

(No Model.)

2 Sheets—Sheet 1.

W. P. FREEMAN.

ARMATURE FOR DYNAMO ELECTRIC MACHINES.

No. 281,049.

Patented July 10, 1883.

FIG. 1.

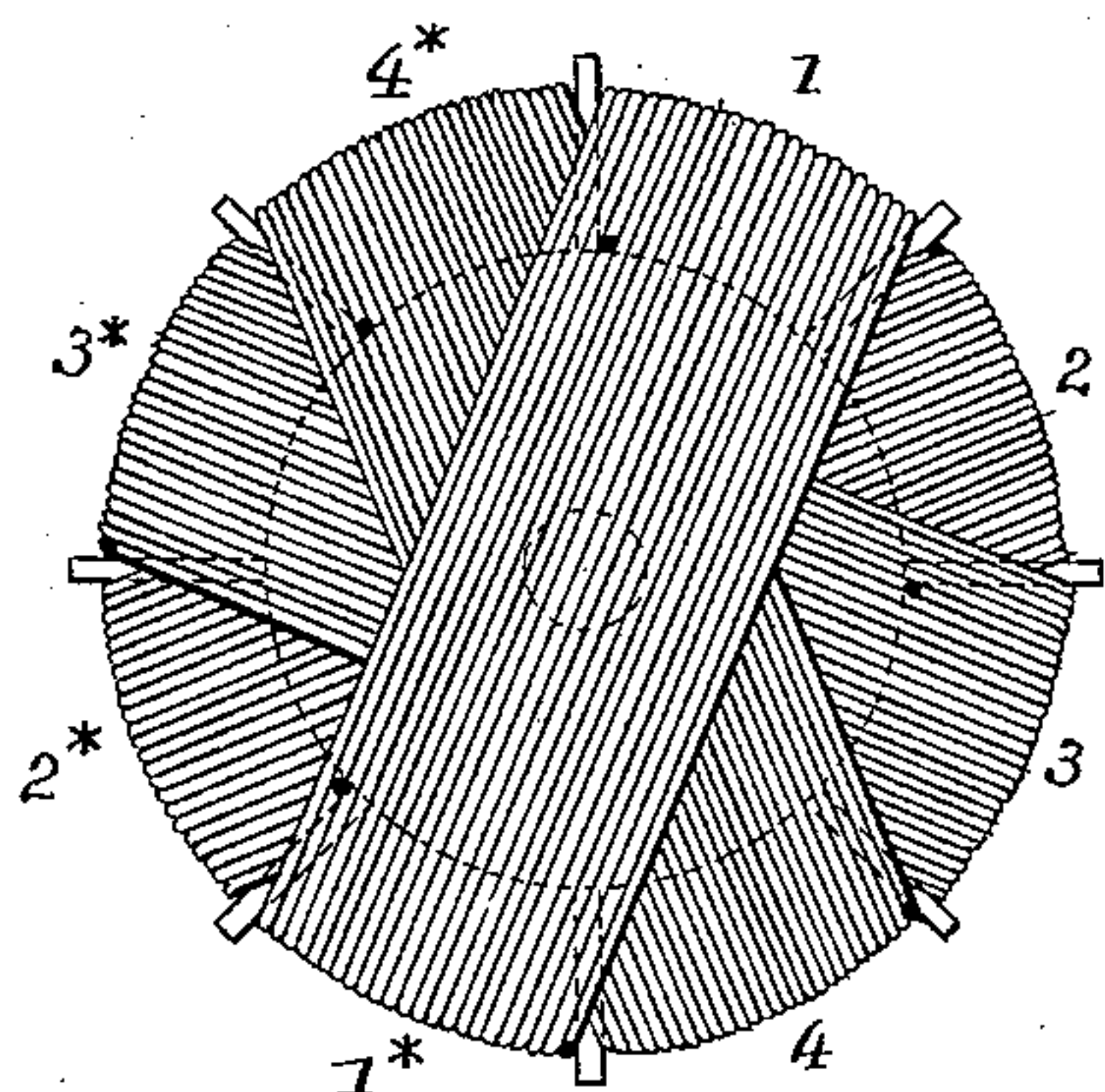


FIG. 2.

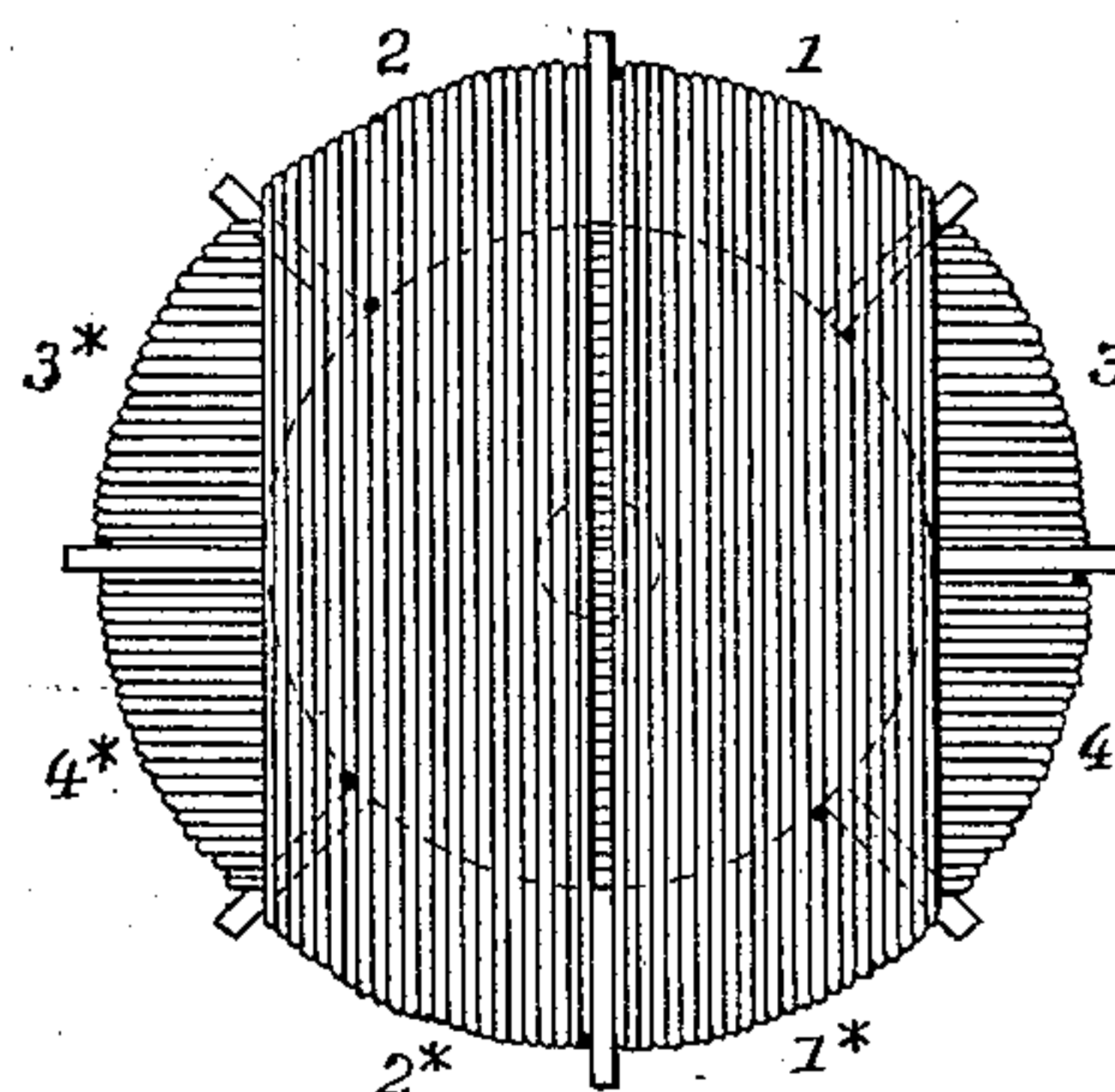
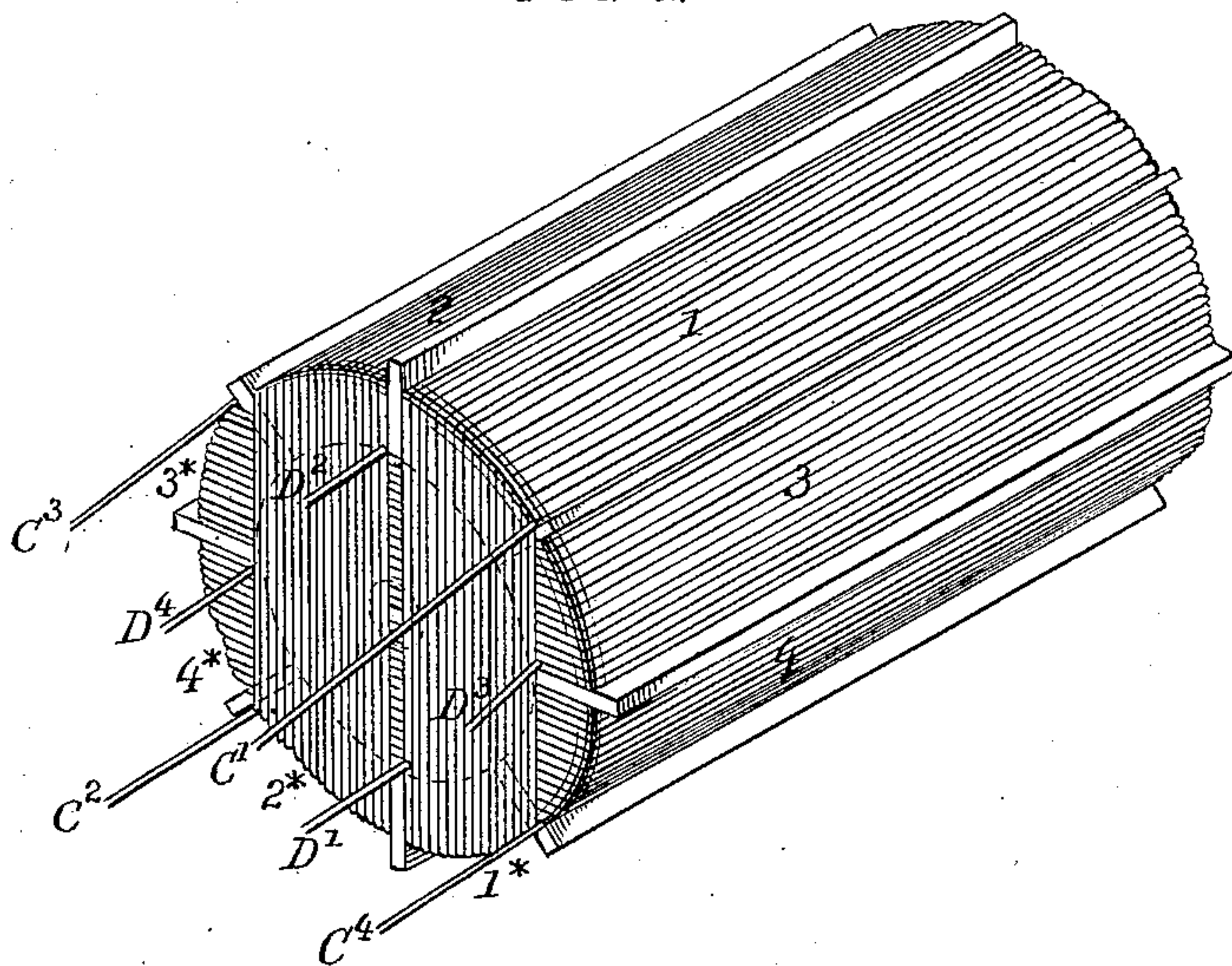


FIG. 3.



WITNESSES:

Harry Drury
Hamilton D. Turner.

INVENTOR:

Warren P. Freeman
By his attys.
Howson and Jones

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2 Sheets—Sheet 2.

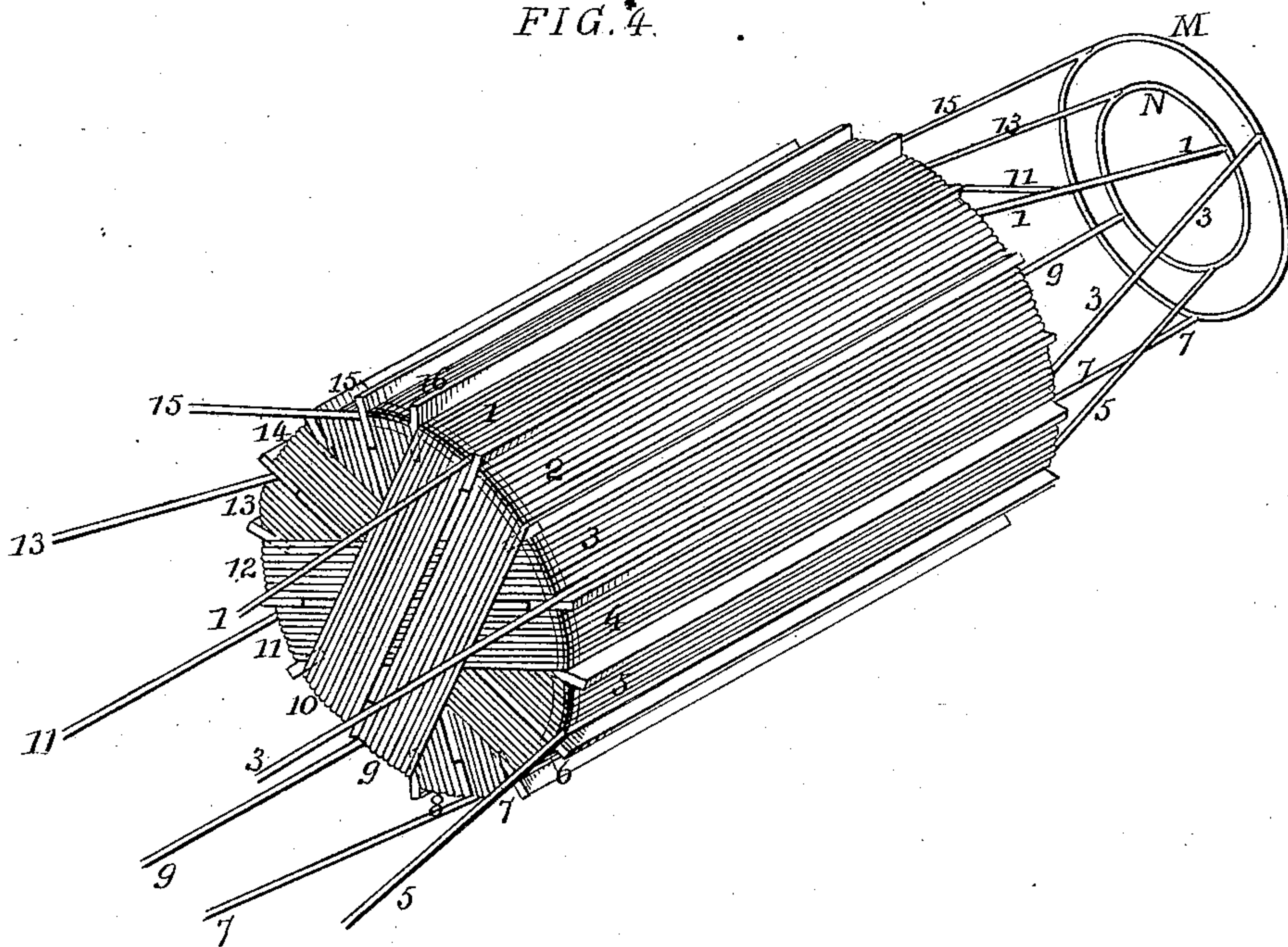
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FIG. 4.



WITNESSES:

Harry Drury
Hamilton D. Turner,

INVENTOR

Warren P. Freeman
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Howson and Fox

UNITED STATES PATENT OFFICE.

WARREN P. FREEMAN, OF NEW YORK, N. Y., ASSIGNOR TO WILLIAM F. JOBBINS, OF EAST ORANGE, NEW JERSEY.

ARMATURE FOR DYNAMO-ELECTRIC MACHINES.

SPECIFICATION forming part of Letters Patent No. 281,049, dated July 10, 1883.

Application filed October 14, 1882. (No model.)

To all whom it may concern:

Be it known that I, WARREN P. FREEMAN, a citizen of the United States, and a resident of New York city, New York, have invented certain Improvements in Armatures for Dynamo-Electric Machines or Electric Motors, of which the following is a specification.

My invention relates to that class of armatures for dynamo-electric machines or electric motors in which the armature-body is in the form of a cylinder or drum mounted on an axis, and having its inducing-coils wound longitudinally around the outside of the cylinder; and my invention consists of an improved method of winding these coils.

In the accompanying drawings, Figure 1 is a diagram of the end of an armature without its axis, showing a common method of winding the coils of an armature; Fig. 2, a similar diagram of my improved method; Fig. 3, a perspective diagram of an armature wound in accordance with my invention; and Fig. 4, another perspective diagram, to illustrate a method of connecting up the terminals.

In Figs. 1, 2, and 3 I have shown the cylinder as provided with eight spaces, into which are wound four coils, while in Fig. 4 there are sixteen spaces and eight coils; but the number may be varied indefinitely, as may be found desirable.

In the usual method of winding, each coil is wound into two diametrically-opposite spaces—as, for instance, the spaces 1 1*, or 2 2*—so that all the coils cross each other at the ends of the cylinder, as shown in Fig. 1. The result of this arrangement is that at two points in the cylinder the terminals do not come out into the proper positions. For instance, in Fig. 1, supposing the dots to represent the terminal wires, at 1 is an inside terminal wire and at 1* an outside terminal; at 2 is an outside and at 2* an inside terminal, and so on. This will leave at the two adjoining spaces 1 and 4* two inside terminals, and at 4 and 1* two outside terminals, so that the magnetic effect on the intermediate poles, p p' , will be neutral. To obviate this difficulty and bring the terminals out in proper relative order, in-

stead of winding each coil into two spaces diametrically opposite each other, I wind each coil in the two spaces which are next adjacent to two diametrically-opposite poles on the same side of a diametrical line through said poles, as indicated in Figs. 2, 3, and 4, so that the coils appear in pairs, the two coils of each pair appearing in these diagrams uncrossed at the ends of the cylinder and lying side by side, with the dividing-line passing through the intermediate and diametrically-opposite poles and through the center of the axis. Thus in Fig. 2 the first coil is wound in the spaces 1 1*, the second in 2 2*, the third in 3 3*, and the fourth in 4 4*. This, as indicated, will permit all the terminals to be brought out in proper order.

Although I have shown the two coils of each pair in the diagrams as absolutely parallel with each other at the ends of the cylinder, in practice convenience in carrying the wires around the axle of the armature at each end of the drum or cylinder will prevent this parallelism; but the essential feature of my invention consists in winding the drum with each inducing-coil in spaces on the same side of and next adjacent to a line drawn through diametrically-opposite poles.

In Fig. 3 I have shown the outside terminals as brought out at the same end of the armature as the inside terminals; but they may be brought out at opposite ends, if preferred. These terminals may be connected up in any manner which may be found convenient, either on a continuous-current dynamo-electric machine, or an alternating-current machine, or for an electric motor; but I prefer to connect up the terminals in the manner described and claimed in the Patent No. 264,229, granted to George W. Beardslee, September 12, 1882, the eight inside terminals, for instance, as shown in Fig. 4, being connected up in alternate sets or order to rings M N at one end of the armature, while the outer terminals at the other end of the armature are connected up to the segments of four commutator-wheels, as fully described in said patent. The particular manner of connecting up the terminals,

however, forms no part of my present invention, as it may be varied to suit convenience.

I claim as my invention—

5 The combination of the body of a cylinder-armature with inducing-coils wound longitudinally thereon, each coil being wound in spaces on the same side of and next adjacent to a line drawn through two diametrically-opposite poles of the cylinder, substantially as
10 described.

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

WARREN P. FREEMAN.

Witnesses:

GEO. W. OLLIFF,

WALTER K. FREEMAN.