March 19, 1963 W. T. SCHUSTER 3,082,286

WATER-SUPPLYING DEVICE FOR STORAGE BATTERIES

Filed Nov. 18, 1960

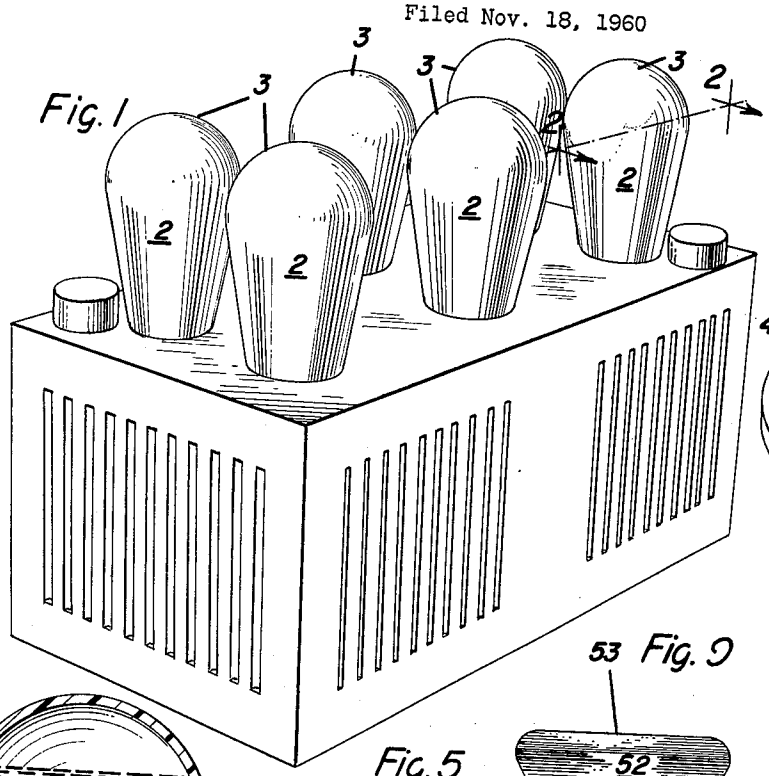


Fig. 1

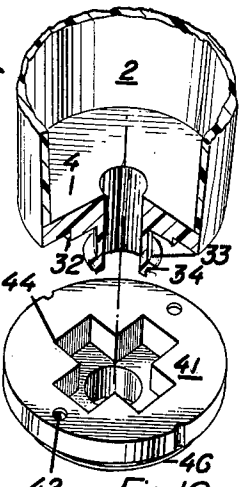


Fig. 10

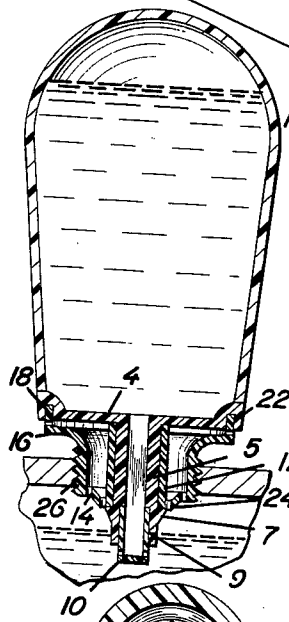


Fig. 2

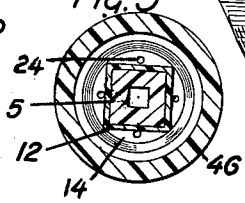


Fig. 5

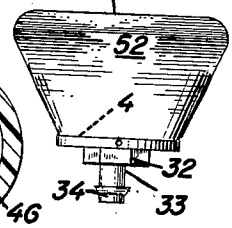


Fig. 9

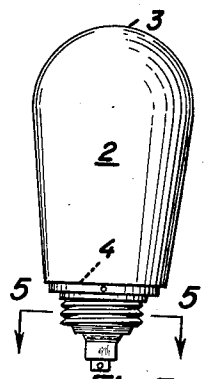


Fig. 3

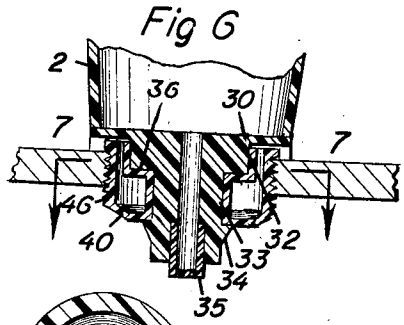


Fig 6

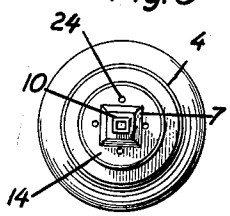


Fig. 4

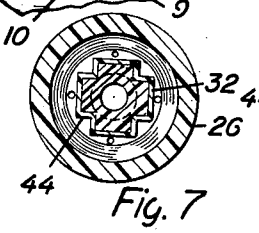


Fig. 7

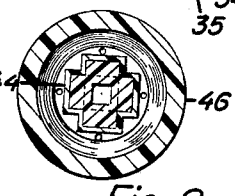


Fig. 8

INVENTOR

William T. Schuster

by Robert U. Geil, Jr.

ATTORNEY

United States Patent Office 3,082,286 Patented Mar. 19, 1963

3,082,286
WATER-SUPPLYING DEVICE FOR STORAGE BATTERIES

William T. Schuster, Wiesbaden, Germany, assignor of one-half to Alice G. Schuster, Camp Hill, Pa.

Filed Nov. 18, 1960, Ser. No. 70,154
7 Claims. (Cl. 136—162)

The present invention relates to water-supplying devices for storage batteries, and particularly to those which are formed of polyethylene and similar plastic materials.

Polyethylene and equivalent materials readily lend themselves to usage in syringes, etc., since they are readily squeezeable yet susceptible of quickly assuming their initial form; and, accordingly, have frequently been employed in the formation of the reservoir or water-containing part of devices of the type contemplated by the teachings of the present invention. It has been found, however, that screw-threads formed on such materials (i.e., polyethylene) possess very limited structural strength.

It is among the objects of the invention to provide a novel water-supplying device for storage batteries which utilizes the desirable characteristics of polyethylene and the like, while at the same time overcoming the disadvantages referred to immediately hereinbefore.

Another object is the attainment of the foregoing advantages in a device which will not readily slip from between the fingers of the hand of one who is servicing the battery.

The invention, then, comprises the features hereinafter fully described and as particularly pointed out in the claims, the following description and the annexed drawings setting forth in detail certain illustrative embodiments of the invention, these being indicative of but some of several ways in which the principles of the invention may be employed.

In said drawings:

FIGURE 1 is an isometric view of a conventional storage battery with each of the six (6) cells thereof equipped with a device which embodies the teachings of the present invention, the same being shown as seating in flush relationship thereon;

FIGURE 2 is a sectional elevation illustrating a specific embodiment;

FIGURE 3 is an elevational view of the embodiment of FIGURE 2;

FIGURE 4 is a bottom view of the showing of FIGURE 3;

FIGURE 5 is a sectional view taken on the line 5—5 of FIGURE 3;

FIGURE 6 is a fragmentary sectional view of a modified form of the present invention;

FIGURE 7 is a sectional view taken on the line 7—7 of FIGURE 6;

FIGURE 8 is a view similar to FIGURE 7, but disclosing another modification;

FIGURE 9 is an elevational view similar to FIGURE 3, but disclosing a further modification; and

FIGURE 10 is a fragmentary exploded view, partly in section, and further illustrating the manner in which certain upper and lower parts of the device interlock and cooperate.

Referring more particularly to the drawings, the reservoir or water-containing upper part of the device of the present invention is generally indicated at **2**; and, in FIGURES 1, 2 and 3, is shown as being of the shape which is covered by my Design Patent No. 184,539, dated March 3, 1959. That is, the major body portion of the reservoir is of inverted truncated coniform shape, substantially circular in transverse cross-section, and with a dome-shaped upper end.

The aforementioned reservoir or water-containing upper part **2** is formed of polyethylene or equivalent plastic material which is readily squeezeable and susceptible of quickly returning to its initial, or undistorted, shape.

The top and side-wall of the reservoir **2** are relatively thin in order to provide the characteristics referred to immediately hereinbefore.

The bottom wall **4** may be of the same wall thickness as the side-walls and top of the bulbous upper portion of the water reservoir, or may be thickened, as desired. In any event, a centrally disposed tubular body member **5** of reduced diameter depends from the bottom wall **4** and is shown in FIGURE 5 as being rectangular in transverse cross-section and possessed of a correspondingly shaped central bore which communicates with the interior of the reservoir.

In the embodiment illustrated in FIGURE 2, the lower portion of the body member **5** (which depends axially from the underside of the bottom wall **4**) is shown as provided on its periphery with an outwardly flared flange **7**, the upper face of which forms a horizontally extending ledge, the purpose of which will be more fully described hereinafter.

A removable tubular extension **9** is disposed to extend into, and snugly occupy the bore of, the tubular body member **5**; and its lower end provided with a closure. As shown in FIGURES 2 and 5, the lower portion of the bore of the tubular body member may, if desired, be enlarged to receive a tubular extension **9** of larger outside diameter than would otherwise be the case. This tubular extension **9** is adapted to depend downwardly below the normal level of the liquid (water and electrolyte) in the battery in the manner well known in the art, and its lower side-wall has a series of radial apertures which permit the flow of water therethrough.

As indicated earlier herein, the teachings of the present invention contemplate a relatively rigid lower part comprising a peripherally screw-threaded portion for cooperation with the interiorly screw-threaded water-filling opening(s) of the battery; the said lower part being preferably composed of material which is more satisfactorily, and durably, threaded than the material of the readily squeezable reservoir **2**.

I have found that a polyethylene upper part and polystyrene lower part cooperate most satisfactorily, this combination being one of the important features of the present invention.

The aforementioned lower part (polystyrene) comprises a tubular sleeve **12** which is adapted to telescope over the tubular body member **5** with its lower end resting upon the horizontally extending ledge provided by the upper face of the flared flange **7**. The interior of the tubular sleeve **12** is of such size and shape as to permit a snap-on fit or engagement with the tubular body member **5**.

The lower end of the tubular sleeve **12** is provided with an outwardly and upwardly extending skirt **14**, the upper end of which has a radial extension **16**, the mid-portion of said skirt having a thickened sidewall and being generally cylindrical, as shown. This radial extension **16** is provided with an upwardly extending annular ring **18** which is adapted to seat in a circular recess **22** on the underside of the bottom **4** of the water reservoir.

As will be observed in FIGURE 2, the exposed portion of the upwardly extending annular ring **18** is radially apertured, as shown, thus completing air-venting from the upper portion of the interior of the battery to the atmosphere.

The lower end of the upwardly and outwardly extending skirt **14** is provided with downwardly extending apertures **24** and the generally cylindrical mid-portion of said skirt is externally screw-threaded as shown at **26**.

Referring to FIGURE 6, the modification disclosed therein comprises a tubular member **30** which depends from the bottom wall **4** of the water reservoir and which

is of considerably larger diameter or width than the previously described (rectangular) member 5 of FIGURE 2, the periphery of said tubular member 30 being cruciform, as shown at 32 (in FIGURE 7). The (upper) cruciform portion of the tubular member 30 terminates in a depending cylindrical portion 33 which is provided with an outwardly flared flange 34 of the same shape as the flange 7 of the previously described embodiment.

As shown in FIGURE 6, a removable tubular extension 35 is disposed to extend into the bore of the tubular body member 30 and is of the same cross-sectional contour; in this instance, cylindrical. Like the previously described tubular extension 9 of the previously described embodiment, the lower end of the removable tubular extension is closed; and its side-wall radially apertured.

In the embodiment of FIGURES 6 and 7, the lower and screw-threaded portion of the device of the present invention comprises a stepped tubular sleeve 36 which is adapted to telescope over both the cruciform portion 32 and the cylindrical portion 33 of the depending tubular member 30, with its lower end seating on the ledge formed by the outwardly flared flange 34.

The lower end of the stepped tubular sleeve 36 is provided with an outwardly and upwardly extending skirt 40 which is generally similar to the skirt 14 of FIGURE 2. Referring particularly to FIGURE 10, the upper peripheral portion of the skirt 40 is formed into a rim 41 which joins with the upper end of the stepped tubular sleeve 36; and this rim is apertured, as shown at 42.

The outwardly and upwardly extending skirt 40 is also provided with suitable apertures in the manner of the skirt 14 of FIGURE 2 to complete the venting to the atmosphere of the air from within the upper portion of the battery.

According to the construction and arrangement of FIGURES 5 through 10, there is provided, in effect, a lower member comprising a hollow-walled ferrule (as distinguished from the open-ended structure illustrated in FIGURE 2, which combines with the bottom 4 of the water reservoir). As shown in FIGURE 10, the upper face of this hollow-walled ferrule modification possesses a cruciform recess 44, the bottom of which communicates with a centrally disposed cylindrical bore.

The mid-portion of the side-wall of the outwardly and upwardly extending skirt 40 is provided with peripheral screw-threads 46.

According to all of the forms illustrated herein, the upper and lower members of the device of the present invention are effectively interlocked against relative rotation in either direction.

In FIGURE 8, a further embodiment is shown as comprising the changing of the cross-section of the bore of the depending tubular member 30 and the exterior and interior of the removable tubular extension 9 from cylindrical to square, the construction otherwise being the same as illustrated in FIGURES 6 and 7.

Referring to FIGURE 9, another modification comprises the changing of the contour of the readily squeezable water reservoir to a shortened inverted frusto-conical shape 52, the same being provided with an upper curved rim which joins with a flattened top 53, this modification otherwise providing a structure which is similar to that of FIGURES 6 and 7.

In the case of either the reservoir 2 or the reservoir 52, the inverted frusto-conical contour enables the person who is servicing the battery to more easily prevent its slipping from his hand and possibly become difficult to retrieve from the ground or lower regions under the engine hood of the vehicle.

While I have shown and described certain specific embodiments of the preesnt invention, it will be readily understood that I do not wish to be limited exactly thereto, since various modifications may be made without departing from the scope of the invention as defined in the appended claims.

I claim:

1. An attachable device for supplying water to a storage battery, comprising a water reservoir; a tubular member depending from the central portion of the bottom of said water reservoir and communicating with the interior thereof; a centrally apertured bottom member carried by said water reservoir; said centrally apertured bottom member having a screw-threaded portion for engagement with the screw-threads of one of the water-filling apertures of said battery; and an exterior boss carried by said tubular member which is rectangular in cross-section; said bottom member having a recess for receiving said boss; said tubular member and said bottom member cooperating with an enlarged section on the lower portion of said bottom member to form a secured non-rotatable connection.

2. An attachable device for supplying water to a storage battery, comprising an inverted frusto-conical water reservoir; a tubular member depending from the central portion of the bottom of said water reservoir and communicating with the interior thereof; a centrally apertured bottom member carried by said inverted frusto-conical water reservoir; said centrally apertured bottom member having a screw-threaded portion for engagement with the screw-threads of one of the water-filling apertures of said battery; and an exterior boss carried by said tubular member which is rectangular in cross-section; said bottom member having a recess for receiving said boss; said tubular member and said bottom member cooperating with an enlarged section on the lower portion of said bottom member to form a secured non-rotatable connection.

3. An attachable device for supplying water to a storage battery, comprising a water reservoir; a tubular member depending from the central portion of the bottom of said water reservoir and communicating with the interior thereof; a tubular member adapted for telescopic relationship with said first-named tubular member; a skirt extending upwardly and outwardly from the bottom of said second-named tubular member; a portion of the periphery of said skirt being screw-threaded for engagement with the screw-threads of one of the water-filling apertures of said battery; and an exterior boss carried by said tubular member which is rectangular in cross-section; said bottom member having a recess for receiving said boss; said tubular member and said bottom member cooperating with an enlarged section on the lower portion of said bottom member to form a secured non-rotatable connection.

4. An attachable device for supplying water to a storage battery, comprising an inverted frusto-conical water reservoir; a tubular member depending from the central portion of the bottom of said inverted frusto-conical water reservoir and communicating with the interior thereof; a tubular member adapted for telescopic relationship with said first-named tubular member; a skirt extending upwardly and outwardly from the bottom of said second-named tubular member; a portion of the periphery of said skirt being screw-threaded for engagement with the screw-threads of one of the water-filling apertures of said battery; and an exterior boss carried by said tubular member which is rectangular in cross-section; said bottom member having a recess for receiving said boss; said tubular member and said bottom member cooperating with an enlarged section on the lower portion of said bottom member to form a secured non-rotatable connection.

5. An attachable device for supplying water to a storage battery, comprising a water reservoir; a tubular member depending from the central portion of the bottom of said water reservoir and communicating with the interior thereof; a tubular member adapted for telescopic relationship with said first-named tubular member; a skirt extending upwardly and outwardly from the bottom of said second-named tubular member; a portion of the periphery

of said skirt being screw-threaded for engagement with the screw-threads of one of the water-filling apertures of said battery; the lower and upper portions of said upwardly and outwardly extending skirt having air vents; and an exterior boss carried by said tubular member which is rectangular in cross-section; said bottom member having a recess for receiving said boss; said tubular member and said bottom member cooperating with an enlarged section on the lower portion of said bottom member to form a secured non-rotatable connection.

6. An attachable device for supplying water to a storage battery, comprising a water reservoir; a tubular member depending from the central portion of the bottom of said water reservoir and communicating with the interior thereof; a tubular member adapted for telescopic relationship with said first-named tubular member; a skirt extending upwardly and outwardly from the bottom of said second-named tubular member, a ring formed by the upper edge of said upwardly and outwardly extending skirt; the bottom of said water reservoir having a groove for receiving said ring; a portion of the periphery of said skirt being screw-threaded for engagement with the screw-threads of one of the water-filling apertures of said battery; and an exterior boss carried by said tubular member which is rectangular in cross-section; said bottom member having a recess for receiving said boss; said tubular member and said bottom member cooperating with an enlarged section on the lower portion of said

bottom member to form a secured non-rotatable connection.

7. An attachable device for supplying water to a storage battery, comprising a water reservoir; a tubular member depending from the central portion of the bottom of said water reservoir and communicating with the interior thereof; a tubular member adapted for telescopic relationship with said first-named tubular member; a skirt extending upwardly and outwardly from the bottom of said second-named tubular member; a radially extending flange connecting the upper edges of said upwardly and outwardly extending skirt and said first-named tubular member; a portion of the periphery of said skirt being screw-threaded for engagement with the screw-threads of one of the water-filling apertures of said battery; and an exterior boss carried by said tubular member which is rectangular in cross-section; said bottom member having a recess for receiving said boss; said tubular member and said bottom member cooperating with an enlarged section on the lower portion of said bottom member to form a secured non-rotatable connection.

References Cited in the file of this patent

FOREIGN PATENTS

160,271	Australia	Dec. 15, 1954
786,372	Great Britain	Nov. 20, 1957