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D. P. KING ETAL

3,219,967

BATTERY TERMINAL CABLE CONNECTOR

Filed July 17, 1964

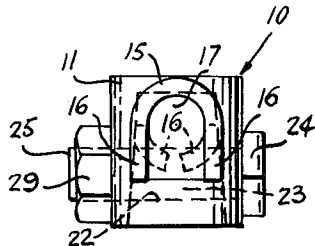


FIG. 3

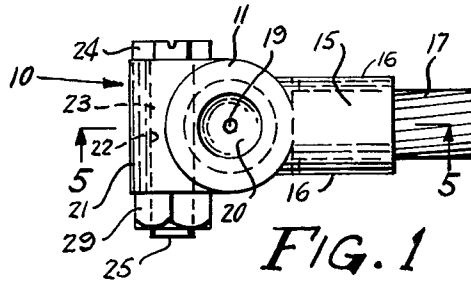


FIG. 1

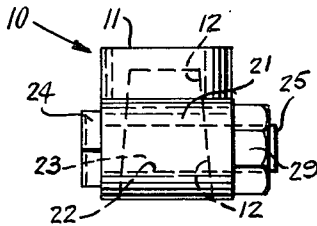


FIG. 4

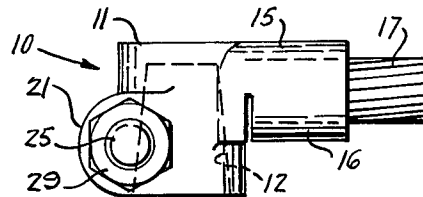


FIG. 2

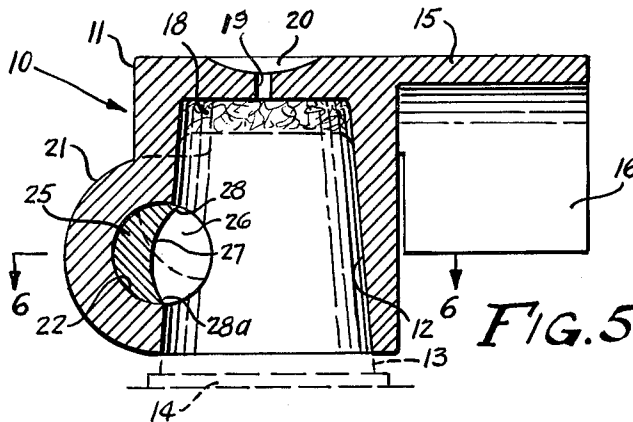


FIG. 5

FIG. 6

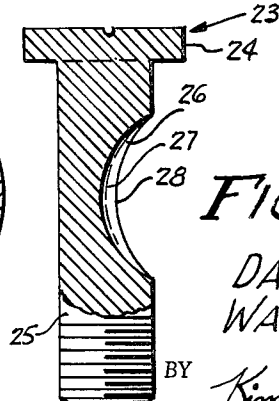
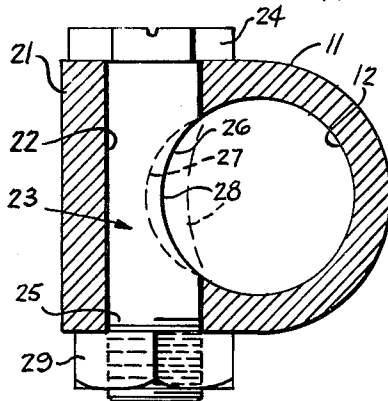


FIG. 7

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BATTERY TERMINAL CABLE CONNECTOR

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5 Claims. (Cl. 339—239)

This invention relates to battery terminal cable connectors, more particularly cable connectors of the kind used for connecting cables to the terminal posts of storage batteries and the like, most generally used in automotive vehicles.

The usually most annoying and difficult procedures in relation to battery terminal cable connectors are the securing of the connector to the terminal post and the removal of the connector from the post. In the course of removing the connector, there is generally some kind of pulling tool used, the pull of which puts a strain on the battery post with consequent damage to the battery. In the application of the connector to the post, there is often a considerable amount of pounding. This is very injurious to the battery. The present invention is directed to overcoming these problems in a very simple and very efficient manner.

The primary object of this invention is to provide a battery terminal cable connector having means to assist in easy removal of the connector from the battery terminal post and to also assist in readily securely fastening the connector to the battery post.

Another object of this invention is to provide, in a manner as hereinafter set forth, a connector for connecting a cable to a battery terminal post, wherein said connector comprises a body of electrically conductive material, such as, for example, a lead alloy, one end of said body being formed as a hollow split shank adapted to receive the exposed end of an electrical cable and when drawn to a smaller diameter, firmly engage and clamp said exposed end of said cable, the body having a portion adjacent to said split shank provided with a cavity generally in the shape of a truncated cone to receive and encompass a terminal post of a battery while at the same time providing a small amount of head space which may as desired be provided with a piece of felt or other suitable material to retain a lubricant, said body having an opening communicating with said head space whereby to insert a lubricant to be held and retained in said head space, said body also having a portion provided with a transverse bore which extends substantially normal to the axis of said cavity and a portion of which intercepts said cavity bolt which has one end thereof provided with an integrally formed head whereby to engage said bolt by means of a suitable tool to rotate the bolt, said bolt having a segment of its shank intermediate the ends of the bolt cut away to provide a cavity having sharpened sides whereby said body is positioned with its cavity fitting over the post and the bolt in a position whereby said cutaway part is in registry, the turning of said bolt will cause the sides of the cutaway portion to bite into the battery post and according to the direction of rotation of said bolt, either force the connector upwards off the post or pull it downwardly onto the post, the inward and outward movement of the bolt selectively clamping and releasing the engagement of the split shank with the battery terminal.

An additional object of this invention is the provision of a battery terminal cable connector of this character which is provided with the usual screw, which however in addition to having a concaved portion which is longitudinal relative to the longitudinal axis of the connecting screw, has an additional concavity which is transverse to the longitudinal axis of the screw and contiguous with

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the first-named longitudinal concavity. The effect of these two coincident concavities having their longitudinal axes in perpendicular arrangement is to provide along the longitudinal edges of the longitudinally extending concavity with the relatively sharpened side edges serving to bite into the battery post and according to the direction of rotation of the bolt either to force the connector upwardly off the post or pull it downwardly onto the post.

Still other objects reside in the combinations of elements, arrangements of parts, and features of construction, all as will be more fully pointed out hereinafter and disclosed in the accompanying drawing wherein there is shown a preferred embodiment of this inventive concept.

In the drawing:

FIGURE 1 is a top plan view of one form of battery terminal cable connector constructed in accordance with the instant invention.

FIGURE 2 is a side elevational view of the connector of FIGURE 1.

FIGURE 3 is an end elevational view of the connector of FIGURE 1 as viewed from the right.

FIGURE 4 is a similar end view of the construction of FIGURE 1 as viewed from the left.

FIGURE 5 is an enlarged sectional view taken substantially along the line 5—5 of FIGURE 1 as viewed in the direction indicated by the arrows.

FIGURE 6 is a sectional view taken substantially along the line 6—6 of FIGURE 1 as viewed in the direction indicated by the arrows; and

FIGURE 7 is a longitudinal sectional view taken through the center line of the bolt comprising an important element of the instant inventive concept.

Similar reference characters refer to similar parts throughout the several views of the drawing.

Having reference now to the drawings in detail, the connector of the instant invention is generally indicated at 10 and comprises a substantially cylindrical body 11 of conductive material which is provided with a tapered frusto-conical internal recess 12 open at its bottom and adapted to fit securely over the terminal post 13 of a conventional battery 14, the terminal post being tapered in conformity with the concavity.

At one side of the body 11 a tubular flange 15 extends in perpendicular relation to the bore or recess 12, and is provided with oppositely disposed depending skirts 16 which are adapted to be bent as indicated in FIGURE 3 and clamped tightly about a cable 17 to secure the latter in electrically conducting relation with the body 11.

As best shown in FIGURE 5, when in assembled relation an absorbent pad 18 is adapted to be positioned on top of the terminal post 13, and is adapted to be lubricated, the lubricant being supplied through a reduced diameter bore 19 positioned at the bottom of a depression 20 in the top of body 11.

A transversely extending semi-cylindrical boss 21 extends across the lower portion of body 11 in perpendicular relation to the sleeve 15, and is provided with an internal bore 22. The bore 21 is adapted to receive a bolt generally indicated at 23 which includes a head 24 and a shank 25 which is externally threaded at least at its outer end. Shank 25 is provided with a longitudinally extending concavity 26 which extends parallel to the longitudinal axis of the bolt, and which is of a radius conforming generally to the radius of curvature of the frusto-conical recess 12, so that when the concavity 26 is aligned linearly with the interior diameter of recess 12 the connector may fit snugly and comfortably over the terminal, or be removed therefrom with a minimum of effort and difficulty. The longitudinal concavity 26 is, however, transversely concaved as at 27 to provide a coincident concavity extending the full length of concavity 26, but

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having its axis at right angles to the axis of concavity of the first-mentioned concaved portion. Thus the side edges 28 and 28a of the longitudinal concavity 6 are rendered relatively sharp, and the arrangement is such that as the bolt head 24 is rotated in one direction the shank 25 is correspondingly rotated so that the edge 28 bites into the terminal post 13, and forces the frusto-conical recess 12 tightly downwardly over the terminal post 13, to clampingly engage the same in a tight manner, the biting engagement of the edge 28 normally precluding removal thereof by a straight pull, or any accidental dislodgment. On the other hand when reverse rotation is applied to the bolt head 24, the shank is rotated in the opposite direction releasing the engagement of the edge 28 with the terminal post 13 while at the same time the lower edge 28a engages in the terminal post in a direction to lift the body 11 in the connector 10 from the terminal, this being occasioned by the taper of the recess 12 and terminal post 13. Thus a relatively small degree of force is required completely to disengage the connector from the terminal post, and a relatively small degree of force is similarly required to tighten the same so that its accidental dislodgment is difficult if not impossible.

A locking nut 29 or a safety nut is positioned on the outer threaded end of bolt 23 opposite the head 24.

From the foregoing it will now be seen that there is herein provided an improved battery connector characterized particularly by an improved screw arrangement which accomplishes all the objects of this invention, and others, including many advantages of great practical utility and commercial importance.

As many embodiments may be made of this inventive concept, and as many modifications may be made in the embodiment hereinbefore shown and described, it is to be understood that all matter herein is to be interpreted merely as illustrative, and not in a limiting sense.

We claim:

1. A battery terminal cable connector comprising a cylindrical body portion having a frusto-conical recess therein adapted to seat snugly on a tapered battery termi-

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nal post, a sleeve adapted for connection to a conductive cable extending laterally from said body, a transverse boss on said body having a bore therethrough intersecting one side of said recess at an intermediate point, a bolt turnable in said bore, said bolt having a first concavity therein extending longitudinally of the longitudinal axis of said bolt, corresponding in curvature to the curvature of the recess and a second concavity coincident with said first concavity but having its axis of curvature at right angles to that of the first concavity, whereby the sides of said first concavity provide sharp longitudinally arcuate edges adapted selectively to engage the terminal post to urge the connector upwardly or downwardly with respect thereto in accordance with the direction in which the bolt is turned.

2. The structure of claim 1 wherein said bolt is provided with a tool engaging head.

3. The structure of claim 1 wherein said bolt extends beyond the length of the threaded bore and a lock nut is positioned on the extending end.

4. The structure of claim 1 wherein said sharp edges of said longitudinal first concavity formed by said transverse second concavity have radii of curvature corresponding substantially exactly to the adjacent radii of the recess when said edges are in alignment therewith.

5. The structure of claim 4 wherein the arc of said second concavity is materially less than the arc of said first concavity.

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