(No Model.)

2 Sheets—Sheet 1.

A. BOSSARD.

ARMATURE FOR DYNAMO ELECTRIC MACHINES.

No. 348,883. Patented Sept. 7, 1886.

Fig. 1

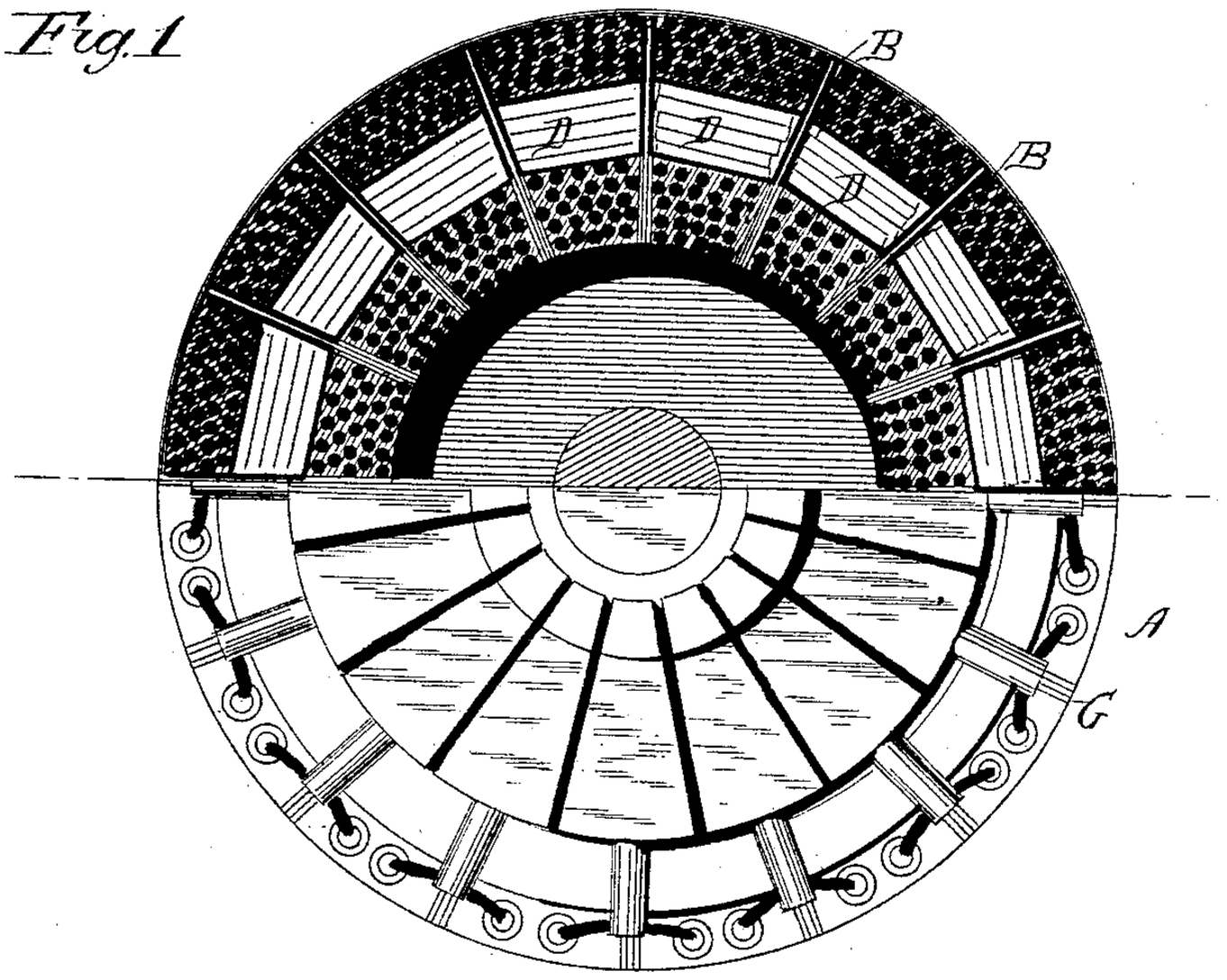
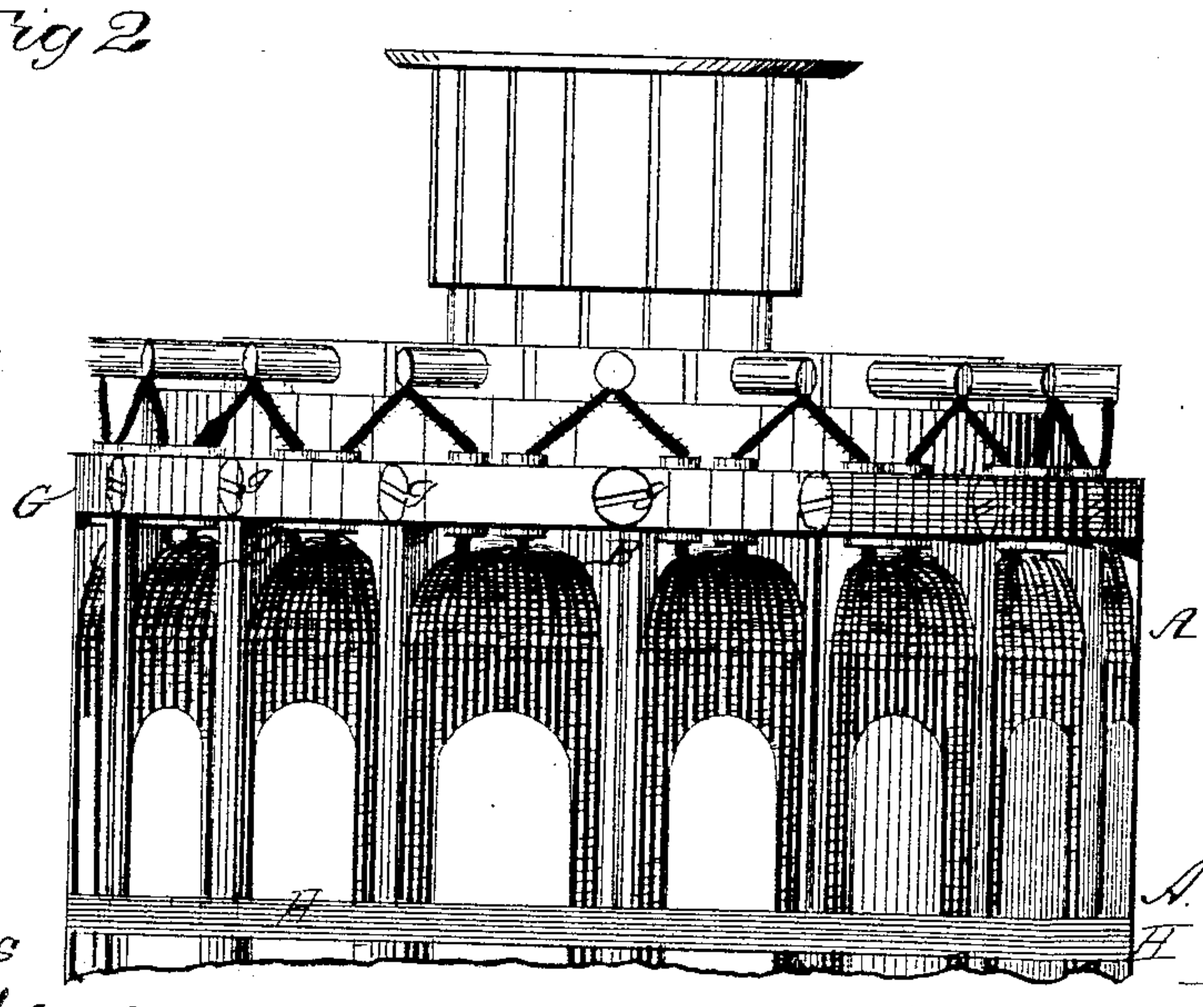


Fig 2



Witnesses
Henry Hasler
Paul Harry

A. Bossard
Inventor
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Atty

(No Model.)

2 Sheets—Sheet 2.

A. BOSSARD.

ARMATURE FOR DYNAMO ELECTRIC MACHINES.

No. 348,883. Patented Sept. 7, 1886.

Fig. 3

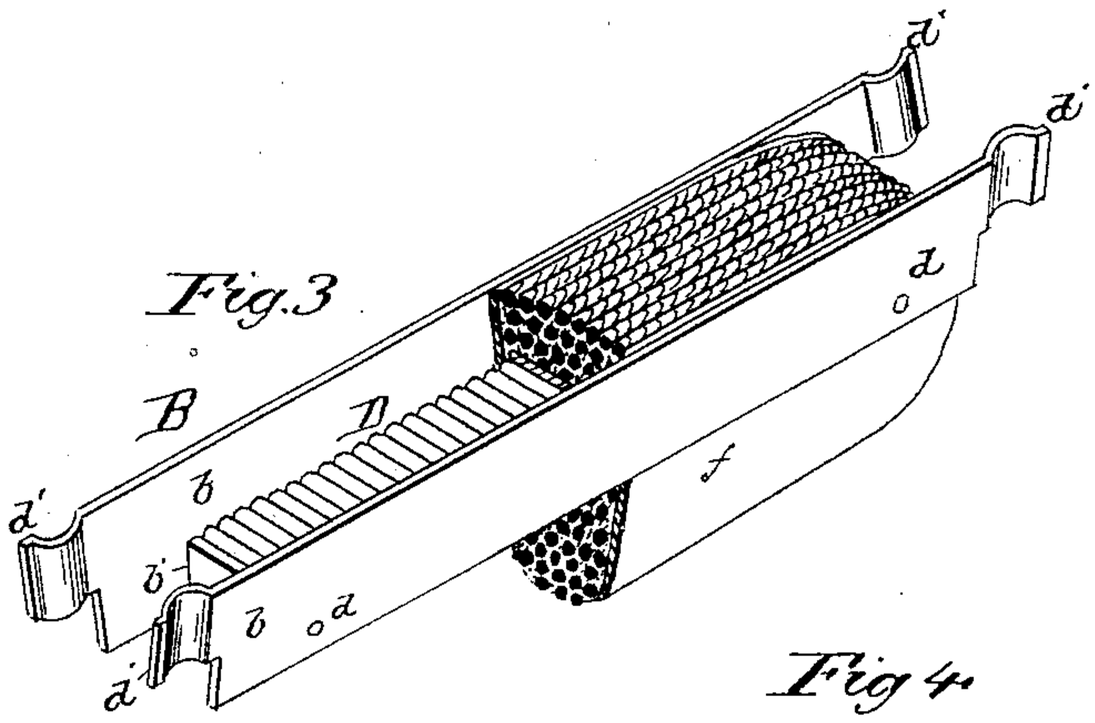


Fig 4.

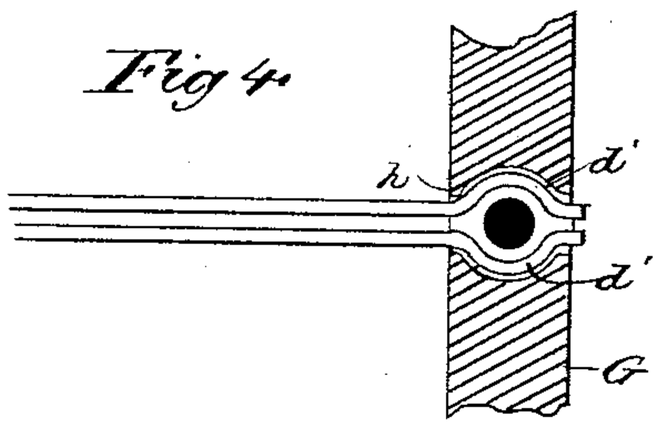


Fig 5

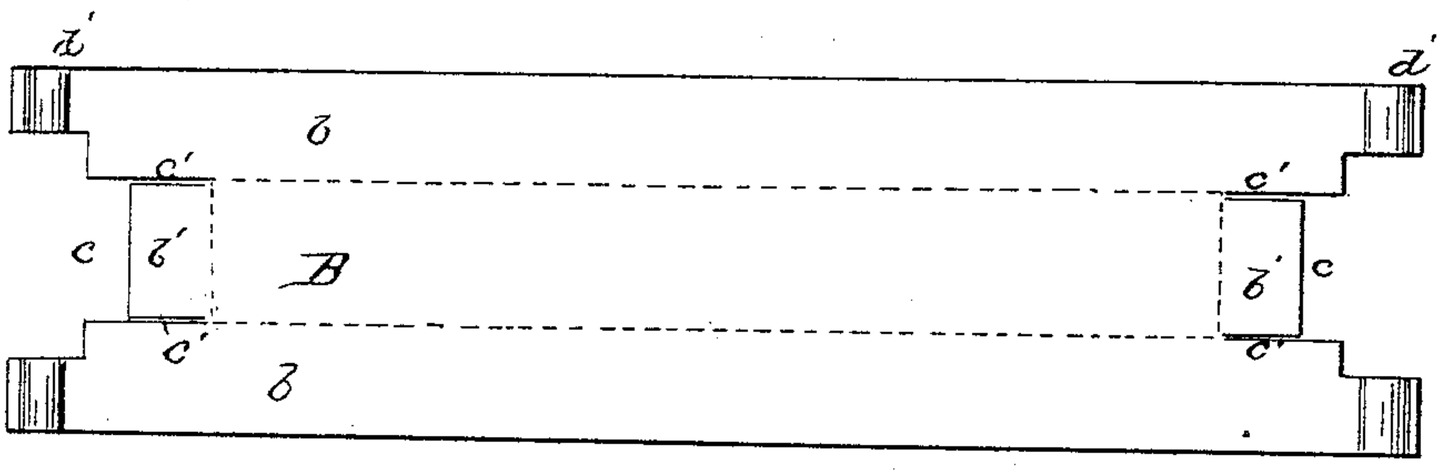
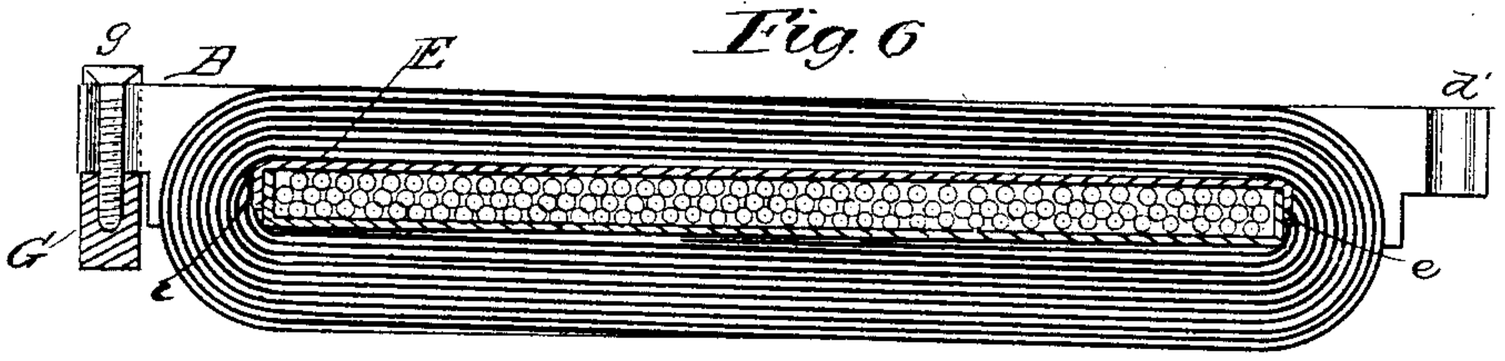


Fig. 6



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UNITED STATES PATENT OFFICE.

AUGUST BOSSARD, OF NEW YORK, N. Y.

ARMATURE FOR DYNAMO-ELECTRIC MACHINES.

SPECIFICATION forming part of Letters Patent No. 348,883, dated September 7, 1886.

Application filed May 20, 1886, Serial No. 202,780. (No model.)

To all whom it may concern:

Be it known that I, AUGUST BOSSARD, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Armatures for Dynamo-Electric Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, reference being had to the accompanying drawings, which form part of this specification, in which—

Figure 1 is an end view, partly in section, of an armature embodying my invention. Fig. 2 is a side view showing a portion of said armature. Fig. 3 is a perspective view, partly in section, of one of the armature-sections. Fig. 4 is a detail view. Fig. 5 is a plan view of a blank for one of the troughs. Fig. 6 is a longitudinal sectional view of an armature-section.

This invention has relation to armatures for dynamo-electric machines of the Gramme type—that is, armatures in which the core is composed of fine iron wire, as distinguished from a solid iron ring such as constitutes the core of an armature of the Paccinote type.

The object in using fine iron wire for the core is to obtain a rapid discharge of magnetism, it being well known that a magnetic body, when subdivided into many sections, will discharge itself more rapidly than will a solid homogeneous mass of the same material. I have found, however, that the fine-wire core of the Gramme armature as heretofore constructed is defective in this respect; that it does not discharge its magnetism when rapidly rotated quickly enough to accommodate itself to the changes of polarity induced by the dissimilar poles of the field, and that there is a a constant transfer of magnetic polarity in the different parts of the core corresponding to the approach toward and recession from the poles of the field; but the lines of separation of these different parts are not well defined, and, owing to the wire sections or strands being continuous in the core, each part depends to such an extent upon the whole mass that the magnetic discharge is more or less retarded.

The principal object of my invention is to promote and effect a more rapid and complete magnetic discharge of the wire core than has heretofore been attained, and with this object in view my invention principally consists, primarily, in subdividing the wire core into separate and independent sections corresponding to the spools of the armature, each section being composed of a suitable number of short links or pieces of wire inclosed in a sheet-iron box or trough, around or upon which is wound the insulated wire composing the spool, by which means I obtain an independent discharge for each and every spool, and effectually avoid the retardation of the discharge following the employment of the ordinary Gramme core.

My invention furthermore consists in the novel construction and arrangement of the sheet-iron box or trough containing the short lengths or sections of wire, so that their sides or flanges shall project or extend between the spools to the periphery of the armature, and thereby approach close to the poles of the field, whereby the magnetism induced by the latter in said flanges will be conducted into the core. By this means I overcome and obviate a defect in the ordinary Gramme core, which is necessarily located so far away from the field-poles that it attains comparatively little magnetic induction.

My invention finally consists in the novel construction and arrangement of the sections or parts comprising the spools, the sheet-iron box or trough, and the fine-wire lengths whereby each section is separate and independent of the others, and may therefore be easily removed and replaced without disturbing the latter for the purposes of repair or readjustment.

Referring to the accompanying drawings, A designates an armature, constructed in sections, embodying my invention.

B designates the troughs or boxes to contain the core-wires. Said troughs or boxes are preferably made of sheet-iron, a suitably-shaped blank, B′, being bent or struck up so as to produce the side flanges or walls, *b b*, and the end flanges, *b′*. By notching or recessing the blank at its ends, as shown at *c*, and then cutting the longitudinal slits *c′* on line with the sides of the notches *c*, the trough B, when completed, will have the side flanges, *b b*, higher than the end flanges, *b′*. Bolts, screws, or rivets *d* serve to brace the side flanges and hold them in shape.

The trough or box B is made with its sides

converging, so as to form radii with the center of the armature, and thus adapt the sections, of which the boxes are a part, to fit together as segments of the complete armature.

D represents the core-wires, which consist of short lengths of soft-iron wire of suitable diameter. These lengths are laid transversely in the troughs B, filling the same up to about the level of the end flanges, and are covered and inclosed by a flanged cap or plate, E, the flanges *e* of which embrace the end flanges of the trough. The armature coils or bobbins are then wound upon the troughs lengthwise of and between the side flanges until the space above the cap E is filled. Below the side flanges strips of vulcanite fiber or other material, *f*, is applied to the sections, and converge radially to correspond. These strips serve to confine the inner portions of the bobbin-wires and preserve the wedge-shape conformation of the sections.

The extended walls or side flanges of the troughs are the mediums through which the armature-sections are secured to the armature-heads, and are therefore bent or indented at *d'* to form semi-cylindrical recesses, which, when the sections are in place, produce cylindrical sockets at the ends of every two adjacent sections. Through these sockets bolts or screws *g* are inserted and fastened to the armature-heads G. The latter, as shown, are formed with radial kerfs *h*, of rounded form, to receive the indented ends of the flanges *b b*. The latter, being fitted in place, are held by the screws or bolts *g*, the heads of which abut against or rest upon the upper edges of the flanges. By simply removing the screws the sections may each be displaced intact, obviating the necessity of taking the whole armature apart should one section be burned out or otherwise injured, so as to require repair or replacement by a new section. The terminals of the bobbins are led through the armature-heads and connected to the commutator-sections in the usual way. When all the sections are in place and fastened at their ends, they may be bound together at points between the armature-heads by suitable bands, H, resting on cushions of vulcanite fiber or other material.

It will be seen from the foregoing description and accompanying illustrations that I have provided an armature in which I obtain all the advantages of a Gramme or subdivided core, while I at the same time effectually overcome certain imperfections which greatly impair the efficiency of the fine-wire core.

By my method of subdividing or separating the wires of the core into small lengths corresponding to the respective bobbins I prevent the whole core from maintaining throughout the magnetic charge which otherwise follows the entrance of a bobbin within the magnetic field, and hence obtain a discharge of the magnetism of each section separately. This discharge is very rapid, owing to the diminished length of the core-sections, and is therefore productive of advantageous results not hitherto attainable. Again, by continuing the side flanges of the troughs out between the bobbins to the periphery of the cylinder I bring the core virtually within the full influence of the field, since the flanges, being in contact with the core, serve to conduct the inductive effects of the field-magnet to the latter and highly magnetize the same. When the usual form of Gramme core is employed, the wires of the bobbins surround the same, and of necessity the core is a distance from the field-magnet proportioned to the size of the bobbin and the number of windings.

What I claim as my invention is—

1. An armature for dynamo-electric machines, comprising a series of separate and independent sections fitted between disks or heads, each section composed of a soft-iron trough or box containing a number of short soft-iron wires forming divisions of the core, the sides of said troughs or boxes projecting radially to or near the periphery of the armature, so as to bring the core fully within the magnetic field, substantially as and for the purpose described.

2. In an armature for dynamo-electric machines, a core composed of short lengths of soft-iron wire, in combination with the surrounding spools or bobbins, and with troughs, boxes, or frames whose side flanges lie between the bobbins and terminate at or near the periphery of the armature, substantially as described.

3. In an armature for dynamo-electric machines, the combination, with the heads or disks having radial parts, the armature-core, and the spools or bobbins, of plates or flanges separating and embracing said bobbins or spools, said plates or flanges having their ends recessed, bent, or indented, so as to form sockets for the reception of bolts or screws by which they are fastened to the armature-heads.

In testimony that I claim the foregoing I have hereunto set my hand this 14th day of May, 1886.

AUGUST BOSSARD.

Witnesses:
HENRY HASLER,
PAUL HAERRY.