G. W. FOYE.

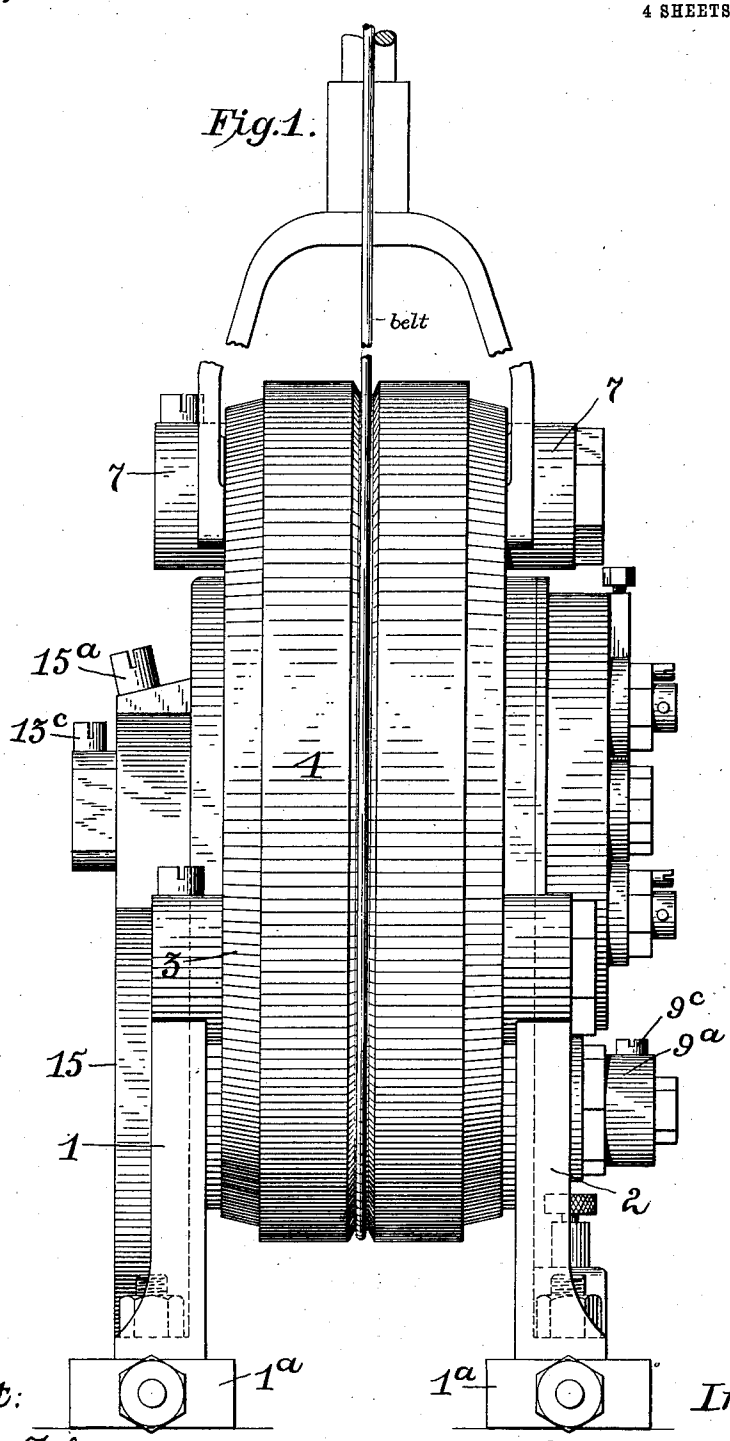
ELECTRIC MAGNETO MACHINE.

APPLICATION FILED SEPT. 10, 1909. RENEWED FEB. 16, 1912.

1,028,202. Patented June 4, 1912.

4 SHEETS—SHEET 1.

Fig. 1.



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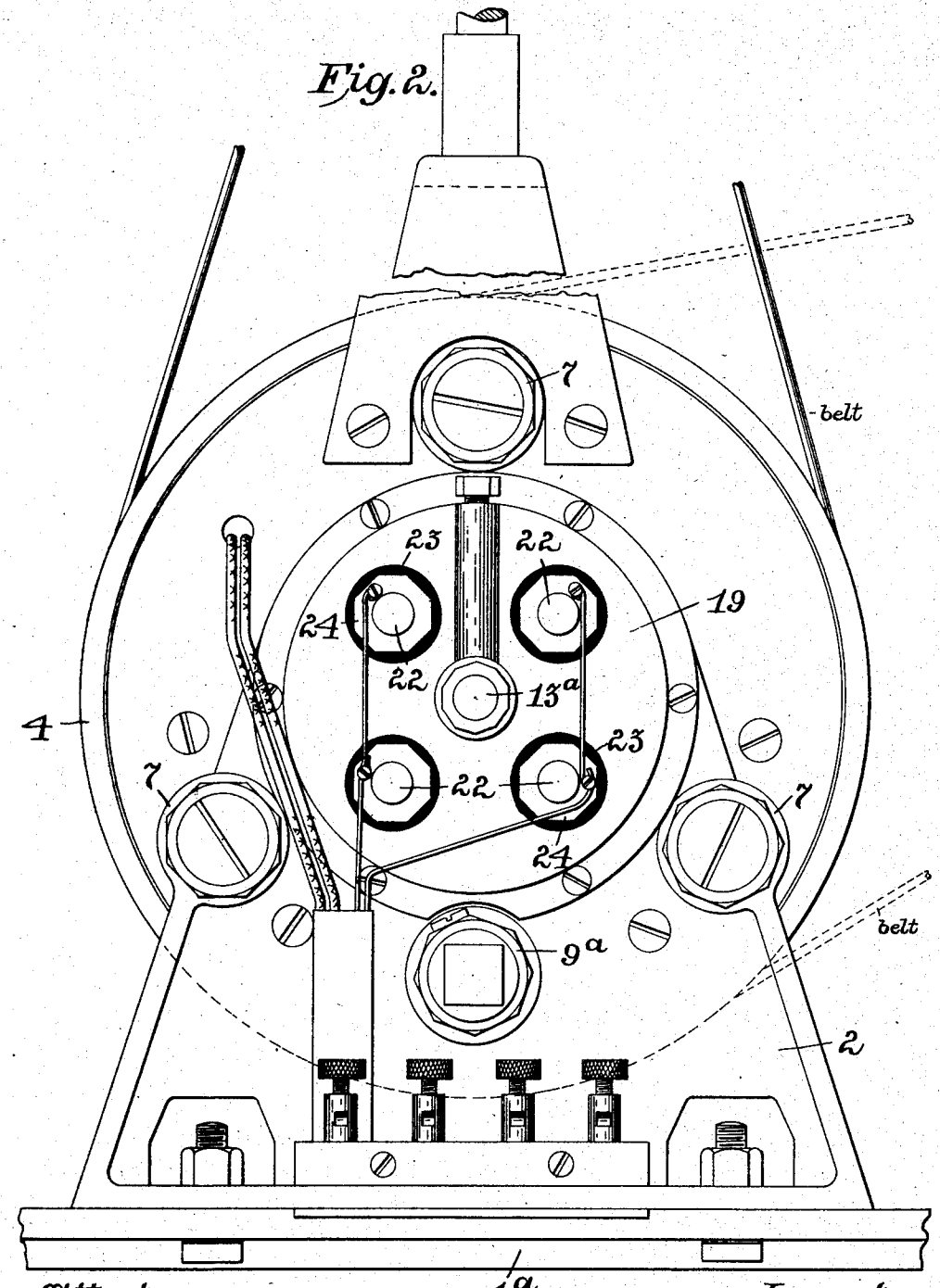
4 SHEETS—SHEET 2.

Fig. 2.



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4 SHEETS—SHEET 3.

Fig. 3.

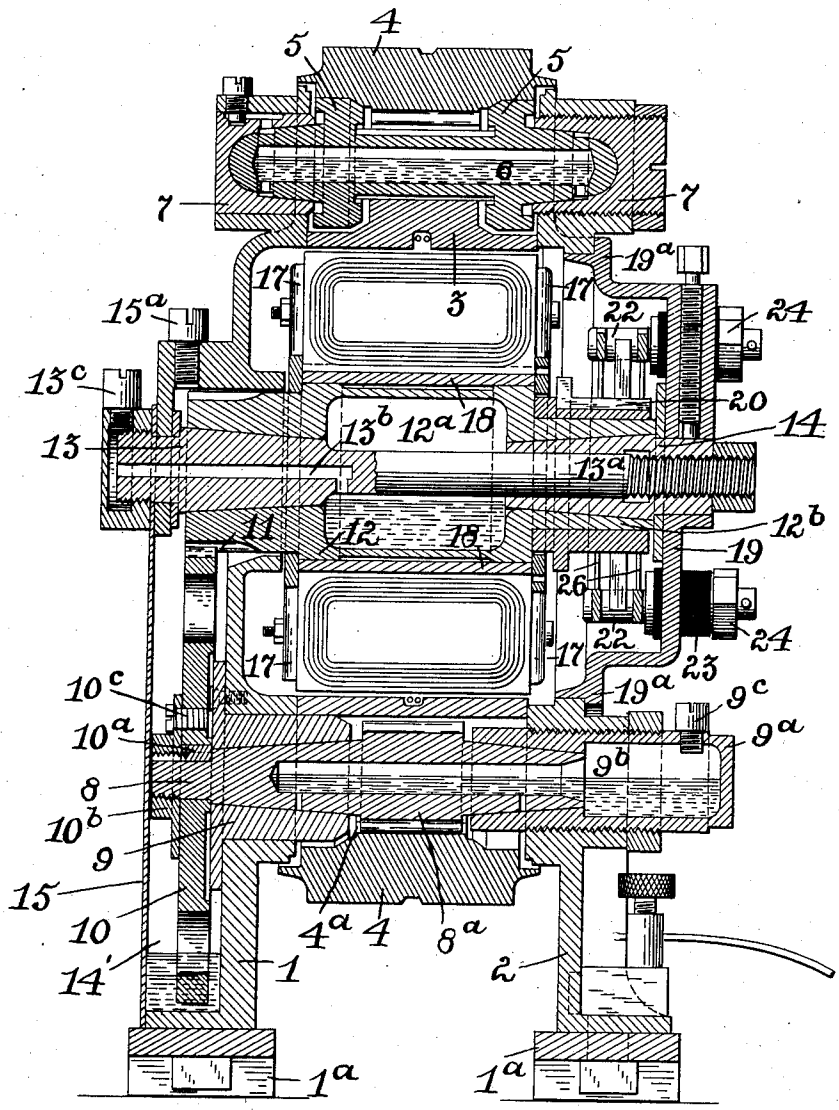

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Fig. 5.

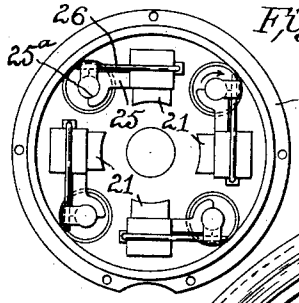


Fig. 4.

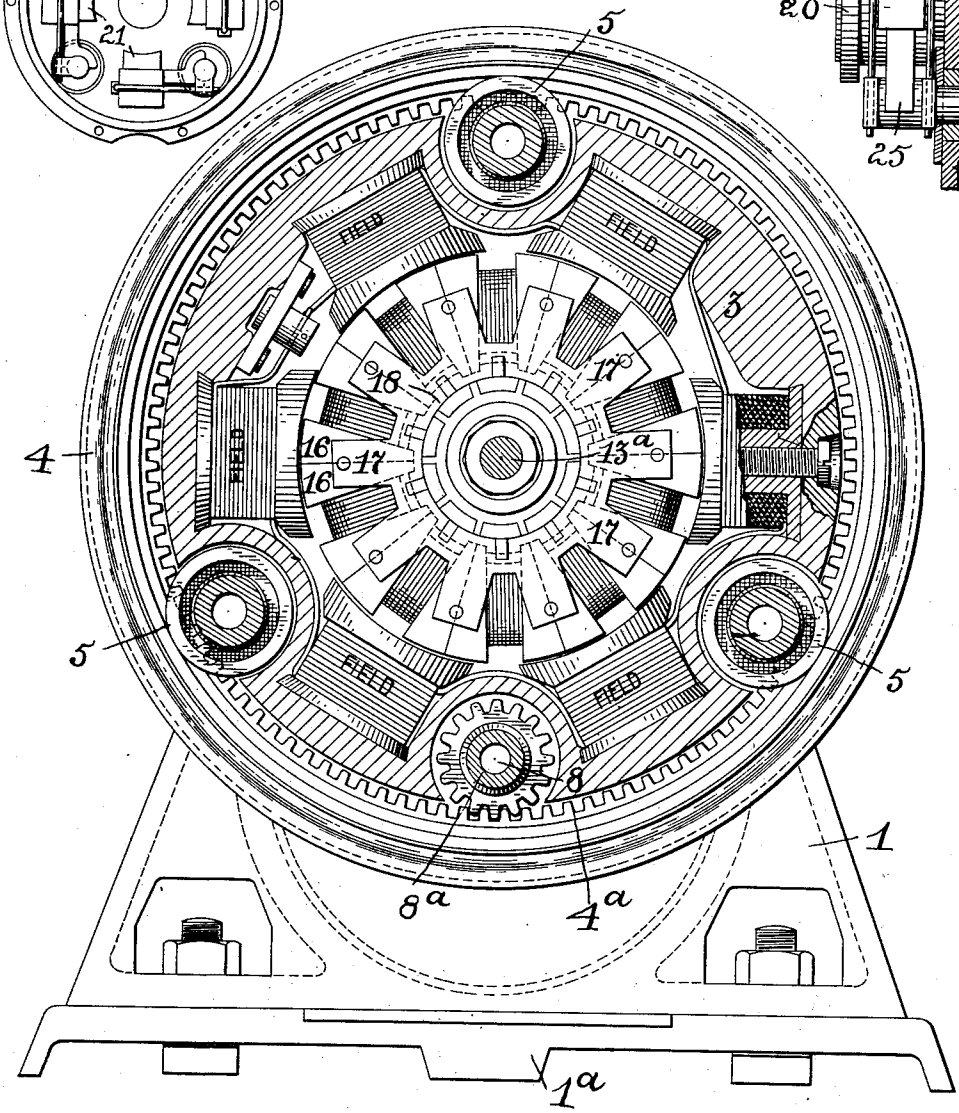
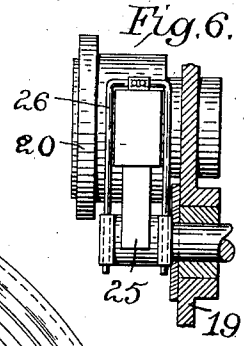


Fig. 6.



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UNITED STATES PATENT OFFICE.

GEORGE WASHINGTON FOYE, OF FREDERICKSBURG, VIRGINIA, ASSIGNOR TO DON C. FOYE, OF PHILADELPHIA, PENNSYLVANIA.

ELECTRIC MAGNETO-MACHINE.

1,028,202. Specification of Letters Patent. Patented June 4, 1912.

Application filed September 10, 1909, Serial No. 517,073. Renewed February 16, 1912. Serial No. 677,962.

To all whom it may concern:

Be it known that I, GEORGE W. FOYE, a citizen of the United States, residing at Fredericksburg, Virginia, have invented certain new and useful Improvements in Electric Magneto-Machines, of which the following is a specification.

My invention relates to improvements in electric motors, and is designed more especially for dental motors, though not by any means limited to such use, and the invention comprises the novel feature of construction and arrangement and combination of parts hereinafter described and particularly set forth in the appended claims.

A motor constructed in accordance with my invention is illustrated in the accompanying drawing, in which—

Figure 1 is a front elevation. Fig. 2 is a side elevation. Fig. 3 is a central transverse section. Fig. 4 is a longitudinal sectional view. Figs. 5 and 6 are detail views of the brushes.

Referring by reference characters to these drawings, the numerals 1 and 2 designate side frames, mounted upon a suitable base or support 1^a, and within or between which frames is held the stationary field ring 3, which carries the field magnets designated by the word "Field" in the drawings.

The numeral 4 designates a revolving pulley ring which is designed to transmit the power of the motor, through a belt, so designated on the drawing. This ring 4 is provided with plain portions near its edges, which bear on the rollers 5, provided with internal oil chambers 6, and journaled in bearings 7, in the side frames, the shafts being provided with tapered bearing portions terminating in ball ends, and the bearings correspondingly shaped. Oil is supplied to the oil chamber 9^b of bearing 9^a, through an opening closed by a screw plug 9^c, and is led from the oil chamber through hollow shaft to the bearing surfaces through suitable ducts or passages as shown. Between the points where the ring bears on the rollers it is provided with internal teeth 4^a constituting a circular rack which meshes with the gear 8^a, carried by or formed integral with the shaft 8. This revolves in bearings 9 and 9^a, carried by the side plates 1 and 2. The bearings are made removable, as shown, and of such size that on the removal of a bearing the shaft and gear may be removed through the space occupied by the bearing, leaving the ring and other parts undisturbed. The shaft 8 is also made hollow for lubricating purposes, as shown, and it carries at one end a gear 10 keyed on by pin 10^a and held in place by jam nut 10^b locked against unscrewing by set screw 10^c. This gear meshes with a gear 11 fast on or formed integral with the armature hub 12. This latter is formed with a central lubricant chamber 12^a and tapered end recesses to receive the tapered bearing members 13 and 14, the latter having a central passage through which passes the spindle 13^a, which is formed as a continuation of the bearing 13. Lubricant is fed to the lubricant chamber through passage 13^b, being admitted by the removal of oil cap 13^c. The bearing 13 is carried by the frame member 1, but the bearing 14 on the opposite side is carried by a removable plate 19, hereinafter more fully described. The gear 10 dips on its lower side into oil contained in a chamber 14 formed by recessing the side frame plate 1, and providing a cover or wall 15, oil being admitted through an opening closed by screw plug 15^a.

The pole pieces of the armatures are shown at 16, being made in halves to facilitate the winding of the coils. They are held together by brass spider arms 17 on a grooved hub of brass 18, which is locked to the armature spindle 12.

With the parts constructed and assembled as above described it will be seen that as the armature rotates it will transmit motion, at a greatly reduced speed, through gears 11 and 10 and gear 8^a, and internal rack, to the pulley ring 4 and to the driving belt. As the pulley ring runs on the anti-friction rollers 5 all weight and pull of the belt is taken off the gears which have only the driving strain to overcome. Further, it will be seen that all the parts are most efficiently lubricated, and that all the bearings may be taken out for replacement or cleaning without disturbing the driving ring.

The side plate 19 which supports the bearing for the armature shaft has a flanged marginal portion 19^a, which fits an opening of a size and shape adapted, on the removal of the plate, to permit the withdrawal of the armature complete. The commutator sections 20 are carried by the projecting portion 12^b of the hub 12, while the brushes 21 are carried by the holding or carrying

pins 22, mounted in insulated bushings 23, in which they are capable of being turned for adjustment and locked in their adjusted position by the lock nuts 24. The brushes 21 are supported from the holders by arms 25, which have curved portions 25[a] fitting against the holding or carrying pins, being retained in place by springs 26 which also serve to keep the brushes pressed against the commutator sections.

It will be understood that while I have described my invention as embodied in an electric motor, it is equally adapted for embodiment in a generator, as will be apparent to any one skilled in the art.

Having thus described my invention, what I claim is:—

1. In a magneto electric machine, a suitable frame comprising side members, bearing rollers having their ends journaled therein, an annular power transmitting ring revolubly supported on said rollers and provided with an internal rack, a stationary field within the ring, an armature rotatably supported within the field, a gear connected to rotate with the armature, a gear meshing with the internal rack, and gearing interposed between said first and second gears.

2. In combination a suitable frame, bearing rollers journaled therein having reduced central portions, an annular power transmitting ring supported by said rollers and having an internal rack traveling in the reduced portions, a shaft journaled in the frame, a gear on said shaft meshing with said rack, an armature rotatably mounted within the ring, a gear on the hub of the armature at one end, a gear meshing with the gear on the armature hub and also with the gear on the said shaft, and a stationary field between the armature and rotary ring.

3. In combination a frame comprising suitable side plates, removable bearings carried thereby, antifriction rollers having their ends journaled in said bearings, a power transmitting ring revolubly supported by said rollers, a stationary field within the ring, an armature rotatably supported within the field, and gearing between the ring and armature.

4. In combination, a frame comprising suitable side plates or standards, removable bearings carried thereby, hollow rollers journaled in said bearings, said rollers having oil ducts leading from the hollow space to the bearing surfaces, a power transmitting ring revolubly mounted on said rollers, and having an internal rack, a gear meshing with said rack, a shaft carrying said gear, a second gear on said shaft, an armature having its hub journaled in said side plates, said hub having a gear meshing with said second gear, said gear shaft and armature hub being hollow for the reception of lubricant and having ducts leading to the bearing surfaces.

5. In combination, a frame comprising suitable side plates, one of said side plates having an open side, a rotary power transmitting ring suitably supported from said frame and having an internal rack, a removable plate closing the open side of the frame, a central armature having a supporting hub or shaft with one end journaled in said removable plate and the other end in the frame member, said armature being removable complete on the removal of said plate, gearing interposed between the armature shaft and internal rack of the ring, and a stationary field carried by the frame between the armature and ring.

6. In combination, a frame comprising suitable side plates, one of said side plates having an open side, a rotary power transmitting ring suitably supported from said frame and having an internal rack, a removable plate closing the open side of the frame, a central armature having a supporting hub or shaft with one end journaled in said removable plate and the other end in the frame member, said armature being removable complete on the removal of said plate, gearing interposed between the armature shaft and internal rack of the ring, and commutator brushes carried by said removable plate and removable therewith, and a stationary field carried by the frame between the armature and ring.

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

GEORGE WASHINGTON FOYE.

Witnesses:

ROBERT M. VAN DORN,

W. L. SWETLAND.