

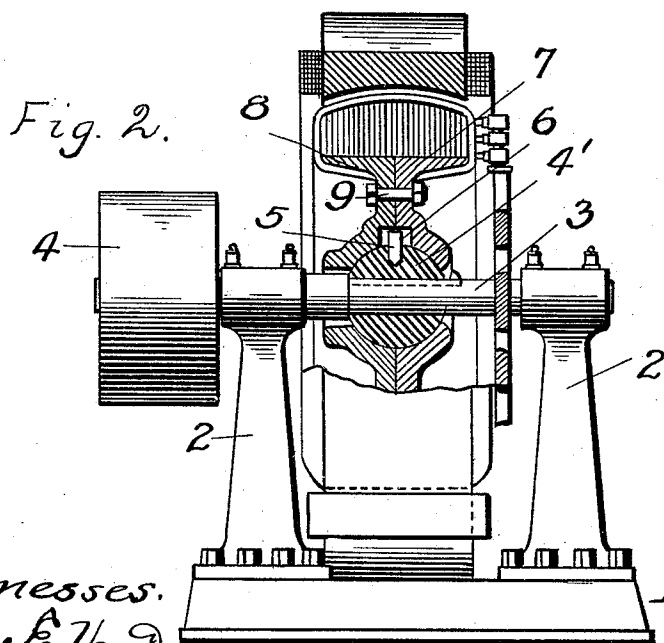
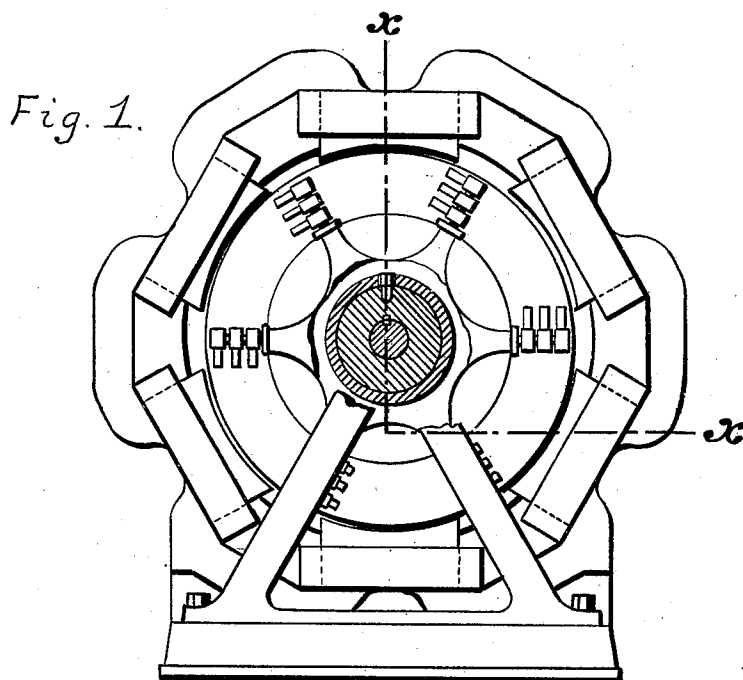
(No Model.)

2 Sheets—Sheet 1.

S. E. HITT.
SHAFT MOUNT FOR ARMATURES.

No. 509,620.

Patented Nov. 28, 1893.



Witnesses.

Chas. E. Vandorn.

C. E. Vandorn

Inventor:

Samuel E. Hitt.
& Paul & Hawley,
his attorneys

(No Model.)

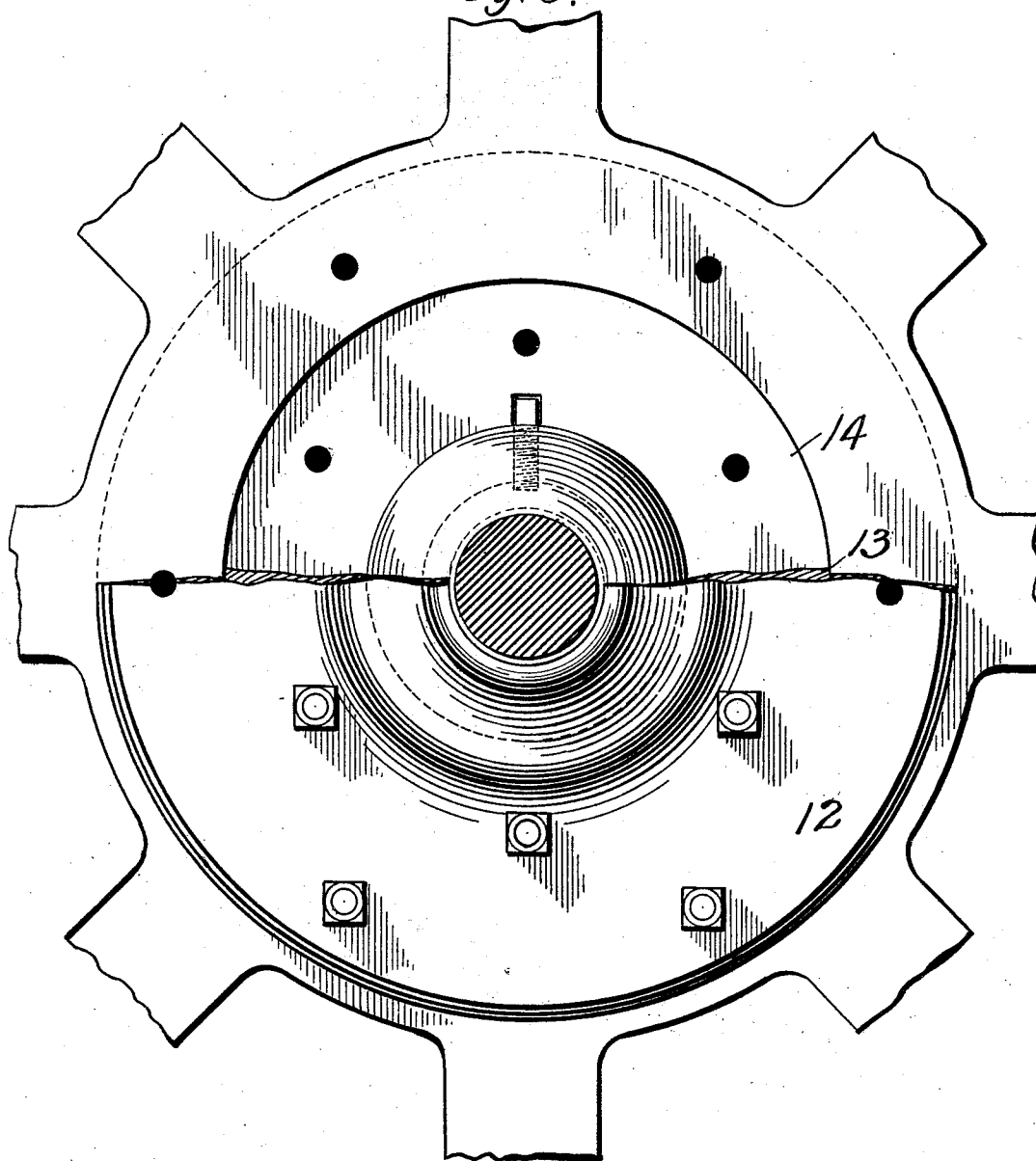
2 Sheets—Sheet 2.

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Fig. 3.



Witnesses:
Chas. E. Van Dorn.
[Signature]

Inventor.
Samuel E. Hitt
& Paul V. Hawley
his attorney

UNITED STATES PATENT OFFICE.

SAMUEL E. HITT, OF ROCKFORD, ASSIGNOR, BY MESNE ASSIGNMENTS, OF ONE-HALF TO W. IRVING HITT, OF CHICAGO, ILLINOIS.

SHAFT-MOUNT FOR ARMATURES.

SPECIFICATION forming part of Letters Patent No. 509,620, dated November 28, 1893.

Application filed March 20, 1893. Serial No. 466,861. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL E. HITT, of the city of Rockford, county of Winnebago, State of Illinois, have invented certain new and useful Improvements in Shaft-Mounts for Armatures, of which the following is a specification.

This invention relates to universal mountings for the large armatures of multipolar machines which are many times smaller in width than in diameter and with which much difficulty has been experienced in aligning the armatures perfectly with respect to the pole pieces of the machine. The result of an improper arrangement of the armature upon the armature shaft has often thrown the armature so far out of the perpendicular with respect to the shaft as to cause it to wobble thereon, the result being the stripping of the wires upon the periphery of the armature, the improper working of the commutator and its brushes, which are ordinarily arranged upon the side of the armature, or, in some cases, a serious fluctuation of the current.

To overcome this difficulty I have taken advantage of the theory of gyration; and the invention consists in a loose or universal mounting for the armature upon the armature shaft and through which the armature is revolved with the shaft, while at the same time being free to turn thereon longitudinally.

My invention further consists in various details of construction and in combinations all as hereinafter described and particularly pointed out in the claims and will be more readily understood by reference to the accompanying drawings, in which—

Figure 1 is an end elevation of a dynamo electric machine embodying my invention, parts thereof being shown in section to illustrate the mounting of the armature on the shaft. Fig. 2 is a sectional view thereof on the line $x-x$ of Fig. 1. Fig. 3 is an enlarged detail view showing the center or hub of the armature and the mount therefor.

In the drawings I have illustrated a multipolar dynamo or motor, having a series of pole pieces and windings fixed upon a suitable base, which base has the standards and bearings 2 for the armature shaft 3, upon one end

of which is the driving belt pulley 4. The armature may be of any desired construction or type, having a large hub or center bored out with a spherical opening to receive the ball 4' keyed upon the shaft 3 and prevented from moving longitudinally thereon by any suitable means. The ball carries a pin 5 set into the same and extending into a longitudinal recess or slot 6, provided within the hub or center of the armature. The openings in the ends of the hub or center are made considerably larger in diameter than the diameter of the shaft 3, and in extreme movements of the bar serve as stops therefor, the side of the central openings striking against the side of the shaft 3.

I preferably construct the core or frame of the armature in two halves 7 and 8, which are secured together by strong bolts 9, and each contains a hemispherical opening or recess for the sphere or ball 4'. The surface of the armature is turned in a curved form, as shown, the surface being coincident with that of a sphere having its center at the center of the ball 4. The pole pieces are cut out to conform with the exterior of the armature and it will be seen that owing to this construction, the armature may assume any position without endangering either the insulation of the winding or the wire itself. In some cases I have preferred to provide the armature in the form of a single large casting or piece, one side or end of its hub being cut away and supplied by an independent piece 12 having an annular shoulder part 13 setting into an annular recess 14 provided in the main part, their movable parts being attached firmly thereto by the required number of spring bolts. In some machines I very much prefer this construction as it greatly facilitates the removal of the armature from the shaft.

It is obvious that in place of the ball I may use any other form of universal joint forming the basis of my invention. In this manner I overcome all inequalities in the balance of an armature, compelling the same to assume a position at right angles with the armature shaft, and consequently in correct position with respect to the pole pieces.

In place of giving the armature and the

pole pieces the spherical form described, I may employ the usual square surfaces, a sufficient air space being left between the armature face and the pole pieces to permit a slight change of inclination or wobble in the armature when in motion or at rest.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, with an armature, of the shaft, and a universal coupling between said armature and the shaft, substantially as described.
2. The combination, with an armature, of the armature shaft, a universal joint coupling or mounting for said armature upon said shaft, and said armature being secured thereon to rotate with the shaft, substantially as described.
3. The combination, with an armature and the armature shaft, of a ball joint arranged between said parts, and whereon said armature is free to swing longitudinally, though secured against rotation with respect to the shaft, substantially as described.

4. The combination, with an armature, provided with a spherically recessed hub or center, of the armature shaft provided with a spherically faced center part arranged within said spherical recess of the armature, and a pin and a slot in said parts whereby said armature is secured against perpendicular rotation on said shaft, substantially as described.

5. The combination, in a dynamo or motor, of pole pieces and windings, with an armature provided with a spherical space, said pole pieces conforming in shape thereto, a shaft for said armature and a universal coupling between said armature and said shaft, whereby said armature is adapted to rotate longitudinally with respect to said shaft, but is locked against perpendicular rotation thereon, substantially as described.

In testimony whereof I have hereunto set my hand this 11th day of March, 1893.

SAMUEL E. HITT.

In presence of—
WM. G. ROSS,
R. FLEMING.