

(No Model.)

2 Sheets—Sheet 1.

H. B. PULLMAN.
ELECTRIC MOTOR.

No. 415,350.

Patented Nov. 19, 1889.

Fig. 1.

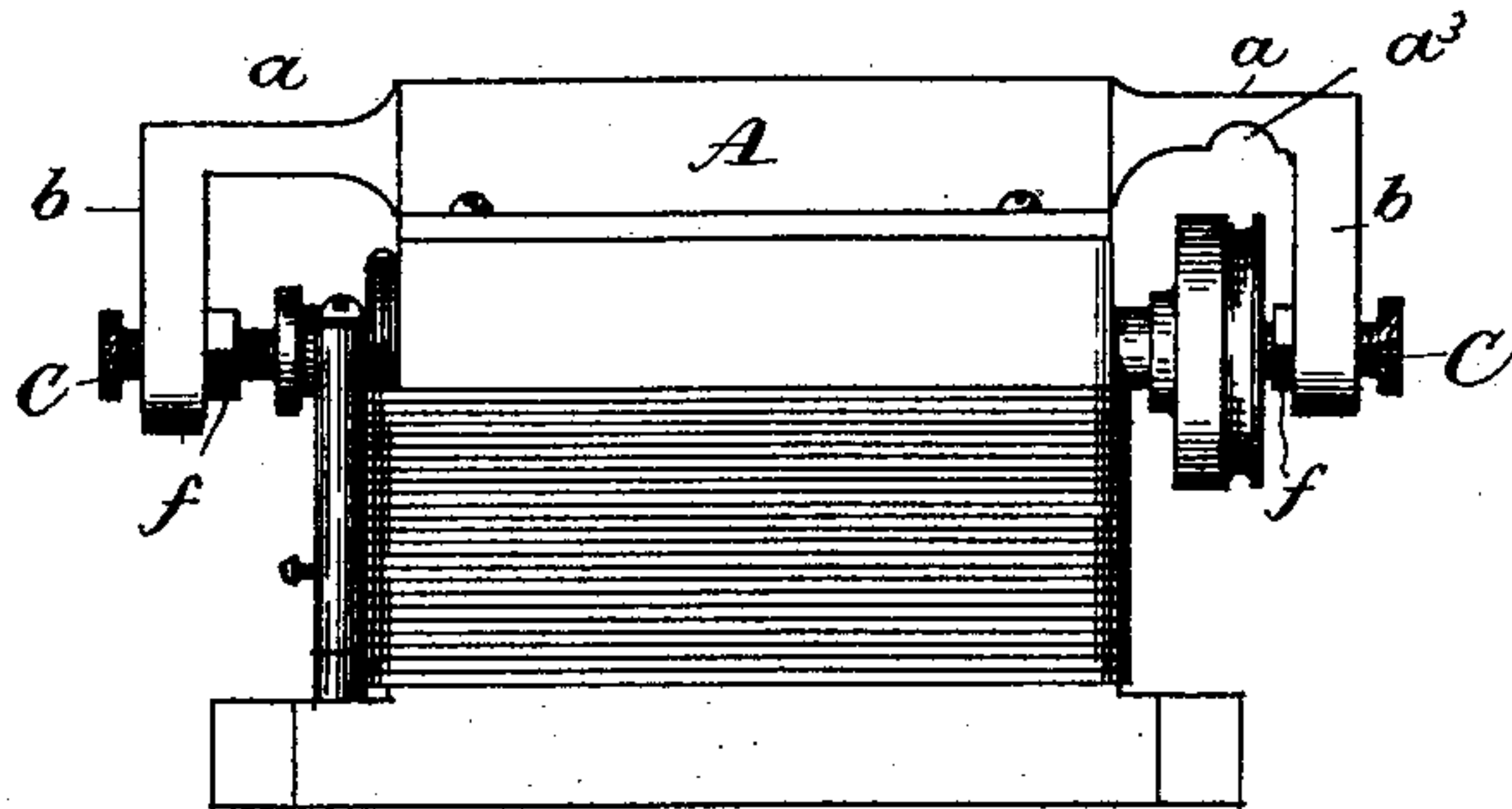


Fig. 2.

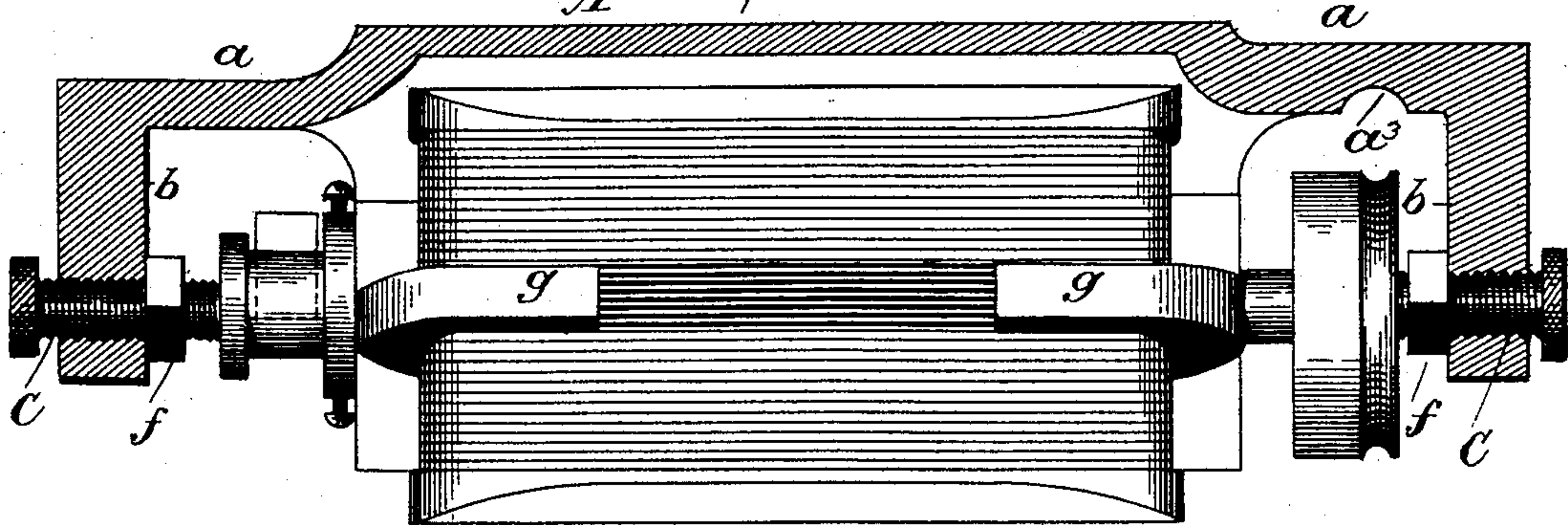
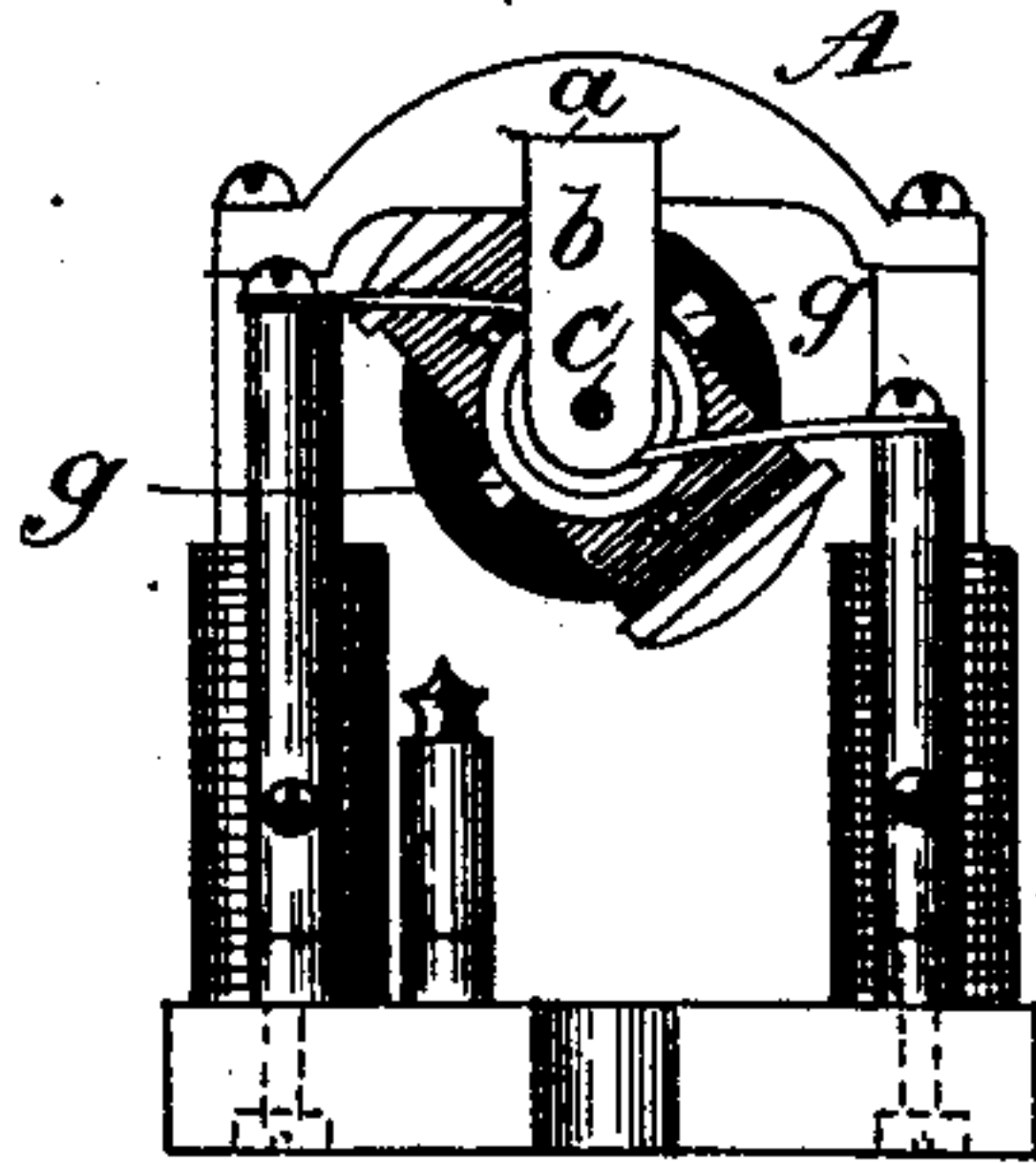


Fig. 3.



Witnesses

L. C. Hills.
E. A. Bond.

Inventor

Harry B. Pullman.

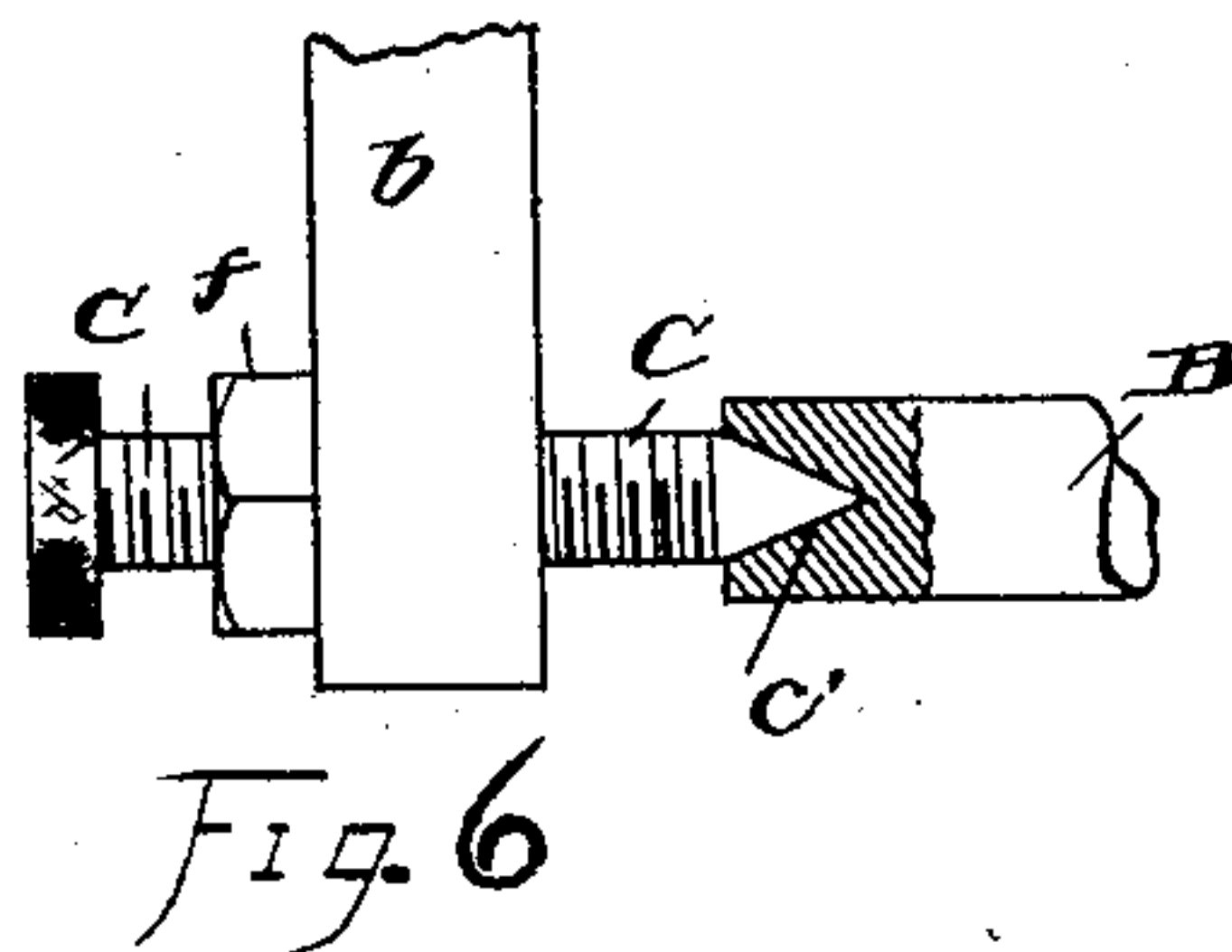
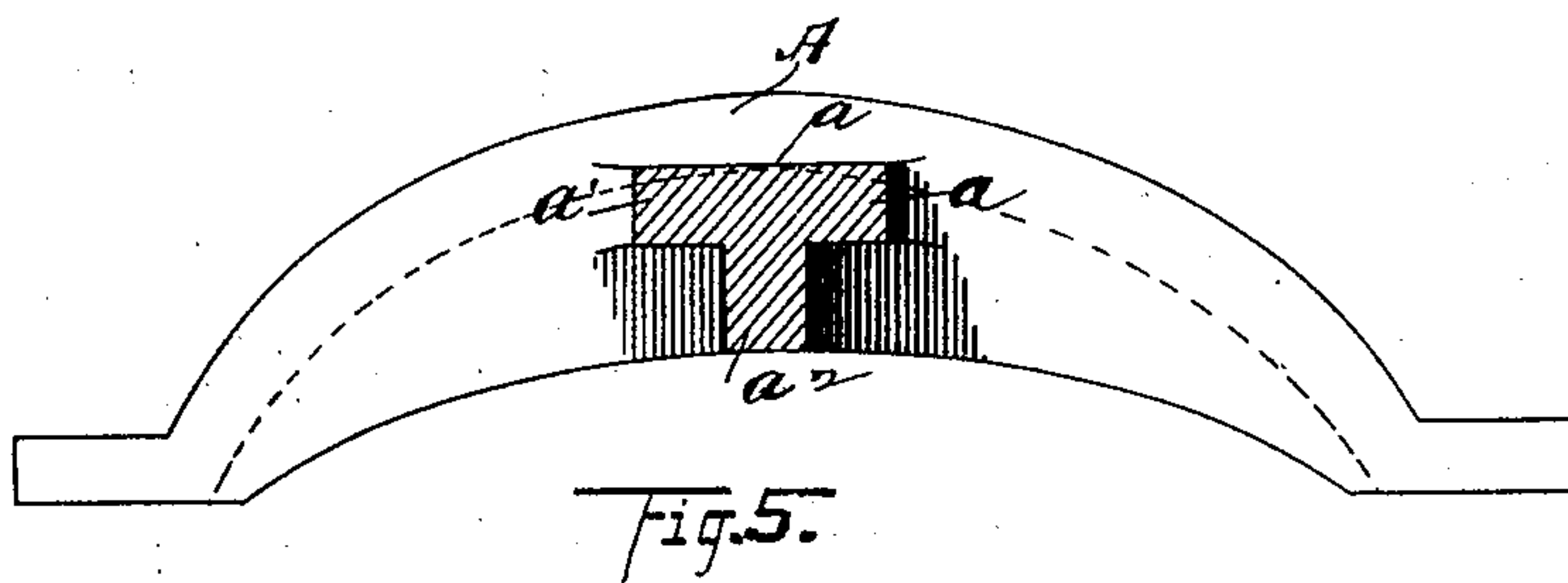
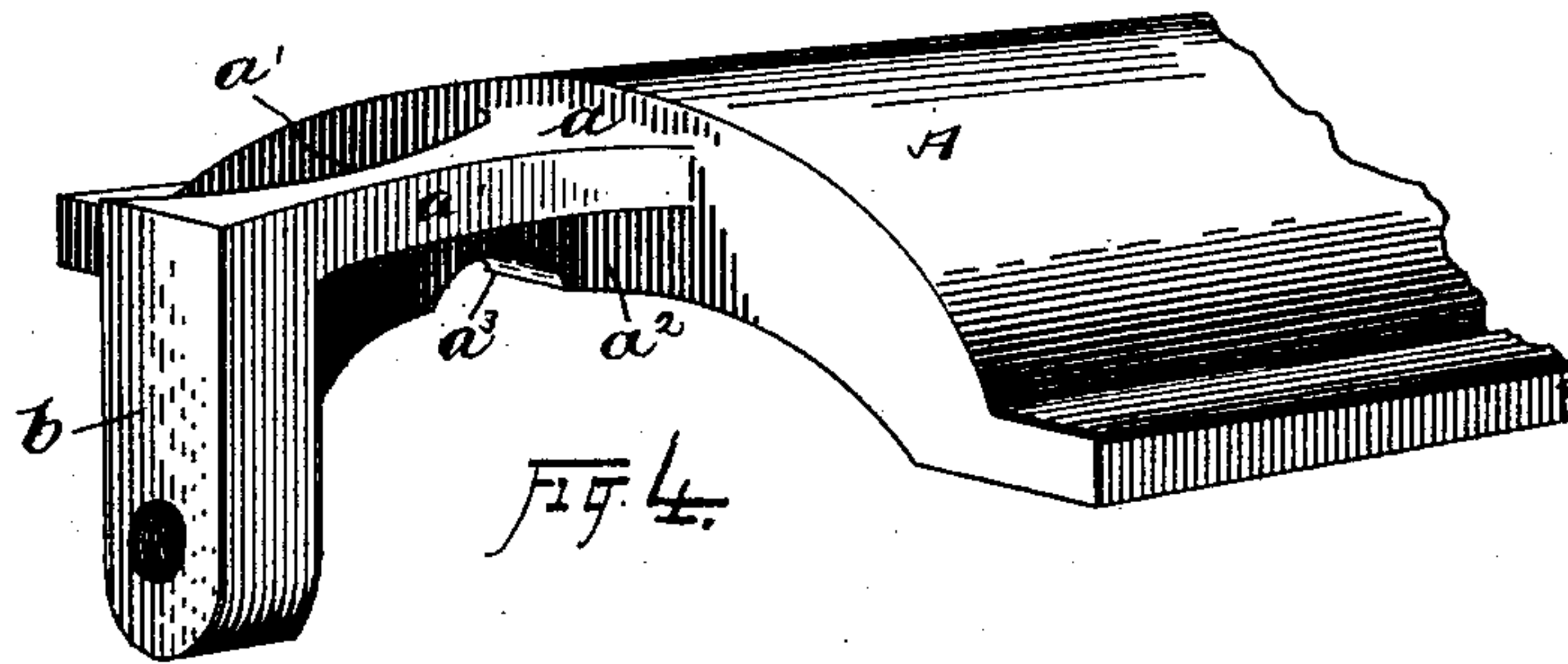
(No Model.)

2 Sheets—Sheet 2.

H. B. PULLMAN.
ELECTRIC MOTOR.

No. 415,350.

Patented Nov. 19, 1889.



WITNESSES,
O. O. Pate
H. H. Fay

H. B. Pullman INVENTOR.
By J. H. Hall
his ATTORNEY.

UNITED STATES PATENT OFFICE.

HARRY B. PULLMAN, OF CAMBRIDGE, OHIO, ASSIGNOR TO THE WOOLEY
ELECTRIC COMPANY, OF SAME PLACE.

ELECTRIC MOTOR.

SPECIFICATION forming part of Letters Patent No. 415,350, dated November 19, 1889.

Application filed August 10, 1889. Serial No. 320,340. (No model.)

To all whom it may concern:

Be it known that I, HARRY B. PULLMAN, a citizen of the United States, and a resident of Cambridge, county of Guernsey, and State of Ohio, have invented certain new and useful Improvements in Electric Motors, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

My invention relates more particularly to the cap of an electric motor, its object being to dispense with mechanical members heretofore necessary.

The invention as to said cap consists in the construction hereinafter described, and finally pointed out in the claims.

Another feature of my invention consists in a peculiar construction of the armature, whereby its weight may be in exact equipoise on its central bearings, as will also be in full described hereinafter, and then specifically pointed out in the claims.

Referring to the drawings, Figure 1 is a view in side elevation of an electric motor embodying the invention. Fig. 2 is a view in central vertical longitudinal section through the cap, and with one arm of the field-magnet omitted. Fig. 3 is a view in end elevation of the motor. Fig. 4 is a detailed perspective end view of a modified form of cap. Fig. 5 shows in vertical transverse section the end extension of said modification. Fig. 6 is a detail view representing a second form of locking the bearing-screw to the hanger of the cap.

The cap A has its two end extensions *a* respectively provided with a depending hanger *b*, said cap having its main body, its end extensions, and the said hangers all cast in single piece. The end extension which is located over the pulley on the armature-shaft is in a higher horizontal plane than is the extension on the opposite end of the cap, as shown clearly in Figs. 1 and 2, and the hanger depending from said higher extension is in itself longer than is the hanger which depends from the opposite end extension. Such construction of the cap-extension and its

hanging adjacent to the pulley of the armature-shaft permits of belting said pulley to the sewing-machine or other device to be operated under a range of adjustment such as is desirable in view of the different relative positions in which the motor and the sewing-machine or other device may be located. This feature is shown in Fig. 2 of the drawings, wherein the two vertical sides of the end extension are formed as concave or incut surfaces *a'*, and the lower side of the extension is formed with a longitudinal strengthening-rib *a²*, and also a semicircular cross-cut *a³*, admitting the belt or endless band to be elevated at a greater angle than could otherwise be done. The shaft B of the armature has its two ends respectively formed with a pivotal bearing *c'*, in which a pivotal screw C is fitted at its inner end. (See Fig. 6.) The body of said screw is fitted in a threaded hole formed in the lower end of the corresponding hanger *b*. The head of said screw has a corrugated periphery, so that it may be operated by thumb and finger. The body of the screw is provided with a check-nut *f*, which serves to maintain the screw in proper position after due adjustment of the armature-shaft has been made. These screws C permit of taking up endwise motion of the armature-shaft, and simultaneously with such reduction of lost motion endwise of the shaft reduction of lost motion sidewise of the armature-shaft is also accomplished.

The casting of the hangers *b* in single piece with the cap-extensions *a* results in providing bearings for the armature-shaft having a very simple mechanical construction and enabling the entire combination of mechanical elements to consist of few members.

The armature-shaft is formed to either side of its central portion with a diaphragm *g*, located parallel with the different coils of the armature and midway between them, said diaphragms having their opposite longitudinal edges projecting from the planes of the outer surfaces of the armature-coils, and thus adapted to be dressed off as occasion may require to adjust the armature in exact equipoise on its bearings.

The foregoing description and accompany-

ing drawings set forth in detail mechanism in embodiment of my invention. Change may be made therein provided the principles of construction respectively recited in the following claims are employed.

I therefore particularly point out and distinctly claim as my invention—

1. In an electric motor, a cap having its end extensions respectively provided with depending hangers forming supports for the armature-shaft formed integral therewith, substantially as set forth.

2. In an electric motor, a cap having its body, its end extensions, and its depending hangers all formed in single piece, substantially as set forth.

3. In an electric motor, the cap having its opposite ends provided with extensions respectively located in horizontal planes, one higher than the other, said higher extension being provided with a long depending hanger, and said lower extension being provided with a short depending hanger, substantially as set forth.

4. In an electric motor, the combination, with an armature-shaft, of a hanger depending from a cap and an intermediate bearing device, substantially as set forth.

5. In an electric motor, the combination, with an armature-shaft and a hanger depend-

ing from a cap, of an intermediate screw threaded in an opening formed in said hanger and a check-nut threaded on said screw, substantially as set forth.

6. In an electric motor, an armature-shaft having a diaphragm projecting to either side of its axial line and adapted to be dressed off or cut away at its longitudinal edges, so as to establish perfect equipoise of the armature-shaft, substantially as set forth.

7. In an electric motor, an armature-shaft having a diaphragm parallel with its coils, said diaphragm having its longitudinal edges projecting beyond the planes of the exterior surfaces of the coils, substantially as set forth.

8. In an electric motor, an armature-shaft provided on either side of its central portion respectively with diaphragms located midway between the coils and parallel therewith, the longitudinal edges of said diaphragms projecting beyond the planes of the exterior surfaces of said coils, substantially as set forth.

In testimony that I claim the foregoing to be my invention I have hereunto set my hand this 7th day of August, A. D. 1889.

HARRY B. PULLMAN.

Witnesses:

CHAS. S. TURNBAUGH,
JNO. C. BECKETT.