

United States Patent

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[72] Inventor **Uriel Erez**
31, Maalei Hazafim, Ramat Gan, Israel
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Primary Examiner—Robert K. Schaefer
Assistant Examiner—H. J. Hohauser
Attorney—Molinare, Allegretti, Newitt & Witcoff

[54] **BURGLARPROOF LOCK**
2 Claims, 3 Drawing Figs.

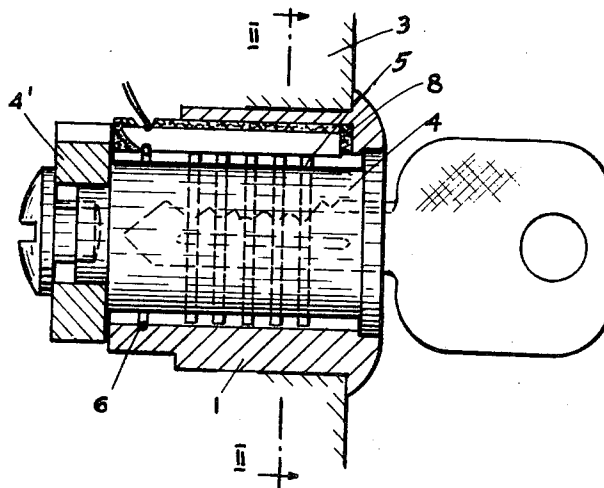
[52] **U.S. Cl.**..... **200/44,**
200/61.66, 340/274

[51] **Int. Cl.**..... **H01h 27/00**

[50] **Field of Search**..... **200/44, 42,**
61—66; 340/274, 63, 64

[56] **References Cited**
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ABSTRACT: A burglarproof Yale-type lock includes a conductive strip positioned in the lock to be contacted by the tumblers when the wrong key is inserted in the lock to complete a circuit to energize an alarm. A second conductive strip may also be positioned in the lock which is normally in contact with the tumblers. A switch which is closed by opening the door or the like is positioned in the circuit between the second strip and the alarm such that if the wrong or no key is inserted in the lock and the door is opened the alarm will be energized, but if the correct key is inserted the alarm will not be energized.



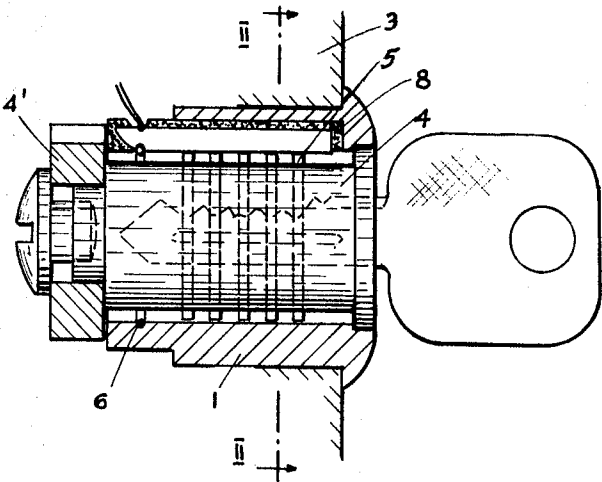


Fig 1

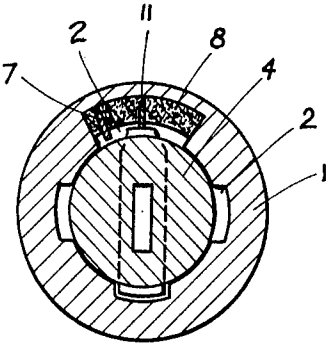


Fig 2

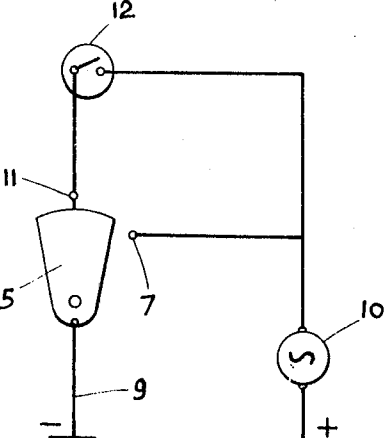


Fig 3

INVENTOR.
URIEL EREZ
BY
Bair, Freeman &
Molinare

BURGLARPROOF LOCK

BACKGROUND OF THE INVENTION

The present invention concerns locks of the kind in which a row of pin tumblers in the form of cylindrical or flat pins housed in a cylinder are depressed against the action of springs by a key provided in its edge with serrations so that the cylinder may be rotated in its housing and withdraw the bolt of the lock. These locks are universally known as Yale locks.

It is the object of the present invention to make locks of this kind burglarproof. It is a further object of the present invention to provide a Yale lock which, when tempered with by means of any kind of tool, actuates a signal. It is a further object of the present invention to provide a Yale lock, which, when a wrong key is inserted, actuates a signal, e.g. an alarm bell, whistle, buzzer, light or the like.

SUMMARY OF THE INVENTION

The invention comprises a lock of the kind defined, which includes an elongated, axially extending electrical contact strip mounted in the housing and insulated therefrom and extending to below the top ends of the pin tumblers at the side leading toward the lock-opening direction, so that it makes contact with the latter when the tumblers are not retracted by the proper key in the lock, a wire or wires leading from said contact strip by way of a signal to one pole of a power source, the cylinder being connected to the other pole of said power source.

These and other objects, features and advantages of the invention will become evident upon considering the following detailed description.

BRIEF DESCRIPTION OF THE DRAWING

In the course of this description, the drawings will frequently be referred to in which:

FIG. 1 is a longitudinal section of a lock according to the invention with the key inserted;

FIG. 2 is a cross section thereof taken along line II-II of FIG. 1; and

FIG. 3 is a wiring diagram showing schematically the electrical connection of the lock according to the invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The lock here illustrated is of the Yale type and comprises a housing 1 which, as known, has internal grooves 2 and is mounted in a supporting surface 3, for example, a door. A cylinder 4 housing a row of flat pin tumblers 5 which are urged outwardly by the action of springs (not shown) is rotatable within housing 1 but, according to the invention, is insulated therefrom by an insulating washer 4'. A spring 6 or the like urges cylinder 4 into the lock-closing position.

An elongated contact strip 7 extending in axial direction in alignment with the tops of the entire row of the tumblers 5 is mounted in a deepened portion of the corresponding groove 2 of the housing 1 and is insulated therefrom by insulating material 8. Strip 7 protrudes downwardly at that side of the top of the tumblers 5 which lie in the path of the opening direction of the rotation of the cylinder which is normally in the clockwise direction, i.e. when lock is viewed from the front the strip 7 lies to the right of the tumblers.

A wire 9, shown schematically in FIG. 3 is connected to one pole of a power source, say a battery or a stepdown transformer connected to the main, and to the cylinder 4. Contact strip 7 is connected to the other pole of said power source by way of a signal 10 which may be constituted by a bell, buzzer or the like alarm means. Thus, when the correct key is inserted into the lock it depresses all the pin tumblers 5 and permits cylinder 4 to be revolved to draw the bolt of the lock without

the tumblers making contact with strip 7 and closing circuit through wire 9, tumblers 5, strip 7 and signal 10. However, if the wrong key or any flat tool is inserted into the lock, one or more of the tumblers will not be depressed and while trying to turn the cylinder, contact will be made between said tumbler pins and the strip 7, so that the circuit through wire 9, tumblers 5, strip 7 and signal 10 is closed, actuating the signal. Strip 7 serves here as a stop as well as a contact.

The lock according to the invention also incorporates a further safety arrangement which is actuated in the case where a door, drawer or the like is opened by forcing the bolt without the proper key being inserted in the lock to actuate the bolt. To this end, a second contact strip 11 protrudes from insulating material 8 and touches the top of the pin tumblers 5 in their position of rest, i.e. their extended position. Contact 11 leads to signal 10 by way of a microswitch 12 or other circuit breaker, which is generally open, but which is actuated to close when the door or drawer is only slightly moved toward the open position. If pin tumblers 5 are depressed by the proper key when the door is opened, signal 10 will not be actuated even if switch 12 becomes closed because the circuit is interrupted between tumblers 5 and contact strip 11. If, however, the bolt of the lock has been forced without the cylinder being turned by the proper key so that the contact between strip 11 and tumblers 5 is maintained, opening of the door will close switch 12 and actuate signal 10.

Due to the force exerted by spring 6, the cylinder 4 will be urged away from the opening direction so that contact with strip 7 cannot be made inadvertently, even, for example, if the lock is mounted in a vehicle which is exposed to vibrations.

It is of course understood that many modifications of the lock and its wiring circuit may be made according to the invention. A latch arm, for example may be mounted to the inner end of the cylinder 4 for locks on drawers or the like, and the contact 11 and switch 12 may be eliminated, if desired. Also microswitches or other circuit breakers may be included in the circuit and may be fixed to windows of a house or car, so that when the latter are forced open by unauthorized persons without the main door lock switch being turned off, the signal will be actuated. A relay may be included in the circuit of the lock according to the invention which is used to actuate a car starter, for example, so that the starter coil will not function but at the same time an alarm signal will be actuated.

It should also be understood that the embodiments of the invention which have been described are merely illustrative of a few applications of the principles of the invention. Numerous modifications may be made by those skilled in the art without departing from the true spirit and scope of the invention.

What I claim is:

1. A lock of the Yale type having a rotatable cylinder and a plurality of key retractable pin tumblers normally extending from the cylinder and positioned in a lock housing, said lock comprising in combination therewith:

an elongated axially extending contact strip mounted in the housing and insulated therefrom, said strip extending below the ends of the pin tumblers at the side of the tumblers toward the lock-opening direction such that said strip is contacted by the tumblers when the tumblers are rotated in the lock-opening direction but are not retracted by the proper key, and

electrical circuit means connecting said contact strip to a signal, said cylinder and the poles of a power source, whereby when said contact strip is contacted by at least one of said pin tumblers the circuit to said signal is completed.

2. The lock of claim 1, including a second contact strip mounted adjacent the first-mentioned contact strip and insulated therefrom, said second contact strip touching the ends of the pin tumblers in their normal extended position, said second contact strip being connected to said signal by a switch which is normally open and is closed by opening of the structure which the lock is adapted to lock.