

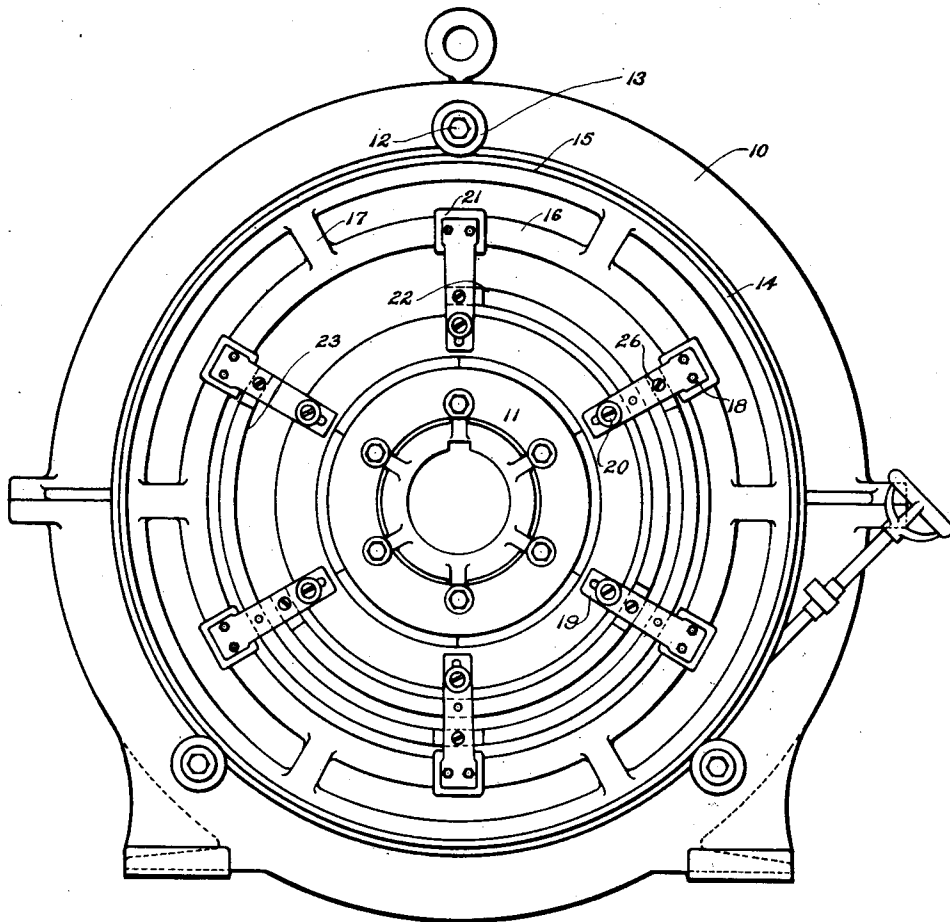
998,392.

H. H. RALSTON.
DYNAMO ELECTRIC MACHINE.
APPLICATION FILED OCT. 6, 1909.

Patented July 18, 1911.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses
John L. Johnson
Chas. L. Byron

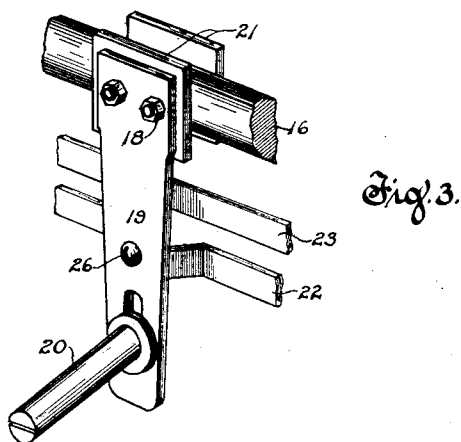
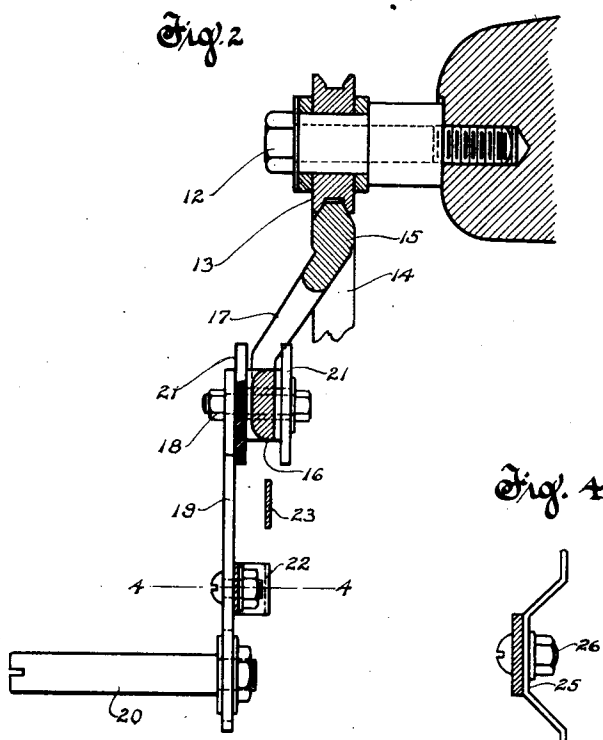
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2 SHEETS—SHEET 2.



Witnesses

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UNITED STATES PATENT OFFICE.

HOWARD H. RALSTON, OF NORWOOD, OHIO, ASSIGNOR TO ALLIS-CHALMERS COMPANY,
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DYNAMO-ELECTRIC MACHINE.

998,392.

Specification of Letters Patent.

Patented July 18, 1911.

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To all whom it may concern:

Be it known that I, HOWARD H. RALSTON, a 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 Dynamo-Electric Machines, of which the following is a full, clear, and exact specification.

This invention relates to improvements in dynamo-electric machines and particularly in the brush riggings of direct current machines.

One of the objects of the invention is the provision of a brush rigging which is more simple in construction, more compact, and consists of a less number of parts than those employed at the present time.

A further object is the provision of a brush rigging which is inexpensive to manufacture although very efficient, and which is rigid and free from serious vibration.

The invention relates more particularly to the arrangement and construction of the brackets or arms which support the brush rods and brushes and to the arrangement and construction of the cross connectors for the brackets supporting the positive and negative brushes respectively.

The invention may be briefly summarized as consisting in certain novel details of construction and combinations and arrangements of parts which will be described in the specification and set forth in the appended claims.

For an understanding of my invention reference is had to the accompanying sheets of drawings wherein—

Figure 1 is an end elevation of a dynamo-electric machine equipped with my invention. Fig. 2 is an enlarged sectional view of a portion of the brush rigging and of the field frame. Fig. 3 is a perspective view of a portion of the brush rigging. Fig. 4 is a detail sectional view, the section being taken substantially along the line 4—4 of Fig. 2 through one of the rod-supporting brackets and through a portion of the corresponding cross connector.

Referring now to the figures of the drawings wherein I have shown the preferred embodiment of my invention, 10 and 11 represent respectively the field frame and commutator of the machine, these parts being of the usual construction and being shown

somewhat conventionally. Extending axially from one end of the field frame are a number of studs 12 carrying rollers 13 which support the brush yoke 14 forming part of the brush rigging. This yoke is provided, as in the usual construction, with an outer ring 15 which engages the rollers 13, an inner ring 16, and connecting arms 17. As shown most clearly in Fig. 2 the inner ring 16 of the brush yoke is provided with inner and outer flat faces, and secured by bolts 18 to the ring 16 are a number of inwardly extending radial brackets or arms 19 carrying at their inner ends brush rods 20 which are adjacent the face of the commutator and on which the brush holders (not shown) are adapted to be mounted in the usual manner. The brackets 19 are clamped to the outer face of the ring 16 of the brush yoke but are insulated from the ring 16 by insulating barriers or washers 21. These brackets, instead of being formed of cast metal, as in the usual constructions, are in the form of comparatively thin flat plates preferably punched from hard rolled sheet brass. This construction is employed to enhance the simplicity and compactness of the brush rigging and to permit cross connectors to be readily attached directly to the brackets as will appear presently.

The two sets of alternately arranged brackets supporting the positive and negative brushes are connected together respectively by cross connectors 22 and 23 which are formed from edgewise bent, arc-shaped metal strips and are arranged in the same plane, concentrically with respect to one another adjacent and parallel to the brackets and inwardly between the latter and the field frame and armature. Instead of employing separate metal strips for connecting the cross connectors to the proper brackets, as in common constructions, I provide in each strip offset portions which extend toward alternate brackets and are provided with outer flat portions 25 which are secured to the inner faces of the brackets by means of bolts 26, it being understood of course that the connector 22 is secured in this manner to brackets supporting brushes of one polarity and the connector 23 is secured to the remaining brackets or to the brackets supporting the brushes of the opposite polarity, and that the offset portions

of one strip occur intermediate the offset portions of the other strip. It will be seen that this brush rigging is more compact both laterally and radially with respect to the commutator than in those constructions having cast metal brackets either in the form of forks or bulky inwardly projecting arms, and having cross connectors arranged outside of the brush yoke and connected to the brackets by inwardly extending strips. Furthermore the construction of the brush rigging is such that it can be easily and cheaply manufactured, and because of the particular construction and the compact arrangement, there will be very little vibration in the parts of the rigging, particularly as the cross connectors themselves brace the brackets and brush rods. Also by reason of the fact that the cross connectors are arranged in the same plane one within the other there is no danger of vibration causing contact between the cross connectors or of an arc communicating between the two, and there is no necessity, therefore, for spacing members between the cross connectors or of the latter being wrapped with insulating tape as is frequently necessary in those constructions wherein the cross connectors are arranged side by side in parallel planes.

I do not desire to be confined to the exact details shown but aim in my claims to cover all modifications which do not involve a departure from the spirit and scope of my invention.

Having described my invention, I claim:—

1. In a dynamo-electric machine, a field frame, a brush rigging supported thereby, said rigging comprising a brush yoke and a single series of radial arms each in the form of a plane flat plate secured at its outer end to the yoke and at its inner end having a brush supporting rod.

2. In a dynamo-electric machine, a field frame, a brush rigging supported thereby, said rigging comprising a yoke, brackets extending inwardly from said yoke, brush supporting means at the inner ends of the brackets, and cross connectors arranged between the brackets and the field frame, and each having portions secured directly to a set of brackets arranged alternately with

respect to the brackets to which the other cross connector is attached.

3. In a dynamo-electric machine, a field frame, a brush rigging supported thereby and comprising a brush yoke, brackets extending inwardly from said yoke, brush supporting means at the inner ends of said brackets, and a pair of cross connectors for said brackets, said cross connectors being arranged concentrically with respect to each other inwardly of the brackets and each having offset portions secured directly to a set of brackets arranged alternately with respect to the brackets to which the offset portions of the other cross connector are secured.

4. In a dynamo-electric machine, a field frame, a brush rigging supported thereby, said rigging comprising a brush yoke, a plurality of brackets in the form of flat plates extending radially inward from said yoke and secured thereto, brush supporting means at the inner ends of said brackets, a pair of strap cross connectors arranged concentrically with respect to each other in the same plane inwardly of the brackets, and each having portions offset outwardly, the offset portions of each cross connector being secured to the inner flat faces of one set of brackets which are arranged alternately with respect to the brackets to which the offset portions of the other cross connector are secured.

5. In a brush rigging of a dynamo-electric machine, a plurality of substantially radial flat arms, brush rods carried by said arms, means forming a common support for said arms, and a pair of cross connectors in the form of edgewise bent arc-shaped straps arranged concentrically with respect to each other adjacent and parallel to said arms, one of said cross connectors having offset portions secured to the adjacent faces of the arms for the positive brushes, and the other cross connector having offset portions secured to the corresponding faces of the arms for the negative brushes.

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

HOWARD H. RALSTON.

Witnesses:

HARRY F. THOMPSON,
LOUIS L. CLEMANS.