United States Patent

Kitman

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[45] **Feb. 8, 1972**

[54] COMBINATION BURGLAR AND FIRE ALARM

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[52] **U.S. Cl.** **340/420,** 340/227.1, 340/274, 340/276

[51] **Int. Cl.** **G08b 19/00**

[58] **Field of Search** 340/420, 227.1, 274; 200/61.64

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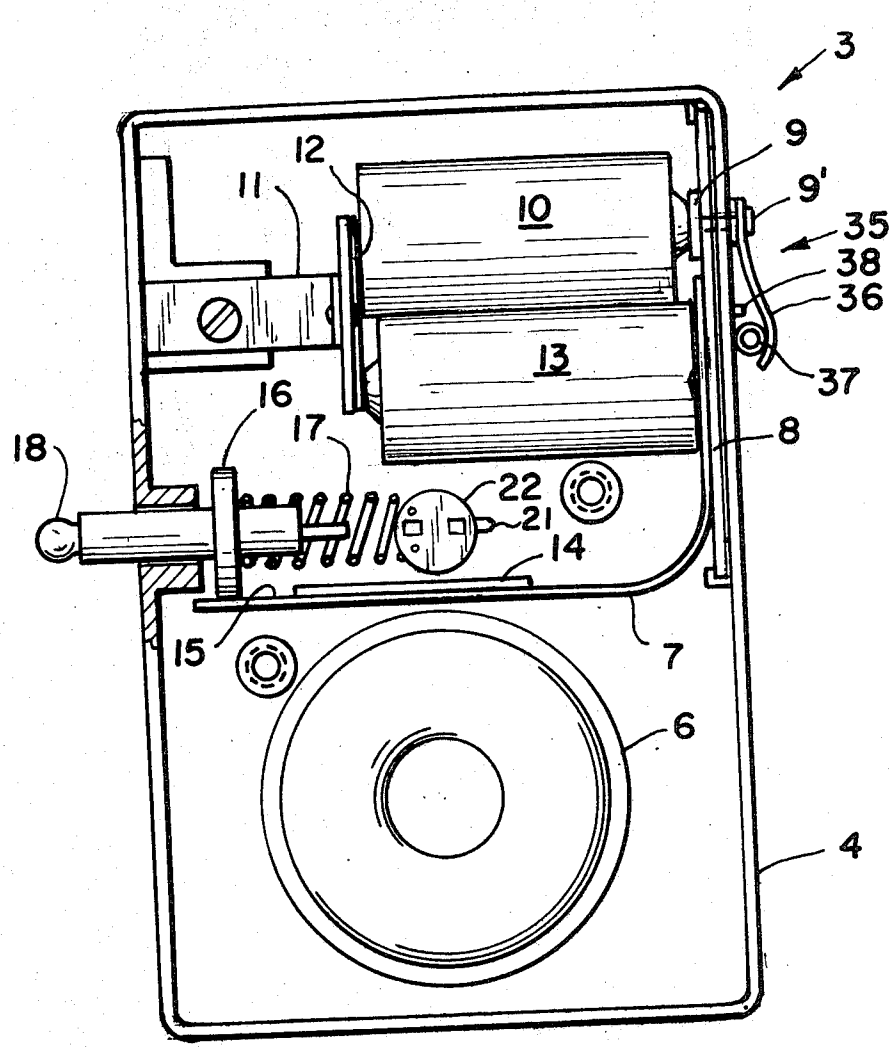
[57] **ABSTRACT**

A burglar alarm which may be mounted on the inside of a door, having a switch that is actuated upon opening of the door to sound an alarm. A lock may be operated from the outside or inside by a key to prevent operation of the alarm when opening the door.

The alarm, with modifications, may be operated in several ways, such as by a placement on the floor and opening of the door; by triggering as the result of opening a window blind when the alarm is mounted below the window; and by mounting on the inside of a door so as to be operated by opening thereof.

A fire alarm may be combined therewith so as to be operated by melting of a fusible element.

4 Claims, 16 Drawing Figures



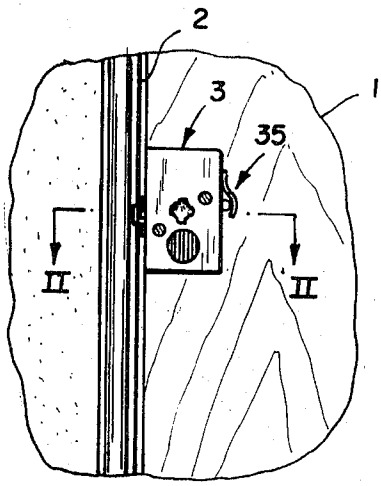


Fig. 1.

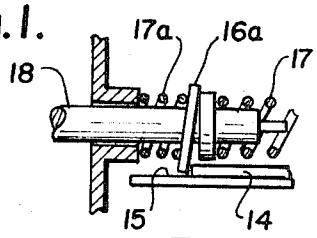


Fig. 4a.

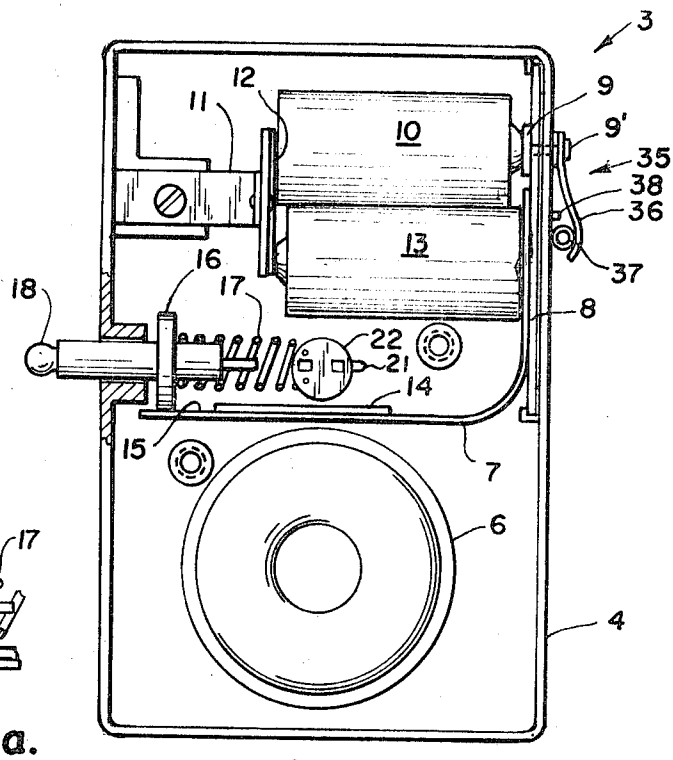


Fig. 4.

Fig. 2.

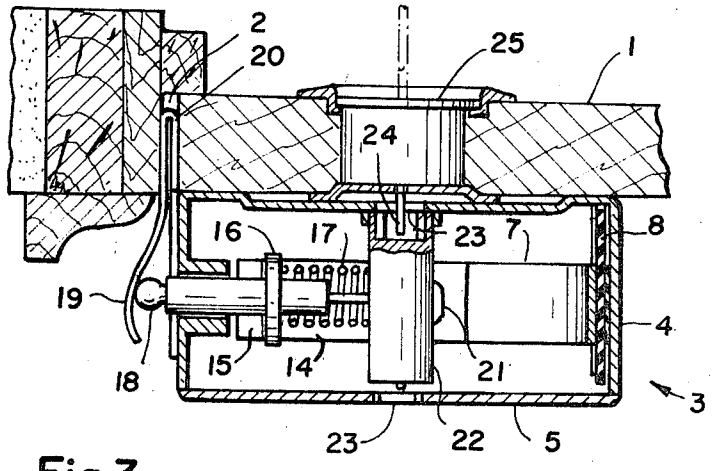
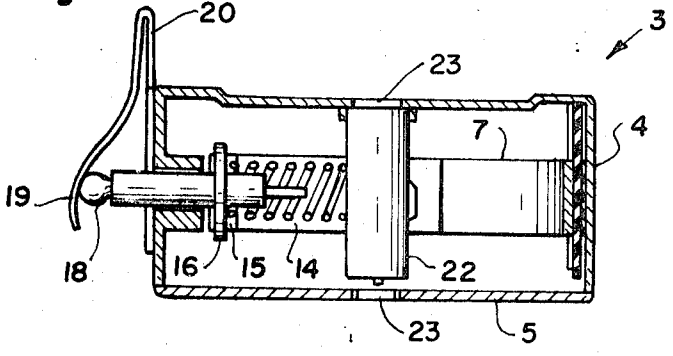


Fig. 3.



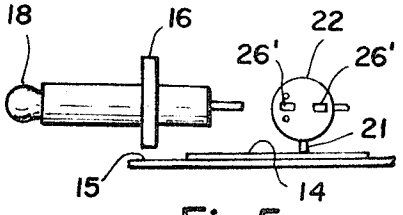


Fig. 5.



Fig. 6.

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Fig. 7.

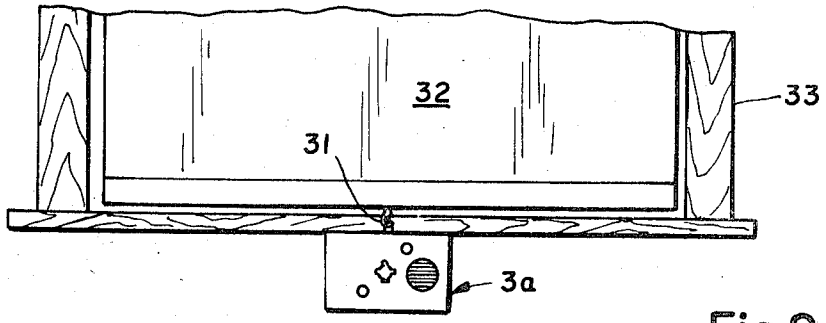


Fig. 8.

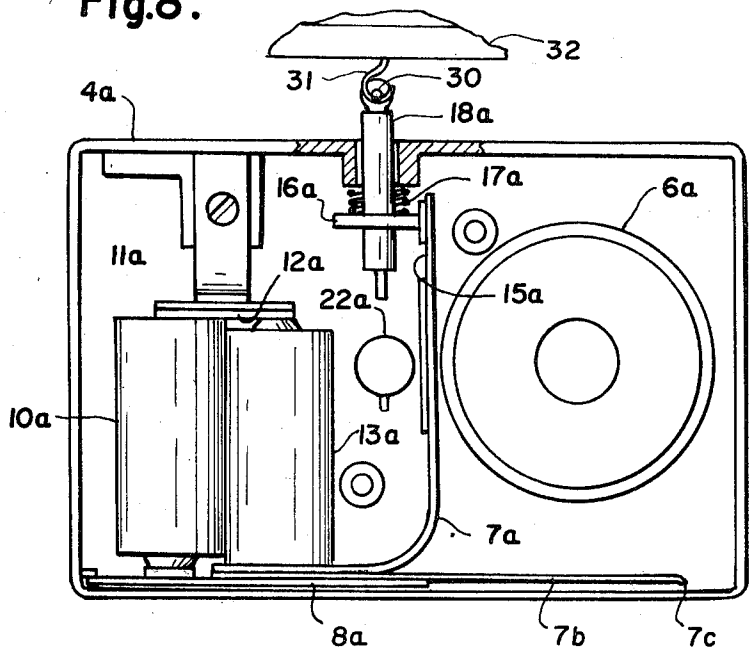


Fig. 9.

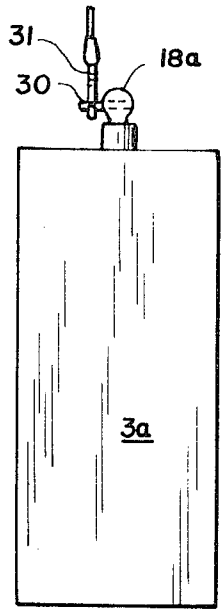


Fig. 10.

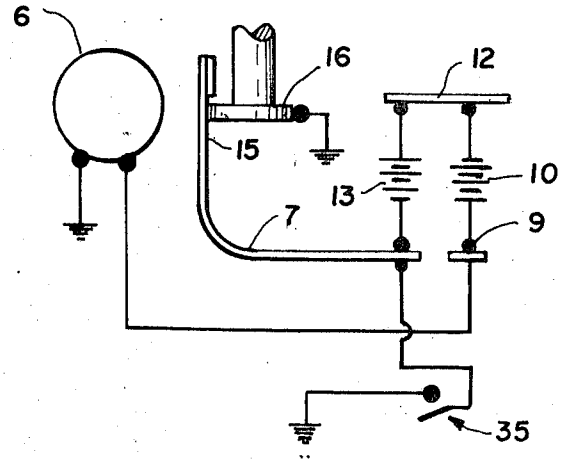
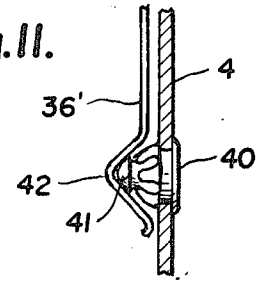
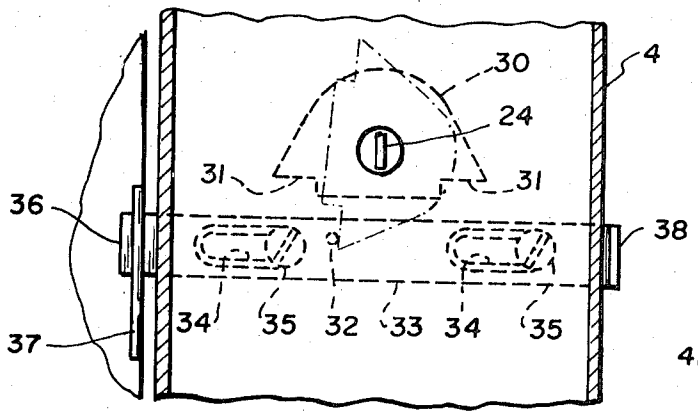


Fig. 11.



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FIG.12.



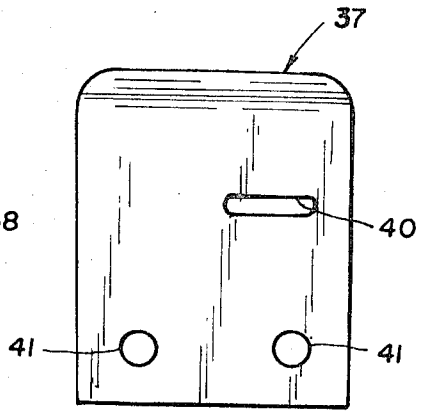


FIG.15.

FIG.13.

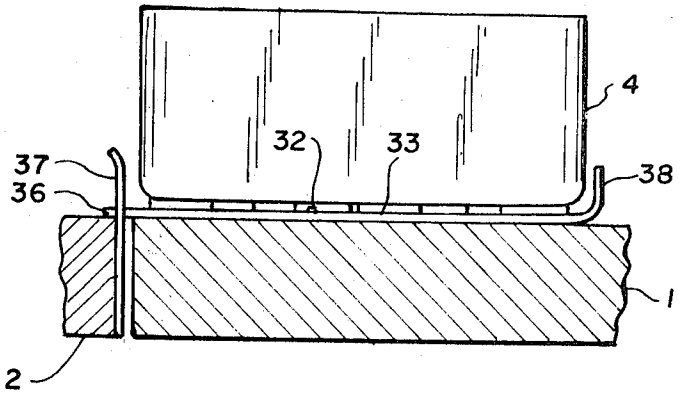
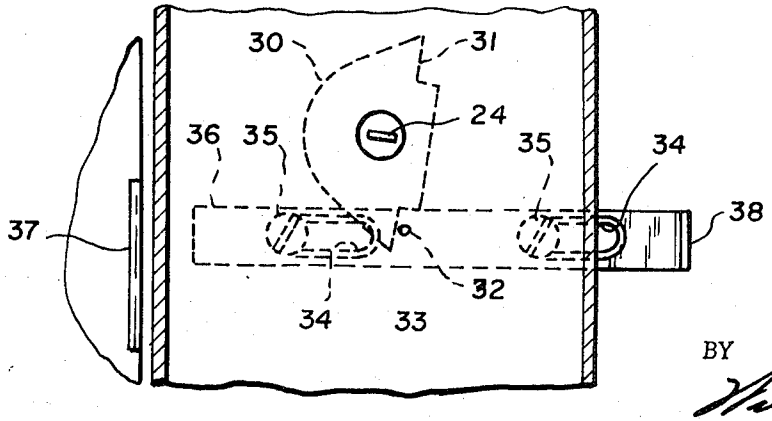


FIG.14.



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COMBINATION BURGLAR AND FIRE ALARM

This invention relates to a combined burglar alarm and fire alarm. More specifically, it relates to a burglar alarm which may be operated by opening of a door or window.

An outstanding disadvantage of well-known types of burglar alarms is that they are not tamperproof, therefore can be rendered ineffective by the burglar without too much difficulty.

Another disadvantage of well-known types of burglar alarms is that they are relatively complicated in construction, cumbersome in size, and expensive to manufacture, and yet they do not assure security under all circumstances.

An object of the present invention is to provide a novel burglar alarm which is devoid of the above-named disadvantages and which is tamperproof, requiring a key to make the alarm ineffective.

Another object of the present invention is to provide a novel burglar alarm which is relatively simple in construction and operation, involving relatively few and inexpensive parts, all of which are standard parts, therefore, making the total cost relative low.

Another object of the invention is to provide a burglar alarm assembly of such construction as to provide flexibility in operation so that the alarm may be operated either by opening of the door, or by opening of a window, and may be either mounted on the door or laid on the floor near the door so as to operate upon opening of the door.

Other objects and advantages will become more apparent from a study of the following description, taken with the accompanying drawings wherein:

FIG. 1 is a fragmentary, front or elevational view showing a burglar alarm embodying the present invention mounted on the inside of a door adjacent the door frame;

FIG. 2 is an enlarged, cross-sectional view taken along line II—II of FIG. 1;

FIG. 3 is a view similar to FIG. 2 (but without the door) except showing the burglar alarm switch in the closed instead of the open position;

FIG. 4 is an enlarged, elevational view of the alarm shown in FIG. 1 with the cover removed to show the interior construction;

FIG. 4*a* is a modification of a part of FIG. 4;

FIG. 5 shows the lock operated switch of FIG. 4 in the deactivated position to nullify the alarm;

FIG. 6 is a cross-sectional view taken through the end of the key 24 where it enters the slot in the tumbler 22 to effect turning thereof;

FIG. 7 is an elevational view showing a fragmentary portion of a window and window blind and the mode of connection to the burglar alarm when mounted on a window sill;

FIG. 8 is an elevational view of the alarm shown in FIG. 7 but with the cover removed;

FIG. 9 is an end view of the alarm shown in FIG. 8;

FIG. 10 is a schematic diagram of the alarm circuit of FIG. 4; and,

FIG. 11 is a modification of the fire detector of FIG. 4.

FIG. 12 and 14 are elevational views and FIG. 13, a side view of a modification; and

FIG. 15 is an enlarged view of the keeper thereof.

Referring more particularly to FIG. 1 of the drawing, numeral 1 denotes a portion of a door separated by a small space 2 from a door frame and as viewed from the inside of a room. Numeral 3 generally denotes an alarm embodying the present invention comprised of a metallic (or plastic) case 4 (see FIGS. 2, 3 and 4) having a detachable cover 5 held thereon by screws or any other suitable fastening means. A horn 6 of any well-known type is contained within the case 4, also a flexible spring metal strip 7 of steel or other suitable material insulated from case 4 by mounting it on an insulating holding strip 8.

A contact 9 is connected to the positive terminal of a dry cell 10 supported on a holder 11 and contact bar 12 connected to the positive terminal of a second dry cell 13. An insulating strip 14 is mounted on strip 7 and the end portion 15 of strip 7 serves as an electrical contact for engaging a disc-shaped sliding contact 16 normally urged by spring 17 to the left or closed position of the switch, as viewed in FIG. 4.

Rigidly secured to contact 16 is a switch actuating element 18 which, when pushed in as shown in FIG. 2, compresses spring 17 and opens the switch because switch element 16 will ride on insulating strip 14. Actuating element 18 may be held in the position shown in FIG. 2, that is, the open position of the switch, by means of a leaf spring 20 bent back upon itself so that when the bent end portions are confined to the small space 2, a terminal portion 19 will hold actuating element 18 in the open position as shown in FIG. 2. This spring may be made of a thin strip of spring metal reversely bent with one leg portion having a central portion partially cut out of the strip and projecting in the manner shown by extension 19, the remaining portion of the cutout strip being in the same plane as the bent end portion.

An important feature of the present invention is that it is tamperproof and may be deactivated solely by a key 24 or one fitting slots 26′, 26′ which operates an ordinary tumbler lock 25 on a door. A barrel or tumbler 22 is provided in case 4 which can be turned only as the result of a key 24 projecting through hole 23 of the box into slot 26 of the tumbler 22 as shown in FIG. 6. A cam 21 is integrally formed on tumbler 22 so that when the tumbler is turned by a key from the position shown in FIG. 4 to that shown in FIG. 5, it will effect springing away of contact 15 from contact 16, thereby opening the switch and making the alarm ineffective. This same rotation of tumbler 22 may be done from the inside of a door by using a key with a double prong which fits into slots 26′, 26′ on the inside end surface of the tumbler 22.

In operation, therefore, after the burglar alarm box or case 4 is mounted on the inside of a door 1 by suitable means, such as screws, vacuum cups or the like, the actuating element 18 is moved to the open position by spring pressure of the terminal portion 19 of the spring 20, as shown in FIG. 2. Assuming that the tumbler 22 has been turned, by a double-prong key fitting into slots 26′, 26′ to the position shown in FIG. 4, that is, in the operative position. Then upon opening of the door by a burglar or other unauthorized person, actuating element 19 will spring outwardly since spring 17 will spring out to the position shown in FIGS. 3 and 4 and will close the contacts 15, 16 which will complete a circuit between the battery 10, 13 and the horn or alarm 6 so as to sound the alarm.

FIG. 4*a* shows a modification with washer 16*a* and additional spring 17*a*.

Should the room occupant go outside on an errand, he may, by his door key 24, set the alarm as shown in FIG. 4. But upon returning from the errand, he may insert his key 24 and turn the tumbler 22 to the position shown in FIG. 5 so as to open contacts 15, 16. Thus upon opening of the door, the alarm will not be sounded.

A fire alarm 35 can be easily embodied by mounting a spring contact member 36, which is normally sprung away from the stationary contact 38 by means of a fusible tubular-shaped element 37 of low melting point. Thus when a fire occurs and sufficient heat is generated to melt the fusible element 37, spring contact 36 will be sprung into contact with contact 38 so as to complete a circuit in the manner shown in FIG. 10. FIG. 10 also shows the circuit of FIG. 4 for the burglar alarm when the switch 15, 16 is in the closed position as shown in FIG. 4.

FIG. 11 is a modification of the fire detector of FIG. 4 showing, instead of the external fusible link 37 an internal fusible button 40, 41 supporting contact 42 of leaf spring 36′.

FIGS. 7, 8 and 9 show a modified burglar alarm 3*a* contained in a box 4*a* having a flexible metal strip 7*a* which carries a contact 15*a* bounded by insulating strips at both ends thereof, one of which engages the movable contact 16*a*, as shown in FIG. 8 when a spring 17*a* is compressed. Such compression may be effected by manually pulling out and holding an actuating element 18*a* by a pin 30 rigidly connected thereto which may be inserted into a hook 31 at the bottom of a window blind 32 supported on a window frame 33.

In operation, when a burglar attempts to enter the window by pushing in blind **32**, hook **31** will no longer support pin **30**, therefore, under the action of spring **17***a*, the actuating element **18***a* will be moved downwardly, as viewed in FIG. **8**, until contact **16***a* engages contact **15***a* so as to complete the alarm circuit between dry cells **10***a*, **13***a* and horn **6***a*.

It should be noted that if window blind **32** is of the venetian blind type, it may be operated in the same way, that is, the venetian blind will first be moved to its lowermost position of the window with a hook on the bottom end or slat similar to hook **31**. Similarly the hook **31**, instead, may be attached to a drape, curtain or the like.

Instead of fusible element **37**, a bimetallic element **7***b* may be used in FIG. **10** and FIG. **4**. Overheating thereof due to a fire will cause its end **7***c* to contact the housing and complete an alarm circuit.

A still further modification of the invention may be made simply by removing spring **17***a* from the assembly shown in FIG. **8** and laying the box **4***a* on the floor immediately adjacent the door **1** so that upon opening of the door, actuating element **18***a* may be moved against friction from the position shown in FIG. **8** to that shown in FIG. **10**, that is, wherein contacts **16***a* and **15***a* engage so as to complete the alarm circuit. The alarm may be turned off later by again pulling out actuating element **18***a*. If desired, instead of normally holding actuating element **18***a* outwardly by friction, it may be so held by placing spring **17***a* of FIG. **8** below, instead of above, contact **16***a* so as to normally bias the actuating element **18***a* to the open position shown.

FIGS. **12** to **15** inclusive show a modification involving the addition of a latch which is key operated from the outside and hand operated from the inside so as to provide greater security. As shown in these Figures, a keeper **37** is attached to door frame **2** and its construction is shown more clearly in FIG. **15**. It has a slot **40** for receiving end **36** of latch **33** and holes **41** for attaching the keeper, such as by wood screws or the like, to the frame.

Latch **33** is provided with grooves **34** which are guided by bolts or rivets **35** attached to the outside of housing **4** closest the door. At the end of the latch there projects, at right angles, integral flange or thumbpiece **38** which may be grasped by the thumb so as to either withdraw or insert the latch through the slot **40** in keeper **37** from the inside of the door.

Assuming that the latch is in its locked position, as shown in FIG. **12**. It may be unlocked either by means of manual sliding of latch **33** or by means of a key which turns the lock from the outside of the door. At the end of the latch there projects, at right angles, integral flange or thumb piece **38** which may be grasped by the thumb so as to either withdraw or insert the the latch through the slot **40** in keeper **37** from the inside of the door.

Assuming that the latch is in its locked position, as shown in FIG. **12**. It may be unlocked either by means of manual sliding of latch **33** or by means of a key which turns the lock from the outside of the door. The key will turn shank **24** which fits into a correspondingly shaped slot in the operating element **30**.

Operating element **30** is turned counterclockwise from the position shown in FIG. **12** to that shown in FIG. **14** so that the lower edge **31** will push against pin **32** on latch **33** so as to retract the latch as shown in FIG. **14**. If the key is turned oppositely, the other edge **31** will push against pin **32** as shown in FIG. **12** to lock the door.

While I have illustrated and described several embodiments of my invention, it will be understood that these are by way of illustration only, and that various changes and modifications may be made within the contemplation of my invention and within the scope of the following claims.

I claim:

1. A burglar alarm for mounting on the inside of a door having a door lock, comprising a box containing a source of electrical energy, an alarm and a switch connecting said source to said alarm, a tumbler also mounted in said box with an end adapted to confront said lock so as to be engageable and turnable by a key for said lock, means on said tumbler to effect opening of said switch as the result of partial rotation of said tumbler to render the alarm ineffective, and actuating means operable by opening of said door for closing said switch and sounding said alarm, said tumbler being provided with means to enable rotation thereof from the inside of the door to open said switch and make the alarm ineffective.

2. A burglar alarm as recited in claim **1** together with a spring in said box for normally urging said switch to the closed position when the door is opened, and a reversely bent leaf spring attached to one side of said box so that one leaf extension will overcome said first-mentioned spring and normally urge said switch-actuating means in the open position and maintaining that position while the door is closed.

3. A burglar alarm as recited in claim **1**, together with a keeper, and a latch operable by said tumbler so that turning of a key will effect sliding of said latch laterally of the door into said keeper, so as to lock said door, said latch being manually operable from the inside of the door to enable selective locking and unlocking of the door.

4. A burglar alarm as recited in claim **1** together with a fire alarm in said burglar alarm circuit comprising a bimetallic element which is normally bent away from a stationary contact but which will bend upon occurrence of a fire to contact said stationary contact to sound said alarm.

* * * * *