No. 680,277. Patented Aug. 13, 1901.

E. D. PRIEST.

ELECTRICAL CONDUCTOR.

(Application filed May 31, 1901.)

(No Model.)

Fig. 1

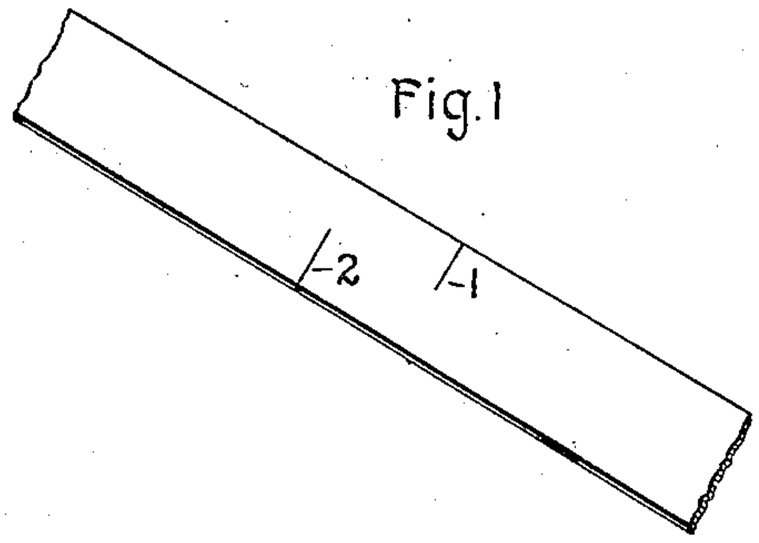


Fig. 4.

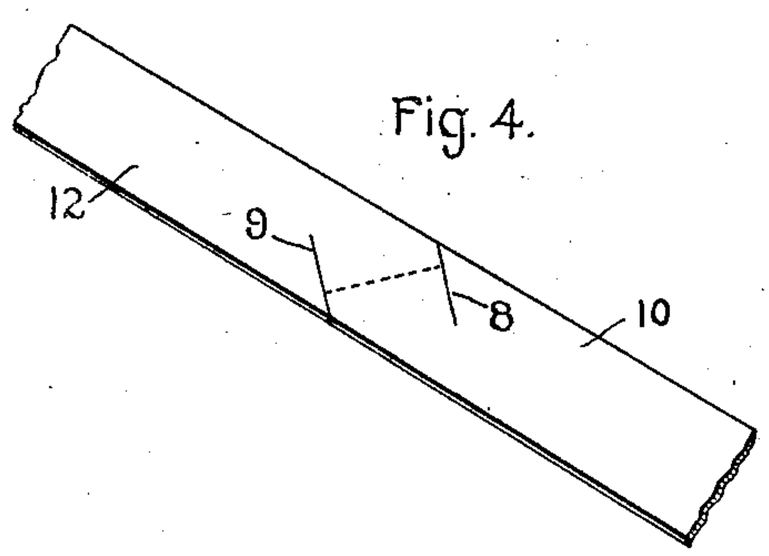


Fig. 2.

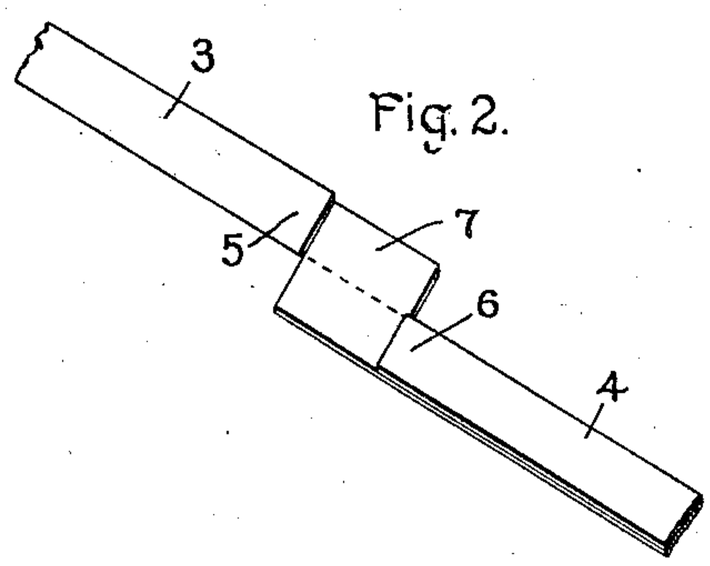


Fig. 5.

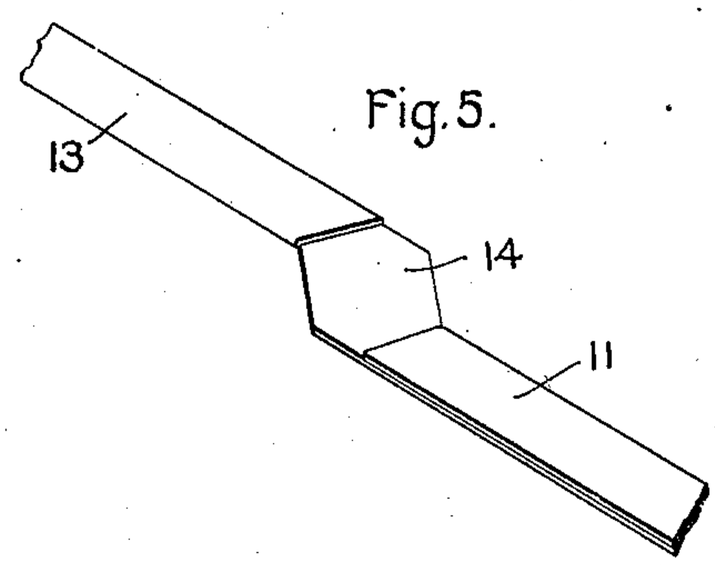


Fig. 3.

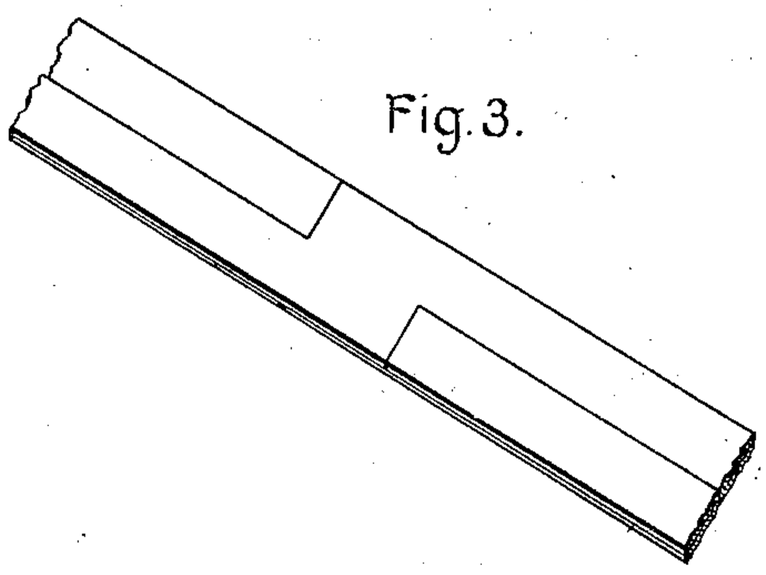
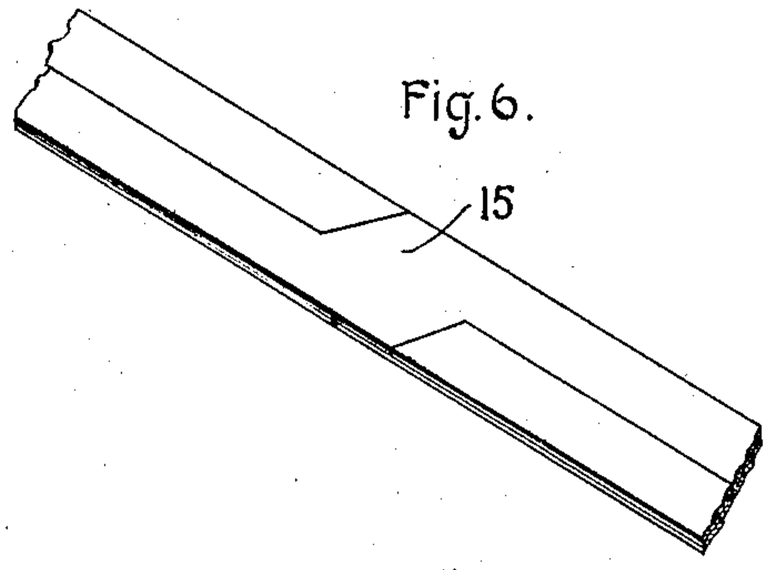


Fig. 6.



Witnesses.
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Atty.

UNITED STATES PATENT OFFICE.

EDWARD D. PRIEST, OF SCHENECTADY, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY, OF NEW YORK.

ELECTRICAL CONDUCTOR.

SPECIFICATION forming part of Letters Patent No. 680,277, dated August 13, 1901.

Application filed May 31, 1901. Serial No. 62,580. (No model.)

To all whom it may concern:

Be it known that I, EDWARD D. PRIEST, a citizen of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Electrical Conductors, (Case No. 2,272,) of which the following is a specification.

In order to avoid excessive production of eddy-currents in armature or other conductors, such conductors are frequently built up of a large number of strands or wires twisted together like the strands of a rope or cable. This construction is objectionable both on the ground of expense and for the reason that the amount of metal comprised within a given area of cross-section of the conductor is considerably less than where the conductor is solid. This latter objection assumes considerable importance in the construction of armatures of dynamo-electric machines, in which it is desired to crowd as much copper as possible into a given space.

My present invention relates to means for avoiding the objections noted and is embodied in a construction wherein the armature or other conductor is formed of parallel strips placed side by side and crossed at suitable intervals.

My invention also embodies certain details of construction in a conductor of the character mentioned, the novel features of which, both in its broader and more limited aspects, will be particularly set forth in the appended claims.

For a detailed description of the invention itself reference is to be had to the following specification, taken in connection with the accompanying drawings, in which—

Figures 1, 2, and 3 represent successive steps in forming a conductor in accordance with my invention, and Figs. 4, 5, and 6 the various steps in the construction of a modified form of conductor.

In the drawings a portion only of the conductor lying within the vicinity of a crossing-point is illustrated; but it will be understood that the conductor may be of any desired length and have any number of crossing-points desired, each crossing-point being of substantially the same character as shown in the drawings.

Fig. 3, which represents portions of two strips forming component parts of a single armature or other conductor, has each of these strips fashioned out of a single flat strip of copper or other metal, such as illustrated in Fig. 1. This flat strip of metal in Fig. 1 is cut half-way through at a point 1 on one side of a strip and half-way through at a point 2 on the opposide side of the strip, the distance between the two cuts or slits 1 and 2 being equal substantially to the width of the strip itself. That portion of the strip lying to the left of the cut 2 is then folded over along a line passing lengthwise through the middle of the strip, the folded-over portion being indicated clearly at 3 in Fig. 2. In a similar manner the portion of the strip at the right of the cut 1 is folded down along the longitudinal line mentioned, the folded-down portion being shown at 4 in Fig. 2.

To complete the construction, the folded-over portions are preferably soldered, brazed, or otherwise made integral with the unfolded-over portions at or about points in the vicinity designated by the numerals 5 and 6, the purpose of which is to consolidate the resulting conductor at these points, and thereby cause current to flow through the total cross-section of the conductor at these points. Otherwise the corners of the folded-over strips in the vicinity of the points 5 and 6 might carry less than their share of the current, thereby causing a localized heating at adjacent points in the unfolded portion of the strip.

The flat square portion 7 of the conductor, which is obviously one-half the thickness of either of the doubled strips at 3 and 4, has its width along the dotted line in Fig. 2 approximately double the width of either of the strips 4, whereby its cross-section is substantially equal to the total cross-section of either of the strips at 3 and 4. As will be obvious, it makes up in width what it lacks in thickness. Since the conductor, although reduced in thickness at the crossing-point 7, is not reduced in cross-section, it will be evident that there will be no localized heating at this point.

To complete the armature-conductor as a whole, another strip is formed as a counterpart of the strip shown in Fig. 2. This strip

is then reversed in position with respect to that illustrated in Fig. 2 and is superposed upon the same, so that the flat crossing portion 7 of the one is brought into contact with the other, the resulting conductor being then as shown in Fig. 3. It will be evident that with this construction the conductor is of uniform thickness throughout, and each strip forming a component part of the same is of substantially uniform cross-section.

Figs. 4, 5, and 6 show a slightly-different manner of forming the conductor. In this case the flat strip from which one of the component portions of the conductor is formed is shown in Fig. 4. This strip is cut halfway through, both from the top and from the bottom, along lines 8 and 9, which make approximately an angle of forty-five degrees with the length of the strip and are separated from each other by a perpendicular distance (represented in dotted lines) about equal to the width of the strip itself. The upper half of the strip 10 is then bent downward, as shown at 11 in Fig. 5, while the lower half of the strip (indicated at 12) is bent or folded upward, as shown at 13 in Fig. 5.

To complete the conductor as a whole, a counterpart of the strip shown in Fig. 5 is produced and after being reversed in position is fitted into the first-mentioned strip in the manner represented in Fig. 6, the crossing portion 14 of one strip being thereby brought into proximity to the crossing portion 15 of the other strip.

In applying conductors of the character mentioned to armatures or other apparatus the component portions of the conductor may be separated by thin sheets of resistance material or by a surface coating of insulating material, or, if desired, the insulation may be omitted entirely, the imperfect contact of the parts being relied on to prevent the flow of current from one strip to its neighbor.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. An armature-conductor formed of a longitudinally-folded sheet-metal strip.

2. An electrical conductor formed of two crossed counterpart strips of folded metal.

3. An electrical conductor consisting of a strip of metal having a portion of one edge folded against the surface of the main strip, and a portion of the other edge folded in an opposite direction against the main strip.

4. An electrical conductor formed of a strip of sheet metal longitudinally folded upon itself at intervals.

5. An electrical conductor formed of a strip of metal folded to constitute two members in substantially parallel planes, with an offset connecting the two members.

6. A composite electrical conductor formed of counterpart strips of metal each folded to constitute two members in substantially parallel planes, with an offset connecting the two members.

7. An electrical conductor consisting of a strip of conducting material having a portion of one edge folded against the main strip, a portion of the other edge folded in an opposite direction against the main strip, and an unfolded portion of the main strip connecting the folded portions.

In witness whereof I have hereunto set my hand this 25th day of May, 1901.

EDWARD D. PRIEST.

Witnesses:
BENJAMIN B. HULL,
MARGARET E. WOOLLEY.