April 3, 1951 M. O. MARSH 2,547,649

ELECTRIC INDUCTION APPARATUS

Filed Dec. 8, 1948 2 Sheets-Sheet 1

Fig. 1.

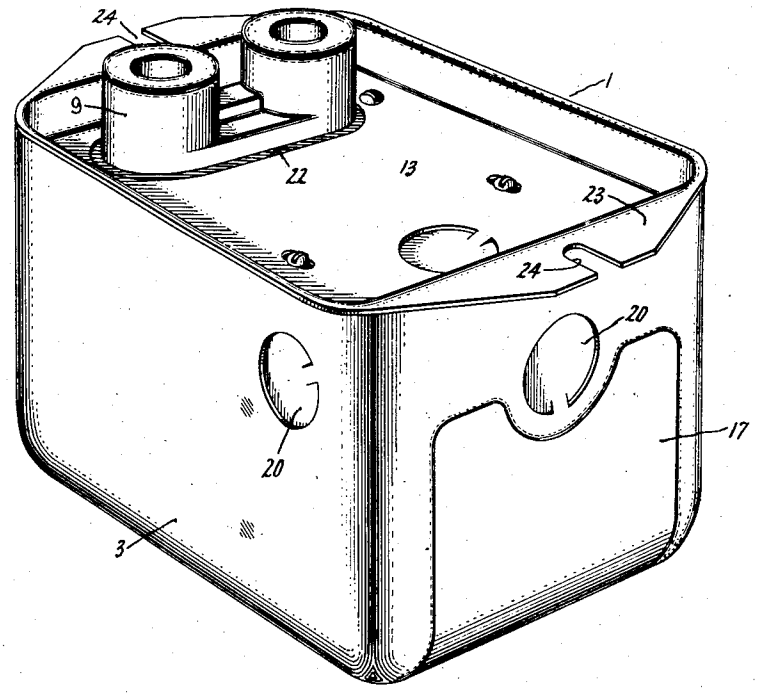
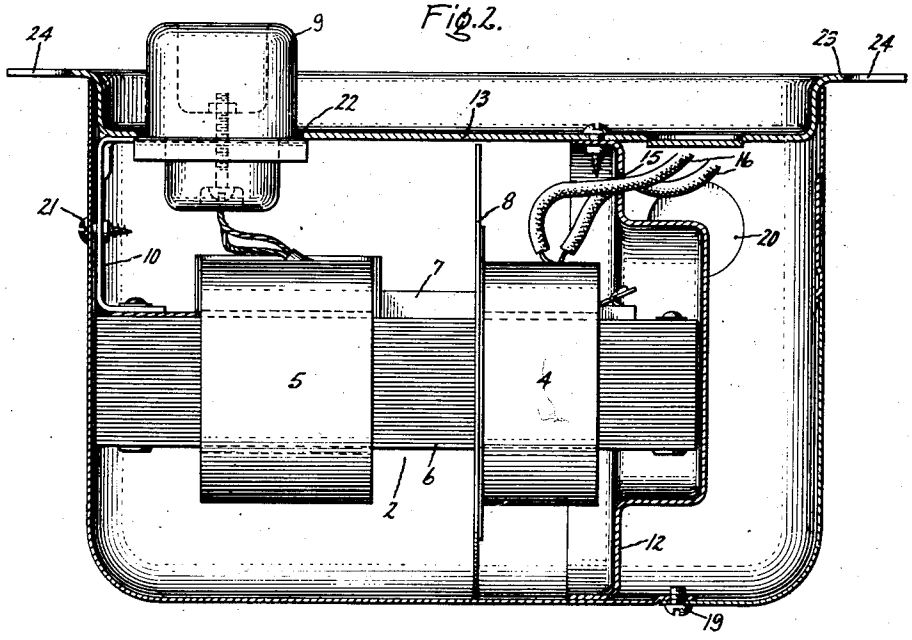


Fig. 2.



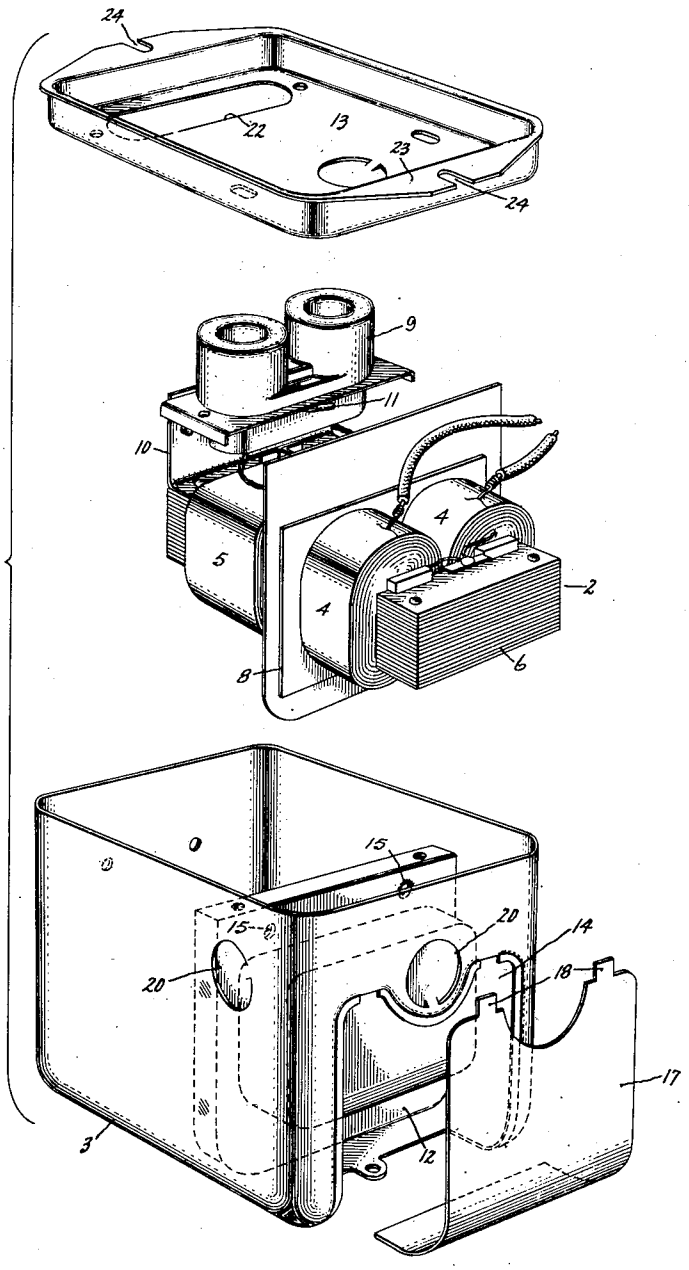
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Fig. 3.



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UNITED STATES PATENT OFFICE

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ELECTRIC INDUCTION APPARATUS

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Application December 8, 1948, Serial No. 64,212

1 Claim. (Cl. 175—356)

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This invention relates to an encasing assembly for electric induction apparatus and has as its principal object a construction of a new, simple, economical and compact ignition transformer encasing unit.

A further object of this invention is to provide an encasing structure employing a minimum of parts and allowing for ease in assembly.

It is still another object of this invention to provide an ignition transformer encasing assembly having great mechanical strength.

The invention will be better understood from the following description taken in connection with the accompanying drawings and its scope will be pointed out in the appended claim.

In the drawing, Fig. 1 is a perspective view of an ignition transformer unit constructed in accordance with this invention. Fig. 2 is a side elevation of the ignition transformer unit shown in Fig. 1 with the casing shown in section through the center, and Fig. 3 is an exploded view of the ignition transformer shown in Fig. 1 illustrating the elements which are incorporated in its construction.

Referring now to the drawing, there is shown therein an ignition transformer unit 1 which is constructed primarily of an ignition transformer core and coil assembly 2 mounted within an encasing structure 3. It is the purpose of the ignition transformer 2 to supply high voltages, in the nature of 10,000 volts, to spark forming electrodes so as to provide the necessary local heating to initiate the burning of vaporized oil in an oil burning unit. The primary voltage supply is normally of the order of 120 volts.

Shown in Figs. 2 and 3 is a standard ignition transformer core and coil assembly 2 having two primary coils 4 and two secondary coils 5 mounted on a rectangular-shaped magnetic core 6. To provide a leakage flux path to limit the secondary current after conduction has started across the electrodes of the spark gap, magnetic shunts 7 are mounted between the primary coils 4 and the secondary coils 5; and to shield the primary current supply from the feedback of high frequency waves generated by the secondary sparking, a radio frequency shield 8 of the type disclosed in Patent 2,339,088, issued in the name of Myrle O. Marsh and assigned to the same assignee as the present invention, is provided between the primary and secondary coils 4 and 5.

The core 6 is constructed of a plurality of stacked laminations which may be riveted together. And, as can be seen in Fig. 3, high voltage bushings 9 which provide means for connecting the secondary terminals of the transformer to the external circuit, are mounted on a channel-shaped member 10, which is riveted to the core 6 when the stacked laminations are being bound as a unit. The bushing support 10 has a slotted portion which accommodates the lower portion of the bushing 9. The upper portion of the bushing 9 rests on the bushing support 10 and a pin 11 is passed through an opening in the lower portion of the bushing 9 so as to fix the bushing in place on its support.

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The core and coil assembly 2 is mounted within an outer encasing member 3 which is substantially rectangular in shape and has one open side. The interior of the outer case 3 is divided into two main sections by partition 12 which may be welded to the outer case 3 and is constructed so as to conform to the interior dimensions of the outer case. The central section of the partition 12 is indented so as to accommodate a portion of the core 6 as shown in Fig. 2. After the ignition transformer 2 has been mounted in place and before the pan-shaped cover 13, which fits over the high voltage bushing 9 and closes the open side of the outer casing 3, has been put in place, insulating compound is poured into that portion of the interior of the outer case 3 which contains the core and coils 2. This compound is prevented from flowing into the remaining volume or junction box, labeled 14 in Fig. 3, by the partition 12. As can be seen in the exploded Fig. 3, holes 15 are provided in the junction box partition 12 to allow the primary leads 16 of the ignition transformer 2 to be brought into the junction box 14.

A portion of the outer case 3, which forms the junction box 14, has been cut away and provided with a junction box cover 17, which may be mounted on the case by the tabs 18 and a single screw 19. Removal of the cover 17 provides access to the junction box 14. Also, knock-outs 20 may be formed in the outer case 3 so as to allow easy exit of the primary leads 16.

It can be seen clearly in Fig. 2 that the core 6 is maintained in position within the outer case 3 by the radio frequency shield 8, which rests against the main body of the outer case and by screws 21 which fasten the high voltage bushing support 10 to one wall of the outer case. Movement of the ignition transformer 2 within the outer case 3 is also prevented by the insulating compound which is introduced before the cover 13 is fixed in place.

In order to entirely enclose the ignition transformer there is placed over the open end of the outer case 3 a pan-shaped cover 13 which has a

hole 22 to accommodate the high voltage bushing 9. The cover 13 is so shaped as to fit snugly within the interior portion of the outer case 3 and is secured to the junction box partition 12 and to the high voltage bushing support 10 by screws. The cover 13 is provided with a lip or edge 23 which has slots 24 to allow bolt mounting of the ignition transformer unit 1.

In many present constructions of ignition transformer units, the ignition transformer is fixed within the casing member only by the insulating compound and it can be seen that the construction provided by this invention assures a more rigid unit. Also, previously, the cover may have been formed of two thicknesses of metal welded together; one metallic layer providing means for fastening the cover to the case, and the other layer providing means for bolting the unit in place. It can be seen that the construction disclosed by this invention permits, therefore, a more economical construction of the unit. Also, this construction insures a junction box area which is both clean and easily accessible.

While there has been shown and described a particular embodiment of this invention, it will be obvious to those skilled in the art that various changes and modifications may be made therein without departing from the invention and, therefore, it is aimed in the appended claim to cover all such changes and modifications as fall within the true spirit and scope of the invention.

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

Encasing means for electric apparatus, comprising a substantially rectangular-shaped outer casing member having an open side, a pan-shaped cover fitting within said open side of said outer casing member, a partition having dimensions which conform to the interior dimensions of said outer casing member, said partition being mounted within said casing member and secured thereto, said partition dividing the interior of said casing member into two main volumes, an electric induction device mounted within one of said main volumes, said electric induction device comprising a magnetic core, portions of said core having primary and secondary windings mounted thereon, a radio frequency shield separating said primary and secondary windings, said partition having a central pocket which receives one end of said core, a channel-shaped bracket mounted on the other end of said magnetic core, a high voltage bushing mounted on said bracket, said bushing accommodating conductive leads from said secondary windings, said bracket being secured to said outer casing, said cover having a slotted portion, said bushing fitting within said slotted portion and providing means for achieving electrical connections to the external circuit, said pan-shaped cover being secured to said bracket and said partition, the second of said main volumes containing conductive leads from said primary windings, a portion of said outer casing member enclosing said second main volume having a cut-away portion, and a cover secured to said outer casing member for enclosing said cut-away portion.

MYRLE O. MARSH.

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The following references are of record in the file of this patent:

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