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SOLDERING TERMINAL FOR ELECTRICAL WIRES

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Fig. 1.

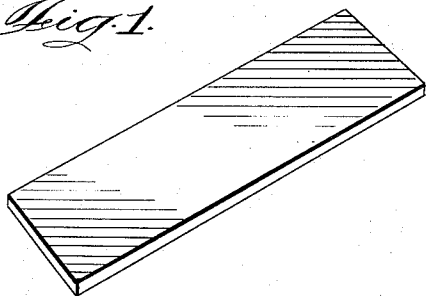


Fig. 2.

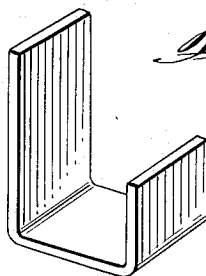


Fig. 3.

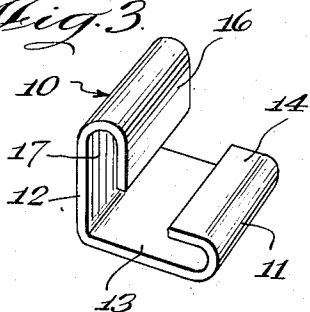


Fig. 4.

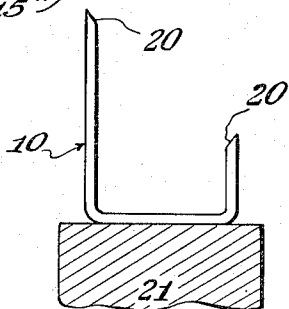
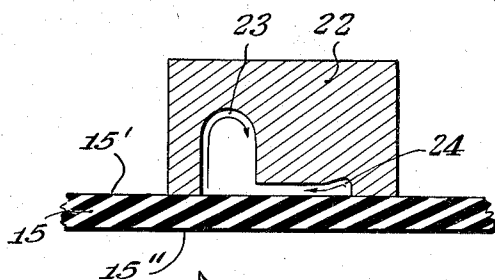
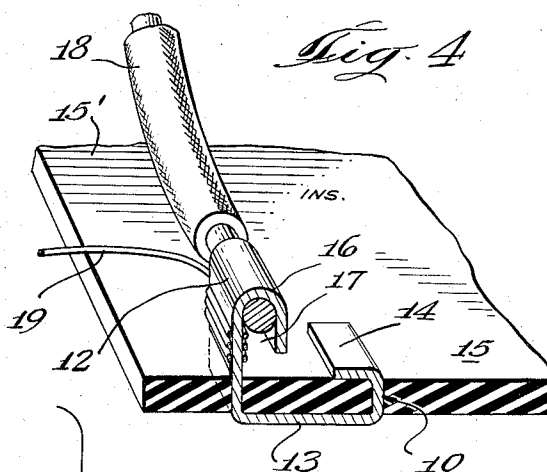


Fig. 5.

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UNITED STATES PATENT OFFICE

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SOLDERING TERMINAL FOR ELECTRICAL WIRES

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1 Claim. (Cl. 339-220)

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This invention relates generally to soldering terminals and more particularly is concerned with soldering terminals which are intended to be produced at high speed, preferably as a staple being driven into a sheet of insulating material, and providing a juncture between a fine wire and a heavy wire. The invention resides in the terminal and in the method of producing same.

In the transformer field, the coils which make up the various parts of the transformer are very often wound of very fine wire having limited mechanical strength. It is customary and practical to solder a heavy wire to the fine wire and provide an anchor for the heavy wire, which will resist the tension and abuse to which the transformer leads may be subjected. This anchor is usually a terminal member secured to some part of the transformer to remove all tension from the fine wire. The terminal which is shown, described and claimed herein is of this type, and while useful in the transformer and ballast field, is not necessarily limited thereto.

One of the important objects of the invention is to provide a soldering terminal of the character described which is extremely simple and highly economical, and which can be applied with great speed for purposes of quick production.

Another object of the invention is to provide a method of forming such a terminal from a strip of metal in the same manner that a staple is formed.

Still a further object of the invention is to provide a terminal formed initially of a U-shaped member having one leg longer than the other, and which terminal is secured to a base member with the shorter leg cinched over the top of the base member and the longer leg curled over to form a heavy wire receiving socket, and about which a fine wire may be wrapped.

Other objects lie in the details of the embodiment described hereinafter for purposes of illustration of the manner in which the invention is practised.

In the drawings:

Fig. 1 is a perspective view of a strip of metal from which the terminal of the invention is formed.

Fig. 2 is a perspective view of the terminal prior to its being secured to its insulating base, same being formed with legs.

Fig. 3 is a perspective view of the terminal in its initially formed condition, same being shown without the insulating base for clarity.

Fig. 4 is a perspective view, partially in sec-

tion showing a terminal secured to a base and having a fine and a coarse wire soldered thereto.

Fig. 5 is a sectional view in more or less diagrammatic form, showing the manner in which a staple driver and anvil may be used to install the terminal upon an insulating base.

Referring now to the drawing, the terminal 10 is shown installed in Fig. 4 and is shown dissociated from the wires and insulating base in Fig. 3. The terminal 10 consists of a U-shaped strip of metal having a pair of legs 11 and 12 of unequal length and a connecting bridge 13. The shorter leg 11 has its free end bent at right angles parallel with the bridge 13 to form a clamp lug 14 which tightly engages the upper surface of the insulating base to which the terminal is secured. Thus, in Fig. 4 there is shown a sheet member of insulating material forming the base 15 having the clamp lug 14 tightly engaged against the top surface 15' thereof with the bridge 13 tightly engaged against the bottom surface 15'' thereof. Obviously the short leg 11 extends through the thickness of the base 15, and was driven or in any other manner passed through the same while in the condition shown in Fig. 2, namely, unbent.

As for the longer leg 12, same has its upper end doubled upon itself as shown at 16 but with the bent portion spaced from the body of the leg 12 to form therebetween a passageway or socket 17. The leg 12 must also pass through the insulating base while in unbent condition as shown in Fig. 2. The doubled over portion must be formed after the leg 12 is completely through the insulating base member 15.

The slot or passageway 17 permits a heavy or coarse lead wire 18 to have its bared end engaged therein and soldered thereto. The large metal to metal contact provides a good adherent for the solder (not shown) and a mechanically good frictional engagement. The upstanding leg 12 with its bent over portion 16 enables a few turns of the fine wire 19 to be taken upon the same so that when the coarse wire is soldered in place the solder will flow upon the wrappings of the fine wire.

The free end of the bent over portion 16 may or may not clear the surface 15' of the base member 15, although it is preferred that there be a space so that the fine wire will be wrapped wholly upon the unbent portion of the leg 12.

The terminals may be formed in any of a number of ways, although it is preferred that they be handled as staples and installed by means of a stapling machine.

The base member 15 may be pre-perforated to receive the terminals in the condition shown in Fig. 2, and then the legs 11 and 12 may be bent by any appropriate tools. In such case, the terminals may be furnished in the condition shown in Fig. 2 or Fig. 1. If in the form of Fig. 1, namely as a strip cut to size, some simple forming jog may be used to bend the same to the shape desired.

As stated herein it is preferred that the terminals be installed much as staples. The art is replete with stapling machines which carry coils of wire or metal strip, and which, when operated, form the staple, sever it from the coil, drive it into the material, and bend the legs to cinch the same. It is contemplated that this terminal be formed in this manner. The terminal is first formed in the stapling machine with the legs unbent as shown in Figs. 2 and 5. If desired, when the legs are severed from the principal coil, they may be provided with sharp ends as shown at 20.

The staple driver is indicated schematically at 21 and the anvil or forming die at 22. The points of the terminal 10 are driven through the base member. The point of the long leg 12 enters the curling cavity 23 and follows a path indicated by the arrow shown in Fig. 5 in said cavity. This will result in the formation 15 which will provide the desired socket 17. Simultaneously the short leg 12 enters the cinching cavity 24, and following the path of the arrow illustrated therein, it is formed into a lug 14 overlying the top surface 15' and clamping the terminal 10 thereto.

It is believed that the invention has been sufficiently described without any necessity for further details and it is to be understood that many variations are possible without departing from the spirit of the invention as defined by the appended claim.

What is claimed and desired to be secured by Letters Patent of the United States is:

A soldering terminal for joining a coarse wire and a fine wire, said terminal being secured to a sheet member of insulating material and comprising a staple-like, substantially U-shaped, flat strip member of uniform width having its bridging portion engaged against one surface of the sheet member in face to face contact therewith, the legs of said strip member being of unequal lengths, the shorter leg having its free end bent parallel to the bridging portion and engaged against the opposite surface of the sheet member, the longer leg extending perpendicular to the sheet and having its free end formed with a reverse curved bend of at least 180° thereby forming a socket spaced from the said opposite surface adapted to receive said coarse wire, said longer leg having a straight portion between the socket and the said second surface of sufficient length to permit the wrapping of fine wire about said straight portion.

HIRSCH EPSTEIN.

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