

No. 649,199.

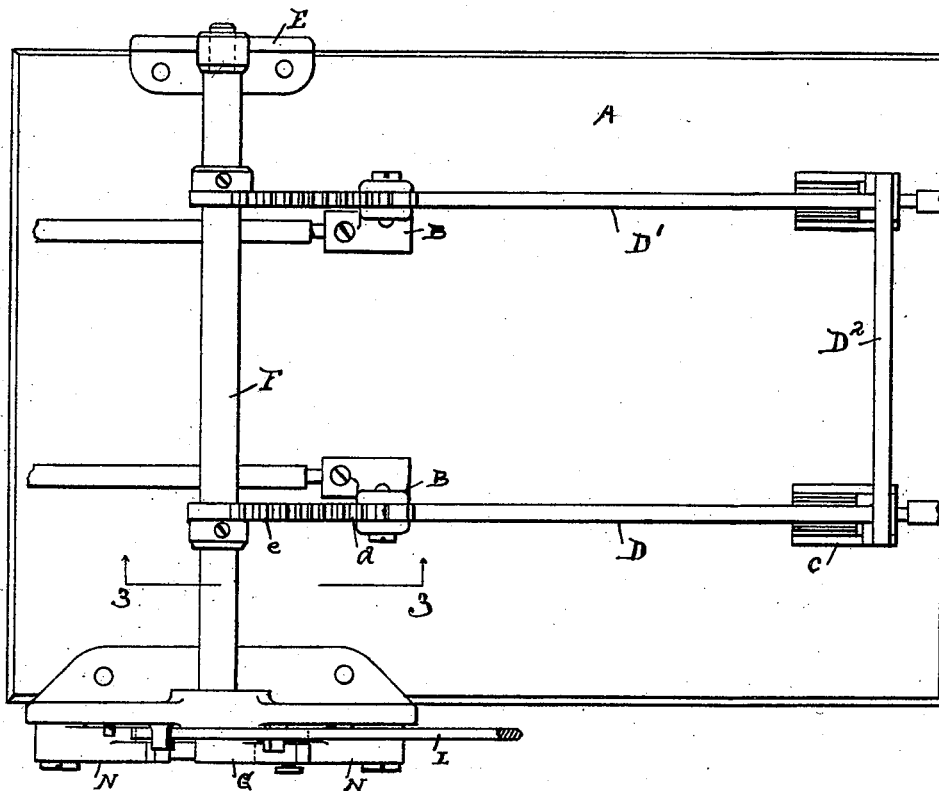
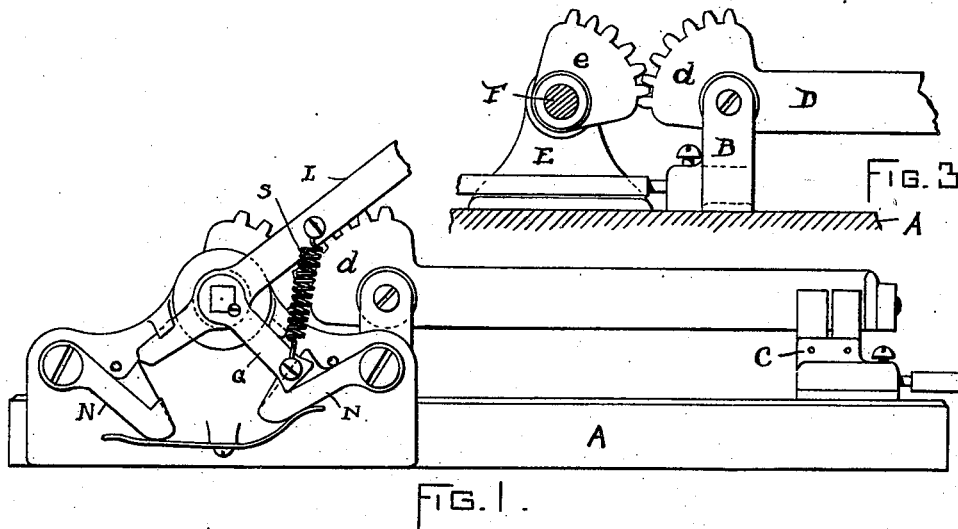
Patented May 8, 1900.

W. ELY.
ELECTRIC SWITCH.

(Application filed Apr. 29, 1898.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES:

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James B. Richardson

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BY Henry Marsh
ATTY.

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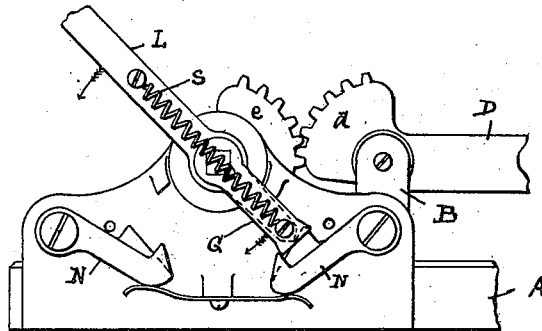


FIG. 4.

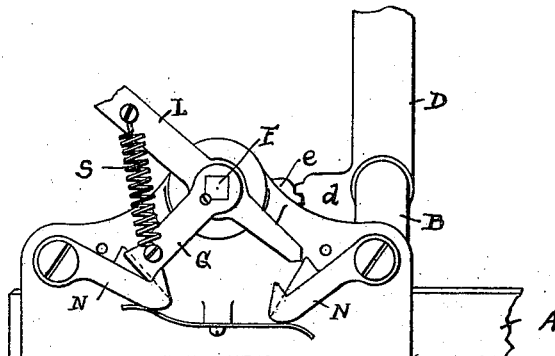


FIG. 5.

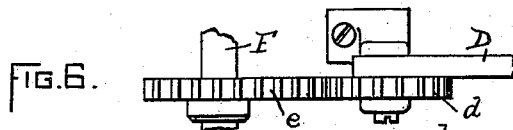


FIG. 6.

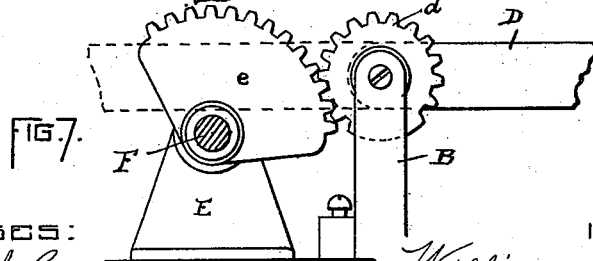


FIG. 7.

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UNITED STATES PATENT OFFICE.

WILLIAM ELY, OF PROVIDENCE, RHODE ISLAND.

ELECTRIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 649,199, dated May 8, 1900.

Application filed April 29, 1898. Serial No. 679,268. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM ELY, a citizen of the United States, residing in the city and county of Providence, in the State of Rhode Island, have invented a new and useful Electric Switch, of which the following is a specification.

My invention consists in the novel constructions, combinations, and arrangements hereinafter more fully described, and shown in the accompanying drawings, in which—

Figure 1 is a side elevation. Fig. 2 is a plan view of my invention applied to a "double-pole" single-throw switch. Fig. 3 is a section on line 3 3 of Fig. 2. Figs. 4 and 5 are side elevations illustrating the operation of the switch. Figs. 6 and 7 are respectively plan and side views of a modification adapting the switch to serve as a transfer or one-hundred-and-eighty-degree-throw switch.

Similar letters of reference indicate like parts wherever they occur in the drawings.

A represents a base of non-conducting or insulating material. B represents a standard secured upon said base and adapted to serve both as a pivot-support for the contact blade or member D and for connection with the main wire. C represents a contact post or brush secured upon said base in line with the standard B and in the plane of the movement of the blade D. The said contact-blade D is provided at its rear end with a gear-segment or toothed termination *d*. Upon said base and arranged rearwardly of said standard B, I secure another standard E, adapted to serve as a bearing for a rotatable shaft F, upon which is secured a gear-segment *e*, so held as to mesh with the toothed termination *d* of the contact-blade D.

When it is desired to use the invention in a multipolar switch, the parts above described (with the exception of the base and shaft) are duplicated, as shown in Fig. 2.

The shaft F and the rear segment-gear *e* are preferably made of fiber or some other non-conducting material in a double-pole switch, so as to insulate the two poles. A crank G is secured upon said shaft F for rotation at one side thereof, and an actuating-lever L is loosely pivoted upon said shaft for rotation at the opposite side of the same, and said lever and said crank are connected by a

spring *s*, which extends from the actuating-lever to the crank at the opposite side of said shaft, and when so connected serve together to actuate the contact-blade D. By means of the before-described arrangement of the gears *d* and *e* I am enabled to employ a connecting-spring which extends from the actuating-lever to the crank at the opposite side of the shaft and still have the movement of the actuating-lever in the same direction as that of the contact-blade. Spring-controlled locking-catches N N, pivoted upon said standard E, serve to lock the blade in its open and closed positions, as shown, respectively, in Figs. 1 and 5. The lever L is so pivoted as to have a short end extending beyond the pivot-axis of said lever, as shown, adapted in the rotation of said lever for contact with a surface (preferably inclined) on the respective catches N N to force that catch with which it is at the time in contact out of its engagement with the free end of the crank G, thereby releasing the latter and allowing it to respond to the action of the spring *s*. When two blades are used, I preferably connect their free ends by a cross-bar, as D', Fig. 2. By changing the relative height of the pivot-axes of the contact-blade and gear-segment and the relative sizes of the two toothed segments or gears the switch is readily adapted for use as a "double-throw" switch, as shown in Figs. 6 and 7.

Other modifications can be made without departing from the principle of my invention. For instance, the contact-blades D D' may be mounted on a common axis and instead of each blade being provided with a toothed end a segment or toothed gear may be secured upon said pivot-axis or shaft and caused to mesh with a toothed segment centrally located on the shaft F. The direction in which the toothed portion *d* of the blade D extends beyond the pivot-axis of said blade is obviously immaterial, provided the geared segment *e* is pivotally arranged and held in mesh with said toothed portion *d* and is adapted to actuate said blade in either direction.

In explanation of the operation of my invention we will assume that the switch is in its closed position—that is, with the contact-blade in engagement with the contact-post C—and locked in that position by the engage-

ment of the spring-controlled catch N with the free end of the crank G. To open the switch and break the contact, the actuating-lever L is turned on its pivot-axis to the position shown in Fig. 4, thereby distending the connecting-spring *s* until the free end of said lever is brought into contact with the catch N and forces it out of its engagement with the free end of the crank G, thereby releasing the latter and allowing it to be drawn with rapid movement by the reaction of said spring into the position shown in Fig. 5 and through the intermeshing gears or segments *d* and *e* causing the contact-blade D to move in the same direction as the actuating-lever L with a rapid movement out of its engaging position into its open or disengaged position, (shown in Fig. 5,) where it will be automatically locked by the opposite spring-controlled catch N engaging with the free end of said crank. Reversing the movement of the actuating-lever L will similarly distend the spring *s*, release the locking-catch N, and carry the contact-blade D with a rapid movement in the same direction as the movement of said lever from its open to its engaged position, where it is locked by the engagement of the locking-catch N on that side with the free end of the crank G, Fig. 1.

I claim as my invention—

1. In an electric switch having a base, contact-posts secured upon said base, and a pivoted contact blade or member, the combination with said parts of an independently-ro-

tatable shaft, a crank carried by said shaft, intermeshing gears or gear-segments connecting said shaft and contact-blade, an actuating-lever pivoted upon said shaft, and a connecting-spring extending from said actuating-lever to the crank at the opposite side of said shaft, whereby the actuating-lever and contact-blade will be caused to move in the same direction.

2. The combination of the base-plate A, contact post or brush C, standard B secured upon said base-plate and adapted to serve as a pivot-support for the contact-blade, a contact-blade D, pivoted on the standard B and provided with a toothed or gear portion *d*, the standard E secured upon said base-plate, the toothed segment or gear *e* rotatably mounted on said standard and arranged and held in mesh with the gear or toothed portion *d* of the contact-blade D, the crank G secured upon the pivot-axis or shaft F of the gear or segment *e*, the lever L, loosely pivoted upon said shaft for movement without reference to the movement of said crank, the spring *s* connecting said lever and crank, and spring-controlled locking-catches N, N.

In testimony whereof I have hereunto set my hand, in presence of two witnesses, this 28th day of February, 1898.

WILLIAM ELY.

Witnesses:

HENRY MARSH, Jr.,

JAMES B. RICHARDSON.