No. 765,189. PATENTED JULY 19, 1904.

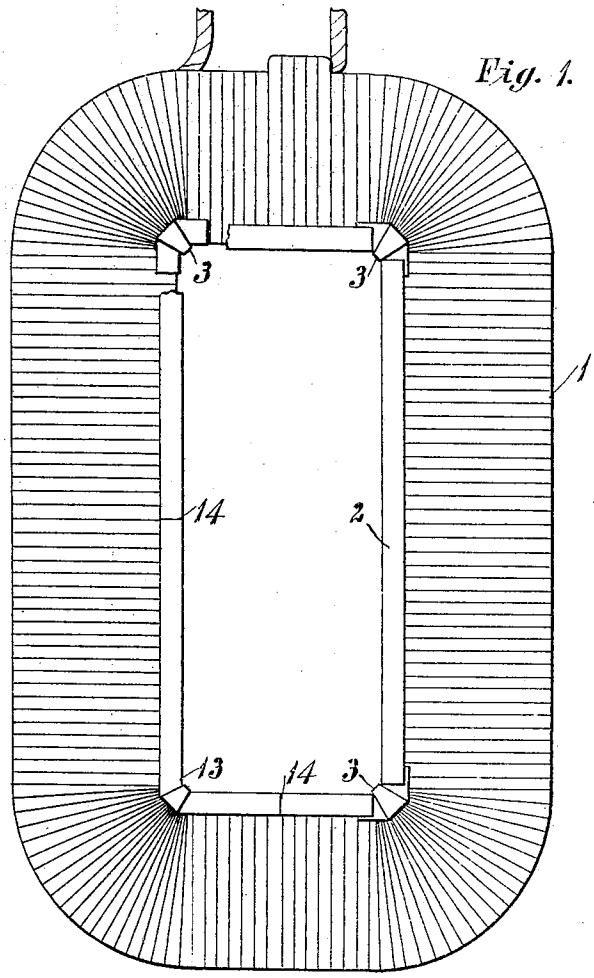
O. B. MOORE.

TRANSFORMER INSULATION.

APPLICATION FILED NOV. 21, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.



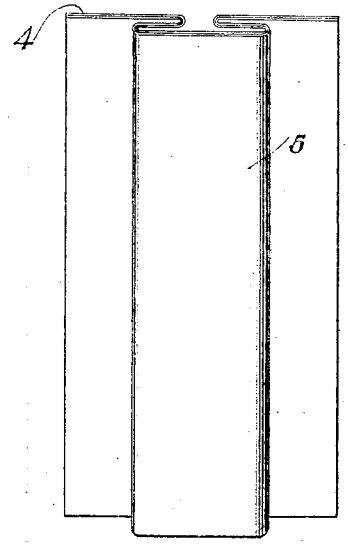


Fig. 2.

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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 3.

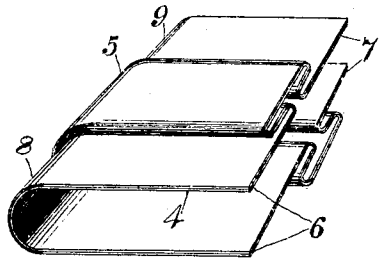
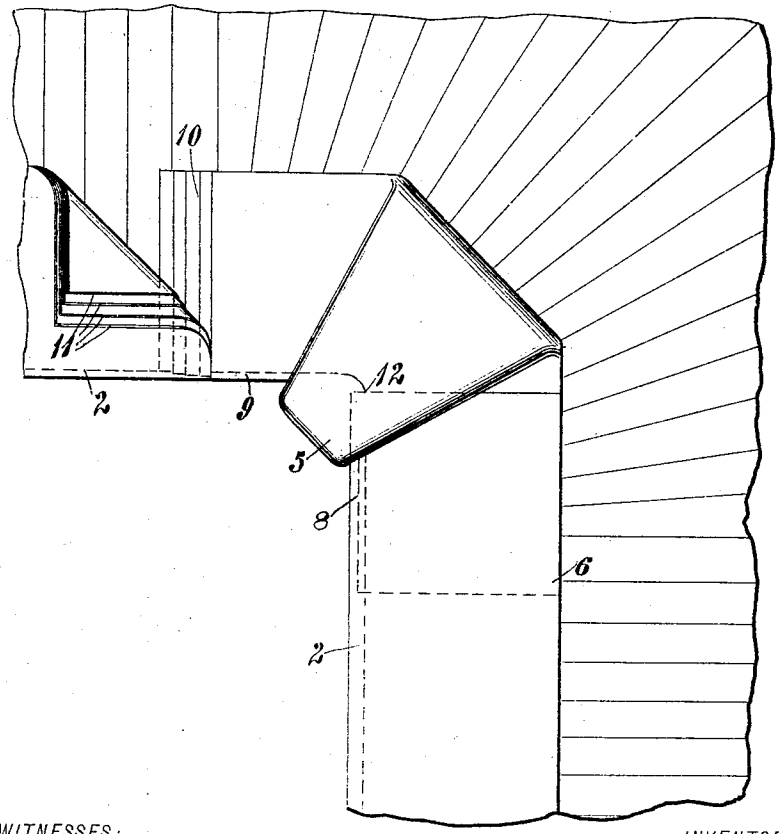


Fig. 4.



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UNITED STATES PATENT OFFICE.

ODUS B. MOORE, OF EDGEWOOD PARK, PENNSYLVANIA, ASSIGNOR TO WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA.

TRANSFORMER INSULATION.

SPECIFICATION forming part of Letters Patent No. 765,189, dated July 19, 1904.

Application filed November 21, 1903. Serial No. 182,189. (No model.)

To all whom it may concern:

Be it known that I, ODUS B. MOORE, a citizen of the United States, and a resident of Edgewood Park, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Transformer Insulation, of which the following is a specification.

My invention relates to the insulation of coils of electrical apparatus; and it has for its object to provide an improved form of insulation for the corners of coils, and particularly for the corners of such coils as are employed in transformers of the shell type.

There are two styles of winding which are commonly employed in transformers of the shell type, one consisting of a plurality of concentric coils and the other consisting of a plurality of flat coils placed side by side on the iron core. The corners of the latter style of coil have been particularly difficult to protect. The coils are usually wrapped with tape, which at the inner corners is cut narrower than at the outer corners in order to prevent excessive bulging. The most vulnerable points of the insulation of such coils under high strains have heretofore been at the corners, because of the difficulty of properly overlapping the tape or applying other forms of insulation at such points. By means of my present invention I am able to provide insulation at the corners that is as effective as that at other points.

In the accompanying drawings, Figure 1 is a side view of a transformer-coil embodying my invention, parts of the insulating and spacing strips being broken away for the sake of clearness. Figs. 2 and 3 represent stages of the development in forming the corner-pieces; and Fig. 4 is an enlarged view of a complete corner-piece as applied to a coil, only a portion of the coil being shown and a corner of the channel-piece being bent back.

The coil 1 may be entirely wrapped in tape, as usual, care being taken to avoid bulging at the inside edges of the corners, or my invention may be applied to untaped coils, as may be desired. Channel-shaped strips of insulating material 2, comprising one or more thicknesses of fabric folded together, are placed on the inside edges of the coil in order to insulate adjacent coils and also to separate them, and thereby facilitate ventilation. The improved corner-pieces 3, embodying my invention, may be held in position by overlapping the strips 2 upon them or in any other suitable manner. The corner-pieces may be constructed in the following manner: The desired or requisite number of sheets 4 of suitable insulating material are folded together so as to form a longitudinal double plait 5 at the middle of the pieces, substantially as shown in Fig. 2, and they are then folded into an U or channel shape, with the longitudinal plait bent transversely, as shown in Fig. 3. The pieces may now be spread into the shape shown in Fig. 4 by partially unfolding the plait 5, which may be done by drawing apart the corners 6 and 7 until the edges 8 and 9 are substantially at right angles or at any other desired angle, which may be readily done if the plait has been properly proportioned. The pieces of fabric may be of unequal lengths, so that when the corner-piece is completed its ends, which are overlapped by the channel-pieces 2, may be beveled, substantially as shown at 10 in Fig. 4. The ends of the channel-pieces 2 may also be beveled, as indicated at 11 in Fig. 4, so that there will be no bulging where they join the corner-pieces.

Instead of thus abutting the beveled ends of the corner-pieces 3 and channel-pieces 2 the latter may be made to overlap the former in such manner that the inside corner 12 of the end of the channel-piece 2 is overlapped by the plait 5, the ends of the said pieces being beveled or not, as desired.

It is also feasible and sometimes desirable to make the channel-pieces 2 and the corner-pieces 3 from the same strips of material, such a combination being shown at 13 with the joints of the pieces at 14 near the middle of the sides and ends of the coil.

It is also within the scope of my invention to apply the herein-described form of insula-

tion to groups of coils as well as to single coils, as is often desirable in transformers or other apparatus, and each coil of the group may also have its corners and edges similarly insulated.

I claim as my invention—

1. An insulating corner-piece for coils of electrical apparatus, comprising one or more pieces of insulating material embodying a partially-unfolded double plait the edges of which extend approximately radially from the corner of the coil.

2. An insulating corner-piece for coils of electrical apparatus, comprising one or more thicknesses of insulating material bent to form a channel-piece and folded to form a sector-shaped double plait extending approximately radially from the corner of the coil.

3. An insulating corner-piece for coils of electrical apparatus, comprising one or more sheets of insulating material folded so as to form a sector-shaped double plait in the middle and having the portions on either side of the plait substantially at the desired angles.

4. An insulating corner-piece for coils of electrical apparatus, comprising one or more thicknesses of insulating material embodying a longitudinal double plait and doubled transversely to said plait, the ends of the latter being expanded.

5. An insulating corner-piece for coils of electrical apparatus, comprising one or more thicknesses of suitable insulating material folded to form a longitudinal, double plait and bent at right angles to said plait into a channel shape, the said plait being expanded at its ends.

6. An insulating-piece for the edges of flat coils, comprising one or more thicknesses of suitable sheet material of channel form and embodying a corner portion in the form of a partially-expanded double plait.

7. An insulating-piece for the edges of flat coils, consisting of a channel-shaped strip comprising one or more thicknesses of sheet material and embodying a corner portion in the form of a double plait having outwardly-diverging edges.

In testimony whereof I have hereunto subscribed my name this 11th day of November, 1903.

ODUS B. MOORE.

Witnesses:
BIRNEY HINES,
J. C. MORSE.