

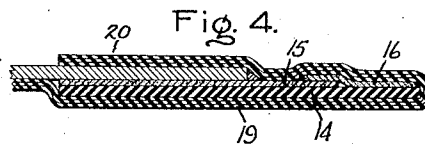
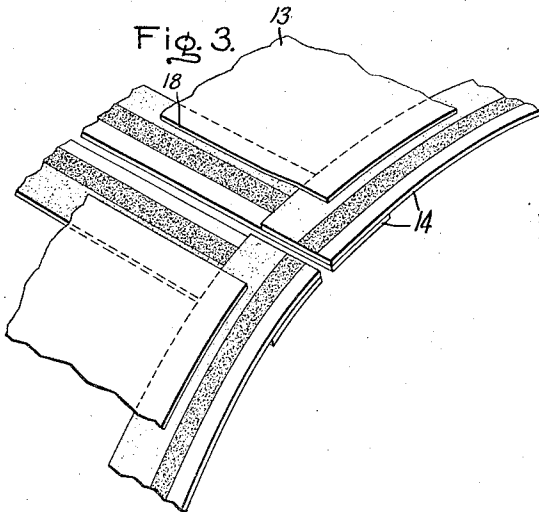
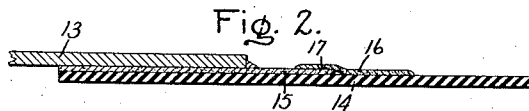
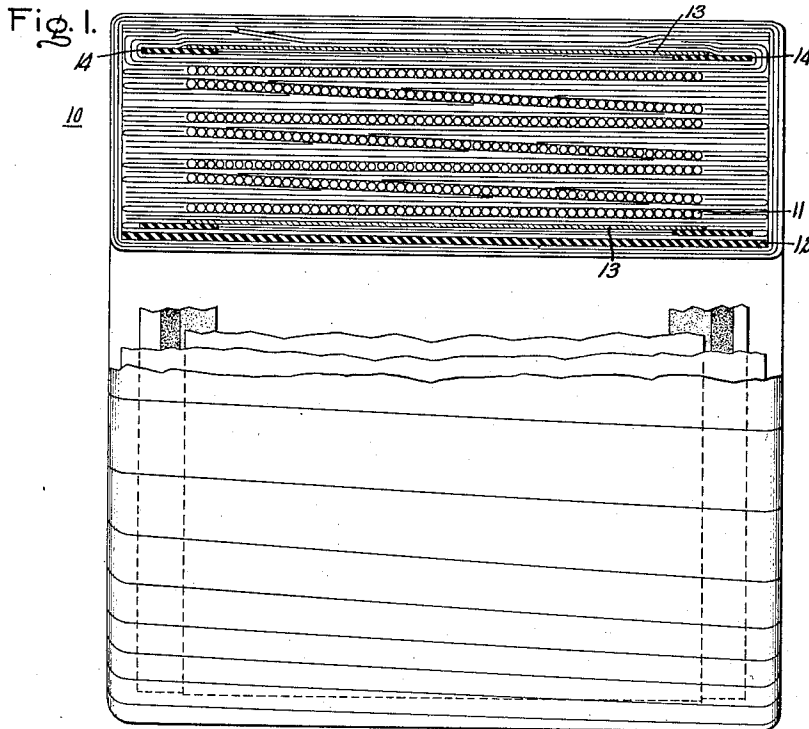
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2,352,166

ELECTRIC INDUCTION APPARATUS

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ELECTRIC INDUCTION APPARATUS

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5 Claims. (Cl. 175—362)

My invention relates to electric induction apparatus, and to an electrostatic shield for electric induction apparatus, such as transformers.

An object of my invention is to provide an electric induction apparatus with an improved electrostatic shield construction.

Another object of my invention is to provide an improved electric induction apparatus structure in which the possibility of corona being formed at the edges of the electrostatic shield is minimized.

A further object of my invention is to provide an improved shield construction for electric induction apparatus which is efficient in operation and economical to manufacture.

Further objects and advantages of my invention will become apparent from the following description referring to the accompanying drawing, and the features of novelty which characterize my invention will be pointed out with particularity in the claims annexed to and forming a part of this specification.

In the drawing Fig. 1 is a side elevation in partial section of a transformer winding which is provided with an embodiment of my invention; Fig. 2 is a sectional side elevation of an end of the shielding arrangement employed in the winding of Fig. 1; Fig. 3 is a perspective view of a portion of one end of the shielding construction shown in Figs. 1 and 2, and Fig. 4 is a modification of the shield illustrated in Figs. 2 and 3.

In the arrangements illustrated in the drawing I have provided an electric induction apparatus, such as a transformer with an improved shield construction which includes a conducting member such as a sheet of copper adjacent a surface of the winding thereof, the edges of the conducting sheet being provided with an adjacent strip of insulating material having a coating of material with conducting particles therein so as to minimize the possibility of corona at the edges of the conducting sheet. The insulating member may be formed in a strip of suitable insulating material such as paper having a portion thereof coated with a conducting material and an adjacent portion thereof coated with a semi-conducting paint. The shield may, therefore, be simply applied by placing a strip of the so coated insulating material at the edges of the conducting portion of the shield with the portion of the strip coated with conducting material contiguous with a surface such as the inner surface of the conducting sheet and with the

portion of the strip coated with semi-conducting paint projecting beyond the edge of the conducting sheet.

Referring more particularly to Fig. 1 of the drawing I have illustrated a winding 10 for an electric induction apparatus, such as a transformer having a plurality of concentric layers or coils 11 wound on a suitable insulating cylinder 12. In order to distribute the electrostatic capacity and prevent a breakdown when a high voltage surge or impulse strikes the winding, shield means including a conducting member 13 is placed adjacent a surface of the winding. In the arrangement illustrated in Fig. 1 a shield 15 is placed adjacent both inner and outer surfaces of the winding but it is to be understood that the shield may be placed only adjacent the inner surface of the winding or only adjacent the outer surface of the winding, if desired.

In order to prevent the formation of corona at the edges of the conducting material 13 which forms the shield arrangement, I provide an insulating strip 14 having a conducting coating 15 adjacent to and projecting beyond the edges of the conducting sheet 13, as will be seen in Figs. 2 and 3. The coating 15 may be provided on the insulating strip 14 in any suitable manner, such as by Schooping conducting particles such as copper on a portion of the strip 14. Another coating 16 of suitable semi-conducting paint may be placed over another portion, such as an adjacent portion of the strip 14 and overlapping a portion of the coating 15 as indicated at 17. The insulating strip at the edges of the conducting member 13 provides an improved and simple arrangement for preventing the formation of corona at the edges of the conducting strip 13, and such strips may be kept in stock so as to be available for application to various types of conducting shields.

As will be seen in Fig. 3 the conducting member 13 is provided in a cylindrical shape with a longitudinal discontinuity 18 therein so that the conducting member 13 will not provide a short circuited turn. The edges formed by the longitudinal discontinuity 18 may also be provided with my improved insulating strip so as to minimize the possibility of the formation of corona at those edges.

In Fig. 4 I have illustrated a modification of the shielding arrangement which includes the insulating strip 14 having the coating 15 of conducting particles and another coating 16 of semi-conducting paint similar to that illustrated in

Figs. 2 and 3. In this construction, however, the semi-conducting paint extends to the outer edge of the strip 14. Also, insulation of any suitable type, such as sheets of paper 19, are placed adjacent the inner surface of the shielding arrangement, the paper sheets being sufficiently long so that edges 20 may be folded over the edges of the shielding arrangement and overlying the outer surface thereof so as to provide additional insulation at the edges thereof and further minimize the possibility of corona forming at this point.

Although I have shown and described particular embodiments of my invention, I do not desire to be limited to the particular embodiments described, and I intend in the appended claims to cover all modifications which do not depart from the spirit and scope of my invention.

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

1. An electric induction apparatus including a winding, and shield means adjacent a surface of said winding comprising a conducting member and an insulating strip, said insulating strip having a portion coated with a material having conducting particles, said shield means being assembled with said insulating strip adjacent an edge of said conducting member, said portion coated with conducting particles lying contiguous with a surface of said conducting member and projecting beyond said edge so as to minimize corona formation at the edge of said conducting member.

2. An electric induction apparatus including a winding, and shield means adjacent a surface of said winding comprising a conducting member and an insulating member, said insulating member having a portion coated with conducting particles and a portion coated with semi-conducting paint, said shield being assembled with said insulating member adjacent an edge of said conducting member, said portion coated with conducting particles lying contiguous with a surface of said conducting member and said portion coated with semi-conducting paint project-

ing beyond said edge so as to minimize corona formation at the edge of said conducting member.

3. An electric induction apparatus including a winding, and shield means concentric with said winding comprising a cylindrically shaped conducting member, said conducting member having a longitudinal discontinuity so that said conducting member will not provide a short circuited turn, and an insulating strip having a portion coated with a material having conducting particles, said shield means being assembled with said insulating strip adjacent the outer edges of said cylindrically shaped conducting member and adjacent the edges formed by the longitudinal discontinuity, said portion coated with conducting particles lying contiguous with a surface of said conducting member and projecting beyond said edges so as to minimize corona formation at the edges of said conducting member.

4. An electric induction apparatus including a winding, and shield means adjacent a surface of said winding comprising a conducting member and insulating strips, said insulating strips each having a portion coated with Schooped conducting metallic particles and a portion coated with a semi-conducting paint, said shield means being assembled with said insulating strips adjacent edges of said conducting member with the Schooped coating contiguous with the adjacent edge of said shield.

5. An electric induction apparatus including a winding, and shield means adjacent a surface of said winding comprising a conducting member and an insulating strip, said insulating strip having a portion coated with a material having conducting particles, said shield means being assembled with said insulating strip with said portion coated with a material having conducting particles adjacent to and contacting an edge of said conducting member, and insulating means adjacent the inner surface of said shield means having an outer portion folded over an edge of said shield means and overlying the outer surface thereof.

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