

No. 664,503.

Patented Dec. 25, 1900.

H. G. REIST.
COLLECTOR RING.

(Application filed Mar. 29, 1900.)

(No Model.)

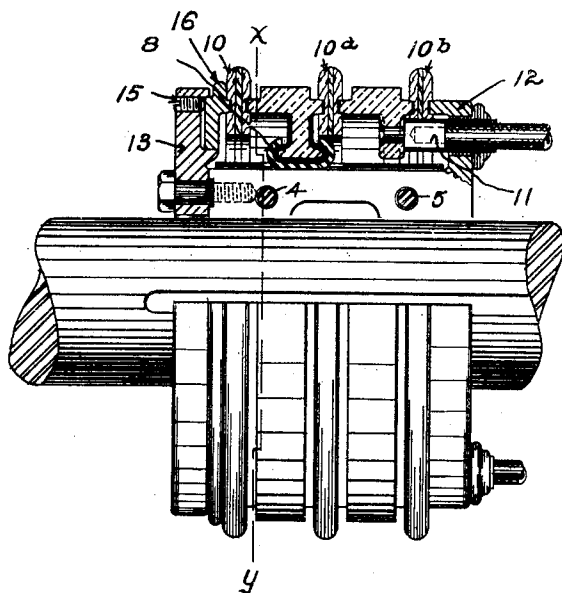


Fig. 1.

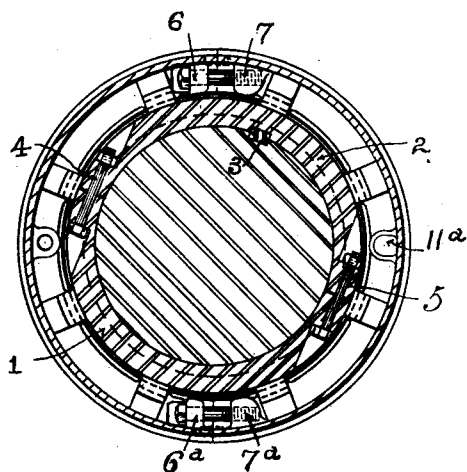


Fig. 2.

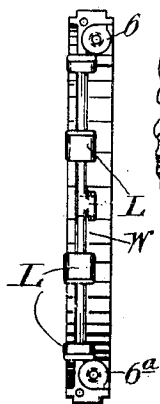


Fig. 3.

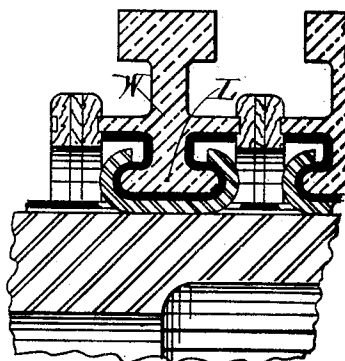
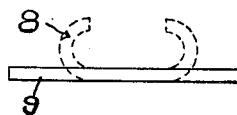


Fig. 4.

Fig. 5.



Witnesses.

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UNITED STATES PATENT OFFICE.

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COLLECTOR-RING.

SPECIFICATION forming part of Letters Patent No. 664,503, dated December 25, 1900.

Application filed March 29, 1900. Serial No. 10,611. (No model.)

To all whom it may concern:

Be it known that I, HENRY G. REIST, a citizen of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Collector-Rings, (Case No. 1,424,) of which the following is a specification.

This invention relates to current-collectors for electric machines—such as generators, motors, rotary converters, or other types of alternating-current machines—in which a rubbing contact is maintained between brushes and ring-contacts mounted on a rotary element.

The objects of the invention are to provide a cheap construction and a true mounting of the collector-rings with reference to the axis of rotation, to promote security of insulation, and stability of construction, and provide for ventilation of the parts to prevent heating, especially in machines handling large currents.

The invention embodies various structural features, the novelty of which will be herein-after fully described, and definitely indicated in the claims.

In the accompanying drawings, Figure 1 is a side elevation, partly in section, of a collector embodying my improvements. Fig. 2 is a cross-section on the plane indicated by the irregular line X Y of Fig. 1. Fig. 3 is a side elevation of one-half of a collector-ring. Fig. 4 is a detail view of a supporting-clamp for the collector-ring and the blank from which it is formed, and Fig. 5 is a sectional detail view showing a modified collector construction where good ventilation is particularly desirable.

The collecting-rings are mounted upon a split collar keyed on the shaft of the rotary element, and the rings are themselves formed in two pieces separated on a diametrical line and adapted to be clamped over the split collar. 1 and 2 (see Figs. 1 and 2) represent the two halves of the collar which supports the collecting-rings. The collar is sufficiently wide, as seen in Fig. 1, to form a support for both or all collector-rings and the spacing-strips. The rings and support may be formed of cast-iron for cheapness and wearing qualities. The collar may be keyed to the shaft,

as indicated at 3, and bolted firmly in position by two pairs of bolts 4 5, lying on opposite sides of the diameter, the stems of the bolts passing through holes bored in the adjoining edges of the segments, the nuts and heads of the bolts meeting in countersunk grooves, as indicated in Fig. 2. Each collector-ring is cast of a single integral piece of metal and then sawed on a diametrical line, so as to form two half-rings, lugs being provided below the tread of the ring to permit the parts to be bolted together, as seen at 6 7 6^a 7^a in Fig. 2. Each ring is provided with a cylindrical web W below the tread, enlarged at intervals symmetrically related to the inner perimeter of the disk, as seen at L in Fig. 3. Over these enlargements is placed a layer of mica insulation, and a metal clip 8, (see Figs. 1 and 4,) formed from a strip of sheet metal, as 9, Fig. 4, is pressed around each enlargement on the inner face of the ring while hot, thus affording when the metal shrinks a very firm joint, which maintains stability in its seat when the ring is turned out in a lathe to provide a true seat on the split collar 1 2. The drawings show a collector formed of two rings, though, of course, any desired number might be employed.

On each face of the ring is a spacer 10 10^a 10^b, of insulating material, permitted, where currents of considerable tension pass through the collecting-rings, to extend above their tread, so as to form barriers against the establishment of a short circuit from one ring to the other. These are preferably formed of a number of separate pieces adapted, when assembled, to form a continuous but broken ring of insulating material, separating the several parts. I have deemed it unnecessary to illustrate this construction in detail, as it is a construction which I have employed in other types of collectors, notably that described in Patent No. 644,684, granted to me March 6, 1900. These spacing-rings are preferably formed of a plurality of thin layers of wood, secured together with the grain running in different directions, so as to prevent warping. They are provided with circular grooves, as indicated in Fig. 1, to receive ridges on the edges of the collector-ring and the face-plates by which the collector is held together. On

the side through which the conductors are led to the collector-rings suitable openings are provided to permit the leads to be led out. In the web of one ring is riveted a socket 11, which has been previously sweated fast with solder to a bared end of one of the leads. The other lead is led through an enlarged opening 11^a (see Fig. 2) to a similar socket in the companion ring. The split collar which supports the collector-rings is provided with an annular flange 12, having an overhanging circular edge, as indicated in Fig. 1, which takes into a groove in one of the insulating-spacers, as 10^b. At the other end of the collector is provided an end plate 13, bolted to the supporting-collar and carrying a series of set-screws 15, by which an adjustable ring 16 may be screwed against the space 10 to clamp the parts of the collector firmly together. This adjusting-ring is provided with a rib engaging a circular groove in the strip 10 and is provided with a smooth periphery, permitting it to be supported in true concentric relation to the end plate 13.

25 In assembling the parts the split collar is first fixed to the shaft and the barriers and collector-rings then successively set in place, each ring being brought in snug engagement with the collar by the bolts 6 7 6^a 7^a. The end plate 13 is then bolted fast to the collar. The adjusting-screws 15 are then turned until all parts of the collector are in tight engagement.

Where it is desirable to have very effective ventilation, especially in the case of collectors carrying currents of large amperage and moderate voltage, the barriers may be lower, as indicated in Fig. 5, since with low potential there is but little tendency to arc. This provides also an additional advantage in permitting oil and dirt to be easily removed from the recesses under the tread of the ring.

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

1. A current-collector composed of contact-

rings provided at a plurality of points on the inner wall with insulating material, and metal centering-pieces clamped around the insulating material to afford a seat on the support.

2. A current-collector comprising a plurality of contact-rings provided on their inner walls with a number of distributed supports covered with insulating material, metal clamps shrunk on the supports around the insulating material, and a hub adapted to be clamped to the shaft fitting said rings.

3. A current-collector comprising a split collar or hub adapted to be mounted on a shaft, and a split contact-ring provided with feet supported by said hub but separated therefrom by insulated metallic clamps.

4. A current-collector comprising a plurality of rings mounted upon a hub, but separated therefrom at a plurality of points by metallic clamps, barriers of insulating material between the several collector-rings, and means for clamping the parts firmly together.

5. A current-collector comprising a split hub adapted to engage a shaft, a flange at one end of the same forming an end plate for the collector, a plurality of insulated contact-rings, separating-rings of insulating material between them, an end plate, an adjustable clamping-ring concentrically supported in said plate, and adjusting-screws mounted on the plate for shifting the clamping-ring in its seat.

6. A current-collector comprising a plurality of contact-rings separated by spacers of insulating material engaging a bead or flange on the ring, and a flanged tread or contact surface above the plane of the spacers, for the purpose described.

In witness whereof I have hereunto set my hand this 27th day of March, 1900.

HENRY G. REIST.

Witnesses:

BENJAMIN B. HULL,
JOSEPH GROSS.