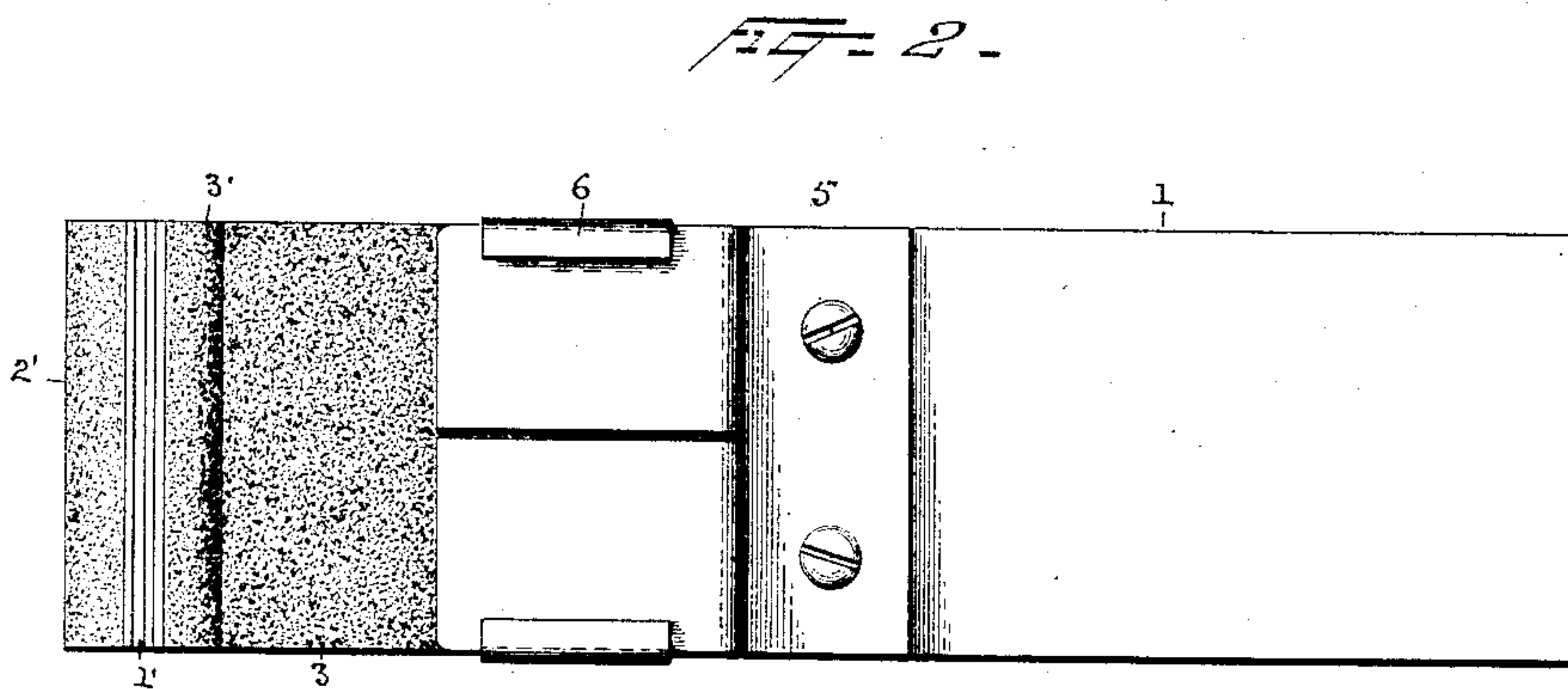
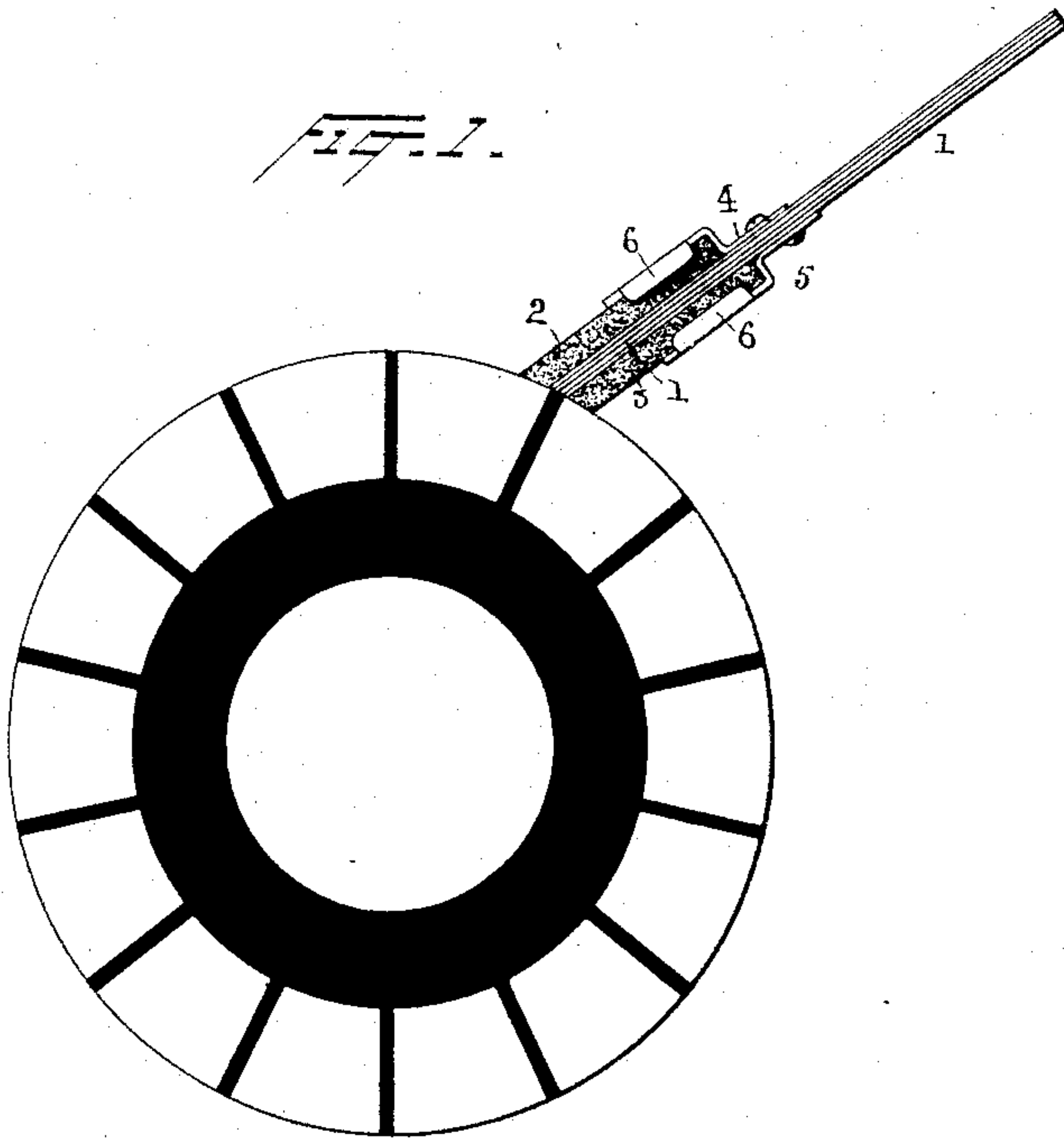


(No Model.)

C. WIRT.
COMMUTATOR BRUSH.

No. 436,964.

Patented Sept. 23, 1890.



Witnesses
Norris H. Clark,
Charles M. Catlin

Inventor
Charles Wirt,
By his Attorneys
Lyert Seely.

UNITED STATES PATENT OFFICE.

CHARLES WIRT, OF ORANGE, NEW JERSEY, ASSIGNOR OF ONE-HALF TO
FRANCIS R. UPTON, OF SAME PLACE.

COMMUTATOR-BRUSH.

SPECIFICATION forming part of Letters Patent No. 436,964, dated September 23, 1890.

Application filed April 12, 1890. Serial No. 347,595. (No model.)

To all whom it may concern:

Be it known that I, CHARLES WIRT, a citizen of the United States, residing at Orange, in the county of Essex and State of New Jersey, have invented an Improved Commutator-Brush, of which the following is a specification.

My invention relates to brushes or current-collectors, such as are used in generators to conduct the current generated to the line; in motors to conduct the line-current to the armature, and in other analogous devices.

My invention constitutes an improvement especially on carbon commutator-brushes as heretofore made. It has been found that with very heavy currents carbon brushes are subject to several objections. Their conductive power is insufficient to readily conduct the current, and the material is heated by such heavy currents. By my improvement I largely obviate these objections and at the same time avoid making a large and clumsy brush, as would be necessary to get the proper conductivity with carbon alone.

In the accompanying drawings, which illustrate my invention, Figure 1 is an end view of the commutator, showing one brush bearing on the commutator-cylinder. Fig. 2 is an inverted plan of the brush.

The brush is a composite one—that is, it is made up of several layers or sections, and they are arranged in the following manner: In the center is a strip of copper or other good conducting material, such as has heretofore been used for commutator-brushes. On either side of this strip is a plate or strip of high-resistance-conducting material. For these plates I prefer carbon, but lead or other material having comparatively high resistance may be employed. The contact end of each of these three plates or strips is curved to correspond substantially with the surface of the commutator-cylinder, so that they all bear simultaneously on said cylinder.

In the drawings, 1 is the central strip, and consists, preferably, of several superposed thin strips of copper. 1' is the end of this strip, which bears on the commutator-cylinder.

2 is the upper high-resistance plate or strip, and 3 is the lower strip.

2' and 3' are respectively the ends which bear on the commutator-cylinder.

For convenience of manufacture, strips 2

and 3 are preferably shorter than the central strip. The manner of holding the sections together is comparatively unimportant, but the central and the high-resistance strips should be in contact for the whole or a large part of their length, in order that the current which passes to the plates 2 3 may find an easy path to the strip 1. In the drawings are shown two metal clips 4 5, connected to strip 1 by means of screws or rivets. Screws are preferred, as they permit more ready adjustment. It will be understood that these clips are preferably yielding, so that the plates 2 3 can be forced under the clips and be held in place by spring-pressure.

6 6 are ears integral with the clips or soldered thereto, and bent over the adjacent plates 2 3 to keep them from sidewise movement.

The operation of the brush (in a dynamo generator, for example) is as follows: When the brush is wholly on the conducting-commutator section, the current flows from said section to the three surfaces of the brush in multiple arc. Of course by far the larger part goes directly through the central strip; but an appreciable amount passes through strips 2 and 3 and thence to the central strip 1. As the commutator-cylinder advances, the brush passes from one conducting-section onto another, and in this passage connection is broken with the first-named section and made with the succeeding section gradually, the outer plates of the brush serving as resistances, the effect being to largely reduce sparking.

This brush may be used in other situations where it is desired to change or switch circuits carrying heavy currents.

I am aware that carbon brushes and commutators are old; that it has been proposed to prevent sparking by placing a strip of asbestos, mica, or other material on the commutator-brush and bearing on the commutator-cylinder just behind said brush, and these things I do not claim.

What I claim is—

1. A commutator-brush comprising in combination a central strip of good conductivity and on either side thereof a strip of poor conductivity, the ends of all the strips bearing simultaneously on the commutator-cylinder, substantially as described.

2. A commutator-brush comprising in combination a central strip of good conductivity and on either side thereof a strip of carbon, the ends of all the strips bearing simultaneously on the commutator-cylinder, substantially as described.

3. A commutator-brush comprising in combination a central strip of good conductivity and on either side a strip of poor conductivity clamped thereto, substantially as described.

4. A commutator-brush comprising in combination a long central strip of good conductivity and on either side a shorter strip of poor conductivity, and clamping-clips for holding said strips in place, substantially as described.

5. A commutator-brush comprising in combination a central strip of metal and on either

side thereof a strip of carbon, the ends of all the strips bearing simultaneously on the commutator-cylinder, substantially as described.

6. A circuit-changing contact comprising in combination a central strip of good conductivity and on either side a strip of relatively poor conductivity, one end of all the strips being in line and conforming in shape to the co-operating contact-surface, substantially as described.

This specification signed and witnessed this 29th day of March, 1890.

CHARLES WIRT.

Witnesses:

W. R. INGALLS,
GEO. O. KEELER.