L. A. TIRRILL.

DYNAMO ELECTRIC MACHINE.

APPLICATION FILED NOV. 19, 1904.

917,188.

Patented Apr. 6, 1909.

2 SHEETS—SHEET 1.

Fig. 2.

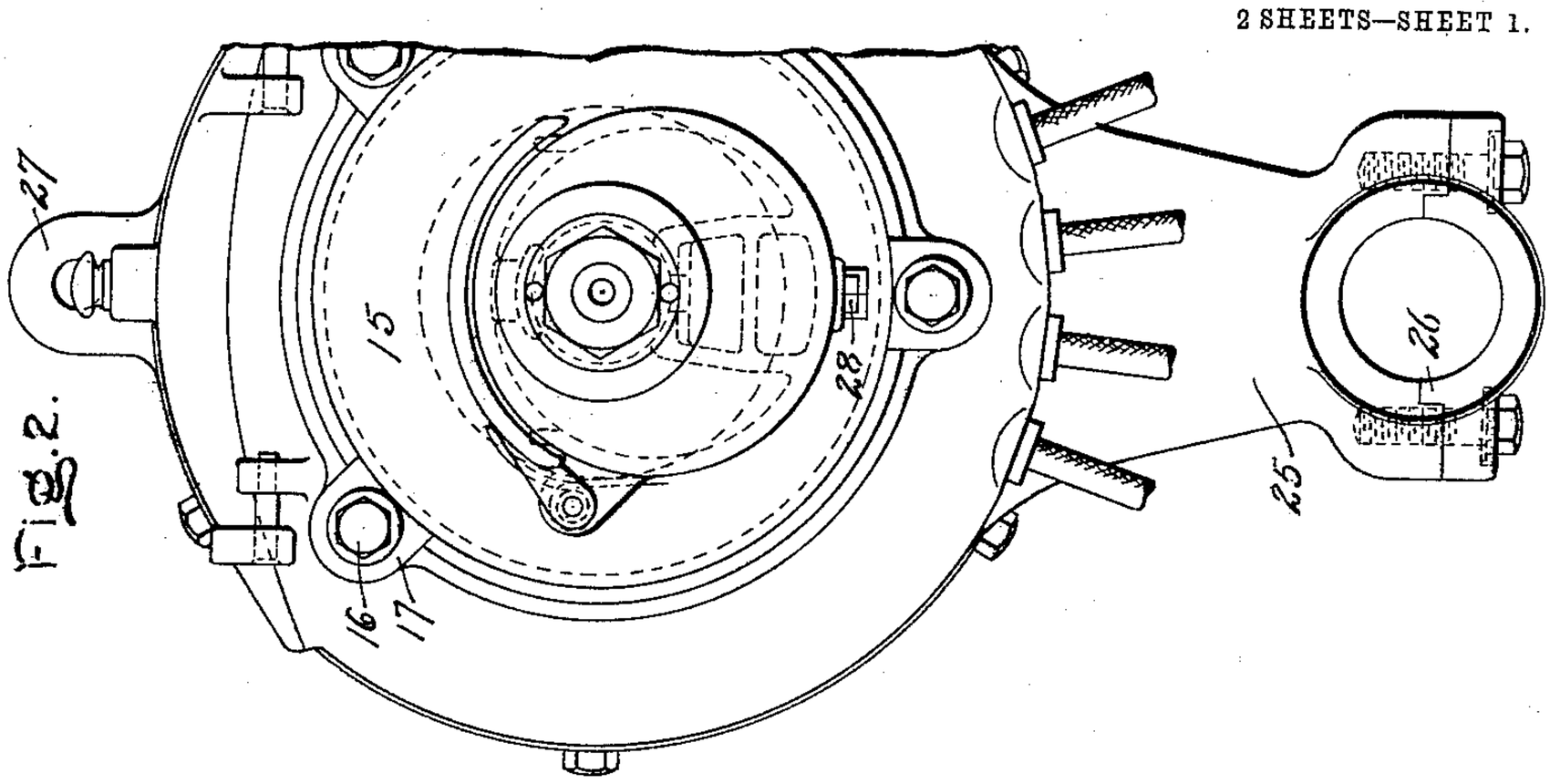
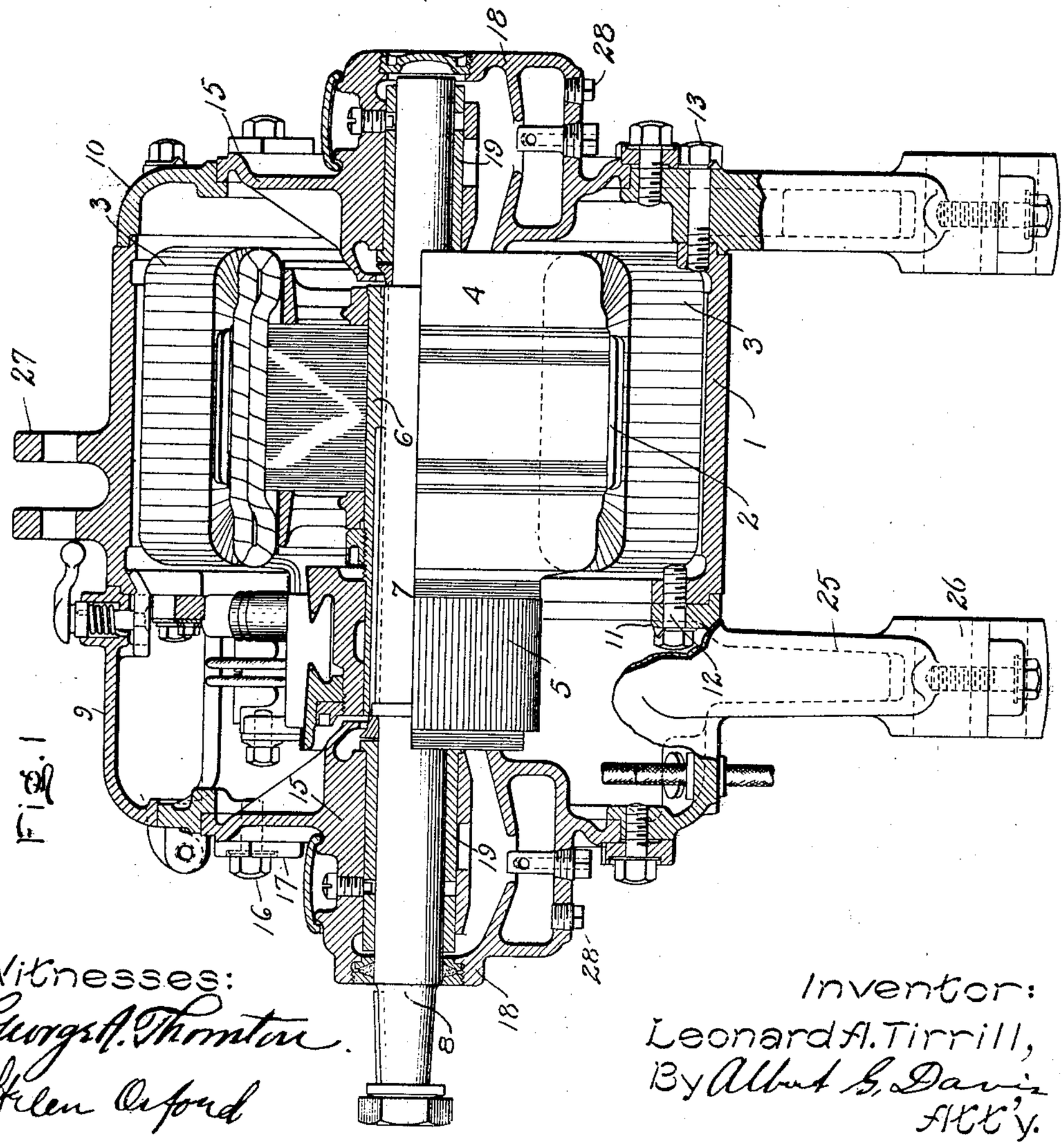


Fig. 1.



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2 SHEETS—SHEET 2.

Fig. 3.

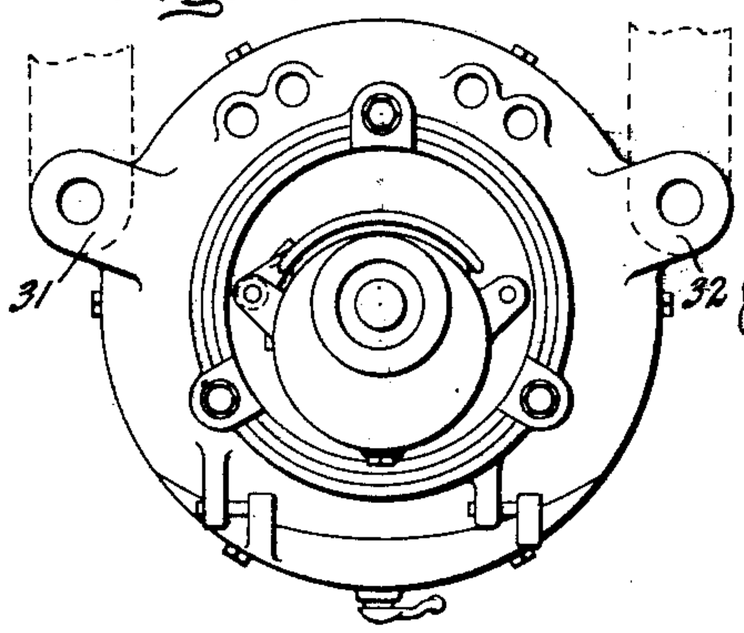


Fig. 4.

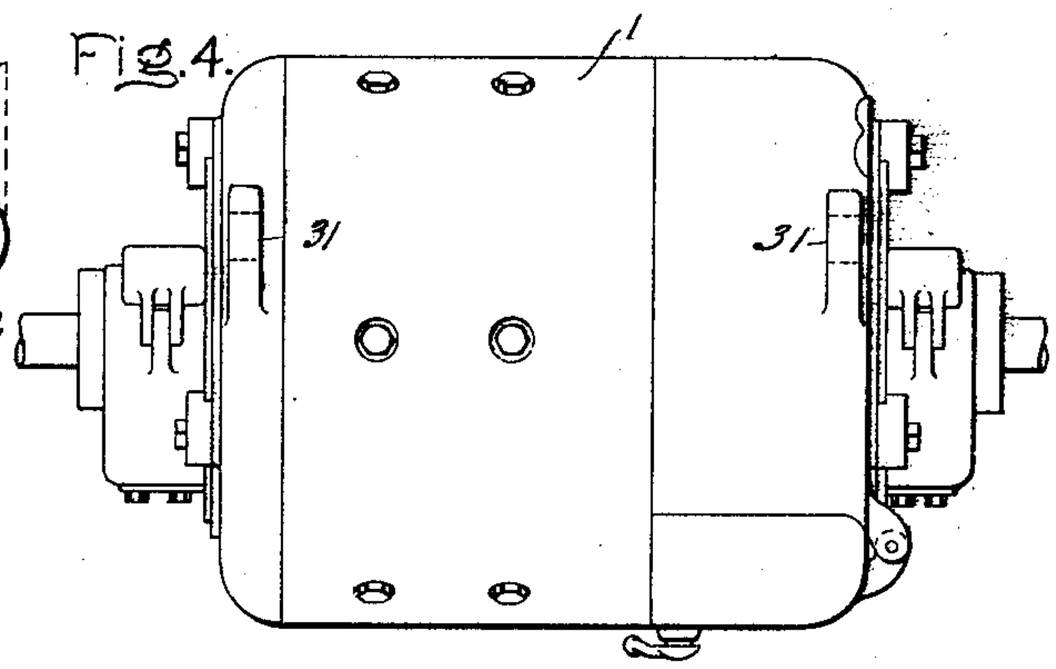


Fig. 5.

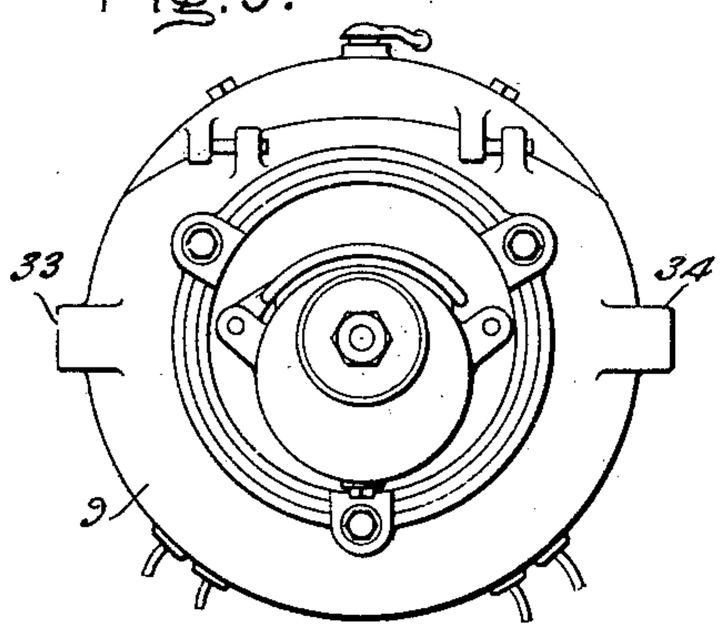


Fig. 6.

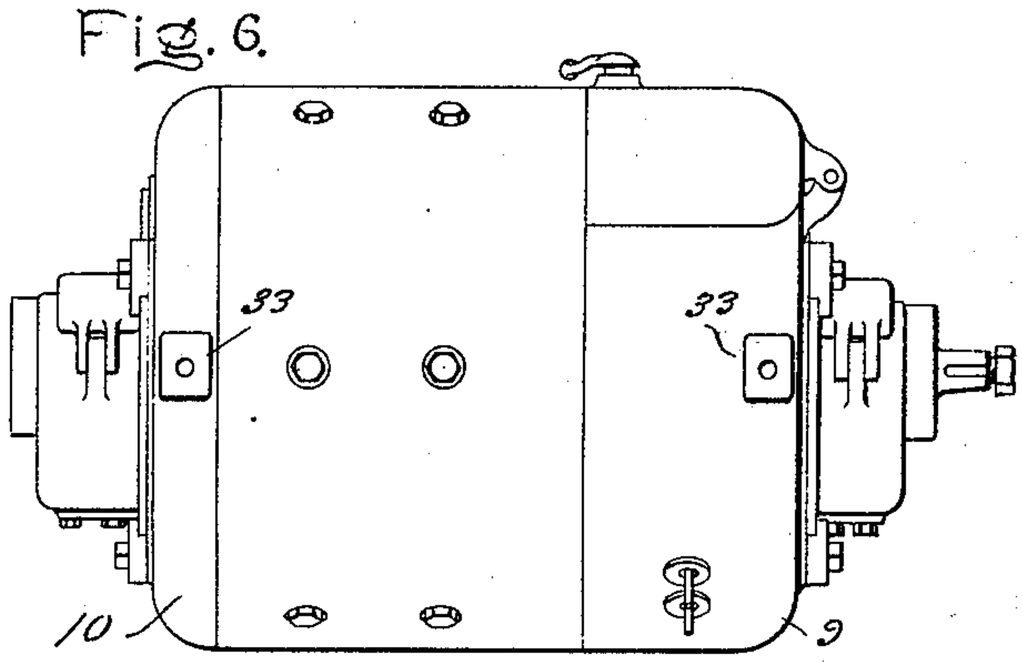


Fig. 7.

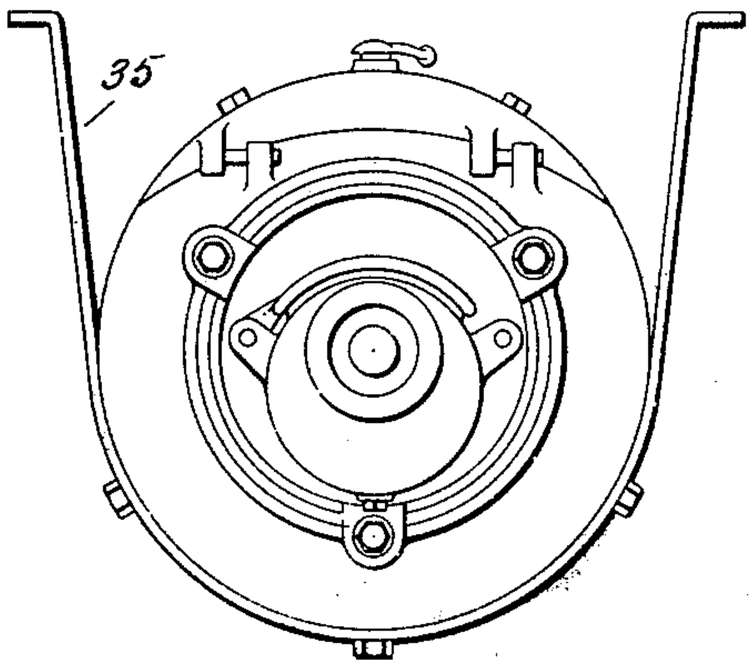
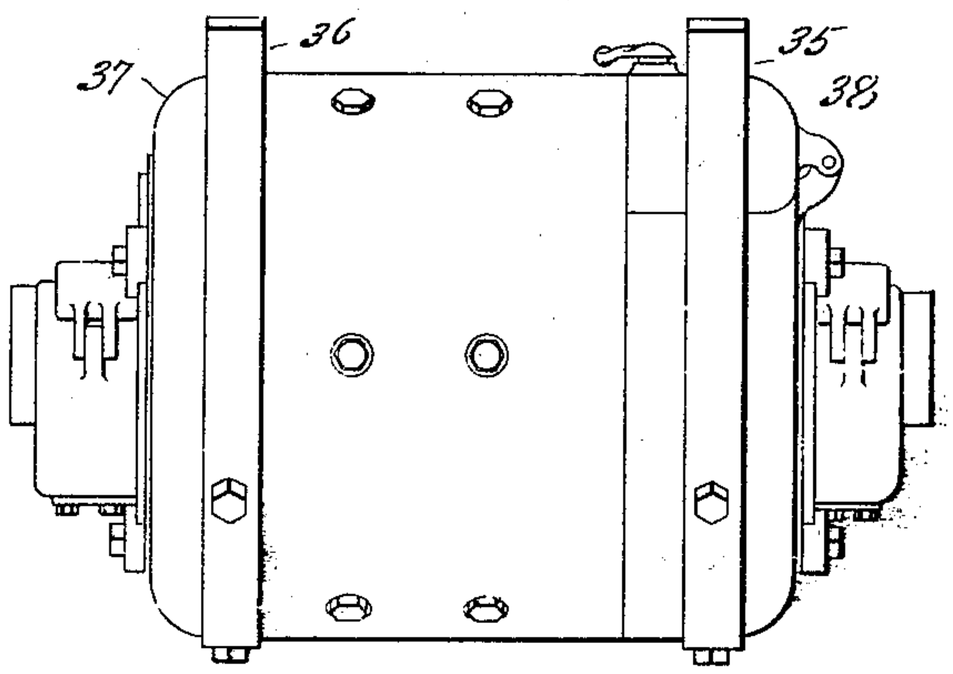


Fig. 8.



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UNITED STATES PATENT OFFICE.

LEONARD A. TIRRILL, OF LYNN, MASSACHUSETTS, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

DYNAMO-ELECTRIC MACHINE.

No. 917,188. Specification of Letters Patent. Patented April 6, 1909.

Application filed November 19, 1904. Serial No. 233,466.

To all whom it may concern:

Be it known that I, LEONARD A. TIRRILL, a citizen of the United States, residing at Lynn, county of Essex, State of Massachusetts, have invented certain new and useful Improvements in Dynamo-Electric Machines, of which the following is a specification.

At the present time there is a demand for electric automobile motors, which, while of the same general style and of the same rating, are supported from the carriages upon which they are mounted in different manners.

Heretofore each different method of support employed has ordinarily necessitated a special type of form of motor frame.

One of the objects of my present invention is the construction and arrangement of a motor in which the largest possible number of standard parts can be employed, while at the same time the peculiarities of frame construction necessary for the different methods of motor support employed can be obtained.

In carrying out my invention I secure auxiliary heads to the ends of the annular field ring. The auxiliary heads employed are provided with arms or lugs, or otherwise shaped to adapt them to be secured to the supporting means. The auxiliary heads have secured to them heads or end members in which the bearings for the armature shaft of the motor are mounted.

With this construction the only special parts ordinarily needed in order to supply a motor adapted to be supported in any particular manner are the auxiliary head plates. All the other parts of the motor can be standard parts.

My invention also comprises certain novel features of construction and arrangement.

The various features of novelty which characterize my invention are pointed out with particularity in the claims annexed to and forming a part of this specification. For a better understanding of my invention, however, reference may be had to the accompanying drawings and description in which I have illustrated several motors equipped with my invention.

Of the drawings, Figure 1 is an elevation with parts broken away and in section showing one form of electric automobile motor equipped with my invention; Fig. 2 is a partial end view of the motor shown in Fig. 1; Fig. 3 is an end elevation and Fig. 4 a side elevation of another form of automobile motor; Fig. 5 is an end elevation and Fig. 6 a side elevation of a third form of automobile motor; and Fig. 7 is an end elevation and Fig. 8 a side elevation showing still another form of motor equipped with my invention.

Referring particularly to Figs. 1 and 2 of the drawings, 1 represents the annular field ring of a four-pole automobile motor. To the interior of the ring 1 are secured four pole pieces 2 surrounded by suitable windings 3.

The armature 4 of the motor and commutator 5 are secured to a sleeve or quill 6 keyed to the armature shaft 7. The armature shaft 7 which is adapted to carry at its end 8 any suitable power-transmitting device, such as a gear, can be reversibly inserted in the quill 6 so that the power-transmitting end of the shaft may be located at either side of the armature.

Against the ends of the field ring 1, which are machined for the purpose, are secured auxiliary or intermediate head members 9 and 10. The member 9, which is shaped to inclose the commutator 5 and brush-holders of the motor, is provided with an interior radially-extending flange 11. Bolts 12 passing through this flange and tapped into the end of the field ring 1 secure the member 9 to the field ring 1. Bolts 13 passing through the head member 10 and tapped into the end of the field ring 1 secure the member 10 in place.

Rabbeted circular openings are formed centrally in the heads or end members 9 and 10. Circular end members 15 substantially identical in construction fit in these openings being secured therein by clamping bolts 16 and plates 17. As is clearly shown the plates 17 bear against the outer surfaces of the end members 15 which are thus angularly adjustable with reference to the intermediate or auxiliary head members to which they are secured. The end members 15 are provided with suitable boxes 18 in which are mounted bearing sleeves 19. The armature shaft 7 of the motor is journaled in the bearing sleeves 19.

In the construction shown in Figs. 1 and 2 each of the head members 9 and 10 is shown as provided with an integral lateral projection or arm 25. Bearings 26 carried at the outer ends of the arms 25, which extend at one side

of the motor proper are adapted to encircle a suitable support such as the axle of the automobile upon which the motor is mounted. In this construction perforated lugs 27 carried by the field ring 1 form means through which the motor is supported from the other side. As ordinarily mounted, the lugs 27 and arms 25 are located in the same horizontal plane. It will be readily understood that when this is the case the heads or end members are given a quarter turn from the position shown so that the waste plugs 28 are directly below the armature shaft 7.

In automobile construction a motor suspension in which the motor is suspended by means of lugs, such as the lugs 27, and by projections such as arms 25 journaled on one of the axles of the automobile is very commonly employed.

With motors such as shown in Figs. 1 and 2, the provision of motors provided with arms 25 of different lengths, shapes or dimensions, to meet the demand of different makers and for different styles, is very simple, necessitating only the making of a pair of intermediate head members 9 and 10 for each style. All the other parts of the motor may be selected from standard parts in stock.

My method of motor construction can also be employed very advantageously in connection with other modes of suspension. For instance, in the form shown in Figs. 3 and 4, the upper side of each auxiliary or intermediate head member is provided with a pair of apertured lugs 31 and 32, and the motor suspension means engages these lugs.

In the form shown in Figs. 5 and 6, the motor-supporting mechanism is secured to the ends of a pair of diametrically-opposed lugs 33 and 34 formed on each of the members 9 and 10.

In the form shown in Figs. 7 and 8, the motor is cradled in straps or supporting members 35 and 36 which are bolted to the intermediate head members as shown in 37 and 38.

With all the various forms of motors shown and illustrated the only special parts required are the intermediate head members, though preferably with the form shown in Figs. 3 to 7 the lugs 27 shown in Figs. 1 and 2 are left off. This, however, is a very simple matter.

As is well known to all those skilled in the art, the annular field ring 1 may be cast with or without lugs from the same pattern.

As before stated, the bearing members 15 are substantially identical in construction. Preferably, however, the bearing member adjacent the power-transmitting end of the armature shaft is provided with a somewhat larger bearing surface proper than the other bearing member. When it is desired to have the power-transmitting end of the armature shaft at the opposite side of the armature from that shown in Fig. 1 the armature shaft is reversed with respect to the quill 6 and the bearing members are interchanged.

It will be obvious to all those skilled in the art that my invention may be employed with many different means of suspension from those shown, and that many variations may be made in the form and application of my invention without departing from its spirit; and I do not intend the claims herein made to be limited to the construction shown more than is made necessary by the state of the art.

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

1. In combination, an electric motor, comprising a rigid, self-sustaining field ring, intermediate head members secured to the ends of the field ring, heads secured to the intermediate members, an internal rotating member formed with an axial opening to receive a shaft, a shaft adapted to be reversibly secured in said opening with its power transmitting end at either side of the rotating member, bearings for said armature shaft carried by the heads, and supporting devices engaging the intermediate members, whereby the motor may be made of standard parts with the exception of the intermediate members.

2. In an electric motor, a rigid self-sustaining field ring, an intermediate head member secured to one end of said field ring, a head secured to the intermediate member, an internal rotating member formed with an axial opening to receive a shaft, a shaft adapted to be reversibly secured in said opening with its power transmitting end at either side of the rotating member, a bearing for said armature shaft carried by said head, and a supporting device for the motor engaging the intermediate member, whereby the motor may be made of standard parts with the exception of the intermediate member.

3. In combination, an electric motor, comprising an external stationary member, an internal rotating member formed with an axial opening to receive a shaft, a shaft adapted to be reversibly secured in said opening with its power-transmitting end at either side of the rotating member, intermediate members secured to the ends of the stationary member, and bearing members in which the shaft is journaled adapted to be interchangeably secured in said intermediate members.

4. In an electric motor, a field ring, heads or members secured to the ends thereof, a quill or sleeve, an armature and a commutator carried thereby, a shaft adapted to be reversibly inserted in said quill with its power transmitting end at either side of the armature, and bearings for said shaft adapted to be interchangeably secured in said heads or members.

5. In combination, an electric motor, com-

prising an external stationary member, an internal rotating member formed with an axial opening to receive a shaft, a shaft adapted to be reversibly secured in said opening with its power-transmitting end at either side of the rotating member, intermediate members secured to the ends of the stationary member, bearing members in which the shaft is journaled adapted to be interchangeably secured in said intermediate members, and supporting devices engaging the intermediate members.

In witness whereof, I have hereunto set my hand this sixteenth day of November, 1904.

LEONARD A. TIRRILL

Witnesses:
JOHN A. MCMANUS, Jr.,
DUGALD MCK. MCKILLOP.