Sept. 8, 1964 H. P. LANDIS 3,147,735

BURGLAR ALARM

Filed Aug. 29, 1962

Fig. 1.

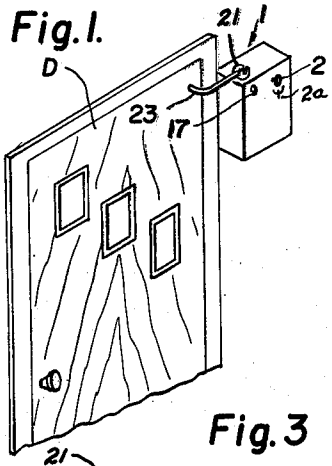

Fig. 2.

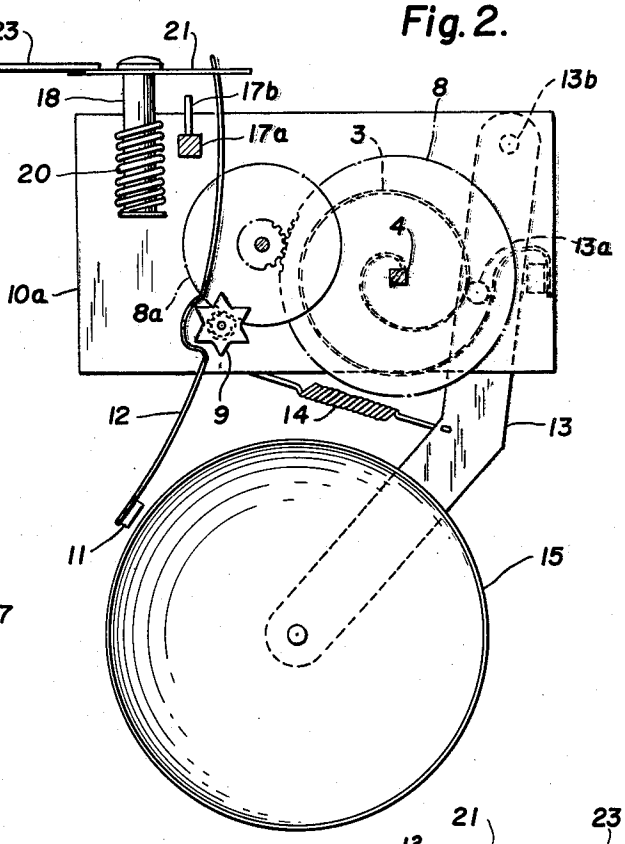

Fig. 3

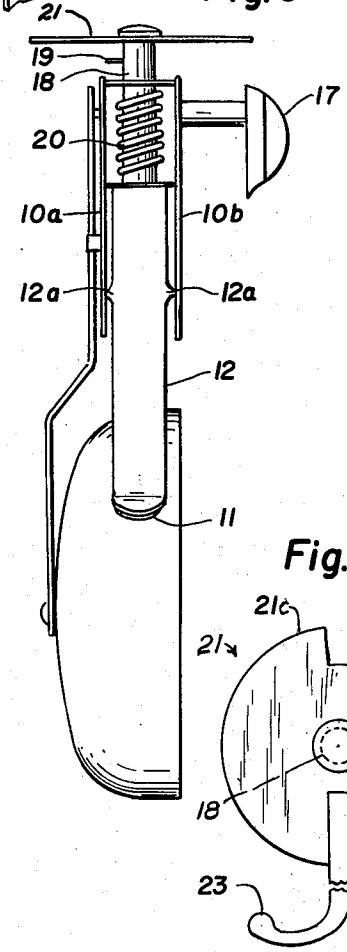

Fig. 4.

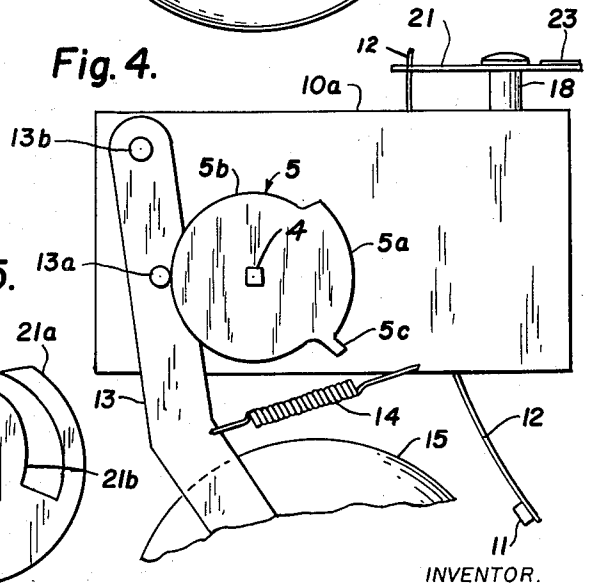

Fig. 5.

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BURGLAR ALARM

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1 Claim. (Cl. 116—91)

This invention relates to a burglar alarm and, more particularly, to a door-operated burglar alarm that not only sounds an alarm when illegal entry is attempted, but which does not sound the alarm when the door is opened by authorized persons, such as tenants.

An outstanding disadvantage of most types of burglar alarms is that when the alarm has been set, it will sound regardless of whether authorized or unauthorized persons wish to enter through the door which operates the alarm.

An object of the present invention is to overcome the above-named disadvantage by providing a novel door-operated, burglar alarm mechanism which can be set and operated in a manner so as to sound if unauthorized entry is attempted, but which will remain silent when tenants or other authorized persons enter through the door.

A further object of the invention is to provide a compact, one piece, burglar alarm unit which may be easily and quickly attached to a door casing so as to automatically set off an alarm the moment the door is opened, even slightly.

Other objects and advantages of the invention will become apparent from a study of the following description taken with the accompanying drawing wherein:

FIG. 1 is a perspective view showing a portion of a door on which a burglar alarm is mounted which embodies the principles of the present invention;

FIG. 2 is an enlarged, front or plan view of the burglar alarm mechanism contained within the box generally denoted by numeral 1 in FIG. 1;

FIG. 3 is a side view of the burglar alarm mechanism shown in FIG. 2;

FIG. 4 is a fragmentary, rear view of the burglar alarm mechanism shown in FIG. 2; and,

FIG. 5 is a top view of the cam 21 shown in FIGS. 2, 3 and 4.

Referring more particularly to FIG. 1 of the drawing, letter D denotes a door on which is mounted a burglar alarm unit contained in a box denoted generally by numeral 1 and provided with a trigger arm 23 which is pushed by the door, when opened, so as to operate the burglar alarm.

Operation

Knob 17 is turned to the "ON" position, thereby withdrawing the integral, radially extending latch 17*b* from engagement with clapper shaft 12, as shown in FIG. 2, which clapper shaft has projections 12*a* forming pivots on mounting plates or frame members 10*a*–10*b*, as shown in FIG. 3. Trigger arm 23 is forced inwardly by opening of the door, rotating cam 21 and winding coil spring 20. Clapper shaft 12 slides off the rim 21*c* of cam 21 (see FIG. 5) and, since the bowed portion of clapper shaft 12 is removed from detent contact with the star wheel 9, releases or unwinds the tension spring 3 of a spring motor causing the cogwheels 8 and 8*a*, and star wheel 9 to rotate. Star wheel 9, by virtue of its pointed surfaces and disengagement with latch 17*b*, causes clapper 11 to oscillate. Clapper 11 thus intermittently strikes the bell and sounds the alarm.

The alarm sounds until cam 5, rigidly mounted on winding shaft 4 of the main spring 3, revolves to a point where its revolution is stopped by stop bar or projection 5*c* by coming into contact with pin 13*a* (see FIG. 4). The alarm can also be shut-off by turning the "ON" and "OFF" switch 17 to the "OFF" position, whereupon latch 17*b* engages clapper shaft 12. The alarm always

shuts off whenever the door is closed because coil spring 20 unwinds and brings trigger arm 23 back to its original position.

"Delayed Action" or "Silent Entry" Mechanism

The two parts which control the above-mentioned feature are cam 5 and cam 21.

Cam 5 is attached to spring winding shaft 4. It has a high or outer rim 5*a* and low or inner rim 5*b* of smaller radius on its circumference. When bell arm 13 slides off the high rim 5*a*, it falls on the low rim 5*b*, thereby releasing bell arm 13 sufficiently to allow spring 14 to turn it about pivot 13*b* so as to draw the bell 15 toward the clapper 11 and sound the alarm.

Cam 21 and stop pin 19 are mounted on shaft 18 which rotates as trigger arm 23 is moved inwardly. Cam 21 is provided with three surfaces, 21*a*, 21*b* and 21*c*. When "Delayed Action" or "Silent Entry" is desired, the door is opened and clapper shaft 12 is held back by surface 21*a*. Then switch 17 is turned to the "ON" position, the door is closed, and the clapper shaft 12 slides off surface 21*a* onto surface 21*c*.

"Delayed Action" or "Silent Entry" Procedure

Assume that the dweller wishes to go away and have the alarm set against illegal entry during his absence, but wishes to re-enter without setting off the alarm and alerting any members of the family who may be inside, or the neighbors or police.

(*a*) He opens the door from the inside. In so doing, trigger arm 23 is pushed inwardly by the door and rotates cam 21.

(*b*) He turns switch 17 to the "ON" position while the door is open. As a result, clapper shaft 12 falls forwardly against arm or surface 21*a* of cam 21.

(*c*) He exits and closes the door from the outside. As a result, clapper shaft 12 slides off arm 21*a* and falls forwardly against the extreme edge of surface 21*c* of cam 21. Now the alarm is set for "Delayed Action" or "Silent Entry."

Assume now that the dweller re-enters the building and opens the door from the outside. As a result, opening of the door forces trigger arm 23 inwardly causing cam 21 to rotate. Clapper shaft 12 slides off surface 21*c* to surface 21*b* and releases power in tension spring 3. Tension spring 3 activates the mechanism, causing cogwheels 8, and 8*a* and star wheel 9 to rotate. The dweller re-enters the house and closes the door and as a result the alarm is shut-off because trigger arm 23 has returned to the original position and clapper shaft 12 is held back by surface 21*c*.

While the door is open, clapper shaft 12 is oscillating, but during the time required to re-enter (4 to 5 seconds) pin 13*a* is resting on the high rim 5*a* of cam 5 and keeps the bell 15 from moving against the clapper 12. Therefore, the alarm does not ring.

Immediate Action Procedure

Assume that all authorized persons are inside the dwelling. Therefore, an immediate alert is desired if illegal entry is attempted.

To set the alarm for this purpose, the tenant pulls back trigger arm 23 and holds it back until an arrow, which is attached to the winding key 2 for shaft 4 reaches a designated point 2*a* marked on the outer surface of the unit cover underneath the key, as shown.

This point is so marked that when the arrow reaches it, pin 13*a* is in such a position on the high rim 5*a* of cam 5, that it will immediately slide off to the low rim 5*b* as soon as the door opens, whereupon, bell 15 is drawn against the oscillating clapper 11 and the bell rings. Note that pin 13*a* will slide off high rim 5*a* of

cam 5 at the identical moment that clapper shaft 12 slides off surface 21*c* of cam 21, which latter occurs the moment the door opens even slightly.

While I have illustrated and described a single specific embodiment of my invention, it will be understood that this is 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:

A burglar alarm adapted to be mounted on a door frame for operation by a door comprising a pair of parallely disposed mounting plates, a spring motor mounted between said plate including a gear train a main spring and winding shaft therefor, a star wheel rotatably mounted between said plates and in operative association with said gear train, a clapper shaft also disposed between said plates and pivotally mounted thereon and engageable by said star wheel to effect oscillation thereof, a clapper secured at the end of said shaft, a bell having a bell mounting arm at one end, the other end of said arm extending between said plates and being pivotally mounted thereon, a return spring connected between said plates and said arm so as to normally move the bell substantially in engagement with said clapper so that oscillation of the clapper will ring the bell, means for controlling operation of said clapper comprising a cam mounted on a stem extending between and parallel to said plates, a trigger arm rigidly secured with respect to said cam and positioned so as to be operable by opening of said door, a spring normally turning said stem so that the free end of the clapper shaft will engage a peripheral portion of greater diameter of said cam adjoining a peripheral portion of smaller diameter, a second cam mounted on said main spring winding shaft having a peripheral portion of larger diameter and another peripheral portion of smaller diameter and a radially outwardly extending stop projection therebetween, a pin mounted on said clapper shaft and adapted to engage said stop projection to limit rotation of said second cam, said pin being engageable with said peripheral portions of said second cam and changing from one to the other of said portions at about the same time as said free end of said clapper shaft changes from contacting relationship with the peripheral portion of greater diameter to that of smaller diameter of said first mentioned cam, and a latch engageable with the free end of said clapper shaft to prevent oscillation thereof, whereby the alarm may be selectively set to ring instantaneously when the door is opened by unauthorized persons or by delayed action which is controllable by authorized persons to prevent sounding of the alarm.

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