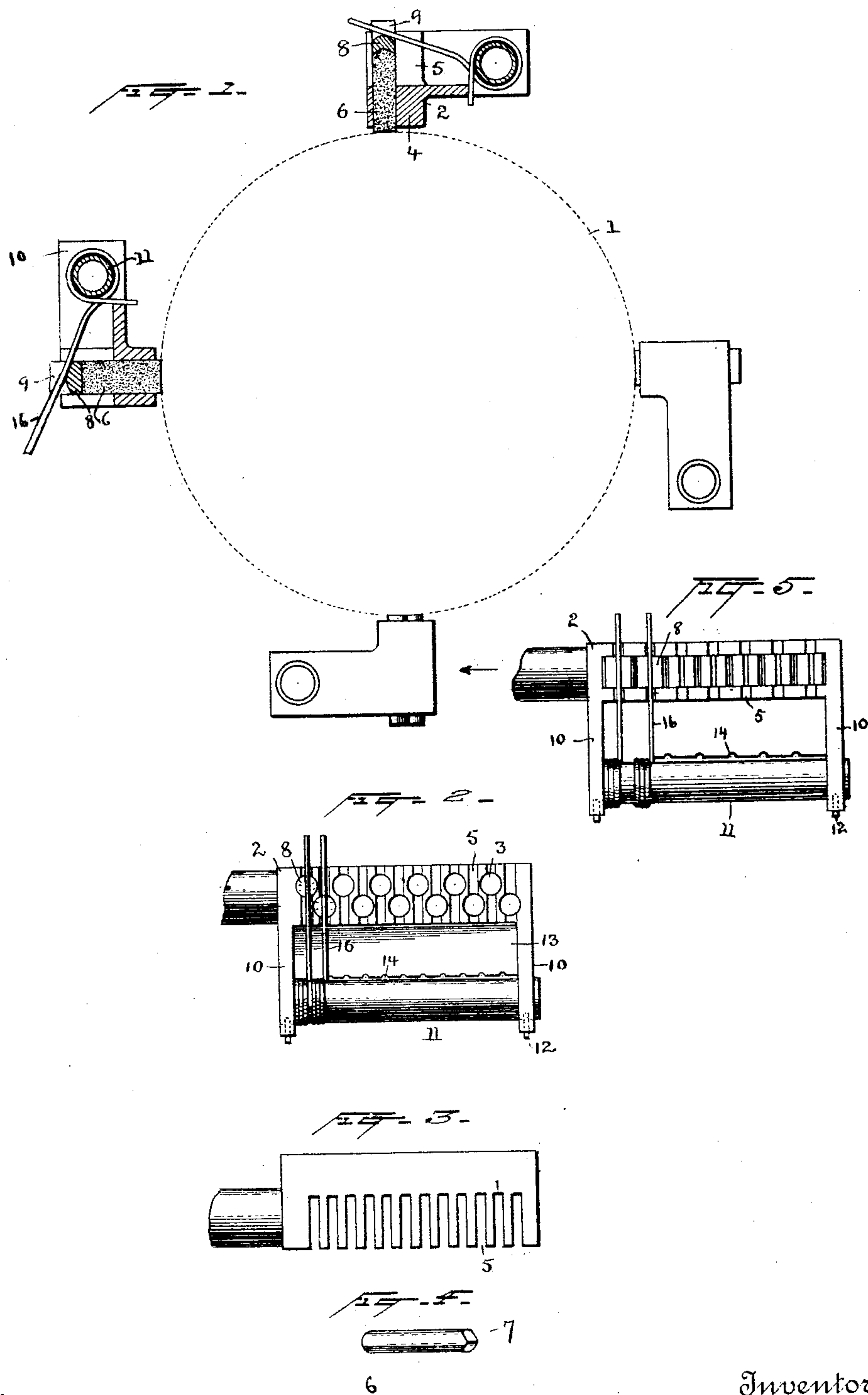


(No Model.)

R. LUNDELL.  
COMMUTATOR BRUSH AND HOLDER.

No. 459,367.

Patented Sept. 8, 1891.



Witnesses

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# UNITED STATES PATENT OFFICE.

ROBERT LUNDELL, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF TO EDWARD  
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## COMMUTATOR-BRUSH AND HOLDER.

SPECIFICATION forming part of Letters Patent No. 459,367, dated September 8, 1891.

Application filed April 4, 1891. Serial No. 387,606. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT LUNDELL, a citizen of the United States, residing at New York city, county and State of New York, have invented a certain new and useful Improvement in Commutator-Brushes and Holders, of which the following is a specification.

This invention relates to devices for conducting current from a supply-circuit to the armature of an electric motor or to take current from the armature of a dynamo to supply an external circuit.

The main object of the invention is to provide current collectors or brushes which shall make a perfect contact, shall wear evenly, and shall rest squarely on the surface of the commutator-cylinder, and to provide an improved brush-holder; and the invention consists in the features and combinations hereinafter described and claimed.

In the accompanying drawings, Figure 1 is an end view of the commutator-cylinder with four commutator-brushes resting thereon, two of the brushes and brush-holders being in section. Fig. 2 is a plan view of one of the collecting-brushes. Fig. 3 is a view of the brush-holder, looking in the direction of the arrow in Fig. 1. Fig. 4 is a view of one of the collecting-rods detached from the holders, and Fig. 5 is a plan of a modified form.

The commutator-cylinder 1 may be made in any suitable manner, and any suitable number of commutator-brushes may be employed. Four such brushes are shown in Fig. 1, the upper and lower brushes being of the form shown in Fig. 2 and the other two being of the form shown in Fig. 5. Each brush consists of a holder 2, in which are one or two rows of holes 3, the holes in one row alternating with those in the other row, or in which is a single large opening, as in Fig. 5. These holes, which pass through the body 4 of the holder, communicate with slots 5. In each hole in the first form is placed a round carbon-rod or similar collecting device 6, one end of which bears directly on the face of the commutator-cylinder. The other ends of said rods are beveled, as indicated at 7. Against these beveled ends are placed small copper or other metal caps 8, one end of which is

made to correspond in shape to the beveled ends of the rods and the other end of which is provided with a slot 9, the bottom of which is rounded, as shown.

10 10 are arms projecting from the body of the holder and supporting at their outer ends a rod or tube 11, secured in place by suitable pins or screws 12. 13 is a web, also projecting from the body of the holder and having notches 14 along its outer edge.

16 are metal springs formed of brass or steel wire. The springs are supported on the rod or tube 11, and one end of each spring bears in a notch 14, while the other end presses against the cap 8 of one of the rods 6.

In Fig. 5 the several collecting-rods are shown as rectangular, all being placed side by side in the holder. The blocks 8 are also rectangular and are narrower than said rods, and are held in place by the springs 16. In this form, as shown at the left in Fig. 1, the blocks 8 have flat faces resting on the rods, since it is not necessary to hold the rods from turning by said blocks. Each collecting-rod, it will be seen, is independently movable and is pressed forward by a separate spring. Owing to the form of the cap and the end of the collecting-rod, said rod is prevented from turning. Consequently it retains the same position relative to the commutator-cylinder, and the end bearing on the cylinder is worn away evenly, so that the whole area of the end of each rod rests flatly on the cylinder.

It will be understood that the commutator-brushes are supported on any suitable brackets or arms, by means of which they may be adjusted.

What I claim is—

1. The combination of a brush-holder, a current-collecting rod supported therein, a grooved cap on the rod, and a spring pressing on the cap and resting in the groove thereof, substantially as described.

2. The combination of a brush-holder, several current-collecting rods supported therein, a cap having a groove in its outer end on each rod, and a spring resting in each of said grooves and pressing on the caps, substantially as described.

3. The combination of a brush-holder, one



or more current-collecting rods supported therein, a cap for each rod having an end adapted to fit a corresponding end of its rod to keep the latter from turning, and a spring  
5 pressing on the cap or caps, substantially as described.

4. A brush-holder consisting of a body having one or more holes through it for the reception of current-collecting devices and having  
10 ing grooves in line with the holes, in combination with current-collecting rods or brushes in the holes, a grooved cap on each collecting-rod, and springs in the grooves of the holder and of the caps and pressing against said  
15 caps, substantially as described.

5. The combination of a brush-holder, several current-collecting devices held therein, a notched web extending from the holder, and several springs on a suitable support, one end

of each of said springs resting in a notch and 20 the other end of each of said springs bearing on a collecting device, substantially as described.

6. The combination, in a brush-holder, of a body in which several collecting devices are 25 independently supported, a grooved cap on each collecting device, arms projecting from said body, a tube or rod supported by the arms, and springs on said tube or rod and pressing on the collecting devices, substan- 30 tially as described.

This specification signed and witnessed this 28th day of March, 1891.

ROBERT LUNDELL.

Witnesses:

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