Feb. 2, 1954 H. EPSTEIN 2,668,279

ELECTRICAL CONDUCTOR TERMINAL WITH STRAIN RELIEVING MEANS

Filed June 17, 1950

Fig. 1.

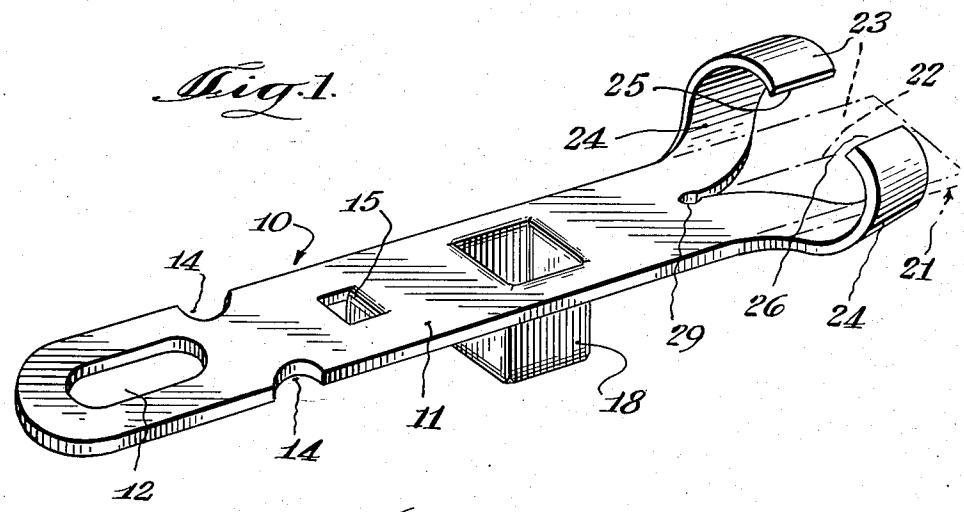


Fig. 2

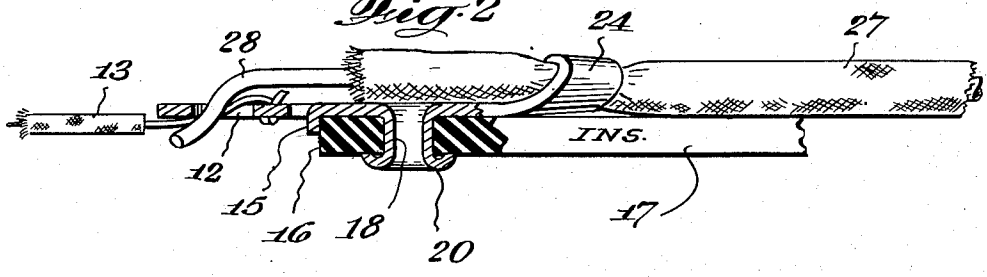
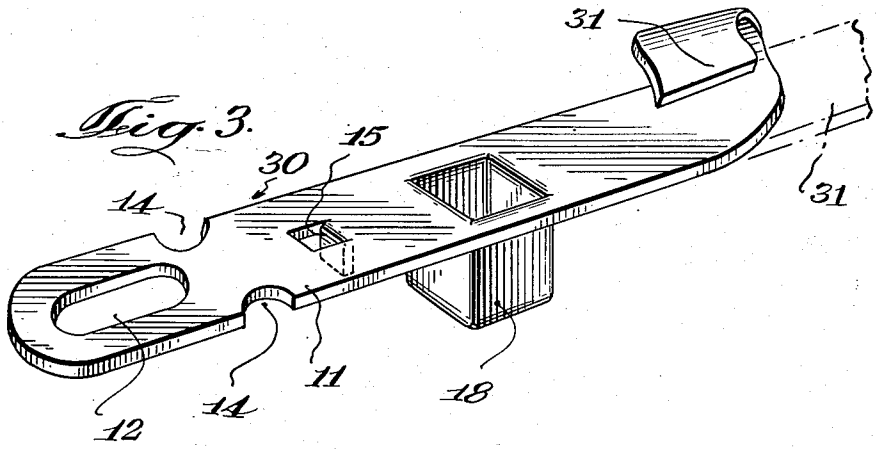


Fig. 3.



Inventor
Hirsch Epstein
By J. Irving Silverman
Attorney

Patented Feb. 2, 1954

2,668,279

UNITED STATES PATENT OFFICE

2,668,279

ELECTRICAL CONDUCTOR TERMINAL WITH STRAIN RELIEVING MEANS

Hirsch Epstein, Chicago, Ill.

Application June 17, 1950, Serial No. 168,759

1 Claim. (Cl. 339—103)

1

This invention relates generally to electrical connectors and more particularly to an electrical lug or terminal secured to a support and adapted to have two electrical conductors engaged therewith, said conductors having electrical engagement one with the other.

The principal object of the invention is to provide a construction in which the connector is formed of a single strip of metal substantially devoid of lateral projections.

Another object of the invention is to provide a connector of the character described in which the end thereof is deformed into a socket or sleeve for the reception thereinto of electrical wire of relatively large diameter, said socket or sleeve adapted to be crimped upon said wire to seize and hold same, whereby the free end of said wire may extend through the sleeve and be soldered to the opposite end of the connector.

A further object of the invention is to provide a lug of the character described of deformable material which is provided with a sleeve-like construction at the end thereof formed by lateral bending of the end of the lug or connector.

Another object of the invention is to provide a device of the character described in which the end of the lug is bifurcated and the bifurcations are formed into a socket whose axis is parallel to the long dimension of the connector.

Another object of the invention is to provide a connector of the character described by means of which a large diameter wire is adapted to be electrically connected to a relatively small diameter wire, and in which the large diameter wire is firmly anchored thereby relieving the strain on the said connection.

Many other objects and advantages will become apparent from the description which follows in which a preferred form of the invention is shown and described in connection with the figures in which:

Figure 1 is a perspective view of an electrical connector or terminal lug constructed in accordance with my invention, same being shown prior to attachment to a base.

Fig. 2 is a median sectional view taken along the length of the connector or terminal lug shown in Fig. 1, same having been secured to an appropriate base and having electrical leads associated with the opposite ends thereof.

Fig. 3 is a view similar to that of Fig. 1 but showing a modified form thereof.

The type of lug or connector which is contemplated by this invention is usually secured by rivets or the like to a base of some insulating

2

material such as for example a phenolic condensate or ceramic substance. There is provided an end portion, usually pierced, which projects beyond the edge of the base member and is adapted to have a wire soldered thereto. The opposite end of the connector overlies the base and is also adapted to have a wire soldered or otherwise connected thereto.

Very often, the second wire referred to above may be of a larger size than the first so that it is difficult to obtain a good connection. Some constructions have utilized ears which project laterally of the lug or connector which are crimped over the wire. The disadvantages of this are that the lug or connector most be formed, such as for example by stamping, out of material which is wider than the body of the lug or connector. This gives rise to waste, and renders it difficult to manufacture the devices from continuous metal strips.

My invention contemplates that the lug or connector will be formed from a strip of metal whose width is substantially the same as the width of the body of the resulting device. The end of the lug or connector which overlies the base member is deformed laterally by means of suitable dies so that there is formed a socket whose axis is substantially parallel with the length of the lug or connector. In one instance, the end is split and the socket formed of opposing bifurcations bent in a semi-circular formation over the top of the lug or connector, and in another instance, there is no split and the entire end is deformed to provide a semi-circular metal portion above the lug.

Referring now to the details of the device, I have used the numeral 10 to designate generally my new connector or terminal lug. Same is formed of an elongate strip of metal 11 of deformable nature. At one end there is an eye 12 adapted to receive thereinto a wire 13 which may be wrapped about the strip 11 at the notches 14. This is clearly shown in Fig. 2. The wire 13 is usually soldered in place thereafter, but this has not been shown for rendering the illustration simple.

The strip 11 has a punched out stop member 15 which is intended to engage the edge 16 of the base member 17 upon which the connector 10 is adapted to be mounted. There is provided an upset hollow formation 18 which extends downwardly in the same direction as the stop 15 and which serves as a grommet or rivet to enable the connector to be secured to the base member 17. Thus, the grommet formation 18 is adapted to be inserted in an appropriate opening 19 formed in

the base member 17 and have its protruding ends peened over the bottom of the base member 17 as shown at 20. As a result of this construction, the body of the connector 10 overlies the base member 17 and the eye end 12 extends over the edge 16 as shown in Fig. 2. The grommet formation 18 may be round or rectangular in cross-section to prevent swinging of the connector 10 upon the base member 17.

With the exception of the fact that the connector 10 is formed of a strip of metal whose width is substantially the same as the width of the body of the connector, the device thus far described is known in the connector art. The invention principally lies in the construction and arrangement of the end which is adapted to overlie the base member 17 and a combination thereof with the connector. The pertinent part of the illustrated devices is the right hand end thereof as viewed in the figures.

In order best to describe my novel construction I will set forth the steps in arriving thereat, but it is not intended to be limited by any specific method of manufacturing the same. The right hand end of the strip 11 is illustrated in broken lines in Fig. 1 and is designated by the reference character 21. By reason of a split 22 which is formed in the center of the strip 11 and extends to a point spaced from the grommet formation, the said end 21 is bifurcated and thereby divided into two portions 23 and 24 which are shown in both broken and solid lines in said Fig. 1. The solid line portion of the view illustrates the configuration achieved by said bifurcations 23 and 24 after having been deformed in the desired manner. It will be seen that such deformation is achieved by spreading the bifurcations 23 and 24 from the positions shown in the broken lines, and bending the parts to cause same to curve inwardly and over the top of the strip 11. Each part is thus twisted in a semi-circular formation, and together the parts provide a kind of socket or sleeve 29 with the juxtaposed ends 25 and 26 spaced apart to permit a wire 27 to be inserted. Such a wire 27 may be much larger in gauge than the wire 13. The insulated portion is inserted in the socket 29 and bifurcations 23 and 24 crimped upon the same, by any suitable tool thereby firmly gripping said wire. The insulation is removed from the free end of the wire 27, baring the central conductor 28 which is passed into the eye 12 and electrically secured by solder (not shown). The wire 27 is anchored at 24 and strain is removed from the connection at the eye 12.

If desired, the split 22 may extend to an opening

29 which passes completely through the strip 11 and is spaced from the grommet formation 20. The opening permits ready spreading of the bifurcations 23 and 24 during the deforming process and prevents tearing of the metal beyond that point.

In Fig. 3 I have illustrated a modified form of construction which is identical to the connector 10 in every respect except for the right hand end. Thus, the connector 30 is formed of strip 11, with eye 12, notches 14, stop 15, grommet formation 18, and its right hand end is designated 31. In the process of producing the said connector the end 31 is twisted and bent in a circular formation over the top of the strip 11 to form the socket or sleeve within which the wire 27 is adapted to be disposed to enable said end 31 to be crimped thereupon.

In conclusion, although my invention has been disclosed in connection with the specific details of preferred embodiments thereof, it must be understood that such details are not intended to be limitative of the invention except insofar as set forth in the accompanying claim.

I claim:

In a connector of the character described and formed of a metal strip, a socket formed from an end of said strip for receiving thereinto a conductor, said socket being integral with said strip and substantially of the same width as the strip, and having a wall which is twisted and bent in a circular formation with the said end disposed over the top of the strip whereby to form the socket, said end adapted to be crimped upon the conductor, said wall being substantially shorter than the body of the connector.

HIRSCH EPSTEIN.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,142,479	Beck	June 8, 1915
1,369,221	Currier	Feb. 22, 1921
1,617,373	Childs	Feb. 15, 1927
1,683,418	Shaw	Sept. 4, 1928
1,706,412	Roberts	Mar. 26, 1929
1,976,312	Wachsman	Oct. 9, 1934
2,376,861	Bonwitt	May 29, 1945
2,431,366	Buel	Nov. 25, 1947
2,476,738	Klumpp	July 19, 1949
2,515,105	Weisberg	July 11, 1950

FOREIGN PATENTS

Number	Country	Date
347,855	Great Britain	May 7, 1931