

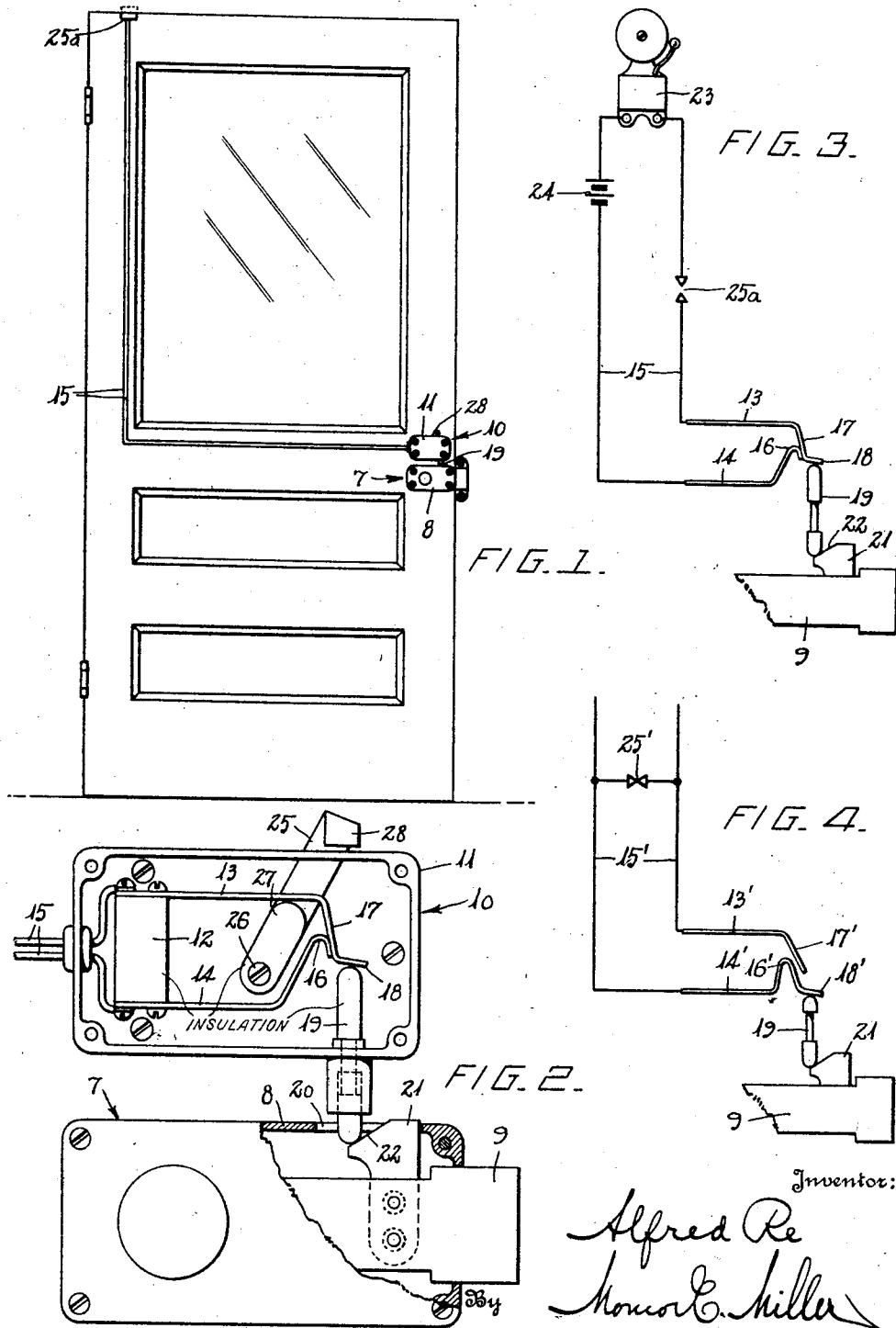
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ALARM SWITCH AND DOOR LOCK

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ALARM SWITCH AND DOOR LOCK.

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The present invention relates to alarm switches for door locks, and aims to provide in combination with a switch or circuit controller operated by the opening of a door, a second switch controlling the circuit and arranged to be operated by the lock of the door, in order that when the lock bolt is retracted by the use of a proper key, the alarm will not be given, whereas if the door is forced open without using the key, the alarm is given.

Another object is to provide a switch device adapted to be secured to a door adjacent to the door lock, with novel means for controlling the switch device from the bolt of the lock.

With the foregoing and other objects in view, which will be apparent as the description proceeds, the invention resides in the construction and arrangement of parts, as hereinafter described and claimed, it being understood that changes can be made within the scope of what is claimed, without departing from the spirit of the invention.

The invention is illustrated in the accompanying drawing, wherein—

Figure 1 is an inside elevation of a door illustrating the improved switch device thereon.

Fig. 2 is an enlarged elevation of the door lock and switch device, a portion of the door lock case being broken away and shown in section and the face plate of the switch case being removed.

Fig. 3 is a diagrammatical view illustrating the electrical circuit.

Fig. 4 is a diagrammatical view illustrating a modification.

The numeral 7 indicates any suitable door lock having the case 8 in which the lock bolt 9 is slidable to be projected into the usual keeper for locking the door closed, said bolt being retracted in the usual manner by the use of a proper key.

In carrying out the invention there is provided a switch device 10 secured to the door adjacent to the lock 7. As shown, the switch device 10 is located above the lock. The switch device comprises a case 11 having a block 12 of insulating material therein to which are secured the leaf springs 13 and 14, and wires 15 of an electrical circuit are connected with said leaf springs. The leaf spring 14 has its terminal portion bent toward the leaf spring 13 and bent reversely

to form a contact 16 to engage a portion 17 of the leaf spring 13 which is bent toward the spring 14, and the portion 17 has an outturned portion 18. The contact 17 of the spring 13 normally bears against the contact 16 of the spring 14, to close the circuit at this point.

In order to control the circuit by the movement of the lock bolt 9, a plunger 19 is slidable through the wall of the case 11 with its inner end adapted to abut the abutment 18 of the spring 13, and the case 8 of the lock is provided with a slot 20 to receive said plunger and to also accommodate a cam piece 21 which is secured in any suitable manner to the bolt 9. The piece 21 has a cam 22 arranged to engage the corresponding end of the plunger 19 and slide said plunger, when the bolt 9 is retracted by the use of the appropriate key, in order that the plunger 19 bearing against the abutment 18 will flex the spring 13 away from the spring 14 so as to separate the contacts 16 and 17. Thus, when the lock bolt 9 is retracted by the operation of the lock, when using the appropriate key, the circuit is opened between the contacts 16 and 17.

As seen in Fig. 3, the circuit of the contacts 16 and 17 includes a suitable electric bell or other audible or visual signal device 23 and battery 24 or other source of electrical energy, and the circuit also includes a switch device or contacts 25^a between the door and door frame, and any suitable switch device or circuit controller may be used for this purpose so that when the door is opened the circuit is closed at this point. Therefore, if the door is forced open without retracting the lock bolt 9, the circuit is completed at the switch device 25^a, and the contacts 16 and 17 being in engagement, will result in the circuit being completed so that the alarm is given. However, when the key is inserted in the lock and the lock bolt retracted, the cam 22 sliding the plunger 19 will open the circuit between the contacts 16 and 17, so that even though the switch device 25^a is closed, the circuit remains broken, and the alarm will not be given.

In order to prevent the alarm being given when not desired, such as during the daytime or when the key is withdrawn from the lock after the door has been opened and before the door is again closed, a lever 25 is pivoted, as at 26, in the case 11 and has a

cam 27 adapted to engage the spring 13 and flex it away from the spring 14, so as to separate the contacts 16 and 17. The lever 25 has a finger piece 28 at its outer end for conveniently swinging said lever. When the lever is swung to separate the contacts, this keeps the circuit open, to prevent the alarm being given. Thus, when the door has been opened by the appropriate key, the lever 25 may be swung to keep the contacts 16 and 17 separated, until the door is again closed, after which the lever 25 may be returned so that the contact 17 returns into engagement with the contact 16, following the opening of the switch device 25^a when the door has been closed. The lever 25 may also be used for opening the circuit during the daytime.

Fig. 4 illustrates modifications for use in a normally closed circuit, which when broken will give the alarm. Thus, the switch device 25' and contacts 16' and 17' are connected in parallel with one another instead of being in series as seen in Fig. 3 for a normally open circuit. The contacts 16' and 17' of the springs 14' and 13', respectively, are normally separated, and when the plunger 19 is moved by the cam piece 21, the plunger bearing against the abutment 18', of the leaf spring 14' will flex said spring 14' toward the spring 13' to move the contact 16' against the contact 17'. Thus, the circuit is closed between the contacts 16' and 17' by the operation of the lock in retracting the lock bolt 9, so that the circuit will not be interrupted when the door is opened and the switch device 25' opened. It will thus be obvious that the improvements may be used for either normally open or normally closed circuits, and the switch device 10 enables the circuit to be controlled from the ordinary or any suitable lock, without the necessity for combining the device with the lock for enclosing same in the lock case.

Having thus described the invention, what is claimed as new is:—

1. The combination with a door lock having a slidable bolt, of a switch device comprising two leaf springs having cooperable contacts, means for flexing one of said springs when said bolt is moved, and means for flexing one of said springs independently of the movement of said bolt.

2. The combination with a door lock including a slidable bolt, of a switch device comprising two leaf springs having cooperable contacts, a plunger to abut one spring and flex it relatively to the other spring, a cam carried by said bolt to move said plunger, and other means for flexing one of said springs independently of the movement of the plunger by said cam.

3. The combination with a door lock including a case and a bolt slidable therein, of a switch device comprising a case, two leaf springs mounted in the second named case and having cooperable contacts, a plunger slidable in the second named case and arranged to abut one spring to flex it relatively to the other spring, and a cam piece carried by said bolt to engage said plunger.

4. The combination with a door lock including a case and a bolt slidable therein, of a switch device comprising a case, two leaf springs mounted in the second named case and having cooperable contacts, a plunger slidable in the second named case and arranged to abut one spring to flex it relatively to the other spring, a cam piece carried by said bolt to engage said plunger, and a lever pivoted in the second named case and having a cam to contact with one spring for flexing it away from the other spring.

In testimony whereof I hereunto affix my signature.

ALFRED RE.