F. C. CHLAN.

SWITCH.

APPLICATION FILED AUG. 6, 1910.

993,756.

Patented May 30, 1911.

FIG. 1.

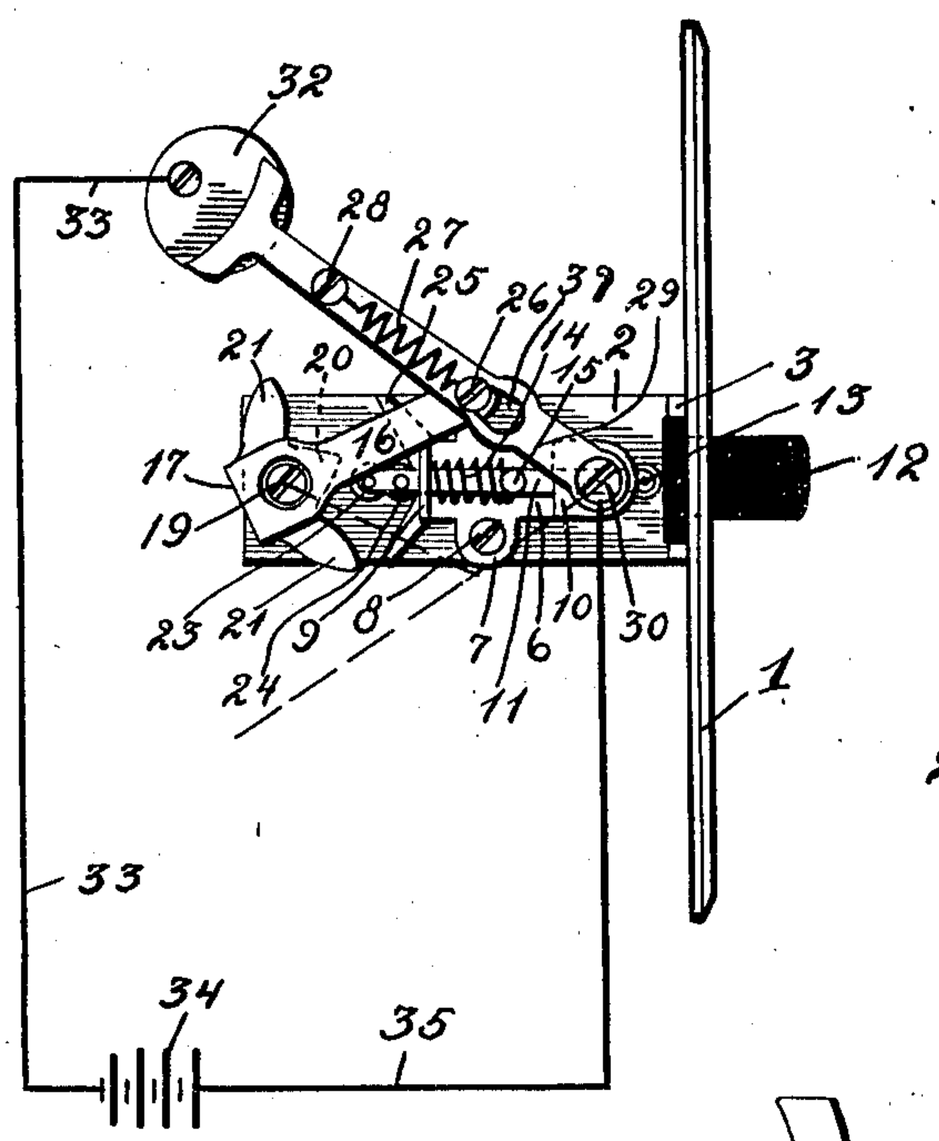


FIG. 3.

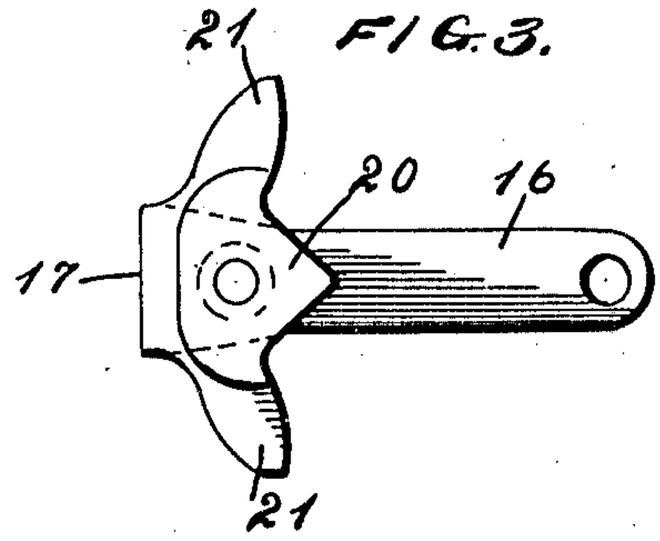


FIG. 4.

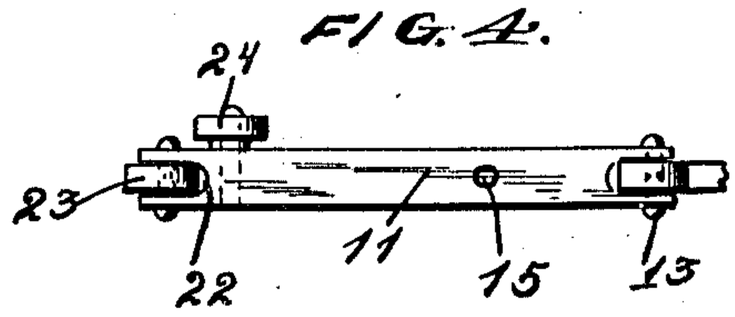


FIG. 5.

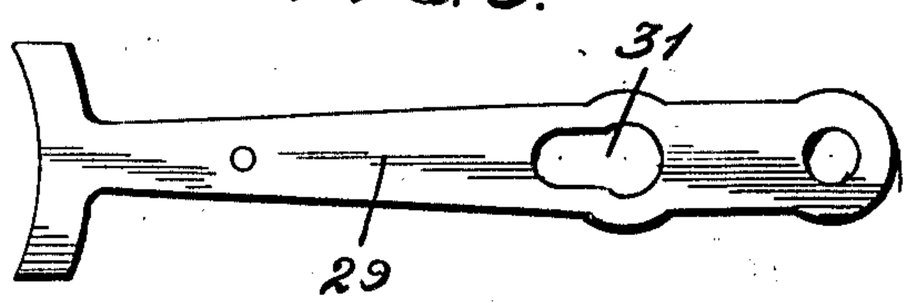


FIG. 2.

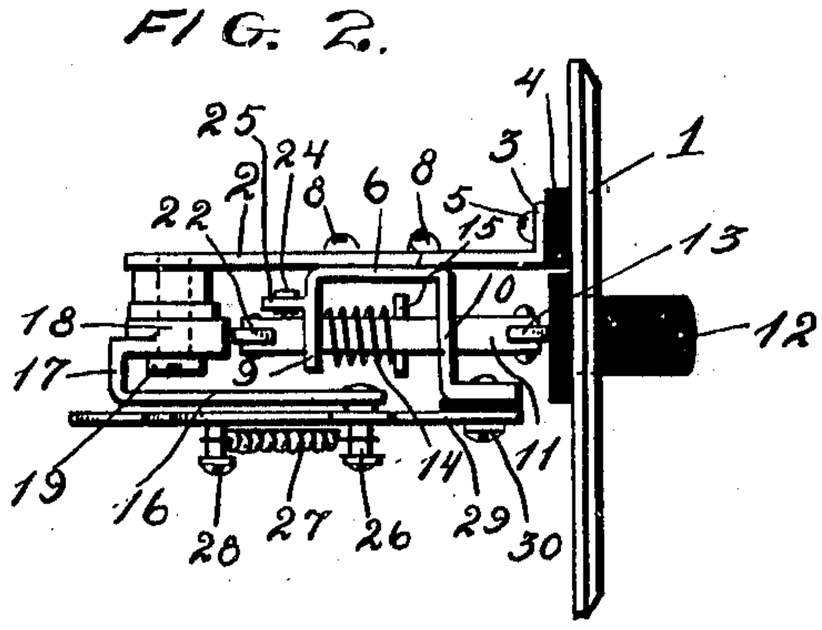
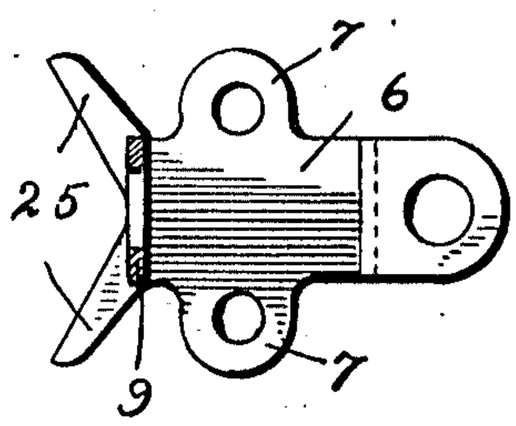


FIG. 6.



WITNESSES

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SWITCH.

993,756. Specification of Letters Patent. Patented May 30, 1911.

Application filed August 6, 1910. Serial No. 575,883.

To all whom it may concern:

Be it known that I, FRANK C. CHLAN, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Switches, of which the following is a specification.

My invention relates to electric switches of the push-button type.

An important object of this invention is to provide a switch of the above character, including a single push-button, which is pushed to open and close the circuit.

A further object of this invention is to provide means for causing a quick movement of the contact arm, whereby sparking at the contacts is prevented.

A further object of this invention is to provide a switch of the above character which is simple in construction, cheap to manufacture and efficient in its operation.

Other objects and advantages of this invention will be apparent in the course of the following description.

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 a side view of the switch, Fig. 2 is an end view of the same, Fig. 3 is an enlarged side view of the swinging lever forming a part of the switch, Fig. 4 is a similar view of the reciprocatory rod, Fig. 5 is a similar view of the contact arm or lever, Fig. 6 is a side view of a bracket forming a portion of the switch.

In the drawings, wherein is illustrated a preferred embodiment of my invention, the numeral 1 designates a plate to which is fixedly secured a flat strip 2, forming supporting means for the parts of the switch to be described. The strip 2 has one end thereof provided with a flange 3, disposed upon suitable insulating material 4 and secured to the plate 1 by means of screws 5. Upon the central portion of the strip 2 is arranged an approximately U-shaped bracket 6, which is provided with apertured ears 7 for receiving screws 8, whereby said bracket may be rigidly secured to the strip 2. The transverse ends 9 and 10 of this approximately U-shaped bracket are provided with suitable openings to receive a reciprocatory push-rod 11. One end of this push-rod is pivotally connected with a push-button 12, as shown at 13, said push-button being disposed for operation within a suitable opening formed through the plate 1. This push-button may be formed of any suitable insulating material. The push-rod 11 carries a compressible coil spring 14 disposed within the bracket 6, one end of which engages the transverse end 9 and the other end a pin 15 which is rigidly mounted upon said push-rod 11. The function of the spring 14 is to return the push-rod and push-button to their normal position, as clearly illustrated in Fig. 2.

Arranged near and to one side of the inner end of the push-rod 11, is a swinging lever 16 having one end thereof bent at substantially right angles as shown at 17 for rigid engagement with a head 18. This head is pivotally connected with the strip 2, as shown at 19. The head 18 has one edge thereof provided with a V-shaped central portion 20 and ears 21 upon opposite sides of this V-shaped portion, whereby the engaging face of the head 19 is approximately W-shaped. The inner end of the push-rod 11 is bifurcated as shown at 22 for receiving a roller 23 adapted to engage the V-shaped portion 20 and ears 21. This push-rod is provided upon its side adjacent the strip 2 with a second roller 24 to engage tracks or guides 25 formed upon the transverse end 9 of the approximately U-shaped bracket. The free end of the swinging lever 16 carries a screw or the like, as shown at 26, which is fixedly secured to said lever and engaged by one end of a retractile coil spring 27, having its opposite end connected with a screw 28 or the like, which in turn is fixedly mounted upon a swinging contact arm 29. This contact arm is pivotally connected with the transverse end 10, as shown at 30. The contact arm 29 is provided intermediate its ends with an elongated opening 31 formed therethrough, within which is disposed the screw 26 above referred to.

Adapted to be engaged by the free end of the contact arm 29, is a suitably supported stationary contact 32, to which is connected a wire 33 having connection with one pole of a source of current 34. The opposite pole of this source of current is connected with a wire 35 having suitable electrical connection with the contact arm 29.

In Fig. 1 the contact arm 29 is shown as engaging the stationary contact 32, whereby

the circuit is closed. When the operator presses the push-button inwardly the reciprocatory push-rod 11 moves inwardly and engages one side of the V-shaped portion 20 of the head 19, it being understood that this head is always retained by the spring 27 in an inclined position so that the apex of said V-shaped portion will be to one side of the roller 23. The roller 23 travels along this inclined side until it engages the ear 21, when with further pressure upon the button, said head together with its swinging lever 16 will be oscillated downwardly. This oscillation of the swinging lever causes the spring 27 to be placed under tension whereby the contact arm 29 is given a quick jerk to effect its disengagement with the stationary contact 32. The contact arm 29 is thus oscillated downwardly out of engagement with the stationary contact 32 and held in such downward position by the spring 27. When the push-button is released the same together with push-rod 12 is returned to its outermost position by the spring 14. When the push-rod is traveling away from the head 19 its roller 24 engages one of the tracks 25 and said push-rod is accordingly returned to its proper central position with relation to said approximately U-shaped bracket. This is an important feature of the invention, inasmuch as it disposes the roller 23 upon one side of the apex of the V-shaped portion 20. If the push-button is again pressed, the roller 23 engages the opposite side of the V-shaped portion 20 and encounters the other ear 21 to oscillate the swinging lever 16 upwardly. The contact arm 29 is accordingly oscillated upwardly by virtue of the spring 27 and associated members, whereby said contact arm is thrown into quick engagement with the stationary contact 32, and the circuit closed.

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

Having fully described my invention, I claim:—

1. In an electric switch of the character described, a supporting structure, a head provided with an approximately W-shaped engaging face pivotally connected with said supporting structure, a lever connected with and adapted to be moved by said head, a push-rod having slidable engagement with the supporting structure and disposed upon one side of said head, said push-rod being adapted to effect a movement of the head when moved toward the same, a pivoted contact arm to be moved by said lever, tracks separate from and disposed at a point spaced from the engaging face of said head, and means connected with the push-rod to engage said tracks, whereby said push-rod is guided during its movement away from said head so that the same may assume a proper position with relation to the same, said means being always out of engagement with said head.

2. In an electric switch of the character described, a supporting structure, a head provided with an engaging face pivotally connected with said supporting structure, a lever connected with and adapted to be moved by said head, a push-rod disposed near said head to effect a movement of the same when moved toward the said head, a pivoted contact arm, connecting means between said lever and contact arm including an electric member, tracks separate from and disposed at a point spaced from said head, means connected with the push-rod to engage said tracks to guide the same during its movement away from said head, and means to cause said push-rod to move away from said head.

3. In an electric switch of the character described, a supporting structure, a head provided with an approximately W-shaped engaging face and pivotally connected with the supporting structure, a lever connected with said head, a contact arm to be moved by the lever, a push-rod to effect a movement of said head when urged toward the same, a track having a substantially V-shaped engaging face, separate from and disposed at a point spaced from said head, means connected with the push-rod to travel upon said track to guide the push-rod in its movement away from said head, means to move the push-rod toward said head, and means to move the same away from the head.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK C. CHLAN.

Witnesses:
HENRY RAPP,
HARRY CAMPBELL.