June 2, 1959 W. H. MARSHALL 2,889,391

CAPPING MEANS FOR STORAGE BATTERY

Filed Aug. 19, 1957

Fig. 1

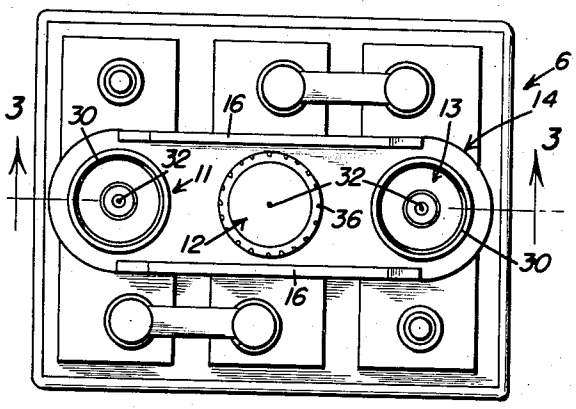


Fig. 2

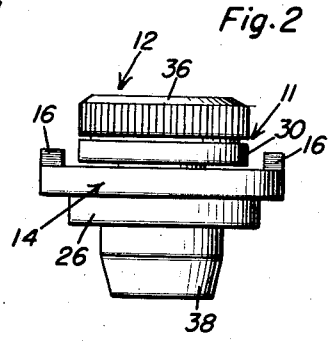


Fig. 3

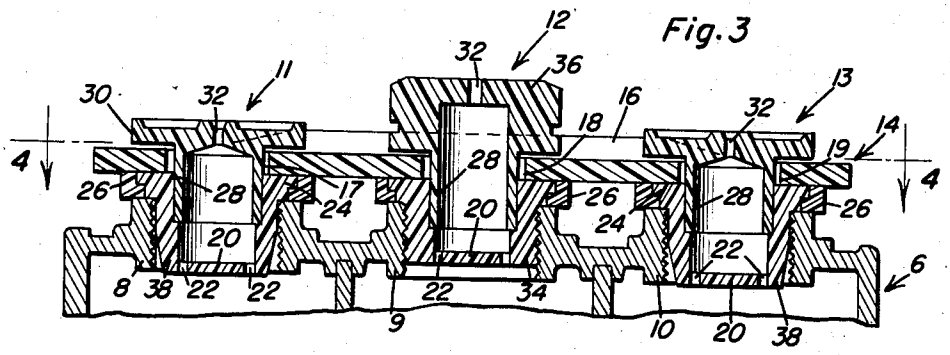


Fig. 4

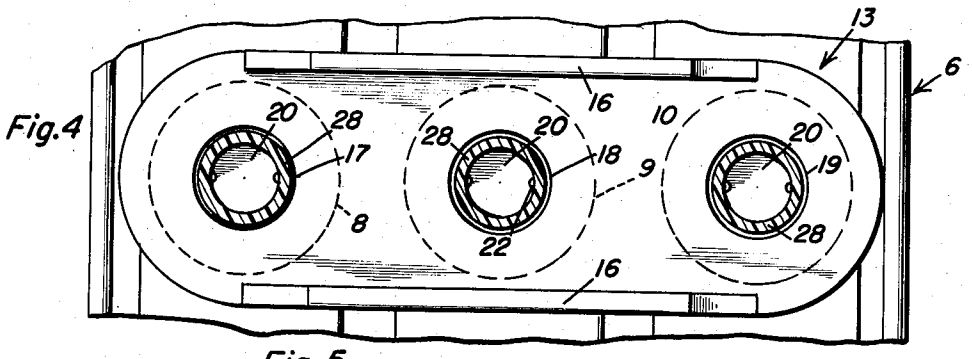
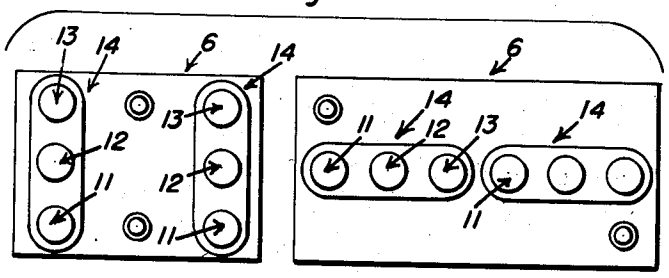


Fig. 5



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CAPPING MEANS FOR STORAGE BATTERY

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2 Claims. (Cl. 136—170)

The present invention relates, broadly speaking, to cell capping means for a conventional-type storage battery, such as under ordinary circumstances, is characterized by individually capped screw-threaded filler necks or openings. More particularly, the invention pertains to specially constructed caps for closures for the respective necks wherein said closures are linked together in such a way that by unscrewing a single one of the caps, the several linked caps may be simultaneously removed or applied, as the case may be.

The preceding general statement of the nature of the invention is not intended to convey the impression that adjoining several closing caps, closures or plugs together for application and removal as a group is new. As a matter of fact, one Riedesel invented a similar adaptation covered in Patent 2,281,800, of May 5, 1942. It follows that an objective in the instant matter is to structurally, functionally and otherwise improve upon the Riedesel patent and any other similar constructions, if any, and to do so in a manner to better achieve the results desired. To this end, the linking plate or equivalent panel has several longitudinally spaced holes therein. The several distinct closures are swivelly and also movably mounted on the panel by way of these holes. The holes are larger in diameter than the outside diameter of the portions of the closures passing therethrough providing clearance requirements which make possible the adapting of the plug portions of the closures to their respective filler necks so as to cope with the lack of uniform spacing which sometimes exist in mass produced battery casings.

Stated along slightly different lines of approach the invention comprehends a storage battery having a plurality of separate cells each having a collar-like screw-threaded filler opening; comprising a cap assembling, linking and supporting panel which is adapted to span said filler openings, said panel having spaced holes which are registerable with their respective filler openings, a closure for each filler opening, each closure embodying a vented plug, said closures being swivelly and movably mounted in their respective holes, whereby said closures are all movable relative to each other as well as said panel.

Other objects, features and advantages of the invention will become more readily apparent from the following description and the accompanying illustrative, but not restrictive, drawing.

In the accompanying drawing, wherein for purpose of illustration, is shown a preferred embodiment of the invention, and wherein; like numerals are employed to designate like parts throughout the views of the same:

Fig. 1 is a top plan view of a storage battery having the improved capping means.

Fig. 2 is an enlarged end view of the capping means which is also sometimes construed as a multiple cap-equipped attachment.

Fig. 3 is a central longitudinal sectional view on an

enlarged scale taken on the plane of the line 3—3 of Fig. 1, looking in the direction of the arrows.

Fig. 4 is a horizontal section on the line 4—4 of Fig. 3.

Fig. 5 is a simple diagrammatic view which gives some idea of how the closure devices or means may be employed singly or collectively on either three-cap or six-cap storage batteries with the caps all in line or in separate lines depending on the prevailing trade practices.

Referring now to the views of the drawing with reference numerals and lead lines the battery shell or casing is denoted by the numeral 6. As seen in Fig. 5 the battery casings vary and hence no special effort will be made here to dwell upon varying constructions. It will suffice to say that the individual cells in the battery case have top filler openings or necks 8, 9 and 10 as shown for example in Fig. 3. The necks are more or less standard and in practice have individual screw caps plugged in place (not shown). In the instant adaptation the regular plug-type caps will be dispensed with and improved caps or closures substituted. In the arrangement seen in Figure 3 there are three caps or closures and these are individually denoted by the numerals 11, 12 and 13 respectively. As before mentioned the several closures are interconnected by way of a linking plate or panel 14. This part 14 is a simple flat plastic plate having reinforcing flanges 16 along its marginal edges. It is provided at longitudinally spaced points with holes or openings 17, 18 and 19 of prescribed diameter as perhaps better shown in Fig. 4. As brought out in Fig. 3 the several closures or caps 11, 12 and 13 are mounted in their respective holes 17, 18, and 19. The two end closures are the same in construction and basically the center closure is the same but has slight structural distinctions. Generically each closure comprises a plug which is located beneath the linking panel and has a bottom 20 with vents 22 and has a flanged upper end 24 the overhanging portion of the flange carrying a suitably grooved or channeled pliant packing ring or gasket 26. Each plug is hollow and internally shouldered to accommodate a depending telescoping sleeve 28 on the cap portion 30, the latter being provided with a central vent 32. It will be noticed that in each instance the sleeve 28 is of a lesser outside diameter than the diameter of the hole in which the sleeve is fitted. The sleeve is telescoped and adhesively or otherwise secured in the shouldered portion of the plug. Thus, each "closure" or "cap" as the case may be comprises a plug portion and a cap portion with two portions secured together and forming a unit and the upper flanged end of the plug portion is marginally provided with a packing ring. Each thus constructed closure is freely movable in the hole in which it is mounted so that it is possible to turn it freely and sufficient leeway or clearance is provided to render the closure self-adjusting in relation with the linking plate or panel 14.

It will be evident particularly from Fig. 3 that the center or control plug 34 is screw-threaded and screws into the filler neck 9. The finger-grip on the cap, as denoted at 36, is slightly enlarged to serve as a handle or grip for the over-all assembly. The inner ends of the end plugs are slightly tapered and of course are non-threaded as denoted at 38. Thus, the one control plug 12 facilitates applying and removing the over-all capping or closure means. In addition to the play existing between the holes 17, 18 and 19 and the sleeves 28 it will be evident that there is also a clearance space provided between the gasket 26 and cap 30. The clearance space is seen in Fig. 3 when the device is in its operating position. This freedom of action between the cooperating components is the very essence of the inventive concept and makes the difference, an important difference

indeed, between this invention and the aforementioned patent or any similar prior art adaptations.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A storage battery having a plurality of screw-threaded filler necks upstanding therefrom, a plurality of separate and independent hollow plugs insertable into said necks respectively and having externally flanged outer ends adapted to seat on said necks, a vented closure cap for each plug, said caps including sleeves telescopically fitted and fixed in said plugs and having flanged outer ends spaced from said flanged ends of the respective plugs, and a connector plate interposed between the flanged ends of the plugs and the flanged ends of the sleeves and wholly separate from said sleeves, one of the plugs being threaded into its respective neck for turning therein by its respective closure cap to press said plate against the flanged ends of the other plugs and force said other plugs into the necks, said plate having apertures therein surrounding and larger than said sleeves and said plate being thinner than the spaces between the flanged ends of the plugs and the flanged ends of the sleeves to provide for self-centering movement of said other plugs in the necks while being forced into said necks.

2. A storage battery having a plurality of conventional-type internally screw-threaded filler necks rising from a top wall of the case of said battery, unified capping and closing means for said filler necks comprising

an elongated linking plate provided with a plurality of longitudinally spaced openings, and a capping and closing device for each opening comprising a hollow plug which is adapted to fit removably into a cooperating opening, said plug being disposed at one side of said plate and having a flanged end portion parallel with said one side and provided marginally with a packing ring, said flanged end and packing ring adapted to reside in contact with the cooperating end of the filler neck, a cap which is centrally vented and provided with a gripping and operating flange, said flange disposed in parallelism to the cooperating other side of said plate, said cap having an axial neck lateral thereto, said neck extending through the cooperating opening and fitting telescopically into the plug and being affixed to the plug, the cooperating opening being of a diameter larger than the cross-section of the sleeve, there being an annular space of fixed dimension existing between the flanged end of the plug and flange on said cap and the cross-sectional thickness of the plate being less than the distance of the space between the cap flange and the flanged end of the plug, whereby each device is not only free to swivel in the opening but may be bodily moved relative to the plate and thus rendered self-centering and self-adjusting.

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