

P. WUEST, Jr.
ELECTRIC MOTOR.

No. 516,784.

Patented Mar. 20, 1894.

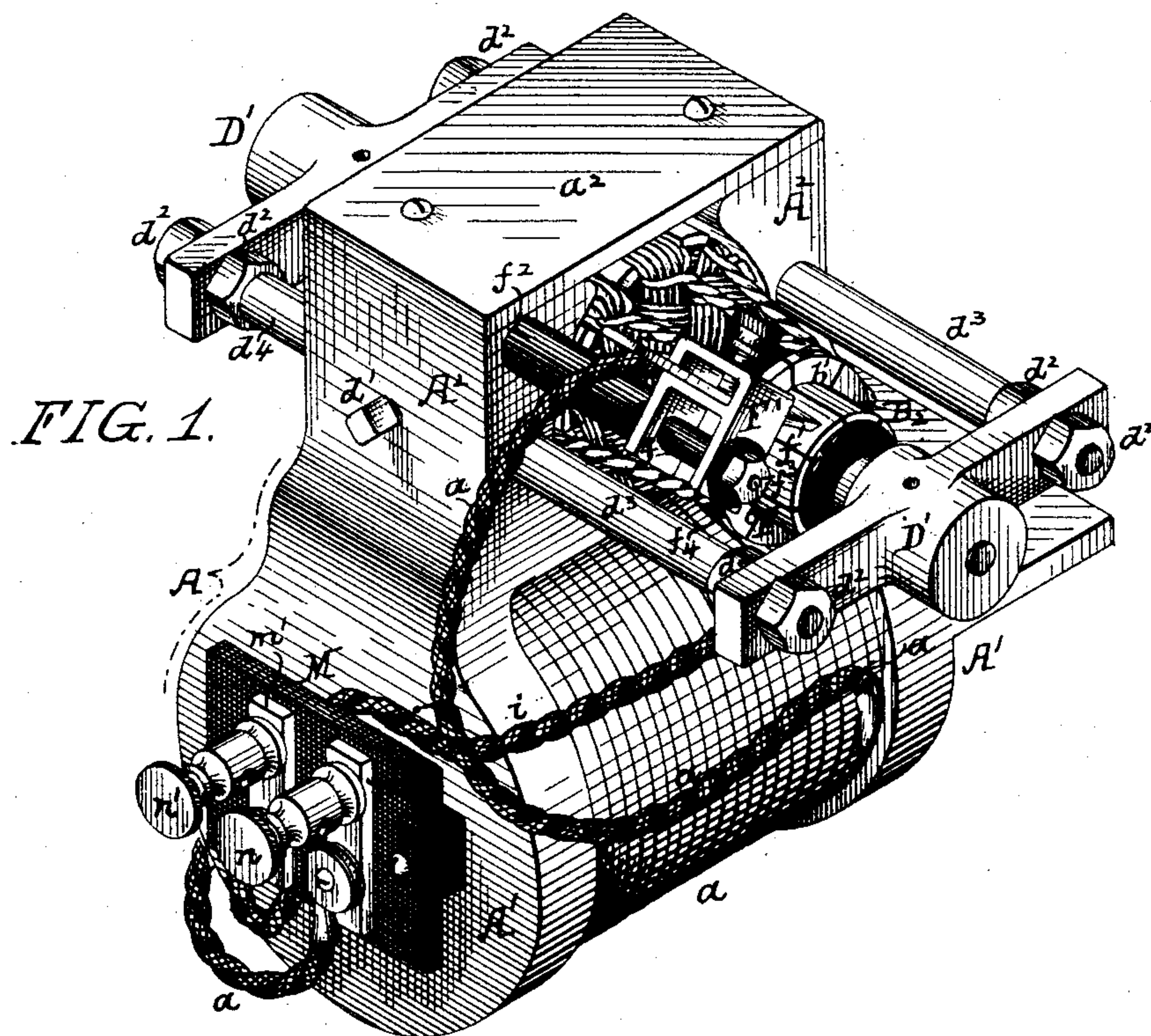
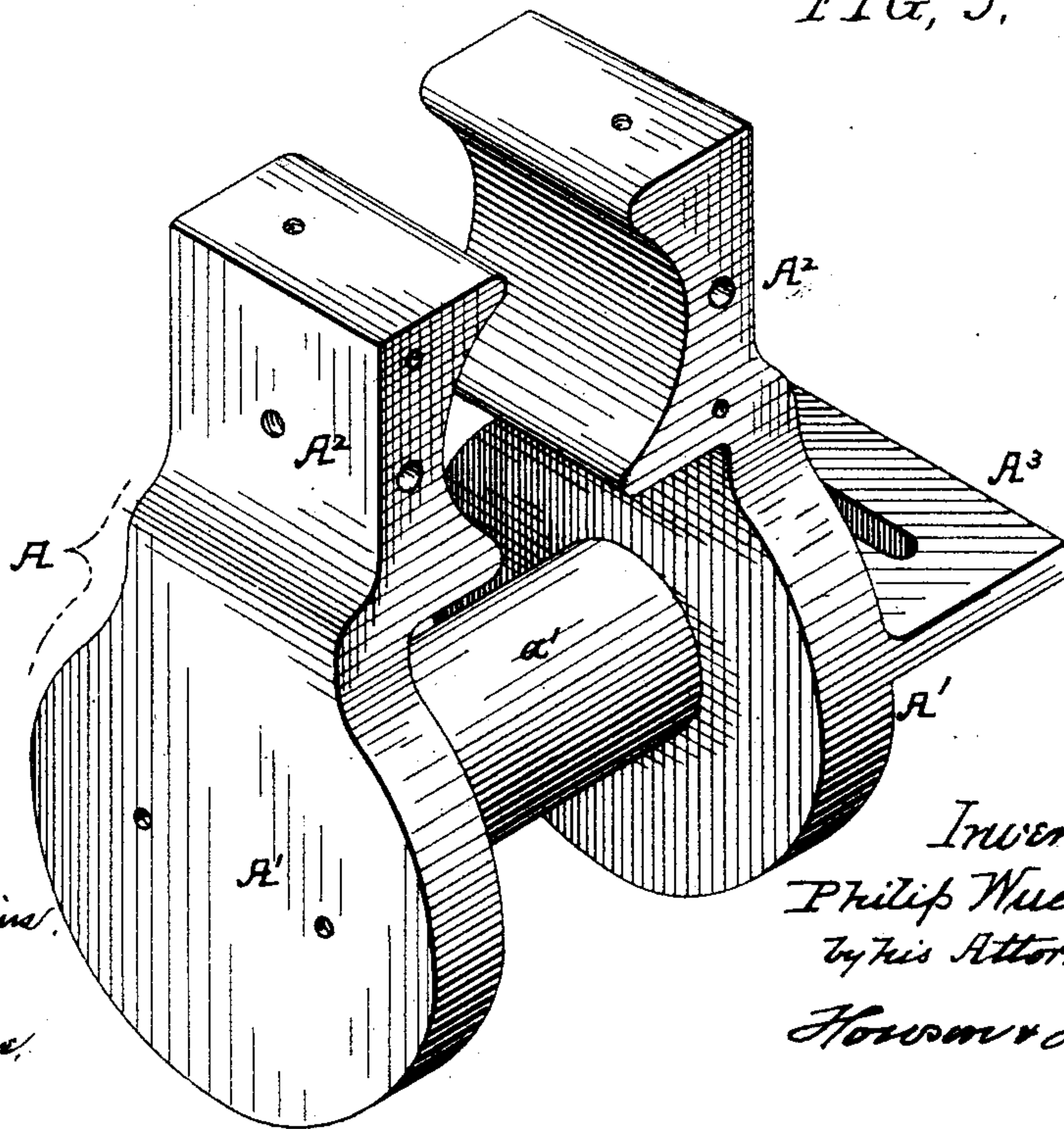


FIG. 5.



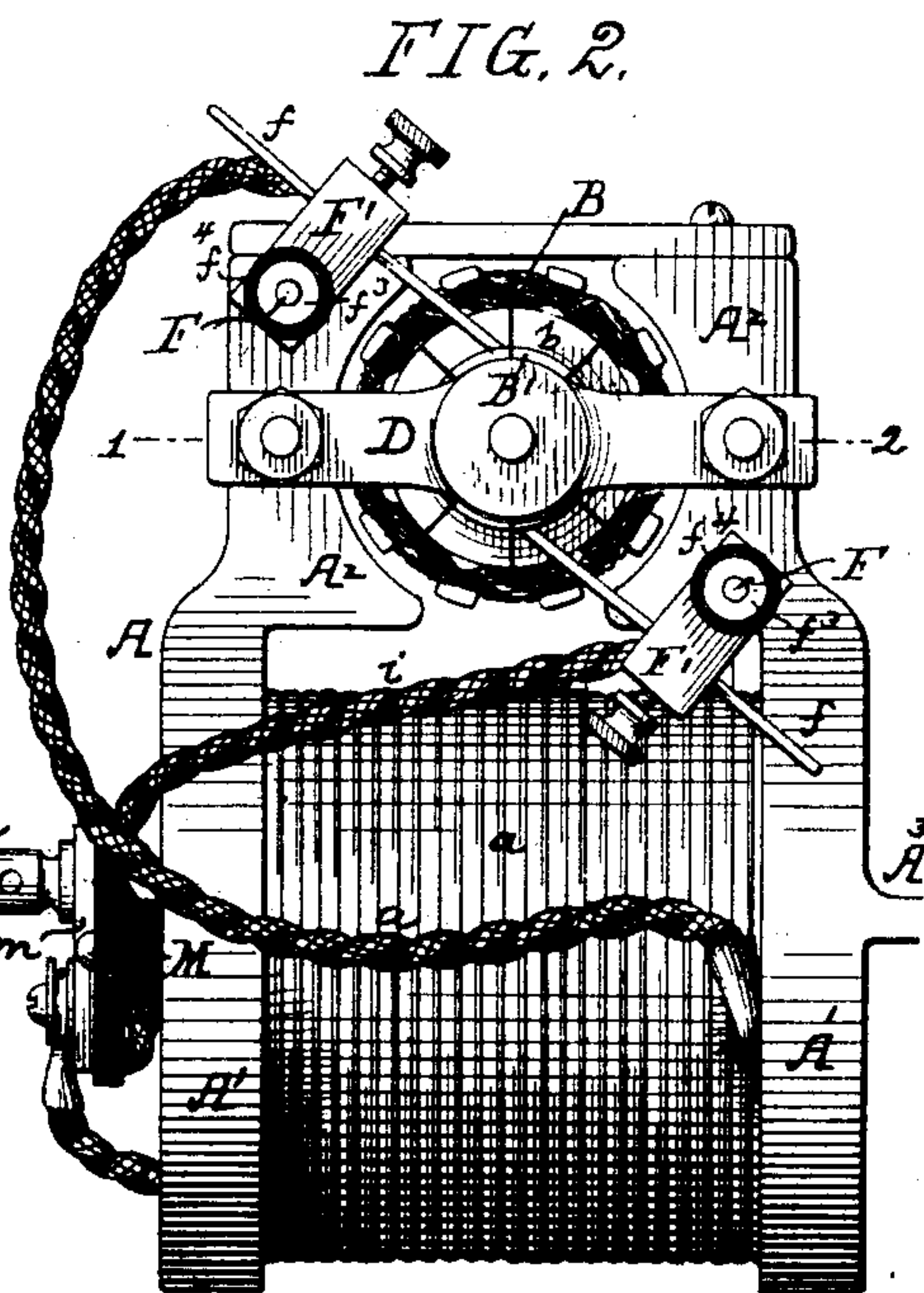
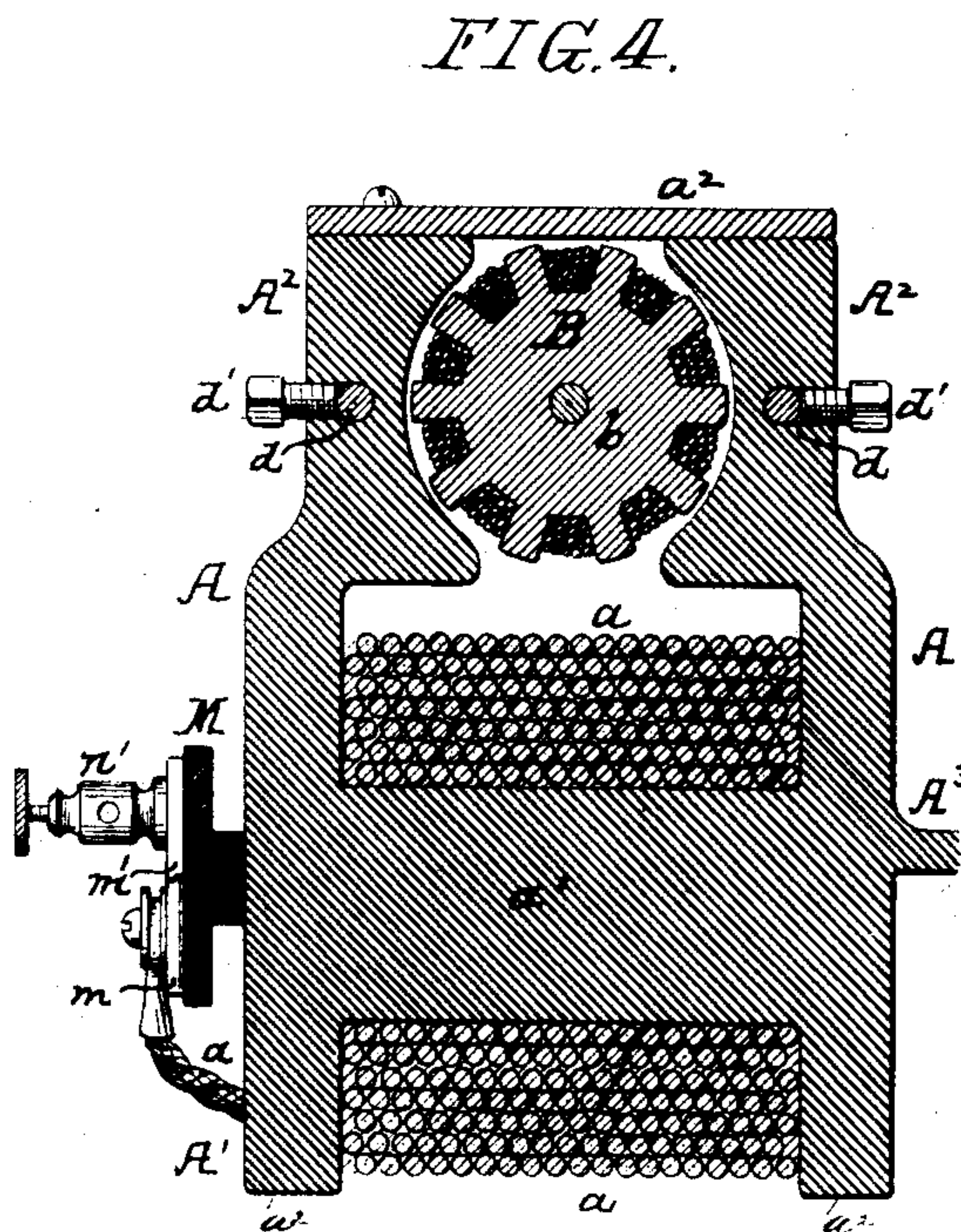
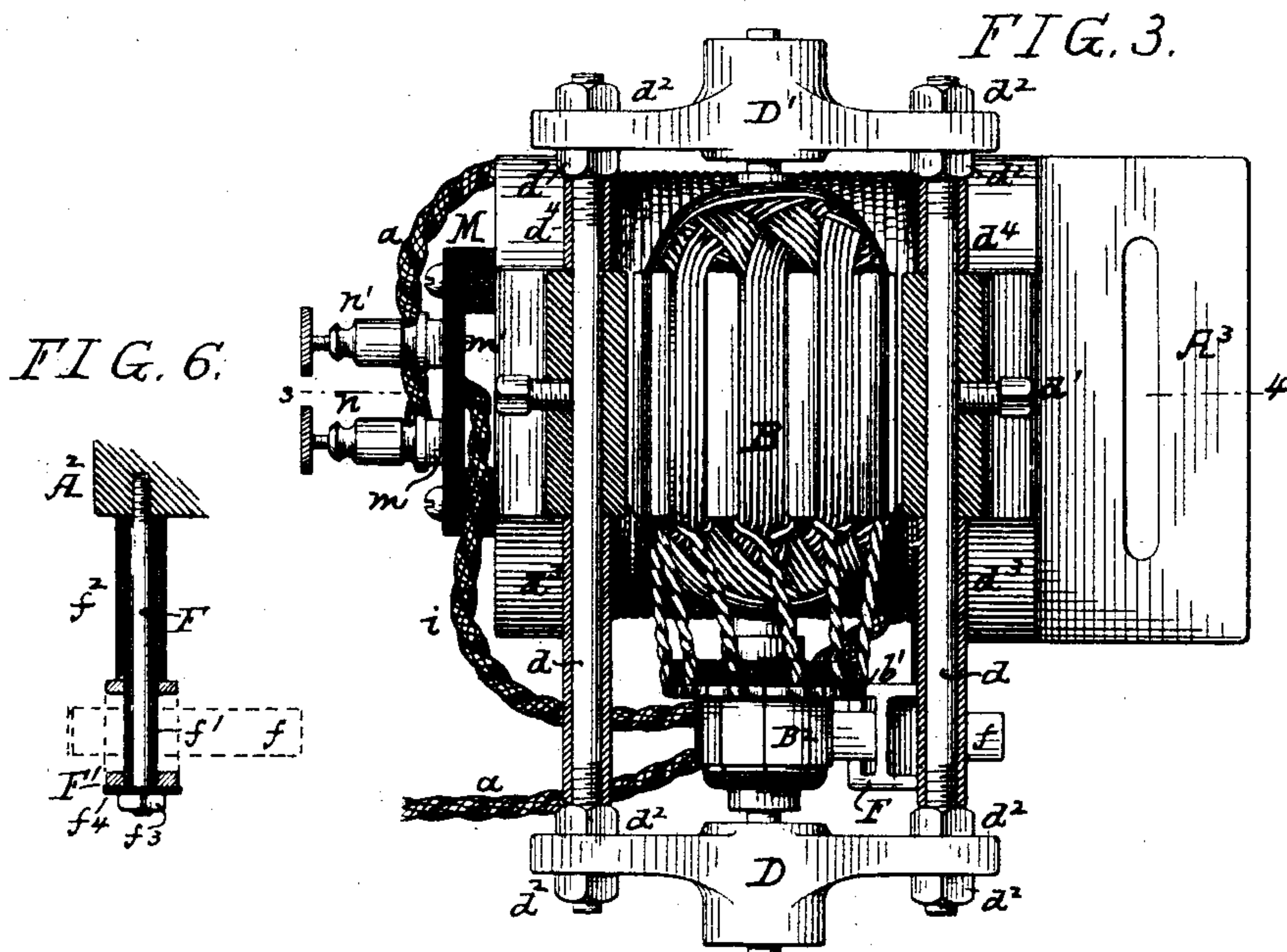
Witnesses:
Albert Popkins.
Jas. L. Skidmore.

Inventor:
Philip Wuest Jr.
by his Attorneys
Howman & Howman

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UNITED STATES PATENT OFFICE.

PHILIP WUEST, JR., OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
CHRISTOPHER J. HEPPE AND FLORENCE J. HEPPE, OF SAME PLACE.

ELECTRIC MOTOR.

SPECIFICATION forming part of Letters Patent No. 516,784, dated March 20, 1894.

Application filed May 16, 1892. Serial No. 433,148. (No model.)

To all whom it may concern:

Be it known that I, PHILIP WUEST, Jr., a citizen of the United States, and a resident of Philadelphia, Pennsylvania, have invented certain Improvements in Electric Motors, of which the following is a specification.

The object of my invention is to cheaply construct an electric motor, which will be compact and at the same time effective, my invention being especially designed for small motors, for running light machinery, fans, &c., but the motor may be made in different sizes without departing from my invention.

In the accompanying drawings: Figure 1 is a perspective view of my improved motor. Fig. 2 is an end view. Fig. 3 is a sectional plan view on the line 1--2, Fig. 2. Fig. 4 is a transverse sectional view on the line 3--4, Fig. 3. Fig. 5 is a perspective view of the frame; and Fig. 6 is a sectional view of a detail of my invention.

A is the frame of the motor, and this frame consists of the electro magnet, A' , and pole pieces A^2 , which project from the heads a^2 , the core a' and pole pieces being cast in a single piece, as shown in Fig. 5. The bobbin can be wound by simply placing it in a lathe and winding the wire a upon the core a' , for since the pole pieces A^2 are not connected at the top, they allow the wire to be readily wrapped upon the spool. I prefer, however, when the motor is finally constructed to mount a plate a^2 , of brass or other suitable material, to brace the pole pieces. On one side of the frame is a bracket A^3 , which is either slotted or provided with holes, and by which the motor may be secured to a shelf or any permanent projecting portion.

B is the armature, having a core b , on which is a series of projections or cogs, and between the projections the armature wires are wrapped, as clearly shown in Figs. 3 and 4. On the armature shaft is the commutator B^2 , the segments of which have lugs b' , to which the wires of the armature are secured. The wires are brazed in the present instance to the lugs, but may be secured thereto in any of the ordinary ways.

Passing through an opening in each pole piece A^2 is a stud d , these studs being secured in the pole pieces by set screws d' . The studs

are screw threaded at both ends and adapted to these screw threaded portions are nuts d^2 which confine the bearings $D D'$ to the studs. On each stud are sleeves $d^3 d^4$ which prevent the studs moving longitudinally, so that the bearings are locked in the proper position in relation to the pole pieces, but this portion of the device is so arranged that by simply unscrewing the nuts at one side of the frame and removing one bearing the armature can be readily removed for repair and placed again in position without altering the relations of the several parts, and both bearings can be readily removed, when necessary, the set screws d' locking the studs to the frame. Projecting from one side of each pole piece is a stud F which carries the commutator brush f Figs. 2 and 6. On the stud F is a sleeve f' of non-conducting material which passes through the brush holder F' , upon which is mounted the brush f . Between this brush holder f' and the pole piece A^2 is a second sleeve of non-conducting material f^2 and between the nut f^3 and the brush holder is a washer f^4 of non-conducting material, so that the brush holder is insulated entirely from the pole pieces, and the parts are so constructed that sufficient friction can be applied to the nut f^3 that while the brush holder can be turned upon the stud, it will, however, remain where put, and the wear can be readily taken up by tightening the nut.

The brush is secured to the holder in the present instance by a set screw, but other means of fastening may be used if found necessary. By having one brush holder-supporting stud above the central line, and one below the central line, as shown in Fig. 2, the brushes can be arranged one on one side of the commutator and the other on the opposite side of the same, and these brushes can be thrown out of engagement with the commutator by simply turning their holders, as described above. Another feature is that when these brushes are turned away from the commutator, the commutator, when one bearing is removed, can be readily withdrawn from the machine.

On one side of the frame is a plate M of non-conducting material upon which are mounted the two plates $m m'$ each provided with

binding posts n n' to which the line wires are secured. The plate m is connected to the bobbin wire a , while the plate m' is connected to a wire i attached to one of the brush holders, the other brush holder being connected to the opposite end of the wire a as clearly shown in Fig. 1, thus completing the circuit.

By constructing the motor as above described I not only obtain excellent results as regard running and power, but the arrangement enables me to cheaply manufacture the motor and so arrange the parts that they can be readily put together, and the parts can be detached when repairs are necessary.

By making the core heads and pole pieces in a single casting I dispense with the necessity of truing up the faces so as to obtain perfect union and the parts cannot possibly get out of line, and this construction affords an excellent framework upon which the several parts of the motor are supported.

I claim as my invention—

1. In an electric motor, the combination of the pole pieces, the armature, studs projecting from each side of the pole pieces carrying removable bearings for the armature shaft, and studs projecting from said pole pieces diagonally above and below the axis of the

armature shaft, with brushes pivotally mounted upon said latter studs, whereby the armature may be quickly removed or replaced from either side of the motor, substantially as described.

2. The combination of the pole pieces, the armature, its shaft, bearing for said shaft, the commutator, the brushes, studs passing through the poles and secured therein by set screws, said studs projecting on each side of the poles, sleeves and nuts on said studs confining the bearings for the armature shaft, substantially as described.

3. The combination of the pole pieces, the armature, the commutator, brushes, studs projecting from the pole pieces for said brushes, a non-conducting sleeve between the brush holders and the studs, and non-conducting sleeves between the brush holder and the field magnets, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

PHILIP WUEST, JR.

Witnesses:

WILLIAM D. CONNER,
HENRY HOWSON.