No. 677,533. Patented July 2, 1901.

C. DE W. ANDERSON.

CASING FOR DYNAMO ELECTRIC MACHINES.

(Application filed Oct. 14, 1899.

(No Model.)

4 Sheets—Sheet 1.

Fig. 1.

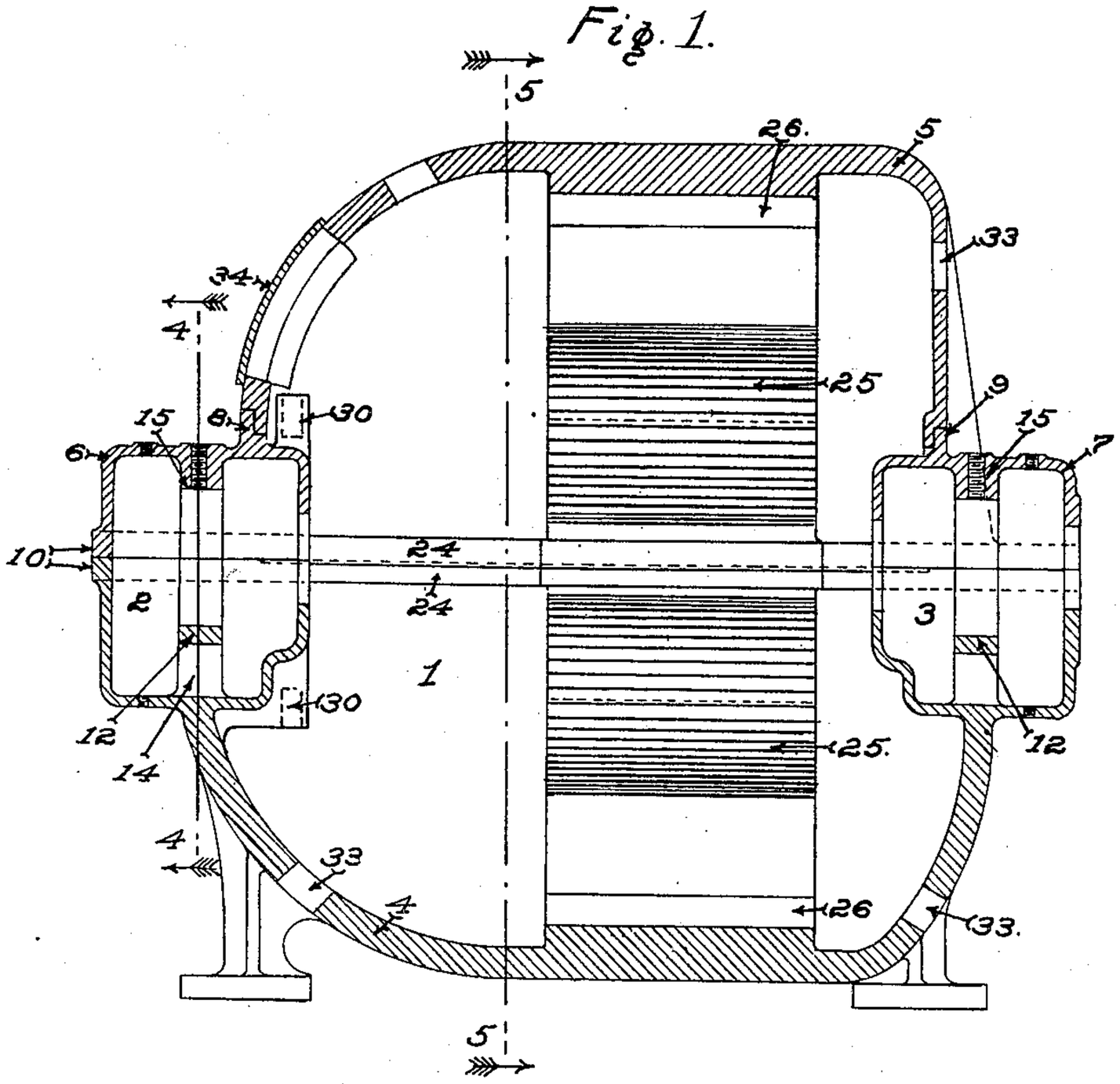
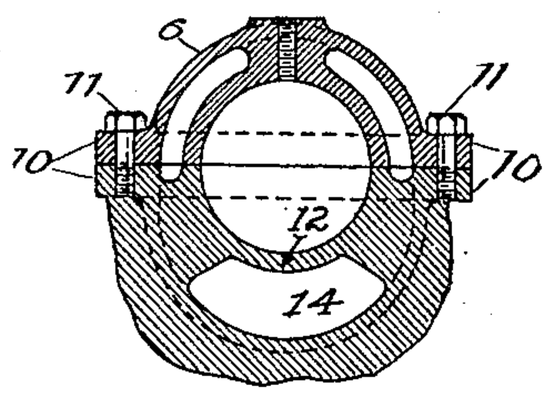


Fig. 2.



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(No Model.) 4 Sheets—Sheet 2.

Fig. 3.

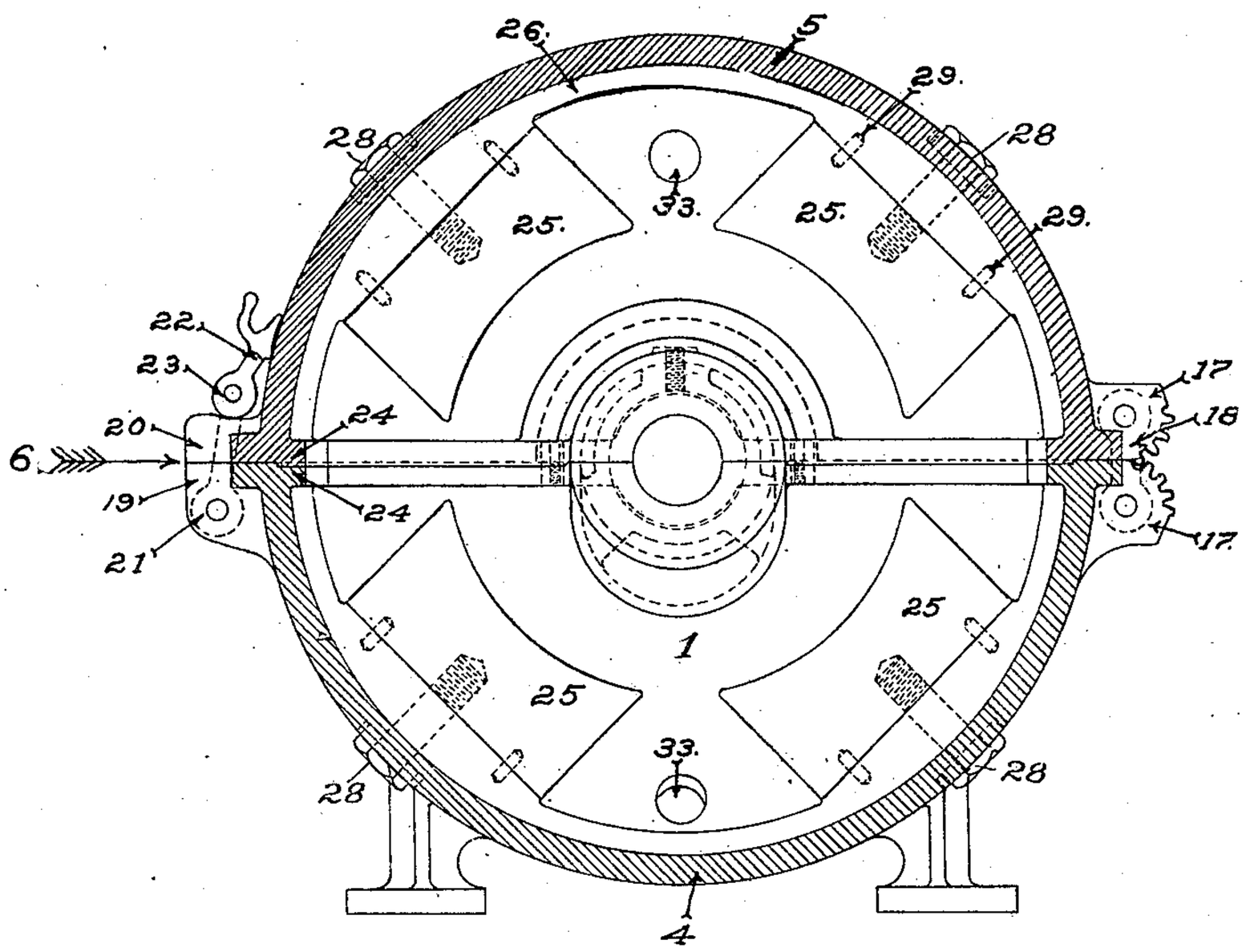
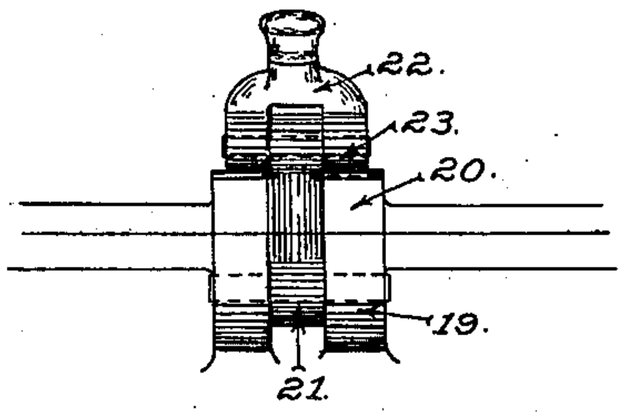


Fig. 4.



Elevation at 6

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(No Model.) (Application filed Oct. 14, 1899.

4 Sheets—Sheet 3.

Fig. 5.

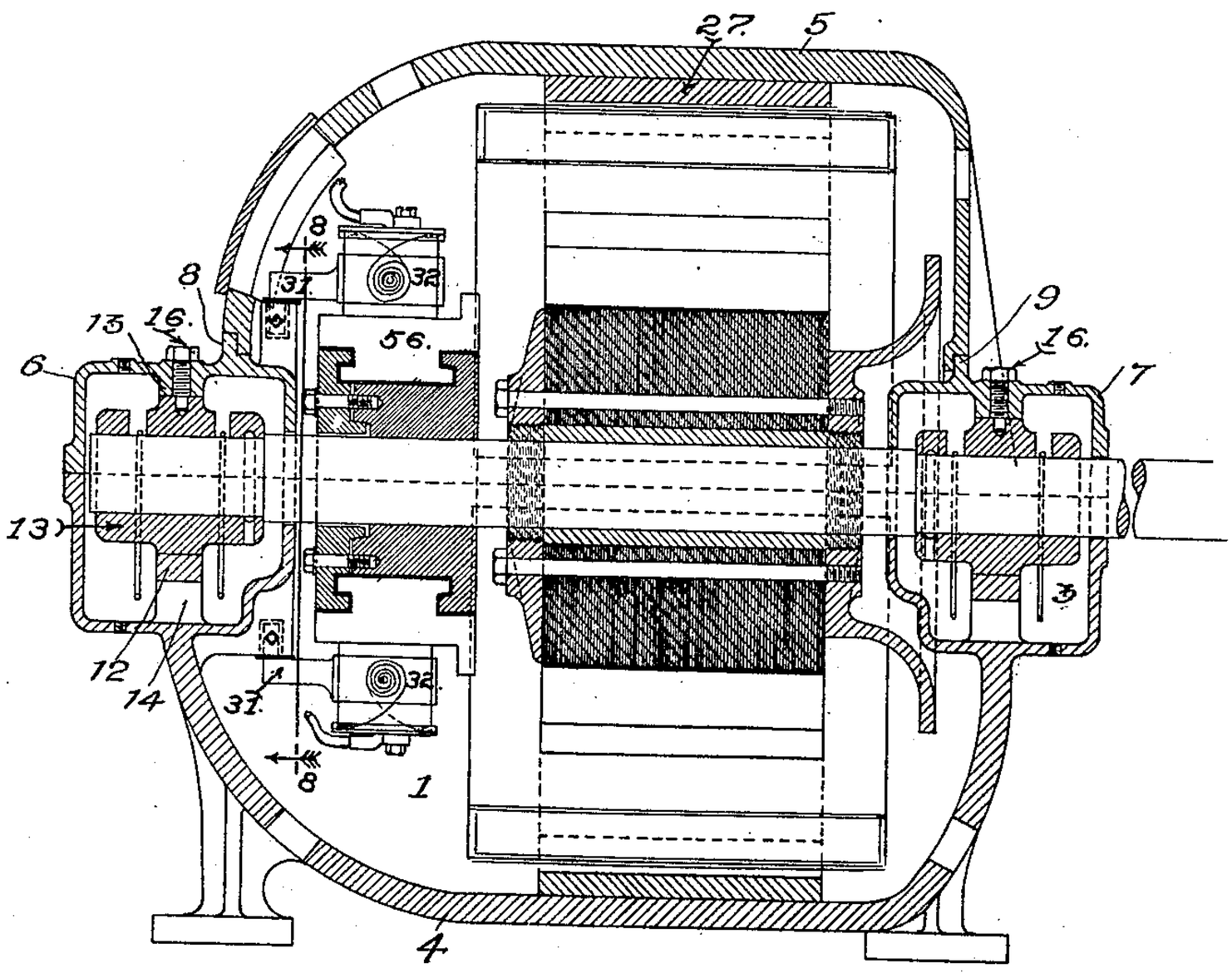
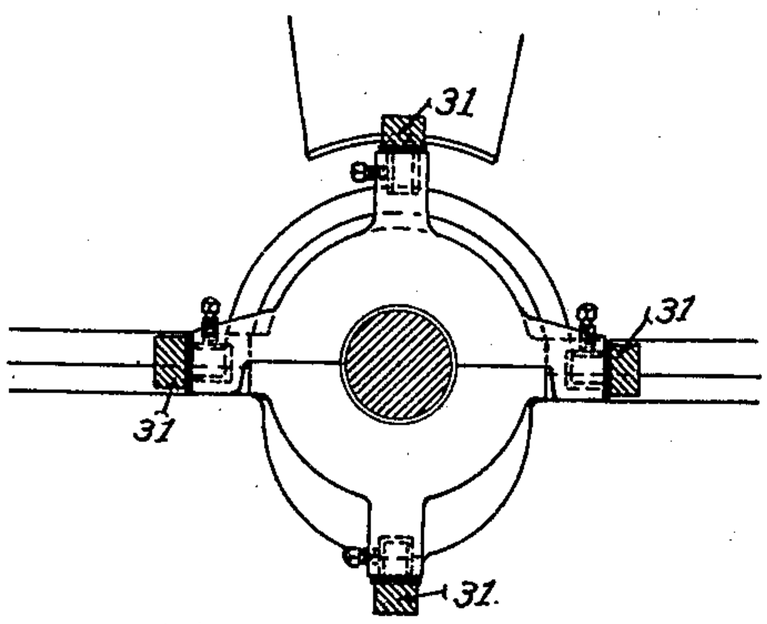


Fig. 6.



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CASING FOR DYNAMO ELECTRIC MACHINES.

(No Model.) (Application filed Oct. 14, 1899.) 4 Sheets—Sheet 4.

Fig. 7.

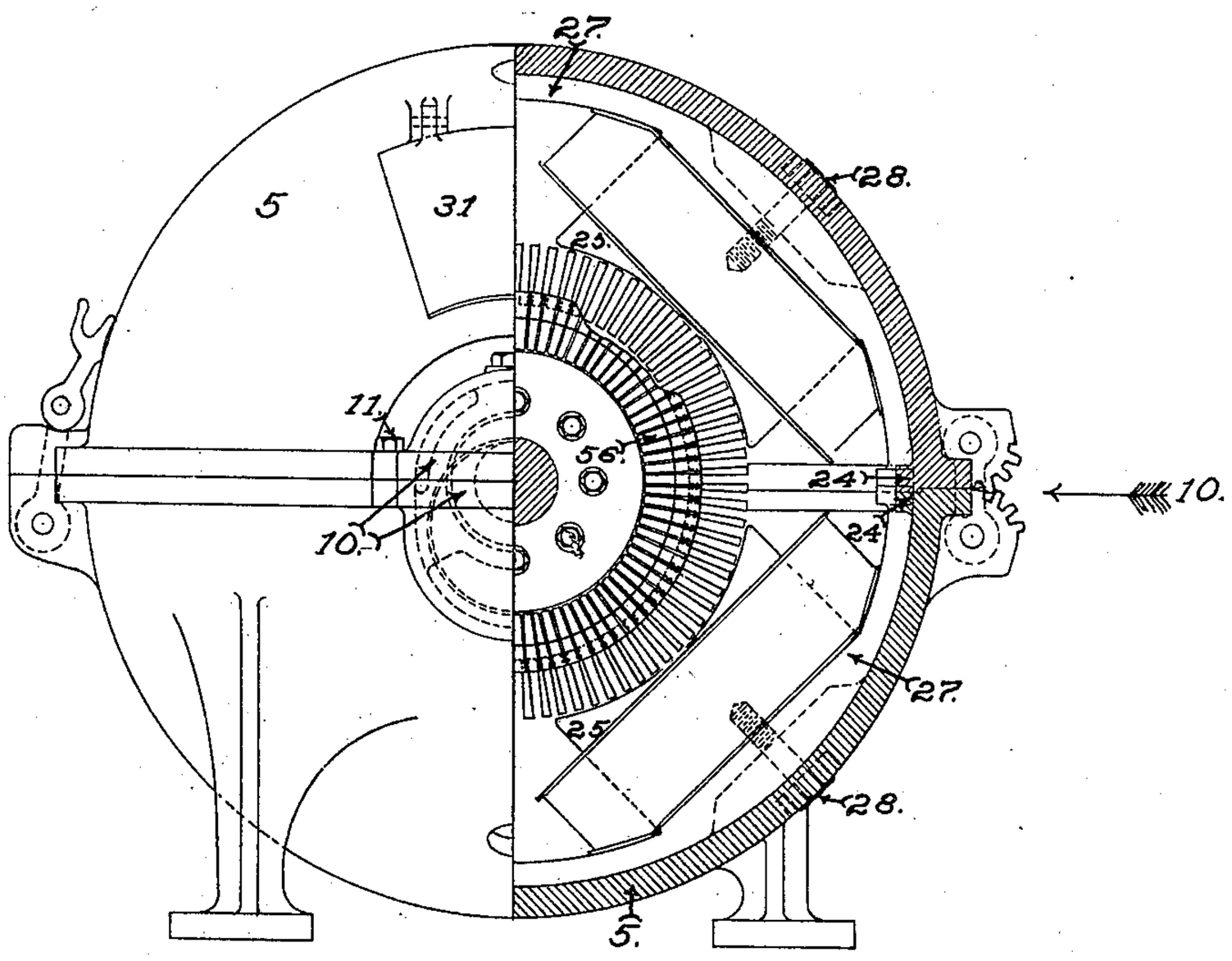
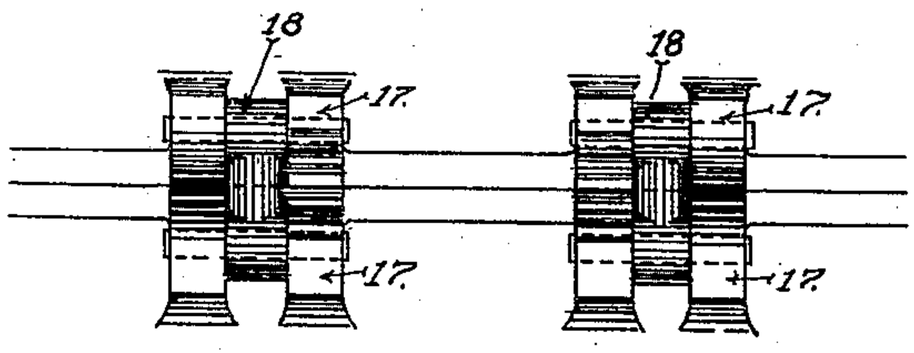


Fig. 8.



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CHARLES DE WITT ANDERSON, OF CHICAGO, ILLINOIS.

CASING FOR DYNAMO-ELECTRIC MACHINES.

SPECIFICATION forming part of Letters Patent No. 677,533, dated July 2, 1901.

Application filed October 14, 1899. Serial No. 733,592. (No model.)

To all whom it may concern:

Be it known that I, CHARLES DE WITT ANDERSON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Casings for Dynamo-Electric Machines, of which the following is a specification.

For the purpose of illustration I have shown the several features of the invention as being embodied in a motor; but it will be understood that they are equally adapted for embodiment in a generator, and I therefore desire to have it understood that in this specification the expression of one of these two types of machines is to be taken as including the other in all cases where the construction is manifestly adapted for use in either.

The invention consists in the features of novelty that are hereinafter fully described with reference to the accompanying drawings, which are made a part of this specification, and in which—

Figure 1 is a vertical axial section of the casing of a dynamo-electric machine constructed in accordance with the invention. Fig. 2 is a vertical transverse section of a portion thereof on the line 4 4, Fig. 1, looking in the direction of the arrow. Fig. 3 is a vertical transverse section of the casing shown in Fig. 1 on the line 5 5, Fig. 1, looking in the direction of the arrow. Fig. 4 is an elevation of a portion thereof viewed in the direction of the arrow 6, Fig. 3. The casing shown in Figs. 1 and 3 is primarily intended and well adapted for stationary machines where lightness is not of great importance, in which case the casing is preferably made of iron or steel. Fig. 5 is a vertical axial section of a dynamo-electric machine constructed in accordance with the invention. Fig. 6 is a transverse section of a portion thereof on the line 8 8, Fig. 5, looking in the direction of the arrow. Fig. 7 is a view thereof, partly in end elevation and partly in vertical transverse section, the armature-windings being omitted. Fig. 8 is an elevation of a portion thereof viewed in the direction of the arrow 10, Fig. 7. Figs. 5 and 7 show a casing which is primarily intended and well adapted for dynamo-electric machines where lightness is of importance. To this end the casing shown in these figures is made of aluminium, the magnetic circuit being completed through a two-part ring disposed within the casing. For the purposes of this application this is elected as the preferred form of the invention.

The entire casing comprises an armature-chamber 1 and two journal-bearing chambers 2 and 3, and all of these chambers are made of four longitudinal parts 4, 5, 6, and 7. Each of the chambers is of curved (substantially cylindrical) shape in transverse section, the several parts of which they are constructed being of such shape that each of them resembles a drum closed at its ends, excepting that one end of the chamber 2 and both ends of the chamber 3 have openings for the passage of the armature-shaft. The part 4 is practically semicylindrical between its ends and forms the lower half of the armature-chamber, the upper half of which is formed by the part 5, which likewise is practically semicylindrical intermediate of its ends, which latter are closed save for semicircular openings that fit around the semicircular parts 6 and 7, which form the upper halves of the bearing-chambers 2 and 3, the said parts 6 and 7 being provided with flanges 8 and 9, respectively, which occupy corresponding rabbets in the ends of the part 5. The lower halves of the bearing-chambers 2 and 3 are integral with the part 4 and project both inward and outward from the ends of said part 4. The meeting margins of the upper and lower halves of the bearing-chambers 2 and 3 are provided with flanges 10, through which pass bolts 11, whereby the upper halves of said chambers are secured to the lower halves. By making the several chambers of the described curved (practically cylindrical) shape in cross-section the maximum strength of the metal is made available, and with respect to the lower halves of the bearing-chambers 2 and 3 they are reinforced and strengthened by the intersection of the ends of the part 4 with them at points intermediate of their ends. They are still further reinforced and strengthened by pillow-blocks 12, which are integral with them and which are disposed opposite the intersec-

tions of the ends of the part 4. These pillow-blocks take the form of flanges having circular seats for the bearings 13 and are provided with openings 14 for the free circulation of oil. The upper halves 6 and 7 of the bearing-chambers have similar but shorter flanges which receive the upper halves of the bearings, the said upper halves 6 and 7 being provided, through the flanges 15, with threaded openings for receiving bolts 16, which engage the bearings and prevent them from rotating with the armature-shaft.

At one side the two parts 4 and 5 of the casing are hinged together, and at the other side they are provided with means for locking them together. Preferably the hinge consists of one or more perforated ears 17 on each of the parts, said ears being arranged in coöperating pairs, (one ear of each pair on each part,) and links 18, perforated for the passage of pivot-pins which pass also through the perforations of the ears 17, the arrangement being such that when the movable part of the casing is moved away from the relatively fixed part the ears will rock or roll one upon the other, and in order to prevent them from sliding one upon another the ears of at least one pair have intermeshing teeth. For securing their free sides together they may be provided with ears 19 and 20, (preferably a pair on each part,) and a link 21 may be pivoted to one pair of ears, so that it may be swung into or out of the space between the ears of the other pair, the free end of the link being perforated for the passage of a pin, upon which is mounted an arm 22, having a cam 23, which by throwing the arm in the proper direction may be caused to bear downward upon the ears 20, and thereby force and hold the two parts together. In order to still further strengthen the two parts 4 and 5 at their meeting edges, they are provided interiorly with flanges 24, and in order to make the joint dust-proof one of the flanges is provided with a rabbet for receiving a corresponding rib on the other.

The field-magnets are secured to the two halves 4 and 5 of the armature-casing. Where the casing is made of magnetic material, the pole-pieces 25 may be secured directly to it, as shown in Figs. 1 and 3, in which case the magnetic circuit will be completed through the casing itself or through a ring 26, which is integral with it. Where, however, the casing is made of aluminium or other non-magnetic material, as in Figs. 5 and 7, the pole-pieces are secured to a magnetic ring 27, of iron or steel, which is formed in halves, each half being secured to one of the two halves of the armature-casing, with their ends coming together to complete the magnetic circuit, as shown more clearly in Fig. 7. In this latter case the two parts of the magnetic ring are provided near their meeting ends with rabbets for receiving the flanges 24, whereby the two parts of the magnetic ring are prevented from rotating within the casing, this rotation of the ring being further prevented by the bolts 28, by which it is secured to the casing. These bolts serve also to secure the pole-pieces 25 to the magnetic ring, the rotary movement of the pole-pieces about the bolts being prevented by dowels 29, which enter the pole-pieces and the flat surfaces of the magnetic ring upon which the pole-pieces seat. With the casing thus constructed and with the field-magnets thus disposed by opening the casing one-half of the armature may be completely exposed.

One of the bearing-cases is provided within the armature-chamber 1 with lugs 30, to which are secured arms 31, carrying the brush-holders 32, the arms and lugs being insulated in the manner described.

The armature-casing may also be provided with ventilating-opening 33 and with a hand-hole closed by a cover 34, so disposed as to enable the inspection of and give access to the upper brush-holders in order that the working of the commutator may be observed.

What I claim as new, and desire to secure by Letters Patent, is—

1. A casing for dynamo-electric machines having an armature-chamber in the nature of a drum formed in two longitudinal parts, and two closed bearing-chambers, each formed in two longitudinal parts, one part of each bearing-chamber being integral with one part of the armature-chamber, these latter parts of the bearing-chambers being so disposed that the ends of that part of the armature-chamber with which they are integral intersect and join them transversely intermediate of their ends, substantially as described.

2. A casing for dynamo-electric machines having an armature-chamber formed in two longitudinal parts, two closed bearing-chambers, each formed in two longitudinal parts, one part of each bearing-chamber being integral with one part of the armature-chamber and so disposed that the ends of the part of the armature-chamber with which they are integral intersect and join them transversely intermediate of their ends, and pillow-blocks integral with the latter parts of the bearing-chambers and disposed opposite the intersection therewith of the ends of the last-aforesaid part of the armature-chamber, substantially as set forth.

3. A casing for dynamo-electric machines having an armature-chamber formed in two longitudinal parts 4 and 5, two closed bearing-chambers 2 and 3, each formed in two longitudinal parts, one part of each bearing-chamber being integral with the part 4 of the armature-chamber and so disposed that the ends of the part 4 intersect and join the corresponding parts of the bearing-chambers transversely intermediate of their ends, and pil-

low-blocks 12 arranged in the bearing-chambers opposite the ends of the part 4, the pillow-blocks being provided with openings for the free circulation of oil, substantially as set forth.

4. A casing for dynamo-electric machines comprising an armature-chamber formed in two longitudinal parts 4 and 5, and two closed bearing-chambers, each formed in two longitudinal parts, one part of each bearing-chamber being integral with the part 4 of the armature-chamber and the other part of each bearing-chamber being a separate part, the part 5 and the last-aforesaid separate parts of the bearing-chambers being provided with features that meet and form a tight joint, substantially as set forth.

5. A casing for dynamo-electric machines having an armature-chamber formed in two longitudinal parts 4 and 5, and two closed bearing-chambers, each formed in two longitudinal parts, one part of each bearing-chamber being integral with the part 4 and so disposed that the ends of the part 4 intersect and join the bearing-chambers transversely, each of the lower parts of the bearing-chambers being provided with a pillow-block arranged opposite the ends of the part 4, each of the upper parts of the bearing-chambers being provided with an internal flange immediately above the pillow-block, and means for securing the two parts of the armature-chamber and the two parts of each of the bearing-chambers together, substantially as set forth.

6. A casing for dynamo-electric machines having an armature-chamber formed in two longitudinal parts 4 and 5 of curved (substantially cylindrical) cross-section intermediate of its ends, the ends being closed, two closed bearing-chambers 2 and 3, each formed in two longitudinal parts, the lower part of each bearing-chamber being integral with the part 4 and so disposed that the ends of the part 4 intersect and join the lower parts of the bearing-chambers transversely intermediate of their ends, and means for securing together the upper and lower parts of the bearing-chambers, the upper part 5 of the armature-chamber and the upper parts of the bearing-chambers being provided with features which meet and form a tight joint, the bearing-chambers being provided with openings for receiving the armature-shaft, substantially as described.

7. A casing for dynamo-electric machines having an armature-chamber formed in two longitudinal parts, a two-part ring supported by the armature-chamber and forming a closed magnetic circuit, and field-magnet pole-pieces secured to said ring, substantially as set forth.

8. A casing for dynamo-electric machines having an armature-chamber formed in two longitudinal parts, a separate ring formed in two parts, each secured to one part of the armature-chamber and forming together a closed magnetic circuit, and field-magnet pole-pieces secured to said ring, substantially as set forth.

9. A casing for dynamo-electric machines having an armature-chamber made of non-magnetic material, a magnetic ring secured within the armature-chamber and forming a closed magnetic circuit, and field-magnet cores carried by said ring, substantially as set forth.

10. A casing for dynamo-electric machines having an armature-chamber made of non-magnetic material and in two longitudinal parts, a magnetic ring formed in two parts, each secured to one part of the armature-chamber and forming together a closed magnetic circuit, and field-magnet pole-pieces secured to said ring, substantially as set forth.

11. A casing for dynamo-electric machines having an armature-chamber formed in two longitudinal parts, a separate magnetic ring formed in two parts, each secured to one part of the casing and forming together a closed magnetic circuit, means for preventing the movement of the ring relatively to the casing, an armature, and field-magnet pole-pieces carried by the ring, substantially as set forth.

12. A casing for dynamo-electric machines having an armature-chamber formed in two longitudinal parts, a magnetic ring formed in two parts, each carried by one part of the casing and forming together a closed magnetic circuit, the two parts of the casing and the two parts of the ring having engaging features which prevent the movement of the ring relatively to the casing, and field-magnet pole-pieces carried by the ring, substantially as set forth.

13. A casing for dynamo-electric machines having an armature-chamber formed in two longitudinal parts, a magnetic ring formed in two parts, each carried by one part of the armature-chamber, the magnetic ring being provided with seats for the pole-pieces of the field-magnets, pole-pieces, and means for securing said pole-pieces to said seats, substantially as set forth.

14. A casing for dynamo-electric machines having an armature-chamber in the nature of a drum formed in a plurality of longitudinal parts separable one from another, said parts having at their meeting edges flanges within the drum, a separate magnetic ring formed in a plurality of parts corresponding with the parts of the drum, means for securing the parts of the magnetic ring to the parts of the drum, and field-magnet pole-pieces carried by the ring, substantially as set forth.

15. A casing for dynamo-electric machines having an armature-chamber, two bearing-chambers, and lugs on one of the bearing-chambers within the armature-chamber, and means for attaching the brush-holders to said lugs, substantially as set forth.

16. A casing for dynamo-electric machines

having an armature-chamber formed in two parts, perforated ears formed on said parts and arranged in coöperating pairs, and links pivoted to the ears of the two parts for holding them in operative relation to each other, substantially as set forth.

17. A casing for dynamo-electric machines having an armature-chamber formed in two parts, perforated ears formed on said parts and arranged in coöperating pairs, and links pivoted to said ears, at least one pair of ears being provided with intermeshing teeth, substantially as set forth.

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