

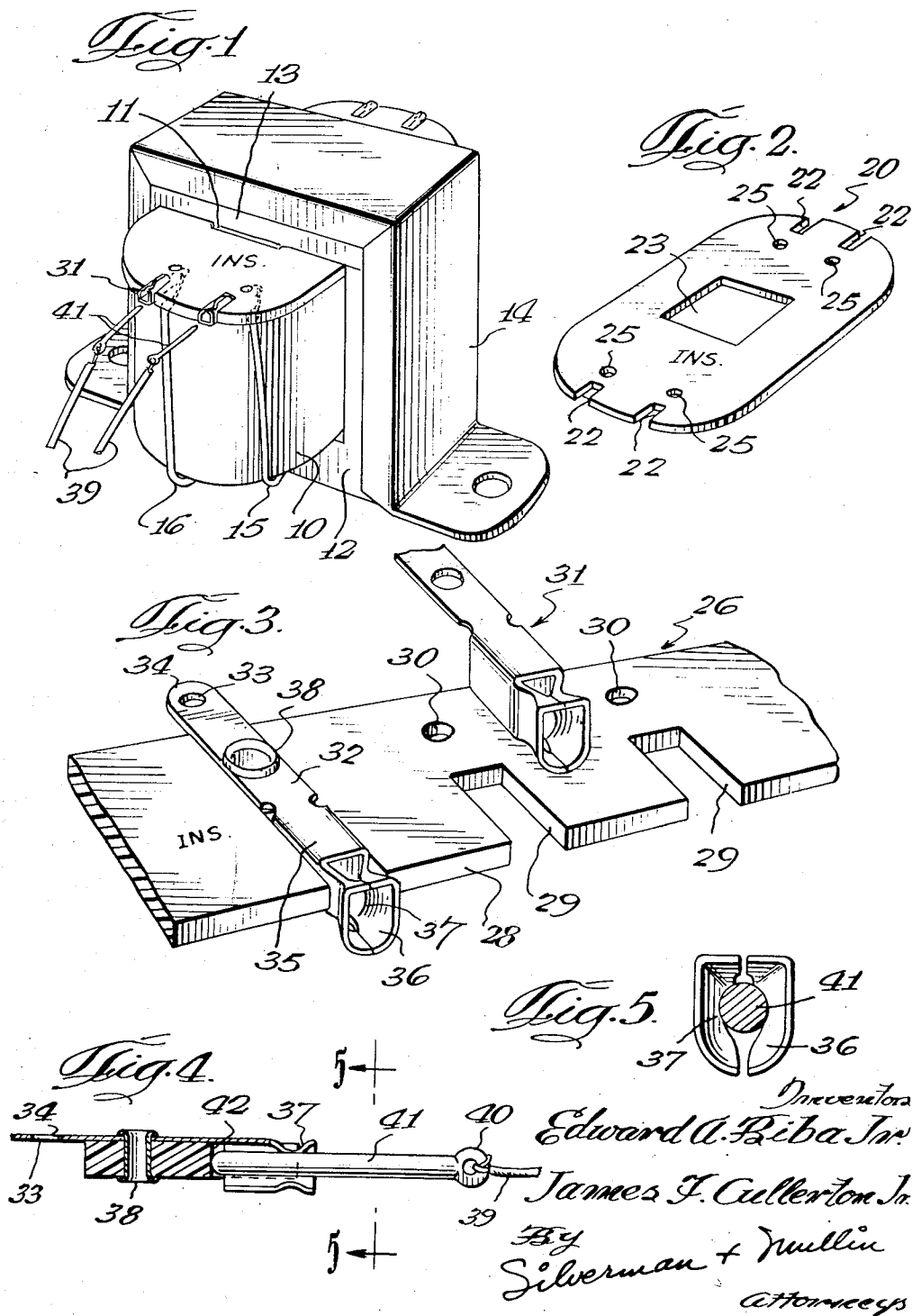
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E. A. BIBA, JR., ET AL

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ELECTRICAL TERMINAL CONNECTOR

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ELECTRICAL TERMINAL CONNECTOR

Edward A. Biba, Jr., Cicero, and James F. Cullerton, Jr.,
Chicago, Ill., assignors to Mandex Manufacturing Co.,
Chicago, Ill., a corporation of Illinois

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1 Claim. (Cl. 339—219)

This invention relates generally to electrical connectors and more particularly relates to an electrical terminal connector which includes a mounting disc and terminal connector especially applicable to fine wire coils. While not limited thereto, the invention will be described as applied to transformer or inductor coils, and voice coils such as employed in loud speakers.

Heretofore, the use of fine wire coils in transformers, inductive reactors and the like has been attendant with the considerable effort of providing some means for preventing severance of the fine wire leads extending from the coil by reason of undue strain placed thereon. As for example, in the loud speaker of a radio or television set, the fine wire leads of the transformer and voice coils are electrically connected to coarser leads which are brought out to a plug having prongs for connection into a socket. In order to prevent severance of the fine wire leads or of their connection with the coarser leads, it has been the practice to hold the juncture of said fine lead and coarse lead immobile by wrapping the convolutions of the coil with insulating paper or tape and over the juncture of said leads. In this way, the strain on the fine lead or the juncture of said two attendant with the removal and insertion of the plug in the socket is avoided in some measure. However, in shipping the loud speaker, the plug has been known to be pushed through the diaphragm of the speaker rupturing same and damaging the speaker. Also, in the case of faulty wrapping, the leads have come free and undue strain on the fine wire leads thereby not avoided.

It is therefore a principal object of the invention to provide an electrical terminal connector of the character described which by reason of its construction enables undue strain on the fine wire leads of a coil to be eliminated and also, eliminates the need for wrapping the coil as heretofore has been a common practice.

Another important object of the invention is to provide an electrical terminal connector of the character described which includes a mounting disc for the terminal connectors, said disc being pre-formed from insulating material with positioning recesses for assembling the terminal connectors thereon; and further, to provide a mounting disc as described which is capable of being pre-formed either for assembly with the coil proper or in another form in proximity to the coil for attachment of the fine wire leads thereon.

Another object of the invention is to provide an electrical terminal connector of the character described which includes a terminal connector pre-formed to be supported on said mounting disc, and having means on one end thereof for attaching the fine wire leads of the coil thereon and a socket on the opposite end thereof for electrically connecting a coarser lead with a fine wire lead.

Further objects of the invention reside in the provision of such an electrical terminal connector which is characterized by substantial savings in the cost of manufacturing the various parts thereof, which enables the fine wire leads of a coil and coarser leads to be elec-

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trically connected without any direct mechanical connection therebetween so as to avoid undue strain on the fine wire leads, which is readily and easily assembled and mounted and which is durable and strong.

5 These and other objects of the invention will become apparent as the description thereof evolves, in connection with which preferred embodiments of the invention have been described in detail and shown in the accompanying drawings for purposes of enabling the invention to be practiced by those skilled in the art to which same pertains. While details of size, proportion, arrangement and construction of the various parts have been delineated by way of compliance with the patent statutes, minor variations in such details may be made without departing
15 from the scope or spirit of the invention.

In the drawings where the same characters of reference have been employed to designate the same or similar parts throughout the various figures:

Fig. 1 is a perspective view of a transformer or choke
20 having fine wire windings as ordinarily assembled in a metal clamping housing and having one form of the electrical terminal connector embodying the invention assembled therewith.

Fig. 2 is a perspective view of one form of mounting
25 disc or wafer of the invention.

Fig. 3 is a perspective view of another form of the invention embodied in a terminal strip and showing the manner in which the terminal connectors are assembled onto said strip.

Fig. 4 is a vertical sectional view taken through either
30 the strip of Fig. 3 showing how the terminal connector is mounted.

Fig. 5 is a sectional view taken along the line 5—5 of
Fig. 4 and in the direction indicated.

Generally, the electrical terminal connector embodying
35 the invention is comprised of an insulating member in the form of a strip or disc or wafer and at least a terminal connector member formed of a conducting metal which is supported on the strip, disc or wafer. The insulating
40 member is pre-formed with a plurality of recesses opening to a side edge thereof into which is received the socket portion of the terminal connector member, the socket opening in the same direction as a said recess. Said terminal connector member also has a straight, flat portion
45 integral with a wall of said socket and extending outwardly therefrom. The connector member is secured on the mounting member by means of the flat portion with the free extremity of said flat portion being perforated for attaching a fine wire lead thereto. In one
50 form of the invention, said mounting member or wafer is pre-formed so that same may be assembled directly with the coil in the metal clamping housing as shown in Fig. 1. In another form of the invention, the wafer is pre-formed as an elongate strip member capable of being
55 secured in proximity to the coil but not directly assembled therewith. In each form of the invention, the recesses provided for positioning and mounting the terminal connector members are of identical construction.

Referring now to the drawings, in Fig. 1 there is shown
60 a fine wire coil 10 (or group of coils) of the type which may be employed in a transformer or a reactor or choke. The coil 10 has been shown wound on the central winding leg 11 of a stack of E-laminations 12 and the legs of stack 12 bridged by the I-laminations 13. The laminations and coil may be maintained in rigid assembly by
65 means of a metal clamping housing 14 of well known construction with the convolutions of the coil extending outwardly of the housing through opposite sides thereof. Of course, the coil 10 will be wrapped in some insulating paper or the like and the taps or leads 15 and 16 of fine
70 wire are shown extending therefrom. Other leads (not shown) may extend from the opposite side of the coil 10.

Referring now to Fig. 2, one form of mounting disc or wafer has been designated generally 20. Same is cut or stamped from sheets of insulating material such as laminated fibre paper or plastic to a dimension slightly larger than the sectional configuration of the coil 10. In diametrically opposite side edges of the wafer 20 are formed recesses 22 of identical formation, the recesses 22 being substantially rectangular in configuration and each opening to a said side edge. In the center of the wafer 20 and between each pair of recesses is provided a substantially rectangular opening 23 which will conform to the cross-section of winding leg 11. Immediately behind each recess 22 and spaced therefrom is an opening 25. It is desired to point out that the configuration of the recesses 22 and opening 23 need not be limited to that shown and this will be further apparent from the ensuing description.

The form of wafer 20 is such as will enable same to be assembled directly with the coil 10 in the housing 14. This is shown in Fig. 1 where the wafer 20 is supported on the convolutions of the coil 10 with the central winding leg 11 received in the opening 23. It is contemplated that the wafer 20 extend beyond the side edges of the coil 10 a small amount so as to provide some clearance.

Referring to Fig. 3, another form of mounting member or wafer has been designated generally 26. The wafer 26 is also cut or stamped from insulating material and is of elongate, strip form. Along one side edge 28 thereof are provided a plurality of recesses 29 each opening to said side edge, the configuration of said recesses 29 being the same as recesses 22. Spaced slightly behind each recess 29 is an opening 30 similar to openings 25 of wafer 20. As is commonly known, the electrodynamic type loud speaker of a radio set, employs a field coil and a voice coil, both of which may be separately mounted in a housing 14 and spaced one from the other. The elongate formation of wafer 26 permits the same to be supported at its ends, for instance, on said housing between the coils. The wafer or strip 26 may be mounted in many locations in electronic equipment and used in the same manner as ordinary terminal strips.

The terminal connector member of the invention has been designated generally by the reference character 31. The construction of connector member 31 is the same either for use with wafer 20 or strip wafer 26. There is shown in the right hand portion of Fig. 3 a member 31 poised above the wafer preparatory to being secured thereon and the identical connector shown as secured to said wafer in the left hand portion of the figure. Same is an integral member and includes a straight, flat portion 32 having an opening 33 in the extremity 34 thereof. The fine wire lead is adapted to be secured in an opening 34 in any well known manner. The opposite end of the portion 33 is formed into a split socket 35 the entrance 36 of which opens away from extremity 34 and is offset from portion 32. The socket 35 is crimped inwardly behind entrance 36 to provide a narrow neck portion 37, the entrance 36 thereby having outwardly flaring walls defining the same. To mount the connector member 31 on either wafer 20 or 26, the socket 35 is inserted into a recess 22 or 29, as the case may be, the full length of a said recess with the flat portion 32 superimposed on the body portion of a said wafer behind the said recess. The connector is then eyeleted onto the wafer as indicated at 38 with the eyelet passing through a said opening 25 or 30 as the case may be.

In the embodiment of Fig. 3, it will be seen that the width of the wafer 26 is such that when the connector member 31 is secured thereon, the extremity 34 and opening 33 will protrude beyond the opposite side edge of said wafer.

In operation, the terminal connectors are eyeleted onto the mounting wafer and then the assemblage is mounted

either as in Fig. 1, between housings of the field coil and voice coil of the electrodynamic speaker, or in any other desired manner. Wire leads such as 15 and 16 are each secured as by solder, for instance, in an opening 33.

The coarse lead 39 required to be electrically connected thereto may be attached to the perforated, flattened end 40 of a prong 41 and the prong inserted into the entrance 36 of socket 35 in a movement parallel to the plane of a said wafer. The narrowed neck portion 37 of said socket will engage the prong 41 around the circumference thereof and assist in keeping the end of the prong in engagement with the wafer, as shown in Fig. 4. It will be seen that since the axis of the socket 35 is offset from the plane of portion 32, when the socket is positioned in a recess 29 for instance, the terminating end 42 acts as a stop means limiting the distance which the prong may be inserted into the socket 35.

It will thus be seen that although the fine wire leads 15 or 16 will be electrically connected to a coarse lead 39 through the connector member 31, they are not physically joined one to the other. Any strain put on the coarse lead 39 by reason of bending, pulling or otherwise handling of the same will not be placed on the fine wire leads and thereby severance of the fine wire leads as a result of undue strain is eliminated. This is true likewise when the prong 41 connected to a coarse lead 39 is inserted in or removed from socket 35. Fine wire coils provided with the electrical terminal connectors of the invention can be shipped safely and without breakage of the fine wire leads or of the speaker with which the coils may be assembled.

Through the use of the invention long leads such as usually required with apparatus of this type are completely eliminated. Further, the connections are easily separated or secured immediately, since there are no soldered connections. The crimp 37 in the connector members 31 seizes the inserted prong tightly and with good electrical contact.

It is believed that the invention has been described in adequate detail. It is desired that the invention be interpreted in scope commensurate with the achievement as pointed out in the claim hereto appended.

We claim:

An electrical terminal connector device for providing separable connection between a pair of conductors comprising, an insulating mounting wafer having at least one rectangular recess opening to an edge thereof, an integral contact member including an elongate, flat body section having a pair of walls each depending from a side edge of the section in opposed alignment adjacent one end of the section, the edges of said walls substantially abutting to form an open-ended socket the axis of which is offset from the body section, said walls being indented adjacent the forward open end, said contact member arranged to be secured on the wafer with the body section in face to face contact with a surface of the wafer, the socket disposed in the recess, the forward open end spaced slightly ahead of the said edge of the wafer and the closed end of the recess arranged behind the rear end of the socket to close the same, one conductor adapted removably to be engaged in said socket in frictional engagement with the indentations and the other conductor adapted to be attached to said body section adjacent the opposite end thereof.

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