

(No Model.)

2 Sheets—Sheet 1.

W. S. BELDING.
ARMATURE.

No. 415,697.

Patented Nov. 26, 1889.

Fig. 1

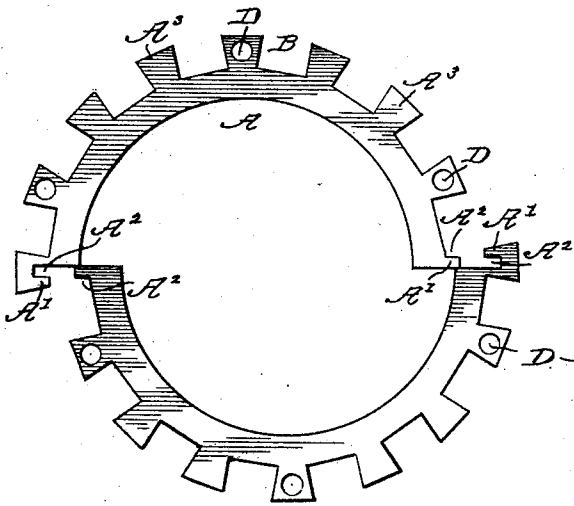


Fig. 2

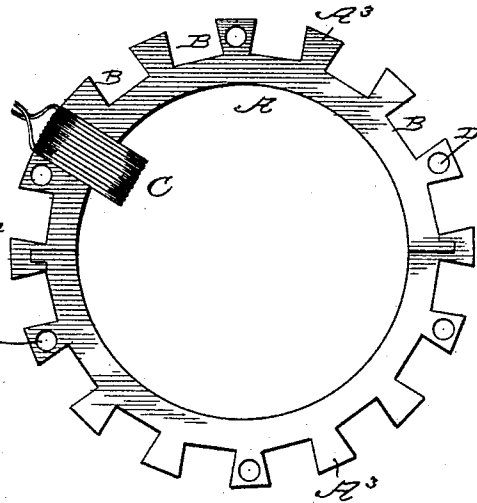
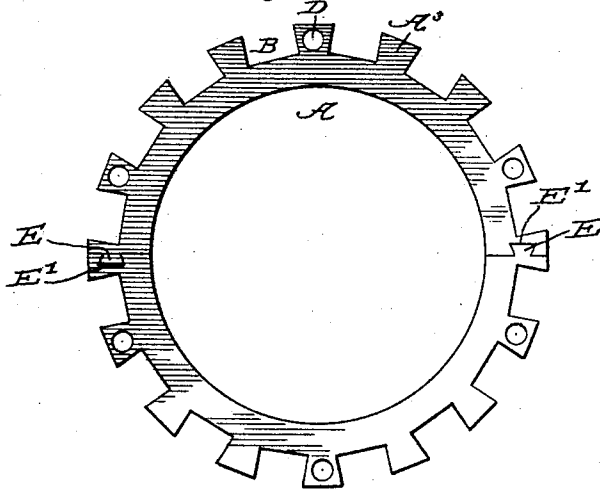


Fig. 3



Witnesses:

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Inventor:

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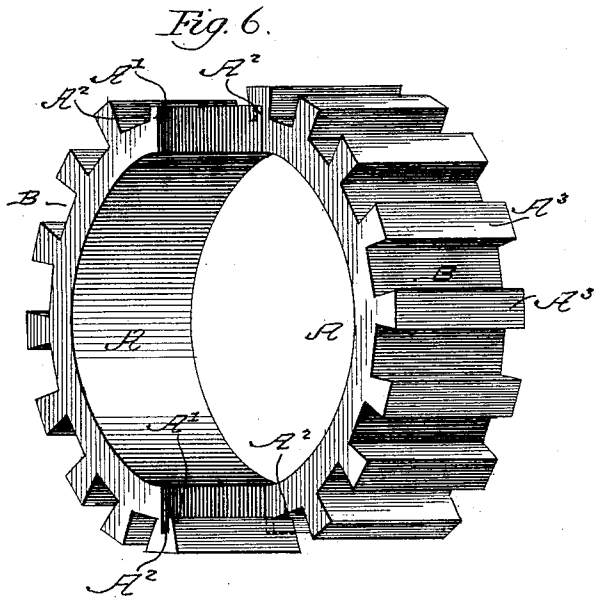
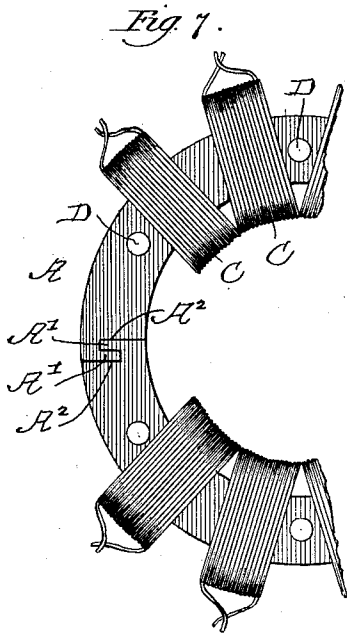
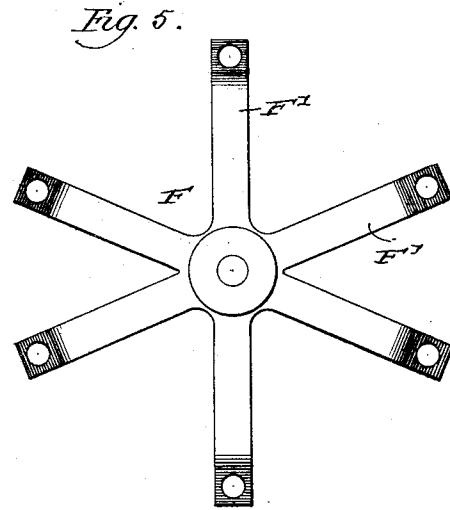
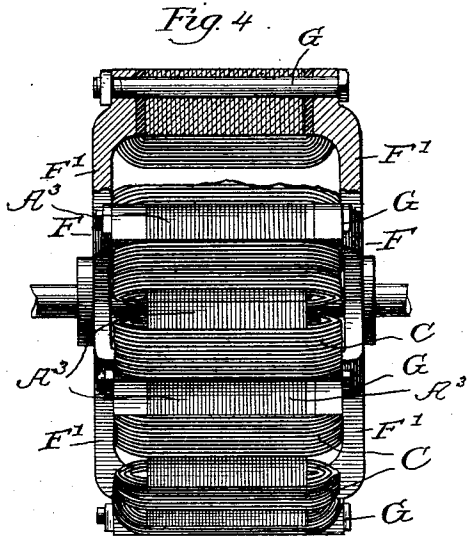
by Cyrus K. K. K.

Atty.

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UNITED STATES PATENT OFFICE.

WARREN S. BELDING, OF ENGLEWOOD, ASSIGNOR TO THE BELDING MOTOR AND MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS.

ARMATURE.

SPECIFICATION forming part of Letters Patent No. 415,697, dated November 26, 1889.

Application filed December 11, 1888. Serial No. 293,255. (No model.)

To all whom it may concern:

Be it known that I, WARREN S. BELDING, a citizen of the United States, residing at Englewood, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Armatures; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates more particularly to armature-cores composed of segmental sections, which sections are united at their ends to constitute the complete ring. It has been found desirable to construct the armature-ring in segments in order that the winding may be more easily accomplished, and that a coil which has been rendered defective by use may be more easily removed and replaced. Said core may be composed of solid metallic sections or of sections composed of thin plates; but such plates do not constitute a part of this application. The plates hereinafter described form the subject-matter of an application filed by me July 7, 1888, and bearing Serial No. 279,313.

Figure 1 is an end view showing the section of the ring disconnected. Fig. 2 is an end view of a complete ring. Fig. 3 is an end view of a complete ring in which the meeting ends of the sections are joined by dovetailing. Fig. 4 is a side elevation of the ring, partially in section. Fig. 5 shows one of the spiders. Fig. 6 is a perspective of the ring partially disconnected. Fig. 7 is a portion of a Gramme ring.

Referring to Figs. 1 and 2, A A are plates of such dimensions and form as that they will fit together end to end and constitute a complete circle. The meeting ends are so formed as to interlock and form a joint by which the plates are held to each other. Each plate in Fig. 1 has a projection A' at its ends extending inwardly or outwardly in a line passing through the center of a circle of which the plate forms a part. I prefer to

form each such projection with parallel sides, so that its outer portion is of the same width as its inner portion, though it may be of other shape, and I prefer to form one of the said projections to extend toward and the other from the center of the circle. The special advantage of this latter feature will be stated below. Between each such projection and the body of the plate is a notch A² of sufficient width to receive the projection A' on the end of the plate A, which is brought into juxtaposition to it. Said notches are best made with parallel sides; but they may be of other shape so long as they are as wide at their outer portion as the widest portion of said projections, in order that said notches may receive said projections when the said sections are moved toward or upon each other on a line passing through the ends of both sections.

The plates A may or may not have polar extensions A³. By making each plate for the complete ring a half or other aliquot part of the circle, all the plates may be identical and cut from the sheet of metal in the same die.

In building the half of the armature the plates are placed side by side to make the desired thickness. Sheets of insulation material cut in the die in which the plates are cut may be placed between the plates, and the plates may be held together temporarily by any suitable means. The similar ends of the plates and the insulated sheets are laid upon each other, and the ends are made even with each other, none being extended beyond the rest to make spaces between the ends. When thus massed and temporarily held together, the bobbin-spaces B of the section are wound with wire to form the coils C. When the coils have been thus wound, they hold the plates of the section together. The two halves may now be easily united by sliding one sidewise upon the other, so that the projections A' on one half enter the notches A² on the other half, or the two halves may be slid endwise upon each other, the projection A' sliding in the channels formed by the notches A². The ring or cylinder is now ready to be mounted upon a shaft by means of a spider or spiders.

Holes D between the bobbin-spaces in the

plates form continuous holes between the coils through the sections for the reception of bolts used to bind the spider or spiders to the armature, whereby said sections are held

5 against movement in a direction parallel to the axis of the armature and against movement in a direction parallel to a plane extending longitudinally through said axis and said projections and notches.

10 In Fig. 3 the ends of the plates lock by dovetailing, a projection E being formed on one end and a corresponding notch E' being formed on the other. The halves of the armature built of these plates must be moved

15 upon each other in the direction of the axis, while those built of the plates shown in Fig. 1 may be moved upon each other in the direction of the axis and also in a direction transverse to the axis. The latter mode is

20 preferable, because the sections are not so apt to bind upon each other before each is in place. In the form shown in Fig. 1 each projection A' merely enters the notch in the end of the plate which is to stand opposite to

25 it in the complete armature, while in the other form the projections E must move parallel to the axis of the armature through the channel formed by the notches E', and, as the dovetailing must fit closely, care must be exercised to get the ends of the plates so even

30 as to allow the sections to move readily upon each other.

It is to be observed that in neither form does a portion of the plates extend beyond the

35 others, so as to leave spaces for the projecting ends of the plates of the opposite section to enter.

Fig. 4 shows the core with the spiders F F applied to it. The arms F' F' extend over the holes D, and bolts G extend through said

40 arms and the holes D and bind said arms to the core. It is to be noted that the joints in the ring are located between the bobbin-spaces and that there is no bolt in said joints; but

45 it is preferable to locate a bolt between the adjacent pairs of bobbin-spaces, as shown by the drawings.

In Fig. 6 the core is shown as composed of solid sections of the full width of the armature, the joint being the same as that shown

50 in Figs. 1 and 2. In Fig. 7 the same kind of joint is shown applied to a Gramme ring. A layer of insulation may be placed between the end of each spider-arm and the side of

55 the core.

To further define the direction of the projections A' and notches A², it may be stated that they lie in a plane extending longitudinally through the axis of the ring.

60 I claim as my invention—

1. In an armature, core-sections meeting end to end and constituting the ring and having their ends provided with interlocking notches and projections, said notches being

65 as wide at their outer portions as the widest portion of said projections, substantially as and for the purpose set forth.

2. In an armature, core-sections meeting end to end and provided with interlocking notches and projections having parallel sides,

70 substantially as shown and described.

3. In an armature, core-sections meeting end to end and constituting the ring and having their ends provided with projections and notches lying in a plane extending longitudinally through the axis of the ring, said

75 notches being as wide at their outer portions as the widest portion of said projections, substantially as shown and described.

4. In an armature, core-sections meeting end to end and constituting the ring and having their ends provided with projections and notches lying in a plane extending longitudinally through the axis of said ring, said

80 notches and projections having parallel sides, and said sections being divided into bobbin-spaces, substantially as shown and described.

85

5. In an armature, core-sections meeting end to end and constituting the ring and having their ends provided with interlocking

90 projections and notches, one of each extending in a direction out and the other in in a plane extending longitudinally through the axis of the ring, said notches being as wide at their outer portions as the widest portion of

95 said projections, substantially as shown and described.

6. In an armature, core-sections meeting end to end and constituting the ring and having their ends provided with interlocking

100 projections and notches, one of each extending in a direction out and the other in in a plane extending longitudinally through the axis of the ring, said notches and projections having parallel sides, substantially as shown and

105 described.

7. In an armature, core-sections meeting end to end and constituting the ring, the ends of said sections being provided with interlocking projections and notches, and said sections

110 having holes between the bobbin-spaces for the reception of spider-bolts, substantially as shown and described.

8. In an armature, core-sections meeting end to end and constituting the ring, the ends

115 of said sections being provided with interlocking projections and notches, and said sections having polar extensions and spider-bolt holes between the bobbin-spaces, substantially as shown and described.

120

9. In an armature, core-sections meeting end to end and constituting the ring and having their ends provided with interlocking

125 projections and notches lying in a plane extending longitudinally through the axis of the ring, and said sections being divided into bobbin-spaces and having polar extensions and spider-bolt holes between said bobbin-spaces, substantially as shown and described.

10. In an armature, core-sections meeting end to end and constituting the ring, the ends of said sections being provided with interlocking projections and notches, and said sections having holes between the bobbin-spaces,

130

spiders applied to the sides of said ring, and bolts extending through said spiders and holes between said bobbin-spaces, substantially as shown and described.

5 11. In an armature, core-sections meeting end to end and constituting the ring and having their ends provided with projections and notches lying in a plane extending longitudinally through the axis of the ring, and said
10 sections having holes between the bobbin-spaces, spiders applied to the sides of said ring, and bolts extending through said spiders and the holes between said bobbin-spaces, substantially as shown and described.

15 12. In an armature, core-sections meeting end to end and constituting the ring, the ends of said sections being provided with interlocking projections and notches, said notches being as wide at their outer portions as
20 the widest portion of said projections, and said sections having holes between the bobbin-spaces for the reception of spider-bolts, substantially as shown and described.

25 13. In an armature, core-sections meeting end to end and constituting the ring, the ends of said sections being provided with interlocking projections and notches, said notches being as wide at their outer portions as
30 the widest portion of said projections, and said sections having polar extensions and spider-bolt holes between the bobbin-spaces, substantially as shown and described.

35 14. In an armature, core-sections meeting end to end and constituting the ring of the armature and having their ends provided with projections and notches lying in a plane extending longitudinally through the axis of
40 the ring, said notches being as wide at their outer portions as the widest portion of said projections, and said sections being divided into bobbin-spaces and having polar exten-

sions between said bobbin-spaces, substantially as shown and described.

45 15. In an armature, core-sections meeting end to end and constituting the ring and having their ends provided with projections and notches lying in a plane extending longitudinally through the axis of the ring, said projections and notches having parallel sides,
50 and said sections being divided into bobbin-spaces and having polar extensions between said bobbin-spaces, substantially as shown and described.

55 16. In an armature, core-sections meeting end to end and constituting the ring and having their ends provided with projections and notches lying in a plane extending longitudinally through the axis of the ring, said notches being as wide at their outer portions
60 as the widest portion of said projections, and said sections being divided into bobbin-spaces and having polar extensions and spider-bolt holes between said bobbin-spaces, substantially as shown and described.

65 17. In an armature, core-sections meeting end to end and constituting the ring and having their ends provided with projections and notches having parallel sides, and one of each extending in one direction out and the other
70 in a plane extending longitudinally through the axis of the ring, said sections being divided into bobbin-spaces and having polar extensions and spider-bolt holes between said bobbin-spaces, substantially as shown and described.
75

In testimony whereof I affix my signature in presence of two witnesses this 4th day of December, 1888.

WARREN S. BELDING.

Witnesses:

L. V. FERRIS,
CYRUS KEHR.