

No. 692,022.

Patented Jan. 28, 1902.

B. G. LAMME.
WINDING FOR ELECTRICAL MACHINES.

(Application filed June 28, 1901.)

(No Model.)

Fig. 1.

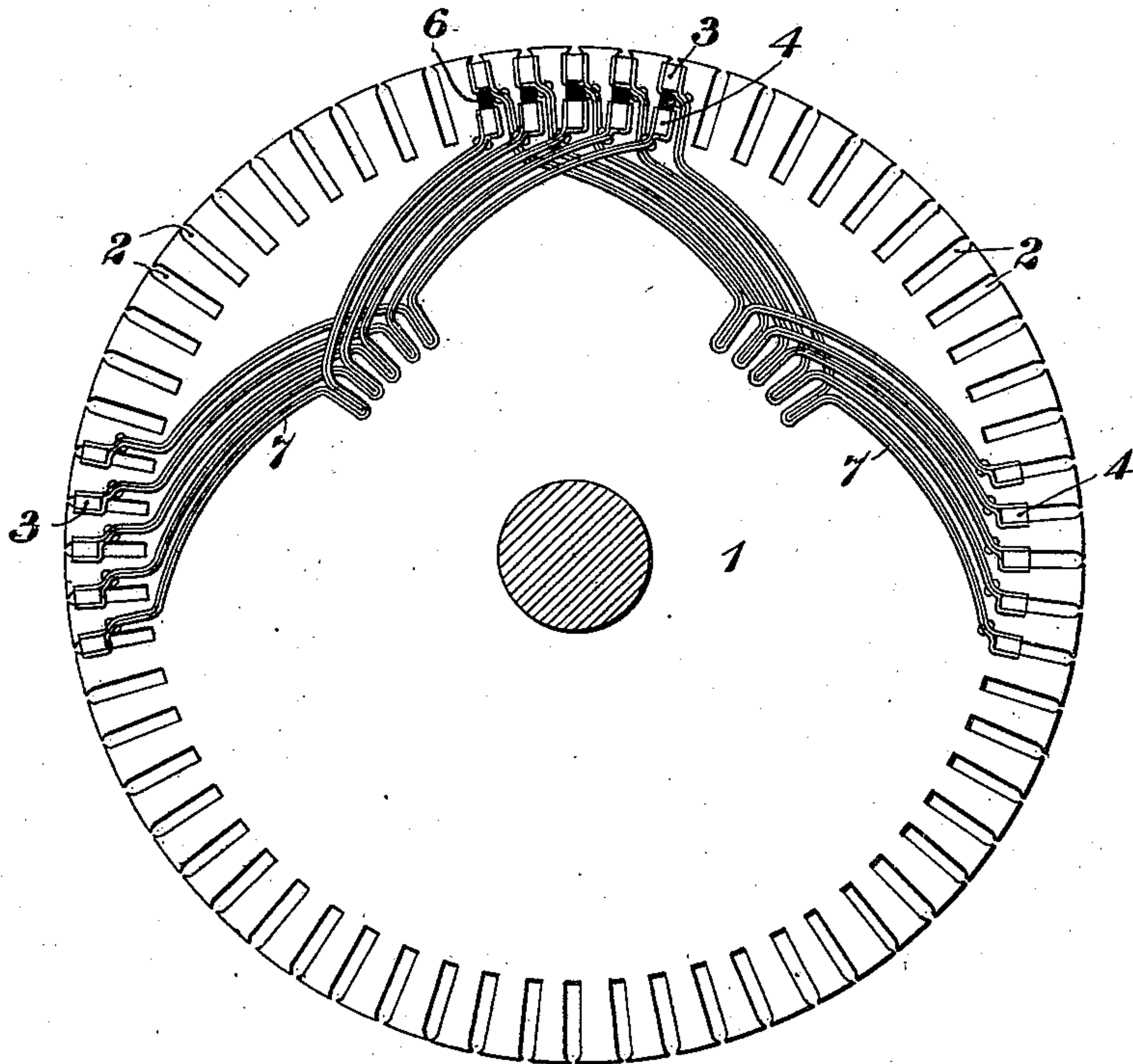


Fig. 2.

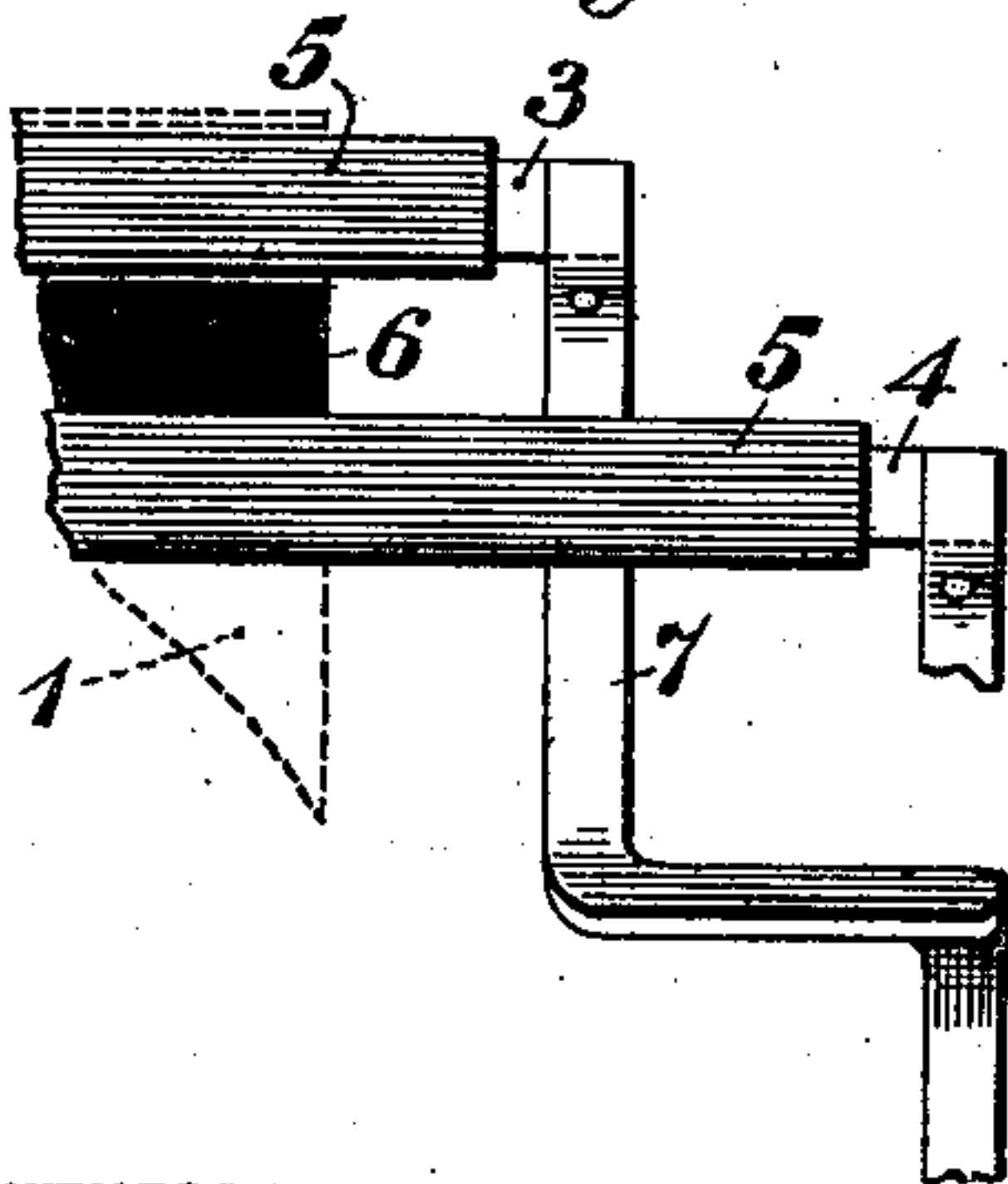


Fig. 3.

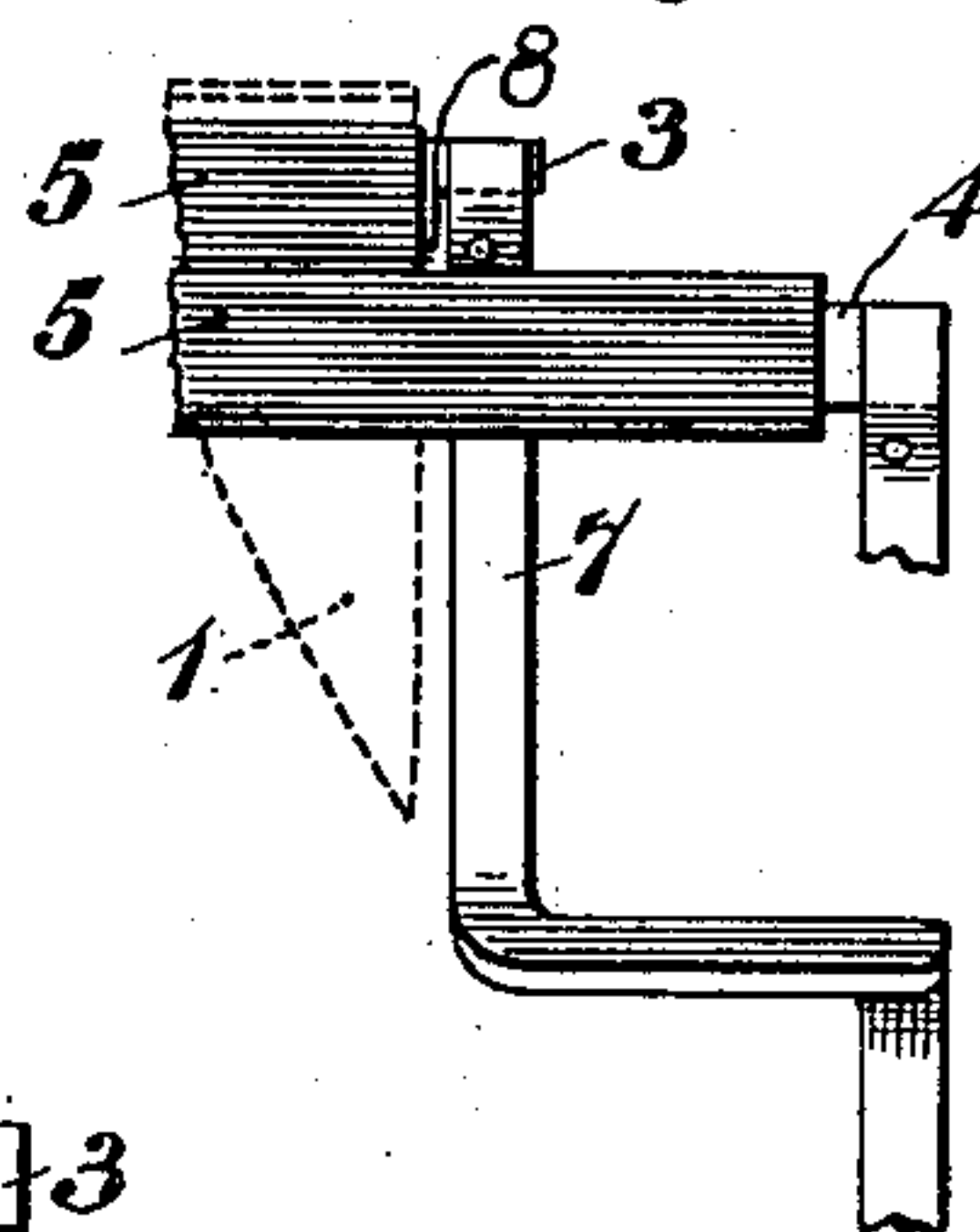
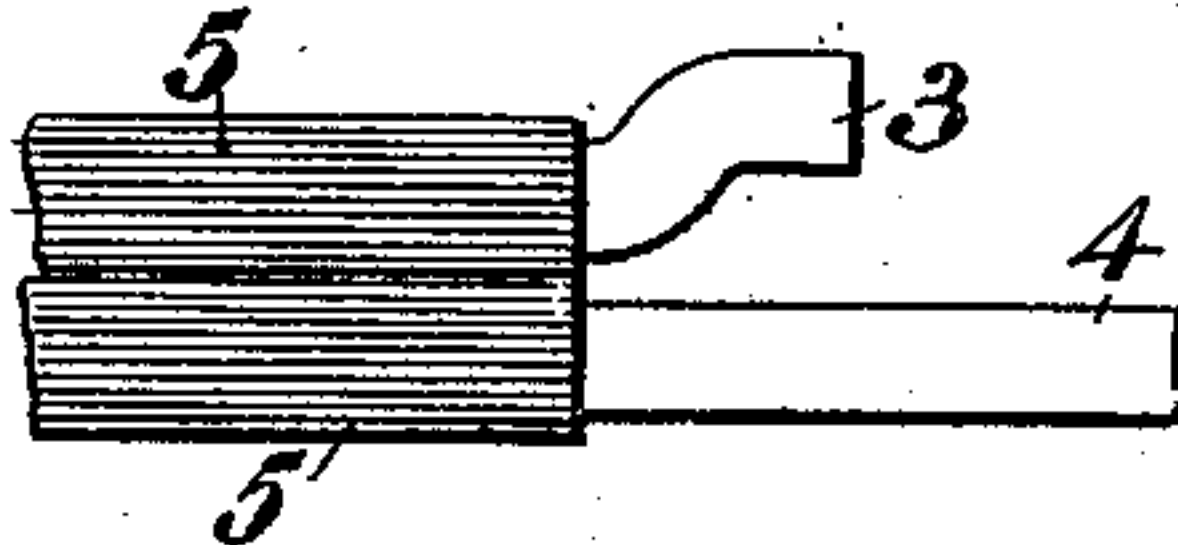


Fig. 4.



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BENJAMIN G. LAMME, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA.

WINDING FOR ELECTRICAL MACHINES.

SPECIFICATION forming part of Letters Patent No. 692,022, dated January 28, 1902.

Application filed June 26, 1901. Serial No. 66,148. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN G. LAMME, a citizen of the United States, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented new and useful Improvements in Windings for Electrical Machines, of which the following is a specification.

My invention relates to electrical machines, and more particularly to low-resistance windings for such machines, which have the form of bars or strips having their ends joined by connectors after being inserted into the core-slots of the machine.

The object of my invention is to provide a winding which is suitable for machines of any size or capacity, which may be readily applied to the core and also be readily removed, if desired, and which facilitates the attachment of the end connectors in cases where the core-slots are close together.

My present invention is an improvement upon Patent No. 589,839, granted September 14, 1897, to the Westinghouse Electric & Manufacturing Company upon an application filed by me, and, as above indicated, it is intended to embody the advantageous features set forth in said patent and also an improvement whereby the end connectors may be readily and securely attached to the ends of bar-conductors that are located in close proximity to each other.

In the accompanying drawings, Figure 1 is an end elevation of an armature-core provided with a portion of its set of bar-conductors and end connectors. Fig. 2 is a detail view, partially in side elevation and partially in section, of a portion of an armature-core, the long and the short bar-conductors and the end connectors attached thereto. Figs. 3 and 4 are views similar to Fig. 2, but showing two modifications.

The armature-core 1 is shown as provided with partially-closed and relatively deep slots 2, in each of which is located a short outer bar 3 and a long inner bar 4, which are respectively provided with sheaths 5, of suitable insulating material. The depth of each slot as compared with the width of the bars lo-

cated therein is such that in the construction illustrated in Figs. 1 and 2 I place a block or bar 6 of insulating material between the bars 3 and 4 in order that the latter may be securely retained, respectively, in the outer and inner sides of the slot.

Each end connector 7 consists of two lengths of strap-copper of substantially the same form and dimensions, the ends of which are joined, respectively, to long and short bars in appropriate slots to provide the number of magnetic poles desired. The advantages of arranging the long and short bars as here indicated is set forth in the above-mentioned patent and need not therefore be here repeated.

It has been the usual practice heretofore in constructing machines of this general character to fasten the end connectors to the bars by means of solder and rivets, it being necessary when such a winding is applied to the rotating member of the machine to make the attachment such that there will be no danger of separation of the said parts.

In case the core to which the winding is to be applied has a large number of slots located close together it is difficult if not impossible to rivet the end connectors to the bar-conductors. I therefore propose to separate the ends of the bars in each slot sufficiently to provide a space through which one of the strips constituting an end connector may project, the two strips constituting the connector being separated at the ends for this purpose and one of them being soldered to one side of the bar and the other to the other side and the two strips being riveted together adjacent to the lower side of the bar to which the connector is attached. It will be seen that with this construction the ends of the two straps constituting a connector will be held so closely together by the rivet that the solder will be sufficient to prevent detachment of the connectors and that if it is desired for any purpose to remove a connector or a bar the removal may be readily effected without disturbing the other portions of the winding.

In Fig. 3 I have shown a construction in which the two bars and their insulating-sheaths entirely fill the slot, and in order to

provide space between the ends of the bars I cut away a portion of the outer bar, as indicated at 8.

5 In Fig. 4 I have shown a construction in which the same result as that illustrated in Fig. 3 is secured by bending the end of one of the bars away from the other, so as to provide a space between the two for the passage of the end of one of the straps of which the
10 connector is composed. Either or both of the bars may obviously be bent to effect this result.

While I have illustrated the invention as applied to a rotating member of drum form, it
15 will be understood that it is equally well adapted for and is intended to cover that type of machine in which the slotted core having the distributed winding is stationary and surrounds the other main member of the
20 machine. It is not deemed necessary to illustrate this form of core with the winding applied thereto, inasmuch as both forms of core are well known in the art.

I claim as my invention—

25 1. In an electrical machine, a slotted core having short outer bars and long inner bars

and double strap end connectors, the strap ends being separated and fastened to both sides of the bar ends and those which are fastened to the short bars being both located at
30 one side of the long bars.

2. In an electrical machine, a slotted core having a short and a long bar in each slot, the ends of which are spaced apart, and double
35 strap end connectors the ends of which embrace the ends of the bars but are located at one side of the bars to which they are not connected.

3. In an electrical machine, a slotted core having a short and a long bar in each slot, the
40 ends of which are spaced apart, and double strap end connectors, the ends of which embrace the bar ends and are riveted together in proximity thereto, the straps for each short bar being both located at one side of the long
45 bar that is in the same slot.

In testimony whereof I have hereunto subscribed my name this 25th day of June, 1901.

BENJ. G. LAMME.

Witnesses:

JAMES B. YOUNG,
WESLEY G. CARR.