

(No Model.)

E. THOMSON.

TRANSFORMER FOR ALTERNATING CURRENT SYSTEMS.

No. 542,295.

Patented July 9, 1895.

FIG. 1.

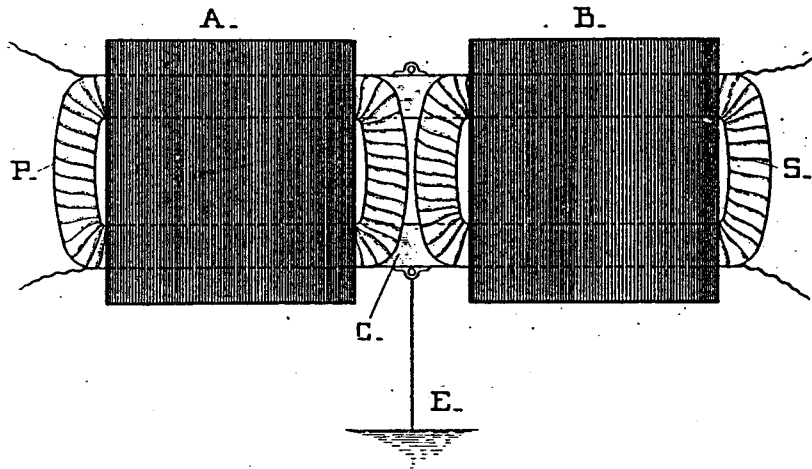


FIG. 2.

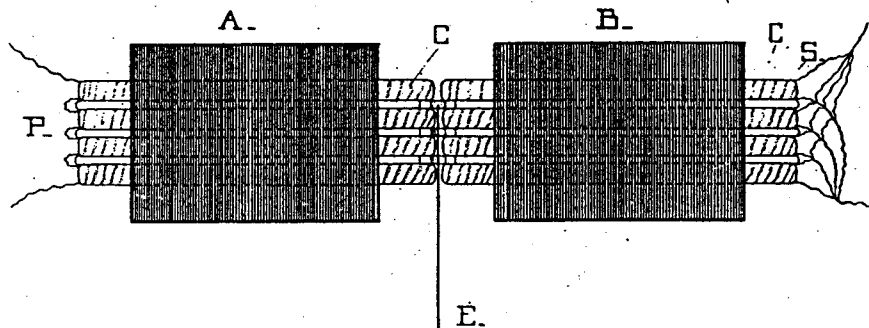
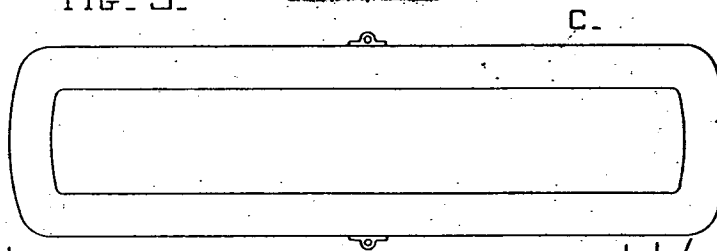


FIG. 3.



WITNESSES.

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UNITED STATES PATENT OFFICE.

ELIHU THOMSON, OF SWAMPSCOTT, MASSACHUSETTS, ASSIGNOR TO THE
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TRANSFORMER FOR ALTERNATING-CURRENT SYSTEMS.

SPECIFICATION forming part of Letters Patent No. 542,295, dated July 9, 1895.

Application filed March 6, 1895. Serial No. 540,699. (No model.)

To all whom it may concern:

Be it known that I, ELIHU THOMSON, a citizen of the United States, residing at Swampscott, in the county of Essex, State of Massachusetts, have invented certain new and useful Improvements in Transformers for Alternating-Current Systems, of which the following is a specification.

My invention relates to transformers for alternating-current systems; and it has for its object to provide a safety ground connection for such transformers, affording a way of separating two lines while still keeping them in inductive relation. It is particularly applicable to cases where there is danger from lightning or where high potentials are employed.

My invention consists, substantially, of a double transformer with coils upon each core and links or plates of copper extending through and forming a primary winding on one transformer and a secondary winding on the other. These plates or sheets are practically at no potential, and are therefore connected directly to ground and serve as an efficient safety connection in case of leakage from any coil of the transformer to the plates or sheets, thereby avoiding the possibility of leakage through the winding.

The accompanying drawings show embodiments of my invention, Figure 1 being a plan, Fig. 2 a side elevation, and Fig. 3 a detail, of one of the links, the earth connection being indicated diagrammatically.

A B are the cores of the double transformer, which are, as usual, made of laminated metal. P is the primary coil connected to any source of alternating current.

C C are the interposed links or plates of copper threaded between the coils, which are made sectional for this purpose and embracing both coils of the transformer.

The coils S upon the core B of the transformer are the sectional coils and may be arranged, as shown, in series or in multiple, as desired.

An earth connection E is made to the links or plates C, so that any leakage from one coil will be carried directly to ground.

In many cases immunity from leakage between the circuits or from the transformer to ground may be imperative; and in such cases I have found that the ordinary copper sheet separating the coils, although sufficient in ordinary circumstances, is not sufficient if the currents are very heavy, as in that case the sheet must be made of very thick metal and gets very hot, and if its temperature rises very much by arcing it becomes inefficient for the purposes designed. The arrangement herein pointed out is also desirable where the circuit is to be divided into two parts, as when it would otherwise be of very great length or where one section is subject to lightning effect and the other section not so subject. It also serves as an absolute protection to the generator or motor when used as a step-up or step-down transformer. It is also useful in diminishing capacity effects in the line and as furnishing self-induction to balance the capacity.

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

1. A transformer for alternating currents, comprising two laminated cores, primary coils wound upon one of the cores, secondary coils upon the other, and plates or links of copper connecting the cores and adjacent to the primary and secondary coils, the plates being connected to earth.

2. A transformer for alternating currents, comprising two laminated cores, primary coils wound upon one of such cores, secondary coils wound upon the other, and connecting plates or links of copper interposed between the sections of the primary and secondary coils, each plate or link being interposed between coils of both types, and all the plates being connected to earth.

In witness whereof I have hereunto set my hand this 28th day of February, 1895.

ELIHU THOMSON.

Witnesses:

JOHN W. GIBBONEY,
HENRY O. WESTENDARP.