

[54] **CABLE TERMINAL**

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[51] Int. Cl. **H01r 11/26**

[58] Field of Search **339/224-240**

[56] **References Cited**

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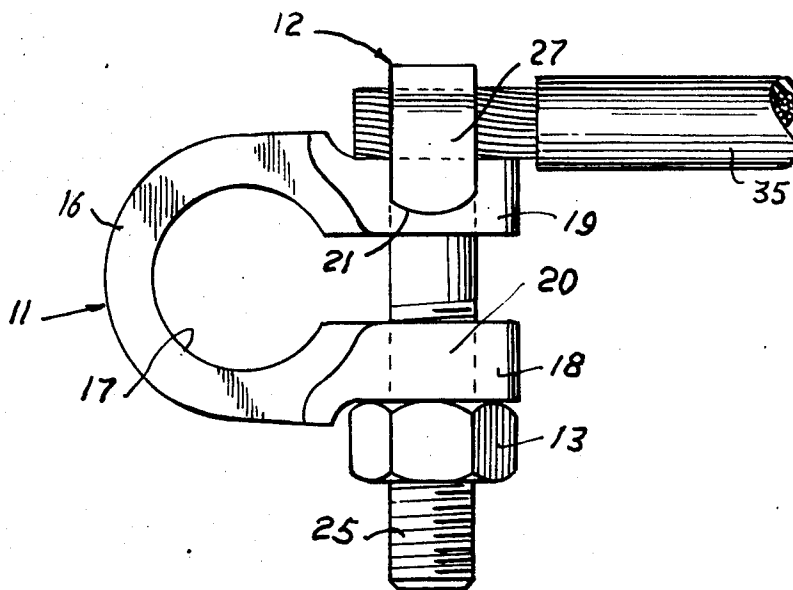
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[57] **ABSTRACT**

A replacement terminal for connecting a battery cable to a battery terminal post includes an integral split ring having parallel outward projecting lugs with a gap between. The clamp defines a tapered bore for enclosing the battery post. A hook bolt extending through aligned bores in the lugs provides an eye at one end for clamping an exposed cable end to one lug. A nut threaded on the opposite end of the hook bolt provides the clamping force for clamping the cable to the ring and for clamping the ring to the battery post.

3 Claims, 4 Drawing Figures



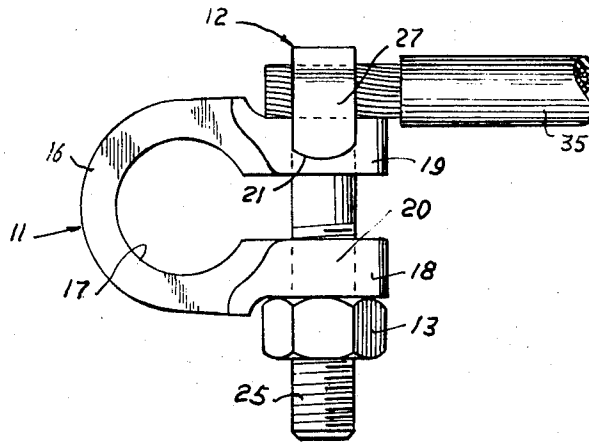


Fig. 1

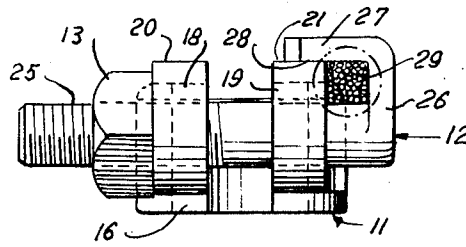


Fig. 2

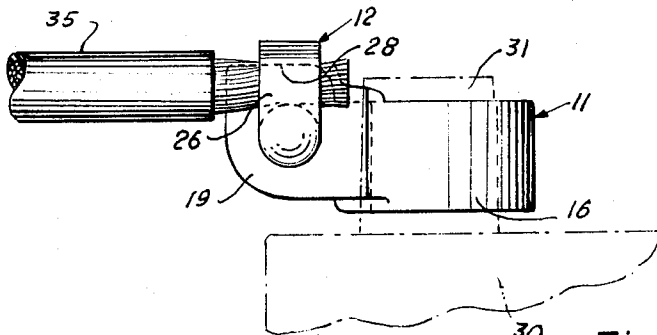


Fig. 3

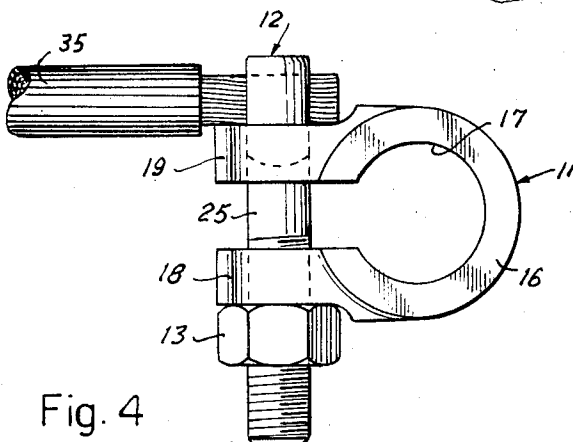


Fig. 4

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BACKGROUND AND SUMMARY OF THE INVENTION

This invention relates to terminal connections for connecting cables to terminal posts; and more particularly to a replacement cable terminal by means of which a cable may be connected to a terminal post.

The terminal according to the invention is particularly adapted for use with cables for attachment to the terminal posts of storage batteries of the type commonly used in vehicles such as automobiles, trucks and tractors. As is well known, the terminal connections between such batteries and cables are subject to corrosion which frequently results in failure of the cable terminal or separation of the cable from the cable terminal. For effective operation of such vehicles, it is important that good electrical contact be had between the battery terminal post and cable; and it is therefore desirable to provide an effective replacement cable terminal for this purpose; and more particularly to provide such a replacement cable terminal which may be readily applied in the field to minimize loss of use of the vehicle.

An important object of this invention is to provide a replacement cable terminal of simple construction to quickly enable the attachment of the terminal to the cable and to a terminal post.

Another object of this invention is to provide such a cable terminal which is of rugged construction and capable of providing an effective electrical connection between the cable and the terminal post.

A further object of this invention is to provide such a cable terminal which is of simple design and including a minimum number of parts for economy of manufacture.

These objects are accomplished in a cable terminal including an integral split ring providing a bore for enclosing a terminal post, and including projecting lugs by means of which the ring may be clamped to the post. A hook bolt extending through the lugs coacts with one of the lugs to define a clamping recess for a cable end. A nut threaded on the hook bolt clamps the cable to the terminal ring and the terminal ring to a terminal post. Coacting surfaces of the hook bolt and adjacent lug prevent rotation of the bolt.

The novel features and the advantages of the invention, as well as additional objects thereof, will be understood more fully from the following description when read in connection with the accompanying drawing.

DRAWING

FIG. 1 is a plan view of a cable terminal according to the invention with the stripped end of a stranded cable shown in clamping relation;

FIG. 2 is an end view of the terminal of FIG. 1, showing the strands of a stranded cable in clamping relation;

FIG. 3 is a side view of the terminal of FIG. 1 showing the cable end in clamping relation, and showing the cable terminal in clamping relation with a battery terminal post illustrated in broken lines; and

FIG. 4 is a bottom view of the cable terminal of FIG. 1.

DESCRIPTION OF THE PREFERRED EMBODIMENT

A preferred form of cable terminal according to the invention, as illustrated in the drawing, consists of an assembly of three parts including a split 11, a hook bolt 12, and a nut 13, all of these parts being parts of simple design for ease and economy of manufacture.

The split ring 11 is a generally U-shaped member preferably fabricated of a good electrically conductive material such as brass. The split ring includes a body portion 16 which defines a bore 17 about an axis perpendicular to the plane of the split ring, and parallel extending lugs 18 and 19 having spaced confronting faces defining the gap of the split ring. The bore 17 is a slightly tapered bore configured for a close fitting relation with the slightly tapered terminal post of a storage battery for

example. The lugs 18 and 19 are provided with axially aligned bores along an axis which is perpendicular to the axis of the terminal post bore 17.

The hook bolt 12 consists of an elongated cylindrical shank 25 having a hook-shaped head which is defined by a transverse arm 26 extending laterally from the shank and a re-entrant arm 27 extending from the end of the transverse back along the shank 25 and generally parallel to the axis thereof.

The aligned bores and the lugs 18 and 19 are dimensioned to receive the bolt shank 25 in relatively close sliding relation; and the inner face of the re-entrant arm 27 is a flat face disposed in a plane parallel to the axis of the bolt shank 25. The upper faces 20 and 21, of the lugs 18 and 19 respectively are flat and are disposed in a plane parallel to the axis of the aligned lug bores and are therefore parallel to the shank axis of the hook bolt 12 received within the aligned bores. The parts are so dimensioned that the lateral distance between the axis of the lug bores and the lug faces 20 and 21, on one hand, and between the bolt shank axis and the inner face 28, on the other hand, are substantially the same. In assembled relation then, the head surface 28 overlies the lug surface 21 of the lug 19, in the illustrated assembly, so that when the re-entrant arm 27 overlies the lug, the parts are locked against relative rotation.

The foot end of the hook bolt is threaded to receive the conventional hex nut 13; and it will be seen that when the nut is threaded on the bolt shank, the head transverse arm 26 is first drawn toward the adjacent lug 19; and further tightening of the nut 13 will effect compression of the lugs to clamp the ring 11 securely on a terminal post received within the bore 17.

In FIG. 3 there is illustrated fragmentarily in broken lines a storage battery 30 and associated tapered terminal post 31 received within the bore 17 and to which the cable terminal is clamped.

As best seen in FIG. 2, the hook bolt head coacting with the adjacent lug 19 defines a rectangular opening or eye 29 for receiving and clamping the bared end of a battery cable or other cable 35. In the drawing, the cable 35 is illustrated as a stranded wire cable having an insulating sheath which is stripped at the cable end to expose the stranded wires for clamping to the cable terminal. In FIG. 2, the stranded wires of the cable are shown in compressed form within the rectangular eye 29. For inserting the cable, the nut is loosened to permit sliding of the hook bolt 12 to the right, as viewed in FIG. 2, thereby elongating the eye 29 to permit the insertion of the cable end; and for this purpose the cable strands may be spread as necessary to be received within the eye 29. Upon tightening of the nut 13, the size of the eye 29 will of course be reduced to compress and shift the wire strands to fully occupy the eye opening and provide a good electrical connection between the cable and the cable terminal. With the wire strands so compressed and deformed, subsequent loosening of the split ring 11, to a sufficient extent to remove the cable terminal from the battery post, will not necessarily result in separation of the cable terminal and cable. Rather, it is likely that the eye 29 would have to be opened to a considerable extent to effect separation of the cable terminal and cable.

If the cable is a single wire cable of ductile metal, rather than a stranded wire cable, the bared single conductor will be deformed by the hook bolt in a similar manner to accommodate the cable to the cable terminal thereby effecting a good electrical contact and obviating inadvertent separation of the cable and terminal when the cable terminal is removed from a terminal post.

As best seen in FIG. 3, the lugs 18 and 19 may be offset from the body portion 16 of the split ring along the axis of the bore 17. This offset may be desirable so that the body portion may be secured on a terminal post 31 close to the adjacent surface of the battery 30, and allow sufficient room for manipulation of the nut 13 with a suitable wrench.

What has been described is a cable terminal of simple and rugged construction which is particularly adapted as a replacement terminal for use with vehicular storage batteries.

The cable terminal assembly consists of only three parts, two of which may be shelf items, and a split ring of relatively simple and straightforward design. Despite its simple and rugged design, this cable terminal provides effective electrical connection between the cable and the cable terminal, on the one hand, and a cable terminal and a battery terminal post on the other hand. The design permits use with cables of different size and of different type.

Because of its simple design, the cable terminal may be readily installed in the field thereby minimizing loss of use of the vehicle having a defective cable or cable terminal for example. As indicated, an effective connection between the cable and cable terminal is made without the necessity of a soldered joint. The cable terminal is simple to install or remove from a terminal post since a simple turning of the nut effects the desired tightening or loosening of the clamp connections.

While the preferred embodiment of the invention has been illustrated and described, it will be understood by those skilled in the art that changes and modifications may be resorted to without departing from the spirit and scope of the invention.

What is claimed is:

1. A terminal for connecting a cable to a terminal post comprising a three part assembly which consists of
a split ring having outwardly projecting lugs at one side providing a gap therebetween; said ring defining a clamp

for enclosing a terminal post and said lugs having aligned openings for a tightening assembly to draw the lugs together;

a hook bolt including an elongated shank and integral hook shaped head, said shank extending in sliding relation through said lug openings; said hook shaped head including a re-entrant arm coacting with the adjacent lug to define a variable opening for clamping a cable; said re-entrant arm having a surface coacting with an adjacent lug surface to prevent rotation of said hook bolt relative to said split ring; said bolt shank having a threaded end;

and a nut coacting with said threaded bolt to define a tightening assembly for closing said variable opening and for drawing the lugs together simultaneously.

2. A terminal as set forth in claim 1

wherein said coacting surfaces of said re-entrant arm of said lug are planar surfaces disposed in planes parallel to the axes of the bolt shank and the lug openings respectively to permit axial movement of the bolt relative to the ring.

3. A terminal as set forth in claim 2

wherein said coacting surfaces, in assembled relation, are disposed in a plane perpendicular to the post clamping axis, whereby the cable clamping axis is perpendicular to the post clamping axis.

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