(No Model.)

E. THOMSON.

INDUCTION COIL, TRANSFORMER, &c.

No. 416,762. Patented Dec. 10, 1889.

Fig. 1.

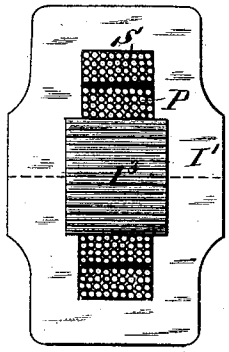
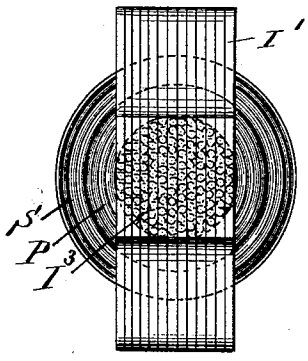


Fig. 2.



WITNESSES:

Gabriel J. W. Galster.

Wm. H. Cabell

INVENTOR

Elihu Thomson.

BY

Townsend & MacArthur

ATTORNEYS

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

ELIHU THOMSON, OF LYNN, MASSACHUSETTS.

INDUCTION-COIL, TRANSFORMER, &c.

SPECIFICATION forming part of Letters Patent No. 416,762, dated December 10, 1889.

Application filed September 26, 1887. Serial No. 251,072. (No model.)

To all whom it may concern:

Be it known that I, ELIHU THOMSON, a citizen of the United States, and a resident of Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Induction-Coils, Transformers, &c., of which the following is a specification.

My invention relates to the construction of that form of electrical apparatus in which one or more coils—such as the coils of an inductorium or of a reactive coil—are inclosed in a magnetic sheath extending through the axis of the coil and by the sides and periphery thereof.

The object of my invention is to secure cheapness and facility of construction in apparatus of this kind, as well as to provide for the proper magnetic subdivision of the iron mass for the purpose of preventing the flow of induced currents in the magnetic body.

My invention consists, essentially, in forming the envelope from an iron piece or pieces having an opening at or about its center adapted to receive the coil or coils wound upon a suitable core, which is adapted to be slipped into the opening and to have its ends make a butt joint with the edges of the iron piece or pieces forming the envelope. In this construction the iron envelope of the coils at the sides and outer periphery thereof is formed of the continuous iron mass of the piece or pieces, while the part of the envelope passing through the axis of the coils consists of the separate piece or pieces comprising the core and making a butt joint at their ends directly with the edges of the plates forming the continuous iron mass.

In manufacturing an apparatus of this kind I prefer to wind the coils upon the core portion of the envelope and then to slip the parts thus formed into place in the hollow iron frame.

Figure 1 of the accompanying drawings is a vertical cross-section of a converter or induction-coil constructed in accordance with my invention, and Fig. 2 is a side view of the same.

S P indicate the two coils of a converter, while I′ indicates a series of iron plates or laminæ, preferably of a general rectangular form, though they may be of other shapes, which plates are formed in one piece and have opening at the center adapted to receive the coils S P and the core I^3 for said coils. The core I^3 is short and composed of sheet-iron plates or wires assembled in a bundle and of proper form, and has its ends dressed off to fit into the central portion of the space formed in the frame-like plates I′ and to make a butt joint with its individual plates against the edges of the plates forming the frame. As many plates I′ may be employed as is found desirable, or a single plate or frame of the desired or requisite thickness might be used, though this form is not so desirable, inasmuch as the element of the magnetic subdivision of the frame would be wanting. The plates I′ may be secured together by any of the means known in the art. They serve to effect a magnetic closure of the magnetic circuit for the core I^3 of the coils.

Thin paper may be used between the sheet-iron plates I′, and may also be interposed between them and the ends of the core-plates I^3, though in the latter position it should not be sufficiently thick to interfere to any great extent with the magnetic continuity.

It is obvious that my invention is applicable to other forms of apparatus in which a different number of coils is employed.

I do not claim in this application a coil or coils whose cross-section is substantially square, in combination with superposed plates the outer lines of which form at the portion thereof external to the axis of the coil a substantial square figure, as this is described in a prior application for patent filed by me February 12, 1887, No. 227,445.

What I claim as my invention is—

In an electric inductorium or converter, or its equivalent, as described, the combination, with a hollow frame of iron formed of a series of superposed iron plates having a central opening or aperture, as described, of a separable core-piece of iron carrying the electric coils and formed of a bundle of iron plates whose ends make a butt joint with the edges of the plates forming the hollow frame when inserted into the central opening with its coils applied.

Signed at Lynn, in the county of Essex and State of Massachusetts, this 12th day of September, A. D. 1887.

ELIHU THOMSON.

Witnesses:
M. L. THOMSON,
J. W. GIBBONEY.