A. L. SALTZMAN.

PRIMARY BATTERY.

APPLICATION FILED FEB. 28, 1911.

1,036,344. Patented Aug. 20, 1912.

Fig. 1

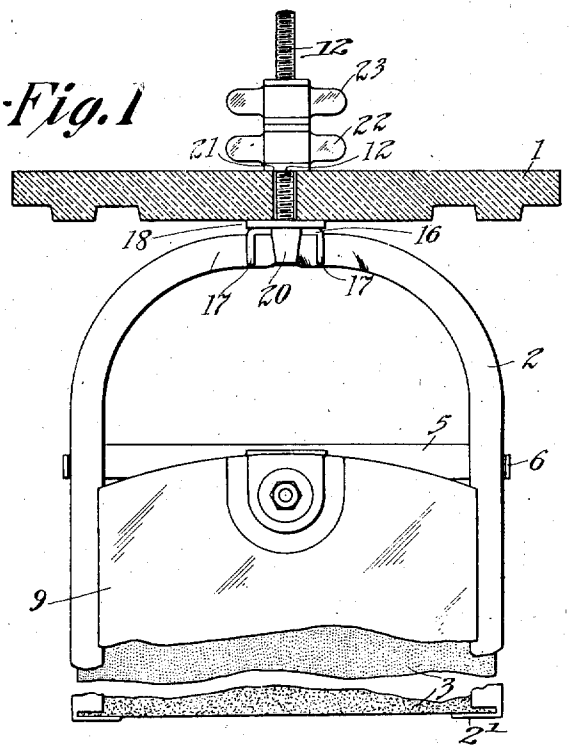


Fig. 2

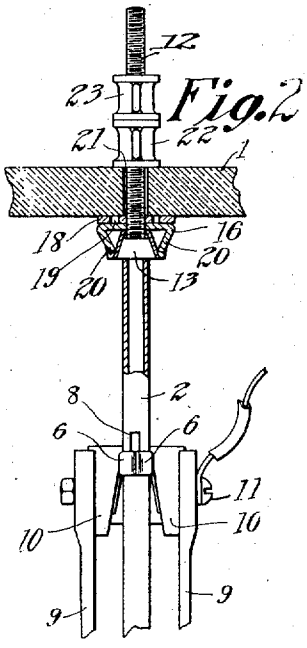


Fig. 3

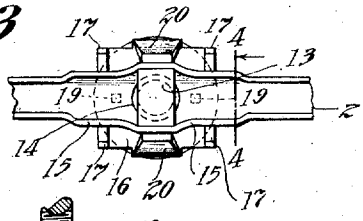


Fig. 4

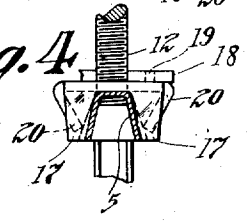
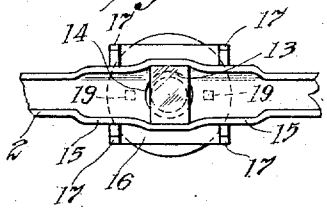


Fig. 5



Witnesses:

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UNITED STATES PATENT OFFICE.

AUGUSTE L. SALTZMAN, OF EAST ORANGE, NEW JERSEY, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THOMAS A. EDISON, INCORPORATED, OF WEST ORANGE, NEW JERSEY, A CORPORATION OF NEW JERSEY.

PRIMARY BATTERY.

1,036,344. Specification of Letters Patent. Patented Aug. 20, 1912.

Application filed February 28, 1911. Serial No. 611,434.

To all whom it may concern:

Be it known that I, AUGUSTE L. SALTZMAN, a citizen of the United States, and a resident of East Orange, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Primary Batteries, of which the following is a specification.

My invention relates generally to improvements in primary or voltaic batteries, and more particularly to that class in which the negative electrode consists of a plate of oxid of copper, or other depolarizing agent, properly molded and agglomerated, and the positive electrode of which consists of a plate or plates of zinc.

My invention includes improvements on the structure described in the patent to Eben G. Dodge, 894,487, granted July 28, 1908. In primary batteries of the type described in this patent, both the positive and negative elements are supported by one frame or hanger including an inverted U-shaped member, channel-shaped in cross section, which is secured to the battery jar cover by a bolt and nut whereby the electrodes and their supporting frame or hanger may be easily removed as a unitary structure for any desired purpose such as cleaning or renewals. In batteries of this type, the bolt is provided with a wedge-shaped head which is drawn into engagement with the walls of the hanger by the nut when the electrodes and their supporting frame or hanger are secured in place to the jar cover. When, however, the nut is removed from the bolt, the latter is no longer held in place in the hanger and is liable to drop out of place thereby causing inconvenience.

The object of my invention is to provide improved means for holding the bolt or other suspension means in place in the supporting frame or hanger or other supporting structure, when the electrodes and their supporting structure are removed from the jar cover.

Another object of my invention is to provide a connection whereby a very efficient electrical and mechanical contact between the bolt or corresponding support and the supporting structure is obtained.

My invention consists further in the details of construction and combination of parts hereinafter more particularly described and claimed.

In the accompanying drawings which form a part of this specification and in which like reference characters refer to like parts in the several views,—Figure 1 is a side elevation partly in section of a portion of a battery embodying one form of my invention; Fig. 2 is an elevation of the structure shown in Fig. 1 at right angles thereto, some of the parts being shown in section; Fig. 3 is a bottom plan view of the upper portion of the supporting frame or hanger and the means for securing the supporting bolt thereto; Fig. 4 is a cross-section taken on the line 4—4 of Fig. 3; and Fig. 5 is a view similar to that shown in Fig. 3 of a modification.

Referring to the drawings, the top or cover of the battery jar is shown at 1.

The numeral 2 indicates a frame or hanger preferably constructed of a strip of sheet copper or copper plated iron or steel, the edges of said strip being turned up to such an extent as to lie flat against the edges of the negative electrode plate 3. The plate 3 is preferably of copper oxid. The cross section of the hanger 2 is channel-shaped as shown in Figs. 3, 4 and 5. The hanger 2 is preferably given the form of an inverted U, the two arms or depending portions of which hold the edges of the negative plate 3. The said plate 3 fits into the channel of the hanger 2 and is held in said hanger by any suitable supporting means, as for example, by lips 2′ formed on the lower ends of the depending arms of the hanger. The plate 3 is further clamped in the hanger by a horizontal cross piece or bridging member 5 preferably of similar material and cross section to the hanger 2, the member 5 being secured at either end to the sides of the hanger by end projection 6 which extends through openings 8 in the hanger and are bent into clamping position against the outside of the hanger.

The zinc or positive electrode plates of the battery designated at 9 are secured to an insulating block or blocks 10 and to the bridging member 5 by a suitable bolt 11. Thus the zinc plates are supported from the bridging member, and the battery plates and their supporting frame form a unitary

structure adapted to be supported from the jar cover by a single bolt or other suspension means.

As a means for supporting the frame and the battery plates from the jar cover, I have used a suitable bolt 12 which is preferably screw threaded. The bolt 12 is provided with a wedge-shaped head 13. The hanger 2 which, as hereinbefore stated, is channel shaped in cross section, is provided with an opening 14 in the base of the channel. In assembling the parts, the bolt 12 is passed through the opening 14 so that the stem of the bolt 12 passes through the opening 14 and the wedge faces are in engagement with the walls of the channel shaped hanger 2. As clearly shown in Figs. 3 and 5, the walls of the channel where they engage the bolt head are spread apart so as to lie in close contact with the wedge faces of the bolt. Immediately beyond the portion of the hanger engaged by the bolt, the divergence of the walls of the channel is decreased so as to form two wedge shaped portions 15 of uniform cross section extending a short distance on both sides of the bolt. From the portions 15, the walls of the hanger converge to their normal relative position.

Loosely mounted on the stem of the bolt 12 is a gripping member 16 preferably formed of sheet metal as shown in the drawings. This member is provided at its ends with downwardly turned projections 17, a pair of these projections being formed on each end of the member. The opposing edges of the projections of each pair are inclined to each other, so as to form two narrow opposing faces adapted to firmly grip between them, the portions 15 of the hanger and to force the walls of the said hanger firmly into contact with the bolt head when the nut 18 mounted on the screw threaded portion of the bolt and engaging the upper face of the gripping member clamps the said hanger, gripping member, and bolt together.

19 are openings to facilitate adjustment of the nut.

In order to firmly bind the walls of the channel to the bolt head and to produce a complete flat contact between the said walls and the bolt head, yielding tongues or projections 20 are bent down from the front and back edges of the gripping member intermediate the projections 17. These tongues or projections are preferably inclined inwardly toward each other; and their lower ends are adapted to engage the walls of the member 2 and to press the same firmly against the bolt head.

By means of the above described construction, an efficient mechanical and electrical connection between the bolt and hanger is obtained, and the bolt becomes a part of the unitary structure including the battery plates and their supporting frame. This structure may be attached to the battery jar cover by placing the stem of the bolt 12 through a hole 21 in the battery jar cover, and drawing the structure in place by means of a nut 22. The nut 23 serves to lock the nut 22 in place and coöperate with it and the bolt 12 to form a binding post for the attachment of a field wire negative element of the battery. It is evident that if it is desired to detach the battery plates and their supporting frame from the battery jar cover, the bolt will be retained in place in the hanger, and ready for re-attachment to the battery.

The modification shown in Fig. 5 resembles that shown in the remaining figures in all respects except that the projecting tongues 20 on the gripping member are omitted.

Having now described my invention, what I claim as new and desire to secure by Letters Patent of the United States is as follows:

1. In a voltaic battery, the combination of a supporting hanger having a flange thereon, a support for said hanger having a portion thereof in engagement with said flange, a gripping member having a projection engaging said flange, a member coöperating with the support for clamping together the said hanger, support, and gripping member, and means for attaching said support to a jar cover, substantially as described.

2. In a voltaic battery, the combination of a supporting hanger having an opening therein and having a flange thereon, a supporting bolt for said hanger engaging said flange and extending through said opening, a gripping member having a projection engaging said flange, a nut coöperating with the bolt for clamping together the said hanger, bolt and gripping member, and means for attaching said bolt to a battery jar cover, substantially as described.

3. In a voltaic battery, the combination of a supporting hanger having oppositely disposed flanges provided with inclined outer surfaces, a support for said hanger engaged between said flanges, a gripping member having projections engaging the outer surfaces of said flanges, a member coöperating with said support for clamping together the said hanger, support, and gripping member, and means for attaching said support to a battery jar cover, substantially as described.

4. In a voltaic battery, the combination of a supporting hanger, having oppositely disposed flanges, a support for said hanger engaged between said flanges, a gripping member provided with projections having their opposing surfaces inclined to each other whereby the said projections are

adapted to wedge said flanges into contact with said support, a member coöperating with said support for clamping together said hanger, support, and gripping member, and means for attaching said support to a jar cover, substantially as described.

5. In a voltaic battery, the combination of a supporting hanger having oppositely disposed flanges, a support for said hanger having a wedge-shaped portion in engagement with said flanges, a gripping member having projections engaging said flanges a member coöperating with said support for clamping together the said hanger, support, and gripping member, and means for attaching said support to a battery jar cover, substantially as described.

6. In a voltaic battery, the combination of a supporting hanger having a flange thereon, a support for said hanger having a portion thereof in engagement with said flange, a gripping member having a yielding projection engaging said flange, and means for clamping together the said hanger, support and gripping member, substantially as described.

7. In a voltaic battery, the combination of a supporting hanger having oppositely disposed flanges, a support for said hanger having a wedge shaped portion thereof in engagement with said flanges, a gripping member having projections engaging said flanges at different points along the length thereof, and means for clamping together the said hanger, support and gripping member, substantially as described.

8. In a voltaic battery, the combination of a supporting hanger having a cross section of channel shape, a support for said hanger having a flattened portion in engagement with the walls of said hanger, a gripping member having a plurality of pairs of spaced projections, the projections of each pair being adapted to grip between them the walls of said hanger and to force the same to contact with said support, and means for clamping together the said hanger, support and gripping member, substantially as described.

9. In a voltaic battery, the combination of a supporting hanger having a cross section of channel shape, a supporting bolt for said hanger having a flattened portion in engagement with the walls of said hanger, a gripping member having a plurality of pairs of spaced projections, the projections of each pair being adapted to grip between them the walls of said hanger and force the same into contact with said bolt, the projections of one pair having a broad bearing surface engaging the said hanger opposite the flattened part of said bolt, and means for clamping together the said hanger, bolt, and gripping member, substantially as described.

10. In a voltaic battery, the combination of a supporting hanger having oppositely disposed flanges, a supporting bolt for said hanger having a wedge-shaped portion thereof in engagement with said flanges, a gripping member having projections engaging said flanges at different points along the length thereof, and a nut coöperating with said bolt for clamping together the said hanger, bolt, and gripping member, substantially as described.

This specification signed and witnessed this 24 day of February 1911.

AUGUSTE L. SALTZMAN.

Witnesses:

FREDERICK BACHMANN,

ANNA R. KLEHM.

Correction in Letters Patent No. 1,036,344

It is hereby certified that in Letters Patent No. 1,036,344, granted August 20, 1912, upon the application of Auguste L. Saltzman, of East Orange, New Jersey, for an improvement in "Primary Batteries," an error appears in the printed specification requiring correction as follows: Page 2, line 72, for the word "coöperate" read *coöperates;* and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 24th day of September, A. D., 1912.

[SEAL.]

C. C. BILLINGS,

Acting Commissioner of Patents.

adapted to wedge said flanges into contact with said support, a member coöperating with said support for clamping together said hanger, support, and gripping member, and means for attaching said support to a jar cover, substantially as described.

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