

No. 816,444.

PATENTED MAR. 27, 1906.

A. R. EVEREST & R. E. BARKER.

ELECTRIC SWITCH.

APPLICATION FILED SEPT. 14, 1903.

Fig. 1.

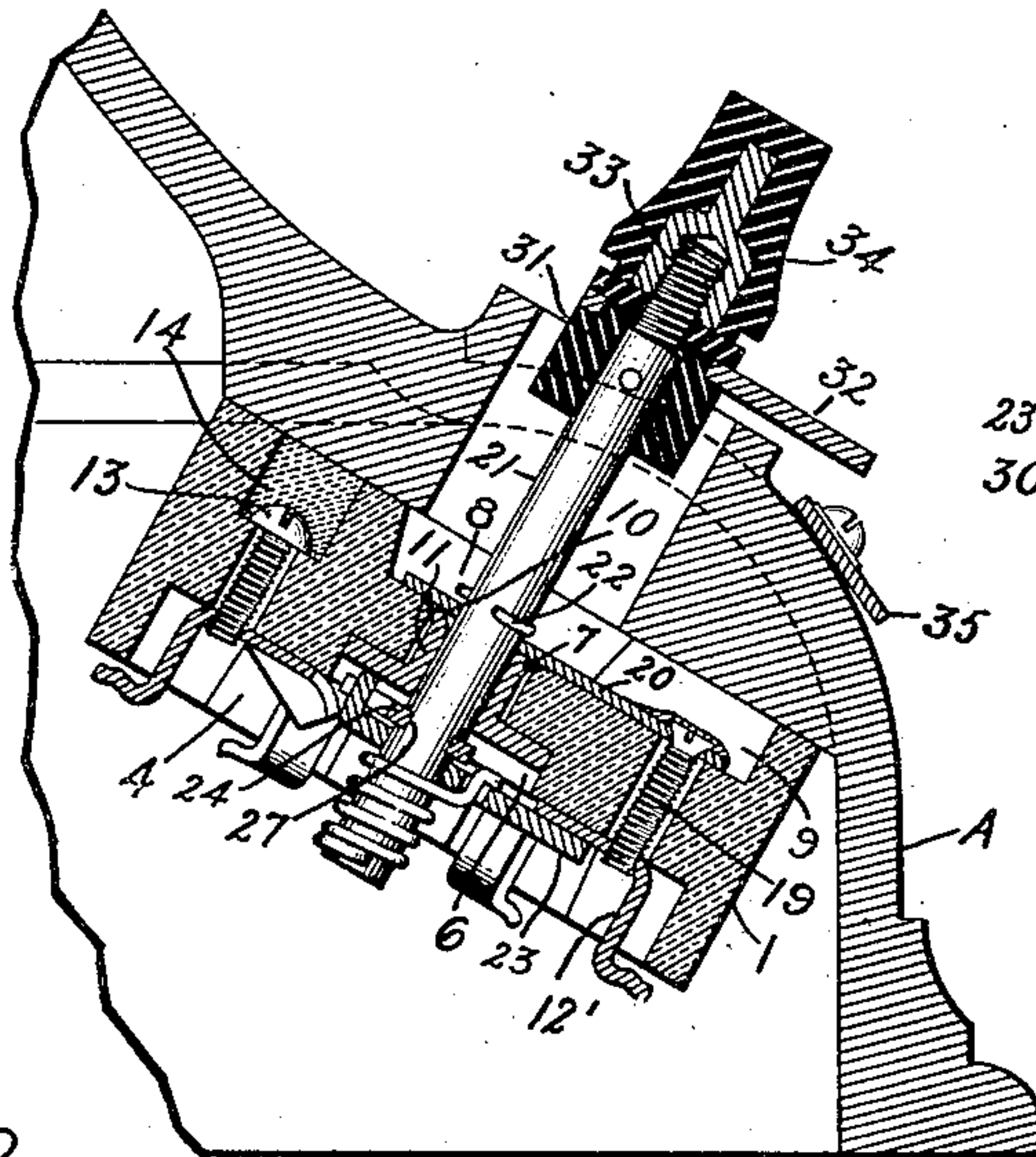


Fig. 4.

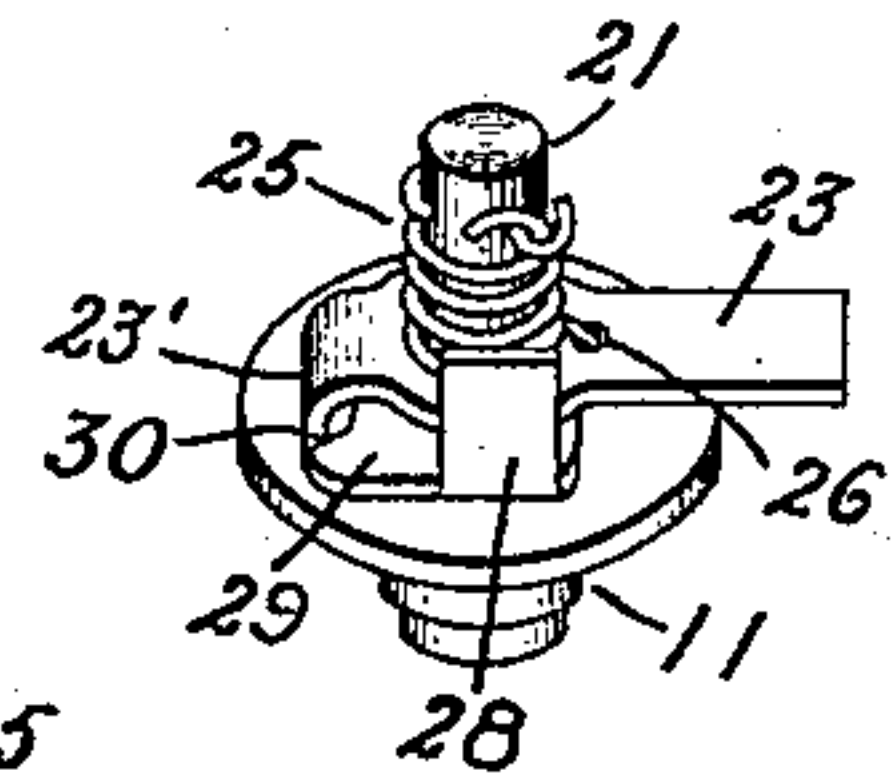


Fig. 2.

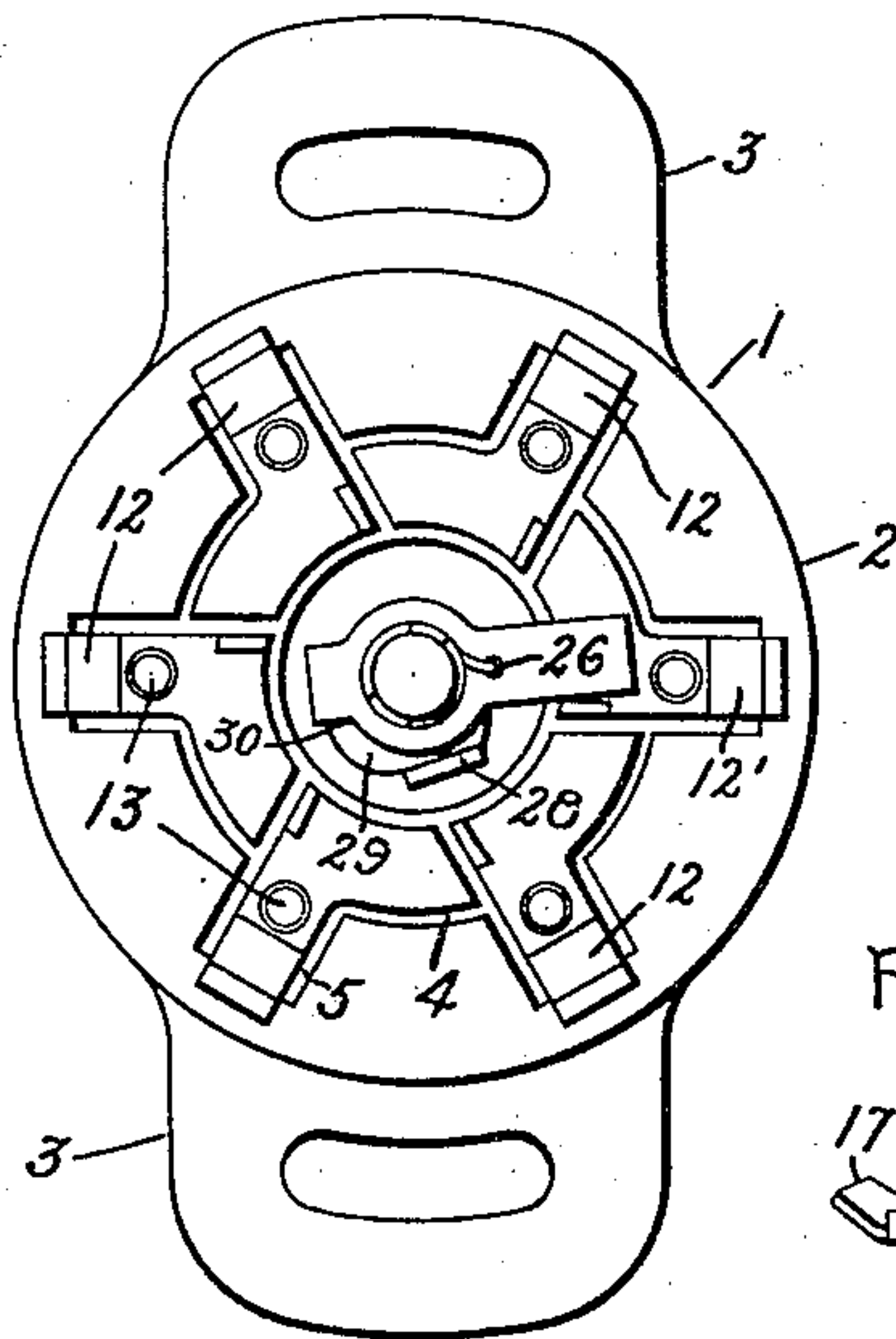


Fig. 3.

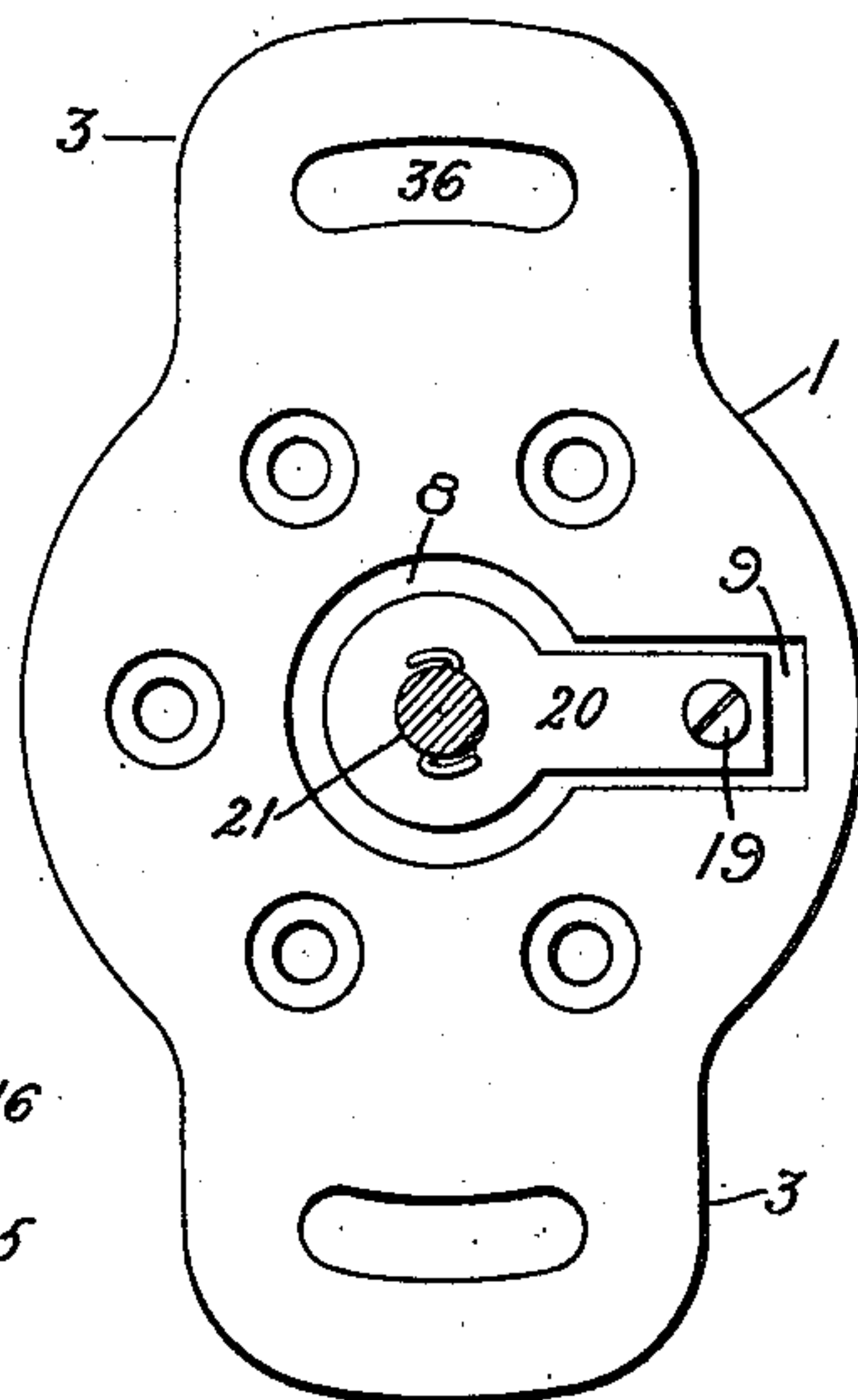


Fig. 5.

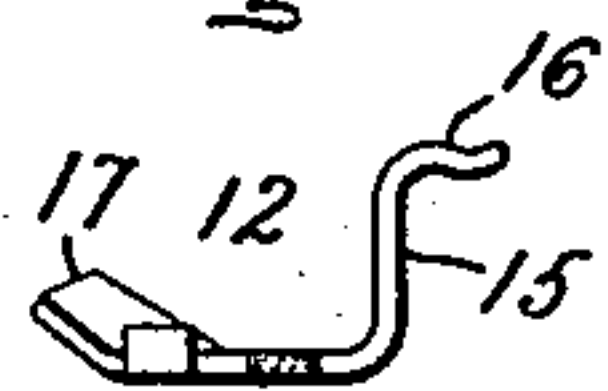
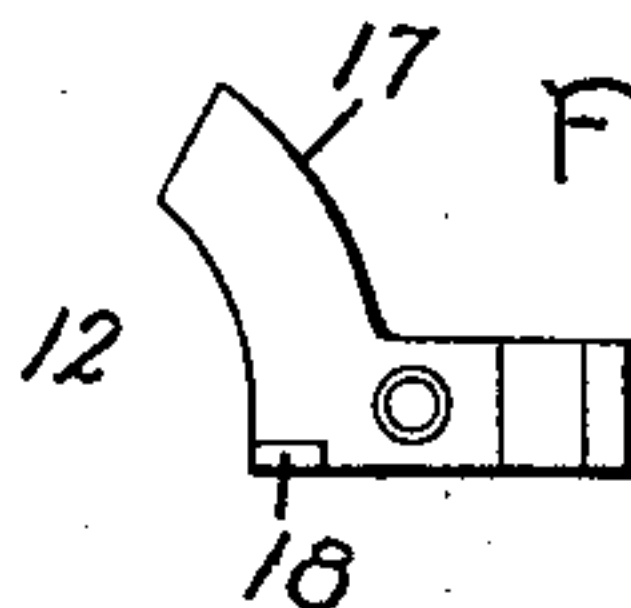


Fig. 6.



Witnesses:

George H. Tilden.
Allen Oxford

Inventors:

Augustine R. Everest.
Ralph E. Barker.
by *Albert S. Davis*
Att'y.

UNITED STATES PATENT OFFICE.

AUGUSTINE R. EVEREST AND RALPH E. BARKER, OF LYNN, MASSACHUSETTS, ASSIGNORS TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

ELECTRIC SWITCH.

No. 816,444.

Specification of Letters Patent.

Patented March 27, 1906.

Application filed September 14, 1903. Serial No. 173,026.

To all whom it may concern:

Be it known that we, AUGUSTINE R. EVEREST, a subject of the King of Great Britain, and RALPH E. BARKER, a citizen of the United States, residing at Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Electric Switches, of which the following is a specification.

The present invention relates to electric snap-switches, and particularly to that class of snap-switches in which a relatively large number of contacts are provided, whereby the device is adapted when connected up, as to a rheostat, to make and break circuit in a series of conductors in succession.

The object of our invention is to provide a device of this character which shall be highly efficient in operation, of low cost of manufacture, and having its parts so constructed and arranged that it may be readily installed in very limited spaces.

The invention will be readily understood upon reference to the following description and the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a vertical section of a snap-switch embodying our invention and shown in operative position upon the inside of a supporting-base, such as is used for mounting ventilating-fans. Fig. 2 is a front elevation of the switch. Fig. 3 is a back elevation of the insulating-base. Fig. 4 is a perspective view of the switch-blade and its connection to the actuating-shaft, and Figs. 5 and 6 are respectively a side elevation and a top plan of a stationary contact.

The switch-base 1 is of porcelain or other suitable insulating material and is formed with a cylindrical center section 2 and attaching side ears or lugs 3. The front face of the base is provided with a main circular recess 4, having radial extensions 5, a smaller concentric recess 6, from the bottom of which an axial aperture 7 extends through the body portion to a recess 8 in its opposite face, which is made circular with a single radial extension 9 and with the shoulder 10 at the junction of the aperture 7 with the recess 8 rounded off, as shown in Fig. 1. A flanged metallic bush 11 is seated in the smaller recess 6 and is held in position by spinning over its rear end upon the rounded shoulder 10 of the central aper-

ture. In each of the radial extensions 5 of the central recess is located the outer portion of an L-shaped contact 12, held in position by a screw 13, extending through a countersunk aperture 14 in the base and engaging a threaded hole in the contact-piece. The outer portions 15 of the contact-pieces 12 are bent up at right angles to their main portions, and the extreme outer tips are bent outwardly to provide surfaces 16, to which the ends of the conductor-wire may be soldered or connected by other suitable means. The inner portions of the contacts 12 are made in the form of circular segments and have their toe ends 17 bent up out of the plane of the main portions and at their heels lugs 18 struck up, as shown in Figs. 5 and 6, for a purpose to be hereinafter set forth. One of the contact-pieces 12' is electrically connected by a screw 19 to a conductor-strip 20, seated in the recess 8 and its extension 9 on the back of the base and provided at one end with an aperture through which the actuating-shaft 21 extends.

The actuating-shaft 21 is journaled in the bush 11 and is held from longitudinal movement in one direction and in electrical engagement with the strip 20 by a clenched pin 22, extending transversely therethrough. At the inner end of the shaft are connected the switch-blade 23, its actuating-crank 24, and the snap-spring 25, which normally presses the blade axially toward the base and yieldingly holds the actuating-shaft inwardly with the pin 22 in positive contact with the strip 20 and the latter in contact with the inner end of the bush 11.

The switch-blade 23 consists of a sheet-metal punching loosely journaled upon the shaft 21 and having an extension 23' on the opposite side of the shaft with its end bent over at a right angle and adapted to bear upon the flange of the bush 11. The spring 25 surrounds the lower end of the shaft 21 and is connected at its respective ends to the shaft and to the switch-blade 23 by being passed through a hook in the former and a hole 26 in the latter and bent over, as shown in Fig. 1.

The actuating-crank 24 consists of a sheet-metal punching secured radially to the shaft in notches 27, formed on opposite sides thereof just below the flange of the bush 11.

and provided with two projections 28 and 29. The projection 28 is bent up at right angles into the path of the switch-blade 23, so that when the shaft 21 is turned clockwise it engages the edge of the blade and forces it forward against the tension of its spring 25. The other projection 29 is provided with a radial shoulder 30, which extends into the path of the bent end of the blade extension 23' and serves to restrict the backlash of the shaft with respect to the blade. The outer end of the shaft 21 is provided with an insulating-collar 31, to which an index-finger 32 is attached, and a screw-thread 33, on which an insulating thumb-piece 34 is mounted.

The support A is provided just below the opening through which the switch-shaft extends with an indicator-plate 35 to designate the off position of the switch-blade. The switch-base 1 is secured to the inner surface of the support by screws or other connecting devices which pass through slots 36 in the lugs 3 and engage the metal of the support. These slots 36 are made relatively long in order to permit of adjustment of the switch upon the base to bring the shaft 21 into the center of the hole through the support and to aline the index-finger 32 with the indicator-plate 35.

When our switch is to be used in connection with a rheostat, one of the line conductors will be connected to the contact 12', which is in direct electrical connection with the sleeve 11, and to the other contacts 12 the leaders to the respective sections of the resistance-conductor will be attached. The current passes from contact 12' through screw 19, conductor-strip 20, bush 11, to the switch-blade 23, through the particular contact 12 with which it is in engagement, to the opposite side of the line. When the switch-blade is turned to engage contact 12', the flow of current will be interrupted. When the thumb-piece 34 is turned in a clockwise direction, it operates at first to put the spring 25 under tension. Then the projection 28 of the crank 24 engages an edge of the blade 23, causing it to rotate therewith and travel up the inclined surfaces of the contact 12 with which it is in engagement until the upper end is reached, whereupon the spring 25 acts by its recoil to throw the blade 23 forward and axially toward the succeeding contact 12, making the break with a sudden snap action. In case the thumb-piece be turned counterclockwise the radial shoulder 30 of the crank 24 engages the bent extension 23' of the switch-blade; but owing to the position of the lug 18 just behind the rear edge of the blade the latter is held from backward movement and the shaft 21 locked against further backward rotation. If the lugs 18 were not provided, it would be possible to force the blades 23 backwardly into engagement with two

contacts at the same time, and thereby short-circuit a section of the rheostat.

We do not desire to restrict ourselves to the particular construction or arrangement of parts herein described and shown, for it is apparent that they may be changed and modified in many respects without departing from our invention.

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

1. The combination of an insulating-base, a plurality of stationary contacts mounted thereon, a metallic bush secured to said base and electrically connected to one of said contacts, a shaft journaled in said bush, and a switch-blade loosely mounted upon said shaft and connected thereto by a spring and adapted to make electrical connection between said bush and the respective stationary contacts.

2. The combination of an insulating-base provided with a central aperture, a plurality of stationary contacts mounted on one side thereof, a metallic bush secured in said central aperture, a metallic strip located on the opposite side of said base and electrically connected to said bush and one of the stationary contacts, a shaft journaled in said bush and provided with a crank-arm, a switch-blade loosely mounted on said shaft in the path of said crank and adapted to make electrical connection between said bush and the respective contacts, and a spring connecting said shaft and said switch-blade.

3. In an electric switch, the combination of an actuating-shaft, a switch-blade loosely mounted thereon and having one end bent up at right angles, a spring connecting said shaft and said blade, and a crank secured to said shaft and provided with two spaced lugs or projections one of which extends radially from the shaft and adapted to engage the bent end of the switch-blade and the other of which is bent up parallel to the shaft and adapted to engage an edge of the switch-blade.

4. In an electric switch, the combination of a base of insulating material provided with a circular recess with radial extensions therefrom, metal contacts seated in said extensions and extending into the circular recess, a metallic bush extending through said base concentric with said recess, and a shaft journaled in said bush and provided with a spring-pressed switch-blade adapted to make contact with said metallic contacts.

In witness whereof we have hereunto set our hands this 11th day of September, 1903.

AUGUSTINE R. EVEREST.
RALPH E. BARKER.

Witnesses:

DUGALD McK. McKILLOP,
HENRY O. WESTENDARP.