

June 8, 1926.

1,588,074

C. D. WHITE ET AL.
AUDIOFREQUENCY TRANSFORMER

Filed Nov. 4, 1925

2 Sheets-Sheet 1

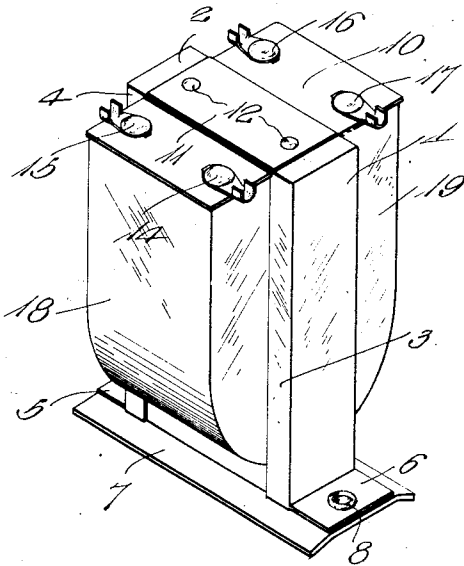


FIG 1

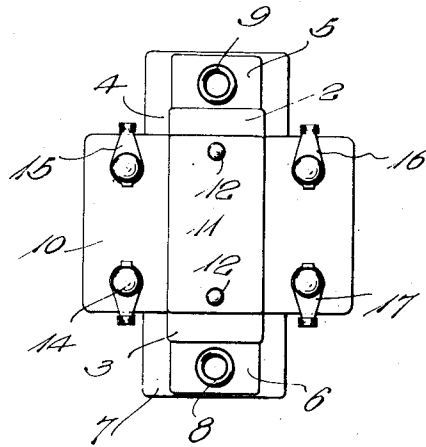


FIG 4

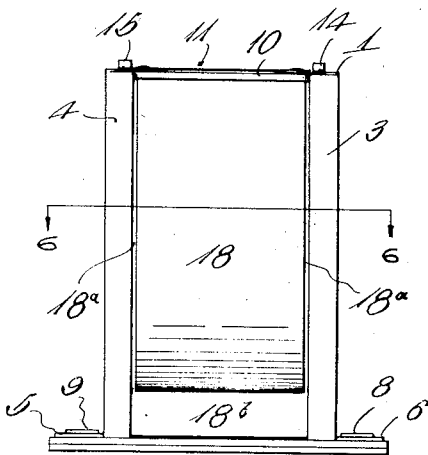


FIG 2

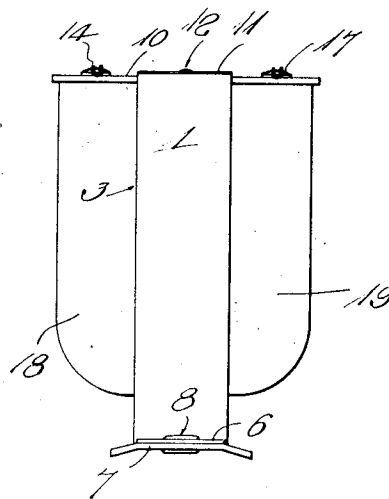


FIG 3

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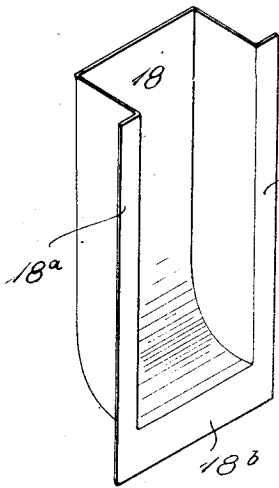


FIG 5

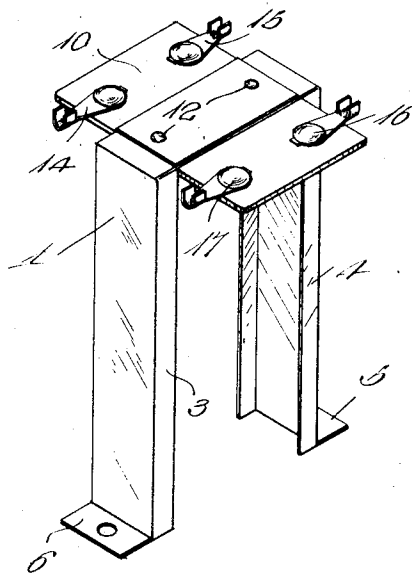


FIG 7.

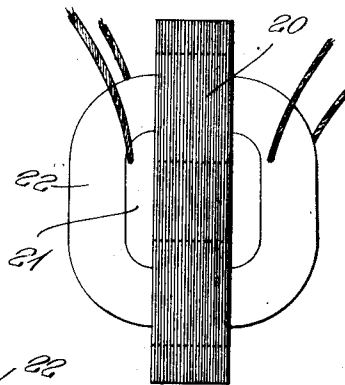
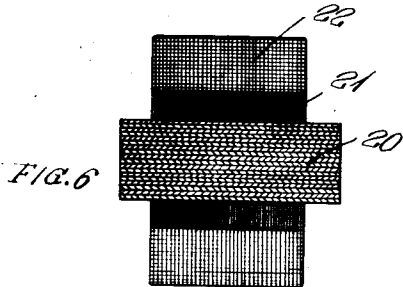


FIG 8



SEC. 6-6

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Patented June 8, 1926.

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UNITED STATES PATENT OFFICE.

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AUDIOFREQUENCY TRANSFORMER.

Application filed November 4, 1925. Serial No. 66,758.

Our invention relates broadly to audio frequency transformers for interconnection in electron tube amplifier systems and more particularly to a mounting or casing for audio frequency transformers for such systems.

One of the objects of our invention is to provide a practical construction of casing or mounting for audio frequency transformers capable of inexpensive manufacture on a quantity production basis, the parts of which can be efficiently assembled for the production of transformer systems having a high degree of electrical efficiency.

Another object of our invention is to provide a construction of audio frequency transformer mounting in which the parts may be readily die pressed from sheet metal or insulation material and inexpensively assembled on a quantity production basis for producing an audio frequency transformer having good mechanical rigidity and high electrical efficiency.

Still another object of our invention is to provide an audio frequency transformer mounting having a minimum number of parts which may be stamped from sheet metal and readily assembled to form a mechanically tight casing where the parts slide one with respect to another in grooves provided by the cooperating parts for completing the assembly of the instruments.

A further object of our invention is to provide a transformer casing having a pair of electromagnetic shields which may be gripped between a central frame member and the closed magnetic core structure of the transformer for preventing stray couplings by magnetic lines from the transformer windings.

Other and further objects of our invention will be understood by the following specification with reference to the accompanying drawings, in which:

Figure 1 is a perspective view showing an assembled transformer embodying the principles of our invention; Fig. 2 is a side elevation of the transformer casing of our invention; Fig. 3 is an end view showing our assembled transformer; Fig. 4 is a top plan view of the assembled transformer; Fig. 5 is a perspective view of one of the shields which we provide as part of the transformer casing; Fig. 6 is a partial cross-sectional view

on line 6—6 of Fig. 2, through the transformer per se; Fig. 7 is a perspective view of the frame of the transformer casing showing the terminal block carried thereby; and Fig. 8 is a side elevation of the transformer construction showing the arrangement of the windings of the transformer.

Referring to the drawings in more detail, reference character 1 designates the frame of the transformer casing comprising a channel member having a pair of vertically extending parallel portions 3 and 4 connected by a flat top strip 2 and having flat projecting members 5 and 6 at the lower extremities of the parallel portions 3 and 4 for securing the transformer casing to an arched base portion 7. The flat projecting members 5 and 6 are secured to the arched base portion 7 by means of eyelet rivets 8 and 9 which permit securing screws to be passed there-through tending to flatten the arched portion 7 against a supporting base for locating the transformer in position with respect to associated electron tube amplification apparatus. The strip 2 serves as a support for a laterally extending terminal plate 10 which is fastened in position by securing means 12 and plate member 11 which lies adjacent the top of the connecting strip 2 of the frame, while the terminal plate 10 is secured adjacent the under surface of the connecting strip 2. The terminal plate 11 consists of insulating material on which are supported connecting terminals 14, 15, 16 and 17 which connect to the primary and secondary windings 21 and 22 which are disposed upon the closed magnetic circuit core 20 positioned within the transformer casing. The magnetic core 20 fits between the vertically extending parallel portions 3 and 4 of the frame 1 and is secured therein against displacement by reason of the channel shape of the frame 1. We provide a pair of magnetic shields or side closures 18 and 19 having flanges adjacent the edges thereof which fit between opposite sides of the magnetic core 20 and the inside faces of the channel frame 1. The magnetic shield 18 is represented more clearly in Fig. 5 as having vertically extending flanges 18^a at the edges thereof and horizontally extending flanges 18^b interconnecting the first mentioned flanges at the lowermost portion of the magnetic shield 18. It will be observed that the

flanges present flat faces which slide with respect to the flat sides of the channel frame 1 in order to position the metallic shields over the transformer windings. It will also be observed that each magnetic shield has its upper end so formed that it conforms with the shape of the terminal plate 10 and acts as a support for the terminal plate 10 around the periphery thereof, while the lower portions of the magnetic shields terminate into flat flanges as we have represented at 18^b in Fig. 5. That is to say, each magnetic shield is curved inwardly toward the transformer structure forming a snugly fitting housing for the transformer coils at the same time that the shields serve as supports for the projecting sides of the terminal plate 10.

In the process of assembly, the transformer slides between the parallel portions 3 and 4 of the channel frame 1 and next the magnetic shields slide into the gap existing between the sides of the closed magnetic circuit transformer and the sides of the channel members constituting the sides of the frame 1, and then the frame 1 may be secured to the base member 7 by means of eyelet rivets 8 and 9.

While we have described our invention in one of its preferred embodiments, we desire that it be understood that modifications may be made in detail without departing from the spirit of the invention.

What we claim and desire to secure by Letters Patent of the United States is as follows:

1. In an audio frequency transformer, the combination of a closed magnetic circuit iron core, windings carried by said core, a channel member constituting a frame for said iron core, said channel member having a pair of vertically extending parallel portions, each terminating in horizontally extending projections and each interconnected at their upper extremity by means of a flat strip, a terminal plate secured to said flat strip and projecting on opposite sides thereof, a pair of magnetic shields adapted to fit between said iron core and the sides of said channel frame, the upper portions of said magnetic shields conforming with the shape of the projections of said terminal plate, and the lower portions of said magnetic shields terminating in planes substantially co-incident with the sides of said channel frame member, and a plate member interconnecting said flat horizontally extending projections on the lower extremities of said vertically extending portions.

2. An audio frequency transformer comprising in combination a substantially rectangular iron core, a channel frame for sup-

porting said iron core, said channel frame comprising a pair of channel shaped vertically extending parallel portions each having a flat horizontally extending projection at the lowermost extremity thereof and each being connected by a flat horizontal strip at the uppermost extremity thereof, an insulated terminal plate carried by said strip and extending laterally on either side thereof, a pair of magnetic shields slidably positioned between said channel shaped vertically extending parallel portions and the sides of said iron core transformer, said magnetic shields having their uppermost sections conforming with the shape of the projections of said terminal plate and having their lowermost extremities terminating in planes substantially co-incident with the sides of said channel frame.

3. An audio frequency transformer comprising in combination a substantially rectangular iron core, a channel frame for supporting said iron core, said channel frame comprising a pair of channel shaped vertically extending parallel portions each having a flat horizontally extending projection at the lowermost extremity thereof and each being connected by a flat horizontal strip at the uppermost extremity thereof, an insulated terminal plate mounted adjacent the lower surface of said strip and extending laterally on either side thereof, a pair of magnetic shields each having flanges on three sides thereof for slidably positioning said shields between said channel shaped vertically extending parallel portions and the sides of said iron core transformer, said magnetic shields having their uppermost sections conforming with the shape of the projections of said terminal plate and having their lowermost extremities formed by one of said flanges lying in planes substantially co-incident with the sides of said channel frame.

4. An audio frequency transformer comprising a channel shaped frame, an iron core transformer mounted in said channel shaped frame, a flat terminal block carried by the upper portion of said channel shaped frame and extending laterally on opposite sides thereof and a pair of magnetic shields arranged to engage opposite sides of said channel shaped frame for substantially enclosing said transformer, said shields being cup-shaped at the lowermost portions thereof and open-ended at the uppermost portions thereof for engaging the outer periphery of the lower surface of said terminal block for closing said transformer casing.

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