July 1, 1969

M. KAY

3,453,613

BURGLAR ALARM

Filed Jan. 24, 1966

FIG. 2

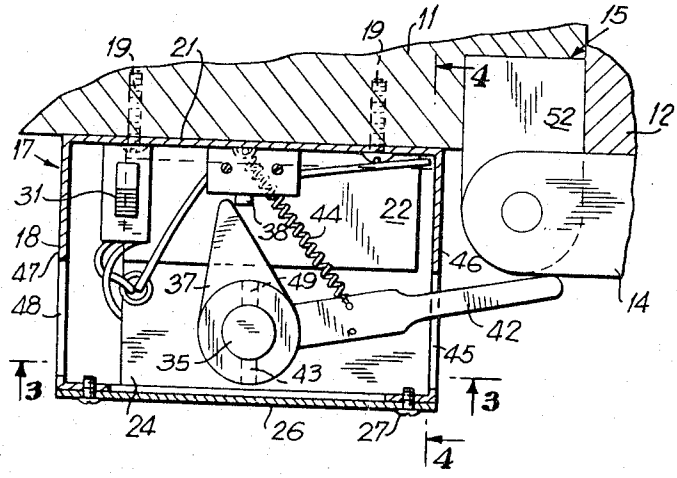


FIG. 1

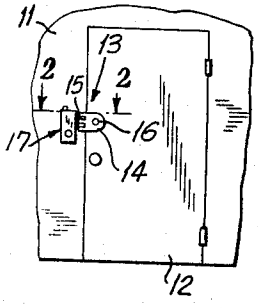


FIG. 3

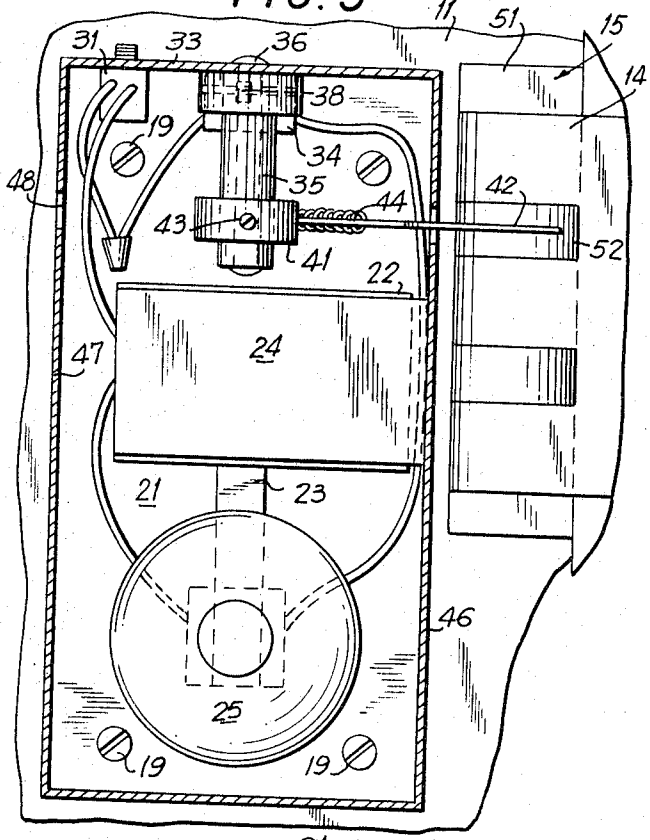


FIG. 4

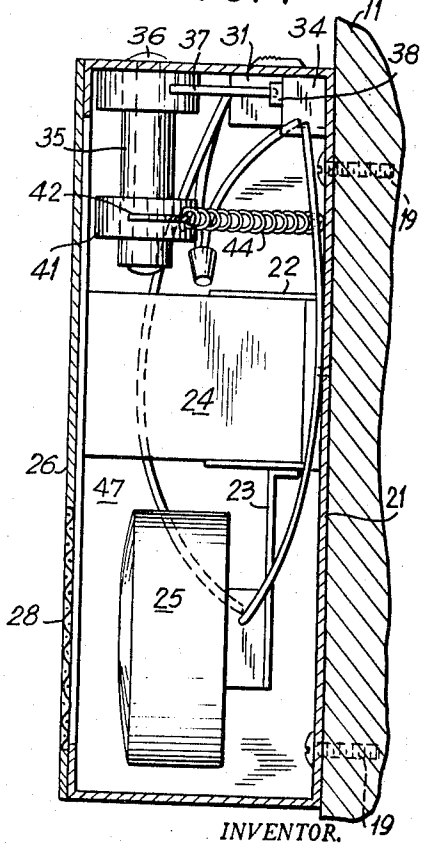
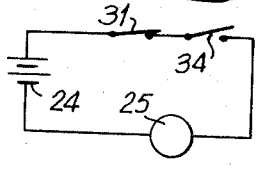


FIG. 5



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BURGLAR ALARM

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ABSTRACT OF THE DISCLOSURE

A burglar alarm mounted with fixed portion of an access opening and responsive to movement of a latch normally fixed to said fixed portion to signal an attempted forced opening prior to the time that entry is actually gained.

This invention relates generally to a burglar alarm and more particularly to an improved type of burglar alarm operative in response to attempted forced entry prior to the time when entry is actually gained. The invention is especially concerned with a burglar alarm adapted to be constantly operative and to be effective on minimal displacement of the normally stationary catch member.

Burglar alarm devices used in conjunction with doors and locks are well known in the art but most have the shortcoming that opening of the door is required before an alarm signal is provided. This has the drawback that complete entry is gained before the alarm is activated and thus the deterrent effect is not as great as when an alarm is set off before the door is forced open. Also, in many alarm devices, operation occurs regardless of whether normal or forced opening of the door takes place, and thus means must be provided to disconnect the system for authorized entry whereby resetting of the system is required in order to make the alarm operative.

Accordingly, it is an object of this invention to provide a burglar alarm which may be constantly in a state of readiness and is not actuated by authorized entry.

A further object of the invention is to provide a burglar alarm responsive to attempted forced entry prior to the occurence of actual entry.

Another object of the invention is to provide a burglar alarm incorporating means for controlling the amount of displacement of the lock mechanism required to set off the alarm.

Still another object of the invention is to provide a burglar alarm powered by its own source of energy.

Still other objects and advantages of the invention will in part be obvious and will in part be apparent from the specification.

Generally speaking, in accordance with the invention, a housing is provided carrying a horn and a self-contained battery unit serially connected through a switch actuated in response to attempted forced entry. Switch actuating means in engagement with the catch portion of a lock moves in response to movement of the normally fixed catch, such movement occurring on attempted forced entry. Means are also provided in the switch actuating means for adjusting the amount of displacement of the catch required to activate the alarm system.

The invention accordingly comprises the features of construction, combination of elements, and arrangement of parts which will be exemplified in the construction hereinafter set forth, and the scope of the invention will be indicated in the claims.

FIG. 1 is an elevational representation of a door and locking mechanism having a preferred embodiment of the instant invention connected thereto, all at greatly reduced scale;

FIG. 2 is a partial section of the burglar alarm and lock mechanism taken along line 2—2 of FIG. 1;

FIG. 3 is a partial sectional view taken along line 3—3 of FIG. 2;

FIG. 4 is a partial sectional view taken along line 4—4 of FIG. 2; and

FIG. 5 is a schematic diagram of a simplified electric circuit embodied in the burglar alarm of the instant invention.

Referring to FIG. 1, there is shown a wall **11** having the usual door **12** hinged thereon. A lock indicated generally at **13** is provided on the interior of the door for locking same. The lock disclosed is a per se known type of surface mounted lock having a bolt housing **14** secured to the door and a catch **15** secured to the wall or door frame. The bolt housing includes bolts which may be rotated into and out of locking engagement with the catch by means of a knob **16** or a key-operated cylinder mounted in the door exterior. The specific lock forms no part of the instant invention and is described for environmental purposes only.

Referring to FIGS. 2 through 4, the burglar alarm of the instant invention is indicated generally at **17**. A housing **18** which may be formed of sheet metal or other suitable material, is provided for supporting the operating mechanism and it may be attached to the wall by means of screws **19**. Connected to housing rear wall **21** is a battery-receiving chamber **22** to which is connected a depending horn support **23**. A battery **24** is slideably received in chamber **22** to provide a self-contained power source for the burglar alarm. A nine volt alkaline battery is deemed preferred in order to provide adequate power with good shelf life so that the burglar alarm remains operative over a long period before requiring battery replacement.

A horn **25** is suitably secured to the horn support **23** and is located behind a front panel **26** removeably mounted to the housing by means such as screws **27** and provided with suitable apertures **28** or other means which provide an attractive appearance without impeding the noise transmission from the horn. The horn may be of any known type or, if desired, a bell may be substituted for the horn.

A main power switch **31** may be mounted to housing top wall **33** for external shutoff of the alarm. However, the main power switch will normally be set in the "on" position so that the burglar alarm is constantly maintained in a state of readiness. The main power switch may be omitted, if desired.

Mounted to the rear or top wall of the housing is a microswitch **34** which controls the operation of the alarm circuitry. A shaft **35** is rotatably mounted to the housing top wall such as by means of a rivet, screw or pin **36** and fixed to shaft **35** is a cam **37** having the cam surface proximate to the switch button **38** of the microswitch.

Also adjustably fixed to shaft **35** is a collar **41** carrying a radially projecting feeler **42**. A set screw **43** threadably engages collar **41** in order to fix the collar with respect to shaft **35**. By means of set screw **43**, the position of feeler **42** with respect to shaft **35** may be readily adjusted. A spring **44** extending between feeler **42** and housing rear wall **21** biases the feeler in the counterclockwise direction as viewed in FIG. 2.

A simplified schematic diagram for the electrical circuitry is shown in FIG. 5 wherein battery **24** is serially connected to horn **25** through main power switch **31** and microswitch **34**. The main power switch is normally closed in order for the burglar alarm to be maintained in a state of readiness. Microswitch **34** is normally open and is closed to activate the horn by depression of switch button **38** on contact with cam **37**.

The operation of the burglar alarm may now be described. In the known type of lock **13** depicted herein,

catch **15** consists of a back plate **51** and two outwardly extending arms **52**. Each arm is provided with a suitable aperture for receiving two bolt elements which extend from the bolt housing when the lock is made secure. Catch **15** is fixed to the wall or door frame and remains stationary at all times. Feeler **42** which projects through a slot **45** in housing side wall **46** is brought into engagement with the outer end of one of arms **52** as best shown in FIGS. 2 and 3. Collar **44** is adjusted on shaft **35** so that the slightest clockwise (FIG. 2) rotation of feeler **42** brings cam **37** into engagement with switch button **38** to close switch **34** and thereby sound the alarm. Feeler **42** does not in any way interfere with the latching or unlatching of the lock and likewise does not interfere with the normal opening and closing of the door carrying bolt housing **14**. However, if forced entry is attempted by prying or otherwise displacing the door, catch **15** will be physically displaced when sufficient force is applied. Displacement will normally occur in small increments and, by proper setting of feeler **42**, the slightest displacement of the catch will cause the alarm to be sounded long before the catch has broken free from its mounting and entry thereby gained. Thus, with this mechanism, the alarm is sounded as a result of attempted forced entry to have the advantageous effect of scaring the burglar before he actually gains entry to the premises. In other prior art devices, the sounding of the alarm subsequent to the gaining of entry may cause the burglar to continue his activities for a short period of time before escaping, an inducement being provided by the fact that he has already gained entry to the premises.

As heretofore stated, the burglar alarm hereinabove described is not affected or otherwise operated by normal or authorized operation of the door. Thus it may remain "on" in a state of readiness at all times, and one need not remember to activate it by an external control on locking of the premises.

The burglar alarm may also be readily tested to be certain that it is properly operating merely by grasping feeler **42** and rotating it slightly in the correct direction whereby the microswitch will be closed to complete the circuit to the horn unit.

The particular type of lock disclosed herein is especially adaptable for use with the burglar alarm of the instant invention, but it should be understood that the burglar alarm is in no way limited to use with such lock. Functionally, the burglar alarm is adapted for operation in conjunction with forced movement of the catch portion of a lock and, since all locks include a catch portion, minor modifications may be made, where required, in order that the instant burglar alarm may operate with any and all types of locks.

It is to be noted that housing sidewall **47** is also provided with a slot **48** through which feeler **42** may extend if the mounting arrangement requires that the feeler extend from the sidewall opposite that shown. Feeler **42** may be relocated merely by loosening set screw **43** and repositioning collar **41** with an additional set screw **49** being provided for securing the collar in the relocated position. Spring **44** will be swung so as to appropriately bias feeler **42** and cam **37** would be repositioned so that counterclockwise movement of feeler **42** (FIG. 2) would cause depression of switch button **38**.

It should also be noted that the burglar alarm described herein is not limited for use with a door and lock mechanism but is equally adaptable for use with any device in connection with which it is desired to provide a signal on attempted forced opening. Thus, the burglar alarm of the instant invention could be mounted to signal the attempted forced opening of a window, for example.

While the preferred embodiment of the invention described herein is a self-contained unit, it should also be understood that remote signalling could be provided for by connection of the alarm circuitry, through suitable

wiring, to a remote location. For example, the telephone lines could be used to monitor the alarm system. Additionally, the preferred embodiment could be suitably modified to provide a visual signal, such as the illumination of a light, on attempted forced entry, which could have a twofold purpose. If the visual light signal were located within the premises, the existence of a signal could be seen from outside of the building. The signal could also be made sufficiently bright to induce the burglar to believe that someone was on the premises and had turned on the light.

What is claimed is:

1. In a burglar alarm system, in combination a fixed frame defining an access opening, a door hingedly carried by said fixed frame, a catch secured to said fixed frame, a lock secured to said door and having bolt means for engagement with said catch for locking said door in closed position, a base mounted on said fixed frame, signal means, a source of electric potential for said signal means, switch means serially connected to said signal means and source of potential, and switch actuating means carried by said base and in engagement with said catch for actuating said switch means upon movement of said catch relative to said fixed frame whereby said signal means provides an alarm signal during attempted forced entry of said door prior to opening of said door.

2. A burglar alarm as claimed in claim **1** said switch actuating means including a feeler arm adapted for engagement with said catch for controlling the operation of said switch actuating means in response to movement of said catch.

3. A burglar alarm as claimed in claim **2** wherein said switch actuating means includes a rotatable cam proximate to said switch means and means interconnecting said feeler arm and said cam.

4. A burglar alarm as claimed in claim **2** including a housing carrying said switch means, said switch actuating means including a shaft rotatably mounted in said housing, a cam mounted on said shaft and adapted for engagement with said switch means, and means carried by said shaft for supporting said feeler arm.

5. A burglar alarm as claimed in claim **4** wherein said last named means comprises a collar rotatably and slideably mounted on said shaft and means for adjustably securing said collar to said shaft.

6. A burglar alarm as claimed in claim **4** wherein said housing includes oppositely disposed side walls parallel to the axis of said shaft, at least one of said side walls including a slot through which said feeler arm extends.

7. A burglar alarm as claimed in claim **6** wherein each of said side walls is provided with a slot selectively receiving said feeler arm.

8. A burglar alarm as claimed in claim **4** wherein said signal means and said source of electric potential is mounted in said housing to provide a self-contained burglar alarm, said source of electric potential consisting of a storage battery.

9. A burglar alarm as claimed in claim **8** wherein said signal means comprises a horn unit.

10. A burglar alarm as claimed in claim **2** further including spring means biasing said feeler arm toward said catch.

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