

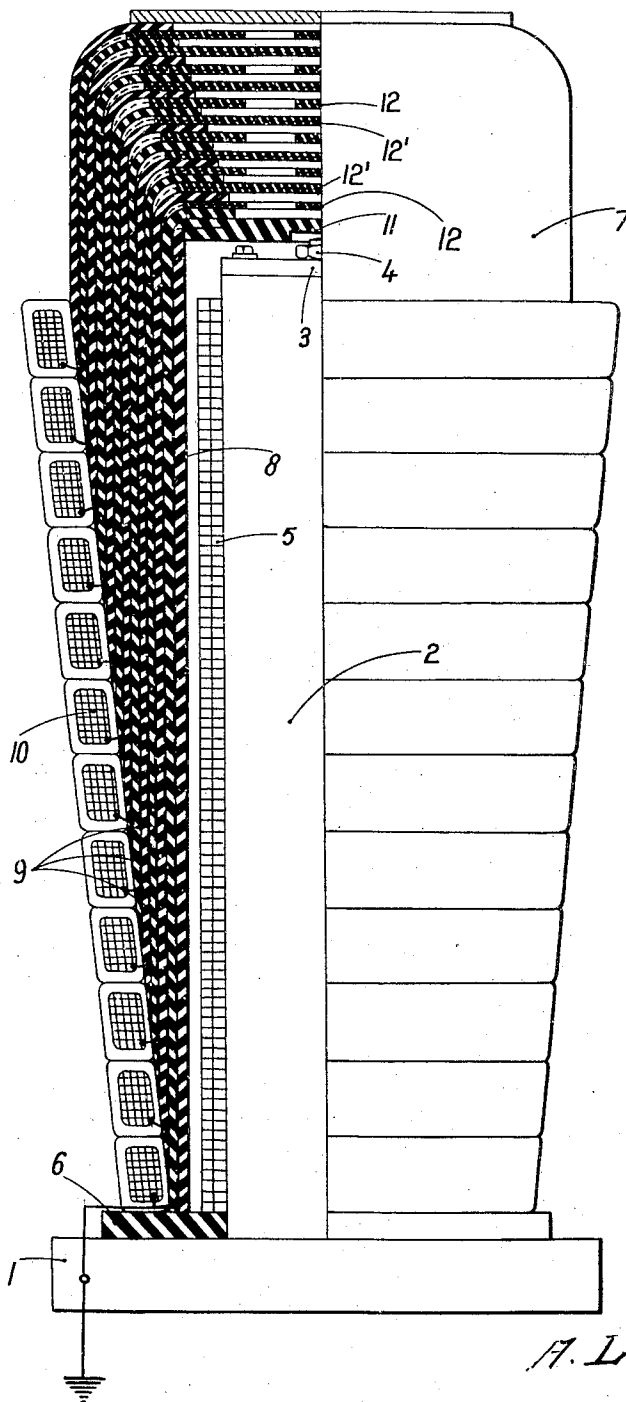
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ELECTRIC TRANSFORMER FOR HIGH TENSION

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ELECTRIC TRANSFORMER FOR HIGH TENSION

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4 Claims. (Cl. 175—356)

The present invention relates to transformers and particularly pertains to the insulation of transformers having open magnetic circuits.

In Patent No. 2,107,973 issued February 8, 1938 to Adolphe Bajon, there is disclosed an electric transformer for high tension, having high and low voltage windings which are mounted on an open iron core. In order to compensate for the wattless currents which are particularly unfavorable when the transformer is used for measurements, there are inserted, at different points on the high-tension winding, suitable capacities whose dielectric consists of insulating sleeves with conducting sheets located between the insulating sleeves affording a regular distribution of the drop of potential in the insulation. On the other hand, the windings can be so arranged as to greatly reduce the magnetic leakage, thus obviating the drawbacks attending the use of an open magnetic circuit for measuring transformers.

In the construction above mentioned, the insulation is open on the high-tension end, and in order to obtain a sufficient path to prevent flash-overs, the part of the insulating elements which projects from the end of the iron core must be considerably extended. It may be advantageous, and chiefly in the case of very high tensions, to reduce this dimension in the direction of the core, in order to facilitate the construction, the transportation and the assembling. This result can be obtained by an arrangement according to the present invention in which the insulation is closed on the high tension end so that it surrounds the free end of the core. When the insulation consists of paper bands wound according to a cylinder and having conducting sheets between them, the layers of paper can be bent over, at the free ends, towards the interior, and the insulating elements can be closed on the upper side by insulating discs. It is preferable to mount conducting sheets between the discs, and such sheets should be electrically connected to the cylindrical conducting sheets.

The accompanying drawing shows by way of example a constructional form of a transformer according to the invention. The figure is a view in which the right-hand half represents, in elevation, the outer parts of the transformer, and the left-hand half is a vertical section showing the insulating elements and the windings. The magnetic iron core 2 is secured to an iron base 1 which serves to reduce the reluctance of the magnetic circuit. The base 1 is attached to the core by means of a spindle passing through the core, and by a disc 3 which is urged against the

upper end of the core 2 by means of a nut 4. The core 2 carries a low-tension winding 5 which is cylindrical and surrounds the core. The winding 5 rests upon an insulating disc 6, and the insulating covering 7 consisting of layers of paper 9 surrounding the insulating tube 8, also rests upon the disc 6.

These layers 9 are obtained by winding single bands of paper, with the interposition of metal sheets, as shown in the figure by the dotted lines. The thickness of the insulating sheath increases from the bottom to the top and this increase corresponds to an increasing number of layers of paper, so that the surface portion provided with the high-tension winding 10, has a tapered form, which spreads out at the top. At their upper ends, the layers of paper are folded, one by one, towards the interior, and the edge of the first layer 9 which follows the insulating tube 8 is applied against the cover 11 of this tube. A disc of paper 12 rests upon the folded end of the first layer 9 and this disc comprises a sheet metal piece which is shown in dotted lines electrically connected to the sheet metal piece which surrounds the layer of paper 9. The sheet metal is also connected with the end of the first fraction (counting from the bottom) of the high-tension winding 10. The beginning of this fraction of the winding 10 is electrically connected to the core which is grounded and to the metallic layer with which the insulating cylinder 8 is covered.

Upon the first paper piece 12 is applied the edge of the next cylindrical layer 9, upon which is placed another paper piece 12' and the metallic sheets form, in all cases, closed conducting coverings, as shown in the drawing.

When the transformer is used in connection with relatively high voltages it is preferable to place the whole apparatus in an oil tank. Holes can then be formed in the discs 12 and 12' for the oil circulation. These holes preferably have a staggered arrangement, and may thus be located alternately to the left in the discs 12 and to the right in the discs 12'.

With the present construction, the total height of the device will not greatly exceed the height of the high-tension winding. On the other hand, the metallic layers serve as condensers for the distribution of the potential and the compensation for the wattless currents.

I claim:

1. An electric transformer for high tension, comprising an open magnetic core, high and low tension windings mounted upon said core, an insulating assembly arranged between said windings

extending above the windings at the high tension end consisting of layers of paper, metallic sheets between said layers for forming condenser coatings, said layers being bent towards the interior
5 at the upper part of the insulating assembly, and insulating discs inserted between said bent parts for holding them.

2. An electric transformer for high tension as claimed in claim 1, the insulating discs of which
10 are provided with metallic sheets connected to the metallic sheets of the insulating covering.

3. An electric transformer for high tension as claimed in claim 1, the insulating discs of which

are pierced with holes which are staggered from one disc to the next and serve for the circulation of a cooling fluid.

4. An electric high voltage transformer comprising, an open magnetic core, high and low
5 voltage windings mounted on said core, an insulating assembly between said windings consisting of a plurality of cylindrical sleeves formed of paper and metal sheets, and said assembly extending beyond the high tension end of the windings
10 and formed in such a manner as to cover the end of the magnetic core.

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