

April 24, 1928.

J. DESLOGE

1,666,889

TRANSFORMER

Filed March 30, 1925

Fig. 1.

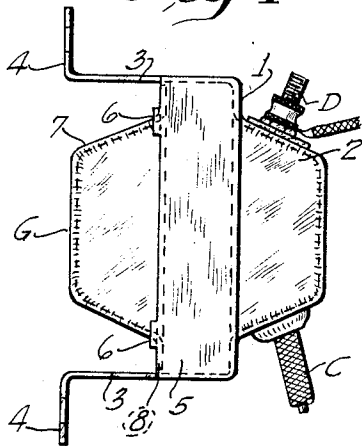


Fig. 2.

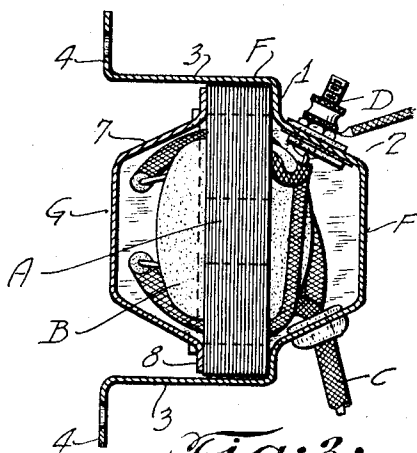
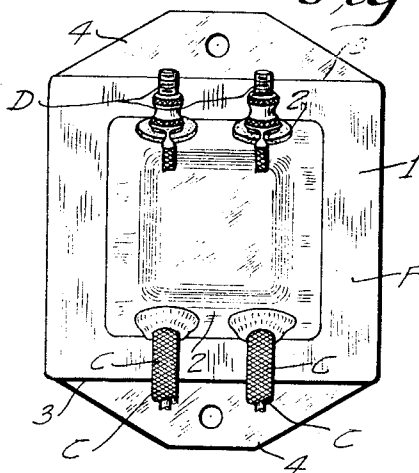


Fig. 3.

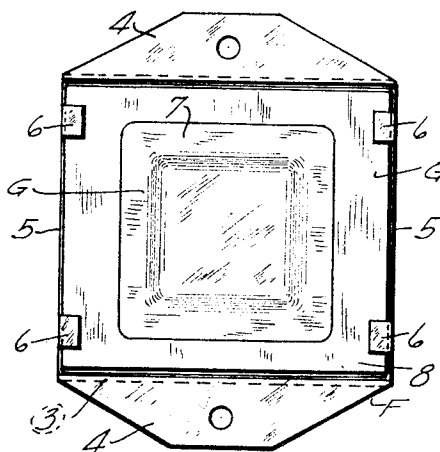


Fig. 4.

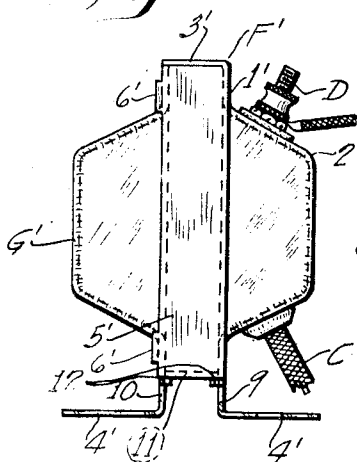


Fig. 5.

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UNITED STATES PATENT OFFICE.

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TRANSFORMER.

Application filed March 30, 1925. Serial No. 19,478.

This invention relates generally to transformers and, more particularly, to a certain new and useful improvement in transformers of so-called bell-ringing type.

My invention has for its principal object the provision of a transformer especially of the type mentioned in which the housing or shell comprises a plurality of complementary sections adapted not only to enclose and house the core and windings of the transformer, but also to securely maintain and hold the superposed laminations of the core in compact rigid relation and thereby obviate vibrations in and separation of the laminations that might affect the efficiency of the transformer.

My invention has for a further object the provision of a transformer especially of the type stated in which the shell is formed of and includes a plurality of complementary sections readily and inexpensively stamped, pressed, or otherwise constructed of sheet metal and adapted for convenient engagement the one with the other in assembled housing formation about the core and windings of the transformer.

And with the above and other objects in view, my present invention resides in the novel features of form, construction, arrangement, and combination of parts hereinafter described and pointed out in the claims.

In the accompanying drawing,

Figure 1 illustrates in end elevation a bell-ringing transformer embodying an enclosing-housing or shell of my invention;

Figures 2, 3 and 4 are, respectively, plan, sectional, and inverted plan views of the transformer; and

Figure 5 is an end elevational view of a transformer embodying a slightly modified form of enclosing housing or shell of my invention.

Referring now more in detail and by reference characters to the drawing, which illustrates both preferred and modified embodiments of my invention, A designates the core of the transformer, which may be of any suitable or approved form and construction; preferably, however, core A comprises and is built up of a plurality of approximately E-shaped laminations, more fully shown and described in United States Letters Patent No. 1,513,972, issued to me under date of November 4th, 1924, super-

posed in staggered relation, suitably wound about the center-tongue of which are the windings B, of which C, C, are the primary leads and D, D, the secondary leads or conducting members to the bell or other transmitting device. Enclosing the core A and windings B is a housing or shell including a main or body section F and a closure-section G.

The shell main-section F is constructed of suitable sheet material stamped and bent or otherwise suitably formed to integrally include a top wall 1 pressed or drawn to bulge outwardly within its area, as at 2, the marginal portion of wall 1 being approximately flat and preferably as shown, rectangular in outline in plan view, opposite so-called side walls 3, 3 projecting downwardly from and at right angles to the marginal portion of wall 1 and bent outwardly at right angles at their free lower ends to provide oppositely disposed securing or supporting feet 4, 4, and opposite so-called end walls 5, 5, similarly projecting from and at right angles to the marginal portion of wall 1 intermediate of, and preferably at the corners of the shell kerfed and thereby split from, the side walls 3, 3, the end walls 5 being of reduced length relatively to the side walls 3; to correspond approximately with the depth of core A, as best seen in Figure 3, and each end wall 5 being provided at its free edge with preferably pair of bendable tongues or a marginal extension 6, for purposes shortly appearing.

Shell closure-section G is substantially a counter-part of top-wall 1 only of shell main section F and is similarly constructed of suitable sheet material pressed or drawn to likewise bulge outwardly within its area, as at 7.

In use and operation and in assembling the transformer, the core A and its windings B are suitably disposed within shell main section F, with the upper lamination of the core disposed at its margin flatwise upon the flat marginal portion of the wall 1, the shell section F being preferably at opposite faces or cheeks of its dome-shaped portion 2 formed with suitable apertures, as shown, for conveniently accommodating both the primary leads C and the secondary conductors D, and the dome-shaped portions 2 and 7 of the shell-sections also providing, it may be here stated, suitable space or cham-

bers within the shell for accommodating the windings B, as best seen in Figure 3. The closure-section G is now disposed intermediate the side walls 3 with its marginal approximately flat portion 8 upon the under one of the laminations of the core A, as seen in Figure 3, and the core laminations A and the core-section G now tightly compressed or compacted to dispose the closure-section G at its margin 8 substantially in the plane of the free edges of the end walls 5, when the end-wall integral tongues or marginal extensions 6 are bent over and clinched upon the marginal portion 8 of the section G. The shell-sections F and G are thereby rigidly joined together in complete housing formation about the core A and its windings B and, at the same time, the laminations of the core A, particularly at the corners, are securely held together in superposed compact relation, without the employment of bolts or other such fastening means, and vibrations and other faults which might affect the efficiency of the transformer thereby obviated. It will be noted that, when so assembled and joined or connected together by the end-wall extensions or tongues 6, the closure-section G sets within the extended length of the side walls 3, so that the transformer may be evenly rested or attached at its feet 4 upon any suitable supporting surface.

My new transformer-shell may be readily and inexpensively constructed, its parts, including core, windings, and shell, may be conveniently assembled, the whole when assembled is compact and rigid, fulfills in every respect the subjects stated, and is exceedingly efficient in the performance of its intended functions.

In the modified form of my new transformer shell illustrated in Figure 5, the main shell-section F' includes a top wall 1' having the chamber-providing bulge or dome 2', opposite end walls 5', and a single side wall 3', the top wall 1' being extended at one margin, as at 9, and then bent outwardly to provide a supporting-foot 4'. Similarly, cooperating with and secured by tongues 6' to, the main-section F' to enclose the core and windings, is a closure-section G', in this instance, however, likewise extended at one margin, as at 10, and bent outwardly to provide a second and oppositely disposed supporting foot 4'. Then set in between the cover-section G' and the marginal portion of wall 1' of main section F' to complete the shell, is a separate or second side wall 11, prongs 12 struck from the main-section F' and from the closure-section G' engaging the under face of the wall 11 to rigidly secure the same in place.

While preferably, as here shown and as I have before stated, each end wall 5 is provided with a pair of the clinching tongues

6, it will be understood that each wall 5 may be provided with a greater number of such tongues or even with but a single such tongue or marginal extension, which latter may have a width corresponding to the total width of the end wall or be of any suitable reduced width; it will also be understood that the leads B and conductors C may be otherwise disposed relatively to the shell sections than here shown; and that other changes in the form, construction, arrangement, and combination of the several parts of the transformer may be made and substituted for those herein shown and described without departing from the nature and principle of my invention.

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

1. In a transformer, a core comprising a plurality of laminations, in combination with an enclosing shell including a main section comprising a top wall, a pair of opposite side walls, and a pair of opposite end walls, a closure section adapted for disposition intermediate the side walls and to rest at its margin upon an outer end lamination of the core, said end walls being of reduced length relatively to the side-walls, and bendable tongues integral with the end walls adapted for clinching engagement over and upon the margin of the closure-section for securing said sections together in housing formation about the core and said laminations in compact, rigid and compressed relations.

2. In a transformer, a shell including a stamped sheet metal main section integrally comprising a top wall, a pair of opposite side walls, and a pair of opposite end walls, a stamped sheet metal closure section adapted for disposition intermediate the side walls and to rest at its margin upon an outer end lamination of the core, said end walls being of reduced length relatively to the side-walls, and bendable tongues integral with the end walls adapted for clinching engagement over and upon the margin of the closure-section for securing said sections together in housing formation about the core and the laminations in compact, rigid and compressed relation.

3. In a transformer, in combination with a core comprising a plurality of laminations, an enclosing shell comprising a main section including a top wall and a pair of opposite end walls, the top wall having a centrally disposed outwardly presented dome-shaped portion and a flat marginal portion, the top wall engaging flatwise at its said marginal portion upon the outer face of the one end lamination of the core, and a complementary closure-section also including a centrally-disposed outwardly presented dome-shaped portion, and a flat marginal portion, the closure

section engaging flatwise at its said marginal portion upon the outer face of the opposite end lamination of the core in opposed relation to the flat marginal portion of the main section, and extensions on said end walls clinchable over and upon the marginal portion of the closure-section for both rigidly securing said sections together in housing formation about the core and said laminations in compact, rigid, and compressed relation.

4. In a transformer, in combination with a core comprising a plurality of laminations, an enclosing shell comprising a main section including a top wall and pairs of opposite side and end walls, the top wall having a centrally-disposed outwardly-presented dome-shaped portion and a flat marginal portion, the top wall engaging flatwise at its said marginal portion upon the

outer face of the one end lamination of the core, and a complementary closure-section also including a centrally disposed outwardly presented dome-shaped portion and a flat marginal portion, the closure section being disposed intermediate said side walls and engaging flatwise at its said marginal portion upon the outer face of the opposite end lamination of the core in opposed relation to the flat marginal portion of the main section, and extensions on said end walls clinchable over and upon the marginal portion of the closure-section for both rigidly securing said sections together in housing formation about the core and said laminations in compact, rigid, and compressed relation.

In testimony whereof I hereunto affix my signature.

JOSEPH DESLOGE.