No. 706,017. Patented Aug. 5, 1902.

J. BURKE.

DYNAMO ELECTRIC MACHINE.

(Application filed June 26, 1900.)

(No Model.)

Fig. 1.

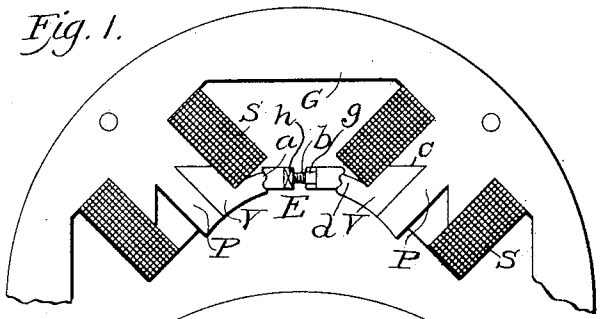


Fig. 2.



Fig. 3.

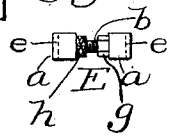


Fig. 4.

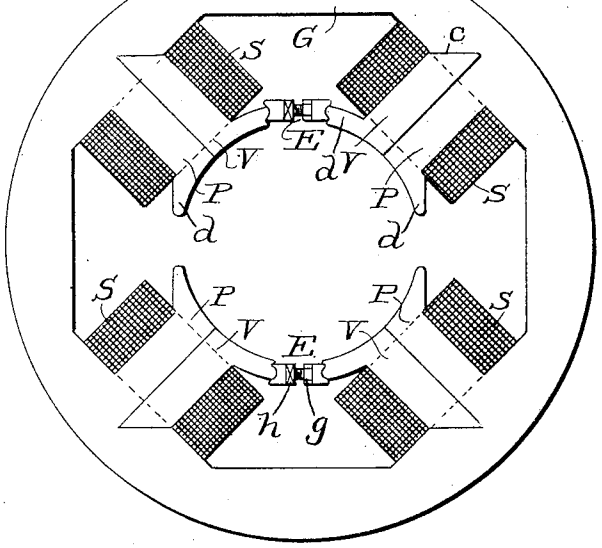


Fig. 5.

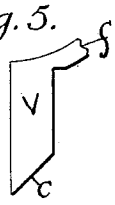
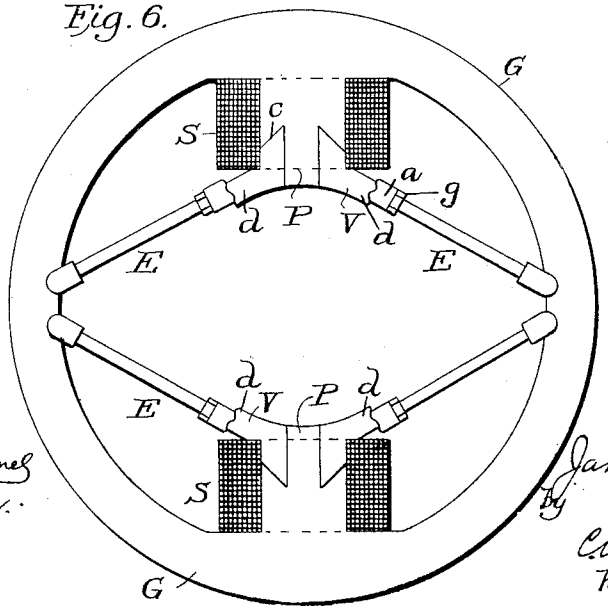


Fig. 6.



Witnesses
James F. Duhamel
Geo. W. Hess.

Inventor:
James Burke
by
C. W. Edwards
his attorney

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UNITED STATES PATENT OFFICE.

JAMES BURKE, OF BERLIN, GERMANY.

DYNAMO-ELECTRIC MACHINE.

SPECIFICATION forming part of Letters Patent No. 706,017, dated August 5, 1902.

Application filed June 26, 1900. Serial No. 21,671. (No model.)

To all whom it may concern:

Be it known that I, JAMES BURKE, a citizen of the United States, residing at Berlin, in the Empire of Germany, have invented certain new and useful Improvements in Dynamo-Electric Machines, of which the following is a full, clear, and exact specification.

This invention relates to dynamo-electric machines, and has particular reference to the pole-pieces thereof and to the manner of securing the magnet-windings upon the pole-pieces.

It is a well-known practice to provide the pole-pieces of dynamo-electric machines with extensions forming enlarged end surfaces in order to cover a greater portion of the armature-surface than would be covered were the cross-sectional area of the end of the pole-piece the same as that where the magnet-winding is supported. Various arrangements of such polar extensions are employed; but the most common construction comprises a separate extension bolted upon the end of the pole-piece after the magnet-winding has been slipped on. Such constructions, however, are objectionable, because the removal of the extension for the purpose of taking out the magnet-winding is often difficult without dismantling the machine and also because the extension cannot be brought to the highest degree of magnetic saturation, owing to the reluctance interposed by the cut between extension and pole-piece and the fact that the extension is not directly surrounded and magnetized by the windings.

Therefore the present invention has for its object the construction of pole-pieces having enlarged end surfaces which shall be of the maximum magnetic intensity and also the provision of means whereby the extension may be readily removed to permit the insertion or removal of the magnet-windings.

The invention will be more fully described with reference to the forms thereof shown in the accompanying drawings, in which—

Figure 1 is a sectional view of a portion of a magnet-frame, showing pole-pieces embodying one form of my invention. Figs. 2 and 3 are respectively detail side views of one of the extensions shown in Fig. 1 and of one of the expansion-pieces. Fig. 4 is a sectional view of a magnet-frame, showing modified forms of extensions upon the pole-pieces. Fig. 5 is a detail of one of the extensions shown in Fig. 4; and Fig. 6 is a sectional view of a magnet-frame, illustrating a modified arrangement for bracing the extensions.

Referring more particularly to the drawings, G represents the magnet-frame of the machine, and P P the pole-pieces thereof, which ordinarily are integral parts of the magnet-frame G, but may be wholly or partly separate therefrom, although in magnetic contact therewith.

In the drawings I have generally illustrated constructions in which the pole-pieces are provided with angular offsets or recesses into which the parts V V of the pole-pieces are adapted to be fitted, the parts P and V being complementary to each other, so that the combined parts P V form the pole-piece of the machine. These parts may be either solid or laminated. So much of the pole-piece as is separate from the magnet-frame is preferably provided with an angular or beveled end *c*, adapted to engage a complementary surface in the magnet-frame, in order that the parts will be held in better magnetic contact when braced, as hereinafter described. Upon the ends of the parts P and V of the pole-pieces are formed the extensions *d d*, which increase the end surfaces of the pole-pieces toward the armature. The extensions also incidentally serve in most instances to retain the magnet-windings *s* in proper position. In all the constructions illustrated in the drawings the extensions are integral with some portion of the pole-piece that is surrounded by the magnet-winding, and thus it may be said that a portion of the extension is in all cases directly under the influence of the magnet-winding, and such is my preferred construction, for it insures a more intense magnetization of the extensions than can be attained in constructions wherein the extension is attached to the pole-piece outside the windings, so that reluctance is interposed between extension and pole-piece beyond the winding.

The extensions and pole-pieces are secured in proper position by suitable means, such as the braces E. These braces may be arranged in various ways—for illustration, by interposing them between opposite extensions, as illustrated in Figs. 1 and 4, or by interposing

them between the extension and the frame of the machine, as illustrated in Fig. 6. A desirable form of brace is shown in detail in Fig. 3 of the drawings. In such construction the claws *a a* are provided with grooves *e e*, which are adapted to interlock with similar grooves *f f* on the ends of the polar extensions V. A screw *b* is swiveled in one claw *a* and screws into the other claw, the screw being preferably provided with a suitable portion *g*, adapted to receive a wrench, and with a locking-nut *h* to prevent loosening of the screw by vibration.

In assembling the machine the coils are slipped over the pole-pieces and fitted in position and the extensions then inserted and braced in position by applying the braces E.

It will be seen that the exact shape of the extensions V V, the relative proportions of the parts P and V of the pole-piece, and the construction and arrangement of the braces are not essential features of the invention, as they will each be varied to meet individual conditions, and I therefore desire it to be understood that I do not herein limit myself to the precise construction shown.

I claim—

1. In a dynamo-electric machine, the combination of pole-piece and a separable extension therefor, the said extension being magnetized directly by the magnet-winding of the machine, as set forth.

2. In a dynamo-electric machine, the combination of a separable extension for the pole-piece, and means for magnetizing the same directly by the magnet-winding of the machine, substantially as described.

3. In a dynamo-electric machine, the combination with the magnet-frame, of a pole-piece, an extension which forms a portion of said pole-piece, the said extension and pole-piece forming an unbroken magnetic circuit, a magnet-winding carried by the pole-piece, and means for bracing the extension and pole-piece against movement, substantially as described.

4. In a dynamo-electric machine the combination with the pole-pieces, of extensions therefor, said extensions being adapted to hold the magnet-windings in position, and braces between said extensions, substantially as described.

5. In a dynamo-electric machine, the combination with the pole-pieces, of enlarged extensions therefor, said extensions being adapted to retain the magnet-windings in position, and means for securing said extensions against movement, substantially as described.

6. In a dynamo-electric machine the combination with the pole-pieces, of extensions therefor adapted to retain the magnet-windings in position, and means for bracing the extensions against the magnet-frame, substantially as described.

7. In a dynamo-electric machine, the combination with the pole-piece, of a separate extension fitted thereto and in magnetic contact therewith, the said extension constituting a portion of the pole-piece, and a magnet-winding surrounding portions of both pole-piece and extension, substantially as described.

8. In a dynamo-electric machine, the combination with the pole-piece, of an extension therefor, the said extension constituting a portion of the pole-piece, and a section of the extension being separable, substantially as described.

9. In a dynamo-electric machine, the combination with the magnet-frame, of a separate pole-piece having a diagonally-cut end adapted to be fitted to and in magnetic contact with the frame, an extension a section of which is separable upon the other end of the pole-piece, a magnet-winding for said pole-piece, adapted to magnetize both the pole-piece and the extension, and means for bracing the pole-piece in contact with the frame, substantially as described.

10. In a dynamo-electric machine, the combination with the magnet-frame, of pole-pieces having one end diagonally cut and adapted to be fitted to and in magnetic contact with the frame, an extension constituting a portion of the pole-piece at the other end, a section of said extension being separable, magnet-windings upon said pole-pieces, and means for bracing the extensions against each other to hold the poles in contact with the frame, substantially as described.

11. In a dynamo-electric machine, the combination with the pole-piece, of an extension constituting a portion thereof, a section of said extension being separable, and a magnet-winding surrounding said pole-piece, substantially as described.

12. In a dynamo-electric machine, the combination of a pole-piece having a longitudinal recess, an extension for said pole-piece having a portion complementary to said recess, and a magnet-winding surrounding said pole-piece, substantially as described.

13. In a dynamo-electric machine, the combination of a pole-piece having a longitudinal recess with an angular end surface, an extension for said pole-piece having a portion complementary to said recess, and a magnet-winding surrounding said pole-piece, substantially as described.

14. In a dynamo-electric machine, the combination of a pole-piece having a longitudinal recess, an extension for said pole-piece having a portion complementary to said recess, a magnet-winding surrounding the pole-piece, and means for bracing the extension in the pole-piece, substantially as described.

15. In a dynamo-electric machine, the combination with the pole-pieces having recesses therein, of extensions having portions complementary to said recesses, magnet-windings surrounding the pole-pieces, and braces between the oppositely-disposed extensions, substantially as described.

16. In a dynamo-electric machine, the combination with the magnet-frame, of a separate pole-piece adapted to be fitted to and in magnetic contact with the frame and having an extension upon its end, constituting a portion of the pole-piece, a magnet-winding for said pole-piece, and means for bracing the pole-piece in contact with the frame, substantially as described.

17. In a dynamo-electric machine, the combination of a pole-piece extension separate from the pole-piece, and a magnet-winding surrounding the same, substantially as described.

18. In a dynamo-electric machine, the combination with the pole-piece, of a separate extension therefor having a portion adapted to be fitted to the pole-piece, and a magnet-winding surrounding the said portion of the extension-piece and the pole-piece, substantially as described.

19. In a dynamo-electric machine, the combination with the pole-piece of an extension therefor, a portion of said extension being fitted into and forming part of said pole-piece, a magnet-winding surrounded by said pole-piece and held in position by said extension, and means for bracing the extension against movement, substantially as described.

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

JAMES BURKE.

Witnesses:
HENRY HASPER,
WOLDEMAR HAUPT.