United States Patent

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Harrisburg, Pa.
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[33] **Germany**
[31] **1,640,002**

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[54] **POST TERMINAL CONNECTOR**
8 Claims, 4 Drawing Figs.

[52] **U.S. Cl.** **339/230**
[51] **Int. Cl.** **H01r 11/26**
[50] **Field of Search** ..... 339/95, 97, 224—240

[56] **References Cited**

UNITED STATES PATENTS

1,661,375	3/1928	Leighton	339/230
2,222,577	11/1940	Thompson	339/230
2,735,997	2/1956	Peterson	339/258
3,000,998	9/1961	Wiora	136/135

FOREIGN PATENTS

857,091	11/1952	Germany	339/231

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ABSTRACT: A battery terminal is made by stamping from sheet metal and bending to form two aligned holes which fit over a battery terminal post. Each hole is open on one side and has a lug bent from it through which a clamping screw can pass into the base of the terminal. A conductor can be crimped onto an integral ferrule.

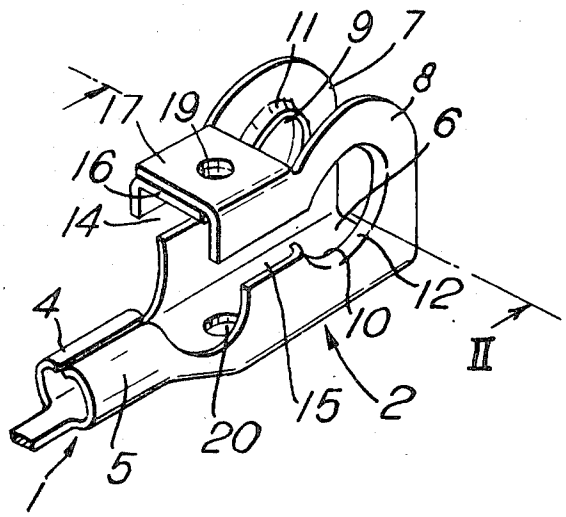


Fig. 1

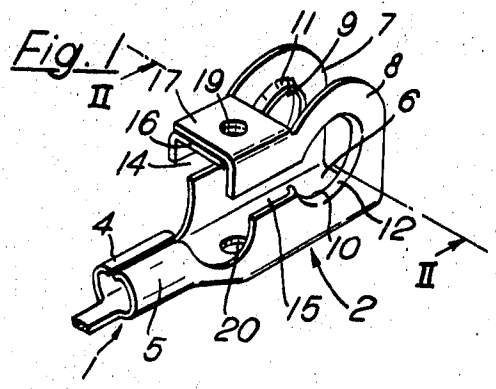


Fig. 3.

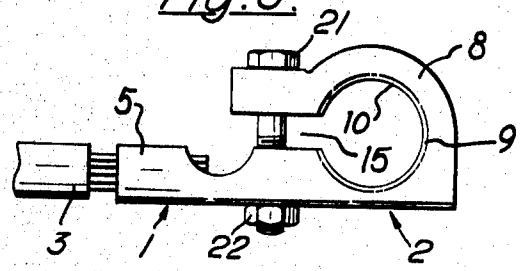


Fig. 2.

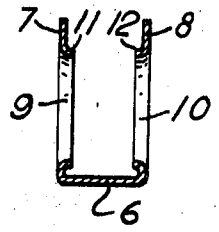
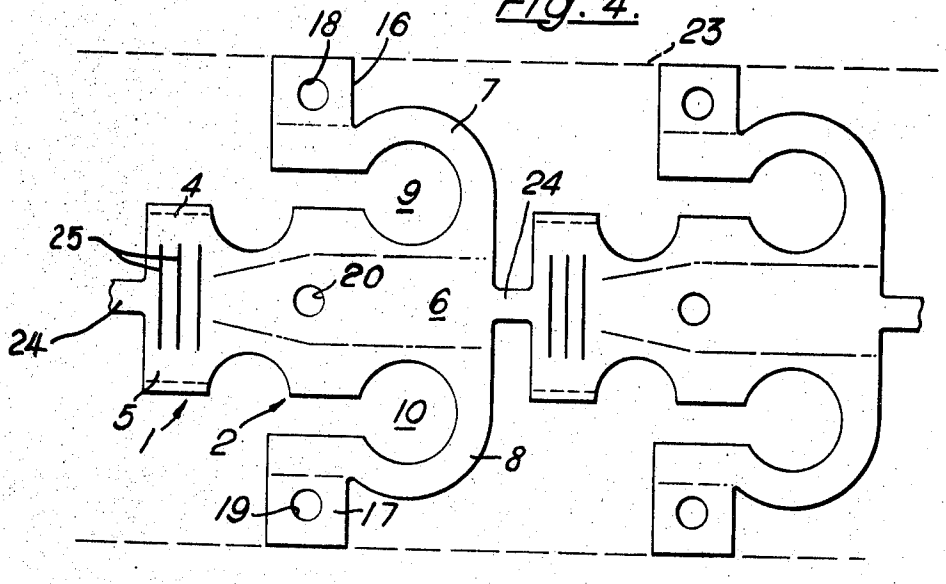


Fig. 4.



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POST TERMINAL CONNECTOR

This invention relates to an electrical connector formed from a single piece of sheet metal and comprising a contact portion for engaging a battery post terminal or the like and an integral ferrule portion for attachment to an electrical conductor.

Connections to post terminals, such as those used on low voltage batteries for cars and trucks, have customarily been made by sliding a cast sleeve or cap having a longitudinal slit over the post and tightening the sleeve or cap onto the post by a bolt and nut attached to extensions of the edges of the slit to close the edges together. A sheet metal form of connector has also been proposed in which a strip of metal is bent transverse to its length to form a tube and similarly tightened by a bolt. In all these known connectors a conductor is secured to an extension of the connector by soldering or brazing.

An electrical connector according to the present invention is formed from a single piece of sheet metal and comprising a contact portion for engaging a post terminal and an integral ferrule portion for attachment to an electrical conductor, in which the contact portion is formed by folding the strip into a channel with a base part and two sidewall parts, each sidewall having an aperture with parts adapted to engage a post terminal and each aperture being open to one end of the sidewall, a lug portion of each sidewall adjacent the open end of the apertures being turned in over the base part in an overlapping manner, the overlapping lug portions being adapted for clamping with the base part to reduce the dimensions of the apertures.

The invention also includes a blank stamped from strip material for folding into a connector according to the invention, in which the blank comprises a longitudinally extending central base part having arcuate sidewall parts extending on each side, the sidewall parts defining open apertures with the openings to the apertures extending in the longitudinal direction of the central base part, and outwardly extending lug portions projecting from the free ends of the sidewall parts.

An object of the invention is to provide a stamped and formed electrical connector for a battery terminal or round post.

Another object is the provision of an electrical connector having inwardly-directed flanges for engagement with a battery terminal or round post.

A further object is to provide an electrical connector having serrated surfaces or lips on inwardly-directed flanges to enhance the electrical connection and retention of the connector on a battery terminal or round post.

An additional object is the provision of an electrical connector having apertures in sidewalls thereof with the apertures being provided inwardly-directed flanges defining engaging areas for engagement with a battery terminal or round post.

Still a further object is to provide an electrical connector having means to tighten and secure a terminal-engaging section onto a battery terminal or round post.

Other objects and attainments of the present invention will become apparent to those skilled in the art upon a reading of the following detailed description when taken in conjunction with the drawings in which there is shown and described an illustrative embodiment of the invention; it is to be understood, however, that this embodiment is not intended to be exhaustive nor limiting of the invention but is given for purposes of illustration in order that others skilled in the art may fully understand the invention and the principles thereof and the manner of applying it in practical use so that they may modify it in various forms, each as may be best suited to the conditions of a particular use.

In order that the invention may be properly understood one example of connector in accordance therewith and a stamped blank from which the connector is folded will now be described by way of example only with reference to the accompanying drawing.

In the drawing:

FIG. 1 shows a perspective view of the connector;

FIG. 2 shows a sectional view of the connector on the lines 2–2 of FIG. 1;

FIG. 3 shows a side view of the connector connected to a conductor; and

FIG. 4 shows a blanked strip for forming a connector.

Referring now to the drawings, the connector comprises two parts 1, 2 stamped from sheet metal. The first part 1 is a crimping ferrule and is secured, in operation, by crimping to a conductor 3 such as a battery lead in a motor car. The other part 2 is adapted to be fitted over a frustoconical shaped terminal post (not shown) of a battery of the car. The ferrule part 1 has inturned sections 4, 5 which fold over onto the conductor 3 to grip it and transverse serrations 25, FIG. 4, which also assist in the gripping action. The sections 4 and 5 may be normally parallel to one another so that ferrule 1 is U-shape prior to being crimped onto conductor 3.

The part 2 is in the form of a channel having a flat central base part 6 with two perpendicular sidewalls 7, 8. At the front end of the connector the sidewalls 7, 8 each have an enlarged aperture 9, 10 respectively stamped out with respective flanges 11, 12, FIG. 2, turned into the body of the channel. Flanges 11 and 12 are tapered away from their respective sidewalls. The apertures are coaxial and aperture 9 is smaller in diameter than the aperture 10 so that account is taken of the frustoconical shape of the battery post terminal on which it is to be fitted. Each aperture 9 and 10 is open at its side so that there is a slot or opening 14, 15 respectively in each sidewall 7, 8 between the apertures and the ends of the sidewalls. The slots 14, 15 in this embodiment open adjacent the ferrule part 1.

The sidewalls 7, 8 have lug portions 16, 17 bent over from a part thereof. The two lug portions overlap each other with the lug portion 16 associated with the sidewall 7 having the smaller dimensioned aperture 9 lying beneath the lug portion 17. Each lug portion has an aperture 18, 19 respectively through it and these apertures are in alignment with each other and with an aperture 20 in the base part 6. A slot (not shown) may be provided in base part 6 forward of aperture 20. A clamping bolt 21 is passed through these holes and secured by a nut 22. Tightening of the nut 22 tends to close the slots 14, 15 and to reduce the size of apertures 9, 10.

When the connector is to be applied to a post terminal, the nut 22 is slackened off and the connector is slid over the top of the terminal with the sidewall 8 encompassing a thicker part of the frustoconical shape and the sidewall 7 a thinner part thereof. The relative dimensions of apertures 9 and 10 and the overlapping relationship of lug portions 16 and 17 enable the connector to be the right shape initially to fit the post terminal. With the connector properly seated, the clamping nut 22 and bolt 21 are tightened until the connector grips the post terminal securely. The flanges 11, 12 of the sidewalls will seat around the post terminal during tightening and thus produce a good electrical contact between their mating surfaces. Since the flanges are only attached to the sidewalls at one end, they accommodate irregularities in the surface of the post terminal and still give a good contact. Flanges 11 and 12 may be provided with inwardly-directed lips for biting into the post terminal to enhance the electrical connection and to prevent any axial slippage or serrations such as serrations 25 on ferrule 1. Slight lips are initially formed at the free ends of the flanges 11 and 12 as a result of the forming operation, however the lips can be larger, if desired.

If the connector were to be applied to a post terminal which was a regular cylinder or had another constant cross section, the apertures 9, 10 would be dimensioned appropriately and would each have the same size.

The blanks from which the connectors are folded are shown in FIG. 4. The blanks are stamped out of the strip metal 23, and they are joined to each other by tabs 24 so that after a folding operation the connectors can be rolled and stored in strip form. The tabs are easily broken to separate the connectors.

It will, therefore, be appreciated that the aforementioned and other desired objects have been achieved; however, it should be emphasized that the particular embodiment of the invention, which is shown and described herein, is intended as merely illustrative and not as restrictive of the invention.

I claim:

1. An electrical connector formed from a single piece of sheet metal and comprising a contact portion for engaging a post terminal and an integral ferrule portion for attachment to an electrical conductor, the contact portion including a channel having a base part and two sidewalls, each sidewall having an aperture with a part adapted to engage the post terminal and each aperture being open to one end of the sidewall, a lug portion of each sidewall adjacent the open end of the apertures being turned in over the base part in an overlapping manner, the overlapping lug portions being adapted for clamping to the base part to reduce the dimensions of the apertures.

2. An electrical connector according to claim 1, in which one of the apertures in the sidewalls is of a smaller size than the aperture in the other sidewall.

3. An electrical connector according to claim 1 in which the overlapping lug portions of the sidewalls and the base part include aligned apertures for the through passage of a clamping member.

4. An electrical connector according to claim 1, in which the opening in the sidewalls is adjacent the ferrule portion.

5. An electrical connector according to claim 1 in which the ferrule portion is adapted for connection by crimping to an electrical conductor.

6. An electrical connector according to claim 1, in which inwardly-projecting flanges extend from the edge of the apertures in the sidewalls.

7. An electrical connector according to claim 6 in which the flanges are tapered away from the sidewalls.

8. A blank for a terminal stamped from sheet metal and comprising an elongate base portion having a narrow end adapted to define a crimping portion and a wider end adapted to define a contact portion, the base portion at the wider end being formed with a pair of generally circular apertures spaced apart laterally of the base and bounded on outer sides by arcuate wall portions, a pair of parallel open ended slots formed in the blank, each extending from a respective aperture towards the narrower end of the base, free ends of the arcuate wall parts adjacent the slots being formed with outwardly extending lug portions, the base part between the slots and the lug portions having respective holes centered on a common line transverse of the length of the blank between the narrower and wider ends.