

[72] Inventor **Alfred G. Shew**
6449 Hazel Avenue, Richmond, Calif.
94805
 [21] Appl. No. **883,480**
 [22] Filed **Dec. 9, 1969**
 [45] Patented **Dec. 28, 1971**

484,577	10/1892	Baumann	200/61.61
884,843	4/1908	Newman	340/274
1,892,330	12/1932	Cornyn	340/274
2,838,748	6/1958	Torma	340/276
2,955,282	10/1960	Boyle et al.	340/274
3,402,405	9/1968	Contreras	340/274

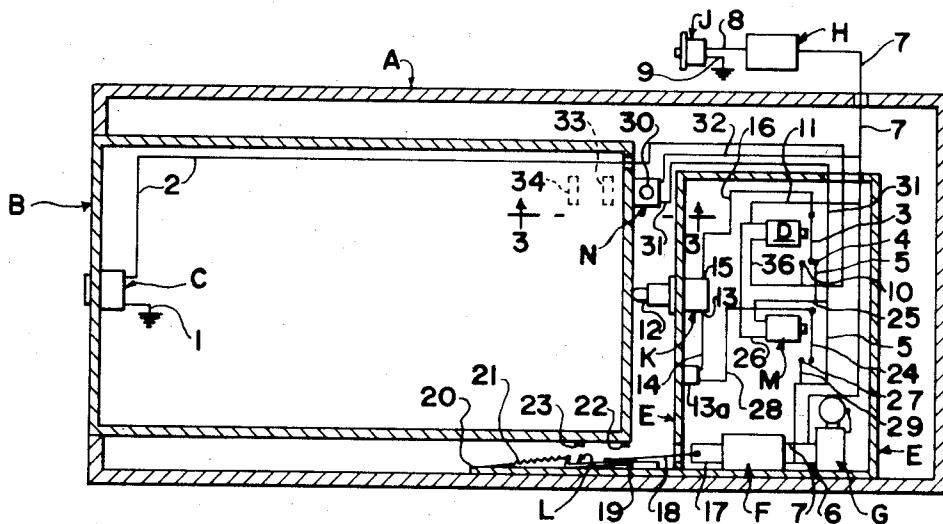
Primary Examiner—Donald J. Yusko
Assistant Examiner—J. Michael Bobbitt
Attorney—William R. Piper

[54] **BURGLAR ALARM AND LOCKING DEVICE FOR DRAWER**
 4 Claims, 4 Drawing Figs.

[52] U.S. Cl. **340/274,**
 200/52, 200/61.61, 200/61.81
 [51] Int. Cl. **G08b 13/08**
 [50] Field of Search 340/274,
 276, 283; 200/61.61, 61.81, 61.82, 52

[56] **References Cited**
UNITED STATES PATENTS
 459,442 9/1891 Garrett 200/61.61

ABSTRACT: A burglar alarm and locking device for a key-locked drawer for holding valuables in which the burglar alarm is activated as soon as an unauthorized person tries to forcibly open the drawer without using the required key. Automatic drawer locking means is also actuated for preventing the drawer from being forced open to an extent where the unauthorized person can remove valuables such as currency from the drawer. This same means will prevent the drawer from being completely closed by the unauthorized person.



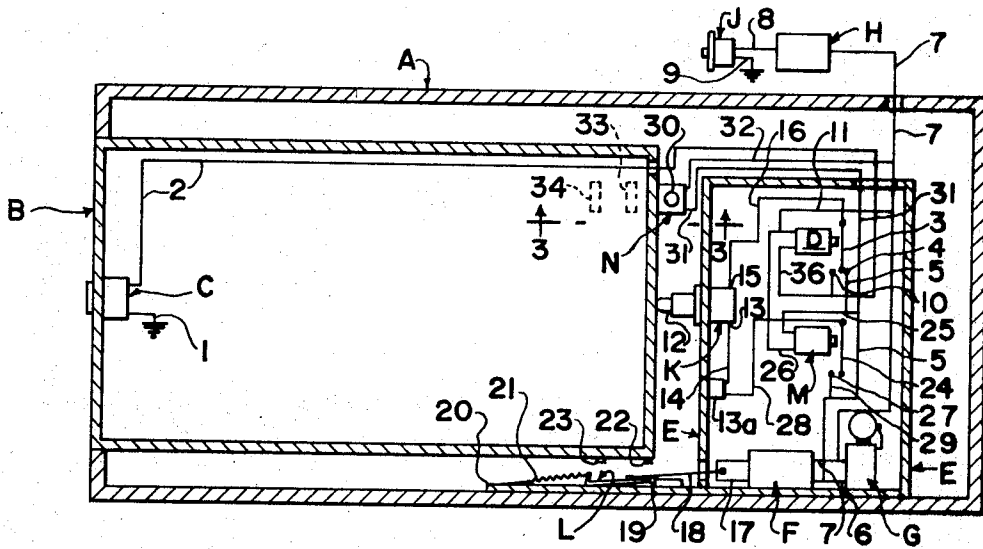


Fig-1

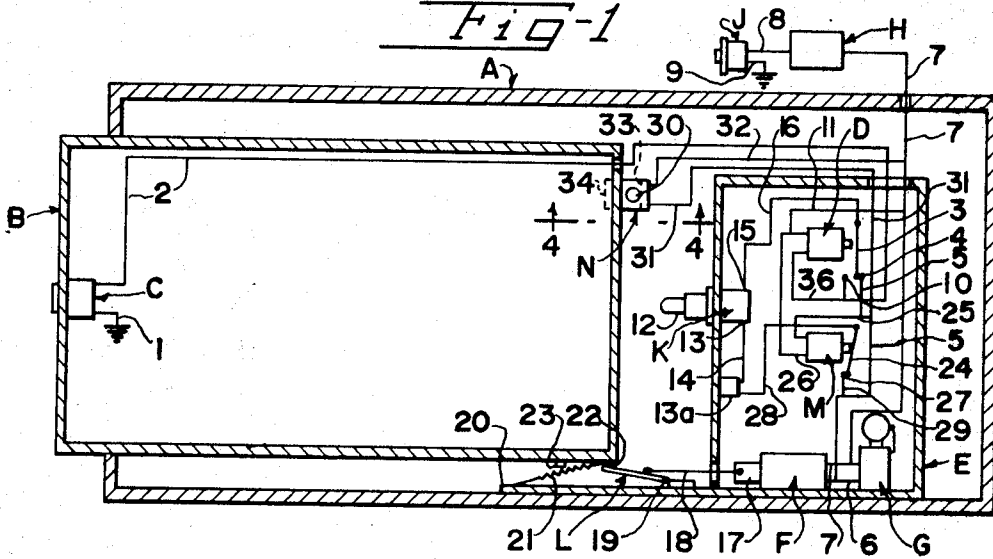


Fig-2

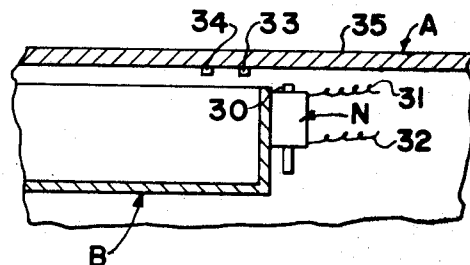


Fig-3

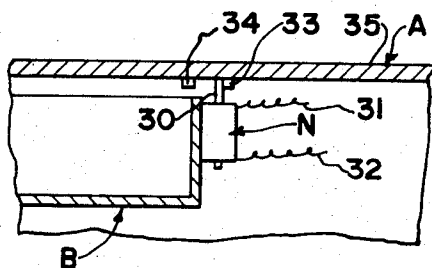


Fig-4

INVENTOR
ALFRED G. SHEW
BY
William R. Piper
ATTORNEY

BURGLAR ALARM AND LOCKING DEVICE FOR DRAWER

BACKGROUND OF THE INVENTION

1. Field of the Invention

Key-locked money-containing drawers are a constant temptation to unauthorized persons who might wish to force the drawer into open position and remove the valuables, such as currency, from the drawer. This is especially true where the key-locked drawer is in an exposed position, such as at a service station, where the drawer is left unattended at times. The purpose of my device is to cause an alarm to sound as soon as an unauthorized person starts to force the drawer into open position without the use of a key. As soon as the drawer is partially opened by the intruder, the alarm will sound and a drawer stop will be activated to prevent the drawer from being opened to an extent where the unauthorized person can gain access to the drawer interior to remove any valuables therein. The drawer stop when once activated will prevent the drawer

2. Description of the Prior Art

The patents to Robert Baumann, No. 484,577; Louis Torma, U.S. Pat. No. 2,838,748; and Joseph J. Boyle et al., U.S. Pat. No. 2,955,282; show key-locked drawers that will close a burglar alarm circuit when the drawers are forced into open position, but none of these patents disclose a drawer stop that is automatically actuated when the burglar alarm circuit is closed for preventing the drawer from being opened to an extent where the unauthorized person can gain access to any valuables in the drawer.

SUMMARY OF THE INVENTION

An object of my invention is to provide a novel burglar alarm device for key-locked drawers where not only an alarm will sound when the drawer is forced open without using a key, but in addition a drawer stop means is also automatically activated for preventing the drawer from being opened to an extent where the unauthorized person can reach into the drawer interior and remove the valuable contents therefrom. This same drawer stop means will prevent the unauthorized person to close the drawer.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a horizontal section through a drawer and the drawer containing casing and shows my device schematically applied thereto. The drawer is shown in closed position and with the drawer stop in inoperative position.

FIG. 2 is a horizontal section similar to FIG. 1, and shows the drawer when forced into a partially open position by an unauthorized person who has not used a key. The drawer stop has been actuated into operative position.

FIG. 3 is a vertical section at 3—3 through a portion of FIG. 1, and shows an auxiliary drawer stop that may be used in combination with the other drawer stop shown in inoperative position in the same Figure.

FIG. 4 is a vertical section at 4—4 through a portion of FIG. 2, and shows the auxiliary drawer stop in operative position for preventing the drawer from being opened beyond a predetermined point and for preventing the drawer from being closed by an unauthorized person.

DESCRIPTION OF THE PREFERRED EMBODIMENT

In carrying out my invention I make use of a casing indicated generally at A, and a key-locked drawer indicated generally at B. The drawer is slidably mounted in the casing and one or more drawers may be assembled in the casing. Each drawer may be provided with my burglar alarm and drawer stop device. I have not indicated any means for slidably supporting the drawer B in the casing A since any one of a number of well-known mechanisms may be used.

The drawer B is provided with a key actuated lock and the lock is provided with a switch indicated schematically at C in

FIGS. 1 and 2. The key-actuated spring-biased switch C is mounted in the key lock casing and one terminal of the switch is grounded to the lock casing and to the drawer casing A and is indicated by the wire and ground at 1 shown in FIGS. 1 and 2. The other terminal of the key-actuated spring-biased switch C is connected to a wire 2 that leads to a circuit-locking relay D shown in FIGS. 1 and 2. The relay D and other electrical parts hereinafter described may be compactly mounted in a casing or housing E that may be mounted in the drawer B. The relay D actuates a switch arm 3 that is normally in contact with a terminal 4 when the relay is not energized. A wire 5 leads from the terminal 4 to a solenoid F which, when energized, actuates a drawer stop mechanism hereinafter described. A wire 6 connects with the wire 5 and connects with an alarm bell G or other audible or warning signal. A common wire 7 connects with both the solenoid F and alarm bell G to a source of current H, such as a battery. A wire 8 leads from the battery to a main switch J that when closed makes the device ready for instant response should the drawer B be tampered with. A wire and "ground" 9 completes one of the circuits.

When a key, not shown, is used for opening the drawer B, the spring biased key switch C is momentarily closed and a current flows through the wire 2 to the relay D to actuate it and cause it to swing the switch arm 3 away from the contact 4. I will explain hereinafter how a drawer-actuated switch must be closed to complete the alarm and door lock circuit. The relay D moves the switch arm 3 into electrical engagement with a contact 10 and holds it there so long as the relay is energized. A wire 11 leads from the relay D to the wire 7 that leads to the battery H and ground 9. In this way the current does not flow through the solenoid F and alarm bell G when the drawer B is first unlocked by actuating the spring-biased key switch C and then opening the unlocked drawer. The alarm circuit and drawer stop circuit will not be closed and valuables, such as currency and coins, may be put in the opened drawer or removed therefrom.

The relay D when energized acts as a locking relay in conjunction with a switch K to maintain the switch arm 3 in closed relation with the contact 10 when the drawer is opened by an authorized person who has a key. The electrical circuit through the relay includes a drawer actuated switch K which is automatically closed when the drawer is opened. The switch K is supported by the housing E and has a spring-biased pushbutton 12 that contacts with the drawer B when the latter is in closed position and this will keep the switch open. The switch K could be carried by the drawer and the pushbutton 12 contact the housing E. When the drawer B is opened after first being unlocked by a key in the key switch C which momentarily completes the circuit for relay D, energizing it, the switch K will close. Current will flow from ground 13a through wire 14, terminal 13, closed switch K, terminal 14, wire 16, switch arm 3, contact 10, wire 36, relay D, wires 11 and 7 and back to the battery H. Then the current flows through the wire 8, main switch J, wire 9 and back to ground which completes the circuit for relay D.

When the drawer B is closed, the drawer switch K will be opened and the circuit to the relay D will be broken. The relay will become deenergized and permit the switch arm 3 to return and make an electrical connection with the contact 4. The device is now ready to close the alarm bell circuit to the bell G should the drawer be forced open sufficiently to permit the drawer switch K to close.

I will now explain the alarm and drawer locking circuit that is closed as soon as the drawer A is forced into a partially open position without first using the key, see FIG. 2. The opening of the drawer closes the switch K. Current will flow from battery H, through wire 8, main switch J, wire 9 and ground, which is the casing A and housing E. From ground 13a, the current will flow through wire 14, switch K, wire 16, relay switch arm 3, contact 4, wires 5 and 6, to the solenoid for the drawer stop F, and alarm bell G, thence through wire 7 and back to the battery, thus completing the alarm and drawer stopping circuit.

The solenoid F will be energized and the alarm bell G will sound.

The energizing of the solenoid F will pull on the solenoid armature 17 to retract it from the inoperative position shown in FIG. 1 into the operative position shown in FIG. 2. A link 18 connects the armature 17 to a swingable drawer latch L that has one end pivoted at 19 to a latch base 20. A coil spring 21 has one end attached to the latch base and its other end is connected to the catch end of the latch L. The latch base 20 is secured to the sidewall of the drawer casing A.

FIG. 2 shows a stop 22 mounted on the side of the drawer B and when the solenoid F is energized by the closing of the drawer actuated switch K, the latch L will be instantly swung into contact with the side of the drawer so that it will engage with the drawer stop 22 and prevent the further prying open of the drawer beyond the slightly open position of the drawer shown in FIG. 2. The drawer B is not open far enough to permit the burglar to gain access to the drawer interior in order to remove any valuables therefrom, such as currency. Also, the alarm bell G is sounding during this entire time and this will cause the burglar to leave the scene promptly for fear of being arrested.

If the burglar should try to close the drawer in order to stop the alarm G from sounding, such a movement is prevented by another stop 23 mounted on the side of the drawer B, and only a short distance from the stop 22. Should the drawer be moved inwardly in an endeavor by the burglar to close it, the stop 23 would strike the latch L, and prevent further inward movement of the drawer before the back of the drawer would strike the push button 12 to open the switch K.

However, I have provided another relay-locked circuit which is energized when the drawer switch K is closed and will act as an auxiliary circuit to keep the burglar alarm G sounding even though the burglar might be successful in overcoming the latch L and forcing the drawer into closed position and thus opening the drawer switch K. In FIGS. 1 and 2, I show a second relay M. This relay has a switch arm 24 that is normally in open position as shown in FIG. 1. When the drawer switch K is closed upon the forcing open of the drawer B without first unlocking the drawer, a current will flow from the battery H through the wire 8, closed main switch J, and to ground 9, which is the metal drawer casing A. From ground the current will flow through wire 14 that is connected to the metal housing E at 13a, and thence through closed drawer switch K which has been closed on the initial forcing open of the drawer. The current will then flow through wire 16, switch arm 3 of relay D, contact 4 because relay D has not been energized and then through wire 5 to branch wire 25, to the relay M. Then the current will flow from the relay M through wire 26 that connects with wire 11 and back to wire 7 and the battery H to complete the circuit and to energize the relay M.

The energizing of the relay M will cause the relay switch 24 to swing and contact terminal 27, see FIG. 2. This now completes an electric circuit from ground 13a, through branch wire 28, relay switch arm 24, contact 27 and wire 29 that connects with wire 5 that leads through alarm bell G and back to the current source H. The locked relay M will remain energized even though the drawer B is forced closed in order to open the switch K. The alarm G will therefore continue to sound until the hidden main switch J is opened.

I provide an auxiliary drawer stop in addition to the drawer latch L for preventing the drawer B from being forced open to a point where the burglar can gain access to the drawer interior for removing valuables therefrom. It is possible, of course, to use the auxiliary drawer stop as the main one if desired and do away with the drawer latch L. In FIGS. 3 and 4 I show a solenoid N mounted on the drawer B and show its armature 30 in retracted or in normal position in FIG. 3. A top plan view of the solenoid N is shown in FIGS. 1 and 2.

When the drawer-actuated switch K is closed by the opening of the drawer B by force, not only the locking relay M is energized as already described, but a current will also flow through wire 16 because the switch K is closed, and thence

through relay switch arm 3, contact 4, wire 5 and a branch wire 31 to the solenoid N. From the solenoid N, the current will flow through a wire 32 that connects with the wire 7 and the battery H. The solenoid N will be energized and will cause its spring-biased armature 30 to move upwardly and cause the upper end of the armature to be positioned between the two stops 33 and 34, see FIGS. 3 and 4. Both stops extend downwardly from an upper wall 35 for the drawer casing A. The stop 33 is so positioned that as soon as the drawer B is forced open into a position that as soon as the drawer B is forced open into a position to permit the spring-biased push-button 12 to close the switch K, the armature 30 will be positioned below and just to the left of the stop 33, see FIG. 4, so that the immediate energizing of the solenoid N will cause its armature 30 to move upwardly into the position shown in this figure. The stop 34 is placed close enough to the stop 33 as to cause the armature 30 when in its operative position to prevent the drawer B from being forced open to such an extent as to permit the burglar to gain access to the drawer for removing valuables therefrom. The stop 33 will prevent the drawer from being forced into closed position.

The stops 33 and 34 are arranged in the same relative positions with respect to the armature 30 of the solenoid N as the stops 22 and 23 are arranged on the drawer B with respect to the drawer latch L when the latter is in its operative position. It is possible to reverse the position of the solenoid N and the stops 33 and 34 so that the solenoid N would be supported by the lower wall of the casing so as to underlie the bottom of the drawer. The stops 33 and 34 would then be secured to the bottom of the drawer and the energized solenoid would move the armature upwardly to be positioned between the two stops. The vertically movable armature 30 will offer greater stopping power for preventing forced movement of the drawer B than the inclined drawer latch L when the latter is in its operative position.

I claim:

1. In combination:

- a. a casing for a drawer;
- b. a key-locked drawer slidably mounted in said casing;
- c. a drawer-actuated switch closed when the drawer is forced into a partially opened position without first using the key to unlock the drawer;
- d. an alarm and drawer latch circuit electrically operated when said drawer switch is closed for sounding the alarm and engaging with said partially opened drawer for preventing it from being opened beyond a predetermined point;
- e. said drawer latch circuit including a solenoid which is energized by the closing of said alarm and drawer latch circuit;
- f. a swingable drawer latch carried by said casing and operatively connected to the armature of said solenoid;
- g. spring means for holding said drawer latch in inoperative position when the solenoid is deenergized; and
- h. a stop carried by said drawer and being movable therewith; said solenoid when energized moving the armature for swinging said drawer latch into operative position so as to lie in the path taken by the drawer stop when the drawer is initially forced toward open position, the latch engaging with said stop for preventing any further opening of the drawer.

2. The combination as set forth in claim 1: and in which

- a. said drawer having a second stop spaced from the first-mentioned stop but lying in the path of said latch for preventing the complete closing of the drawer so long as the solenoid remains energized.

3. In combination:

- a. a casing for a drawer;
- b. a key-locked drawer slidably mounted in said casing;
- c. a drawer-actuated switch closed when the drawer is forced into a partially opened position without first using the key to unlock the drawer;

- d. an alarm and drawer latch circuit electrically operated when said drawer switch is closed for sounding the alarm and engaging with said partially opened drawer for preventing it from being opened beyond a predetermined point;
- e. said drawer latch circuit including a solenoid which is energized by the closing of said alarm and drawer latch circuit;
- f. said solenoid being carried by said drawer and having an armature that is movable upwardly into operative position when said solenoid is energized; and
- g. a stop carried by the portion of said casing that overlies the drawer; said solenoid when energized moving said ar-

mature upwardly so that said stop will lie in the path of the upper end of said armature as the drawer is initially forced toward open position, the armature engaging with said stop for preventing any further opening of the drawer.

4. The combination as set forth in claim 3: and in which

- a. a second stop is carried by the portion of said casing that overlies the drawer and being spaced from the first-mentioned stop and lying in the path of said armature when the solenoid is energized, said second stop being positioned for preventing the complete closing of the drawer so long as the solenoid remains energized.

* * * * *

15

20

25

30

35

40

45

50

55

60

65

70

75