I. M. NOBLE & W. E. GOSSLING.

STORAGE BATTERY.

APPLICATION FILED AUG. 23, 1917.

1,251,452. Patented Dec. 25, 1917.

Fig. 1.

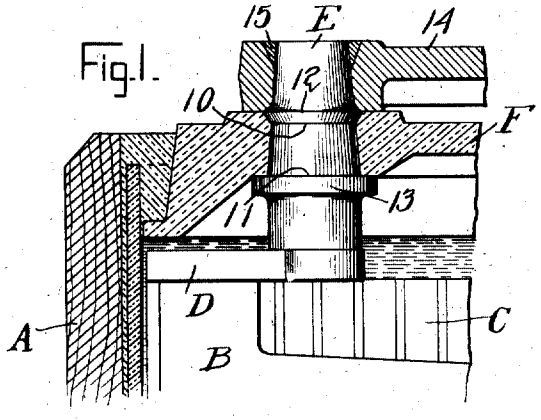


Fig. 2.

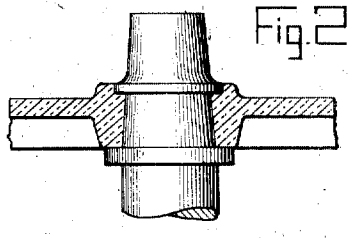


Fig. 3.

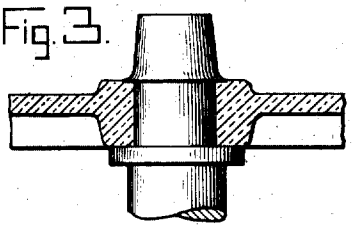


Fig. 4.

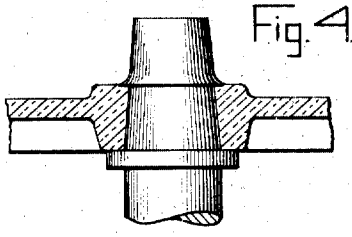


Fig. 5.

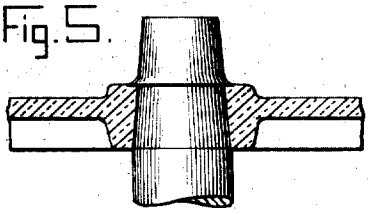
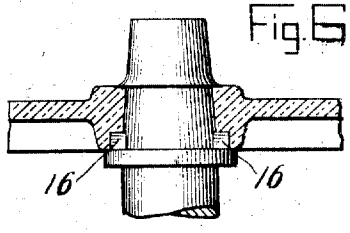


Fig. 6.



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UNITED STATES PATENT OFFICE.

IRVINE M. NOBLE AND WALTER E. GOSSLING, OF INDIANAPOLIS, INDIANA, ASSIGNORS TO THE PREST-O-LITE COMPANY, INC., OF INDIANAPOLIS, INDIANA, A CORPORATION OF NEW YORK.

STORAGE-BATTERY.

1,251,452. Specification of Letters Patent. Patented Dec. 25, 1917.

Application filed August 23, 1917. Serial No. 187,837.

To all whom it may concern:

Be it known that we, IRVINE M. NOBLE, a citizen of the United States, residing at Indianapolis, Marion county, and State of Indiana, and WALTER E. GOSSLING, a citizen of the United States, residing at Indianapolis, Marion county, and State of Indiana, have invented and discovered certain new and useful Improvements in Storage Batteries, of which the following is a specification.

Our invention consists in certain improvements in the construction of covers for the cells of storage batteries, said invention relating particularly to the improvement and method of uniting the post of each plate connector (the connectors uniting the several battery plates of certain polarity) with said cover, whereby a tight and stable joint is formed between said post and cover and that may be formed quickly and inexpensively, to the end that the top of the battery will be proof against leakage or the "creeping out" of acid from the inside of the cell through the joints between said parts, all as will be hereinafter more fully described and claimed.

Referring to the accompanying drawings, which are made a part hereof and on which similar reference characters indicate similar parts, Figure 1 is a sectional view through one corner of a storage battery showing the parts where the post of one plate connector is united with the cover, the cover being shown in section and the post in elevation.

Fig. 2, Fig. 3, Fig. 4, Fig. 5, and Fig. 6 are views showing modified forms of the construction, the views being taken through the battery top on a line at right angles with the line on which the section shown in Fig. 1 is taken, and illustrating only the form of joint between the post and the top.

In said drawings the portion marked A represents the wall of the battery cell, B one of the battery plates (either of the negative or positive set, as both sets are similarly connected and similarly united); C a wooden separator such as commonly interposed between the positive and negative plates of a battery; D a metal bar forming a connector by which each of the plates of the polarity corresponding to the polarity of the plate B are integrally united; E the post integrally united to the connector and termed a "plate connector post"; and F the battery top.

It will be understood that these several parts are of any well known or appropriate construction and arrangement, the construction illustrated being that of a common type of storage battery. The plates of like polarity are alternately arranged with separators C between them and all the plates of the same polarity are united by a connector D, and the connectors are each provided with a post E; the construction in respect to each set of plates being a duplicate of the other, only one of said posts is, or need be, illustrated.

In said construction the cover F is formed with perforations to receive the plate-connector posts, and each preferably has a recess around its outer end each of said perforations preferably is tapered slightly, its diameter near the top, or at point 10, being slightly less than at the bottom, or at point 11. From point 10 to point 12 the top of the aperture is reamed out, as shown. Post E is formed with a collar 13, the top face of which is adapted to seat against a flat surface on the under face of the top immediately surrounding the lower end of the apertures through which post E is inserted. The top of post E projects a distance above the top of the cover and is adapted to project through an eye or aperture in the end of link 14, which is adapted to connect the posts of unlike polarity of adjacent cells in the usual manner. At the point corresponding with the position of the chamfer or recess at the top of the perforation in the cover, as between points 10 and 12, said post is upset or enlarged to fit closely into said recess and bind the post tightly to the cover, forming a secure and tight joint. This upsetting is done in the process of assembling and by an appropriately formed tool, heated and brought down over the top of the face by appropriate pressure (a relatively light pressure has been found sufficient) until the metal of the post is firmly pressed into and against the recess in the cover and the collar 13 brought tightly against the under face of said cover. The link 14 is attached to the top of the post E in the usual manner, by lead-burning, or running fusible material 15 into the tapered recess around its top. A sealing compound may be used in the joint to increase the efficiency of the seal.

In Fig. 2 a similar construction is shown

except that in lieu of a tapered recess at the top of the aperture in the cover a recess is shown having a square corner.

In Fig. 3 is shown a modification wherein the post aperture in the cover is of uniform diameter from top to bottom and the top of the post is pressed out to form a flange overhanging said aperture.

Fig. 4 shows a modification similar to that illustrated in Fig. 3, except the aperture in the cover and the part of the post extending therethrough are slightly tapered.

Fig. 5 shows a modification similar to Fig. 4 except that the collar of the post adapted to bear against the under face of the cover is omitted, and Fig. 6 shows a modification similar to Fig. 4 except that the projections 16 are formed on the sides of post adapted to fit into recesses in the cover to prevent any turning of the parts in relation one to the other.

It will be understood of course, that the upsetting of the upper end of the post E so as to form the annular enlargement adapted to fit within any shaped recess at the top of the aperture in the cover, or overhang said aperture, may be formed by any appropriate process or tool, and we do not desire to be understood as limiting ourselves to any means for carrying out this process or any particular form of projection or enlargement, the several forms illustrated being only a few of those that will suggest themselves to those skilled in the art. By this invention a construction is provided by which the connector post is secured in the cell cover without intervening or interposed parts and one that is not only comparatively inexpensive, simple and easy to construct, but one by which any leakage, or creeping out, of the acid is completely prevented.

Having thus fully described our said invention what we claim as new and desire to secure by Letters Patent is:

1. A storage battery comprising a cell cover with a plate-connector post extending through an aperture therein, said post being formed with an integral enlarged portion immediately adjacent the top of said cover closely impinging against said cover to form a tight joint between said parts, substantially as set forth.

2. A storage battery comprising a cover formed with an aperture to receive the plate-connector post, the top of said aperture being enlarged, and a plate-connector post fitted within said aperture and formed with an integral enlarged portion fitting the enlarged upper end of said aperture in the cover, substantially as set forth.

3. In a storage battery comprising a cover formed with an aperture tapered from a larger diameter at the bottom to a smaller diameter toward its top and with an enlarged portion at its immediate top, and a plate-connector post said aperture formed with a collar to fit against the under face of the cover and with an enlarged portion to fit into the enlarged portion at the top of the aperture in said cover, substantially as set forth.

4. A storage battery comprising a cover formed with an aperture for a plate-connector post tapered from a larger diameter at the bottom to a smaller diameter toward the top and with a tapered recess extending from a point near the top in said aperture to the top thereof, and a plate-connector post mounted in said aperture correspondingly formed and having a collar adapted to rest against the under face of the cover and an enlarged portion formed to fit in the recess at the top of said aperture, substantially as set forth.

5. A storage battery comprising a cover having an aperture to receive a plate-connector post, and a plate-connector post mounted in said aperture, and enlarged above said cover to overhang the edges of said aperture, substantially as set forth.

6. A storage battery comprising a cover and a plate-connector post secured directly thereto without interposed parts by an enlarged portion of the post itself, substantially as set forth.

In witness whereof, we have hereunto set out hands and seals at Indianapolis, Indiana, this 30th day of July A. D., nineteen hundred and seventeen.

IRVINE M. NOBLE. [L. S.]
WALTER E. GOSSLING. [L. S.]

Witnesses:
F. W. HICKS,
BRUCE DANIEL.