April 17, 1945. T. W. LANGFORD 2,374,107

PRESSURE TYPE CONNECTOR AND METHOD OF MAKING THE SAME

Filed Feb. 12, 1942

Fig. 1.

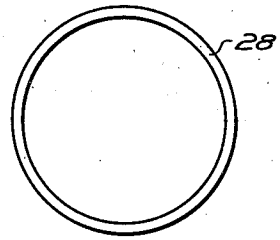


Fig. 2.

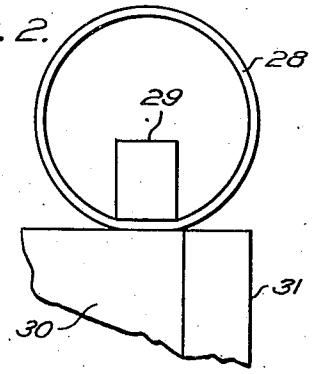


Fig. 3.

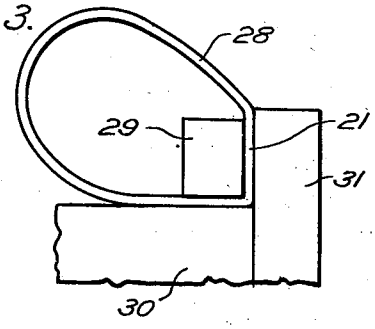


Fig. 4.

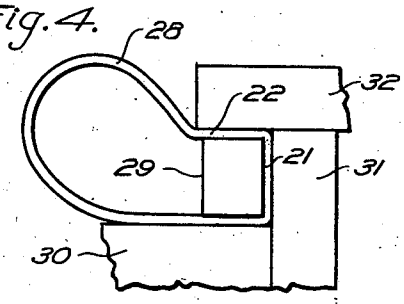


Fig. 5.

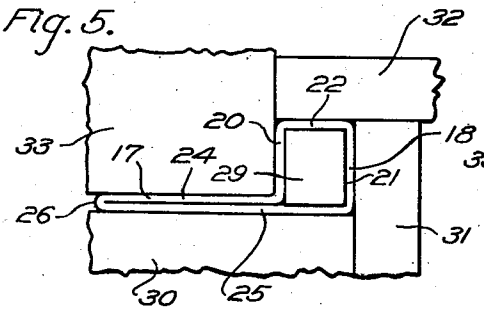


Fig. 6.

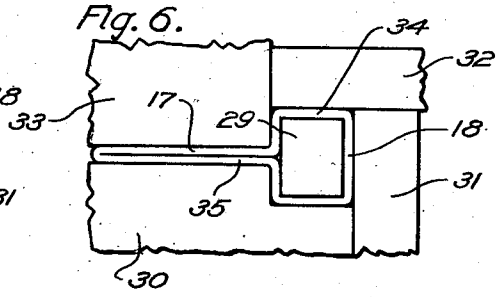


Fig. 7.

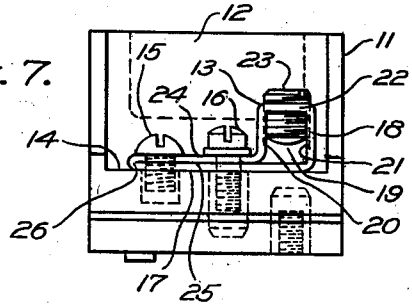
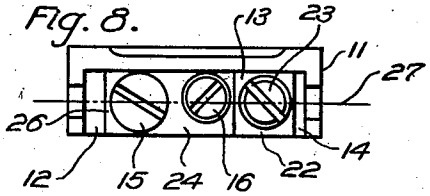


Fig. 8.



WITNESSES:

Robert C. Baird

W. H. Young

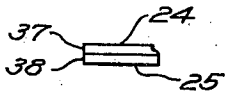


Fig. 9.

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UNITED STATES PATENT OFFICE

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PRESSURE TYPE CONNECTOR AND METHOD OF MAKING THE SAME

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Application February 12, 1942, Serial No. 430,606

1 Claim. (Cl. 173—324)

My invention relates to an improved form of pressure type electric terminal connector.

One of the principal objects of my invention is to provide an electrical terminal connector of the type having an opening for the reception of an electrical conductor and a supporting strap extending in a direction substantially at right angles to the axis of such opening by which the terminal may be suitably secured to a support.

A further object is to provide a terminal connector of the character referred to which may be made from a single strip of conducting material.

A further object is to provide a terminal connector of the character referred to which may be made from a single strip of conducting material.

A further object is to provide a terminal connector of the character referred to which may be made from an endless strip of conducting material.

Other objects and advantages of my invention will become more apparent from a study of the following specification and the accompanying drawing, in which

Figure 1 is an end view of a blank of material from which the terminal connector may be made;

Figs. 2, 3, 4 and 5 respectively are views showing the relative positions of a mandrel and cooperating die parts with respect to a blank of material in the various steps of one method of forming a preferred form of terminal connector;

Fig. 6 is a view similar to Fig. 5 showing the final relation of the mandrel and cooperating guide parts with respect to the blank of material in forming a modified form of terminal connector;

Fig. 7 is a side elevational view of a preferred form of my terminal connector showing the same mounted in position on a supporting structure;

Fig. 8 is a top plan view of the parts shown in Fig. 7; and

Fig. 9 is a broken away side elevational view of the free end of a connector strap such as is had when the connector is made from a single strip of material.

Referring first to Figs. 7 and 8, the numeral 11 designates a supporting structure having a chamber 12 which is open at the top and on one side thereof. A terminal connector, indicated as a whole by the numeral 13, is secured to the base 14 of the supporting structure by suitable means such as the screws 15 and 16.

The connector 13 is comprised of two main parts 17 and 18 which will be referred to separately. The part 18 is shaped rectangularly to provide a rectangular opening 19 having parallel side walls 20 and 21 between which the end of an electrical conductor may be positioned for connection to the terminal 13. The top side 22 of the part 18 is provided with a threaded opening for the reception of a set screw 23 which may be inserted into position for clamping the end of a conductor in position in the opening 19. The part 18 is preferably made rectangular in shape in order that the threads by which the screw 23 is held in a position may be extended down along the inside facing surfaces of the side walls 20 and 21. The pitch diameter of the threaded opening for the screw 23 is made slightly greater than the distance between the walls 19 and 20 in order that such walls will be threaded when forming the opening for the screw 23. By threading the surfaces 20 and 21, it will be apparent that the top 22 of the part 18 will not be unduly distorted when the screw 23 is operated to clamp a conductor in position as would likely be the case if the threads for holding the screw 23 were formed entirely in the top portion 22. This arrangement is thus much stronger and a firmer grip can be obtained on the conductor.

It will be noted that the terminal 13 is formed of an endless strip of material and that the strap portion 17 is comprised of two overlying strips 24 and 25 which have been clamped together with their facing surfaces abutting against each other. The overlying portions 24 and 25 constitute an integral continuation of the material forming the part 18 and have a common integral end 26.

It is to be noted that the longitudinal center line 27 of the strap 17 lies in a plane which is perpendicular to the axis of the opening 19. By this arrangement of the parts 17 and 18 and by reason of the fact that the connector 13 is formed from a single endless strip of material, it will be apparent that there is provided a terminal connector which may be readily mounted in a limited space such as the chamber 12, and which has great strength and durability due to the fact that there are no parts which are likely to become separated from each other.

The connector 13 is preferably formed from a section of copper tubing 28 as shown in Fig. 1. In one method of forming the connector 13 the tubing 28 may be positioned over a mandrel 29 and clamped against the underside thereof by a die part 30, as shown in Fig. 2. To form the wall 21 of the part 18, a second die part 31 is then moved from the position shown in Fig. 2

to the position shown in Fig. 3. To form the upper side 22 of the part 18, a third die part 32 is moved with respect to the die part 31 and mandrel 29 to the position shown in Fig. 4. To complete formation of the conductor 13, a fourth die part 33 is moved to the position shown in Fig. 5. In this last step, the wall 20 of the part 18 is formed and the overlying portions 24 and 25 are pressed into final position with their facing surfaces in abutting relation.

In the preferred form of invention, as shown in Figs. 5, 7 and 8, it will be noted that the underside 25 of the connector 13 extends over the entire length of such connector. However, the principles of this invention are adaptable to many different modifications of connector 13 and, if desired, cooperating die parts formed as shown in Fig. 6 and corresponding to the die parts illustrated in Figs. 2, 3, 4 and 5 may be employed to form a modified form of connector 34 in which the bottom side 35 does not lie in a single plane.

It is to be understood that the above is intended as illustrative of only one method of forming the connector 13 and, if desired, any other suitable method may be employed such as a series of drawing operations in which the blank 28 is drawn over a mandrel positioned between suitable die parts. However, for the purposes of this invention it will be further understood that all of such methods will be characterized by the fact that the part 18 of the connector 13 will be formed around a mandrel 29 of the desired shape and in the final operation the overlying portions 24 and 25 of the strap 17 will be flattened together.

Although the preferred embodiment of this invention has been described as being made from a blank 28 of tubular conducting material, it is to be understood that any other shape of blank 28, such as a hollow rectangular blank, may be employed. An important advantage is obtained by making the conductor 15 from a single strip of material in that the end 26 integrally connects the overlying portions 24 and 25 without the necessity of an additional welding operation as would be the case with free ends 37 and 38, as shown in Fig. 9. Obviously, it is desirable that the overlying portions 24' and 25' be secured together before mounting the connector 13 in position in order that such overlying portions 24' and 25' will not become separated during packing or shipment of such connectors.

I claim as my invention:

An electric terminal for clamping a conductor to a support, comprising a single-piece endless strip of conducting material and uniform cross section having a flat strap portion formed of two adjacent sections of the strip overlying each other in face-to-face contact and being provided with a bore traversing both said sections for fastening the terminal to the support, said strip having a clamping portion adjacent to said strap portion and formed by mutually spaced sections of the strip so as to form a clamping opening of substantially rectangular cross section, one of said latter strip sections having a threaded bore, and a clamping screw in said threaded bore having substantially the same diameter as the width of said cross section extending parallel to the flat strip portion, said screw extending substantially at a right angle to said flat strap portion for clamping the conductor in said opening.

THOMAS W. LANGFORD.