(No Model.)

J. A. WEBBER.

FORM FOR WINDING ARMATURE COILS.

No. 561,636. Patented June 9, 1896.

FIG. 1.

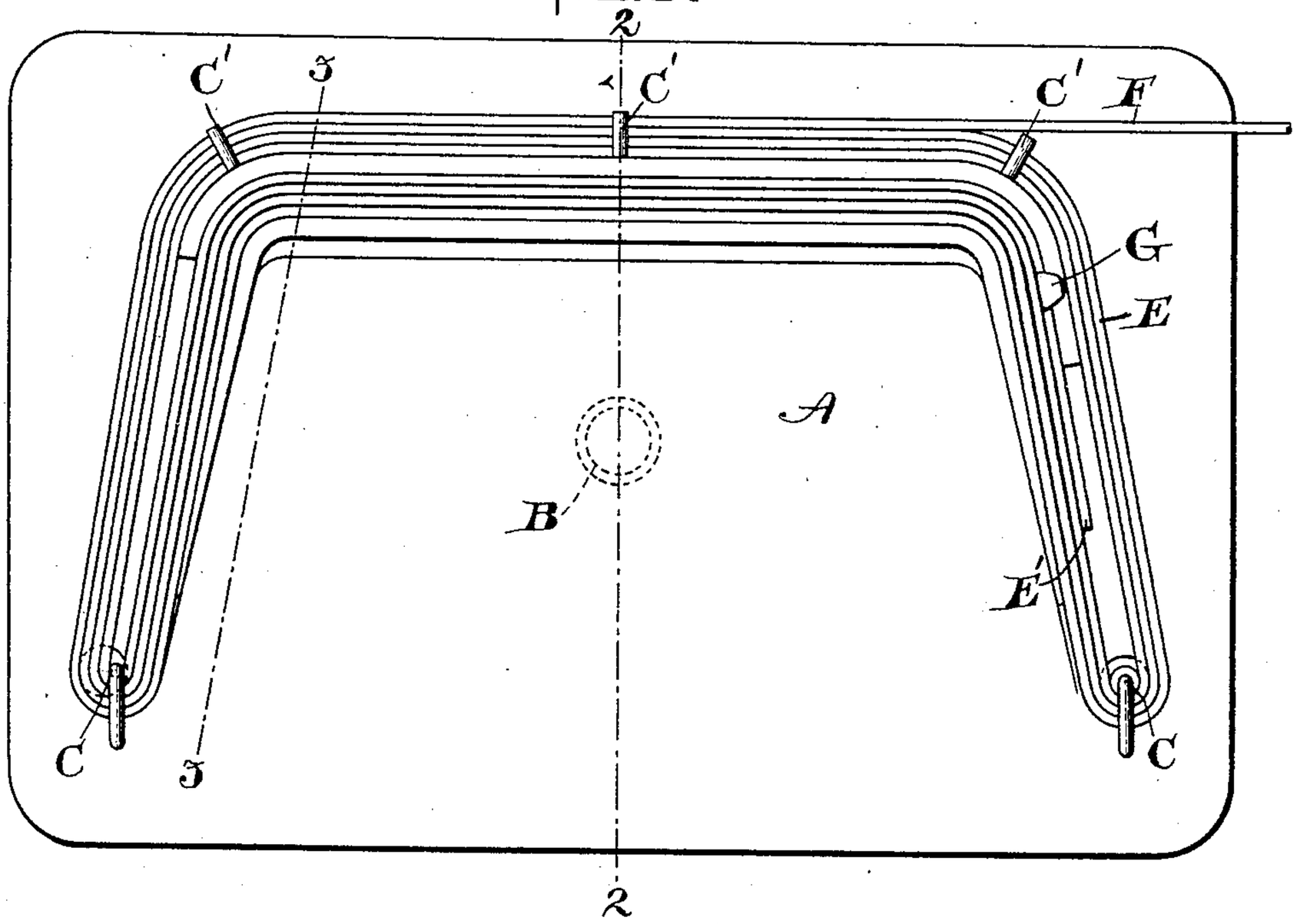


FIG. 2.

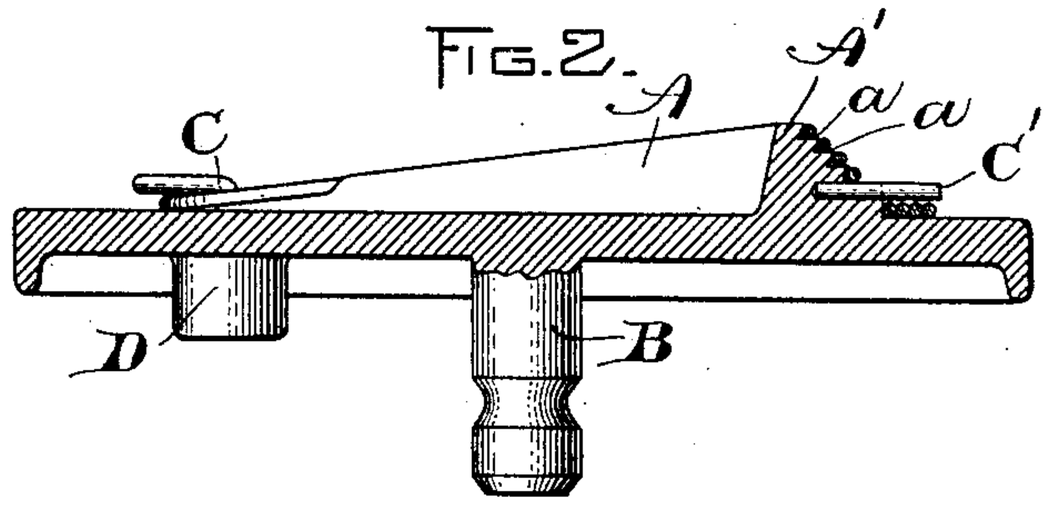


FIG. 3.

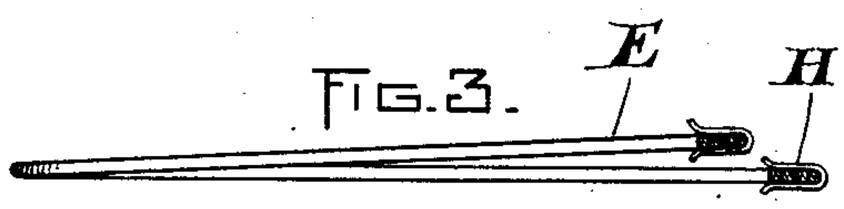
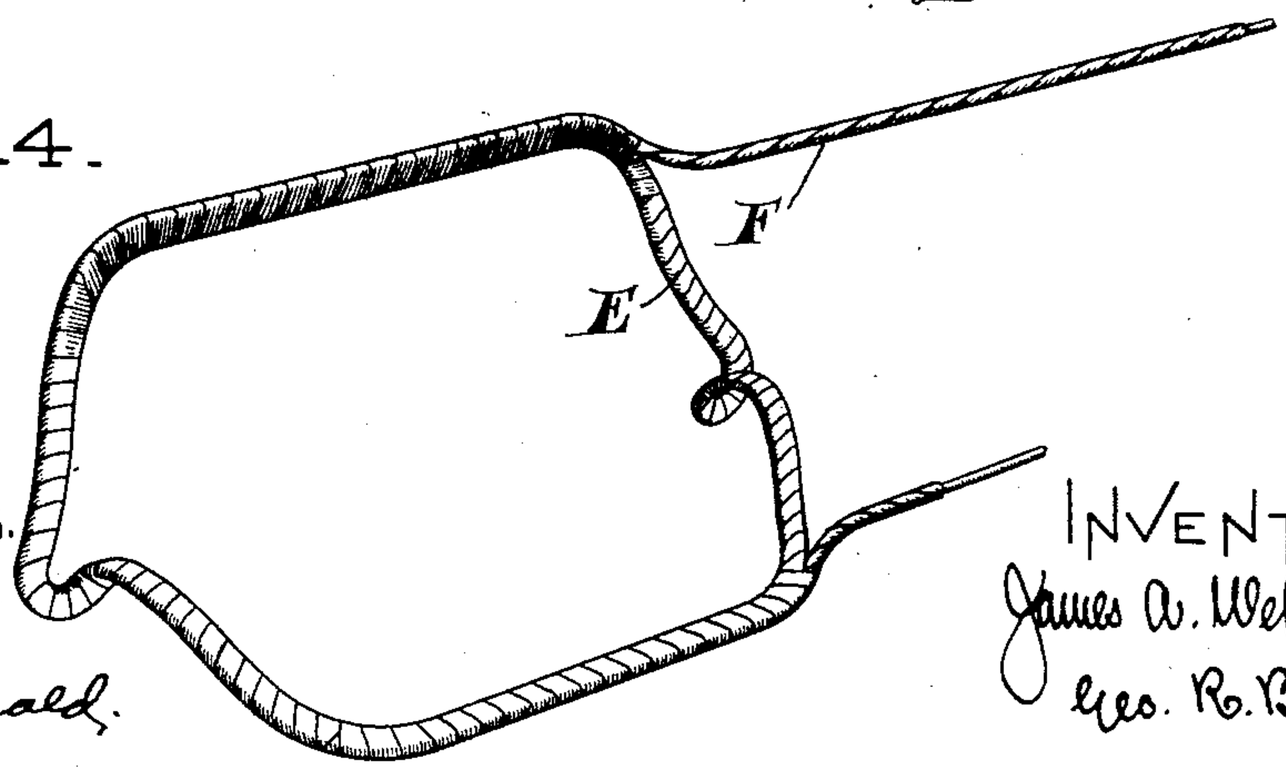


FIG. 4.



WITNESSES.
A. H. Abell.
A. Macdonald.

INVENTOR.
James A. Webber, by
Geo. R. Blodgett,
Attn.

UNITED STATES PATENT OFFICE.

JAMES A. WEBBER, OF LYNN, MASSACHUSETTS, ASSIGNOR TO THE GENERAL ELECTRIC COMPANY, OF NEW YORK.

FORM FOR WINDING ARMATURE-COILS.

SPECIFICATION forming part of Letters Patent No. 561,636, dated June 9, 1896.

Application filed January 25, 1896. Serial No. 576,862. (No model.)

To all whom it may concern:

Be it known that I, JAMES A. WEBBER, a citizen of the United States, residing at Lynn, in the county of Essex, State of Massachusetts, have invented certain new and useful Improvements in Forms for Winding Armature-Coils, of which the following is a specification.

My invention relates to means for winding armature-coils of dynamo-electric machines or motors, and has for its object to provide a form upon which such coils may be wound with a minimum of expenditure of labor and time and by which they may be made interchangeable, the utility of which is well understood in the art, the apparatus being adaptable to armatures of any number of poles, as will be more fully explained.

I have illustrated my invention in the accompanying drawings, in which—

Figure 1 is a plan, and Fig. 2 a view partly in section upon the line 2 2 of Fig. 1, of a suitable form such as I have devised. Fig. 3 is an end elevation of the coil as it leaves the form, and Fig. 4 is a perspective view of a complete coil.

The winding-form of my invention is shown in the patent to John Riddell, No. 532,821, dated January 22, 1895; but in that case it is shown as a means of illustrating the action of the machine described and claimed by that inventor.

A is the base or table of the form.

B is a trunnion about which the form rotates, it being understood that the trunnion B is held in a standard so that the table A is substantially horizontal.

C C are pins which rotate about their centers and serve to hold the wire in place. They have a bearing in the lugs D, only one of which is shown in Fig. 2. C′ C′ are similar pins for a similar purpose, but these latter are simply driven horizontally into holes tapped in the projection A′, which is cut into a series of grooves or terraces *a a*. Against the lower one of these terraces is secured a clip G, under which the end *e′* of the wire is passed in starting the winding of the coil.

I have illustrated the form as applied to a winding of the so-called "four-turn" armature, but it may be equally well applied to a coil of any other number of turns, the variations of construction being understood without further explanation.

In Fig. 3 the coil is shown looking to the left upon the line 3 3 of Fig. 1, just as it is taken from the form. Clips H H are slipped over the coil to preserve the wires in place, and afterward it is wrapped with insulating-tape and dipped in asphalt varnish or otherwise suitably insulated, so that it becomes practically one integral structure. This, however is no essential feature of my invention.

The method of operation is as follows: The end E′ of the wire E is placed under the clip G, and the form is then rotated to the right until the wire is laid along the lowest of the grooves or terraces *a* past the first of the pins C—the one in the lower left corner of Fig. 1. The form is then further rotated, but in the opposite direction, the wire being bent around this pin, then passed under the pins C′ C′ until it is brought to the opposite pin C. The motion is then reversed, and the wire is laid along through the second of the grooves or terraces *a*, around the pin C again, then under the pin C′, as before.

It is of course understood that the wire is kept under tension during the entire process until the coil is completed, the end of the wire showing at F.

To remove the coil from the form, the pins C C are rotated until they come in alinement with the opening of the coil. It is then removed and the clips H (shown in Fig. 3) are placed upon it to preserve the wires temporarily in place until the completion of the operation, when, as already described, it is suitably insulated.

The coil of which I have described the winding may be adapted to a machine of any number of poles desired. After being removed from the form in the shape shown in Fig. 3 it is opened out to span the angular distance determined by the number of poles. For instance, in a two-pole machine the sides of the coil would be one hundred and eighty degrees apart upon the face of the armature; in a four-pole machine, ninety degrees apart; in an eight-pole machine, forty-five degrees apart, and so on, corresponding to the pitch

of the pole-faces surrounding the armature to which the coil is applied. This forms a feature of peculiar utility in the method of operation which I have described, inasmuch as by the same form coils may be wound for an armature of the same size applied to any class of machine to which its dimensions may adapt it.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. As a new article of manufacture, a winding-form for armature-coils, comprising a suitable base, means for confining the coil, and a series of terraces or grooves upon which one part of the coil is wound.

2. A winding-form for armature-coils, comprising a suitable base A, a ridge or projection formed into terraces *a*, *a*, and pins for confining the coil in place.

In witness whereof I have hereunto set my hand this 15th day of January, 1896.

JAMES A. WEBBER.

Witnesses:
JOHN W. GIBBONEY,
HENRY M. HOBART.