

(No Model.)

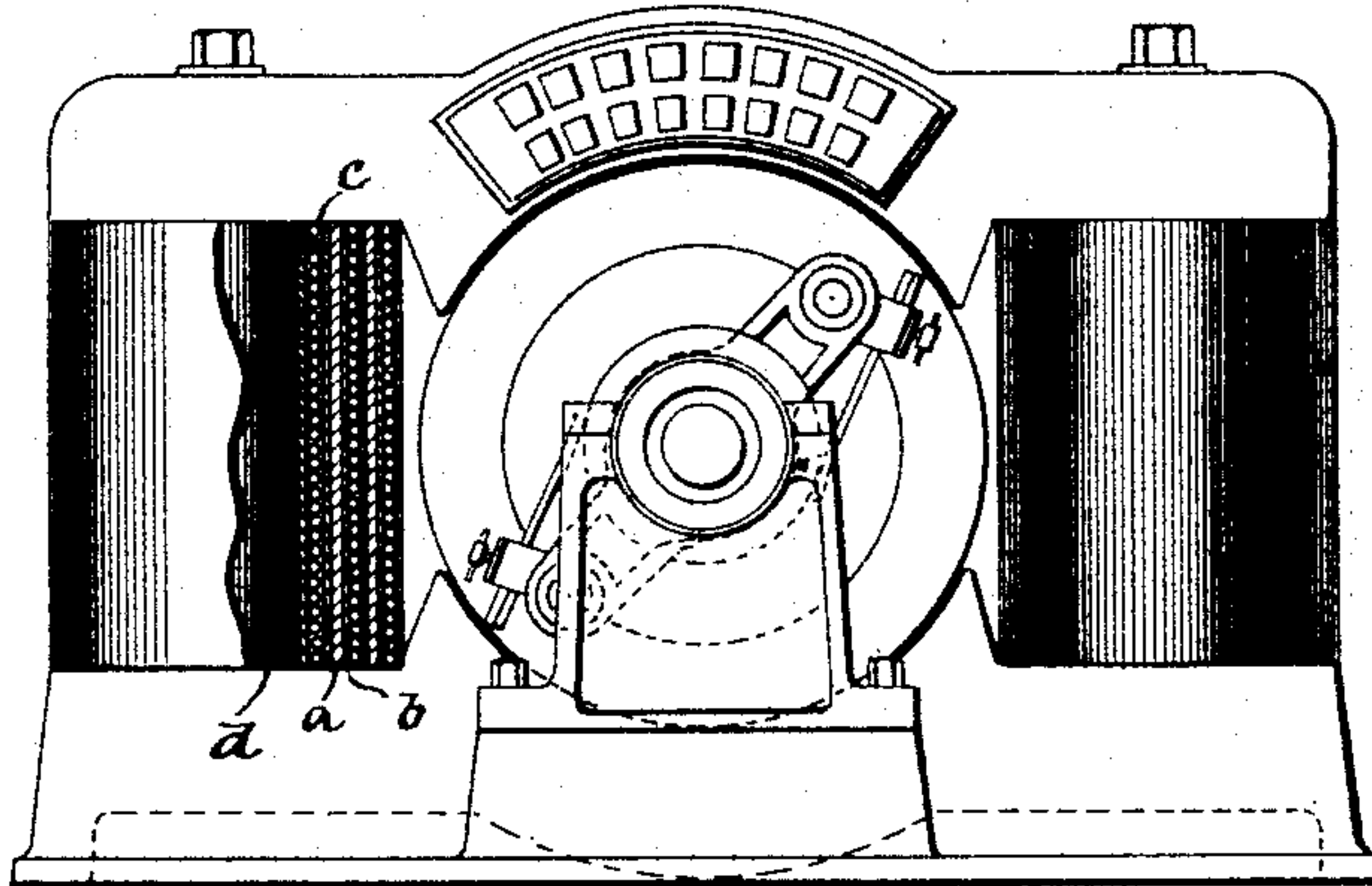
C. F. WINKLER.

DYNAMO ELECTRIC MACHINE OR MOTOR.

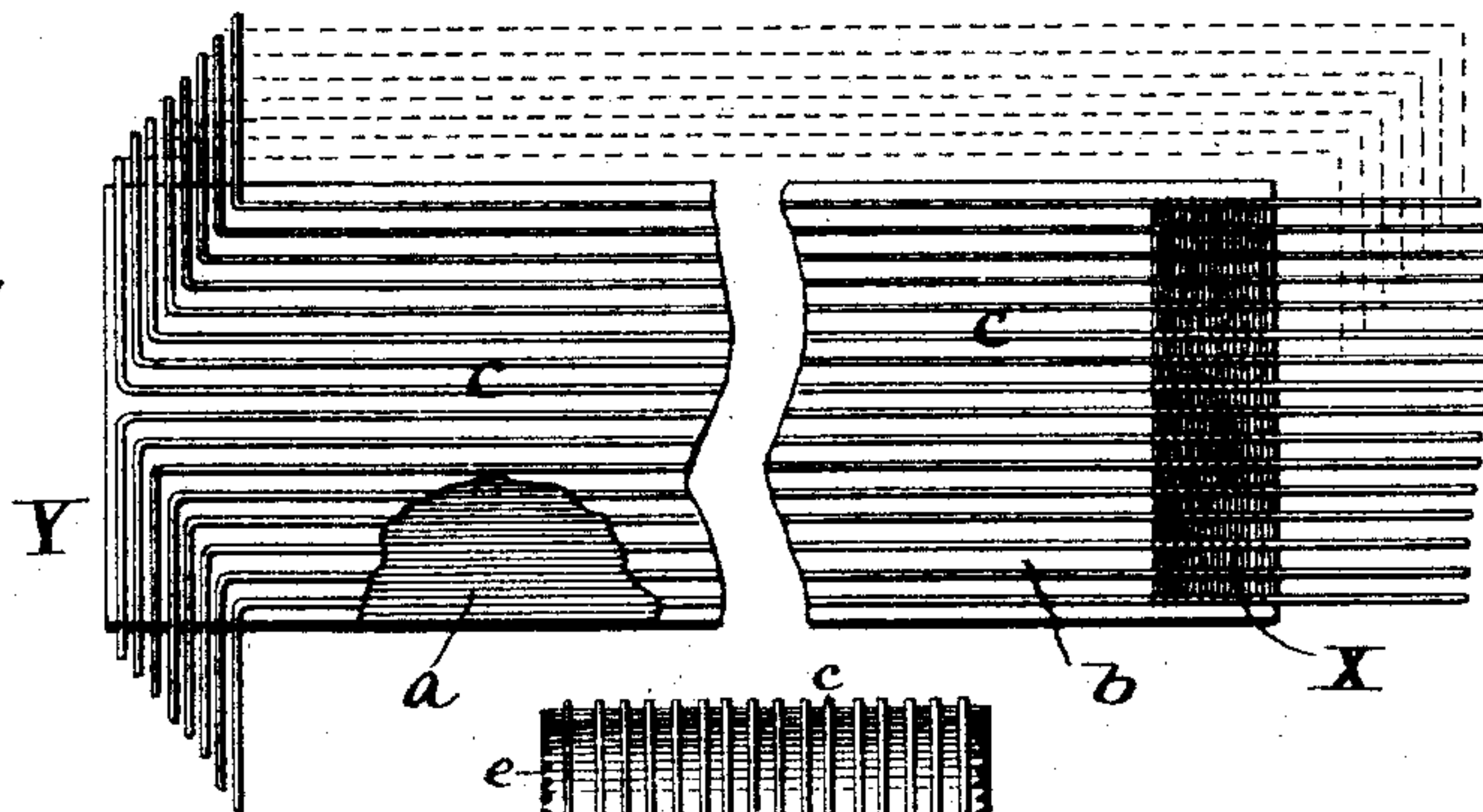
No. 412,353.

Patented Oct. 8, 1889.

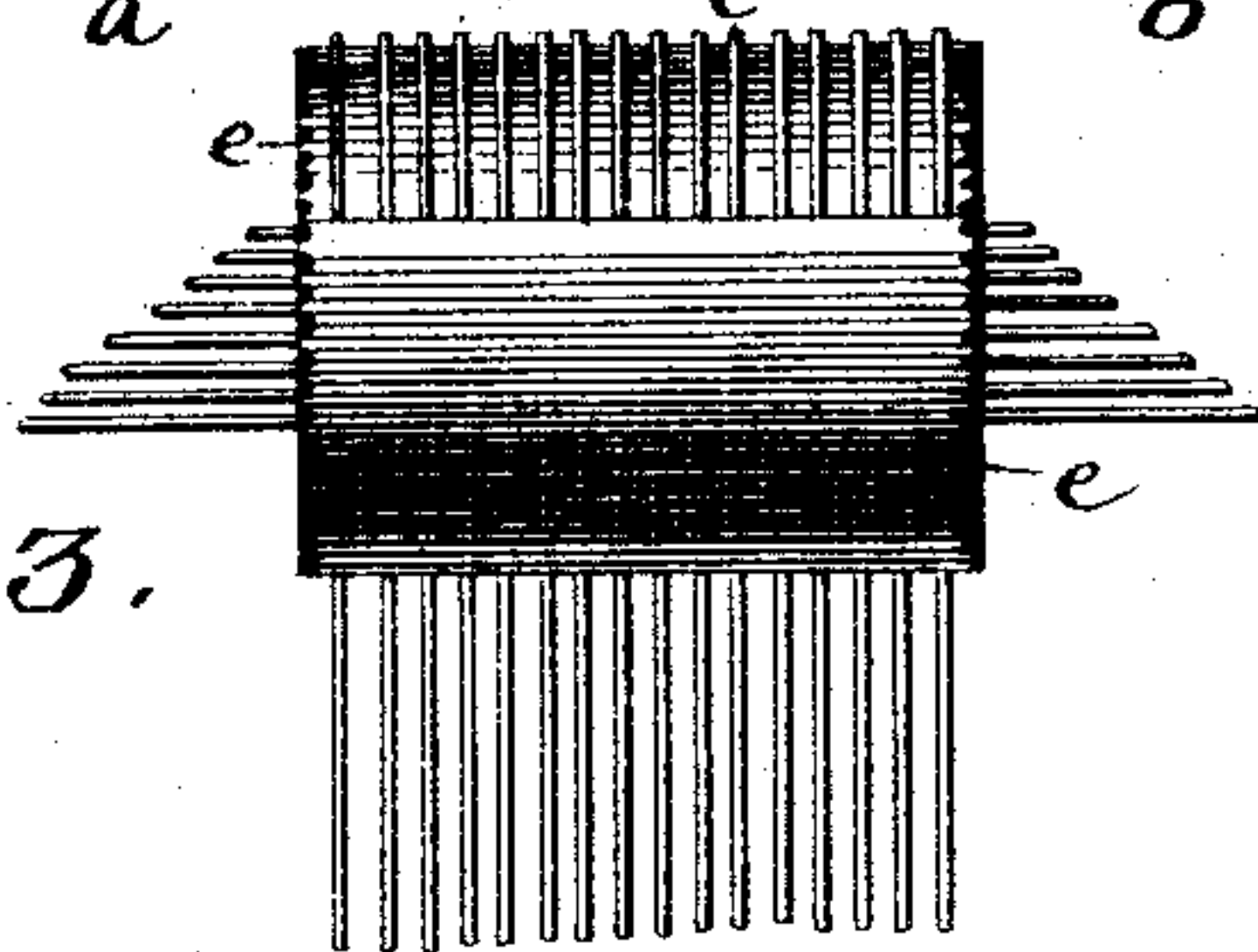
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## DYNAMO-ELECTRIC MACHINE OR MOTOR.

SPECIFICATION forming part of Letters Patent No. 412,353, dated October 8, 1889.

Application filed May 20, 1889. Serial No. 311,453. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES F. WINKLER, a citizen of the United States, residing in Hoosick Falls, in the county of Rensselaer and State of New York, have invented certain new and useful Improvements in Dynamo-Electric Machinery, of which the following is a specification.

My invention has reference to dynamo-electric machines and motors, the object being to improve the construction of the field-magnets to the end that the efficiency will be increased.

The construction of the machine will now be described with reference to the accompanying drawings, in which—

Figure 1 represents an end elevation of the machine; Fig. 2, a plan view of a field-magnet before being rolled into shape; Fig. 3, an elevation of the field-coils before mounting.

Referring to Fig. 2, I have shown first a layer or strip of sheet-iron *a*. On the top of this is placed a strip of felt or other insulating material *b*, of about the same length. The length of these strips depends upon the size of magnet to be constructed, and their width is the length of the finished magnet. Upon these two layers I place the insulated wires *c*, running parallel with one another and extending some distance beyond the strips *a* and *b* at one end, and at the other the ends of the wires are divided into two groups and bent at right angles, projecting beyond the sides of the strips *a* and *b*, as shown. The projecting ends will be of varying lengths, and each wire may be identified by its length.

That portion of Fig. 2 marked X illustrates the wires *c* woven together by cross-threads of insulating material, thus forming a web or fabric. When the wires are bound together in this manner, they are more easily handled and applied in building up the magnet. When these cross-threads are used, they serve to insulate the conductors from one another, and therefore enable me to use bare wires. Upon the wires I place another strip of insulating material. (Not shown on the drawings.) The structure is now ready to be rolled up, and a solid core *d*, Fig. 1, is placed crosswise at the Y end of the strip and the whole thing wound upon it into the form

shown in Fig. 4. The ends of the coil thus formed are provided with radial grooves *e*, and the wires projecting from the ends of the coil are bent over, one or more into each groove. This leaves the surfaces at the ends flush and admits of good contact with the pole-pieces. The free ends of the wires are carried around the coil one or more times, and all finally bound in any desired manner. The whole coil may be covered with a strip of insulating material, thus giving it a smooth surface. From this construction it will be seen that I have provided a coil wound spirally, and that the iron occurs between every two layers of wire. I maintain that there is an advantage in having the wire on both sides of the iron, and that the magnetic effects are induced from both directions. After the coil has been bolted in position between the pole-pieces the ends of the wires may be connected up in any desired manner. For instance, to divide the coil into as many sections as there are strands of wire, the ends are connected, as shown in the dotted lines, Fig. 2. The joined ends may then be led to the contact-blocks of a regulating-switch for the purpose of cutting in and out the sections to regulate the output of the machine.

Having thus described my invention, I claim—

1. In an electric motor or dynamo, the field-magnets formed of insulated spiral conductors arranged between the layers of a volute magnetizable metal, the heads of the roll or volute being grooved or scored radially and the inner ends of the conductors occupying said grooves, as set forth.

2. In an electric motor or dynamo, field-magnets formed of a layer of separate conductors woven together by cross-threads in the manner described and a layer of iron placed together and wound spirally upon themselves.

In witness whereof I have hereunto affixed my seal and signed my name in the presence of two subscribing witnesses.

CHARLES F. WINKLER. [L. S.]

Witnesses:

CHARLES S. BRINTNALL,  
WILLIAM A. SWEET.