

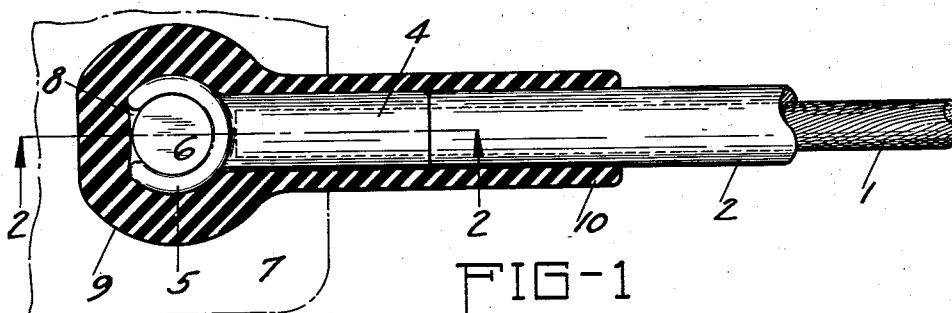
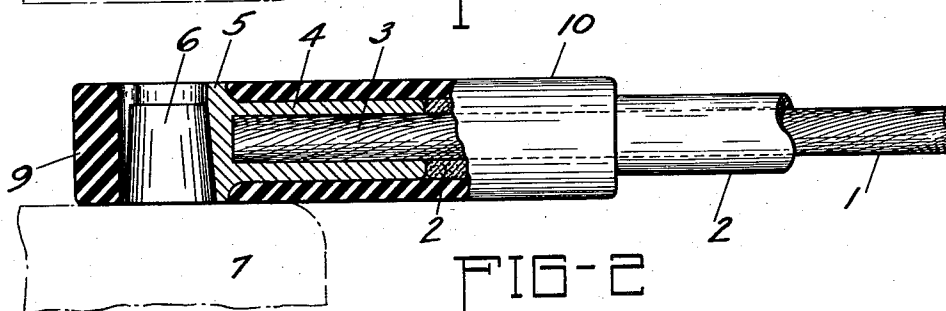
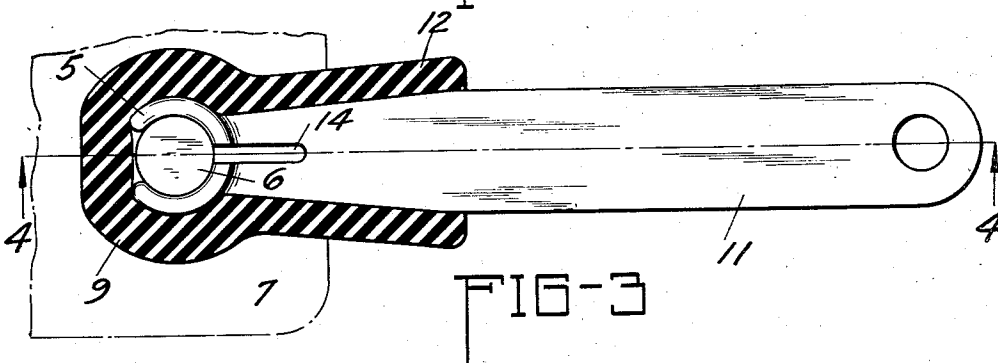
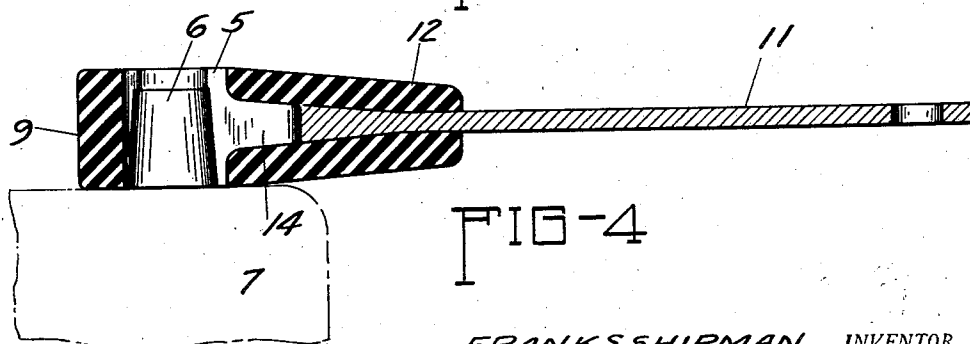
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BATTERY CONNECTOR

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2,160,422

BATTERY CONNECTOR

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4 Claims. (Cl. 173-259)

The present invention relates to a connector and more especially a connector of the type used with storage batteries. It is a well known fact that, in such connectors, when there are two metals of different characteristics which are subject to the fumes rising from the battery and these metals are in contact, there is a local action set up between the metals, as well as a chemical reaction between the acid fumes and one or more of the metals. It is also a well known fact that the sulphuric acid of the battery and the fumes therefrom do not react upon lead. If a non-lead connector engages the lead terminal or post of the battery, then there will be local action and corrosion between these metals, due to the acid or fumes rising from the battery. As ordinarily constructed, the head of the connector has means provided for clamping the head to the battery post, including as a part thereof a bolt formed from a non-lead metal. As a result of this, there is always corrosion and the formation of a chemical salt, commonly copper sulphate, around the post of the battery.

Generally speaking, therefore, it is the purpose of this invention to provide a connector for a battery which may be securely attached to a battery post and which will not be subject to corrosion. More specifically, the objects of this invention comprise the provision of a battery connector having a non-corrodible head for attachment to a battery post; the provision of a battery connector which has non-corrodible means for attaching same to a battery post and holding it securely attached thereto; the provision in a bi-metallic battery connector of means for preventing corrosion of either or both of the metals at the point of junction thereof; the provision of means for effectively securing a mono-metallic battery connector to a battery post; and such further objects, advantages, and capabilities as will hereafter appear and as are inherent in the construction disclosed herein. My invention further resides in the combination, construction, and arrangement of parts illustrated in the accompanying drawing and, while I have shown therein what is now regarded as the preferred embodiment of this invention and a single modification thereof, I desire the same to be understood as illustrative only and not to be interpreted in a limiting sense.

In the drawing annexed hereto and forming a part hereof,

Fig. 1 represents a fragmentary, partially sectional view of a connector embodying my present invention;

Fig. 2 represents a fragmentary, partially sectional view of the structure shown in Fig. 1, as if taken along the plane indicated by the line 2-2, Fig. 1;

Fig. 3 represents a partially sectional view of a modified form of this invention;

Fig. 4 represents a vertical section taken substantially along the plane indicated by the line 4-4, Fig. 3.

Reference will now be made in greater detail to the annexed drawing for a more complete description of this invention. In the structure shown in Figs. 1 and 2, a cable 1, covered by a non-corrodible covering 2, has the covering 2 removed from an end section, as shown at 3. This end section is inserted in the sleeve 4 which projects from one side of the head 5 and, essentially, forms a part thereof. This head 5 partially encircles the post 6 of the battery 7 and is provided with a slit 8 which permits the head 5 to open up and to be compressed tightly against the post 6, when applied thereto. Since lead is not corrodible by the acid fumes given off by the battery, it is preferable to make the sleeve 4 and head 5 of lead. The part which surrounds and exerts an inward pressure upon the head 5 is preferably made of contractile rubber shaped into a ring 9 and from this extends a tubular sleeve 10 which, in the completely assembled structure, surrounds the sleeve 4 and the end portion of the cable covering 2, fitting both tightly so as to prevent access of the acid fumes to the cable 3 at the junction between the sleeve 4 and the adjacent end of the covering 2.

The preferable way to assemble this structure is to insert the cable 1 and its covering 2 through the sleeve 10, passing the same outwardly through one side of the ring 9 so that the sleeve 4 may be slipped over the stripped end 3 of the cable. After this has been done, the sleeve 4 is compressed upon the end of the cable very tightly so as to force a little of the lead between the strand of the cable. This makes a more or less permanent joint between the two, and the cable and the sleeve can now be slid back into position in the rubber sleeve 10, as shown in Figs. 1 and 2, the head 5 assuming its proper position within the ring 9. Since the ring 9, when not under internal stress, is smaller internally than the head 5, when applied to the post 6, the rubber tends to contact the head 5, when assembled. Therefore, when the head 5 is applied to the post 6 and forced into position, it is expanded because of the tapered form of the post. This enlarges the head 5 and consequently distends

the ring 9. On account of this, the natural contractility of the rubber will hold the head 5 in tight engagement with the post 6.

The cable 1 is normally made of stranded copper but it is of course understood that it may be made of other non-lead conducting material and may be made in any desired form, as circular, oval, or flat cross-section. In the construction shown in Figs. 3 and 4, the conducting element 11 is shown as formed integrally with the head 5, and it should therefore be made of non-corrodible material. If the head 5 is made of lead, then the connector 11 should also be of lead. In this construction, the assembly is similar to the assembly of the structure shown in Figs. 1 and 2. However, the sleeve 12, which replaces the sleeve 10, is preferably made of substantially the form which it will have in the assembled product. But, the size will be small enough so that it will fit snugly around the parts 5 and 11. It is noted that in this construction a slot 14 is provided which enables the head 5 to be more readily compressed against the post 6. It is of course understood that the part 11 need not necessarily be homogeneous with the part 5, provided the junction between the two is encased within the sleeve 12 so as to prevent access of the acid fumes to the joint between the metals.

Another method of assembly which may be followed but which is not regarded as being as good as that described above is to make the unit 4, 5 and connect it to the end of the cable 1 and then compress the part 5 so as to reduce the transverse dimension thereof to a point sufficiently less than the diameter it will have, when in use, so that the ring 9 will have to be quite noticeably distended when the connector is applied to the post 6. After the assembly of this unit, the rubber may be moulded about the head and the end portion of the covering 2 to form the structure illustrated in Figs. 1 and 2. Now, when the rubber is properly cured, it will tend to hold the part 5 against distention to fit the post 6. However, the head or partial ring 5 may be forced on the post 6, thus distending the ring 9. Therefore, the ring 9, by its contractility, causes the partial ring 5 to grip the post 6 and hold the parts tightly assembled. If it should be desired, the rubber may be extended across over the smaller end of the opening through the part 5. This same method of construction could be used in connection with the form illustrated in Figs. 3 and 4.

It is of course understood that the specific description of structure set forth above may be departed from without departing from the spirit of my invention as set forth in this specification and the appended claims. It is intended to claim, both broadly and specifically, the various novel subject-matter disclosed herein, and I therefore desire that failure to insert any claim commensurate with the scope of my invention be not construed as an abandonment thereof.

Having now described my invention, I claim:

65 1. A battery connector comprising a ferrule

formed of a lead-like metal, said ferrule having a slot therein extending from end to end and the inner surface thereof being tapered to conform to a battery post, a conductor secured to said ferrule, and a cover of rubber-like material covering the junction between the ferrule and the conductor and extending therefrom along the conductor, said cover also comprising a ring surrounding said ferrule and open at least at one end of the ferrule, said ring being small enough and strong enough to deform the ferrule to a size smaller than the battery post, whereby when said connector is placed on a battery terminal the ferrule is held in tight engagement with said post.

2. A battery connector comprising a ferrule formed of a lead-like metal, said ferrule having a slot therein extending from end to end and the inner surface thereof being tapered to conform to a battery post, a conductor secured to said ferrule, and a cover of rubber-like material covering the junction between the ferrule and the conductor and extending therefrom along the conductor, said conductor at its end opposite said ferrule being formed for the attachment of a cable, said cover extending along said conductor a sufficient distance that it covers the point of attachment of said conductor and said cable, said cover also comprising a ring surrounding said ferrule and open at least at one end of the ferrule, said ring being small enough and strong enough to deform the ferrule to a size smaller than the battery post.

3. A battery connector comprising a ferrule formed of a lead-like metal, said ferrule having a slot therein extending from end to end and the inner surface thereof being tapered to conform to a battery post, a flat conductor secured to said ferrule, and a cover of rubber-like material covering the junction between the ferrule and the conductor and extending therefrom along the conductor, said conductor extending substantially beyond said cover and being formed at its ends for the attachment of a cable, said cover also comprising a ring surrounding said ferrule and open at least at one end of the ferrule, said ring being small enough and strong enough to deform permanently the ferrule to a size smaller than the battery post.

4. A battery connector comprising a ferrule formed of a lead-like metal, said ferrule having a slot therein extending from end to end and the inner surface thereof being tapered to conform to a battery post, a conductor secured to the outer surface of said ferrule and extending substantially perpendicularly to the axis of said ferrule, and a cover of rubber-like material covering the junction between the ferrule and the conductor and extending therefrom along the conductor, said cover also comprising a ring surrounding said ferrule and open at least at one end of the ferrule, said ring being small enough and strong enough to deform the ferrule to a size smaller than the battery post.

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