H. L. WOOD.

BATTERY POST AND METHOD OF MAKING A SEAL.

APPLICATION FILED MAR. 21, 1921.

1,401,573. Patented Dec. 27, 1921.

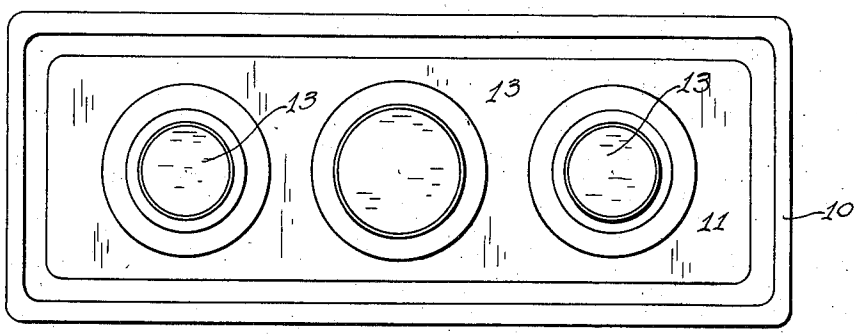


Fig. 1.

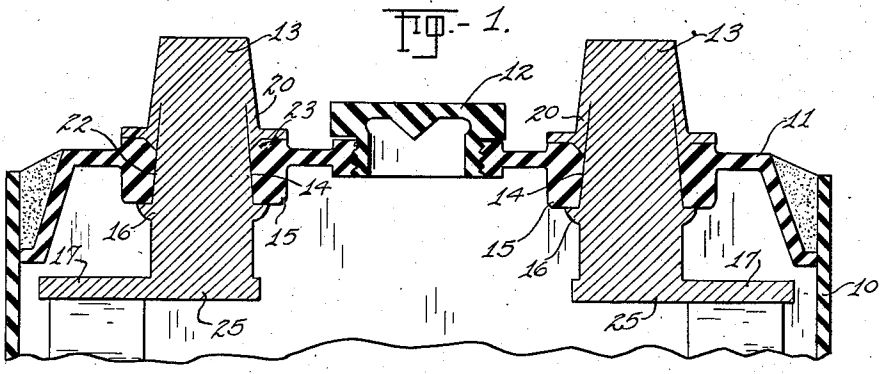


Fig. 2.

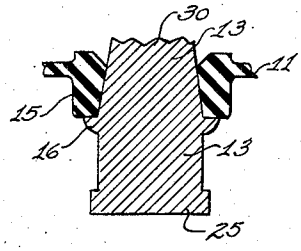


Fig. 5.

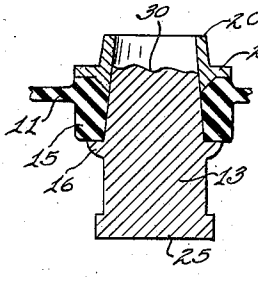


Fig. 6.

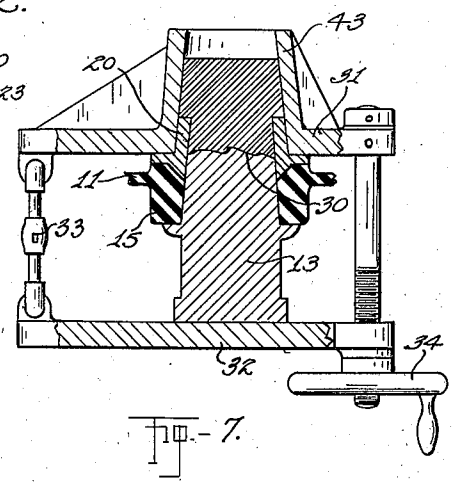


Fig. 7.

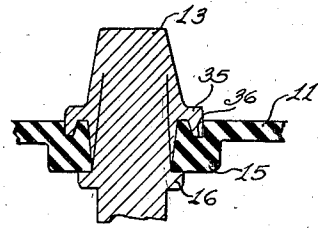


Fig. 4.

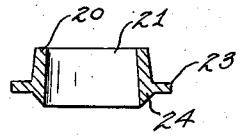


Fig. 3.

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BATTERY-POST AND METHOD OF MAKING A SEAL.

1,401,573. Specification of Letters Patent. Patented Dec. 27, 1921.

Application filed March 21, 1921. Serial No. 453,927.

To all whom it may concern:

Be it known that I, HARRY L. WOOD, a citizen of the United States, residing at Lakewood, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Battery-Posts and Methods of Making Seals, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention relates to storage batteries and is primarily concerned with the construction of a battery post, together with the process of building up such post whereby an effective seal may be obtained with the cover of a cell.

In building storage batteries, it is essential that the post be securely embedded in the cover of the cell to prevent seepage of the acid from the interior portion thereof. During the process of manufacturing, it is comparatively easy to obtain an effective seal between the post and cell, but in repairing, much difficulty has been experienced in obtaining satisfactory results.

One of the methods heretofore employed in repairing batteries has been to sever the old post just above the top of the cover and to employ a tool for removing the metal adjacent the top of the cover, thereby separating the post therefrom. A mold is then usually placed over the post, and the body portion thereof built up by a process of lead burning, or welding. Repair work executed in this manner required not only considerable time but frequently resulted in imperfect seals between the post and the cell cover.

One of the objects of my invention is the provision of means for securing the post to the cover, whereby the time required particularly in repair work for securing such members is materially decreased.

Another object is the provision of a process for building up battery posts, which process may be readily employed in repair stations for securing an effective seal between the post and cover, without requiring extensive equipment therefor.

In accomplishing the above objects, I provide a ring, which may be positioned over the old battery post, and I provide means for clamping the ring and post to the cover plate, so that the building up process may be conveniently accomplished, while the aforementioned parts are held under pressure.

My invention contemplates, in general, the construction of battery posts for greatly facilitating the work required in repair stations and for enabling an effective seal to be obtained by the use of ordinary tools and equipment. Furthermore, it contemplates the employment of a removable ring which can be conveniently positioned over existing forms of posts, and be applied to cell covers without necessitating extensive changes in the structure thereof. This ring is adapted to be held in abutting engagement with the post to be repaired, and while held in such position to be welded with additional material, which may be employed for building up posts to the proper height.

In the drawing, Figure 1 is a plan of a storage cell having the usual terminals secured thereto; Fig. 2 is a longitudinal section showing a cell having terminal posts embodying features of my invention; Fig. 3 is a section of a removable ring; Fig. 4 is a modified form of a ring attached to the terminal post; Figs. 5, 6 and 7 are sections which represent steps in the process of building up a battery post.

Referring now to the drawing and designating the parts shown therein by the use of reference characters, 10 represents the walls of a cell having a cover plate 11, which is equipped with the customary cap 12 and posts 13. The cover which is provided with the usual wedge-shaped apertures 14, through which the posts are adapted to be inserted, is shown as equipped with bosses 15, which serve to materially strengthen that portion of the cover adjacent the post and to provide an effective bearing surface between the post and cover.

I have shown each post as having a flange 16, which abuts the bottom of the boss 15 and is equipped with an arm 17 offset from the axis of the post and adapted to receive the positive and negative plates respectively within the cell. This structure, however, is arbitrary and is merely illustrative of one form of battery post to which my invention may be applied.

To secure an effective seal between the post and cover, my invention contemplates the employment of a removable ring 20, which as shown in Fig. 3 comprises a substantially cylindrical member having an

aperture 21, which aperture may be tapered to correspond with the contour of the battery post, as at 22. Each ring may be further equipped with a flange 23, which is adapted to rest on top of the boss 15. For securing further contact between the ring and the boss, I provide a beveled portion 24, which is adapted to extend into a suitable recess 23 on top of the boss. This ring and post may be composed either of the same kind of metal or of any metal which is capable of being united when heat is applied thereto. In this manner the ring becomes an integral part of the post and serves to hold it effectively to the cover.

The insertion of a ring over the post and uniting the material provides an effective bond between the ring and post, but does not necessarily provide an effective seal between the post and the cover for preventing the seepage of acid from the interior part of the cell. My invention therefore, provides for the employment of a clamping mechanism which may be utilized for bringing pressure to bear upon the top of the flange 23 on the ring 20, and on the bottom surface 25 of the post 13. When these members are clamped together, then a wedging action occurs between the tapered complementary surfaces. Furthermore, this clamping action causes the flange 16 on the post, to press tightly against the lower surface of the boss 15, and causes the lower surface of the flange 23, to press tightly against the top surface of the boss 15. In this manner an effective bond is obtained between the walls of the cover and the entire contact surface of the post before the application of heat to the top of the post.

In Figs. 5 to 7, I have shown various steps in the process of building up a post in accordance with the manner of my invention. In Fig. 5 the post is shown as severed along the line 30, such severance having been employed for previously removing the post for necessary repairs. In manufacturing, however, the post is usually formed so as to terminate just above the cover and substantially along a line as indicated at 30. In Fig. 6, I have shown a removable ring 20 as positioned over the top of the post and as fitted into the recess. To clamp the post to the cover, I have illustrated in Fig. 7, a convenient clamping mechanism, which effectively presses the aforementioned parts into abutting engagement with each other, and securely holds them in position, while the uniting process, as by lead burning, is employed for building up the post to the proper height. This clamping mechanism may comprise bearing plates 31, 32, which are adapted to be brought together by a turn-buckle mechanism 33, and a hand-wheel 34. The top plate 31 may terminate in the mold 43, which is employed for forming the top of the post during the uniting process.

To form or build up the post, heat is employed, usually by a blow torch, to the top of the ring 20 until a portion of such ring is melted, and the molten metal flows downwardly to unite with the post. Additional metal may then be added from bar-stock, until the post is of the required height. After the metal cools, the partially formed post, the ring, and the added metal will become an integral mass as heretofore explained.

The adaptability of my invention to various forms of rings or sleeves is obvious, and accordingly I have shown in Fig. 4 only a single modification of such ring as embodied in a member having an elongated tapered portion 35, and a flange which terminates in a hooked portion as at 36. The employment of an elongated tapered portion provides for a more effective binding action, between the walls of the cover and the post, during the uniting process, while the shape of the flange provides for an increased contact surface with the cover. The post may have various forms of flanges and may even be provided with an inner sleeve to prevent any splitting or chipping of the cover during the welding process.

From the foregoing description, it will be seen that I have provided a process for building up battery posts which effectively seals such posts and prevents the leakage of liquid from the inner portion of the cell. An advantage of my invention is that it may be adapted for use in sealing existing forms of battery posts and be employed in repair stations to materially reduce the time required for such work. Furthermore, the means for sealing the post to the cap is of such character that it may be constructed in numerous shapes and forms that tend to increase the length of the path which the acid must follow in escaping from the cell.

Having thus described my invention, I claim:

1. The process of sealing a battery post consisting of taking a cell cover, extending a partially formed post through the cover and from the bottom thereof, placing a ring over the post and on top of the plate, fusing the post with the ring and then adding material to build up the post.

2. The process of forming a battery seal consisting of taking a cover having a tapered aperture therein, passing a post therethrough, said post having a flange which abuts one surface of the cover, surrounding the post with a ring, said ring having a flange which abuts the other surface of the cover, pressing the ring and post together in such manner that the flanges are forced against the cover and then applying heat to fuse the ring with the post.

3. In combination, a battery cover, a post, a ring having a smooth aperture therein and closely embracing the post, said cover having a recess adjacent the post, and said ring extending into the recess, and being held in abutting engagement with top of the cover, and means for uniting the ring and post.

4. A battery post seal having in combination a cover, a post, a flange on the post and in abutting engagement with one side of the cover, an annular member adapted to surround the post and to be fused therewith, and a flange on said member in abutting engagement with the other side of said cover.

5. A battery post seal, having in combination a cover, a tapered post, said post having a flange in abutting engagement with one side of the cover, a ring having a tapered aperture therein and adapted to engage the post, and a flange on said ring, said flange being in abutting engagement with the other side of said cover.

6. A battery post seal having in combination a cover, a post having a flange adapted to abut the cover and having a tapered portion which extends through the cover, a ring having a tapered aperture which is substantially complementary to the tapered portion of the post, said ring being provided with a flange which abuts the other side of the cover, and means for causing the ring to become an integral part of the post by applying material in a molten state thereto.

7. A battery post seal having in combination a cover, a post having a flange adapted to abut the under side of said cover and having a tapered portion which extends through said cover, a ring having a tapered aperture which is substantially complementary to the tapered portion of the post, and having a tapered portion which extends into said cover, said ring being provided with a downwardly extending flange which partially abuts and partially extends into the top side of the cover, and means for causing the ring to become an integral part of the post by fusing it therewith.

In testimony whereof, I hereunto affix my signature.

HARRY L. WOOD.