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BATTERY TERMINAL AND CABLE CLEANING BRUSH

Filed Aug. 18, 1960

FIG. 1.

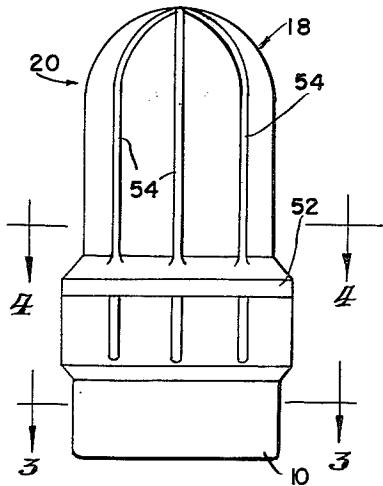


FIG. 2.

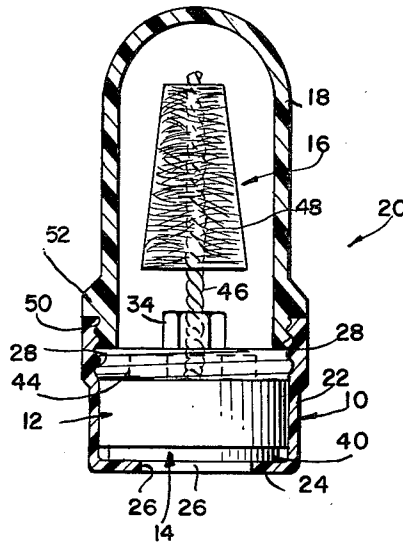


FIG. 3.

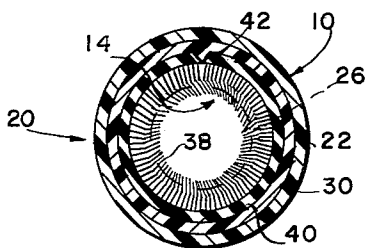


FIG. 4.

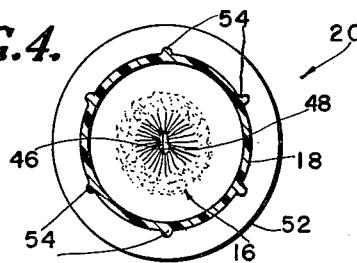


FIG. 5.

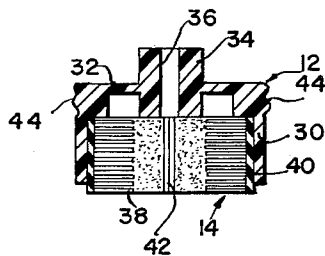
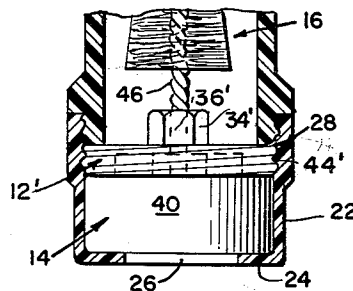


FIG. 6

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BATTERY TERMINAL AND CABLE CLEANING BRUSH

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This invention relates to cleaning devices of the type particularly adapted for cleaning battery terminals and connectors.

An object of the invention is to provide a novel battery terminal and connector cleaning device utilizing two kinds of brushes, one for the terminal and one for the connector, and so constructed and arranged as to facilitate replacement of either of the two types of brushes.

Another object is to provide a simplified and compact construction for cleaning devices of the character described and wherein the parts may be conveniently assembled and disassembled to permit replacement of parts.

A further object resides in the provision of an improved, durable and inexpensive cleaning device of the type described.

According to the invention, the cleaning device includes a base member and a brush holder removably connected together. An annular or female brush preferably formed of metallic or steel wires is disposed within the base member and retained therein by the brush holder, while the brush holder, itself, carries a second or male cleaning brush also preferably formed of metallic or steel wire. A cover is provided for the male brush, and this cover is designed to be removably engaged to the base member. In the preferred embodiment of the invention, to be described in more detail hereinafter, the base member is provided with a common internally threaded portion designed to be threadably engaged by external threads on the brush holder and cover, whereby the cover and brush holder may be conveniently removed from the base member, if desired, thus facilitating cleaning, repair, or replacement of parts.

Further objects and advantages of the invention will be in part obvious and in part pointed out hereinafter.

The novel features of the invention may be best made clear from the following description and accompanying drawings in which:

FIGURE 1 is an elevational view of a battery terminal and connector cleaning device embodying the invention;

FIGURE 2 is a partially, vertically sectioned view of the device as shown in FIGURE 1;

FIGURE 3 is a horizontal sectional view taken generally along line 3—3 of FIGURE 1;

FIGURE 4 is a horizontal sectional view taken generally along line 4—4 of FIGURE 1;

FIGURE 5 is a longitudinal vertical sectional view of one embodiment of the brush holder with a female or annular cleaning brush arranged therein;

FIGURE 6 is a cross-sectional view of another embodiment of the brush holder.

Referring now to the drawing, the illustrative embodiment of the invention there shown comprises a base member 10, a brush holder 12, a female cleaning brush 14, a male cleaning brush 16 and a cover 18, constituting the cleaning device 20. The base member 10 is shown as being of cup-shaped configuration having cylindrical side walls 22 and a web or intumed flange 24 at one end thereof and formed with or defining a centrally disposed aperture 26 therein. At the other end of the base member, there are provided internal threads 28, as best seen in FIGURE 2.

The brush holder 12, as best seen in FIGURES 2, 3

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and 5, is also of cup-shaped configuration including a cylindrical skirt 30, and a web 32 including a boss 34 having a pilot hole 36 therein. The stem of the male cleaning brush 16 will be mounted in the pilot hole 36, and the female cleaning brush 14 will be disposed within the cylindrical skirt 30, as will be described in more detail hereinafter.

As best seen in FIGURES 3 and 5, the female cleaning brush 14 may be a conventional card cloth brush, which may be made by tempered steel wires 38 stapled into a flexible cloth and rubber backing 40. Such a card cloth brush will normally come in strips of a length designed to be formed into an annulus of a size to fit within the cylindrical skirt 30 of the brush holder 12. The brush holder 12 is also shown as being formed with a rib 42 on the inside of the skirt portion 30 and extending throughout the height thereof so as to be engaged by the ends of the backing 40 of the female cleaning brush 14. By reason of this rib 42, the backing 40 will be prevented from rotating relative to the skirt 30 during use.

The upper end of the brush holder 12 is shown as being formed with external threads 44 thereon designed to be engaged to the internal threads 28 of the base member 10, and the upper part of the boss 34 is shown in FIGURE 2 as being hexagonal in configuration so as to be engaged by a suitable tool, if desired, in tightening the brush holder 12 in position on the base member 10, or for removing same therefrom, as will be evident.

When the brush holder 12 with the female brush 14 therein is mounted in the base member 10 in the position shown in FIGURES 2 and 3, the female cleaning brush 14 will define a hole coaxial or concentric with the aperture 26 in the web 24 of the base member whereby a battery terminal or the like may be cleaned by inserting the terminal through the aperture 26 and into the hole defined by the cleaning brush 14, and then moving the brush 14 relative to the terminal, as is evident.

The male cleaning brush 16 may be of the conventional construction shown in FIGURES 2 and 3 including a twisted wire stem 46 with wire bristles 48 held between the twists of the stem and trimmed so as to provide a generally conical shape, as shown. The stem 46 is designed to be mounted in the pilot hole 36 in the brush holder 12, as indicated above. It is preferred that both the brush holder 12 and the base member 10 be made of a plastic, for example, a high impact polystyrene, and an exemplary procedure for arranging the stem 46 of the brush 16 in the pilot hole 36 of the brush holder 12 is as follows: the stem 46 of the brush 16 is first heated in any suitable manner and to a somewhat elevated temperature, for example, to about 650° F. The heated stem 46 is then inserted into the pilot hole 36 which preferably is slightly smaller in diameter than the diameter of the stem 46 of the brush. As the hot stem 46 is forced into the pilot hole 36, it will cause some of the plastic to melt whereby the stem 46 may be pushed farther into the hole 36 until the bottom of the stem is disposed at about the bottom of the hole. At this time, the parts are allowed to cool, and during such cooling, the plastic in the boss 34 of the brush holder 12 will solidify so as to tightly and firmly retain the brush 16 in position on the brush holder.

The cover 18 preferably is also made of plastic, such as a high impact polystyrene, and is provided with external threads 50 at the open lower end thereof for engagement to the upper portion of the internal threads 28 on the base member 10, as indicated in FIGURE 2. An annular shoulder 52 is also formed on the cover 18, and this shoulder is designed to engage the upper end of the base member 10 when the two parts are threadably connected together. Ribs 54 are shown as

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being provided around the cover for strengthening purposes, and six of these ribs 54 may be arranged on the cover, spaced approximately 60° from each other, as indicated in FIGURE 4.

As will be apparent, when it is desired to clean a battery connector, the male brush 16 will be utilized by inserting same into the female battery connector (not shown).

By virtue of this construction, it will be appreciated that the brush holder 12 may be conveniently connected to or disconnected from the base member 10 whereby the female brush 14 may be replaced. It is contemplated that, if desired, the brush holder 12 with the brushes 14 and 16 connected thereto, as shown, may be sold as a replacement unit to be used with an existing base member 10 and cover 18, and to replace a brush holder having worn out brushes.

FIGURE 6 illustrates a modification of the brush holder shown in FIGURE 5, and similar reference numerals have been used to designate similar parts. The brush holder 12' is shown as being identical to the brush holder 12, except it does not include the cylindrical skirt portion 30. It is intended that the stem 46 of the male brush 16 be mounted in the pilot hole 36' of boss 34', in the same manner as that described above. With this type of brush holder, the card cloth or female brush 14 will be arranged in the base member 10 so that the backing 40 of the brush directly engages the inside of the cylindrical walls 22 of the base member, with the wires 38 again defining a hole concentric or coaxial with the aperture 26 for reception of the battery terminal. The brush holder 12' will again be threadedly connected to the threads 28 on the base member 10, and will be screwed thereinto preferably until it engages the upper end of the female brush 14. Thus the brush 14 will be retained between the flange or web 24 of the base member 10 and the brush holder 12'. Although not shown, the cylindrical portion 22 of the base member 10 may be provided with a rib, such as the rib 42 provided on the skirt portion 30 of the brush holder 12 in FIGURE 5 in order to engage the ends of the backing 40 of the female brush 14, as discussed above, in the event that the brush holder 12' of FIGURE 6 is to be utilized therewith. However, such a rib may be omitted and relative rotation between the female brush 14 and the base member 10 prevented by tightening the brush holder 12' against the brush backing 40 to increase the frictional resistance against such rotation.

The present invention will thus be seen to completely and effectively accomplish the objects enumerated hereinabove. It will be realized, however, that various changes and substitutions may be made to the specific embodiments disclosed herein for the purpose of illustrating the principles of this invention, without departing from these principles. Therefore, this invention includes all modifications encompassed within the spirit and scope of the following claims.

What is claimed is:

1. A cleaning device of the character described comprising: a hollow cylindrical base member opened at both ends, said member including a radially inwardly extending annular flange means at one end thereof and internal threads adjacent the other end thereof; an annular brushing element removably arranged in said base member in concentric relation therewith with its bristles extending inwardly; a brush holder having external threads thereon removably threadedly engaged to said internal threads of said base member and coacting with said flange means to retain said brushing element in said base member; an elongated hollow cover of sufficient length to be manually grasped and thereby operative to shield another brush carried by said brush holder within its hollow interior when so grasped, said cover including external threads formed at said open end thereof and

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being removably threadedly engaged to said internal threads of said base member and outwardly of said brush holder, whereby said annular brush is operative for cleaning battery terminals and the like when the elongated cover is manually grasped, and said annular brushing element can be replaced by removing said elongated cover and said brush holder from said base member.

2. The structure defined in claim 1 wherein said brush holder is of inverted cup-shaped configuration.

3. The structure defined in claim 1 wherein said brush holder is of generally disc-shaped configuration.

4. A cleaning device of the character described comprising: a cup-shaped base member having cylindrical side walls and a centrally apertured web at one end thereof; a cup-shaped brush holder removably threaded concentrically within said base member with said member and said holder being in inverted relation to each other; an annular brushing element disposed concentrically in said holder and between the webs of said holder and said member with its bristles extending inwardly; and an elongated cover of hollow construction having an open end exteriorly threaded for removable engagement with said base member adjacent said brush holder, said elongated cover being of sufficient length to be grasped and thereby afford protection from a male brush element carried by said brush holder therein.

5. The structure defined in claim 4 wherein said holder and said member are made of plastic.

6. The structure defined in claim 4 wherein said base member includes internal threads at the open end thereof opposite its web, and said brush holder and said cover including external threads removably threadedly engaged to said internal threads.

7. The structure defined in claim 6 wherein said internal threads are continuous, with the external threads on said holder being in engagement therewith inwardly of the external threads on said cover.

8. A cleaning device of the character described comprising: a hollow cylindrical base member for receiving an annular brushing element having a radially inwardly extending flange means at one end thereof defining an aperture; a brush holder removably threaded to said base member at the end of said base member opposite said flange means; said brush holder including a concentric nut-like, wrench-engageable boss extending oppositely from the apertured end of said base member; a male brushing element secured to said boss in oppositely extending relationship to said base member; an elongated hollow cover having an open end exteriorly threaded for engagement with said base member adjacent said brush holder; said cover being of hollow construction and of sufficient length to be manually grasped and thereby operative to shield said male brushing element carried therein.

9. The structure defined in claim 1 including a nut-like boss mounted in concentric relationship on said brush holder opposite said base member whereby said brush holder may be secured within said base member by a wrench.

10. The structure defined in claim 4 including a concentric, nut-like boss on said brush holder opposite said brushing element whereby said brush holder may be secured within said base member by a wrench.

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