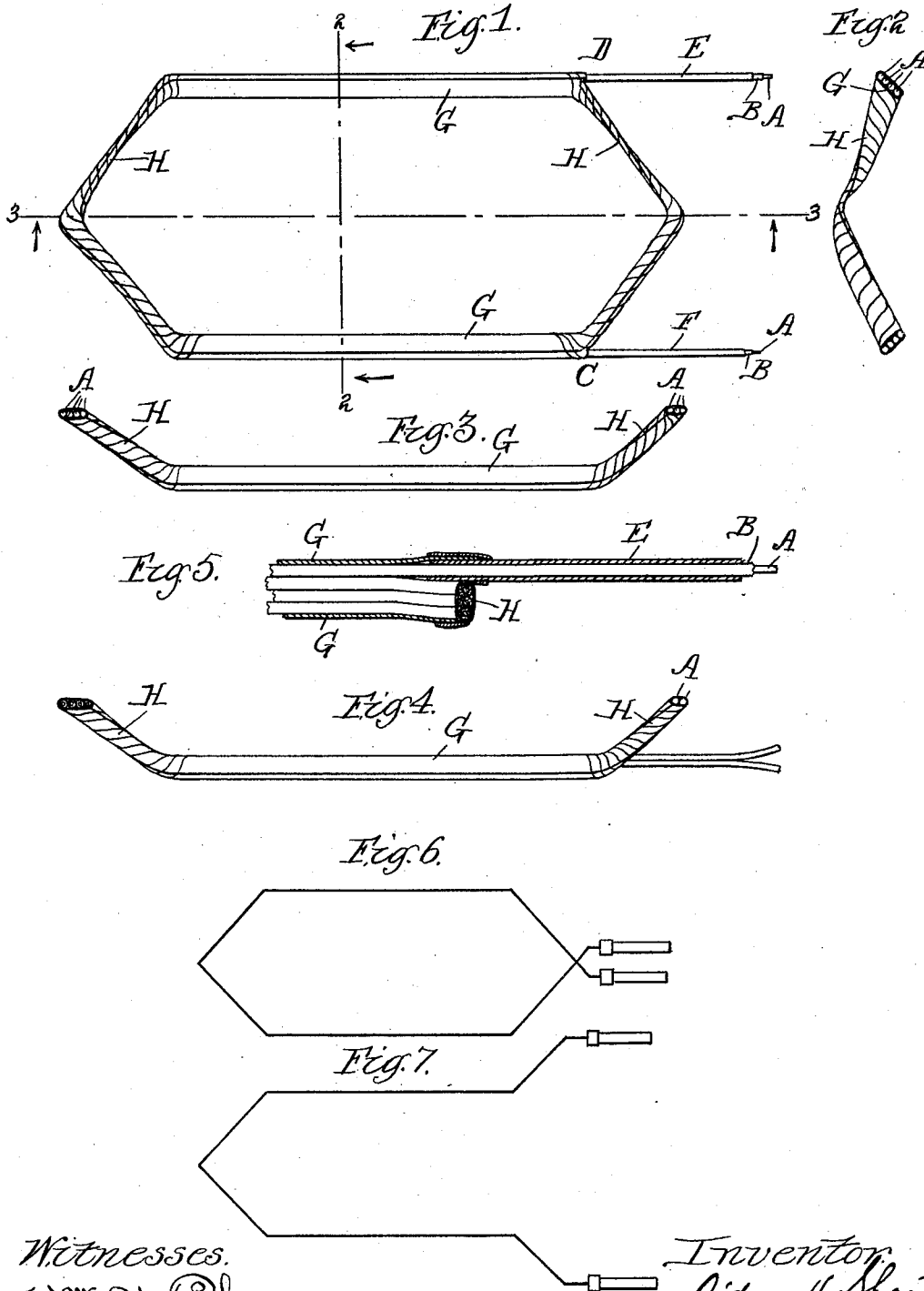


(No Model.)

S. H. SHORT.
ARMATURE WINDING.

No. 568,414.

Patented Sept. 29, 1896.



Witnesses.

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by

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UNITED STATES PATENT OFFICE.

SIDNEY H. SHORT, OF CLEVELAND, OHIO.

ARMATURE-WINDING.

SPECIFICATION forming part of Letters Patent No. 568,414, dated September 29, 1896.

Application filed April 20, 1896. Serial No. 588,280. (No model.)

To all whom it may concern:

Be it known that I, SIDNEY H. SHORT, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and useful Improvement in Armature-Windings, of which the following is a specification.

This invention relates to armature-windings.

10 The object of the invention is to produce an armature coil or winding which is thoroughly efficient and cheaply insulated.

The invention consists, substantially, in the combination, location, and relative arrangement of parts, all as will be more fully hereinafter set forth, as shown in the accompanying drawings, and finally specifically pointed out in the appended claims.

15 In the accompanying drawings, Figure 1 is a view in plan of a form of coil or winding for armatures embodying my invention. Fig. 2 is a transverse sectional view of the same on the line 2 2, Fig. 1. Fig. 3 is a central longitudinal sectional view of the same on the line 3 3, Fig. 1. Fig. 4 is a view similar to Fig. 3, showing a slightly-modified form of construction. Fig. 5 is a broken sectional detail view showing the method of applying the insulation. Figs. 6 and 7 are diagrammatic views illustrating the various methods of windings.

20 In carrying out my invention I first form the coil from one or more strands of wire into a double-trapezium shape, as shown in Fig. 1, by bending the strand or strands A in any suitable, convenient, or well-known manner about a form in the usual way, the strand or strands employed having previously been provided with the usual or any suitable insulating-cover B, the ends of the strand or strands of wire forming the coil projecting from the coil at one end thereof for connection with the commutator-segments.

25 In Figs. 1, 2, 3, and 4 I have shown the coil formed of a single strand of wire. It is obvious, however, that, if desired, two or more strands of wire may be employed to form the coil. For instance, in Fig. 4 I have shown a coil composed of two strands of wire.

30 The coil may be formed of one or more complete convolutions of the wire strands, as may be desired. In the form shown in Figs. 1, 2,

3, and 4 the coil is composed of three complete convolutions and a partial convolution extending from the point C to the point D, 55 Fig. 1. In Fig. 4 I have shown a coil formed of one complete and a partial convolution of the two strands of wire.

Instead of the double trapezium being completely formed I may, if desired, and for certain forms and styles of winding, form each of the trapeziums as shown, for instance, in diagram in Fig. 7. This style of winding is employed in parallel winding. In Fig. 6 I have shown the winding as adapted for series windings. 65

Before the end of the strand or strands of wire are attached to the frame or other apparatus upon which they are wound I slip over such ends a short section or sleeve of suitable insulation E, and which I will designate the "stocking," and when the coil has been completed I slip a similar sleeve or stocking F upon the other end. In practice I prefer to employ one stocking, E, of one color and the other, F, of the same coil of another color in order to facilitate connecting up the ends of the coils to the commutator-sections, the differently-colored ends of the same section serving as a guide for the workman in making the connections. 80

After the coil has been formed, whether arranged for series or parallel windings, whether with one or more strands of wire, and whether with one or more convolutions, 85 it is dipped into a suitable varnish. I have found boiled linseed-oil, which has been treated with permanganate of potash in order to oxidize the fatty acids thereof, forms a suitable varnish material for use in this connection. After the coils are dipped in the varnish, as described, they are baked and are then ready to receive the final insulation.

In practice, and on account of the thickness of the tape usually employed for insulating the armature-coils, I have found that it is desirable to omit the taping for a portion of the coil and in place thereof use thick paper. The paper is applied in one or more thicknesses and is glued or pasted down upon the coil. In Figs. 1, 3, 4, and 5 I have shown the paper insulation G as applied to the long or parallel sides of the coil, while the end portions of the coil are insulated with the tape 95 100

II in the usual way. By extending the arms of the paper jacket G over the inner ends of the stockings E F said stockings are securely held in place and are prevented from being readily pulled or slipped off the ends of the strands. The taping II is preferably wound around the ends of the paper insulation G, as shown, whereby the said paper jacket is more firmly bound in place.

By the construction above described I provide an exceedingly cheap and efficient insulation of the coil, and one which can be readily, easily, and quickly applied.

An armature-coil constructed in accordance with my invention is not only thoroughly insulated, but is cheap and durable.

Having now explained the object and nature of my invention and an operative embodiment thereof, it will be understood that many variations and changes would readily suggest themselves to persons skilled in the art and still fall within the spirit and scope of my invention. I do not desire, therefore, to be limited or restricted to the exact details shown and described, but

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

1. An armature-coil having side and end portions, said side portions provided with paper insulation, and said end portions provided with tape insulation; as and for the purpose set forth.

2. An armature-coil, formed by bending one or more strands of wire into suitable shape, and a portion of such coil being covered with paper insulation and other portions

with tape insulations; as and for the purpose set forth.

3. An armature-coil, formed by bending one or more strands of wire into suitable shape, and having short sections or stockings of insulating material secured upon the projecting ends thereof; as and for the purpose set forth.

4. An armature-coil, formed by bending one or more strands of wire into suitable shape, and having short sections or stockings of insulating material of different colors secured upon the respective ends thereof; as and for the purpose set forth.

5. An armature-coil, formed by bending one or more strands of wire into suitable shape and having short sections or stockings of insulating material upon the ends thereof and a paper wrapping arranged to secure said stockings in place; as and for the purpose set forth.

6. An armature-coil formed by bending one or more strands of wire into suitable shape and having stockings of insulating material upon the projecting ends of said wires, the sides and ends of said coil being respectively covered with paper and tape insulations, said paper insulation arranged to bind the ends of said stockings, whereby they are held in place; as and for the purpose set forth.

In witness whereof I have hereunto set my hand this 16th day of April, 1896.

SIDNEY H. SHORT.

Witnesses:

FRANK T. BROWN,
M. I. CAVANAGH.