H. H. RALSTON.

COMMUTATOR CONSTRUCTION.

APPLICATION FILED MAY 31, 1907.

911,758.

Patented Feb. 9, 1909.

Fig. 1

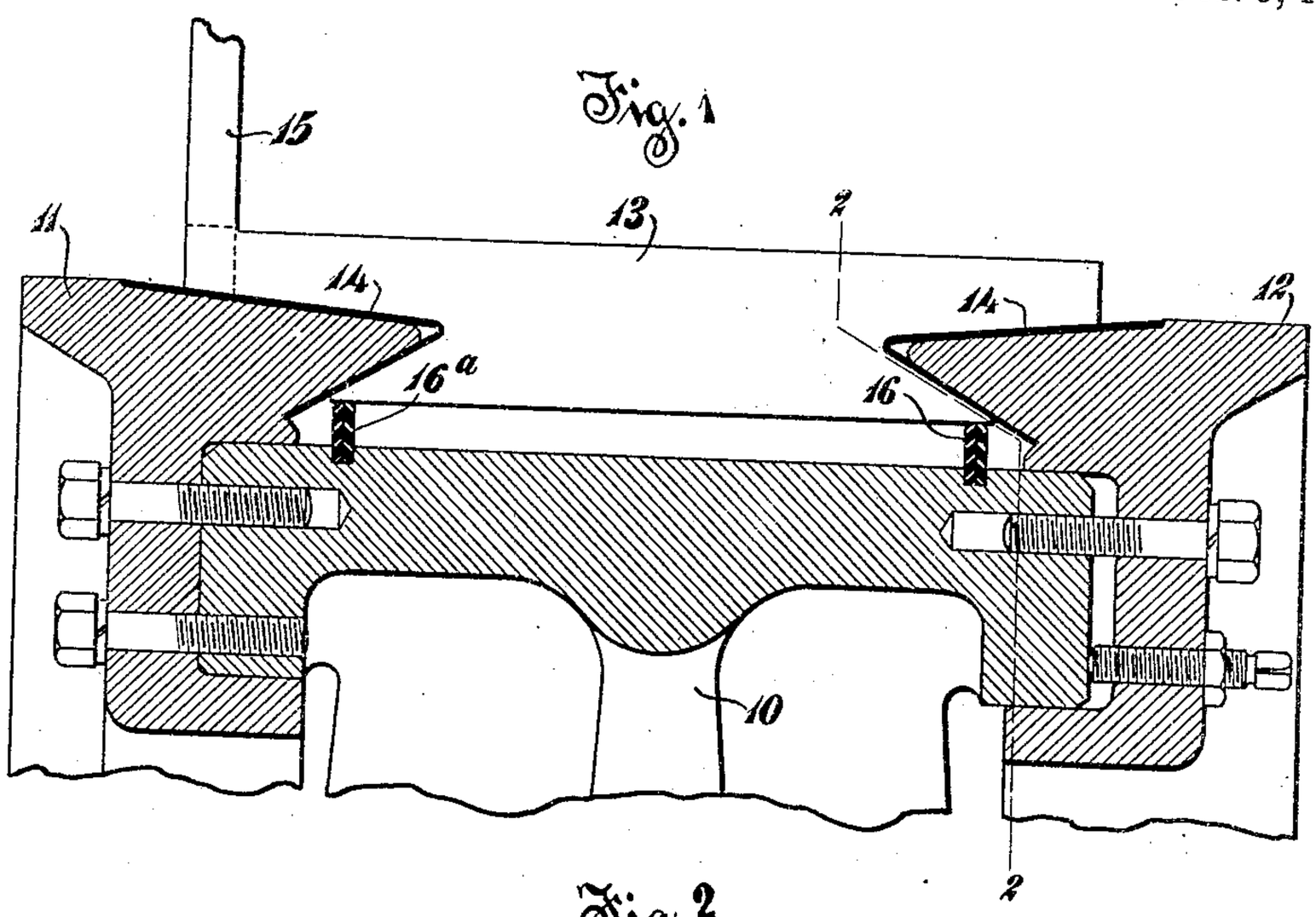
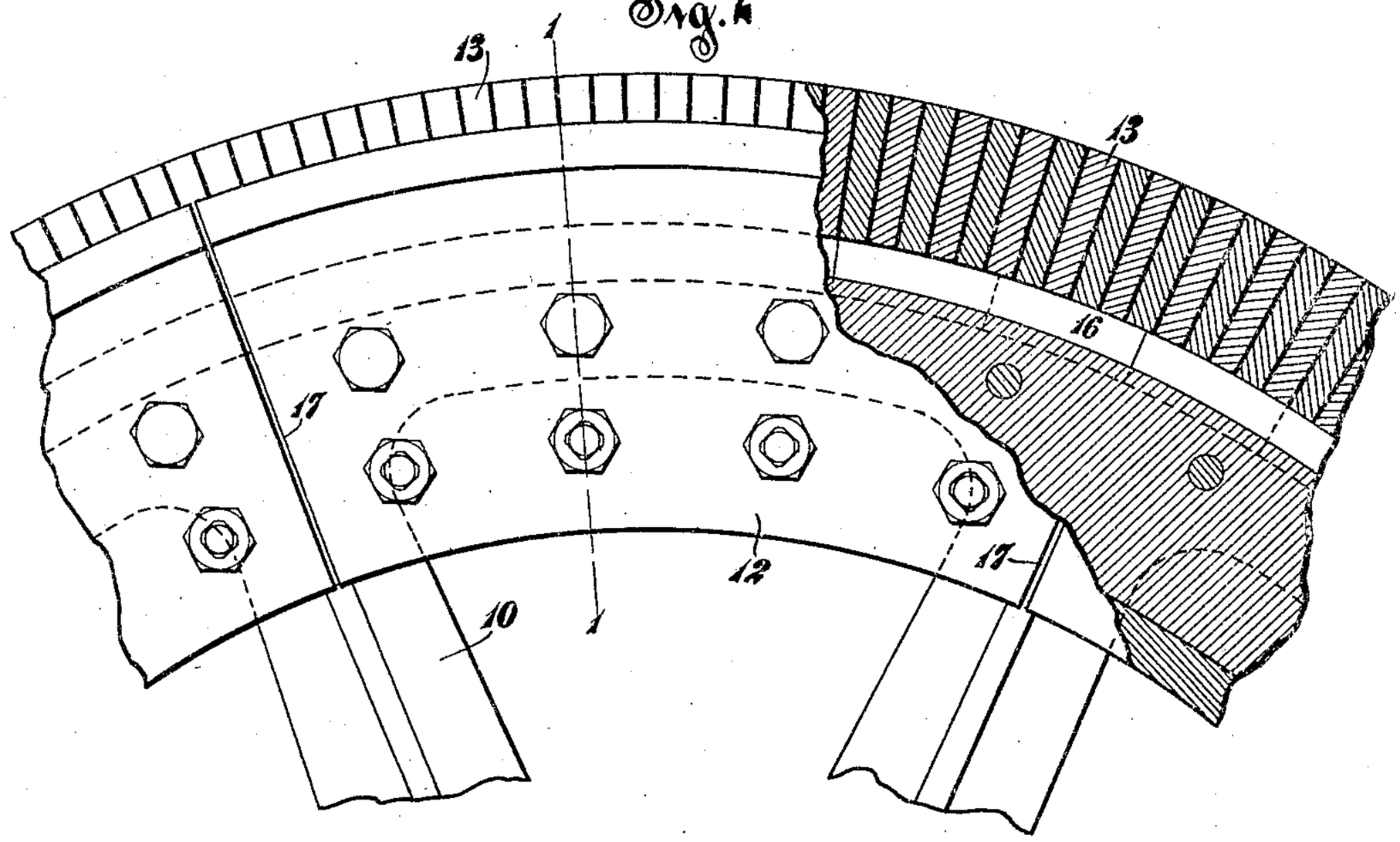


Fig. 2



Witnesses

Oliver L. Furman

Fred J. Kinsey

Inventor

Howard H. Ralston

By

Chas. E. Ford

Attorney

UNITED STATES PATENT OFFICE.

HOWARD H. RALSTON, OF NORWOOD, OHIO, ASSIGNOR TO ALLIS-CHALMERS COMPANY, A CORPORATION OF NEW JERSEY, AND THE BULLOCK ELECTRIC MANUFACTURING COMPANY, A CORPORATION OF OHIO.

COMMUTATOR CONSTRUCTION.

No. 911,758. Specification of Letters Patent. Patented Feb. 9, 1909.

Application filed May 31, 1907. Serial No. 376,478.

To all whom it may concern:

Be it known that I, HOWARD H. RALSTON, citizen of the United States, residing at Norwood, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Commutator Construction, of which the following is a full, clear, and exact specification.

My invention relates to the construction of commutators for dynamo-electric machines.

The bars or segments of commutators are generally notched at their ends so that they can be readily clamped in place by rings which fit into said notches and draw the bars tightly together. These clamping rings, especially in the larger machines, are often made of a single casting sawed into a number of parts for convenience in assembling and shipping. When again put together the saw kerfs between the adjacent parts of the ring permit dust and small metallic particles to sift through and finally lodge beneath the commutator bars. In the course of time this material which has sifted in is liable to short circuit adjacent commutator bars. Considerable trouble has also been experienced in assembling and repairing commutators because of the absence of any supporting means for the commutator bars when the clamping rings are not in place.

It is the object of my present invention to provide means whereby the difficulties above set forth may be overcome.

With this object in view, my invention consists in certain novel features of construction which will appear from the description and drawings and will be particularly pointed out in the claims.

Figure 1 is a section through a commutator embodying my invention taken on the line 1—1 of Fig. 2; and Fig. 2 is an end elevation partly in section on the line 2—2 of the commutator shown in Fig. 1.

The commutator spider 10 may be made either in one or in several parts as desired. Clamping rings 11 and 12 are fastened to the flanges of the spider 10 and are so shaped that they fit into the notches of the commutator bars or segments 13, insulating cones 14 being placed between said rings and said commutator bars. Commutator necks 15 connect the commutator bars with the armature winding. The ring 11, at the armature end of the commutator, may be made of one or more pieces, preferably the latter so that the commutator may readily be shipped in parts. The ring 12 at the opposite end of the commutator is preferably made of a larger number of segments. The segments of both rings are generally formed by sawing radially a complete ring.

Rings 16 and 16ª fit tightly in slots in the outer periphery of spider 10. These rings are of insulating material and are hard enough to support the weight of the commutator bars while soft enough to give under the pressure with which the clamping rings are forced into place. They are each preferably made of two thicknesses of material built up in sections with the joint broken as shown in Fig. 2, though if desired but one thickness of material may be used.

In assembling or repairing the commutator any section thereof may be brought uppermost so that the bars 13 of said section will rest upon the rings 16 and 16ª. The section of the clamping ring 12 corresponding to that section of the commutator may then be fastened in place or removed, the commutator bars remaining in place by their own weight.

In clamping the bars 13 in place the rings 16 and 16ª are crushed slightly. If it is found necessary, the mica strips between the adjacent commutator bars may be cut away slightly just over the rings 16 and 16ª so that the latter will not force them outward. Furthermore the rings 16 and 16ª prevent any dust or other material which may sift through the saw kerfs 17 between the segments of the rings 11 and 12 from getting in under the bars 13, thus lessening the danger of short-circuit. If the ring 11 is made of one piece, so that no saw kerfs therein admit foreign matter, the ring 16ª may be omitted if desired, as during assembling or repairing sufficient support for the commutator segments 13 may be obtained from the ring 11 and the ring 16.

Although the preferred form of my invention is described above, I aim in my claims to cover all of the many modifications which may be made in the particular arrangement shown without departing from the spirit and scope of my invention.

What I claim as new is:—

1. In a commutator for dynamo-electric machines, the combination of a spider, a

plurality of commutator segments, means for clamping said segments in position relative to said spider, and a ring of insulating material in the space between said spider and said segments but occupying less than all of said space.

2. In a commutator for dynamo-electric machines, the combination of a spider, a plurality of commutator segments, a ring for clamping said segments in position relative to said spider, said ring consisting of a plurality of parts, and a comparatively narrow ring of insulating material between said commutating segments and said spider and adjacent to said clamping ring.

3. In a commutator, the combination of a plurality of commutator segments, a supporting spider therefor, two clamping rings for clamping said segments in position relative to said spider, at least one of said rings consisting of a plurality of sections, and a comparatively narrow ring of insulating material bridging the space between said commutator segments and said spider adjacent to one of said clamping rings.

4. In a commutator, the combination of a supporting frame, a plurality of commutator segments, a ring for clamping said segments in position relative to said frame, said ring consisting of a plurality of parts, and a ring of insulating material bridging the space between said frame and said segments at or near the ends of the commutator segments adjacent to said clamping ring, the axial dimension of said ring of insulating material being less than that of such space.

5. In a commutator, the combination of a supporting frame, a plurality of commutator segments, a ring for clamping said segments in position relative to said frame, said ring consisting of a plurality of parts, and a ring of insulating material bridging the space between said frame and said segments at or near the ends of the commutator segments adjacent to said clamping ring, said ring of insulating material consisting of two thicknesses of segments with the joints broken.

6. In a commutator for dynamo-electric machines, the combination of a supporting frame, a plurality of commutator segments, means for clamping said segments in proper position relative to said frame, and two insulating rings spaced from each other and spacing said frame and segments apart.

7. In a commutator, the combination of a supporting frame provided with a groove, a plurality of commutator segments, means for clamping said segments in proper position relative to said frame, and an insulating ring set in the groove in said frame and spacing it from said segments.

8. In a commutator, the combination of a supporting frame provided with a groove, a plurality of commutator segments, means for clamping said segments in proper position relative to said frame, and an insulating ring set in the groove in said frame and furnishing a support for the ends of the commutator segments.

In testimony whereof I affix my signature, in the presence of two witnesses.

HOWARD H. RALSTON.

Witnesses:
GEO. B. SCHLEY,
FRED J. KINSEY.