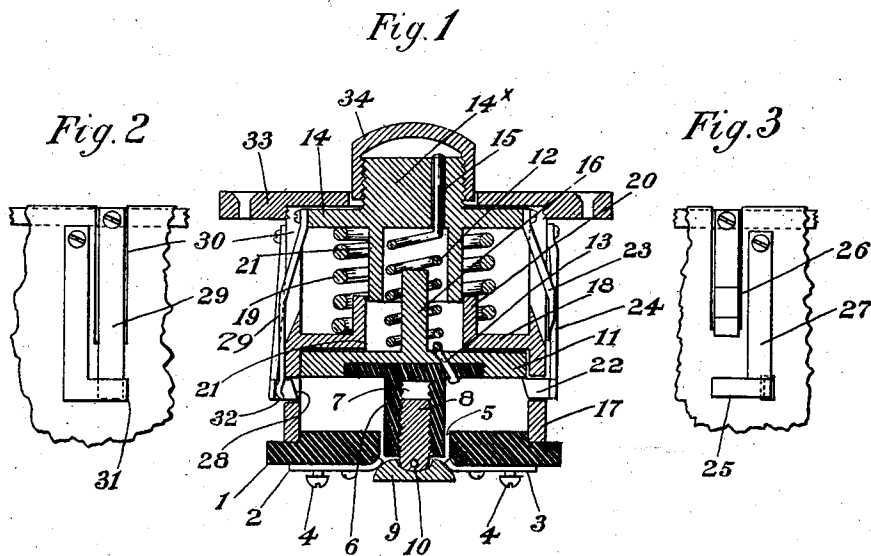


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C. E. FELT.
ELECTRIC SWITCH.
APPLICATION FILED APR. 21, 1902.

NO MODEL.



WITNESSES:

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ELECTRIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 744,736, dated November 24, 1903.

Application filed April 21, 1902. Serial No. 103,836. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. FELT, a citizen of the United States, residing at Pullman, Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Electric Switches, of which the following is a full, clear, and exact specification.

This invention relates to electric switches, and more particularly to that class on the push-button order, which are designed for high-tension currents liable to arc and injure the contacts and other parts if the circuit be slowly or imperfectly closed or opened.

One of the objects of the invention is to provide improved means for causing the contacts to snap apart or to close with a sudden motion however slowly the pressure may be applied to the button or other actuating part.

Another object of the invention is to make a switch of the described character which shall be compact and simple in construction and especially adapted for use on doors, &c., where the switch is actuated by the movement of the door.

A further object of the invention is to insure the perfect and simultaneous electrical connection between the movable contact and the two stationary contacts of the switch.

With these ends in view the invention consists in certain features of novelty in the construction, combination, and arrangement of parts by which the said objects and certain other objects hereinafter appearing are attained, all as fully described with reference to the accompanying drawings, and more particularly pointed out in the claims.

In the said drawings, Figure 1 is a longitudinal sectional view of the improved switch. Fig. 2 is a detail side elevation of the catch or resistance for holding the movable contact against movement in one direction. Fig. 3 is a similar view of the other catch or resistance for holding such contact against movement in the opposite direction.

1 is a plate of insulation of any suitable form, to which are secured two fixed contact-plates 2 3, to which the ends of the electric conductors (not shown) may be secured by screws 4 or other suitable devices. These

contacts 2 3 terminate at a distance from each other on opposite sides of a central aperture 5 in the insulation 1, in which aperture is arranged a socket-piece 6, having a threaded socket 7, in which is screwed or otherwise secured a stem 8, which carries the movable contact 9. The contact 9 is secured to its stem 8 by a pivot-pin 10, so that the contact is capable of rocking on its stem and adapting itself to the two fixed contacts 2 3, and thereby making perfect electrical connection with these fixed contacts simultaneously when the socket-piece 6 is forced inward.

The socket-piece 6 is composed of any suitable insulating material, and it in turn is secured to a follower 11 by being screwed into a socket in the latter, and it is forced inwardly, so as to draw the contact 9 into engagement with the contacts 2 3 by means of a coil-spring 12, having one end riveted or otherwise secured to follower 11, as shown at 13, and the other end riveted or otherwise secured to a head 14, as shown at 15, the follower being provided with a guide-pin 16 for holding the spring and preventing the same from buckling when compressed. The head 14, as well as the follower 11, is arranged in a shell or barrel 17, which is provided with an internal flange 18, upon which is supported a coil-spring 19, which bears between this flange and the head 14 and is opposed in its action to the spring 12, which is of less strength than the spring 19, so that after the latter is compressed by pressure upon the head 14 its recoil will be of sufficient power to stretch the spring 12. The two springs are telescoped one within the other, as shown, for the sake of compactness, and the outer one is held and guided at its lower end by a sleeve 20, formed around the inner edge of the flange 18, and through which sleeve the stem 16 and spring 12 project. The upper end of spring 19 is held in place by a depending sleeve 21, formed on the inner side of the head 14 and projecting into the sleeve 20, so as to constitute a guide for the head 14.

Projecting through one side of the barrel or shell 17 is a latch or catch 22, which engages with the edge of the follower 11 and holds the latter against inward movement or

that movement which is necessary to disengage the movable contact 9 from the fixed contacts 2 3. Hence it will be seen that when pressure is applied to the head 14 for actuating the movable contact both springs 12 19 will be compressed, the inner end of spring 19 taking its abutment against the flange 18 and head 14, while spring 12 takes its abutment between said head and the follower 11; but after head 14 has been forced inwardly a certain distance the catch or latch 22 is automatically released by means of a trip 23, operatively connected to the head 14 in any suitable manner. This trip preferably consists of a flat finger-shaped bar having a beveled end 24, adapted to engage under a lug 25 on the latch 22 and force the latter outward out of engagement with the follower 11 as the head 14 is forced inwardly. The upper or outer end of this finger-shaped trip 23 is secured to the edge of the head 14 and projects through a slot 26 in the side of the shell or barrel 17, the latch or catch 22 being held and supported on the outer side of the barrel by a flat spring-strip 27, which serves the double purpose of supporting the latch and at the same time forcing it inwardly into engagement with the follower 11 when not otherwise restrained. Thus it will be seen that the power stored in the spring 12 by the inward movement of the head 14 is subsequently utilized for snapping the movable contact 9 away from the fixed contacts 2 3 as soon as the catch 22 is released by the trip 23 24, thereby avoiding the possibility of an arc being formed while the contacts are separating. When the pressure upon head 14 is released, the recoiling action of spring 19 returns it to its normal outward position; but the return movement of the follower 11 is arrested by a second catch or latch, 28, projecting through the side of the barrel 17 in a position to engage the upper or outer side of the follower 11 after the latter has been forced inwardly in the act of disengaging the contacts; but just as the head 14 arrives at the limit of its outward movement, as shown in Fig. 1, the catch or latch 28 is automatically released by a trip operatively connected with said head. This trip preferably consists of a spring-bar 29, projecting through a slot 30 in the side of the barrel and passing between the barrel and a lug 31 on the latch or catch 28 and having a beveled or rounded end 32, which stands normally between said lug 31 and the barrel, so as to hold latch or catch 28 out of engagement; but when the head 14 is depressed the beveled end 32 passes below lug 31 and leaves catch 28 free to engage the upper side of follower 11, both catches 22 28 being beveled at their inner ends and on the lower and upper sides, respectively, so as to permit the follower 11 to deflect them alternately when moving in opposite directions, the bevel of the catch 22 rendering the latter ineffectual when the follower is moving outwardly and that of the catch 28 rendering

the latter ineffectual when the follower is moving inwardly. By the construction described it will now be understood that when the head 14 is depressed for opening the switch the power resulting from the compression of both springs will be stored until the catch 22 is released by trip 23 24 and thereupon permitting the springs to separate the contacts with great rapidity, and when pressure on the head 14 is released, the movable contact being locked in its open position by latch 28, the stronger spring 19 will stretch the weaker spring 12 until trip 32 releases catch 28, whereupon spring 12 will jerk the movable contact back to a closed position.

The barrel 17 may be secured to any suitable support. It is shown as screwed into a face-plate 33, which may be secured to the place where the switch is to be used, and it has an aperture through which a boss 14^x on head 14 projects. This boss may be utilized as the push-button, but is preferably provided with a cap 34, screwed thereon for finishing its outer end and constituting the push-button, and which cap, being adjustable, provides for variation in the position of the door with reference thereto.

Having thus described my invention, what I claim as new therein, and desire to secure by Letters Patent, is—

1. In an electric switch the combination with two contacts one of which is movable and an actuating member for moving it in one direction, of a barrel or shell, a follower in said barrel or shell connected with said movable contact, catches projecting into the path of said follower and adapted to hold the same against movement in opposite directions respectively, a spring for resisting the inward movement of said actuating member, a second spring connecting said movable contact with said actuating member and trips operatively connected with said actuating member for releasing said catches, respectively, substantially as set forth.

2. In an electric switch the combination with two contacts, one of which is movable, and an actuating member for moving it in one direction, of a barrel, an annular flange in said barrel, a sleeve supported by said flange, a head movable in said barrel, a sleeve secured to said head and telescoped with said first sleeve, a spring surrounding said sleeves and bearing between said head and flange, a second spring arranged within said sleeves and secured at its ends to said head and movable contact, respectively, catches projecting through the sides of said barrel for holding said movable contact against movement in opposite directions, respectively, and means secured to said head for releasing said catches, respectively.

3. In an electric switch the combination with two contacts, one of which is movable, a barrel having a perforated end adjacent to the perforation in which the other contact is situated, a stem of insulating material se-

cured to the movable contact, and projecting through said perforation, an actuating member for said movable contact, a spring for resisting the movement of said member in one direction, a second spring secured at its ends to said member and movable contact, respectively, and catches for holding said movable contact against movement in opposite directions, respectively.

- 10 4. In an electric switch the combination of two contacts, one of which is movable, an actuating member for moving said movable contact in one direction, a barrel, a perforated end in said barrel supporting one of said con-
15 tacts, an insulating-stem secured to the movable contact and passing through said perforation, a follower in said barrel to which said stem is secured, an actuating member for moving said movable contact in one direction,
20 a spring connected at its ends to said actuating member and follower, respectively, a second spring for opposing the movement of said actuating member in one direction, catches projecting through the sides of said barrel for
25 engaging the upper and lower sides, respectively, of said follower, and means for releas-

ing said catches by the movement of said actuating member in both directions.

5. In an electric switch the combination of two contacts, one of which is movable, a barrel having slotted sides, a head movable in said barrel, catches secured to said barrel and projecting through the sides thereof for retarding the movement of said movable contact in opposite directions, respectively, trips
35 secured to said head and projecting through said slots for releasing said catches, respectively, a spring secured at its ends to said head and movable contact, respectively, and a second spring for opposing the movement
40 of said head in one direction.

6. In an electric switch the combination of two contacts, one of which is movable, an actuating member for said movable contact having a threaded boss on the outer face thereof,
45 an adjustable cap or button on said boss, and means for actuating said movable member by the movement of said actuating member.

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Witnesses:

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