No. 680,795. Patented Aug. 20, 1901.

J. P. MALLETT.

STRAP COIL FOR ELECTRICAL MACHINES.

(Application filed Oct. 17, 1899.)

(No Model.)

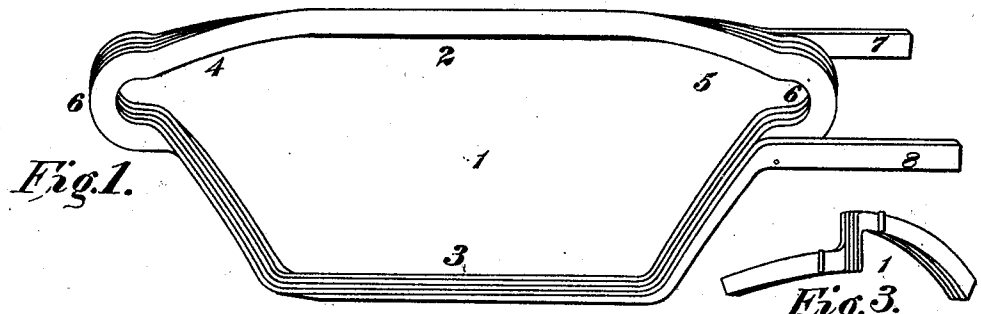


Fig. 1.

Fig. 3.

Fig. 2.

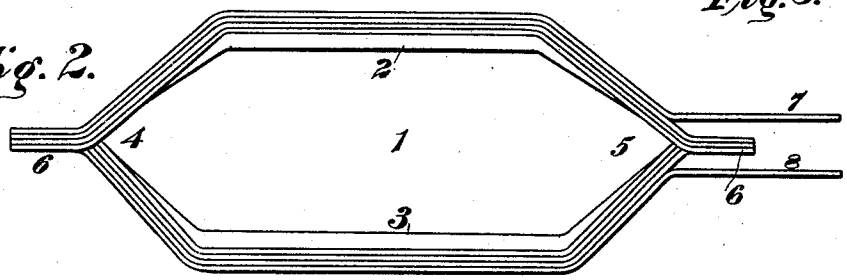


Fig. 4.

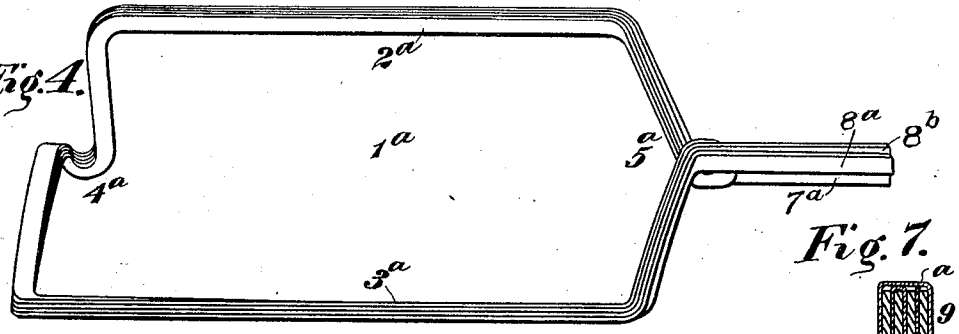


Fig. 7.



Fig. 5.

WITNESSES:

Ethan D. Dodge

H. C. Sener

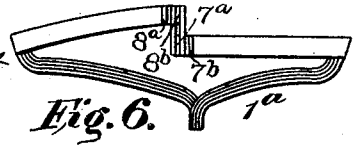


Fig. 6.

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UNITED STATES PATENT OFFICE.

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STRAP-COIL FOR ELECTRICAL MACHINES.

SPECIFICATION forming part of Letters Patent No. 680,795, dated August 20, 1901.

Application filed October 17, 1899. Serial No. 733,899. (No model.)

To all whom it may concern:

Be it known that I, JOHN P. MALLETT, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Strap-Coils for Electrical Machines, (Case No. 848,) of which the following is a specification.

My invention relates to electrical machines, and particularly to the coils employed in such machines.

The object of my invention is to provide a strap-coil having a sufficient number of turns to enable it to perform the functions of a wire-wound coil and at the same time have all the desirable features of a bar or strap winding. With these ends in view I so bend copper strap as to make a coil having a plurality of complete turns and without joints and separately insulate each turn after the coil is formed. The desirability of the results attainable by the use of such coils has always been recognized in the art; but so far as I am aware coils having the desired structure and characteristics have not been produced prior to my invention.

In the accompanying drawings, Figure 1 is a perspective view of one form of coil embodying my invention, and Figs. 2 and 3 are respectively a plan and an end view of the coil shown in Fig. 1. Fig. 4 is a perspective view of a coil of slightly-modified construction and having four instead of two commutator-leads. Figs. 5 and 6 are respectively a plan and an end view of the coil shown in Fig. 4. Fig. 7 is a sectional view of one side of a coil provided with an insulating-cell.

Referring now particularly to Figs. 1, 2, and 3, the coil 1 is formed by bending the necessary length of copper strap so as to form three complete turns, and, in fact, except at the commutator end, four turns, comprising two parallel sides 2 and 3 of substantially equal length and two ends 4 and 5, each turn at each end of the coil being bent edgewise to form a substantially semi-annular offset bend 6 of small radius, the plane of which is substantially perpendicular to the planes of the sides 2 and 3. Leads 7 and 8 project from one end of the coil and adjacent to the semi-annular portion 6 at that end. After the coil is bent in a suitable former or mold to the shape shown in the drawings it is opened up sufficiently to permit each turn to be completely insulated with tape, and before being placed in the core-slots of the machine each side is provided with a fuller-board cell 9, wound between and around the several conductors, so as to completely insulate them from each other and from the core, as indicated in Fig. 7.

In Figs. 4, 5, and 6 a coil is illustrated which is constructed in substantially the same manner as that already described except that it is formed of two straps wound or bent together at the same time, and the sides 2^a and 3^a are of unequal length. The end 5^a of this coil is shaped substantially the same as the end 5 of the coil 1; but the opposite end 4^a is so formed as to bring its conductors flatwise instead of edgewise with reference to the plane of the coil as a whole. By reason of the fact that the coil is formed of two conductors bent together into shape there are four leads 7^a and 7^b and 8^a and 8^b in lieu of the two leads 7 and 8 in the coil previously mentioned.

The edgewise and side-by-side arrangement of the several turns of each coil insures operation of the coils at relatively low temperatures, for the reason that the heat which is generated in or imparted to the portions that are located in the core-slots will be readily conducted to the outer edges to be dissipated. If the turns were disposed one above another in the slots, the heat conduction would be impeded by the several layers of insulation. The edgewise-offset bends at the ends of the coils serve to make the bottom edge of the strap at one side of the coil the top edge at the other side and also enable me to apply the coils to a core having slots that are near together and at the same time to provide ample space between adjacent coils to insure proper ventilation and to avoid all danger of short circuits.

Coils constructed as described may be employed for either direct-current or alternating-current machines, and the form may be

materially varied from what is shown in the drawings without departing from my invention.

The leads provided for connection with commutator-segments, collector-rings, or other coils may obviously project from either or both ends of the coil, according to the relations in which the coil is to be used.

I claim as my invention—

1. A strap-coil for electrical machines having two long and four short sides and composed of a plurality of complete side-by-side turns without joints, the long side portions of the turns being disposed edgewise in radial planes and separately insulated.

2. A strap-coil for electrical machines comprising a plurality of complete side-by-side turns without joints and separately insulated, each of said turns having an offset bend at each end in a plane substantially perdendicular to a plane including the sides of the coil.

3. A strap-coil for electrical machines comprising a plurality of separately-insulated, complete, side-by-side turns without joints, each of which has a semi-annular edgewise bend of small radius at each end.

In testimony whereof I have hereunto subscribed my name this 13th day of October, 1899.

JOHN P. MALLETT.

Witnesses:
JAMES B. YOUNG,
H. C. TENER.