

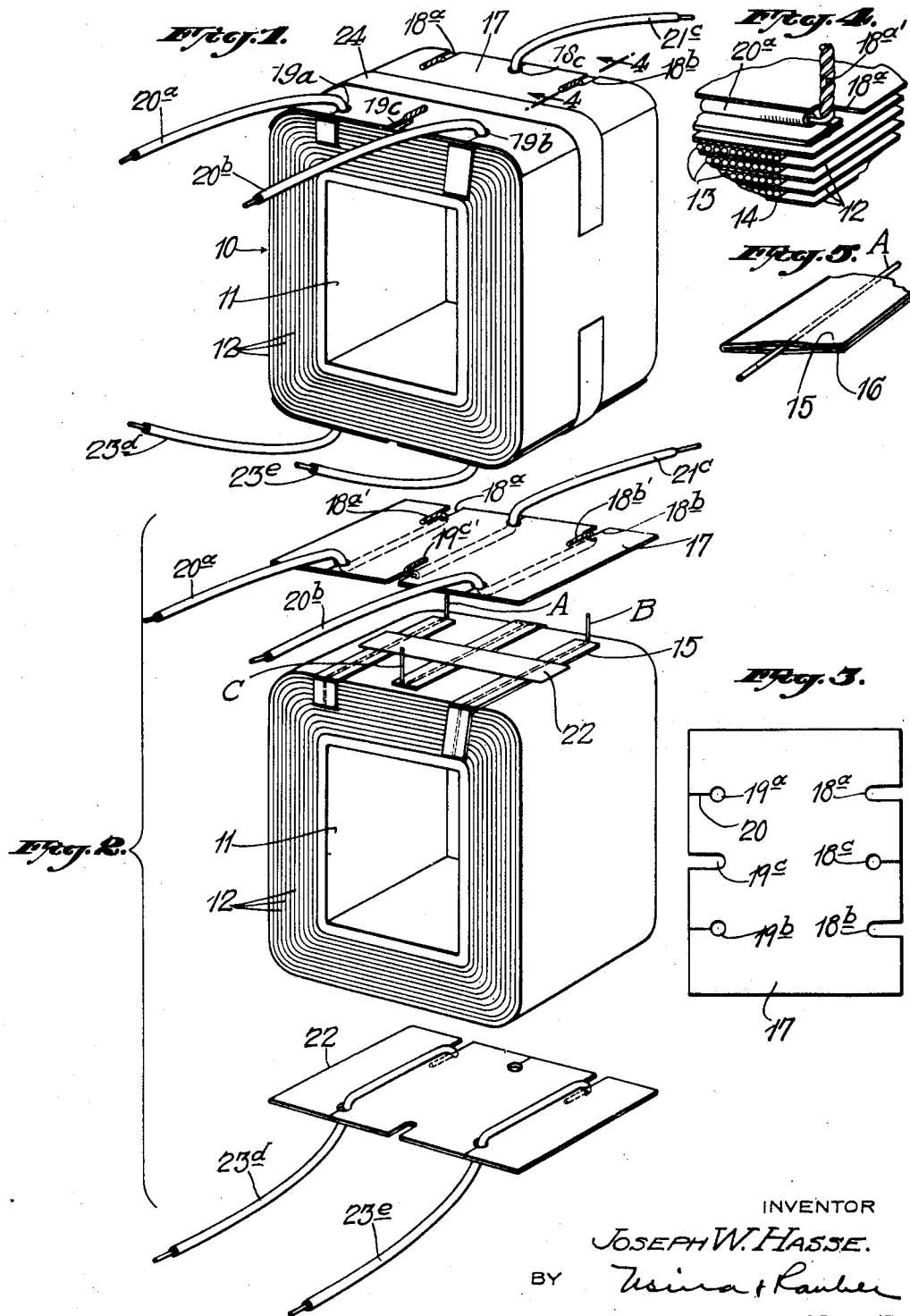
May 23, 1939.

J. W. HASSE

2,159,269

LEAD LOCATING MEANS AND METHOD OF APPLYING SAME

Filed Dec. 2, 1936



INVENTOR
JOSEPH W. HASSE.
BY *Usina & Ranher*
ATTORNEYS

UNITED STATES PATENT OFFICE

2,159,269

LEAD LOCATING MEANS AND METHOD OF
APPLYING SAME

Joseph W. Hasse, Muskegon, Mich., assignor to
Anaconda Wire & Cable Company, New York,
N. Y., a corporation of Delaware

Application December 2, 1936, Serial No. 113,769

2 Claims. (Cl. 174—138)

This invention relates to means and method for applying leads to various types of electrical devices, such as transformer coils, induction coils, condensers, or similar devices in which a plurality of terminals are to be connected with leads adapted to be tapped into various circuits. While not limited thereto, the invention will be illustrated in connection with coils for transformers, such as used in radio receiving sets and the like.

For a full understanding of the invention, reference is to be had to the accompanying drawing, following specification and the appended claims.

In the drawing—

Fig. 1 is a perspective view of a transformer made in accordance with and embodying the features of the present invention; Fig. 2 is a perspective view illustrative of certain steps in the method of making connections between the leads and the terminals of the transformer coils; Fig. 3 is a plan view of a locating card; Fig. 4 is a perspective view partly in section illustrating one step in the method of connecting the leads to the terminals of the device; Fig. 5 is a detail perspective view showing the terminal interposed between layers of a non-absorbent strip of insulation.

Referring first to Fig. 1 of the drawing, 10 represents generally a transformer such as used on radio receiving sets, which is built up around a hollow cardboard core 11. Surrounding this core, there are a multiplicity of layers of paper 12. These layers of paper form separators between the separate coils, such as primary and secondary coils of the transformer, or as separators between the various layers of each coil. In Fig. 4, I have shown a secondary coil formed of three layers of wire 13 and the layer 14 may be regarded, for example, as the primary winding. The paper layers 12 are thus seen to separate either the separate coils or the layers thereof.

It is a feature of this invention to provide an improved method and means for making connections to the terminals of the different coils or to make taps to portions of such coils. It is important, where such connections are to be made by mass production methods, to make provision for rapidly and accurately connecting leads to the terminals or taps of the coils. Accordingly, the devices, such as transformers, induction coils, condensers, or the like, are so constructed that projecting terminal wires are located uniformly on all the articles produced. For example, in Fig. 2, the secondary terminals A and B are positioned a predetermined distance apart

near one end of the transformer and the tap terminal C is positioned midway between them at the opposite or front end of the coil. The terminal wires A, B and C are usually interposed between upper and lower layers 15 and 16 of a strip of insulating material, such as shown in Fig. 5. This material may be in the nature of paper rendered non-absorbent.

This is accomplished by the application of varnish thereto, or it may be formed of cambric, or other textile material suitably impregnated with varnish or a phenol condensate product, or other suitable insulating substance. The strips enclosing the terminals are overlapped with the top layer of the coil and are adhesively united thereto and the extreme ends of the terminals, which have been previously bared, are bent upwardly, as shown in Fig. 2. Similar terminals for the primary coil, not shown, will be provided on the underside of the device.

To facilitate the connecting of leads with the terminals, I provide a locating card 17, such as shown in detail in Fig. 3. Each locating card has open ended apertures 18^a and 18^b at one edge and closed apertures 19^a and 19^b adjacent the opposite edge, there being slits 20 extending from the edge of the card to said closed apertures. Intermediate the open ended apertures 18^a and 18^b at one end of the card, there is a closed aperture 18^c and at the opposite end of the card in line therewith there is an open ended aperture 19^c.

Lead wires 20^a and 20^b are positioned, respectively, by the apertures 18^a, 19^a and 18^b, 19^b. Similarly, a lead wire 21^c is positioned by the apertures 18^c and 19^c.

These three lead wires and the card 17 form a complete sub-assembly prior to the time the lead wires are connected with the terminals. The arrangement and formation of the apertures is such that each lead wire can be easily and quickly secured to the positioning card. This is accomplished by merely pressing the lead wire in question, for example, through the slit 20 until it snaps into place in the closed aperture 19^a. Then the extreme end of the lead wire, which has previously had a portion of the insulation stripped therefrom, is bent around through the opening in the slot 18^a, as indicated for example at 18^{a'} in Fig. 2. The other lead wires are also secured to the locating card in a similar manner as will be readily understood. The sub-assembly of the locating card 17 and the three lead wires 20^a, 20^b and 21^c is then superposed on the paper strips, which in some cases may have been previously in-

terlocked by a cross-strip 22 adhesively united to the outermost surface of the transformer. The locating card is now preferably secured in assembled relationship to the other parts by means of an adhesive strip 24, as shown in Fig. 1. The spacing of the open ended apertures 18^a, 18^b and 19^c corresponds with that of the upstanding bared terminals A, B and C. Thus, it is apparent that these terminals will pass through the open ended slots.

Terminal A is then twisted around the end of the lead wire 20^a, such end having first been bent up from the position indicated at 18^{a'} in Fig. 2 to permit the twisting. In a similar manner, terminal B is twisted around the end 18^{b'} of the lead wire 20^b. Likewise, terminal C is twisted around the end 19^{c'} of the lead wire 21^c. The position of the parts after being twisted is illustrated in Fig. 4. The thus twisted together terminals and lead wires are then bent down flat against the locating card and a small quantity of solder applied thereto or alternatively the parts might be electrically welded to insure good electrical connection.

In a similar manner, the locating card 22 carrying lead wires 23^d and 23^e may be connected with terminals not shown extending, for example, from the primary winding of the transformer.

From the foregoing, it is apparent that my invention provides an improved method for making connections to uniformly spaced terminals of various electrical devices by the utilization of locating cards carrying lead wires positioned in apertures formed in the cards whose spacing corresponds with the spacing of said terminals and involving the application of said cards and lead wires to the devices and the securing of the terminals and the devices to the ends of the lead wires. It is also apparent that the invention contemplates the provision of improved means for quickly, easily and accurately connecting lead wires to uniformly spaced terminals of various devices, thus speed of assembly can be accomplished by relatively unskilled operators of a comparatively low order of intelligence, without

likelihood of error in making improper connections.

While the invention has been described in detail with respect to the connecting of lead wires to various portions of coils of a transformer, it is apparent that the invention is also applicable to the making of connections to other electrical devices, such as condensers, induction coils, rheostats, resistances, etc.

While I have described quite specifically the embodiment of the invention herein illustrated and certain specific steps in the method of securing lead wires to terminals it is to be understood that various modifications may be made by those skilled in the art without departure from the invention as defined in the appended claims.

What I claim is:

1. A locating card for holding wire terminals of an electric coil, said card having means for holding a plurality of wires and having for each wire a notch at one edge and an opening near the opposite edge in alignment with the notch, but spaced from said opposite edge, the portion of the card between the opening and the adjacent edge being cut but not removed, whereby a terminal wire may be hooked about the notched portion and swung laterally through the cut into the opening, to be thereby firmly secured to the locating card.
2. A locating card for holding wire terminals of an electric coil, said card having means for holding a plurality of wires and having for each wire a notch at one edge and an opening near the opposite edge in alignment with the notch, but spaced from said opposite edge, the portion of the card between the opening and the adjacent edge being cut but not removed, a plurality of wires, one for each said opening and extending through its respective opening, thence underneath said card and thence upwardly in the corresponding notch at the opposite edge for connection to the terminal of an electric apparatus, said wire being bent reversely downwardly on to the upper face of said card.

JOSEPH W. HASSE.