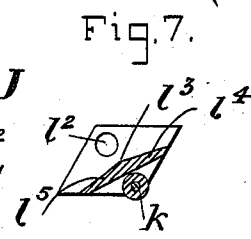
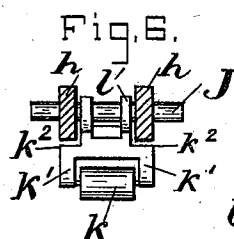
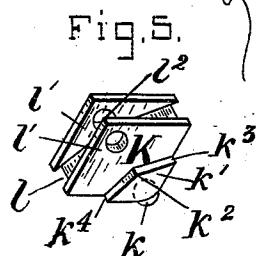
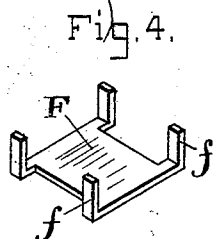
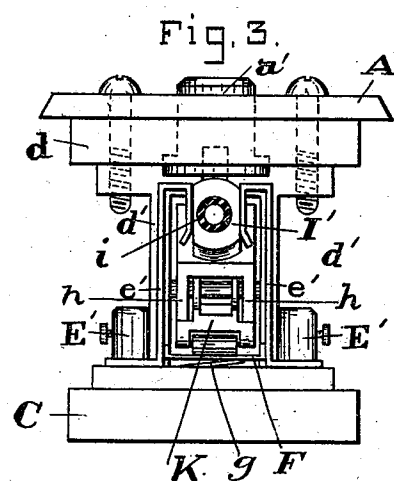
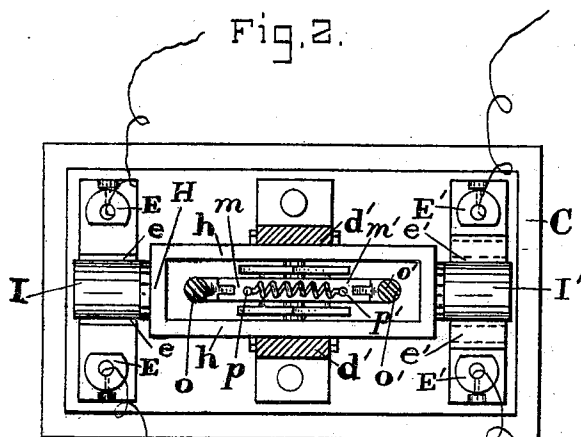
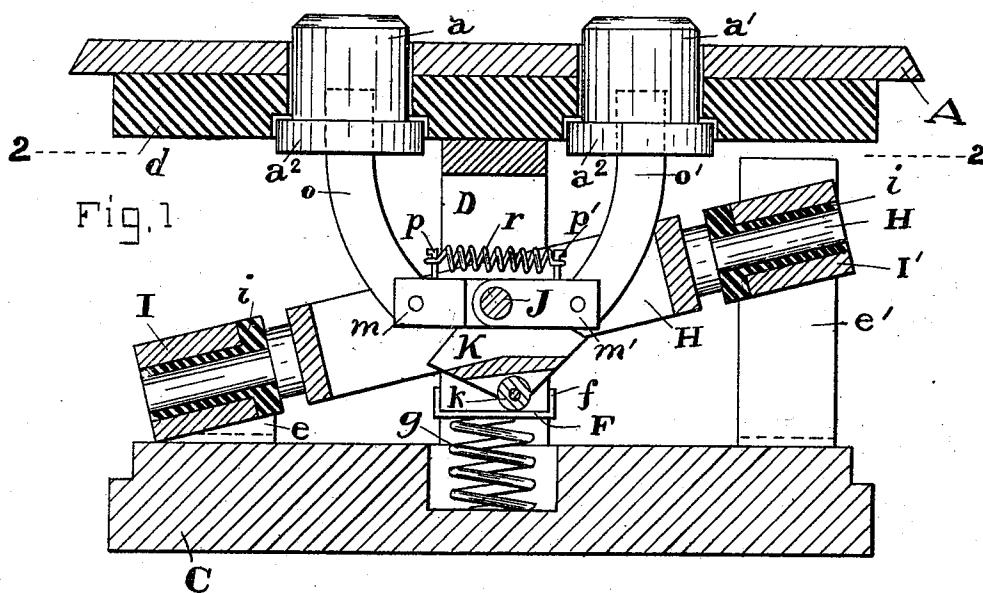


(No Model.)

C. W. GARTSIDE & R. E. WOOD.
DOUBLE POLE SWITCH.

No. 504,523.

Patented Sept. 5, 1893.



WITNESSES

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CHARLES W. GARTSIDE AND ROBERT E. WOOD, OF BALTIMORE, MARYLAND.

DOUBLE-POLE SWITCH.

SPECIFICATION forming part of Letters Patent No. 504,523, dated September 5, 1893.

Application filed June 29, 1893. Serial No. 479,182. (No model.)

To all whom it may concern:

Be it known that we, CHARLES W. GARTSIDE and ROBERT E. WOOD, citizens of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Double-Pole Switches, of which the following is a specification.

Our invention relates to an improved push-button switch for making and breaking an electric circuit. The preferred form, as shown in the drawing is a double-pole switch, but our invention is not limited to this particular variety, as it may be embodied in many forms.

Referring to the drawings—

Figure 1, is a central, longitudinal, vertical section of the switch. Fig. 2, is a horizontal section on the line 2—2, of Fig. 1, looking down. Fig. 3, is a view of the switch showing an end elevation. Fig. 4, in a detail perspective of the spring pressed platform. Fig. 5, is a perspective view of the tilting-block. Fig. 6, is an end elevation view of the tilting-block and showing the pivot on which it turns. Fig. 7, is a longitudinal vertical section of the tilting block. Fig. 8, is a longitudinal vertical section of the tilting-block showing its position when the poles of the switch are in contact position to establish the circuit, and indicating in broken lines its position when the poles of the switch are not in contact position.

In the drawings the letter, A, indicates the face-plate of the switch, through which the push-buttons, *a*, *a'*, project. The bed-plate, C, is connected with the face-plate by a central standard, D, extending transversely of the said face and bed-plates. A block, *d*, of insulation intervenes between the face-plate and the end of the standard. The bed-plate is made of insulating material. Two binding posts, E, are secured to the bed-plate near one end, and are in electrical connection with two upright parallel spring contact-arms, *e*, having position between the said binding-posts. At the other end of the bed-plate are two binding posts, E', corresponding to binding-posts, E, and likewise in electrical connection with two spring contact-arms, *e'*, corresponding to contact arms, *e*, but of greater length, and at the other end of the bed-plate, for a purpose to be presently described.

These contact-arms form the poles of the switch.

The upright standard, D, has a central slot, thus forming two upright, side posts, *d'*. A platform, F, extends between the two said posts and has clips, *f*, which take around them to retain the platform on a level and in relative position between the posts, when said platform is moved up or down. A coiled spring, *g*, abuts at one end against the under side of the platform and at the other against the bed-plate, C, whereby the said spring tends to elevate the said platform.

The rocking contact-lever, H, comprises an elongated rectangular, yoke having a longitudinal slot forming parallel side-bars, *h*, with two contact-pieces, I, I', one secured to each end of the said yoke and insulated therefrom by a bushing-shaped insulator, *i*. The said contact-pieces are of such a size that they may be sprung the one, I, between the contact-arms *e*, and the one I', between the contact-arms, *e'*, with which they have respectively a spring-contact. Midway between the contact-pieces, I, the side-bars, *h*, of the contact-lever have bearings, through which the pivots, J, extending between the posts, *d'*, passes. A rectangularly-shaped tilting-block, K, has a roller, *k*, having its axis parallel to the pivot, J, and is itself pivoted between two ears, *k'*, located each on one side of the downward projecting corner of the tilting-block and each ear has a sharp-edged upper corner or shoulder, *k*², formed between two adjoining inclined top-sides, at the ends of which and one on either side of shoulder, *k*², are corners or stops, *k*³, *k*⁴, which are adapted to abut against the under side of the contact-lever—the one to throw it into contact-position, and the other to throw it out of contact-position, as will be presently described. A central slot, *l*, in the tilting-block in direction transverse to the roller, *k*, forms two upwardly projecting parallel side-pieces, *l'*, having bearings, *l*², parallel in direction to the roller, *k*. The said side-pieces, *l'*, fit from below up and between the side-bars, *h*,—and the pivot, J, passes through bearings, *l*², therein. In the bottom of the slot, midway between its ends, is a central ridge or edge, *l*³, transverse in direction to pivot, J, and having two adjoining inclined faces, *l*⁴, *l*⁵, as will be presently pointed out more clearly.

Two links, m, m^2 , are each pivoted at one end to the pivot, J , and lie in the groove, l , between the side-pieces, l' , of the tilting-block, and extend in opposite directions from the said pivot. The two push-buttons a, a' , extend from below up through perforations in the face-plate and each has an annular flange, a^2 , extending around its lower edge and abutting against the lower side of the insulator-block, d , below the face-plate. Curved push-bars, o, o' , are rigidly connected at one end to the said push-buttons and at the other are loosely jointed to the ends respectively of the links, m, m' , as may be seen by reference to the drawings. Two pins, p, p' , project upward from the links, m , and, m' , respectively and a spiral contraction spring, r , connected at its ends to the said pins, operates to draw the free ends of the links, to which the push-bars are connected, toward each other, thus operating to normally retain the said push-bars and the push-buttons on the ends of the same, in an elevated position,—the push-buttons being in the perforations in the face-plate, with the flanges, a^2 , abutting against the under side of the insulator-block, d , as above described. The contact-arms, e' , are made longer than the contact arms, e , and are of such length with respect thereto, that when the rocking contact-lever is in a tilted-up position with the contact-piece, I' , at that end thereof which is adjacent the contact-arms, e' , in elevated position and in contact with the said contact-arms—the contact piece, I , at the other end of the lever will be depressed, but also in contact-position with the contact-arms, e . It will easily be seen from the foregoing that both contact-pieces, I, I' , may be simultaneously thrown into engagement with the contact-arms, e, e' , or simultaneously thrown out of engagement therewith, by simply elevating or depressing one of the ends of the contact-lever.

The object of the device as above described is to make and break the electrical connections between the contact-arms, e, e' , and the contact-pieces, I, I' , by a spring-snap movement to thus avoid sparking and its consequent evils.

The operation of the device is as follows: If the device be in contact-position,—in which case the circuit is "established" as shown in drawings—by depressing the push-button, a' , the contact-pieces will be forced out from engagement between the spring contact-arms and the circuit will in this manner be broken. The first effect of depressing said push-button, a' , is to cause the pivoted link, m' , to move downward and to abut against the face, l^2 , in the slot, l , of the tilting-block, K . A sufficient force must now be applied to push-button, a' , to overcome the force of the spring, g , as exerted against the platform, F , which, in turn exerts the same force against the tilting-block. When this required force has been applied, the tilting block will begin to slowly move or swing on its pivot, J , until the

roller k , passes the point on the platform, F , which is directly under the said pivot, J , whereupon the force of the spring, acting upon the roller, k , at an angle, will snap the tilting-block around to the position shown in dotted lines in Fig. 7. Before the reverse movement of the tilting-block takes place, the lower edges of the two side-bars, h , rest respectively on the two corners, k^3 , of the ears, k' , of the tilting-block and the contact-bar does not change position till in the last part of the movement of the tilting-block, when said block is moving rapidly by virtue of the spring-pressure exerted by the platform, F , the corners, or stops, k^4 , of the ears, k' , come forcibly into contact with the lower edges of the side-bars, h , on the opposite side of the pivot, J , from that against which the corners or stops k^2 , rested before the reverse movement began. The effect of the aforesaid forcible contact exerted to one side of the pivot, J , on the under side of the depressed end of the contact-lever, is to snap the said contact-lever into a reverse position, that is, the contact-piece, I , which before was depressed, will be elevated and the contact-piece, I' , from being elevated will be depressed. Both contact-pieces will be thrown out of contact position. The switch is thrown into a position to establish a circuit by depressing push-button, a , which causes a reversion of the operations above described.

While we have shown and described our invention as applied to a double-pole switch, yet its application is not restricted to that specific use, for it may be employed in many devices where it is desired to operate a slide or to effect a rapid, snap movement of some element of the device, and to effect this movement in a rapid snap manner, irrespective of the manner in which the device is operated by the attendant.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. In a push-button switch, the combination of the poles; a rocking-lever pivoted between the poles and having contact-pieces in engagement therewith; a spring-pressed platform having position under the contact-lever; a block interposed between the contact-lever and the spring-pressed platform and having a projection abutting against the latter; and means for operating the rocking contact lever as described.

2. In a push-button switch the combination of the poles; a rocking contact-lever pivoted between the poles and having contact-pieces for engagement therewith; a spring-pressed platform having position under the contact-lever; a block having a projection interposed below the contact-lever and the spring-pressed platform; and two pivoted push-bars on opposite sides of its pivot-point of the contact-lever for operating the same as described.

3. In a push-button switch, the combination of the poles; a rocking contact-lever pivoted between the poles, and having contact-pieces

for engagement therewith; a spring-pressed platform; a pivoted tilting-block having a projection abutting against the spring-pressed platform; and two push-bars each pivoted at one end to the tilting-block as described.

4. In a push-button switch, the combination of the poles; a rocking contact-lever pivoted between its ends and having a contact-piece at each end, both of said contact-pieces being adapted to be simultaneously thrown into or out of contact with the said poles; a spring-pressed platform having position under the pivot-point of the contact lever and having a projection abutting against the spring-pressed platform; stops on the tilting-block,—one on either side of the pivot-point and either of which is adapted to abut against the contact-lever on one side of the pivot-point, whereby a limited independent movement is permitted the tilting-block, but a further movement will cause one of the said stops to abut against the rocking contact-lever, and throw the same into or out of contact with the poles; and push-bars connecting with the tilting-block to operate the contact-lever.

5. In a switch the combination of the poles; a rocking-contact-lever having a longitudinal slot forming side-arms, *h*, and pivoted between the poles; two contact pieces one on each end of the contact-lever, and adapted to simultaneously make or break contact with the poles; a spring-pressed platform located under the pivot-point of the contact-lever and having a sliding movement to and from the same; a tilting-block pivoted between the side-arms, *h*, and having a downward projection in

spring-contact with the spring-pressed platform; stops on the tilting-block, one on either side of the pivot-point and either adapted to abut against the contact-lever to throw the same into or out of engagement with the poles of the switch; and push-bars connecting with the tilting-block to operate the same, substantially as described.

6. In a push-button switch, the combination of the poles, a standard between the poles and comprising side-posts, *d'*; a rocking contact-lever pivoted between the side-posts, and having side-bars, *h*; contact-pieces one on each end of the contact-lever and adapted to make contact, each with one of the said poles; a spring-pressed platform sliding between the side-posts of the standard and below the pivot-point of the contact-lever; a tilting-block pivoted co-incidentally with the lever and between its side-arms, *h*, and having a projection abutting against the spring-pressed platform—said tilting-block having upwardly-extending side-pieces, *l'*; two links, each pivoted at one end co-incidentally with the tilting-block and extending along the said slot in the tilting-block, in opposite directions from their common pivot-point; and two push-bars each jointed at one end to the free end of one of the links, for the purpose described.

In testimony whereof we affix our signatures in the presence of two witnesses.

CHAS. W. GARTSIDE.
ROBERT E. WOOD.

Witnesses:

CHAS. B. MANN, Jr.,
ALVAN MACAULEY.