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1,669,929

H. D. CURRIER

TRANSFORMER

Filed Dec. 26, 1924

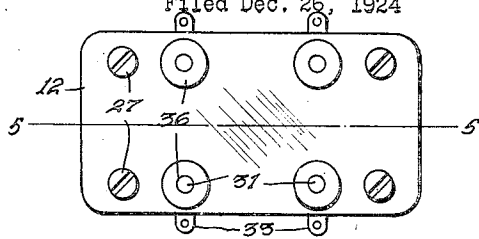


Fig. 3.

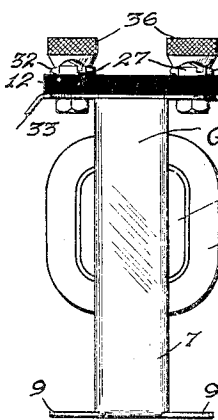


Fig. 2.

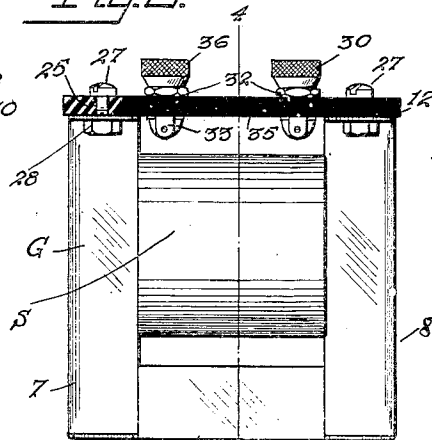


Fig. 1.

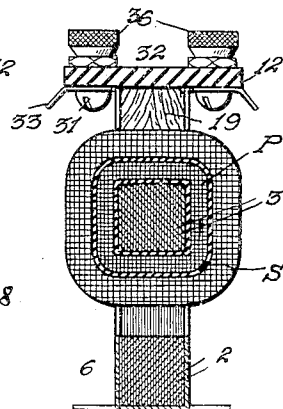


Fig. 4.

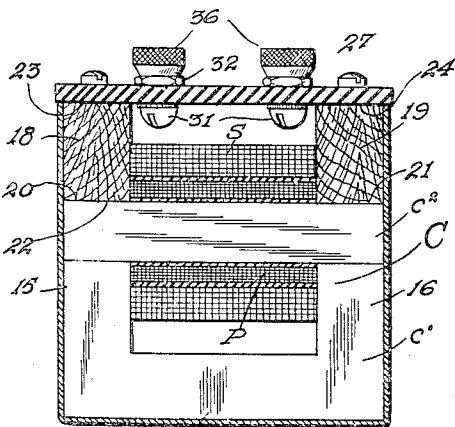


Fig. 5.

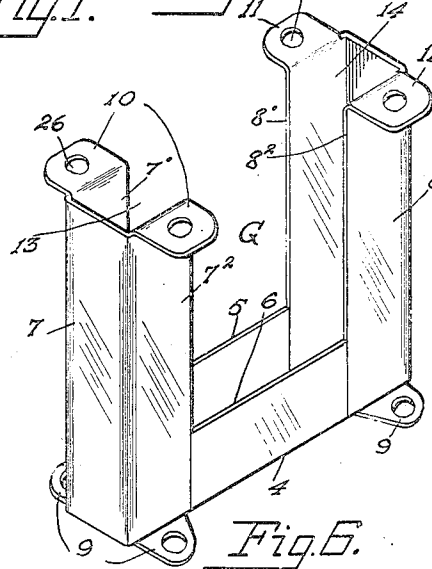


Fig. 6.

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UNITED STATES PATENT OFFICE.

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TRANSFORMER.

Application filed December 26, 1924. Serial No. 758,007.

My invention relates to transformers, and has to do more particularly with the construction and assemblage of the various parts of a transformer in a simple manner, whereby a transformer is provided which is cheap to manufacture and most efficient in its operation.

A feature of my invention is the provision of a supporting casing for supporting certain parts of the transformer, which is of a one-piece construction, and which when formed, provides means for supporting the core of the transformer and also provides means for mounting the transformer in position on any suitable mounting or support.

Another feature of my invention is the provision of a split laminated core, one portion of which supports the windings of the transformer and the association of this portion with the other portion of the core to form a closed magnetic field for the transformer.

Still another feature of my invention is the provision of means which is clamped between the combined terminal rack and cover cap and the core of the transformer, when the cover cap is secured to the supporting casing, which prevents movement of the core and its supported windings when supported in position in the supporting casing.

The above-mentioned features, as well as others not heretofore mentioned will be more fully and specifically pointed out in the ensuing specification.

For a more complete understanding of my invention reference may be had to the accompanying drawing in which like reference characters in the several views denote like parts and in which:

Fig. 1 is a front view of the transformer of my invention;

Fig. 2 is a left side view of Fig. 1;

Fig. 3 is a plan view of Fig. 1;

Fig. 4 is a sectional view along the line 4-4 of Fig. 1;

Fig. 5 is a sectional view along the line 5-5 of Fig. 3;

Fig. 6 is a perspective view of the enclosing casing.

Referring now more in detail to my invention as illustrated in the accompanying drawing, the core C of the transformer, comprises two portions c' and c'' . The lower portion c' of the core C is composed of a plu-

rality of U-shaped laminations 2, and the upper portion c'' is composed of a plurality of rectangular shaped strips 3 which support the primary winding P and the secondary winding S.

The supporting casing G comprises a base 4 provided with integrally formed walls 5 and 6 formed at right angles to the base 4 and a pair of U-shaped upwardly extending members 7 and 8 integrally formed with the base 4. The base 4 is provided with four integrally formed ears 9 which are provided with suitable orifices, and these ears 9 provide means for mounting the transformer to a suitable support. The sides 7' and 7² of the member 7, and the sides 8' and 8² of the member 8 are provided respectively with ears 10 and 11, and are adapted to support the combined terminal rack and cover cap 12.

The portion c' of the core C is built up of a plurality of laminations 2 to form the U-shaped portion and is inserted in the channels 13 and 14 formed by the respective U-shaped extended members 7 and 8 of the casing G, and when the portion c' is in position the arms 15 and 16 extend upward into the channels 13 and 14 of the U-shaped extended members 7 and 8, and the bottom 17 of the laminations 2 rest on the base 4 between walls 5 and 6 extending up from the base 4. The rectangular portion c'' of the core C is built up of a plurality of rectangular-shaped laminations 3 which are adapted to be slipped through the sleeve supporting the primary winding P. With the transformer windings P and S thus supported on the portion c'' , the same is inserted in the channels 13 and 14 of the U-shaped extended members 7 and 8. The space between the U-shaped extended members 7 and 8 is slightly larger than the width of the transformer windings P and S, supported on the portion c'' , and permits this insertion of the rectangular portion c'' of the core and its supported windings P and S. The rectangular portion c'' of the core C when in position rests against the ends of the respective arms 15 and 16 of the portion c' of the core C, and rectangular shaped spacer blocks 18 and 19 of a size to fit in the channels 14 and 15 of the U-shaped extending members 7 and 8 are now inserted in the channels 14 and 15, and when in position, the bottom faces 20 and 21 of the blocks rest against the face 22 of the laminated portion c'' of the core C.

The faces 23 and 24 of the blocks 18 and 19 extend slightly above the plane faces of the ears 10 and 11 on the U-shaped members 7 and 8, for purposes as will presently be described.

The combined terminal strip and cover cap 12 is formed of suitable insulating material, such as bakelite, and is rectangular in shape and with the core C and its supported primary and secondary windings P and S and the rectangular blocks 18 and 19 in position, as just described, the cover cap 12 is now placed on the integrally formed ears 10 and 11 of the extending members 7 and 8. The cover cap 12 is provided with orifices 25 which are in alignment with orifices 26 in the ears 10 and 11 of the extending members 7 and 8, and screws 27 are provided which pass through the aligned orifices 25 and 26 in the cover cap 12 and ears 10 and 11. Nuts 28 are provided which have screw-threaded engagement with the screws 27 to secure the cover cap 12 in position to the casing G. As it has been pointed out that the blocks 18 and 19 which rest on the rectangular portion c^2 of the core C protrude slightly beyond the plane faces of the ears 10 and 11 of the casing G, and when the cover cap 12 is clamped in position on the casing G, the blocks 18 and 19 are forced down against the rectangular portion c^2 of the core C which in turn is forced down against the arms 15 and 16 of the U-shaped portion c' of the core C. This pressure exerted on the portion c' of the core C insures positive contact engagement between the two portions c' and c^2 of the core C and at the same time clamps the rectangular portions c' and c^2 of the core C in position in the casing G against movement.

The cover cap 12 has secured to it four terminals 30 which serve to connect external conductors with the terminal windings of the primary P and secondary S of the transformer, and as each one of the terminals 30 is the same and secured to the cover cap 12 in a like manner, a description of one will be sufficient. A screw 31 extends up through a suitable orifice in the cover cap and is secured thereto by means of a nut 32, and a suitable terminal clip 33 is placed between the head of the screw 31 and the bottom face 35 of the cover cap 12 to which one of the terminal windings of the transformer is soldered. A thumb nut 36 is also provided which has screw-threaded engagement with the protruding end of the screw 31 which when turned down may secure the external conductors to the terminal.

While I have illustrated and described a preferred embodiment of my invention, it is to be understood that I do not wish to be limited to the exact structure as shown and described, but I aim to cover all such changes

and modifications as come within the spirit and scope of the appended claims.

Having described my invention what I claim as new and desire to secure by Letters Patent is:

1. A device of the character described including a supporting casing comprising a base and parallel channel shaped members, a split core comprising a U-shaped member and a rectangular shaped member, said U-shaped member supported in the base of said casing and its extended portions extending in said channel members, a winding supported on said rectangular shaped member, said rectangular shaped member resting on said extended portion of said U-shaped member of said core, and means for securing said split core members in position in said supporting casing against displacement by engaging said casing and the ends of said winding, said casing enclosing only the said U-shaped member the said securing means and the portions of the said rectangular member free of the said winding.

2. A device of the character described including a supporting casing comprising a base and parallel channel shaped members, a split core comprising a U-shaped member and a rectangular shaped member, said U-shaped member supported in said base and its extended portions extending up in said channel members, windings supported on said rectangular shaped member, said rectangular shaped member resting on said extending portions of said U-shaped member in said channels, a cover cap secured to said casing, and means associated with said cover cap and adapted to engage the said windings for securing said split core members in position in said supporting casing, said casing adapted to enclose only the U-shaped member, securing means, and the extended portions of the rectangular member.

3. A device of the character described including a supporting casing comprising a base and a pair of parallel channel shaped members, a split core comprising a U-shaped member and a rectangular shaped member, said U-shaped member supported in said base and its extended portions extending up in said channel members, windings supported on said rectangular shaped member, said rectangular shaped member resting on said extended portions of said U-shaped member in said channels, a cover cap secured to said casing, a pair of blocks resting in said channel engaging the said casing and said winding and associated with said cover cap for securing said split core in position in said supporting casing, said casing enclosing only the U-shaped member, the pair of blocks, and the extending portions of the said rectangular member.

4. A device of the character described in-

cluding a supporting casing, comprising a base and a pair of parallel channel shaped extending members, a split core comprising a U-shaped member and a rectangular shaped member, said U-shaped member supported in said base and its extended portions extending up in said channel members, windings supported on said rectangular shaped member, said rectangular shaped member resting on said extended portions of said U-shaped members, a cover cap secured to said casing, a block resting in each of said channel members between said cap and said rectangular member and engaging the said winding and said rectangular member, said cover cap clamping said blocks in position to prevent movement of said split core members in said supporting casing, said casing enclosing only the U-shaped member, the said blocks and the extended portions of the said rectangular shaped member.

5. A device of the character described including a single piece casing member having a horizontal and a pair of vertical channel members, a closed magnetic core having its bridging member and side members within the said channel portions of the casing, a winding supported on a portion of

said closed magnetic core between said pair of vertical channels, keeper members in said vertical channels resting on the end portion of the portion of the closed magnetic core supporting said winding, and a terminal plate secured to integrally formed members of the casing, said plate and winding maintaining said keeper members in position to prevent movement of said winding and magnetic core.

6. A device of the character described including a casing member, a U-shaped core member fitting into said casing member, a second core member having its ends extending into said casing member and resting upon the free ends of said first core member, and members pressing said second core member into contactual engagement with said first core member to prevent movement of said core members in said casing, certain of said members engaging a winding supported on said second core member, said winding preventing movement of said members.

Signed by me at Chicago, county of Cook, and State of Illinois, this 23d day of December, 1924.

HIRAM D. CURRIER.