts into contact relation with the other of said contacts.

4. A switch for an alarm comprising a support having an end wall, said end wall having a slot, a bracket mounted on said end wall adjacent said slot, a cam plate, said cam plate positioned on said bracket and extending through said slot, said cam plate having a plurality of arcuate slots, pivot pins mounted on said bracket and extending through said arcuate slots, spring means extending between said end wall and said cam plate yielding forcing said cam plate outwardly in the direction of said first named slot, a pair of contacts mounted on said support, one of said contacts engaging said cam plate and the other contact positioned in spaced relation to said one of said contacts whereby upon the pivotal movement of said cam plate on one of said pivot pins said cam forces said one of said contacts into contact relation with the other of said contacts, a locking member mounted on said end wall and locking means mounted on said cam adapted to be engaged by said locking member to prevent the pivotal movement of said cam plate and the closing of said contacts.

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5. A switch for a burglar alarm comprising a support, an end wall mounted on said support, said end wall having a slot, a bracket mounted on said end wall adjacent said slot, a cam plate having a front end portion, an arcuate side wall and a pair of arcuate slots symmetrically disposed on said cam plate, a pair of pivot pins mounted on said bracket in alignment with said slots, said pivot pins extending through said slots, spring means extending between said end wall and a rear portion of said cam plate yielding forcing said cam outwardly in the direction of said slot in said end wall, and a pair of contacts mounted on said support, one of said contacts engaging said cam plate and the other contact positioned in spaced relation to said one of said contacts whereby upon the pivotal movement of said cam plate on one of said pivot pins said cam forces said one of said contacts into contact relation with the other of said contacts.

6. A switch for a burglar alarm comprising a support, an end wall mounted on said support, said end wall having a slot, a bracket mounted on said end wall adjacent said slot, a cam plate having a front end portion, an arcuate side wall and a pair of arcuate slots symmetrically disposed on said cam plate, a pair of pivot pins mounted on said bracket in alignment with said slots, said pivot pins extending through said slots, spring means extending between said end wall and a rear portion of said cam plate yielding forcing said cam outwardly in the direction of said slot in said end wall, a pair of contacts mounted on said support, one of said contacts engaging said cam plate and the other contact positioned in spaced relation to said one of said contacts whereby upon the pivotal movement of said cam plate on one of said pivot pins said cam forces said one of said contacts into contact relation with the other of said contacts, an elongated locking blade mounted on said end wall and extending in spaced relation to said cam plate, and a cam lock mounted on said cam and extending in the direction of said locking blade, said cam lock having a recess adapted to be engaged by said locking blade upon the pivoting of said cam plate on one of said pivot pins said cam forces said one of said contacts into contact relation with the other of said contacts.

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7. A switch for a burglar alarm comprising a support, an end wall mounted on said support, said end wall having a slot, a bracket mounted on said end wall adjacent said slot, a cam plate having a front end portion, an arcuate side wall and a pair of arcuate slots symmetrically disposed on said cam plate, a pair of pivot pins mounted on said bracket in alignment with said slots, said pivot pins extending through said slots, spring means extending between said end wall and a rear portion of said cam plate yielding forcing said cam outwardly in the direction of said slot in said end wall, a pair of contacts mounted on said support, one of said contacts engaging said cam plate and the other contact positioned in spaced relation to said one of said contacts whereby upon the pivotal movement of said cam plate on one of said pivot pins said cam forces said one of said contacts into contact relation with the other of said contacts, an elongated locking blade mounted on one end to said end wall and its other end in spaced relation to said cam plate, a button mounted on said other end of said locking plate for pushing said locking blade in the direction of said cam plate, a cam lock mounted on said cam plate and terminating in spaced relation to said locking blade, said cam lock having a recess adapted to be engaged by said locking blade upon the pivoting of said cam plate on one of said pivot pins and applying a force on said button in the direction of said cam plate to render said switch ineffective to close said contacts and a housing for receiving said cam switch, said housing having a U-shaped cross section and a pair of flanges for securing said switch in operating position, said housing having a plurality of bores to permit said button to extend there-through and be operated from outside said housing.

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