

June 20, 1933.

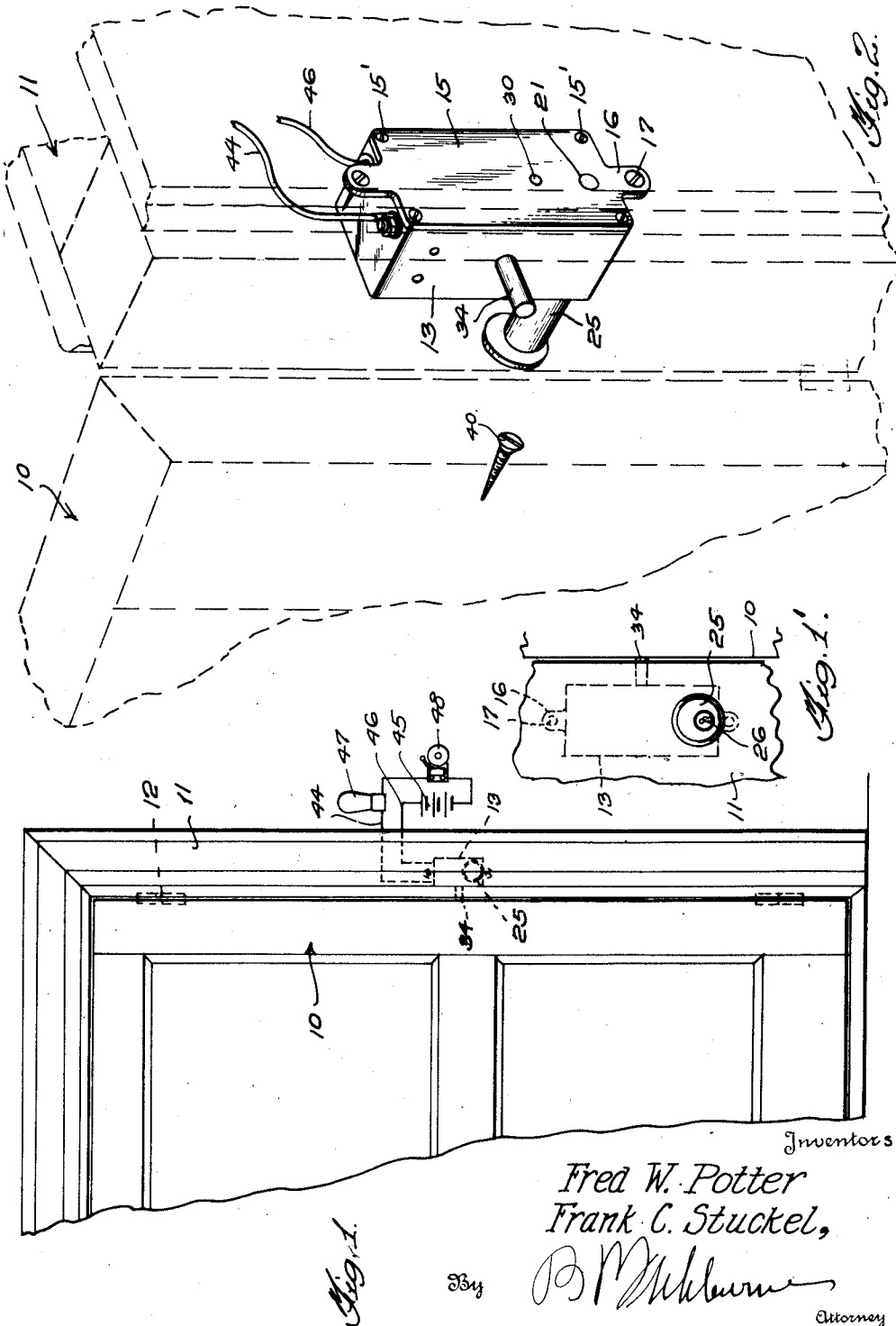
F. W. POTTER ET AL

1,915,239

ELECTRIC SWITCH

Filed May 27, 1932

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

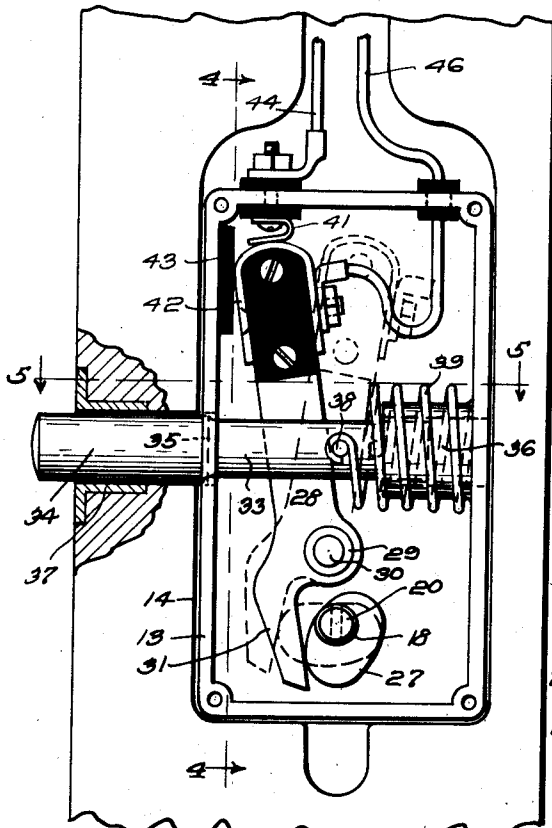


Fig. 3.

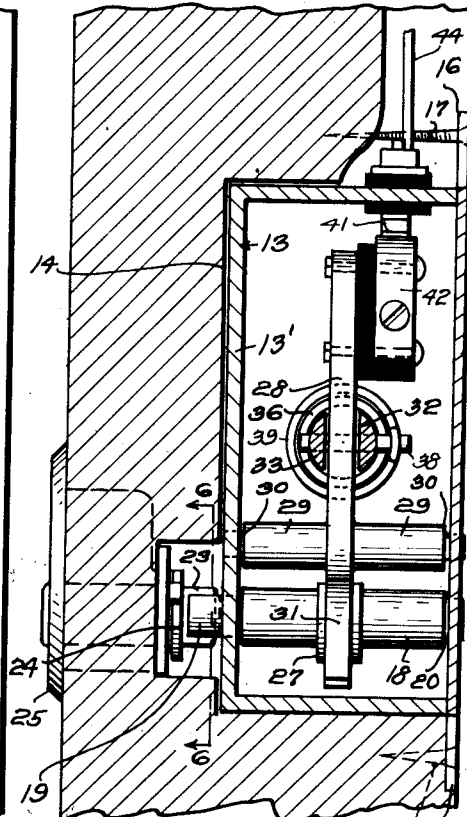


Fig. 4.

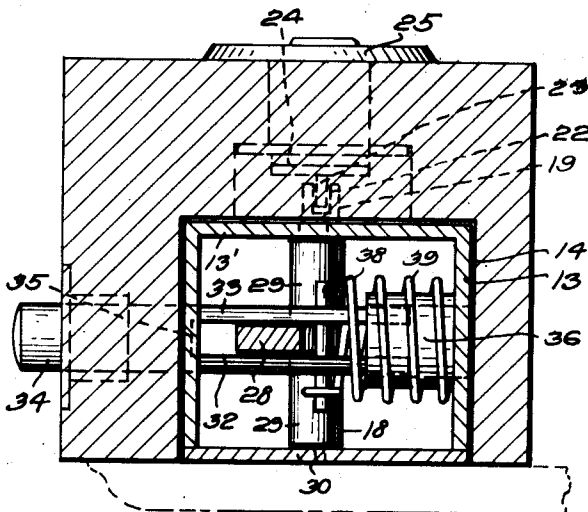


Fig. 5.

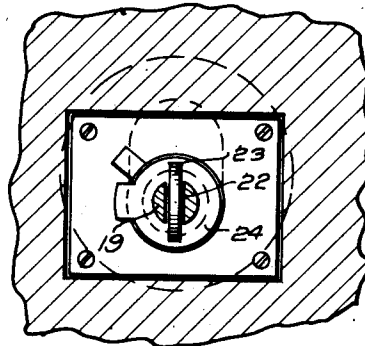


Fig. 6.

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ELECTRIC SWITCH

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Our invention relates to improvements in signal devices.

An important object of the invention is to provide a device of the above-mentioned character, which is adapted to automatically produce a signal, visual or audible, upon the unauthorized opening of a closure element.

A further object of the invention is to provide a device of the above-mentioned character, which is so constructed that when the signal is produced upon the unauthorized opening of the closure element, the operation of the signal will continue, if the closure element is again closed, until the device is actuated by separate means to render the same inoperative with respect to operating the signal.

A further object of the invention is to provide a device of the above-mentioned character, embodying a contact lever which may be shifted and held in the inoperative position by means of a lock element, the device then being incapable of causing the signal to operate.

In the accompanying drawings, forming a part of this specification, and in which like numerals are employed to designate like parts throughout the same,

Figure 1 is an outer side elevation, parts broken away, of a door, showing our signal device associated therewith,

Figure 1' is an inner side elevation of the lock,

Figure 2 is a perspective view of the switch unit of the signal device,

Figure 3 is a side elevation of the switch unit, the cover plate of the box being removed,

Figure 4 is a longitudinal section taken on line 4—4 of Figure 3,

Figure 5 is a horizontal section taken on line 5—5 of Figure 3, and,

Figure 6 is a transverse vertical section taken on line 6—6 of Figure 4.

In the drawings, wherein for the purpose of illustration is shown a preferred embodiment of our invention, the numeral 10 designates a closure element, in the embodiment of a door, arranged in co-operative relation with a door frame 11, and connected therewith by hinges 12. Figure 1 shows the outer side of

the door. While the closure element is illustrated as in the form of a door, it may be in the form of a window, cover or lid of a box, or any other suitable closure element.

The switch unit embodies a box or case 13, which may be formed of metal, or the like, and which is mounted within a recess or chamber 14, formed in the door frame 11. This case has a cover plate 15 provided with apertured ears 16, which may be attached to the door frame 11 by screws 17, or the like. The cover plate 15 is detachably connected with the case 13 by screws 15', or the like.

The case 13 fits snugly within the recess 14, and will be held rigidly to the door frame by the plate 15. Mounted within the lower end of the case 13 is a pivoted cylinder 18, having trunnions 19 and 20, at its ends. The trunnion 20 is pivoted within an opening 21, formed in the cover plate 15, while the trunnion 19 is pivoted in an opening formed in the closed side 13' of the case 13. This trunnion 19 is slotted, as shown at 22, for receiving a coupling 23, which is rigidly connected with a rotary lock barrel 24, included in a lock 25. This lock may be of any well known or preferred type, and has the usual key-hole opening 26, for receiving the key, whereby the lock barrel 24 may be turned, provided the proper key is used, the lock barrel being otherwise held against turning movement. The coupling 23 projecting into the slot 22, provides a positive connection with respect to rotation, but also permits of the removal of the case 13 without disturbing the lock barrel. The pivoted cylinder is provided near its center with a cam 27, preferably integral therewith.

Arranged within the case 13, and generally vertically disposed, is a lever or arm 28, provided with trunnions 29, formed integral therewith adjacent to its lower end. The trunnions 29 have reduced extensions 30, which are pivoted in openings formed in the closed side 13', and the cover plate 15, as shown. The trunnions 30 are arranged near and above the pivoted cylinder 18, as shown. The lever or arm 28 is provided at its lower end with a laterally off-set extension 31, arranged to be engaged by the cam 27. The

lever or arm 28 extends through a longitudinal slot 32, formed in the shank 33 of a plunger 34. The slot 32 has a forward end wall 35, while the slot preferably extends to the rear end of the shank. The rear end of the shank is slidably guided within a tubular boss 36, formed upon the side of the case 13, while the plunger 34 is slidable within a guide sleeve 37, as shown. A transverse pin 38 extends through openings formed in the shank 33, and is arranged inwardly or rearwardly of the lever 28. This pin extends across the slot 35, and is disposed to contact with the lever 28, but has no connection therewith. The pin has connection with one end of a compressible coil spring 39, which surrounds the tubular boss 36. The plunger 34 projects a short distance beyond the tubular guide 37 and the edge of the door frame, and is arranged to be engaged by a wear element 40, such as a screw, attached to the edge of the door. When the cam 27 is in the retracted position, as shown in Figure 3, the spring 39 will then be capable of shifting the plunger 34 forwardly, and the pin 38 will swing the lever 28 forwardly to the circuit closing position. However, should the plunger 34 be depressed, it cannot shift the lever 28 to the rear or circuit opening position, since the end wall 35 is spaced from the lever 28 for a greater distance than the rearward stroke of the plunger 34.

The numeral 41 designates a stationary contact which is mounted within the case near its top, and insulated therefrom. This contact is adapted to be engaged by a contact 42, which is mounted upon the upper end of the lever 28 and insulated therefrom. Insulation 43 is provided to prevent the contact 42 engaging the adjacent side of the case. The stationary contact 41 has electrical connection with a wire 44, which is connected with one side of a source of current 45, the opposite side of which is connected with a wire 46, which extends into the case 13, and is connected with the contact 42. A visual signal device 47, such as an electric lamp, is connected in the wire 44 while an audible signal device 48, such as a bell, is connected in the wire 44. Either or both types of signals may be employed.

When it is desired to use or move the door or closure element, without operating the signal device, the lock barrel 24 is turned in a direction to bring the cam 27 into operative engagement with extension 31, thereby swinging the extension 31 forwardly, Figure 3, and the upper end of the lever 28 rearwardly, so that contact 42 breaks connection with contact 41. The key may be removed from the lock, and the cam 27 will then hold the lever 28 in the rear inactive position. The lever 28 will engage the pin 38, and the plunger 34 will be carried inwardly or depressed and held in this position. When the

door 10 is opened, it is obvious that the signal device cannot function since the lever 28 is now held or locked in the rear inactive position. To set the device for operation, the lever 28 being in the rear position, the door or closure element is first closed, and the lock barrel 24 is turned in a reverse direction so that the cam 27 is in substantially the position shown in Figure 3. The lever 28 being in the rear inactive position, it will remain in this position and contacts 41 and 42 are disengaged, but lever 28 is free to have its upper end swung forwardly, by the action of the spring 39, upon the release of the plunger 34. Hence, when the door is opened, the spring 39 projects plunger 34 forwardly and pin 38 will engage with the lever 28 and force it forwardly, bringing contacts 41 and 42 into engagement. The electric circuit is, therefore, completed at the contacts 41 and 42, and the visual or audible signal elements 47 and 48 are thrown into action. Should the door closure element be again closed without manipulating the cam 27, the circuit would still remain closed at the contacts 41 and 42, for the inward movement of the plunger 34 will not swing the upper portion of the lever 28 rearwardly, as the end wall 35 of the slot 32 is spaced a greater distance from the lever 24 than the inward stroke of the plunger. The signal element will, therefore, continue to operate until the key is employed to turn the lock barrel for turning the cam 27 in the direction to shift the upper end of the lever 28 rearwardly to the inactive position, thereby breaking engagement between contacts 41 and 42.

It is to be understood that the form of our invention herewith shown and described, is to be taken as a preferred example of the same, and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention, or the scope of the subjoined claims.

Having fully described our invention, what we claim is:

1. A circuit closer for use in connection with a stationary member and a hinged closure member, comprising a support arranged upon the stationary member near the hinged extremity of the closure member, a lever pivoted to the support, a contact carried by the lever, a stationary contact arranged to be engaged and disengaged by the first-named contact, a plunger carried by the support and adapted when projected forwardly to engage with the hinged extremity of the closure member, said plunger having means affording such a connection with the pivoted lever that when the plunger is projected forwardly, the contact carrying portion of the lever is swung toward the stationary contact so that the contact of the lever engages the stationary contact and when the plunger is

shifted rearwardly it is incapable of swinging the lever from the circuit closing position, and a spring connected with the plunger to automatically project the same forwardly and thereby cause the plunger upon this forward movement to shift the lever to the circuit closing position.

2. A circuit closer for use in connection with a stationary member and a swinging closure member, comprising a support arranged upon the stationary member near the extremity upon which the member turns, a lever pivoted to the support, a contact carried by the lever, a stationary contact arranged to be engaged and disengaged by the first-named contact, a plunger carried by the support and adapted to engage with the turning extremity of the closure member, said plunger having means for affording such a connection with the pivoted lever that when the plunger is projected forwardly the lever is shifted to the circuit closing position and when the plunger is shifted rearwardly it is incapable of swinging the lever from the circuit closing position, a spring connected with the plunger to automatically project the same forwardly and thereby cause the plunger upon this forward movement to shift the lever to the circuit closing position, and separate means to shift the lever from the circuit closing position.

3. A circuit closer, comprising a support, a lever pivoted to the support, a contact carried by the lever, a stationary contact arranged to be engaged and disengaged by the first-named contact, a plunger carried by the support and having a shifting part to engage with the lever and swing the same to the circuit closing position upon the forward projection of the plunger, said plunger being free from any shifting part which would engage the lever and swing the same from the circuit closing position upon the rearward movement of the plunger, a spring connected with the plunger to automatically project the same forwardly and thereby cause the plunger upon this forward movement to shift the lever to the circuit closing position, and separate means to shift the lever from the circuit closing position.

4. A circuit closer comprising a support, a lever pivoted to the support, a contact carried by the lever, a stationary contact arranged to be engaged and disengaged by the first-named contact, a plunger carried by the support and having an elongated slot receiving the lever, said plunger having a shifting part arranged to engage the lever and swing the same to the circuit closing position upon the forward movement of the plunger, said plunger being incapable of shifting the lever from the circuit closing position when the plunger is shifted rearwardly, a spring to project the plunger forwardly and thereby cause the plunger upon this forward move-

ment to shift the lever to the circuit closing position, and separate means to shift the lever from the circuit closing position.

In testimony whereof, we affix our signatures.

FRED W. POTTER.
FRANK C. STUCKEL.

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