March 1, 1938. E. H. RICHTER 2,110,055

CAP TERMINAL FOR BATTERIES

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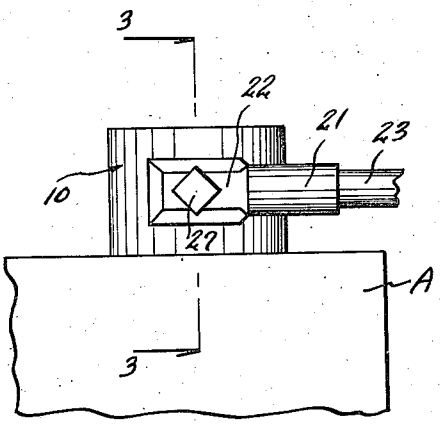



FIG. 1

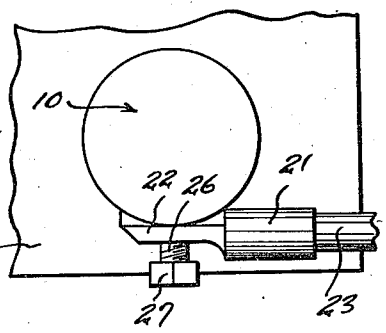



FIG. 2

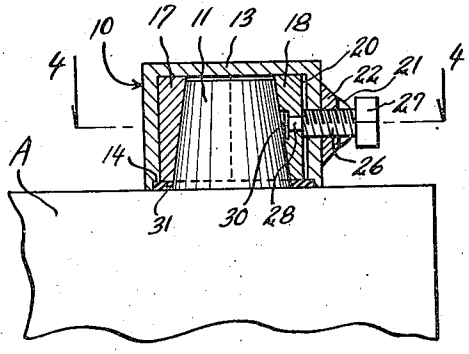



FIG. 3

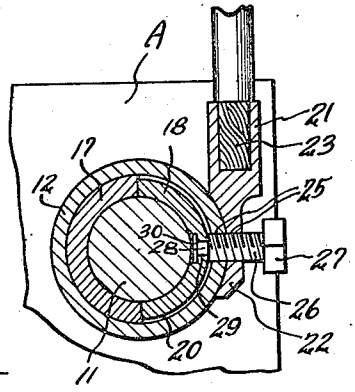



FIG. 4

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## CAP TERMINAL FOR BATTERIES

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Application March 31, 1937, Serial No. 134,078

1 Claim. (Cl. 173—259)

This invention relates to a connecting device and more particularly to an electric conductor or cable terminal connector for a storage battery binding post.

The principal object of the invention is to provide a cap terminal which may be readily and securely attached and detached, the construction of the terminal being such that the release of the same from the binding post may be easily effected even though there be corroding about the contacting parts.

A further object of the invention is to provide a terminal wherein the contact established is such that corrosion will not interfere with the flow of current from the terminal to the conductor.

A still further object of the invention relates to the terminal being adaptable to various sizes of binding posts.

Another object of the invention is the provision of a clamp plate which will be continuously held in a desired position and may not become separated or lost from the terminal.

Still another object of the invention is to produce a terminal which is economical to manufacture, of relatively few parts, of sturdy construction and of maximum efficiency.

With these and other objects in view, the invention consists of certain novel features of construction, as will be more fully described, and particularly pointed out in the appended claim.

In the accompanying drawing forming a part of this specification and in which like numerals are employed to designate like parts throughout the same;—

Figure 1 is a front elevational view of the cable terminal shown mounted on a fragmentary portion of a storage battery,

Figure 2 is a plan view of the cable terminal,

Figure 3 is a vertical cross-sectional view of the same taken on line 3—3, Figure 1, and

Figure 4 is a transverse horizontal cross-sectional view through the cable terminal taken on line 4—4, Figure 3.

With reference to the drawing, the storage battery, only a fragmentary portion of which is shown, is designated by A and is provided with a binding post 11, which viewing Figure 3 is shown to be slightly tapered, this being the conventional shape thereof.

The cable terminal 10 is cap shaped and comprises a metallic cylindrical body 12 which is open at its lower end and is provided with a closed top 13 at its upper end, the whole being of inverted cup-shape, and of a depth slightly greater than the height of the binding post 11. The inside diameter of the cylindrical body 12 is greater than the maximum diameter of the tapered binding post 11. Formed on the inside edge portion of the cylindrical body 12 is an annular shoulder 14, for a purpose to be hereinafter described.

Arranged within the cylindrical body 12 are two curved clamping plates 17 and 18, each being exteriorly of semi-cylindrical shape and preferably of length equal to the distance from the shoulder 14 to the bottom 13. The inside surfaces of the clamping plates 17 and 18 are provided with curved tapered surfaces complemental to the tapered surface of the binding post 11 so as to completely engage the same when in their operative clamped position. Preferably the clamping plate 18 is made of less thickness than the coacting clamping plate 17 so as to provide a clearance 20 between the same and the inside wall of the cylindrical body 12, whereby to permit a lateral movement of the clamping plate 18 for a purpose to be hereinafter described.

The clamping plate 17 is fitted within the cylindrical body 12 and is preferably secured thereto in any desired manner as by rivets, screws or spot-welding (not shown). It is further to be understood that the clamping plate 17 and cylindrical body 12 if desired may be integrally formed by casting the same as one piece.

Arranged exteriorly of the cylindrical body 12 is a tubular stem 21 formed with an integral head 22 which is preferably rigidly secured to the exterior wall of the cylindrical body in any desired manner; both the head and stem being co-extensive, and the whole so mounted that the stem extends outwardly and tangentially with respect to the cylindrical wall 12, midway between the top and bottom thereof, see Figure 1. Secured in any desired manner within the tubular stem 21 is one end of an electrical conductor or cable 23. The integral head 22 in addition to carrying the tubular stem 21, provides a boss for the bolt 26 and a reinforcement for the wall of the cylindrical body member 12 at this point.

Formed both in the head 22 and the cylindrical wall 12 is a coaxial threaded opening 25 in which is provided a bolt 26, having at its outer end a wrench-engaging head 27 and at its inner end a reduced diameter extension 28. The clamp plate 18 is provided with an opening 29 arranged laterally centrally thereof into which the bolt extension 28 fits for rotative movement. To prevent separation of the clamp plate 18 from the bolt 26, the extension 28 is provided with a flattened head 30. It will thus be seen that turning

of the bolt 26 will either move the clamp plate 18 towards or away from the stationary clamp plate 17 depending upon the direction the bolt is rotated, such movement being accommodated by the clearance space 20.

In the position of the parts shown in Figures 3 and 4, the clamp plates 17 and 18 are shown in operative clamping engagement on the binding post 11, thus positively securing the terminal 10 thereto.

To prevent corrosion there is provided a washer 31 which is fitted within the annular shoulder 14 and on which the clamp plates rest, the washer 31 snugly surrounding the bottom of the binding post 11.

From the above it will be apparent that the terminal connector is capable of being quickly attached and applied by the simple expedient of turning the bolt 26 in the proper direction. By providing a greater clearance 20 the terminal 10 may be adapted for use with a great variety of sizes of binding posts. It is to be understood that while a tapered binding post 11 has been shown and the terminal designed for attachment thereto, that the same may be readily modified to fit a binding post of cylindrical shape, and in addition various changes relative to the material, size, shape and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the following claim.

Having thus described a preferred embodiment of the invention, without having attempted to set forth all the forms in which it may be made, or all the modes of its use, what I claim, and desire to secure by Letters Patent, is:—

A terminal for securing a cable to a tapered battery binding post comprising a cylindrical body member open at its bottom and provided with a closed top, a pair of clamping plates having substantially semi-cylindrical outer surfaces arranged within said body member, one clamping plate being fixed to said body member with its outer surface completely engaging the same, the other clamping plate being of less wall thickness to provide a semi-annular clearance within said body member whereby to permit lateral movement towards and away from said fixed clamping plate, said clamping plates being each formed to provide an inside clamping surface of conical contour and adapted to receive therebetween the tapered binding post of the battery, and when in clamped position thereon said clamping plates abut each other with the inside clamping surfaces thereof completely surrounding said binding post, said clamping plates being each of the same height and having a length less than that of said cylindrical body member, and screw means rotatably attached to said movable clamping plate and extending through the wall of said body member for moving said clamping plate into and out of clamping engagement with said binding posts, said clamping plates in the mounted position of the terminal on the binding post engaging at their upper ends the inside surface of the top of said cylindrical body member, the lower ends of said clamping plates terminating short of the bottom edge of said cylindrical body member to provide a washer receiving pocket.

EMIL H. RICHTER.