Jan. 19, 1960 A. JEZL 2,922,150

DOOR ALARM

Filed April 19, 1957

Fig.1

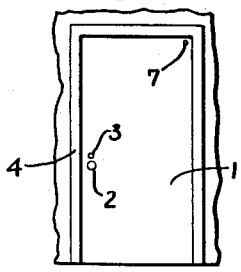


Fig.2

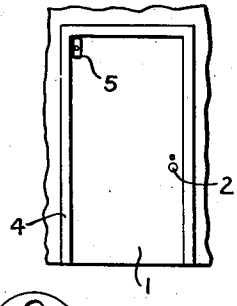


Fig.3

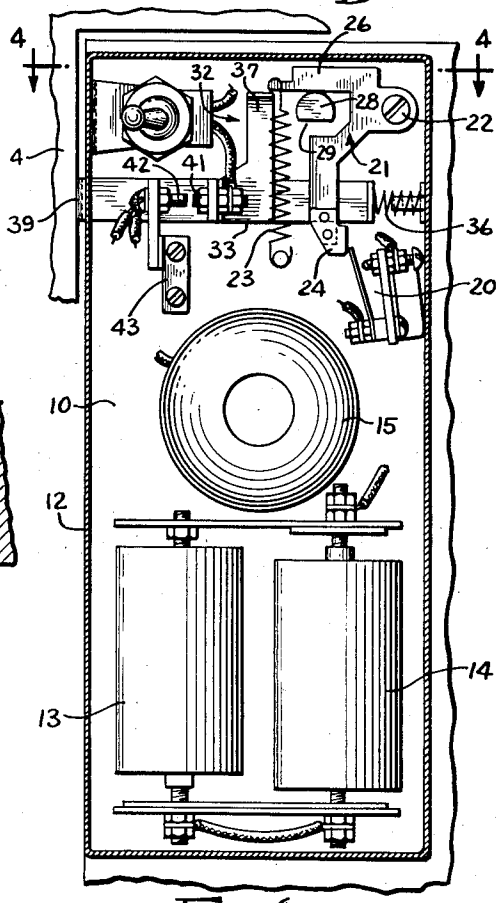


Fig.4

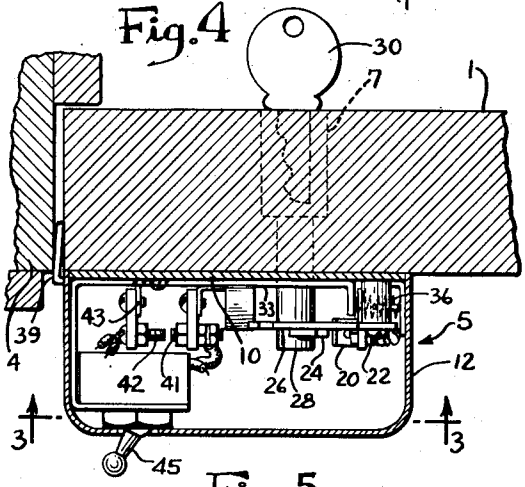


Fig.5

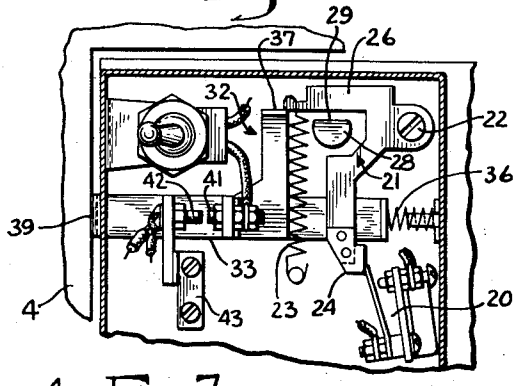


Fig.6

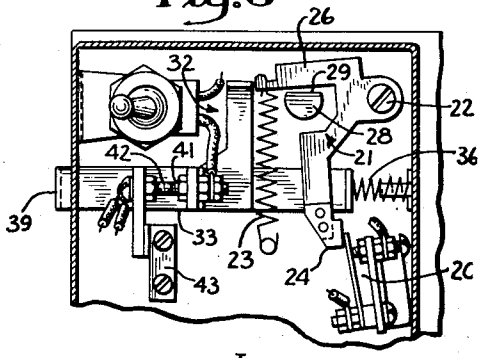
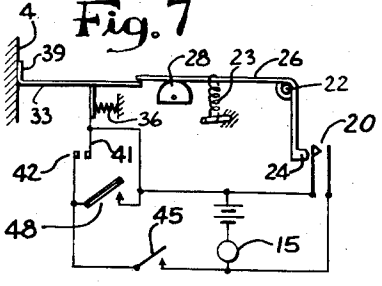


Fig.7



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DOOR ALARM

Anton Jezl, Chicago, Ill.

Application April 19, 1957, Serial No. 653,999

5 Claims. (Cl. 340—275)

This invention relates to door alarms; that is, an apparatus that will give an alarm signal indicating that a door has been opened. It is one of the objects of the present invention to provide a door alarm that will indicate when a door has been opened and that can be set selectively to operate in either of a number of ways. One mode of operation for which the apparatus may be set is to indicate when a door has been opened and continue that indication only until the door has been closed. Another possible way of setting the apparatus is to provide for the alarm ceasing after the door has been opened, the cessation of the alarm being brought about either by a time-delay switch or a manually operated switch so that the door may be left open without a continuation of the alarm, and in the case of a manually operated switch the switch may be set to an off-position to incapacitate the alarm even before the alarm signal has been given. A third arrangement which is possible with the same equipment is brought about by a key controlled operator which, in one position is ineffective so that the alarm may operate in either of the manners above set forth and in the alternate key controlled position prevents the turning off of the alarm once the alarm has been actuated by opening of the door, so that once the door is opened the alarm continues notwithstanding a reclosure of the door, until the key-operated member has been actuated.

It is a further object of the present invention to provide an alarm system of the above-mentioned character wherein the alarm unit is contained within its own enclosure that includes its own source of power, such as electric dry cells, so that there are no external wires that can be cut or external circuits that can be opened to disable the alarm once the alarm has gone on. This is of importance in connection with burglar alarm protection. It is a still further object of the present invention to provide a door alarm of the above character which is simple and economical of construction and which can be mounted on a door or door jamb in a convenient and inconspicuous location.

The attainment of the above and further objects of the present invention will be apparent from the above specification taken in conjunction with the accompanying drawings forming a part thereof.

In the drawings:

Fig. 1 is a front outside view of a door on which the present invention has been mounted;

Fig. 2 is a similar view of the inside of the door;

Fig. 3 is an enlarged front view of the alarm mechanism with the cover removed;

Fig. 4 is a sectional view taken along the line 4—4 of Fig. 3;

Fig. 5 is a view of the mechanism of Fig. 3 in an alternate position;

Fig. 6 is a view similar to Fig. 5 showing the mechanism in its tripped position; and

Fig. 7 is a simplified diagram of the circuit embodying the present invention.

In Fig. 1 there is shown at 1 a hinged entrance door of a home or the like having the usual doorknob 2 and key operated lock 3, the door being mounted in the usual jamb 4. An alarm protective apparatus 5 of the present invention is mounted on the inside of the door at any convenient place, for instance in an upper corner at the hinged side thereof. The apparatus 5 is arranged to be controlled in a manner to be more fully set forth, by a key operated lock 7 that is controlled from the outside of the house; that is, from the outer surface of the door.

The apparatus 5 includes a base 10 that is secured to the door and upon which the various instrumentalities are mounted, which instrumentalities are overlaid by an enclosure 12.

Mounted on the base and enclosed within the enclosure 12 there is provided means for releasably holding a pair of dry cell electric storage batteries 13, 14 that are connected in series. An audible electric alarm signal 15 is also mounted on the base 10 and, in addition, on the base 10 are mounted the various instrumentalities for actuating the alarm signal 15 from the batteries. These instrumentalities include an electric switch 20 that is normally in its open position and arranged to be closed by a spring actuated trip lever 21, in the form of a bell crank, that is pivoted at 22 and is urged by a tension spring 23 in a direction counterclockwise as seen in Fig. 3 so that an insulating nose portion 24 of the trip lever moves the spring switch 20 to its closed position. The trip lever includes an arm 26 to which the spring 23 is connected. The arm 26 is adapted to be held in its raised position, which is the position where the switch 20 is open, by either of two instrumentalities, one of which is an axially rotatable key operated shank 28 that has a flat surface 29 and is part of the key controlled lock 7 actuated by a key 30. When the shank is in the position illustrated in Fig. 3 it holds the trip lever in its switch open position. When the shank 28 has been turned through 180° to the position shown in Figs. 5 and 6, it permits the spring 23 to move the trip lever in a counterclockwise direction. The counterclockwise movement of the trip lever 21 is further controlled by a latch 32. The latch 32 includes a horizontal bar 33 mounted for longitudinal sliding movement and constantly urged by a compression spring 36 in a direction to the left as seen in Fig. 3. The latch 32 includes an upright arm 37 which, in Fig. 3, is in a position underlying the left hand end of the arm 26 of the trip lever and thus prevents counterclockwise movement of that lever under the action of spring 23.

The bar 33 of the latch 32 extends through the left hand wall of the housing 12, as seen in Figs. 3, 4, 5 and 6, and has a forwardly bent projection 39 that is adapted to enter between the door 1 and the jamb 4 so that when the door is being shut, the projection 39 bears against the jamb 4 and moves the bar 33, against the action of the spring 36, to the position illustrated in Fig. 3. When the door is opened the bar 33 is free to move in a direction leftward as seen in Figs. 3 and 4 to permit the latch 37 to clear the bottom of the arm 26. The bar 33 carries a switch contact 41 mounted thereon which is adapted to cooperate with a switch contact 42 mounted on a piece of insulation 43 that is secured to the base 10. The contacts 41, 42 are illustrated in their switch open position in Figs. 3, 4 and 5 and in their switch closed position in Fig. 6. A manually operated toggle switch 45, the actuator of which extends through an opening in the housing 12, is connected in series with the switch contacts 41, 42.

An explanation will now be given of the mode of operation of the structure thus far described. When the door is in its closed position, the latch 32 is in the position il-

lustrated in Fig. 3. When the door is opened the latch moves to the position illustrated in Fig. 6. This closes a circuit at the switch contacts **41**, **42**. If at this time the toggle switch **45** is in its closed position, there is established a circuit for the alarm **15** as may be seen from Fig. 7. This alarm circuit can be opened either by opening the toggle switch **45** or by closing the door, which results in return movement of the bar **33** to the position illustrated in Figs. 3 and 5, to open the switch contacts **41**, **42**. At this time movement of the latch **32** has no effect upon the bell crank lever **21** which is retained in the position illustrated in Fig. 3 by the key controlled shank **28**.

So long as the key-controlled shank **28** is in the position illustrated in Fig. 3 the bell crank lever **21** remains in the position there shown regardless of the opening or closing of the door, and therefore the actuation or non-actuation of the alarm **15** upon opening the door is independent of the switch **20** and is controlled solely by whether or not the toggle switch **45** is in its on or in its off position.

If desired, a normally open thermostatic switch **48** may be connected in parallel with the switch contacts **41**, **42** so that upon closing of the thermal switch **48**, as for instance in the event of a fire, the alarm **15** is actuated over a circuit which can be opened by opening the switch **45**.

If it is desired to provide an alarm system wherein the alarm is actuated by opening of the door, and, once actuated, cannot be turned off except by operating the key-controlled shank **28**, it is merely necessary to operate the key **30** to turn the shank **28** through an angle of 180° from the position illustrated in Fig. 3. This is illustrated in Fig. 5 when the door is closed. At that time the arm **37** is in position under the arm **26** and retains the bell crank lever **21** in its inoperative position illustrated in Figs. 3 and 5. However, when the door is opened the latch **32** moves to the left, that is, to the position illustrated in Fig. 6, under the action of the spring **36**. The latch bar **37** clears the arm **26**. The spring **23** then draws the lever **21** about its pivot support **22** to move the switch **20** to its closed position. This completes a circuit for the alarm **15** through the switch **20**, as seen in Fig. 7, which circuit is independent of the switch **45** and of the switches **41—42**. A reclosure of the door returns the latch **32** to the position illustrated in Fig. 3, at which time the left hand end of the arm **26** is below the top of the latch bar and not affected thereby. It is thus apparent that when the key-controlled shank **28** is in a position turned 180° from the position illustrated in Fig. 3, the opening of the door results in actuation of the alarm, which alarm continues notwithstanding reclosure of the door. The only way in which the bell crank lever **21** can be moved back to the position of Fig. 3 for opening the switch **20** is by actuating the key-controlled shank **28** by the key **30** to raise the shank **26** back to the position illustrated in Fig. 3. If this is done after the door is closed, and the bar **37** is above the left hand end of the arm **26**, there is sufficient resiliency in the bar **37** to permit it to flex and let the left hand end of the arm **26** pass, the top of the bar then flexing back under its natural resiliency to the position illustrated in Fig. 3.

In compliance with the requirements of the patent statutes I have herein shown and described a preferred embodiment of the invention. It is, however, to be understood that the invention is not limited to the precise construction herein shown, the same being merely illustrative of the principles of the invention. What is considered new and desired to be secured by Letters Patent is:

1. In combination, an electric alarm and a circuit closer therefor for use with a movable closure member, said circuit closer comprising a first circuit for the alarm, a first switch controlling said first circuit, a second circuit for said alarm paralleling said first circuit, a second switch in said second circuit, a movable member having a retracted and an extended position, spring means urging said member to its extended position, said member being moved to its retracted position by said movable closure in one position of said closure, means controlled by said member for actuating said first switch to complete the first alarm circuit, whereby said alarm is effective to indicate the open and the closed position of the closure member, manual means for disabling said first circuit, a spring actuated trip lever for actuating the second switch, means controlled by the movable member for holding the trip lever in its switch-open position and releasing the trip lever for movement to its switch closed position upon movement of the said member to its extended position, said last means being free of the trip lever so that upon subsequent return of the member to its retracted position said member is ineffective to restore the tripped lever to its switch open position, and a key controlled lock having key actuated means for restoring the trip lever to its switch-open position.

2. In combination, an electric alarm and a circuit closer therefor for use with a movable closure member, said circuit closer comprising a first circuit for the alarm, a first switch controlling said first circuit, a second circuit for said alarm paralleling said first circuit, a second switch in said second circuit, a movable member having a retracted and an extended position, spring means urging said member to its extended position, said member being moved to its retracted position by said movable closure in one position of said closure, means controlled by said member for actuating said first switch to complete the first alarm circuit, whereby said alarm is effective to indicate the open and the closed position of the closure member, manual means for disabling said first circuit, a spring actuated trip lever for actuating the second switch, means controlled by the movable member for holding the trip lever in its switch-open position and releasing the trip lever for movement to its switch closed position upon movement of the said member to its extended position, said last means being free of the trip lever so that upon subsequent return of the member to its retracted position said member is ineffective to restore the tripped lever to its switch-open position, a key controlled lock having key actuated means for restoring the trip lever to its switch-open position, and a casing, said alarm and the circuit closure therefor being within said casing and said member projecting from the casing for actuation by the movable closure.

3. In combination, an electric alarm and a circuit closer therefor for use with a movable closure member, said circuit closer comprising a first circuit for the alarm, a first switch controlling said first circuit, a second circuit for said alarm paralleling said first circuit, a second switch in said second circuit, a movable member having a retracted and an extended position, spring means urging said member to its extended position, said member being moved to its retracted position by said movable closure in one position of said closure, means controlled by said member for actuating said first switch to complete the first alarm circuit, whereby said alarm is effective to indicate the open and the closed position of the closure member, manual means for disabling said first circuit, a spring actuated trip lever for actuating the second switch, means controlled by the movable member for holding the trip lever in its switch-open position and releasing the trip lever for movement to its switch closed position upon movement of the said member to its extended position, said last means being free of the trip lever so that upon subsequent return of the member to its retracted position said member is ineffective to restore the tripped lever to its switch open position, a key controlled lock having key actuated means for restoring the trip lever to its switch-open position, a casing, said alarm and the circuit closure therefor being within said casing and said member projecting from the casing for actuation by the movable closure, and battery means within said casing for supplying electrical operative energy for said alarm.

4. In combination, an electric alarm and a circuit closer therefor use with a movable closure member, said circuit closer comprising a first circuit for the alarm, a first switch controlling said first circuit, a second circuit for said alarm paralleling said first circuit, a second switch in said second circuit, a movable member having a retracted and an extended position, spring means urging said member to its extended position, said member being moved to its retracted position by said movable closure in one position of said closure, means controlled by said member for actuating said first switch to complete the first alarm circuit, whereby said alarm is effective to indicate the open and the closed position of the closure member, manual means for disabling said first circuit, a spring actuated trip lever for actuating the second switch, means controlled by the movable member for holding the trip lever in its switch-open position and releasing the trip lever for movement to its switch closed position upon movement of the said member to its extended position, said last means being free of the trip lever so that upon subsequent return of the member to its retracted position said member is ineffective to restore the tripped lever to its switch-open position, and a thermostatic switch paralleling one of said two switches to actuate the alarm upon operation of said thermostatic switch.

5. In combination, an electric alarm and a circuit closer therefor for use with a movable closure member, said circuit closer comprising a first circuit for the alarm, a first switch controlling said first circuit, a second circuit for said alarm paralleling said first circuit, a second switch in said second circuit, a movable member having a retracted and an extended position, spring means urging said member to its extended position, said member being moved to its retracted position by said movable closure in one position of said closure, means controlled by said member for actuating said first switch to complete the first alarm circuit, whereby said alarm is effective to indicate the open and the closed position of the closure member, manual means for disabling said first circuit, a spring actuated trip lever for actuating the second switch, means controlled by the movable member for holding the trip lever in its switch-open position and releasing the trip lever for movement to its switch closed position upon movement of the said member to its extended position, said last means being free of the trip lever so that upon subsequent return of the member to its retracted position said member is ineffective to restore the tripped lever to its switch-open position, a thermostatic switch paralleling one of said two switches to actuate the alarm upon operation of said thermostatic switch, a key controlled lock having key actuated means for restoring the trip lever to its switch-open position, a casing, said alarm and the circuit closure therefor being within said casing and said member projecting from the casing for actuation by the movable closure, and battery means within said casing for supplying electrical operative energy for said alarm.

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UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 2,922,150 January 19, 1960

Anton Jezl

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 5, line 2, after "therefor" insert -- for --.

Signed and sealed this 14th day of June 1960.

(SEAL)

Attest:

KARL H. AXLINE
Attesting Officer

ROBERT C. WATSON
Commissioner of Patents

UNITED STATES PATENT OFFICE

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