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S. L. B. LINES

SPLIT-CORE TRANSFORMER

Filed Sept. 25, 1922

Fig. 1.

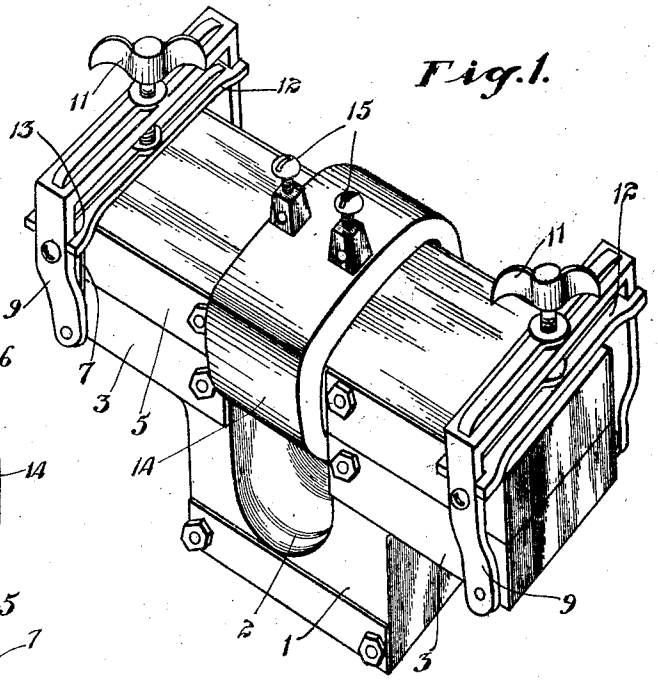


Fig. 2.

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UNITED STATES PATENT OFFICE.

STANLEY LLANDAFF BURNETT LINES, OF TORONTO, ONTARIO, CANADA, ASSIGNOR TO THE LINCOLN METER COMPANY, LIMITED, OF TORONTO, ONTARIO, CANADA.

SPLIT-CORE TRANSFORMER.

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To all whom it may concern:

Be it known that I, STANLEY LLANDAFF BURNETT LINES, a subject of the King of Great Britain, and resident of the city of Toronto, county of York, Province of Ontario, in the Dominion of Canada, have invented certain new and useful Improvements in Split-Core Transformers, described in the following specification, and illustrated in the accompanying drawings that form part of the same.

The principal objects of the invention are to facilitate the testing of an electrical service without interfering with same and to provide a split core transformer which will offer the minimum of magnetic reluctance and which may be made at extremely low cost.

A further and very important object is to provide a transformer which will enable an instantaneous change of ratio by substituting different coils and thereby providing a remarkable field of alteration.

A still further object is to produce greater accuracy on low primary ampere turns.

The principal features of the invention consist in the novel construction of the transformer whereby the coil is loosely mounted upon a flat slab core section and the other section of the core presents flat surfaces of considerable area to engage the flat section, and whereby said sections are securely held in contact by hinged clamps.

In the drawings Figure 1 is a perspective view showing my improved transformer with the sections clamped in place.

Figure 2 is a perspective view showing the clamps released and the movable core section separated from the main section.

A split core transformer is very desirable for the reason that a section of the core may be moved to allow of the transformer being placed upon a service cable without in any manner interfering with the service. It is, however, essential that the core sections be united so as to offer very little, if any, magnetic reluctance by reason of the division and the present structure of transformer has been constructed particularly with that end in view.

The main section 1 of the transformer core is formed of laminations of substantially U-shape forming a channel 2 to receive the service cable. The upper flanges 3 extend laterally for a considerable length so that the tops thereof will present surfaces 4 of considerable area. These surfaces 4 are preferably machined very smooth and true.

A flat slab 5 formed of laminations and having a true face 6 corresponds approximately in outside dimensions with the flanges 3 and extends over and closes the channel 2, the faces 6 which are preferably machined smooth and true making practically perfect contact with the surfaces 4 and thus completing the core.

The slab 5 is loosely held from being disengaged entirely from the main section by means of slotted strips 7 secured thereto by the bolts 8, said strips being pivotally secured to the outer ends of one of the flanges 3.

A pair of U-shaped clamp irons 9 are pivotally secured, one to each of the flanges 3 at the outer ends thereof. The cross bars of these clamped irons are provided with centrally threaded holes 10 through which the screws 11 extend, which screws engage and operate the clamping bars 12. The bars 12 are formed with notches 13 at the ends which slidably engage the parallel sides of the irons 9.

The transformer coil 14 is adapted to be slipped on to the core member 5 and fits into the channel 2. When the core is thus located the clamps are tightened down upon the slab, thus drawing the two core sections into the closest possible contact.

It will be readily seen that a transformer constructed as described may be handled very expeditiously. In order to place it upon a service cable it is merely necessary to loosen the clamps, swing them outwardly, swing the slab 5 away from the main section 1 and place the main section over the cable. The slab is then swung back into place and the clamps returned to their position and tightened down. If a coil of a different ratio is required, it is merely necessary to loosen the slab 5, slip one coil off and another on in its place. The coil is provided with suitable binding screws 15 to which terminals of a meter may be connected to effect a reading of the current flowing in the cable.

What I claim as my invention is:—

1. A transformer, comprising, a pair of core sections enclosing a transverse opening and hinged at one side of said opening, a transformer coil surrounding one of said

sections and removable from the free end, and means for securing the free ends of said core sections together.

2. A transformer, comprising, a core section channeled to receive an electrical conductor, a removable core section closing said channel, and a coil slidably arranged on said removable core section and held in position by said channeled section.

3. In a split core transformer, a main section having a channel therein and end surfaces arranged in a common plane, a flat slab section adapted to engage said end sections in close contact, means for removably holding said flat slab in place, and a transformer coil encircling said slab.

4. A split core transformer, comprising, a U-shaped main section having lateral extensions presenting flat surfaces arranged in a common plane, a flat slab core section adapted to rest upon the flat surfaces of said main section, pivotal clamp members pivotally connected to one of said sections and adapted to hold the other section in close contact therewith, and a transformer coil surrounding the slab section.

5. A split core transformer, comprising, a U-shaped main section having laterally extending flat surfaces arranged in a common plane, a flat slab core section adapted to engage the flat surfaces of the main section, strips pivotally connected to one end of the flat slab and to one end of the main section, a coil encircling said slab, and clamps for holding said core sections in close contact.

6. A split core transformer, comprising, a channeled main section having a flat surface extending either side of the channel, U-shaped clamp irons pivotally connected at the outer ends of said flat surface portions, a flat slab core section adapted to engage the flat surfaces of the main section, a transformer coil encircling said slab, slidable clamp bars arranged in said clamp irons and adapted to engage said slab section, and screw members threaded in the clamp irons operating said movable bars.

STANLEY LLANDAFF BURNETT LINES.