J. ZIEMIENIK.

BURGLAR PROOF LOCK.

APPLICATION FILED JULY 17, 1915.

1,184,909.

Patented May 30, 1916.

4 SHEETS—SHEET 1.

Fig. 1.

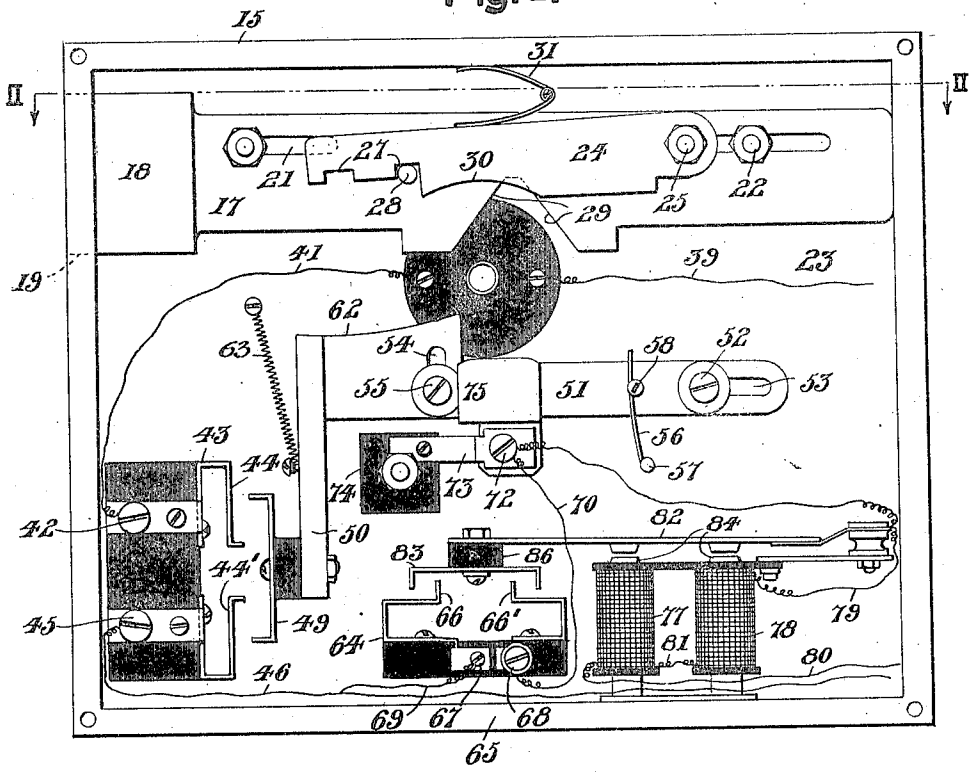
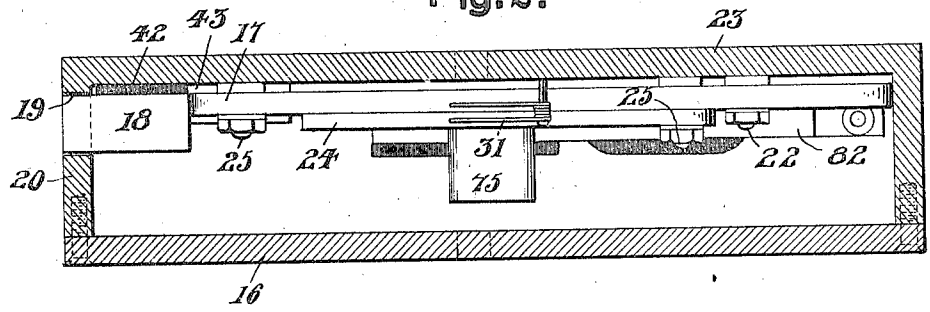


Fig. 2.



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4 SHEETS—SHEET 2.

Fig. 3.

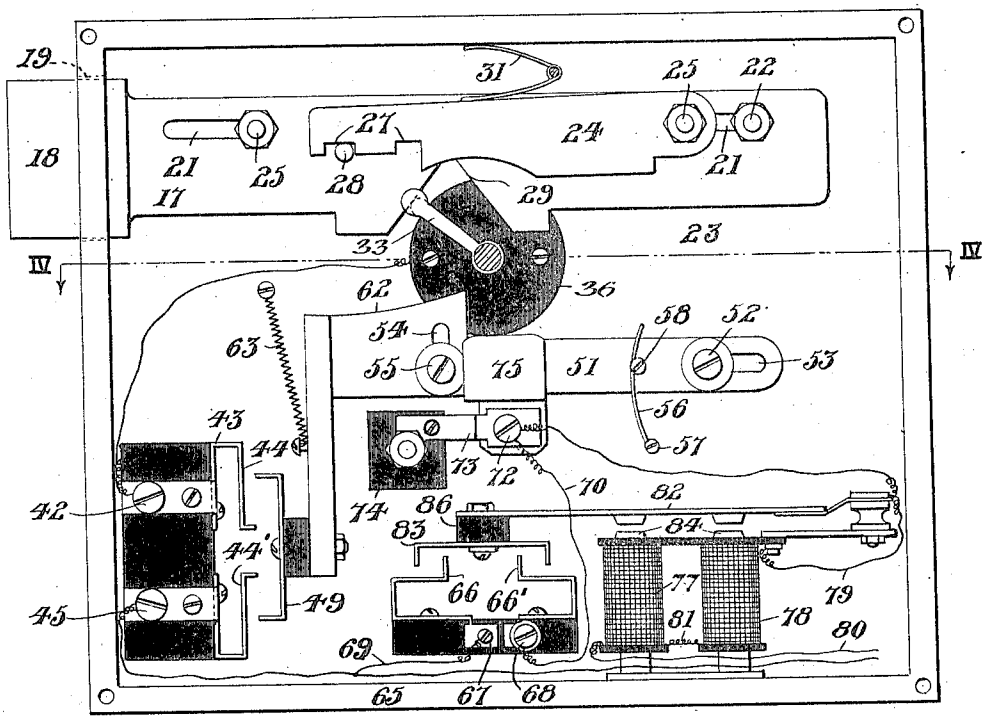
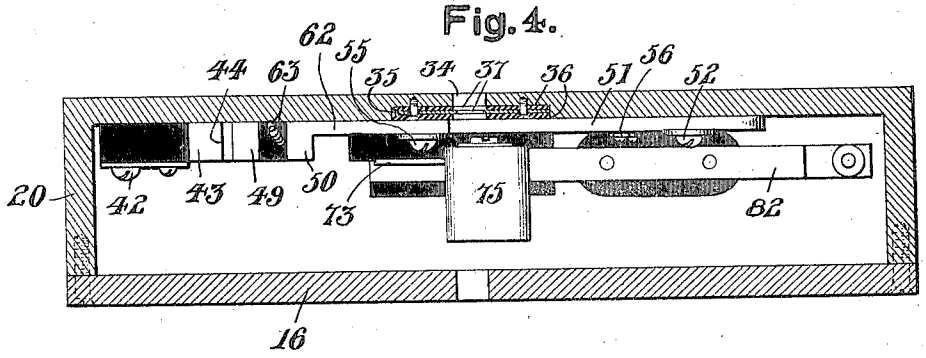


Fig. 4.



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4 SHEETS—SHEET 3.

Fig. 5.

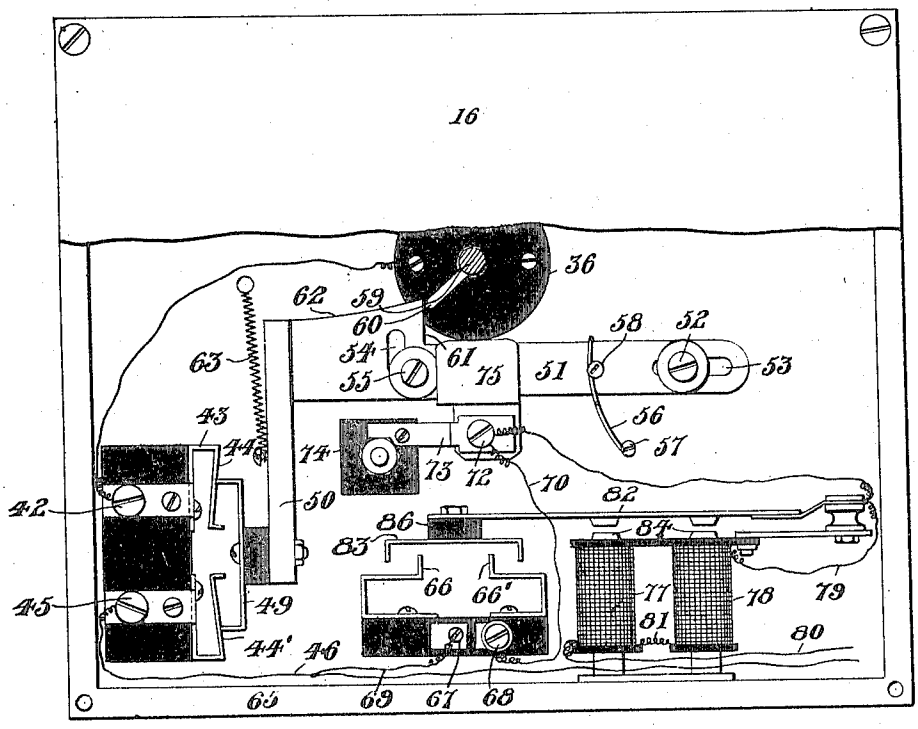


Fig. 6.

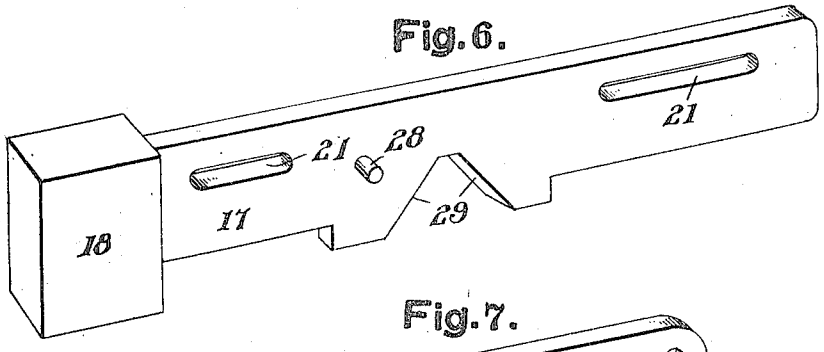
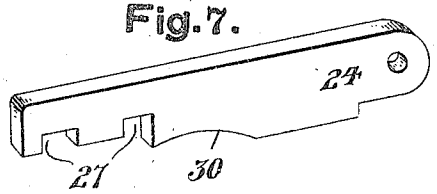


Fig. 7.



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4 SHEETS—SHEET 4.

Fig. 8.

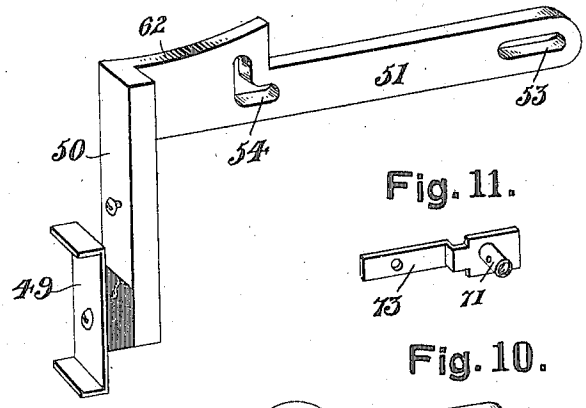


Fig. 11.

Fig. 10.

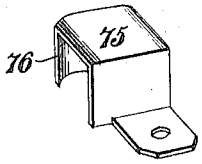


Fig. 9.

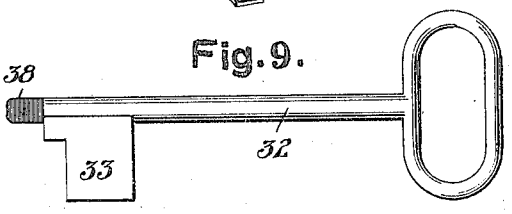
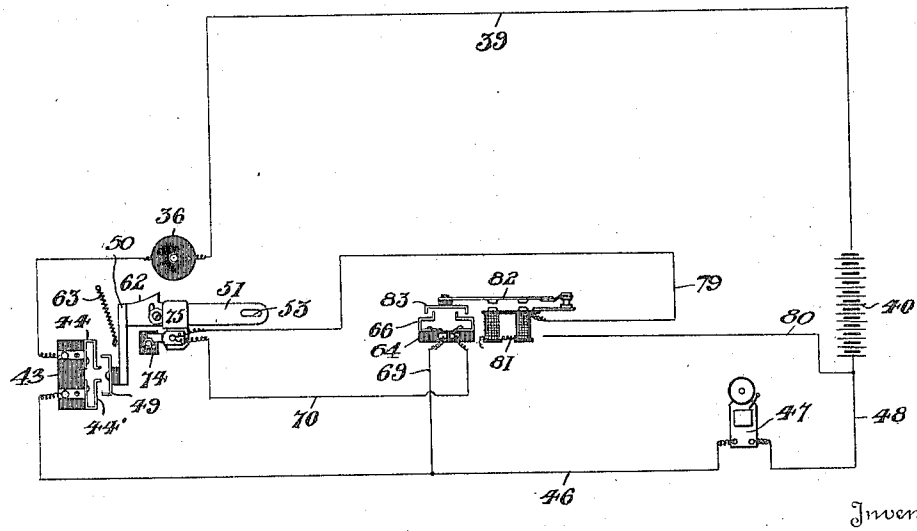


Fig. 12.



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UNITED STATES PATENT OFFICE.

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BURGLAR-PROOF LOCK.

1,184,909. Specification of Letters Patent. Patented May 30, 1916.

Application filed July 17, 1915. Serial No. 40,490.

To all whom it may concern:

Be it known that I, JOSEPH ZIEMIENIK, subject of the Emperor of Austria, residing at St. Clairsville, in the county of Belmont and State of Ohio, have invented certain new and useful Improvements in Burglar-Proof Locks, of which the following is a specification.

This invention relates to certain new and useful improvements in burglar-proof locks.

The primary object of this invention is the provision of a lock provided with electric circuit attachments whereby an attempt to operate the lock mechanism by means of any other key than the authorized one will sound a distant alarm bell, thus giving notice of an attempt to release the door.

A further object of the invention is the provision of a door lock having a plurality of circuit closers adapted for operation upon the insertion and actuation of any metallic key of ordinary construction, while a special form of key is provided for the lock for the ready manipulation of the securing bolt without completing electrical connection.

A still further object of the device is to provide a door lock having a securing bolt readily operable by a key of special form and having an armature operated circuit closer for an alarm bell operable upon the closing of an electric circuit through a metallic key of usual form inserted in the lock by an unauthorized person such as a burglar endeavoring to open the door with which the lock is provided.

With these general objects in view and others that will appear as the nature of the invention is better understood, the same consists in the novel combination and arrangement of parts hereinafter more fully described, illustrated in the accompanying drawings, and pointed out in the appended claims.

In the drawings forming a part of this application like-designating characters refer to corresponding parts throughout the several views.

Figure 1 is an interior elevational view of the casing of the present lock with the front plate thereof removed and the elements arranged as normally positioned. Fig. 2 is a transverse sectional view thereof taken upon line II—II of Fig. 1. Fig. 3 is a view similar to Fig. 1 and showing the authorized form of key operatively positioned within the lock and with the bolt in its projected locking position. Fig. 4 is a transverse sectional view taken upon line IV—IV of Fig. 3. Fig. 5 is a view similar to Fig. 3 illustrating an unauthorized key in the act of closing one of the alarm circuits. Fig. 6 is a perspective view of the locking bolt removed. Fig. 7 is a similar view of the latch for the locking bolt. Fig. 8 is a perspective view of the shiftable member attached to one of the circuit closers. Fig. 9 is a side elevation of the authorized key employed with the present lock. Fig. 10 is a perspective view of a key engaging spring contact employed with the other circuit closer. Fig. 11 is a perspective view of a binding post and plate employed, and Fig. 12 is a diagrammatic view of the electric wiring employed with the device.

A lock casing 15 of substantially the usual form is provided having a removable front plate 16 and a bolt 17 is slidably mounted within the said casing in substantially the usual manner and having its head 18 projectable through the opening 19 in the end wall of the casing. The bolt 17 is provided with two longitudinal slots 21 through which bolts 22 are freely positioned which bolts are secured to the opposite wall 23 of the casing 15 and thus mounting the bolt for guidingly sliding within the casing. A latch 24 is pivoted at one end upon a bolt 25 which extends through the rearwardly arranged slot 21 of the bolt and is secured to the casing wall 23. The said latch 24 is provided with spaced notches 27 adjacent its free end and adapted to engage a pin 28 upon the adjacent face of the bolt 17 at the opposite extremes of movement of the said bolt. A V-shaped excision 29 is provided in the lower edge of the bolt 17 and a curved portion 30 of the latch 24 slightly overlaps the same. A coiled wire spring 31 engages between the latch 24 and the adjacent side of the casing 15 for resiliently retaining the latch 24 with its notches 27 one at a time in engagement with the bolt pin 28. It will thus be evident by inserting the key 32 into the lock and turning the same that the ward 33 of the key will engage the latch 24 at the curved edge 30 thereof and by moving the latch outwardly will unseat the latch from the pin 28, while a further movement of the key will engage the ward 33 against one of the sides of the excision 29 of

the bolt, so that the further turning of the key will shift the bolt in either direction desired and the latch will reseat upon the pin 28 at the extremity of its movement where it will remain when the key is withdrawn normally retained by the latch in either its retracted or projected positions and in substantially the usual manner and is herein illustrated in Figs. 1 and 3 respectively of the drawings.

The casing 15 is provided in its side 23 with a keyhole opening 34 and is provided with a circular disk or plate 35 positioned inwardly thereof and being insulated from the casing by means of an insulating disk 36 secured to the opposite sides thereof, both of the said disks 35 and 36 being provided with central perforations 37 through which the insulated projecting end 38 of the key 32 is operatively positioned when in use.

The contact plate 35 is provided with the wire 39 in electrical contact therewith and extending exteriorly of the casing 15 and attached to a battery 40 at any desired distance as at a point within the house, while an oppositely-extending wire 41 is attached to the said plate 35 and is in electrical connection with a binding post 42 of a circuit closer or switch 43, the said post 42 being provided with a U-shaped spring terminal 44.

A binding post 45 is provided for the circuit closer 43 and has a circuit wire 46 connected thereto which wire 46 passes exteriorly of the casing 15 and is attached to an alarm bell 47 at any desired point in the house, while a connecting wire 48 is attached between the bell 47 and the pole of the battery 40 opposite that to which the afore-mentioned wire 39 is attached. The circuit closer 43 is provided with a contact 44′ which is in electrical connection with the binding post 45, the terminals 44 and 44′ being identical although oppositely arranged in spaced positions.

A switch plate 49 is adapted to span the spring terminals 44 and is normally positioned spaced therefrom being secured to an arm 50 of an operating bar 51 which is slidably mounted within the casing 15 substantially parallel to the bolt 17. A screw 52 carried by the casing wall 23 freely extends through a longitudinal slot 53 in the inner end portion of the bar 51 while an angular slot 54 adjacent the outer end of the bar receives a screw 55 carried by the said casing wall 23 and whereby the bar 51 is slidably mounted within the casing. A leaf spring 56 is secured at one end to the casing wall 23 by means of a post 57 and is in constant resilient engagement with a lug 58 carried by the bar 51 and whereby the said bar is normally positioned with the outer ends of the slots 53 and 54 in engagement with other respective screws 52 and 55 as illustrated in Figs. 1 and 3 of the drawings.

In Fig. 5 an ordinary metallic key 59 is illustrated as inserted within the lock and with its ward 60 operatively engaging the shoulder 61 of the operating bar 51 and as having been turned sufficiently to shift the said bar outwardly or toward the left and against the action on the spring 56 and in which position it will be seen that the switch plate 49 electrically connects the terminals 44 and 44′, thus closing the electric circuit through the battery 40 and bell 47. It will thus be seen that such operation of the ordinary key closes the circuit closer 43 and by ringing the alarm bell 47 at a distant point within the house, gives notice that an unauthorized person such as a burglar is attempting to open the door by picking the lock. As soon as the key ward 60 is released from the shoulder 61 by either a reverse movement or ratcheting past the bar 51, the spring 56 returns the said bar 51 rearwardly to its normal position. It will be also noted that in the event of a downward contacting movement of the key ward 60 upon the upper face 62 of the bar 51, when the same is normally projected retracted, the said bar will be slightly depressed against the action of a return coil spring 63 and allowing the bar 51 to move laterally with the screw 55 within the lateral portion of the bar slot 54, while the said bar will be returned to its normal position by means of the spring 63 as soon as the key ward ratchets over the bar face or edge 62 as just described.

A second circuit closer or strip 64 identical with the circuit closer 43 hereinbefore described is provided within the casing 15 and adjacent the side 65 thereof and is provided with opposite spring terminals 66 and 66′ spaced from each other and provided with binding posts 67 and 68 respectively. A wire 69 connects the binding post 67 with the circuit wire 46, while another wire 70 is attached to the binding post 68 at one end and to the binding post 71 by means of a screw 72, the said post 71 being mounted upon a plate 73 secured to an insulated block 74 carried by the casing side 23. A U-shaped spring contact 75 of the form best shown in Fig. 10 is carried by the said plate 73 and has its depending side 76 slightly curved and adapted to be engaged by a key ward of sufficient width when the key is inserted operatively in the lock. It will thus be seen that the positioning of the metallic key through the keyhole opening 37 of the contact plate 35 effects electrical connection between the battery wire 39 and the spring contact 75, when the key ward engages the said contact and thus connects the terminal 66′ by means of the wire 70 so

that the bell 47 will be operated whenever the circuit is entirely completed by bridging the terminals 66 and 66′.

Two electro-magnets 77 and 78 are carried by the casing wall 65, the windings of the magnet 78 having electrical connection with the afore-mentioned binding post 71 by means of a wire 79, while a wire 80 electrically connects the windings of the magnet 77 with the wire 48 which is connected to the battery 40 as herein noted it being also understood that the two magnets 77 and 78 are connected by a wire 81. A spring armature 82 is provided for the electro-magnets 77—78 and has a switch plate 83 at its free end, an insulating block 86 being positioned between the said armature and switch plate 83, the said plate being normally spaced from the terminals 66—66′, but capable of engaging the said terminals upon a closing of the armature for completing the circuit from the circuit closer 64.

A metallic key being inserted in the keyhole of the lock, the same completes the electrical circuit from the battery 40 from the wire 39 to the plate 35 and thence through the metallic key to the contact 75 and thence through the wire 79 to the windings of the electro-magnets and through the same to the wire 80 and thence back to the battery 40. This electrical circuit being thus closed by the metallic key, electro-magnets 77—78 are energized and the armature 82 is closed against the cores 84 thereof and this movement of the armature 82 positions the switch plate 83 in bridging contact with the terminals 66—66′, thus closing the switch 64. The key completing the circuit from the battery 40 to the spring contact 75 in the manner hereinbefore noted, the circuit is also completed through the wire 70 and through the closed switch 64 and the wire 69 to the wire 46 and thence through the bell 47, and wire 48 back to the battery 40. It will thus be seen that the key which so connects the spring contact side 76 with the plate 35 affects a closing of the switch 64 by means of the electro-magnets 77—78 and thus rings the bell 47 which sounds and gives warning that an unauthorized key has been inserted in the lock of the door.

It will be seen that the authorized key 32 which is especially designed for the lock not only has its journaling end 38 formed of an insulating material, but the ward 33 thereof is provided with a cut-away portion 85 for allowing the ward 33 to freely turn within the lock without contacting the shoulder 61 on the edge 62 of the operating bar 51 and although the ward 33 freely engages the side 76 of the spring contact 75 no electrical connection is established between the said contact and the plate 35 by reason of this insulated end 38 of the key and by reason of the further fact that the base 86 of the ward 33 moves upon the adjacent insulating disk 36 without contacting the plate 35. It is therefore apparent that the lock bolt 17 may be readily shifted by the authorized key 32 either for locking or unlocking the door without in any manner completing the electrical circuits of the device for ringing the alarm bell 47 thereof so that when the lock is actuated by an authorized person no alarm whatever is sounded. When an ordinary metallic key is inserted in the lock in an endeavor to release the locking bolt 17, the same will complete the electrical contact between the plate 35 and the spring contact 75 if the ward of the key is of sufficient length to engage the curved side 76 and in this event, the electro-magnets 77 and 78 will be energized for closing the electric switch 64 and sounding the alarm bell 67. The further movement of this key as well as the similar movement of a key having its ward 60 of insufficient width to contact the spring terminal 75 will engage the shoulder 61 of the operating bar 51 thus shifting the said bar to the position shown in Fig. 5, and closing the switch 43 completes the electrical circuit with the bell 47 and battery 40 thereby giving the alarm in the manner hereinbefore described.

While the form of the invention herein shown and described is what is believed to be the preferred embodiment thereof, it is nevertheless to be understood that minor changes may be made therein without departing from the spirit and scope of the invention as claimed.

What I claim as new is:—

1. A device of the class described comprising a casing, electric switches within the said casing, a bell and a battery in electric circuit with the said switches, a successively key-operated armature controlled closing means for one of the said switches, and pivotal shiftable closing means for the other of said switches.

2. A device of the class described comprising a casing provided with a keyhole opening, a circular contact plate provided with a central perforation in substantial alinement with the said opening, an insulated cover disk for the said plate provided with a central perforation in substantial alinement with the perforation of the said plate, an electric bell and battery connected in series and electrically connected to the said plate, and circuit closing means for the circuit of the said bell and battery adapted for actuation upon the insertion of a metallic key in contact therewith and with the said plate.

3. A device of the class described comprising a casing provided with a keyhole opening, a circular contact plate provided with a central perforation in substantial alinement with the said opening, an insulated cover disk for the said plate provided

with a central perforation in substantial alinement with the perforation of the said plate, an electric bell and battery connected in series and electrically connected to the said plate, circuit closing means for the circuit of the said bell and battery adapted for actuation upon the insertion of a metallic key in contact therewith and with the said plate, a key for the said lock, an insulated journaling end for the said key positioned through the perforation of the said plate when operatively arranged within the lock, a circuit closer within the casing, an electrical circuit for the said bell and battery within which the said circuit closer is located, an operating bar for the said circuit closer adapted for successive contact by the metallic key after the completion of the first-named electrical circuit.

4. A device of the class described comprising a casing, an electrical switch, an alarm bell and a battery connected in series with the said switch, an operating bar slidably mounted within the casing and having an angular slot therein and provided with a shoulder and a curved edge, a switch plate carried by the said bar operatively positioned with respect to the said switch, normal retracting means for the said bar and switch plate, a key depressingly engaging the curved edge of said bar controlling its inoperative movement in one direction and shiftably engaging the said shoulder in its operative switch closing direction, and a laterally impelling return spring for the said bar.

In testimony whereof I affix my signature.

JOSEPH ZIEMIENIK.