No. 845,048. PATENTED FEB. 26, 1907.

J. BIJUR.

STORAGE BATTERY PLATE.

APPLICATION FILED AUG. 14, 1906.

Fig. 1.

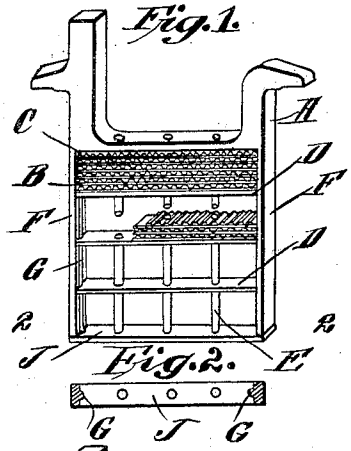


Fig. 2.

Fig. 3.

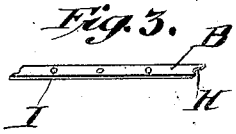


Fig. 6.



Fig. 5.

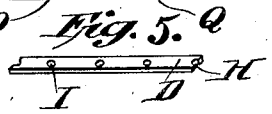


Fig. 4.



Fig. 7.

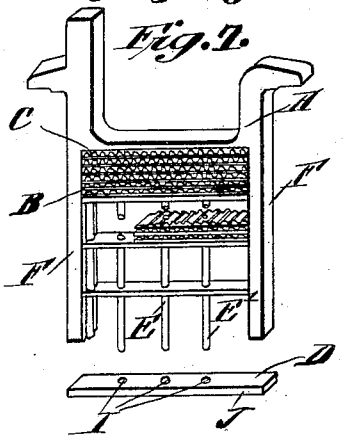


Fig. 8.

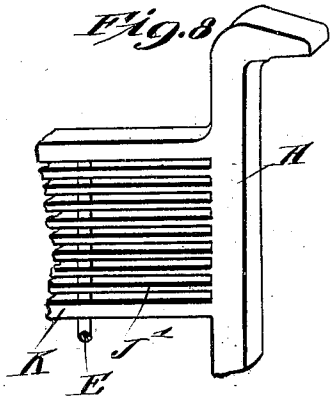


Fig. 9.

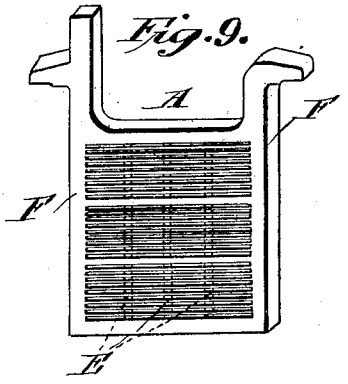


Fig. 11.

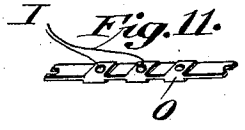
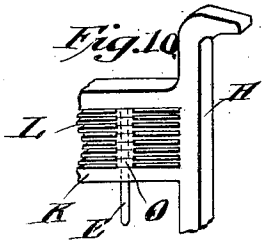


Fig. 10.



Witnesses:
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UNITED STATES PATENT OFFICE.

JOSEPH BIJUR, OF NEW YORK, N. Y., ASSIGNOR TO THE GENERAL STORAGE BATTERY COMPANY, A CORPORATION OF NEW YORK.

STORAGE-BATTERY PLATE.

No. 845,048. Specification of Letters Patent. Patented Feb. 26, 1907.

Application filed August 14, 1906. Serial No. 330,525.

To all whom it may concern:

Be it known that I, JOSEPH BIJUR, a citizen of the United States, and a resident of the borough of Manhattan, city, county, and State of New York, have invented certain new and useful Improvements in Storage-Battery Plates, of which the following is a specification, accompanied by drawings.

This invention relates to storage-battery plates; and the objects of the invention are to improve upon the construction of such plates, afford large surfaces for the active material supported at frequent intervals, and prevent distortion of the plate when formed.

Further objects of the invention will hereinafter appear; and to these ends the invention consists of a storage-battery-plate for carrying out the above objects embodying the features of construction, combinations of elements, and arrangement of parts having the general mode of operation substantially as hereinafter fully described and claimed in this specification and shown in the accompanying drawings, in which—

Figure 1 is a perspective view of a partially-constructed plate embodying the invention. Fig. 2 is a sectional plan view on the line 2 2 of Fig. 1. Fig. 3 is a detail perspective view of one of the thin flat ribbons. Fig. 4 is a perspective view of one of the thin corrugated ribbons. Fig. 5 is a perspective view of one of the separating-ribs. Fig. 6 is a plan view of a modification of one of the separating-ribs. Fig. 7 is a perspective view of the complete plate. Fig. 8 is a detail perspective view of a portion of a modified plate. Fig. 9 is a perspective view of the complete plate shown in Fig. 8. Fig. 10 is a detail perspective view of a portion of a modified plate. Fig. 11 is a detail perspective view of one of the strips used in Fig. 12.

Referring to the drawings, A represents the frame of the plate, which supports the flat strips B, the corrugated strips C, and the separating strips or ribs D, as well as the vertical rods or ribs E. Means are provided for centering the strips in the frame, in this instance the sides F of the frame being provided with interior longitudinal ribs G, while the strips are adapted to coöperate with said ribs, in this instance the strips being provided with grooves H, which fit over the ribs G.

The thin flat strips B and corrugated strips C are arranged alternately in sets, as shown, each set being separated by a separating strip or rib D. The strips and ribs are preferably provided with apertures I, which all register, and the bottom strip J of the frame is burned onto the sides F. After the parts have been assembled suitable rods E are placed through the registering apertures I in the strips, and then all the intervals in the assembled parts are filled with a dry paste, which can be readily removed by shaking or by solution. The rods E are then removed and molten alloy is poured at a suitable temperature through the vertical channels formed by the registering apertures I in the strips and in the bottom J. According to this construction large surfaces for the active material are provided, and the strips are supported at frequent intervals, so that they will not bend out of line, as if supported at the ends only. The ribbons may be spaced far apart to provide for lateral thickening and expansion of the ribbons.

In Fig. 7 the frame A is provided with alloy-rods E′, integral with the frame, and the parts are strung on said rods, as shown. The bottom J is then preferably burned into the rods and frame.

In Fig. 8 a plate having substantially the same construction as Figs. 1 and 7 is shown made in a different way. In this case transverse perforated ribbons J′ of lead are interleaved with similar ribbons of paper or other suitable material and a sufficient number of ribs K to form a plate of the desired size. Then molten alloy is poured around the ribbons to form the frame A and through the apertures to form the ribs E, and the paper is removed as by burning. Preferably cores of steel instead of paper are used between the ribbons, and they are arranged in any suitable manner so that they may be readily removed after the frame and ribs have been poured.

In Fig. 10 a modification is shown in which the strips L are provided with enlarged portions O at the apertures I to keep the strips separated and inclose the tubular channels to confine the molten metal and enable cores to be dispensed with. After the strips and ribs or separators K have been assembled in the frame A the molten lead is poured through the registering apertures I to form the rods E. The plate shown in Fig. 10 may

also be cast in one piece instead of constructed of a number of separate pieces. The strips and separators, instead of being provided with apertures I in their length, may be provided with opposed grooves Q, (shown in Fig. 6,) into which the molten lead may be poured to form longitudinal rods or ribs intersecting all of the strips.

According to this invention it will be seen that the active strips are all strung, as it were, upon ribs or rods, and thus freedom of expansion is provided, and at the same time a substantial structure results.

Obviously some features of this invention may be used without others, and the invention may be embodied in widely-varying forms.

Therefore, without limiting the invention to the devices shown and described and without enumerating equivalents, I claim, and desire to obtain by Letters Patent, the following:

1. A battery-plate, comprising continuous parallel transverse active strips and interspersed ribs parallel with the strips, said strips and ribs being provided with registering apertures, a supporting and inclosing framework having continuous parallel longitudinal rods cast from the conducting portion of the frame on to the strips and ribs in the said apertures and thereby binding the said parts in position and forming a paneled plate.

2. A battery-plate, comprising a plurality of active strips provided with registering holes and a supporting and inclosing framework having rods cast from the frame on to the strips in said holes.

3. A paneled plate, comprising strips and ribs extending in one general direction and provided with registering apertures, and a supporting and inclosing framework having rods cast from the frame on to the strips and ribs in said apertures.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

JOSEPH BIJUR.

Witnesses:
OLIN A. FOSTER,
A. L. O'BRIEN.