June 16, 1942. F. B. HEWEL 2,286,415

BATTERY CONNECTOR

Filed May 21, 1940

Fig. 1.

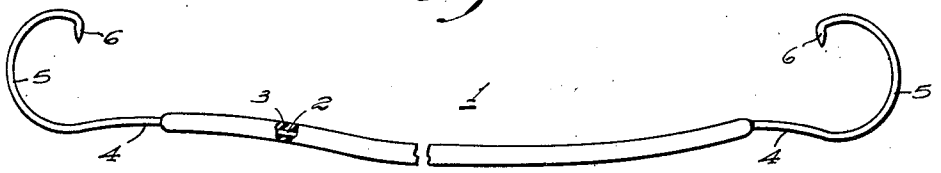


Fig. 2.

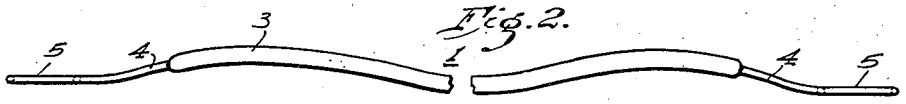
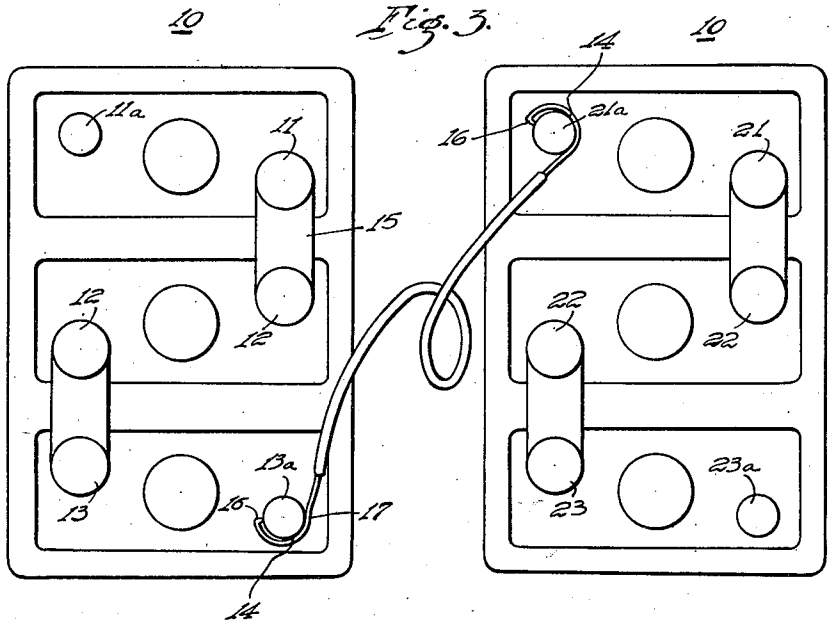


Fig. 3.



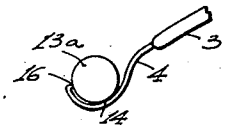


Fig. 4.

WITNESS

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BATTERY CONNECTOR

Frank B. Hewel, Pittsburgh, Pa.

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1 Claim. (Cl. 173—259)

My invention relates to connectors and particularly to electric connectors for the terminals or studs of automobile batteries, for example.

One object of my invention is to provide a simple, cheap and quickly applied, but fully effective electrical connector for charging or testing automobile batteries or for other purposes.

Another object of my invention is to provide a connector of the type set forth comprising a bare end portion having a sharp point for insertion into the soft metal terminal of automobile batteries or the like and adapted to wrap around or generally follow the contour of and grip the terminal for a selected length beginning a predetermined distance from the place of insertion of the point. In this way, a very quickly applied connection, but one providing good electrical contact, is provided.

A further object of my invention is to provide a device of the character set forth in which the sharp point extends transversely of the direction of the bare end portion for ready insertion into the soft metal terminal, such bare portion being sufficiently flexible to generally follow the contour of the usual cylindrical terminal and sufficiently stiff to grip the terminal beginning a predetermined distance from the place of insertion of the point and extending approximately to the area directly opposite the place of insertion.

Still another object of my invention is to provide as an article of manufacture a battery terminal connector having at least one bare end portion with a sharp point for insertion in a battery terminal and adapted to wrap around and grip the terminal.

Other objects of my invention will become evident from the following detailed description taken in conjunction with the accompanying drawing, wherein:

Figure 1 is a view in front elevation of a battery connector constructed in accordance with my present invention;

Fig. 2 is a view in side elevation of the connector shown in Fig. 1;

Fig. 3 is a plan view of a portion of two automobile storage batteries showing my novel battery connector connected in its final position to two of the terminals thereof; and

Fig. 4 is a plan view of a battery terminal or post to which my connector is in the act of being applied.

Referring to the drawing, my connector 1 is shown as comprising a body portion preferably of flexible stranded or other wire 2 having a rubber coating or insulation 3 of a familiar character, together with bare hook-shaped end portions respectively comprising a shank of relatively straight body portion 4, a hook portion 5 making an obtuse angle with the portion 4, as best shown in Fig. 2, and a sharp point 6 constituting the extremity of each portion 5 and extending inwardly transversely to such portion 5. The end portions 4, 5 may be suitably secured to the wire 2 by wrapping, soldering, welding or otherwise.

The mode of application of my battery connector will now be discussed in conjunction with Figs. 3 and 4 and then a further description of the battery connector will be given. Referring to Fig. 3, I show two three-cell automobile storage batteries 10, for example, respectively having a plurality of pairs of the familiar spaced upstanding lead or other soft metal terminals, posts or studs 11*a*, 11, 12, and 13*a*, 13 and 21*a*, 21, 22, 23*a* and 23, the posts 11 and 12, etc. of adjacent cells being connected by a strap connector 15 in accordance with a familiar practice to connect the cells in series relation, while the unconnected end posts, such as 11*a* and 13*a*, constitute the usual positive and negative terminals of each battery.

In the event that it is desired to charge the two illustrated batteries, my connector 1 is readily applied as follows:

Considering first the illustrated left-hand end of the connector, the sharp point 6 is readily inserted in the soft metal end terminal 13*a* of one of the batteries 10, as at the point 16 of Figs. 3 and 4, and by practically the same movement accompanying such insertion the bare end portions 5, 4 may be wrapped around or generally follow the contour of the cylindrical post 13 beginning with a place 14 a predetermined distance from the point 16 to the area 17 approximately opposite the point of insertion 16. Fig. 4 shows an intermediate stage of the application of my connector, in which the connector has touched place 14 but has not yet been wrapped around part of the terminal, while Fig. 3 shows the final position of the connector on terminal 13*a*, with contact of the end portions 5, 4 with terminal 13*a* from place 14 to area 17.

A similar ready fastening of the other bare end portion of my connector may be made on the end terminal 21*a* of the other battery 10. In this way, a good electrical contact may be made by the respective bare end portions of the connector with the soft metal battery terminals for charging the batteries, when the supply circuit is suit-

ably connected to the end terminals 11*a* and 23*a*. It will be noted that since the hook portion 5 makes an obtuse angle with the shank portion 4, it is unusually convenient to apply the connection with the hook 5 substantially horizontal.

It will be appreciated that a considerable variety of metals or wire portions may be employed for use in my connector, it merely being essential that the bare portions 4, 5 be sufficiently flexible to generally wrap around or follow the contour of the battery terminal and sufficiently stiff to grip the terminal for a selected length beginning at a predetermined distance from the place of insertion of the point 6 and extending to an area on the terminal substantially opposite said point. I have found that, if the parts 4, 5 are made of spring steel preferably provided with a non-corrosive coating such as zinc, nickel or chromium, the necessary conditions will be met, or stainless steel, for example, may be employed. Because of the use of spring steel, for example, there is a spring pressure on the hook point 6 in its applied position that causes the point to readily penetrate any corrosion on the battery post to maintain good electrical contact with the solid metal of the post. The portions 2 and 3 of the connector may be of any suitable, preferably rubber coated, wire, since they do not have any special function to perform other than being relatively flexible and capable of conducting an electric current.

It will be appreciated that other forms of my connector having an end portion 4, 5 may be conveniently used for testing or other current-carrying purposes, particularly with soft-metal terminals.

It will be seen, therefore, that I have provided a battery connector which may be very quickly and effectively applied to the soft-metal terminals of a storage battery, for example, and which will make and maintain a good electrical connection. The device is simple and inexpensive, but durable and effective.

While I have shown herein the preferred embodiment of my present invention, I do not desire to be restricted to the specific structural details or arrangement of parts thereof, as various modifications thereof may be made without departing from the spirit and scope of my invention. I desire, therefore, that only such limitations shall be imposed thereon as are indicated in the appended claim.

I claim as my invention:

In combination with a storage battery terminal provided with a cylindrical surface having a certain diameter, a connector therefor comprising a bare end portion of spring conductive material curved for at least 180 degrees and provided at its end with a single transversely extending sharp point, the distance between the end of said point and the opposing area of said curved end portion being less than the diameter of said terminal, said point and a portion of said material being applied to the cylindrical surface of said terminal by a single pull substantially in the direction of said point and the space between the terminal at said point and the material of the terminal gradually decreasing from a maximum value where the material joins the outer end of said sharp point to a zero value at the area of said terminal approximately opposite the location of said sharp point, the springiness of said material pressing against said area serving to hold said sharp point and the material in place and any further pull on said material in the direction of said point serving to tighten the hold of said material on said terminal.

FRANK B. HEWEL.