March 1, 1927. 1,619,517

W. HUGHES

CONNECTER FOR ELECTRIC WIRES

Filed March 5, 1920

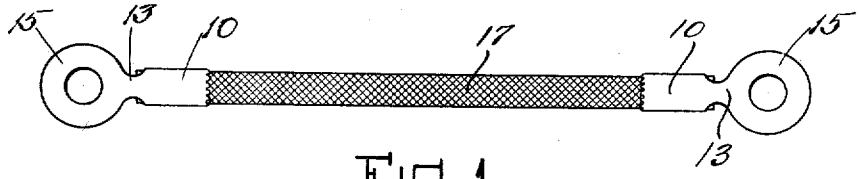

Fig. 1.

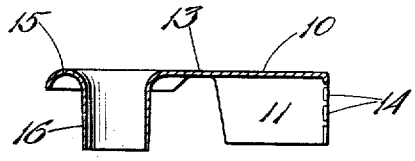

Fig. 3.

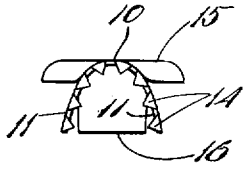

Fig. 4.

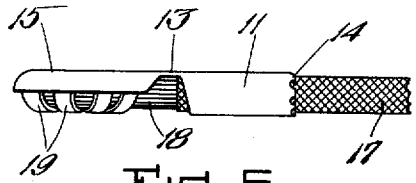

Fig. 5.

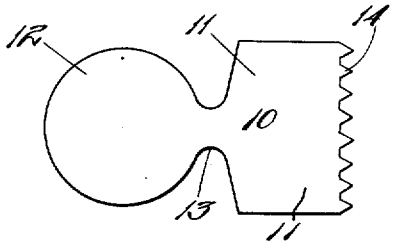

Fig. 2.

INVENTOR:
William Hughes
by Macleod, Calvin, Copeland & Davis.
Attys

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UNITED STATES PATENT OFFICE.

WILLIAM HUGHES, OF TAUNTON, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY CORPORATION, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

CONNECTER FOR ELECTRIC WIRES.

Application filed March 5, 1920. Serial No. 363,520.

My invention has for its object a new and improved connecter for electric wires, the particular object being to provide a connecter which can be rapidly and cheaply manufactured and quickly attached to the wire and which will be secured to the wire in such manner that it will stand the vibration and rough handling to which it is subjected without being detached and without diminishing its electrical continuity.

A connecter embodying my invention consists of a single piece of ductile sheet metal preliminarily stamped and formed to provide an unclenched eyelet portion and a body portion of U-shaped cross-section adjoining the base or flange of the eyelet portion. It is intended to be applied to an electric wire covered with insulating material except at the end or ends from which the insulating material has been stripped to bare the wire and of which the bared portion has been bent to form an eye. The connecter and the wire are assembled by arranging the eye portion of the wire to surround the unclenched barrel portion of the connecter and arranging the adjacent portion of the wire in the trough or channel formed by the U-shaped body portion of the connecter. A permanent union of the wire and the connecter may be made by clenching the barrel portion upon the eye portion and wrapping the extremities of the U-shaped body portion about the insulating material, and a novel and advantageous result of the U-shape is that the clenching of the barrel portion and the wrapping of the body portion may be performed simultaneously with a pair of suitable dies, since the preliminary shaping of the body portion simplifies the attaching operation.

The invention will be fully understood from the following description when taken in connection with the accompanying drawings, and the novel features thereof will be pointed out and clearly defined in the claims at the close of this specification.

In the drawings, Fig. 1 represents a length of electric wire covered with insulation and provided with terminal connecters embodying my invention.

Fig. 2 is a plan view of a blank from which the connecter is made.

Fig. 3 is a longitudinal section of the connecter in the condition that makes it most convenient to be applied to the wire.

Fig. 4 is an end view of the connecter in the condition shown in Figure 3.

Fig. 5 is a side elevation of the connecter after it has been applied to the wire.

Figure 2 shows one form of blank from which a terminal connecter may be made to embody my invention. This blank, stamped from a sheet of ductile sheet metal, comprises essentially a body portion 10, a head 12, and a neck 13 connecting them. The neck 13 is advantageous to facilitate the forming operation hereinafter described. Opposite marginal portions 11, 11 of the body portions insulating material, and a novel and advan- are initially bent to provide individual upstanding ears or tabs which are preferably arranged to stand in confronting relation as shown by Figure 4. These tabs are finally wrapped around the insulating material with which most electric wires are covered. If desired, the body portion may be provided with teeth or spurs 14 to hold the insulating material more securely. The head 12 is preliminarily drawn and pressed to provide an eyelet portion including a dished flange portion 15 adjoining the neck 13 and a barrel portion 16, the latter being in line with the channel formed by the tabs 11, 11.

Figures 3 and 4 show the form into which the blank is converted prior to assembling it with the wire to which it is to be applied, which is also the most convenient form for the trade when the device is sold separately because it enables a suitable hand-tool or die-press to apply it completely with a single stroke, as hereinafter set forth. The U-shape imparted to the body portion by bending the tabs into upstanding relation (Figure 4) forms a channel in which to lay the wire, and maintains the desired relation of the wire and the connecter prior to and during the operation of effecting a permanent union of the two. When teeth 14 are provided they are bent inwardly before the tabs 11, 11 are bent to confronting relation.

Having removed an inch, more or less, of insulating material 17 from an end of the wire, and having bent the bare portion 18 of the wire to form an eye, the wire is ready

to receive the connecter which is in the condition shown by Figures 3 and 4. In assembling the two elements the eye of the wire is arranged to surround the barrel portion 16 and the adjacent straight portion of the wire is placed in the channel formed by the tabs 11, 11 and thereby held against lateral displacement.

To attach the connecter to the wire the barrel portion 16 is clenched upon the eye portion 18 and the confronting extremities of the U-shaped body portion are wrapped tightly around the insulating material. These two parts of the operation may be performed simultaneously by a single stroke of suitable dies, for example, like those shown in my copending application filed January 8, 1923, Serial No. 611,461. The initially unclenched condition of the barrel portion 16 permits completely forming the eye portion of the wire before the terminal is applied thereto, so that nothing remains to be done after the wire and terminal are assembled but to clench the barrel portion and wrap the body portion 10. The clenching of the barrel portion splits the latter into prongs 19 which curl outwardly and backwardly toward the flange 15 far enough to engage and confine the perimeter of the eye portion 18. Furthermore, the prongs 19 take hold of the eye portion 18 individually and bind it tightly against the flange portion 15. The body portion 10, when wrapped tightly around the insulating material, grips the latter and prevents it from slipping. If teeth 14 are provided they become embedded in the insulating material incidentally to wrapping the body portion 10, and increase the holding power of the device.

In practice, I find that the loop in the bare wire 18 can be formed conveniently by bending it around the punch of the eyelet set instead of around the barrel of the eyelet 15, and that when the punch is driven home, the loop will be carried into place around the barrel 15 automatically.

The connecter embodying my invention has greater strength, durability and electrical continuity than connecters which are soldered to the wire, but my improved connectors may be made more cheaply and applied more rapidly and conveniently.

What I claim is—

1. A terminal connecter for an electric wire, consisting of a single piece of ductile sheet metal having a body portion, an eyelet portion, and a neck portion connecting the first two said portions, said body portion having individual upstanding tabs separate from and transformable independently of said eyelet portion and arranged to be bent over a straight portion of the wire to secure it to said body portion, and said eyelet portion having a flange adjoining said neck portion to provide a seat for one side of an eye portion of the wire, said eyelet portion also having an unclenched barrel portion arranged to extend through such eye portion and of a length to reach to or beyond the perimeter of such eye portion of the wire to hook over said perimeter when clenched upon said eye portion.

2. The combination with an electric wire having a terminal bend forming an eye, of a terminal connecter consisting of a single piece of sheet metal having a portion substantially surrounding the wire near said eye, an annular flange portion in concentric relation to and engaging said eye, and a barrel portion projecting from said flange portion and through said eye, said barrel portion being divided into a plurality of prongs which curl outwardly and backwardly toward said flange portion and are clenched upon said eye.

In testimony whereof I affix my signature.

WILLIAM HUGHES.

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Certificate of Correction.

Patent No. 1,619,517. Granted March 1, 1927, to WILLIAM HUGHES.

It is hereby certified that error appears in the printed specification of the above-numbered patent requiring correction as follows: Page 1, lines 66 and 67, for the word "operation" read *operations;* and line 68, for "portions" read *portion;* same page, line 69, strike out the words and syllable "insulating material, and a novel and advan-"; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 11th day of October, A. D. 1927.

[SEAL.]

M. J. MOORE,
Acting Commissioner of Patents.

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