

935,226.

Patented Sept. 28, 1909.

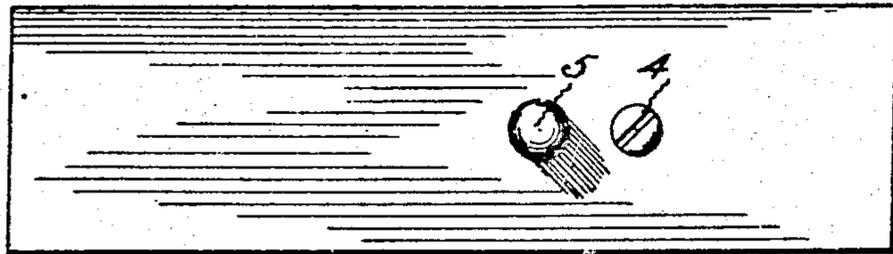


FIG. 1

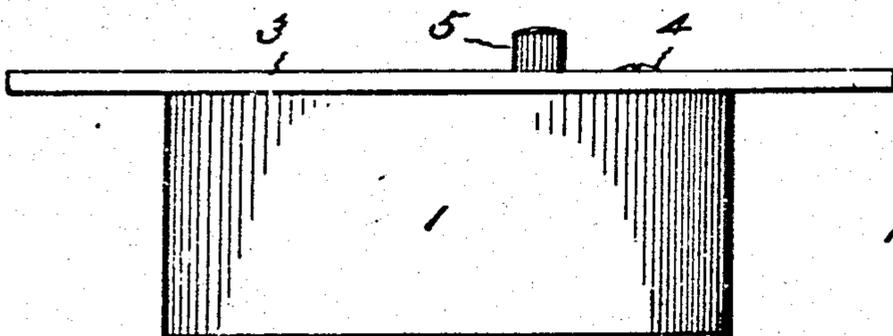


FIG. 2

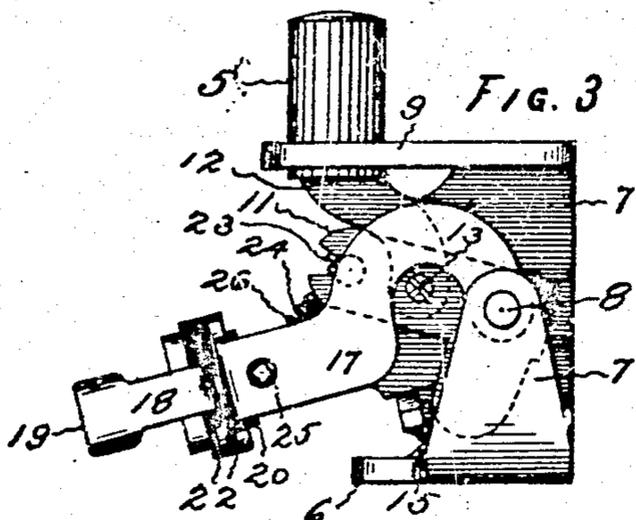


FIG. 3

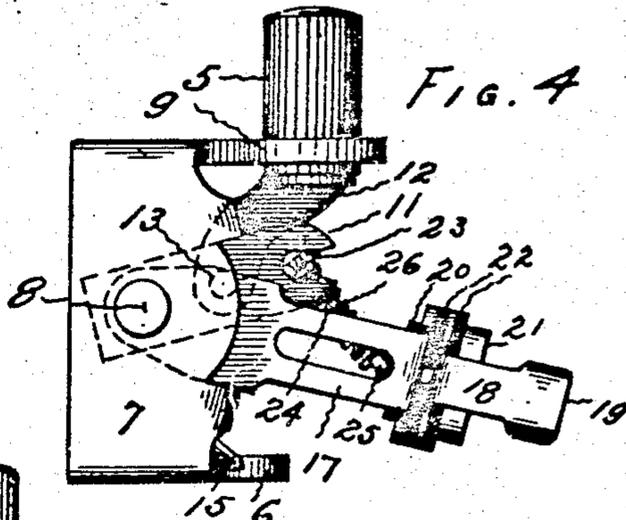


FIG. 4

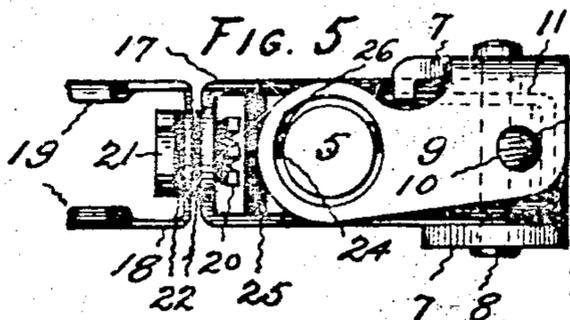


FIG. 5

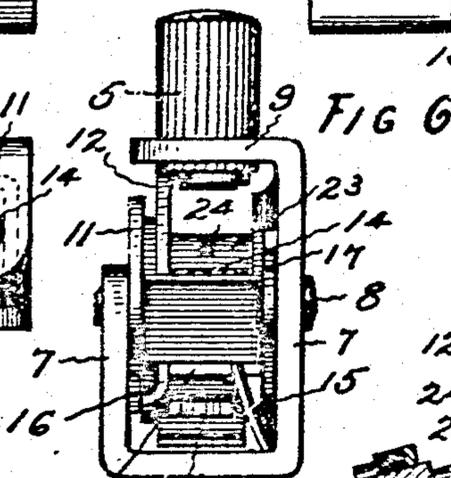


FIG. 6

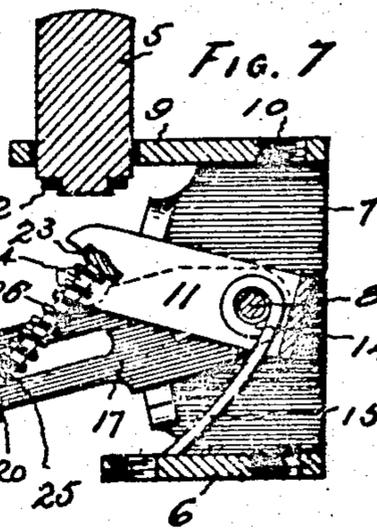


FIG. 7

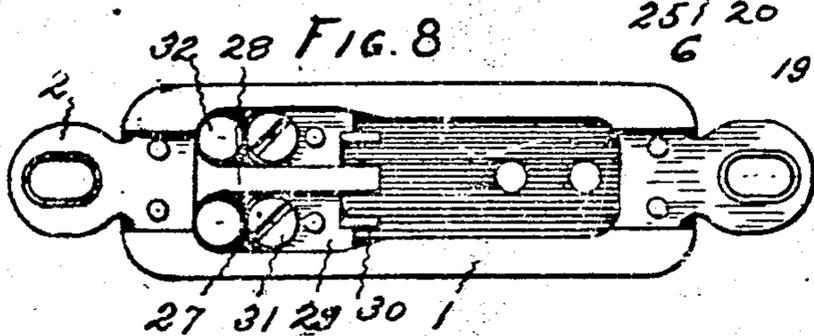


FIG. 8

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# UNITED STATES PATENT OFFICE.

JOHANN G. PETERSON, OF HARTFORD, CONNECTICUT, ASSIGNOR TO THE ARROW ELECTRIC COMPANY, OF HARTFORD, CONNECTICUT, A JOINT STOCK CORPORATION OF CONNECTICUT.

## ELECTRIC SWITCH.

935,226.

Specification of Letters Patent. Patented Sept. 28, 1909.

Application filed December 28, 1908. Serial No. 469,598.

*To all whom it may concern:*

Be it known that I, JOHANN G. PETERSON, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented a new and useful Electric Switch, of which the following is a specification.

This invention relates to a door switch, that is, an electric switch designed to be operated, either by the opening or by the closing of a door, for the purpose of lighting and putting out one or more electric lights.

The invention applies to a switch that is automatically operated to close the circuit and light up a dark room or closet when the door is opened in order that the apartment may be inspected, and open the circuit and darken the room or closet, when the door is closed, or which effects the opposite, that is, which operates to close the circuit and light up a dark room or toilet when the door is closed, and open the circuit and extinguish the light when the door is opened.

The object of the invention is to provide a very simple, cheap and small switch which can be conveniently arranged in a mortise in a door stile or in a door frame, as desired, and which will operate surely and quickly when the door is opened and closed, being actuated one way by the pressure of the door when the door is closed, and the other way, when the door is opened, by a spring that is made tense by the closing of the door.

The switch illustrated in the drawings is designed to be inserted into a door frame, and, when the door is closed to be held with the circuit open and the actuating spring under tension so that as soon as the door is opened the spring will cause the switch to operate and close the circuit. Without changing the construction of the operating mechanism in any respect, but by merely reversing the position of the fixed contacts the opposite effect may be accomplished, that is, when the door is closed the circuit will be held closed by the door, and when the door is opened the circuit will be opened by the force of the actuating spring which was put under tension by the closing of the door.

Figure 1 of the drawings shows on natural scale, a plan of a complete switch which embodies the invention. Fig. 2 shows on the

same scale, a side elevation of the complete switch. Fig. 3 shows on enlarged scale, an elevation of one side of the switch mechanism. Fig. 4 shows an elevation of the opposite side of the switch mechanism. Fig. 5 shows a plan of the switch mechanism. Fig. 6 shows an edge view of the mechanism. Fig. 7 shows a central section of the mechanism. Fig. 8 shows on natural scale, a plan of the receptacle in which the switch mechanism is located, with the holding lugs and fixed contacts in place.

The receptacle 1 may be made of porcelain or any other suitable insulating material. This receptacle is preferably oblong in shape and at its ends is provided with perforated lugs 2 for the screws used to fasten the receptacle in place. Over the top of the receptacle is placed a cover plate 3, usually of brass, which is held in place by a screw 4, and through which the single push button 5 projects in such manner that it will be pushed inward by a part of a closed door when the switch is in use.

The mechanism supporting frame has a base 6 which is fastened by screws to the bottom of the receptacle, and sides 7 which support an arbor 8. The top of one side of the frame is bent over to form a guide 9 for the push button, and also to provide for the threaded perforation 10 designed to receive the screw which holds the cover in place.

Pivoted on the arbor are arms 11. These arms are preferably connected near the arbor so they will move as one piece. A finger 12 which is secured to the inner end of the push button, is connected by a stud 13 with one of these arms. A spring 14, which is coiled about the arbor, has an end 15 engaging the base of the frame and an end 16 engaging a portion of one of the arms in such manner that the tension of the spring normally holds the free ends of the arms upwardly and the push button, connected therewith, projecting outwardly. When the button is pushed inward the spring coiled on the arbor is given more tension, and as soon as the pressure is relieved the button and free ends of the arms are thrown violently outward by this spring which is somewhat stiff.

Pivoted to the arbor are the ends of a pair of arms which are connected so as to form a yoke 17. Attached to the outer or free end

of the yoke is the movable contact plate 18, which, in the form shown, is made of spring metal and is provided with two brushes 19. This contact plate is held in place by studs 20 which project from a plate 21 through openings in the end of the yoke. Washers 22 of insulating material, are placed between the contact plate and the holding plate, and between the contact plate and the yoke end so as to electrically insulate the contact plate from the metallic parts of the switch mechanism.

Loosely held by the outer ends of the arms is a plate 23, through which passes a rod 24 that extends from a bar 25 which is oscillatingly supported by the yoke. A spring 26 is arranged on this rod so as to thrust between the bar held by the yoke and the plate held by the ends of the arms.

In recesses 27 in the receptacle, which recesses are separated by the insulating partition 28, are plates 29. These plates have inwardly projecting contact fingers 30 which are adapted to be engaged and electrically connected by the spring brushes on the ends of the contact plate, when the mechanism is moved into position to close the circuit. Binding screws 31 are screwed into the fixed contact plates for the attachment of the circuit wires, which are led into the receptacle through perforations 32 in the bottom thereof.

When the push button is pressed in by the engagement therewith of a door or other part, the arms connected with the button are oscillated against the pressure of the actuating spring. While the arms are being moved in this manner, the tension of the contact throwing spring is increased until the axis of the plate carried by the outer ends of the arms passes the plane extending through the axis of the arbor and the axis of the bar which connects the spring with the yoke, and then the tension of the contact throwing spring causes the yoke and contact brushes to move rapidly upward. When pressure is relieved from the push button and it is forced outwardly by the actuating spring, the reverse action takes place, that is, while the arms are moving upwardly with the button, the tension of the contact throwing spring is increased until the plate carried by the ends of the arms passes the plane of the arbor and bar which connects the spring with the yoke. Then the contact throwing spring forces the yoke and brushes in the opposite direction, that is downward.

The invention claimed is:

1. An electric switch mechanism having a frame, an arm pivotally mounted on the frame, a push button connected with the arm, a spring thrusting the push button outwardly, a yoke pivotally mounted on

the frame with its axis coinciding with the axis of the arm, a contact carried by the yoke, and a spring thrusting between the arm and the yoke in such manner that when the arm is moved in one direction, said latter spring is first placed under compression and then after passing center thrusts the yoke in the opposite direction.

2. An electric switch mechanism having a frame, arms pivotally mounted on the frame, a push button connected with the arms, a spring thrusting the push button outwardly, a yoke pivotally mounted on the frame with its axis coinciding with the axis of the arms, a contact carried by the yoke, and a spring thrusting between the arms and the yoke in such manner that when the arms are moved in one direction, said latter spring is first placed under compression and then after passing center thrusts the yoke in the opposite direction.

3. An electric switch mechanism having a frame, an arbor supported by the frame, arms pivoted on the arbor, a push button, a finger connecting the push button and said arms, a spring thrusting the push button outwardly, a yoke pivoted on said arbor, a contact carried by the yoke, and a spring thrusting between the arms and the yoke, said latter spring being placed under compression by the movement of the arms so as to throw the yoke.

4. An electric switch mechanism having an arbor supported by the frame, arms pivoted on the arbor, a push button connected with the arms, a spring coiled around the arbor and having one end engaging the frame and the other end engaging the arms for thrusting the button outwardly, a yoke pivoted on said arbor, a contact carried by the yoke, and a spring thrusting between the arms and the yoke, said latter spring being placed under compression by the movement of the arms so as to throw the yoke.

5. An electric switch mechanism having a frame, arms pivoted to the frame, a push button connected with the arms, a spring thrusting the push button outwardly, arms pivoted to the frame, the axis of said latter arms coinciding with the axis of said former arms, contact brushes carried by and insulated from the latter arms, and a spring arranged between the arms connected with the button and the arms carrying the contact brushes in such manner that the movement of the former arms compresses the spring and causes it to throw the latter arms.

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