Aug. 20, 1935. G. LODISPOTO 2,011,944

COMBINED LOCK AND SWITCH FOR AN ALARM

Filed Dec. 1, 1933

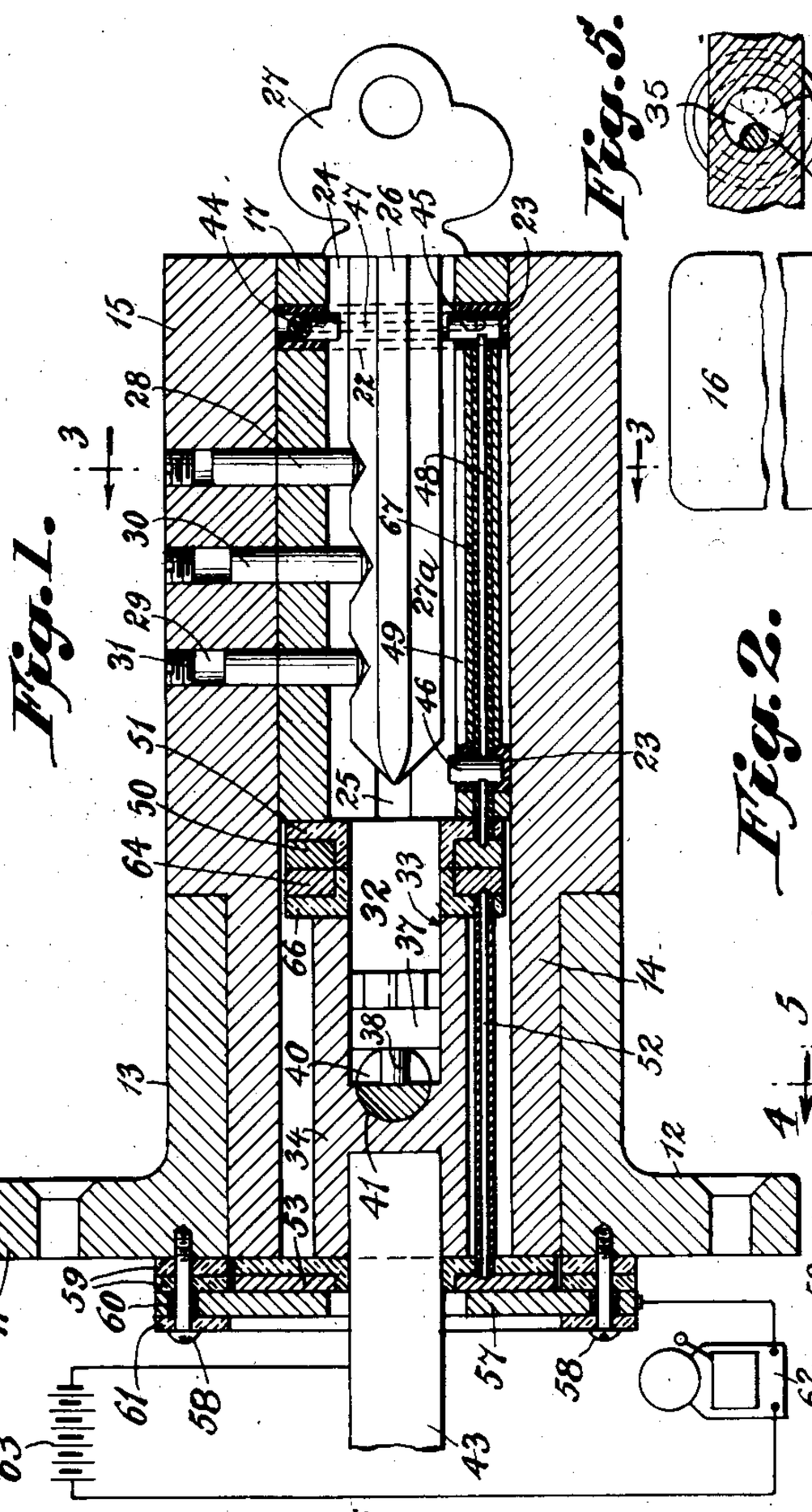

Fig. 1.

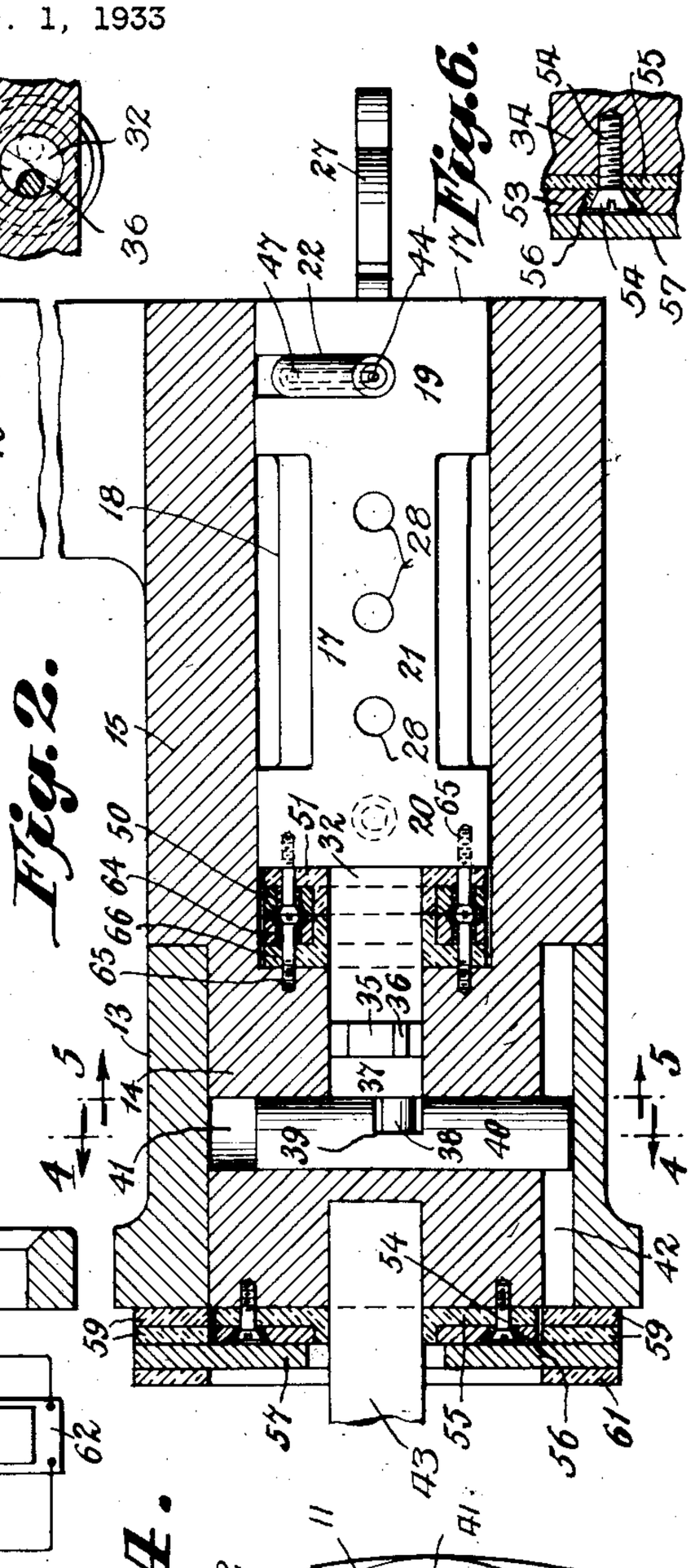

Fig. 2.

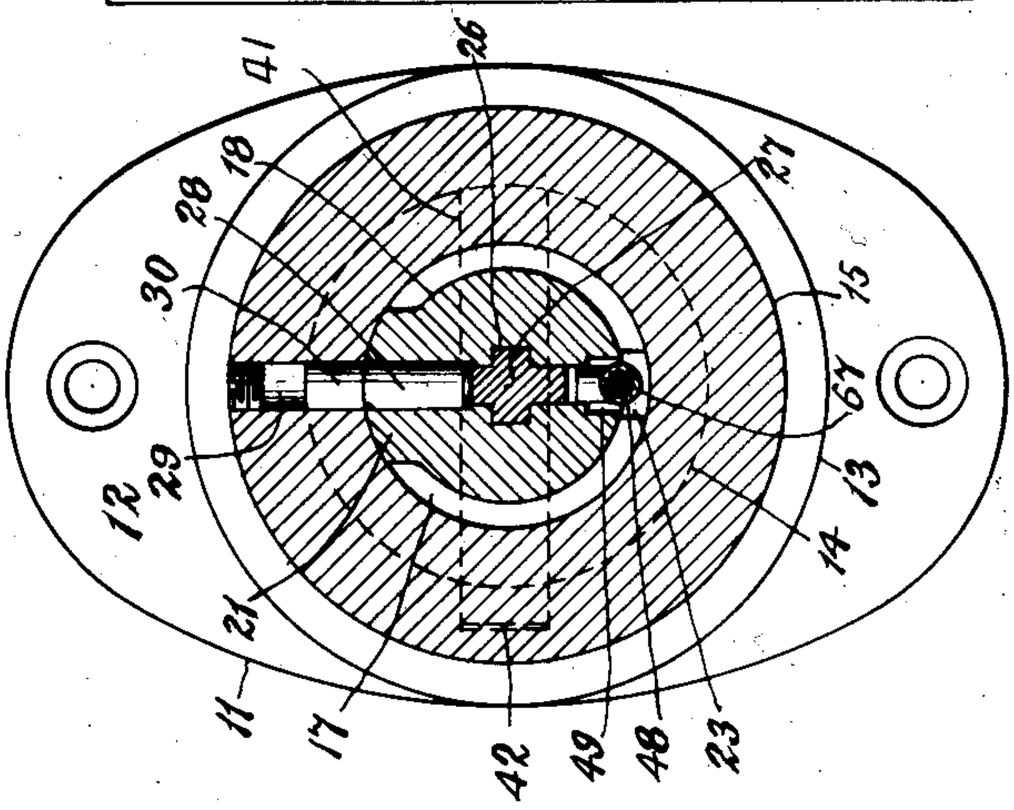

Fig. 3.

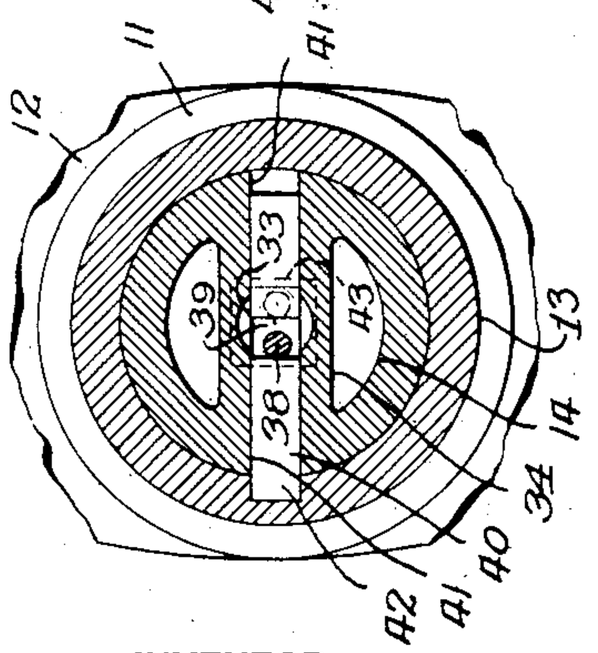

Fig. 4.

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Patented Aug. 20, 1935 2,011,944

UNITED STATES PATENT OFFICE

2,011,944

COMBINED LOCK AND SWITCH FOR AN ALARM

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Application December 1, 1933, Serial No. 700,432

5 Claims. (Cl. 200—44)

My invention relates to improvements in a combined lock and switch for an alarm, and it consists in the novel features, which are hereinafter described.

One of the objects of my invention is to prevent the surreptitious opening of a lock by means of a false key, and consists in providing a lock with certain parts thereon which are electrically connected to an electric battery and a bell, the circuit being normally open and adapted to be completed by the insertion of a false key, thereby actuating the bell.

Another object of my invention is to provide a means for avoiding the sounding of an alarm when the lock is legitimately opened by means of the proper key.

A further object of my invention is to have my combined lock and switch for an alarm relatively simple, durable and inexpensive.

Other objects and advantages will hereinafter appear.

I attain these objects by the device, one form of which is illustrated in the accompanying drawing, or by any mechanical equivalent or obvious modification of the same.

In the drawing Fig. 1 is a longitudinal central vertical section of an automobile door lock embodying my invention, showing sundry parts in elevation.

Fig. 2 is a horizontal longitudinal central section of the lock, showing sundry parts in plan view.

Fig. 3 is a section on the line 3—3 of Fig. 1, looking in the direction of the arrows.

Fig. 4 is a fragmentary view in section on the line 4—4 of Fig. 2, looking from right to left in Fig. 2 when the lock is closed and drawn to a smaller scale than Figs. 1, 2 and 3, which are drawn to an enlarged scale.

Fig. 5 is a fragmentary view in section of a detail on the line 5—5 of Fig. 2 looking from left to right in Fig. 2, when the lock is open.

Fig. 6 is a detail view in cross-section of parts which are hereinafter described.

Similar numerals refer to similar parts throughout the several views.

11 designates a bracket, which is normally secured by means of flanges 12 and suitable screws, to the door of an automobile; it has thereon a hub 13 which fits the outer periphery of a neck 14 of a partly hollow casing 15 which is rotatably connected to said hub 13 by means of said neck 14 and terminates in a handle 16 which may be preferably integral with said casing 15.

A key barrel, 17, is rotatably connected to the outer end of said casing 15 interiorly thereof, to rotate co-axially therewith.

The barrel 17 has thereon an intermediate portion 18 and two end portions 19 and 20; the portion 18 is reduced in size through the greater part of the periphery thereof leaving a space therebetween and the interior of the casing 15, except near the top of said portion 18, as at 21, where it is in contact with the said interior.

The portion 19 has therein an arcuate groove 22, extending through about one half of its circumference at the rear thereof for a purpose, which is hereinafter described.

The lower parts of said portions 19 and 20 have each therein also a longitudinally disposed groove or cavity 23 for a purpose which is also hereinafter described.

A normally vertically disposed key slot 24 extends lengthwise the barrel 17 centrally thereof and it has thereon a pair of guide grooves 25 to fit a pair of ribs or guides 26 on a key 27 transversely thereto.

Multiple tumblers 28 are slidably positioned in corresponding normally vertically disposed openings 29, which pass through the part 21 of the barrel and the upper part of the casing 15, and the tumblers 28 normally extend downwardly below the positions shown in Fig. 1.

The lower ends of the tumblers 28 rest in the notches of the key blade 27*a*, which is in the opening or closing position of the lock; the upper ends of the tumblers are in line with the outer periphery of the barrel 17, thereby permitting the barrel to be turned by means of the key 27, for opening the lock. To close the lock, the key 27 is withdrawn, thereby permitting the tumblers 28 to fall below the positions shown in Fig. 1, thereby also lowering a set of riders 30, which are mounted on said tumblers 28, through a distance which is smaller than the height of the riders 30, whereby the barrel 17 is prevented from rotating until the proper key 27 is inserted, as shown in Fig. 1.

The upper ends of the openings 29 are shown as closed by means of plugs 31, leaving a space between the upper ends of the riders 30 and the lower ends of the plugs 31, whereby said riders 30 with said tumblers 28 could be raised to higher positions, than as shown in Fig. 1 by the passing of higher parts of the blade 27*a* of the key 27 thereunder.

The barrel 17 has at its inner end a stem 32, which extends at the inner end thereof into a cylindrical opening 33 in a web 34 in the interior of the neck 14 co-axially therewith and is swivelled therein; the stem 32 terminates in a quad-

rant sector projection 35, which is disposed to engage a similar projection 36 on the adjacent outer end of a cylindrical stub 37, which is also swivelled in said opening 33 and has on the inner end thereof a pin 38 extending into a groove 39 of a bolt 40, whereby to move said bolt lengthwise thereof alternately in opposite directions, as shown in Fig. 4, where the arrow indicates the direction of rotation of the pin 38 for opening the lock. The quadrants 35 and 36 serve to cause the barrel 17 to have a lost motion through one half of a revolution when the direction of rotation thereof is reversed; whereby the key 27 is brought to the position shown in Fig. 1 after the said pin 38 moves the bolt 40 in either direction.

The bolt 40 is slidably mounted in a transversely disposed opening 41 in the web 34 at the inner end of the opening 33, and the forward end thereof removably extends into a keyway 42 in the hub 13 of the bracket 11.

The web 34 has secured thereto, by casting the web on to it, a door spindle 43, which is square in cross-section as shown in dotted lines in Fig. 4. The spindle 43 passes through the door of an automobile and actuates an interior latch in the latter. When the lock is open, to wit: when the end of the bolt 40 is out of the keyway 42, the spindle 43 may be actuated by means of the handle 16, which may be turned to open the inner latch, which is normally kept closed by means of a spring, which is not shown in the drawing, the latch being of standard well known design in all automobiles.

When the lock is closed, i. e. when the end of the bolt 40 is engaged in the keyway 42, the spindle 43 cannot be turned and the interior latch of the automobile door cannot be opened from the outside without a proper key.

To prevent the surreptitious opening of the lock by a false key I provide the lock with an electrically operated alarm, which comprises the following features.

The key slot 24 is made vertically wider than the key blade 27*a* as shown in Fig. 1, and the latter is kept in alignment with the axis of the slot by means of said guide grooves 25 and guides 26 on said key blade 27*a*.

An insulated pin 44 is inserted into the top of the part 19 of the barrel 17, radially thereto with the inner end thereof exposed and extending into the upper side of the key slot 24 as shown in Fig. 1.

Similar pins 45 and 46 are inserted respectively into the parts 19 and 20 of the barrel 17 at the underside thereof, also radially thereto and with the ends of the pins also extending into the key slot 24 at the bottom thereof.

An insulated wire 47 placed in the groove 22 connects the outer ends of the pins 44 and 45; another insulated wire or an extension of the same wire 48 connects the outer ends of the pins 45 and 46 in the cavities 23; and the wire 48 may be enclosed in a metal tube 67 and is shown in Figs. 1 and 3 as placed in the groove 49 in the underside of the barrel 17.

The wire 48 is extended and connected at the inner end thereof to a metal ring 50 at the inner end of the barrel 17.

The ring 50 is shown as insulated from the barrel 17 and the stem 32 by means of a gland shaped insulation 51 as shown and may be connected to the portion 20 of the barrel 17 by means of countersunk screws 65.

The ring 50 is in sliding contact with a ring 64 which may be made resilient, and is secured to the adjacent end of the web 34 also by means of countersunk screws 65, and is insulated from the web 34 by means of a gland shaped ring 66 of insulating material; the rings 50 and 64 may also be insulated from the screws 65 by means of tapered ferrules of insulating material such as shown on a larger scale at 56 in Fig. 6.

An insulated rod or wire 52 connects the ring 64 to a metal ring or plate 53 which may be made resilient, and is connected by means of screws 54 to the inner end of the web 34 in the neck 14 and is insulated therefrom as shown on a larger scale in Fig. 6, where a sheet of insulation 55 is shown as placed between the plate 53 and the end of the web 34, and a tapered ferrule 56 of insulating material is placed between the countersunk head of each screw 54 and the interior of the opening in the ring 53, which is provided for the said screw head. Instead of the rod 52 an insulated compression spring may be used.

A metal plate 57 is connected by means of screws 58 to the inner side of the bracket 11 in sliding contact with the outer side of the plate 53 and is insulated from the metal of the bracket 11 by means of a ring or rings of insulation 59. The screws 58 are also insulated from the plate 57 by means of suitable ferrules 60 and a ring 61 of insulating material.

The plate 57 is electrically connected to a bell 62 and a battery 63, which is in turn connected to the spindle 43 through some part of the door of the automobile or the latch thereof; these parts being omitted in the drawing, the electrical connection from the battery 63 is shown as made directly to the spindle 43, which is shown as broken off in Fig. 1.

It is evident from the drawing that, if any false key is inserted into the key slot 24, it will very probably contact with the interior of the barrel 17 and with one or more of the pins 44, 45 and 46, thereby closing the circuit and causing the bell 62 to ring an alarm; the blade 27*a* of the proper key, being directed by the guide 26, does not touch either the interior of the barrel 17 or the pins 44, 45 and 46.

In this way I provide a very effective combined lock and switch for an alarm, which may be used not only for automobile doors, but also for securing the lever which controls the brakes, or the ignition or any other part of the automobile. My combined lock and switch for an alarm may also be employed for dwellings, warehouses and wherever it may be useful. Instead of a bell a horn may be employed to produce an alarm.

It will be understood that I do not restrict myself to the particular form of lock, which is illustrated in the drawing; but my switch for an alarm may be combined with any other lock, if desired.

The bell 62 and battery 63 may be located in any convenient places.

Variations are possible in the details of my combined lock and switch for an alarm, and parts of my invention may be used without other parts.

I do not, therefore, restrict myself to the details as shown in the drawing; but I intend to include also all mechanical equivalents and obvious modifications of the same within the scope of the claims.

I claim as my invention and desire to secure by Letters Patent:

1. In a combined lock and switch for an alarm multiple members, axially rotatably mounted with relation to each other and including a bracket,

a hollow casing and a key barrel, means on said casing to engage said bracket, means on said barrel to actuate said engaging means, a slot in said barrel for a proper key to be inserted thereinto, said slot being wider than the blade of the said key in the plane of the latter, guide means on said barrel and said blade for keeping the edges of said blade spaced from the interior of said barrel, insulated conductor means, extending from said bracket to said casing and said barrel along said members and terminating in the interior of said barrel in insulated contact means having thereon exposed parts to be inadvertently touched by a false key, said contact means being disposed to be cleared by the said blade, means in the ends of said bracket, said casing and said barrel for keeping said conductor means in electrical communication therethrough during the relative rotation of said members, said conductor means with said contact means forming part of an electrical circuit which includes said casing, said barrel, a source of electrical energy and a sound producing means, said circuit normally being open between the exposed parts of said contact means and the interior of said barrel and adapted to be closed by the contacting of a false key with one or more of said parts and with the interior of said barrel, thereby actuating the said sound producing means.

2. The elements of claim 1, said guide means comprising ribs on the sides of said blade and grooves in the interior of said barrel along said key slot to fit said ribs, whereby to keep said blade from touching the interior of said barrel and the exposed parts of said contact means.

3. The elements of claim 1, said contact means comprising insulated pins in said barrel, said pins having their ends exposed and extending into the key-slot, reaching not quite to the position of said blade.

4. The elements of claim 1, said members having relative motion at their adjoining ends in multiple planes and said keeping means including multiple pairs of metal rings the rings in each pair being insulated from and secured to the adjoining ends of said members in sliding contact with each other.

5. The elements of claim 1, said casing being normally stationary when the lock is closed, said barrel being rotatably mounted in said casing, and said keeping means including an annular metal plate, insulated from and secured to the end of said casing, and a metal ring insulated from and secured to the adjacent end of the barrel in sliding contact with said plate.

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