

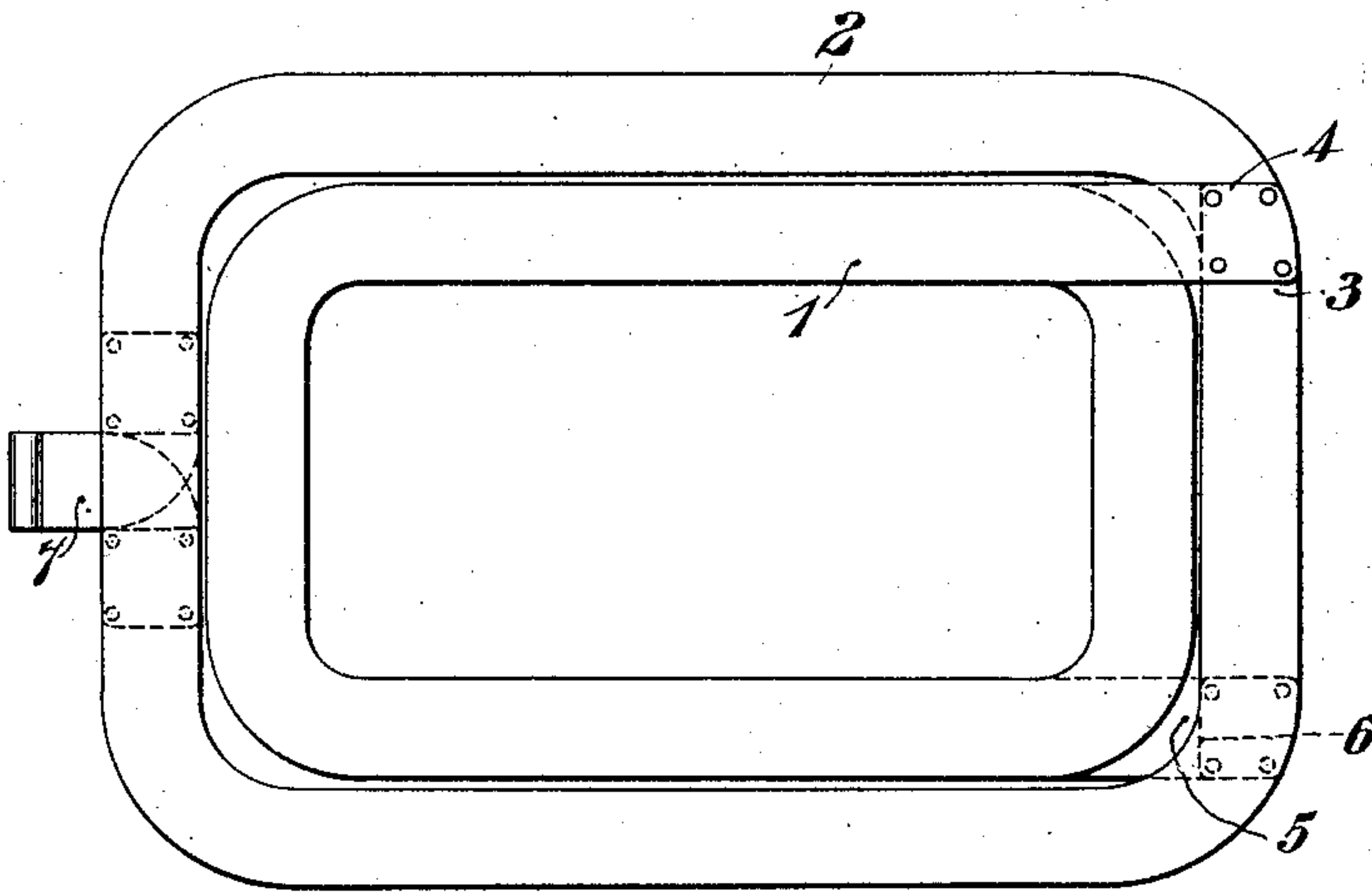
No. 747,595.

PATENTED DEC. 22, 1903.

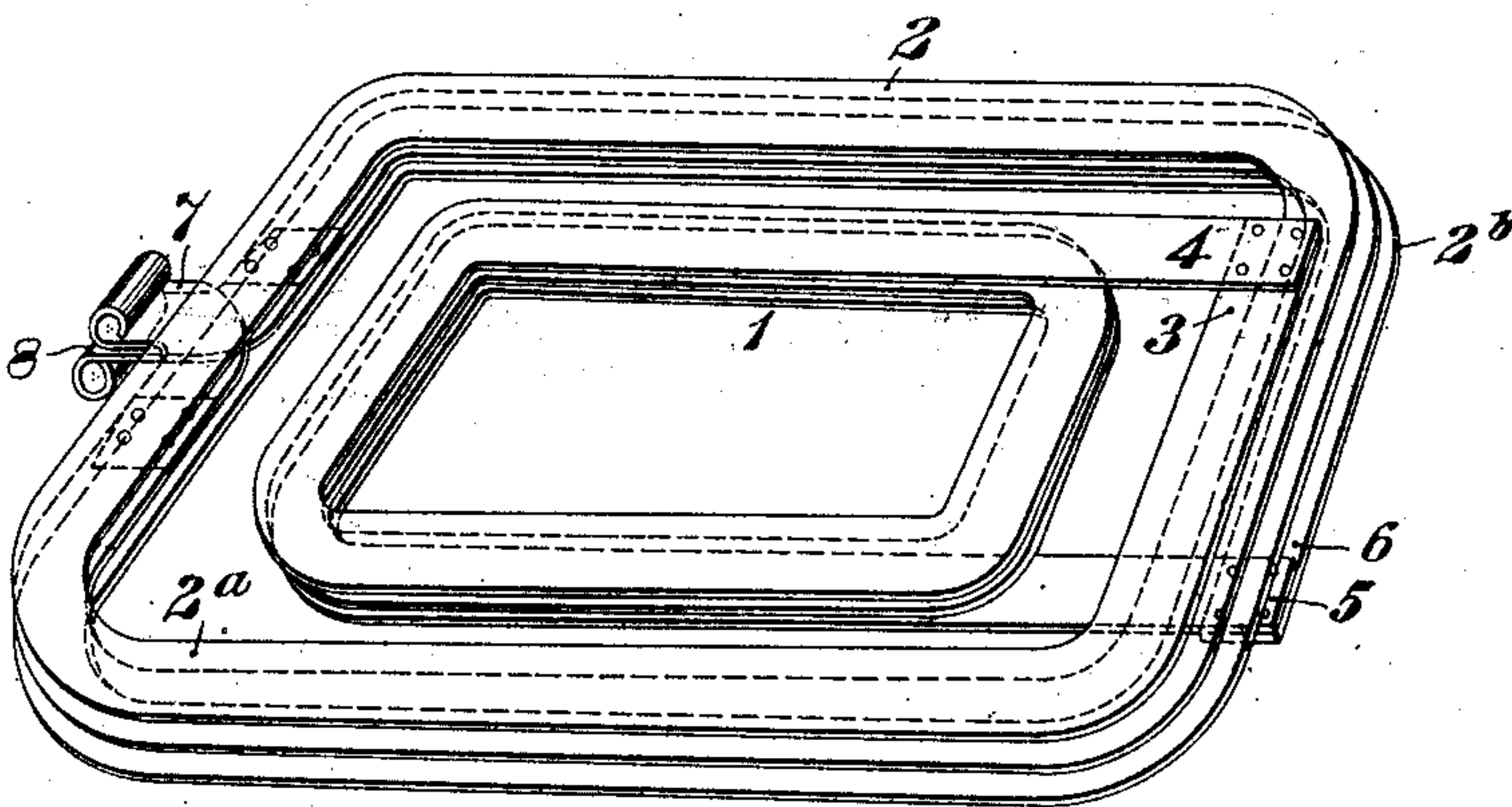
I. DE KAISER.  
COIL FOR ELECTRICAL MACHINES.  
APPLICATION FILED MAY 1, 1903.

NO MODEL.

*Fig. 1.*



*Fig. 2.*



WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## COIL FOR ELECTRICAL MACHINES.

SPECIFICATION forming part of Letters Patent No. 747,595, dated December 22, 1903.

Application filed May 1, 1903. Serial No. 155,236. (No model.)

*To all whom it may concern:*

Be it known that I, ISAAC DE KAISER, a citizen of the United States, and a resident of Pittsburgh, in the county of Allegheny and  
5 State of Pennsylvania, have invented a new and useful Improvement in Coils for Electrical Machines, of which the following is a specification.

My invention relates to field-magnet coils  
10 for electric railway-motors and similar apparatus; and it has for its object to provide a coil of simple, compact, and durable construction having terminal leads projecting from adjacent layers at a place where they are most  
15 accessible.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of a strap-wound field-magnet coil with the insulation removed,  
20 and Fig. 2 is a perspective view of a coil without insulation and having comparatively few turns, which are spread apart to clearly indicate the coil structure.

The complete coil comprises two substantially concentric strap coil-sections 1 and 2,  
25 which are separated by a suitable insulation-space. Each of the said concentric sections consists of approximately one-half the total number of turns, those in section 1 being continuous or in simple series, while section 2 is  
30 divided into two parts 2<sup>a</sup> and 2<sup>b</sup>, which may or may not contain equal numbers of turns. One end 3 of part 2<sup>a</sup> of section 2 is riveted and soldered or otherwise electrically con-  
35 nected to one end 4 of section 1 at one of the outer sides or faces of the coil, and the other end 5 of section 1 is similarly secured to one end 6 of part 2<sup>b</sup> of section 2 at the opposite side or face of the coil, sections 1 and 2 being  
40 oppositely wound in order that said connections may be neatly made within a minimum amount of space. As shown in Fig. 2, the leads 7 and 8 are brought out from adjacent turns of section 2, said leads being arranged  
45 for connection to wires or cables. The current may be considered as entering at lead 7, going through part 2<sup>a</sup> of section 2 to the end of 3, then through section 1 from the end 4 to the end 5, and finally through the part 2<sup>b</sup> of

section 2 from the end 6 to the lead 8. Obviously the current may be supplied to the coil so as to traverse it in the opposite direction, if desired.

It is evident that I have devised a coil of such construction that the terminal leads may  
55 be attached to any two adjacent turns, whereby a minimum amount of space is required to contain the coil and leads and whereby the leads are made more easily accessible than they otherwise would be. 60

I do not intend to limit my invention to the exact form of coil shown in the drawings or to one composed of sections having equal numbers of turns. It is also obvious that by properly designing the winding the leads may be  
65 brought out from any two adjacent turns of either of the sections, that the conductors of which the coil-sections are formed may be of different cross-sectional form from that shown, and that if of strap form they may be  
70 bent sidewise instead of edgewise.

I claim as my invention—

1. A coil comprising two concentric portions wound in opposite directions and having leads projecting from adjacent turns of the outer  
75 portion.

2. A coil comprising two concentric portions connected together in series and having its two terminal leads projecting from adjacent  
80 turns of the outer portion.

3. A strap-coil comprising two concentric sections having their ends fastened together to provide a series connection and terminal leads projecting from adjacent turns in the  
85 outer section.

4. A strap field-magnet coil comprising separately-coiled inner and outer sections connected together in series and terminal leads projecting from adjacent turns of the outer  
90 section.

5. A field-magnet coil comprising inner and outer sections formed of edgewise-bent copper strap, the sections being connected together in series, and terminal leads projecting from adjacent turns of the outer section. 95

6. A strap field-magnet coil comprising a single-length inner section and a double-length outer section, all connected together in series,



the free ends of the outer section lengths being located in juxtaposition and provided with terminal leads for the coil.

7. A field-magnet coil comprising two concentric sections of metal strap wound in opposite directions and connected in series and terminal leads projecting from adjacent turns of the outer section.

8. A field-magnet coil comprising two sections coiled in opposite directions and con-

nected together in series to form a single unidirectional circuit, and terminal leads projecting from adjacent turns of one of the sections.

In testimony whereof I have hereunto subscribed my name this 16th day of April, 1903.

ISAAC DE KAISER.

Witnesses:

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JAMES B. YOUNG.