

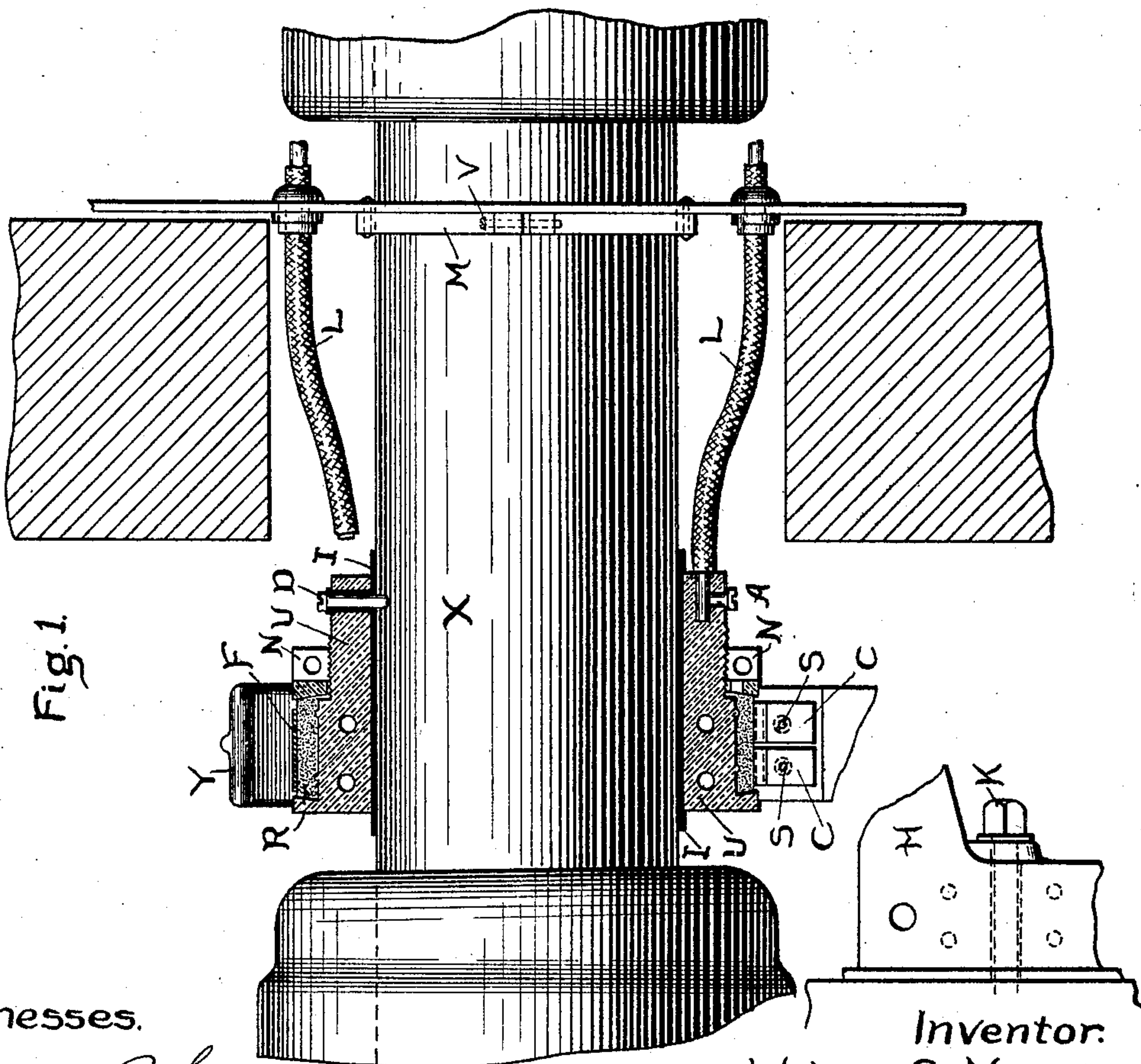
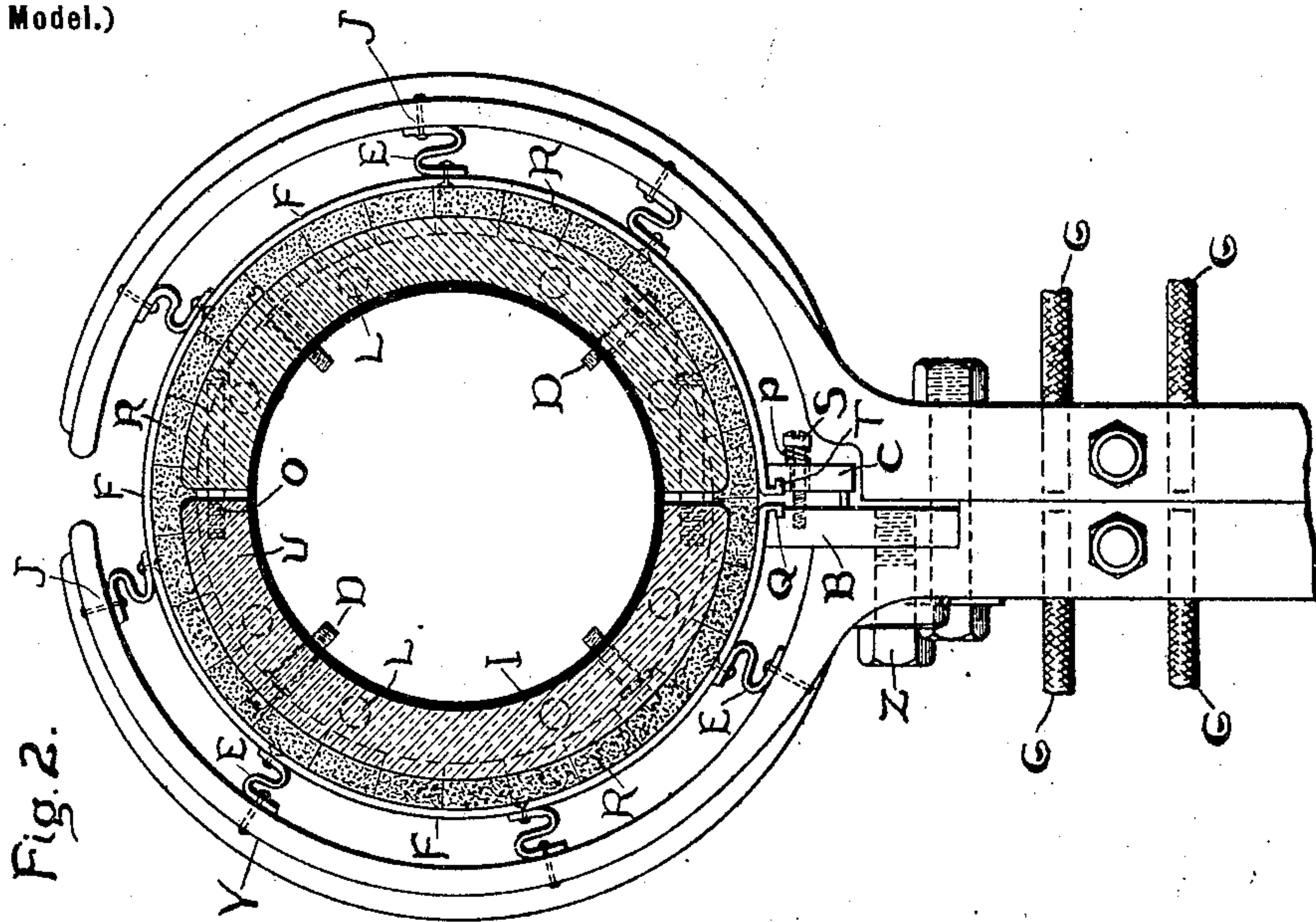
No. 680,265.

Patented Aug. 13, 1901.

W. S. MOODY.
CURRENT COLLECTING DEVICE.

(Application filed May 22, 1901.)

(No Model.)



Witnesses.

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UNITED STATES PATENT OFFICE.

WALTER S. MOODY, OF SCHENECTADY, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY, OF NEW YORK.

CURRENT-COLLECTING DEVICE.

SPECIFICATION forming part of Letters Patent No. 680,265, dated August 13, 1901.

Application filed May 22, 1901. Serial No. 61,346. (No model.)

To all whom it may concern:

Be it known that I, WALTER S. MOODY, a citizen of the United States, residing at Schenectady, county of Schenectady, and State of New York, have invented certain new and useful Improvements in Current-Collecting Devices, (Case No. 1,772,) of which the following is a specification.

This invention relates to means for conveying large currents of electricity to moving bodies, especially through shafts having a slow speed of rotation in proportion to the current to be transmitted.

The invention comprises a collecting device consisting of two relatively movable parts, which have large engaging surfaces, and adapted to make contact with each other with considerable pressure.

The invention is especially adapted to be used where it is desired to convey large currents—such, for example, as ten thousand amperes, at one hundred volts—to a slowly-rotating shaft, which may drive, for example, an oven for preparing foodstuffs by mixing and heating. For such purposes I have found that the ordinary collector-ring and brushes are entirely inadequate and impracticable, as they do not provide sufficient contact-surface, and it is difficult to apply the brushes to the collector-rings with a sufficient degree of pressure. For example, in order to provide the desirable contact-surface of a square inch for each two hundred amperes of current such a large number of brushes would be required as would prohibit the use of the apparatus, especially in view of the difficulty in maintaining sufficient pressure between the collector-ring and the brushes. These difficulties have been overcome by the apparatus described herein, which is both simple and effective. It is shown in longitudinal section in Figure 1 and in transverse section in Fig. 2.

Upon the shaft X and separated therefrom by suitable insulation I is mounted a metal collector-ring support U. This support comprises two semicircular segments, which are secured together about the insulation I by means of the bolts O. The collector-ring R is composed of a plurality of blocks or segments of carbon or graphite, or a mixture of

both, which are dovetailed into the support U and secured in place by a threaded ring N, which also forces the blocks against the support U to make good electrical contact. Screws D secure the support to the shaft X. Such material as carbon is employed in order to provide lubrication for the moving parts, and also a conductor for the current. The carbon blocks are of minimum thickness permitted by considerations of strength, as unnecessary resistance should be avoided.

A cast-iron yoke Y is secured at its lower end H to a suitable support by means of bolts K, and this yoke is concentric with the collector-ring, as shown. The carbon collector-ring R rotates within a flexible contact-ring F, which fits the periphery of the carbon ring, so that good contact is maintained between the two. This contact-ring F is composed of a strap, which is flexible in order to permit the ring to be contracted as the carbon wears away, and to this end may be made of copper or brass. The ends Q and T of the strap are not connected together, but one end Q is attached to a member B, held in place by a bolt Z, engaging in the base of the yoke. The other end T of the strap is attached to a movable piece C, through which freely passes a bolt S, which engages in the stationary member B. A sufficiently-powerful spring P is interposed between the head of the bolt S and the movable piece C, so that as the carbon collector-ring or the contact-ring, or both, wear away the ends of the contact-ring will be automatically drawn together to keep the ring in tight engagement with the periphery of the collector-ring R. When the spring P has reached its limit of expansion, the bolt S may be screwed farther into the stationary member B to provide for the continued automatic action.

Current is supplied to the contact-ring F by multiple generator-leads G, which are secured in the lower portion of the yoke, as shown. The inner portion of the yoke is connected with the contact-ring F by means of flexible leads E of sheet-copper or other suitable material of a thickness of about one-thousandth of an inch, and secured in place by rivets J, and also, if desired, by solder. These flexible leads provide multiple paths

for the current and permit the ring F to adjust itself or to be adjusted to the collector-ring R.

Current is taken to the moving apparatus by means of leads L, which are seated into the collector-ring support U, and, if desired, are held therein by binding-screws A. These leads are supported adjacent to the apparatus by means of a clamping-ring M, which is secured to the shaft X by a clamping-screw. The apparatus is grounded through the shaft X, which is insulated from the collector-ring support.

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

1. The combination with a collector-ring, of an annular contact-ring having an extended surface and adapted to be pressed against substantially the entire periphery of the collector-ring.

2. The combination with a collector-ring composed of lubricating conducting material, of an annular contact-ring having an extended surface and adapted to be pressed against substantially the entire periphery of the collector-ring.

3. The combination with a collector-ring, of an annular contact-ring consisting of a flexible metal strap having an extended surface adapted to be pressed against substantially the entire periphery of the collector-ring.

4. The combination with a collector-ring, of an annular contact-ring consisting of a flexible metal strap having its ends unconnected with each other, but adapted to be pressed against substantially the entire periphery of the collector-ring.

5. The combination with a collector-ring, of an annular contact-ring, adapted to engage substantially the entire periphery of the collector-ring, and consisting of a flexible metal strap, having its ends adjacent to each other on the collector-ring, and provided with means for drawing the ends of the strap together to compensate for the wear of the parts.

6. The combination with a collector-ring, of an annular contact-ring adapted to engage substantially the entire periphery of the collector-ring, and consisting of a flexible metal strap, having its ends adjacent to each other on the collector-ring, and means for automatically drawing the free ends of the strap together around the collector-ring as the parts wear away.

7. The combination with a collector-ring, of an annular contact-ring adapted to engage substantially the entire periphery of the collector-ring, and consisting of a flexible metal strap, having its ends adjacent to each other on the collector-ring, and a spring arranged to draw the ends of the strap together around the collector as the parts wear away.

8. The combination with a collector-ring, of a stationary member, and an annular contact-ring mounted on said member in engagement with substantially the entire periphery of the collector-ring.

9. The combination with a collector-ring, of an annular contact-ring consisting of a flexible metal strap, a stationary member to which one end of the strap is attached, a movable member to which the other end of the strap is attached, and a bolt which passes freely through said movable member and is seated in said stationary member.

10. The combination with a collector-ring, of an annular contact-ring consisting of a flexible metal strap, a stationary member to which one end of the strap is attached, a movable member to which the other end of the strap is attached, a bolt passing freely through said movable member and seated in said stationary member, and a spring interposed between the head of the bolt and said movable member.

11. The combination with a collector-ring, of a stationary member, a contact-ring engaging substantially the entire periphery of the collector-ring, one end of the contact-ring being attached to said member, and means for adjusting the other end of the contact-ring, said ends lying adjacent to each other on the collector-ring.

12. The combination with a collector-ring, of a stationary conducting-yoke, a flexible strap forming a contact-ring adapted to engage the periphery of the collector-ring, and flexible leads connecting the yoke with the strap.

13. The combination with a collector-ring, a flexible contact-ring, a conducting-yoke carrying the contact-ring, flexible leads connecting the yoke with the contact-ring, and means for contracting the latter.

14. The combination with a rotatable member, of a collector-ring support mounted thereon, a collector-ring comprising carbon blocks dovetailed in said support, and a locking-ring securing said blocks in position and in good contact with said support.

15. The combination with a collector-ring, of an annular contact-ring in engagement therewith, and a plurality of flexible metal supporting connections for the contact-ring.

16. The combination with a carbon collector-ring, of a metal contact-ring having its ends adjacent to substantially encircle the collector-ring.

In witness whereof I have hereunto set my hand this 20th day of May, 1901.

WALTER S. MOODY.

Witnesses:

BENJAMIN B. HULL,
CHARLES STEINER.