

P. DUNNING.
 DUPLEX TWO-POLE SWITCH.
 APPLICATION FILED JULY 10, 1907.

945,923.

Patented Jan. 11, 1910.

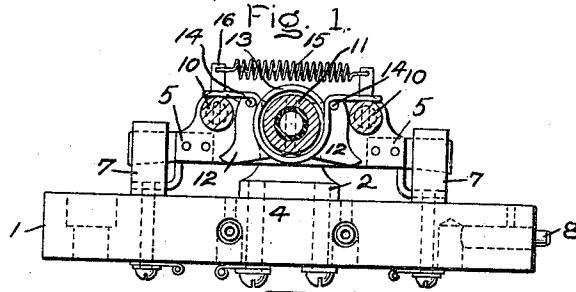


Fig. 2.

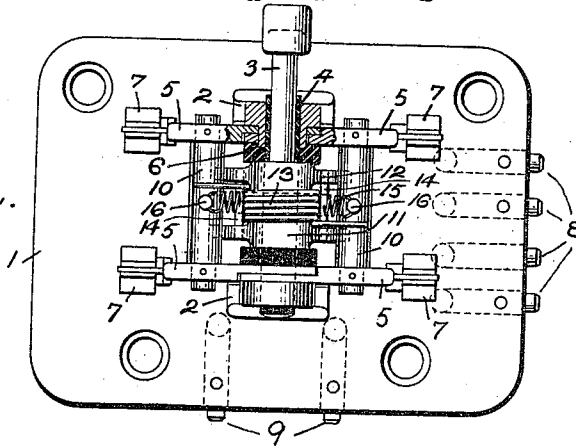


Fig. 3.

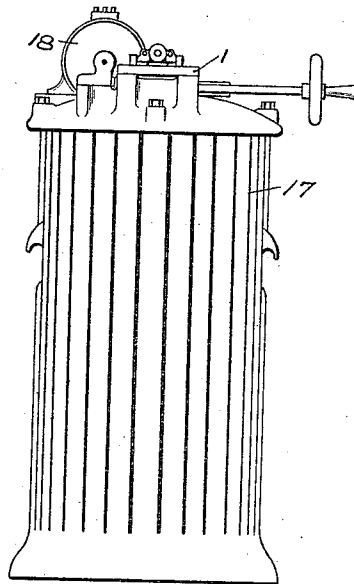
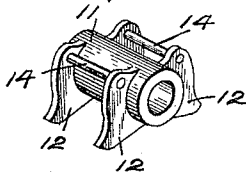


Fig. 4.



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UNITED STATES PATENT OFFICE.

PARKER DUNNING, OF SCHENECTADY, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

DUPLEX TWO-POLE SWITCH.

945,923.

Specification of Letters Patent.

Patented Jan. 11, 1910.

Application filed July 10, 1907. Serial No. 383,081.

To all whom it may concern:

Be it known that I, PARKER DUNNING, a citizen of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Duplex Two-Pole Switches, of which the following is a specification.

This invention relates to cut-outs for electric circuits, and its object is, broadly stated, to enable two double-pole single-throw electric switches to be operated by a single actuating device, so arranged that when one switch is opened or closed the other remains undisturbed. I am aware that this is not broadly new, but the particular embodiment hereinafter described contains certain features of novelty which are pointed out in the claims.

The switch has been especially designed for use as a limit switch for the motor operating an induction potential regulator, automatically opening the motor circuit at the position of maximum boosting and maximum lowering; but it is evidently applicable to other analogous uses.

The switch is simple in construction and will be readily understood from the following detailed description, reference being had to the accompanying drawing, in which—

Figure 1 is a sectional elevation of the switch; Fig. 2 is a plan view partly in section; Fig. 3 is an elevation of an induction potential regulator equipped with said switch; and Fig. 4 is a view of the actuator.

On a suitable base 1 of insulating material are erected two posts 2 in which is journaled a shaft 3, suitably insulated from said posts, preferably by a sleeve 4 of insulation surrounding that portion of the shaft which lies in and between the journal bearings in said posts. Two circuit-closing elements, such as the switch-blades 5, are pivotally mounted on each of said posts, being preferably pivoted on a hub 6 formed on said post concentric with the shaft. These blades extend respectively in opposite directions from said shaft. Contact-clips 7 are secured to the base 1 in position to cooperate with said blades, and line terminals 8 are connected with said clips. Other line terminals 9 are connected with the two posts 2.

The two switch-blades on the same side of the shaft are rigidly connected by an insulating bar 10. Rigidly secured to the insu-

lating sleeve 4 is an actuator comprising a cylindrical body 11 with two or more arms 12 projecting in opposite directions therefrom. Said arms extend under the bars 10. A resilient element is arranged to urge said switch-blades closed, preferably a spring 13 coiled around the body of the actuator with its ends bearing upon the bars 10. Under each end of the spring is a lifting-lug 14 projecting from an arm of the actuator. A tension spring 15 is connected between lugs 16 on the bars 10.

The operation of this switch is as follows: In its normal position all the blades are closed upon their clips. When the shaft and the actuator are turned in either direction the first action is that the rising-lifting-lug raises one end of the spring 13 off the bar 10 on that side of the shaft, and leaves the blades free to be opened. Continued angular movement of the actuator brings its rising arm 12 against the underside of the bar 10, and gradually lifts the switch-blades attached thereto out of their clips. The instant they clear the clips or the instant the friction of said clips fails to hold them, the tension spring 15 snaps the blades wide open with a quick, arc-rupturing action. The opposite pair of blades cannot open under the tension of this spring 15, because they are held down by their end of the coiled spring 13 whose tension is increased by the upward lift of the lug 14 on the rising side of the actuator. When the direction of rotation of the shaft and actuator is reversed, the end of the spring 13 once more bears upon the bar 10, and the downward movement of the actuator permits the open switch-blades to be forced down into their clips by said spring, which is considerably stronger than the tension-spring 15.

There is preferably considerable space between the bars 10 and the arms 12 when the actuator is in its middle or "zero" position, as shown in Fig. 1, so as to permit the actuator to have quite a range of angular movement. This is especially desirable in the case of an induction potential regulator 17 when the actuator is geared to the motor 18 whose circuit is controlled by the switch, so that said motor is limited to a given number of revolutions in either direction, as is customary in devices of this kind. It will be seen that in whichever direction the actuator is turned it will open a pair

of switch-blades and interrupt the circuit between the posts 2 and the clips 7; the opposite pair of blades being meanwhile held securely closed.

5 I have illustrated a double-pole switch, but it is evident that the invention is equally applicable to a switch having either one or a plurality of blades.

10 What I claim as new and desire to secure by Letters Patent of the United States, is,—

1. An electric switch consisting of two independently-movable circuit-closing elements pivoted on a common axis, a resilient member having its ends resting on said elements and urging them to a closed position, 15 and an actuator angularly movable on said axis and adapted to lift either end of said resilient member and also to open the circuit-closing element upon which said end rested without disturbing the other circuit-closing element. 20

2. An electric switch consisting of two independently-movable switch-blades, an actuator having arms adapted to open said 25 blades, a spring coiled on said actuator with its ends urging said switch-blades closed, means on said actuator for lifting one end of the spring before opening the corresponding switch-blade, and a spring for giving 30 said blades a quick opening action.

3. An electric switch consisting of a shaft, two independently-movable switch-blades insulated from said shaft, an actuator 35 mounted on said shaft and having arms adapted to open said switch-blades, a spring

coiled on said actuator with its ends bearing on said blades, lifting lugs on said actuator engaging under the ends of said spring, and a tension-spring attached at its ends to the two switch-blades.

4. An electric switch consisting of a base, 40 two posts thereon, a shaft journaled in said posts, an insulating sleeve surrounding said shaft and its journals, two switch-blades independently pivoted on each post, an insulating 45 bar connecting each pair of blades on the same side of the post, a tension-spring attached at its ends to said bars, an actuator secured on said shaft and having arms underlying said bars, a spring coiled around 50 said actuator with its ends bearing on said bars, and lugs on said actuator engaging under the ends of said spring.

5. The combination with two switches pivoted on a common axis, of a coil spring for 55 closing both of them and surrounding the pivotal axis thereof, and means for opening either of them without disturbing the other.

6. The combination with two switches, of a spring for closing both of them, a weaker 60 spring for giving them a snap action in opening, and means for opening one or the other at will and at the same time relieving it from the operation of the closing spring.

In witness whereof, I have hereunto set 65 my hand this 9th day of July, 1907.

PARKER DUNNING.

Witnesses:

BENJAMIN B. HULL,
HELEN ORFORD.