Jan. 17, 1928. 1,656,644

E. E. MEISEKOTHEN

DRY BATTERY AND METHOD OF CONSTRUCTION

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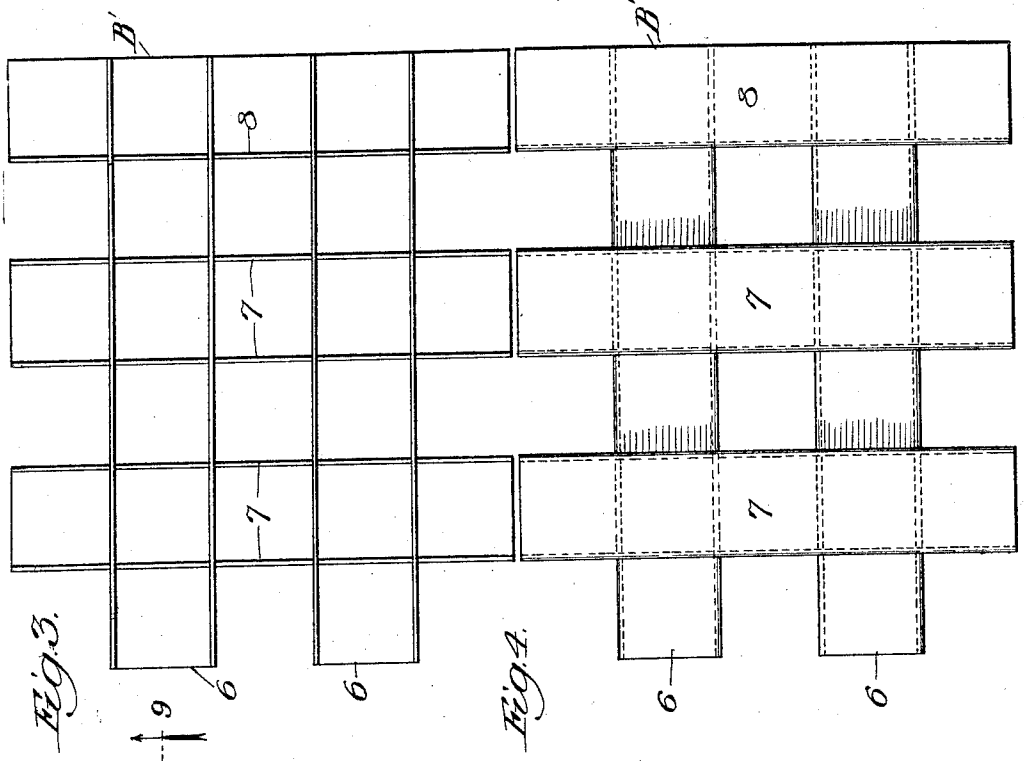


Fig. 3.

Fig. 4.

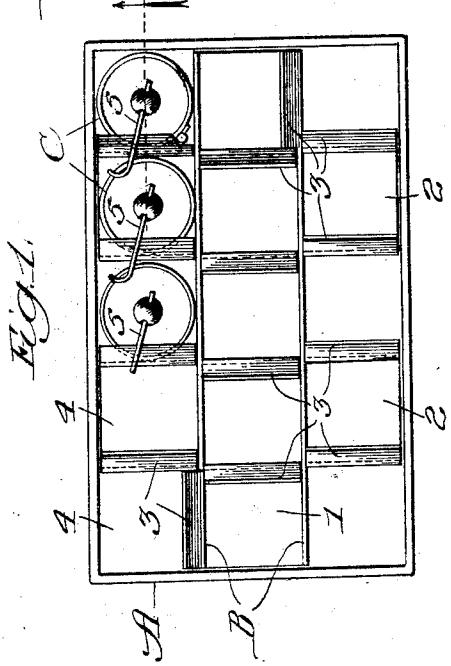


Fig. 1.

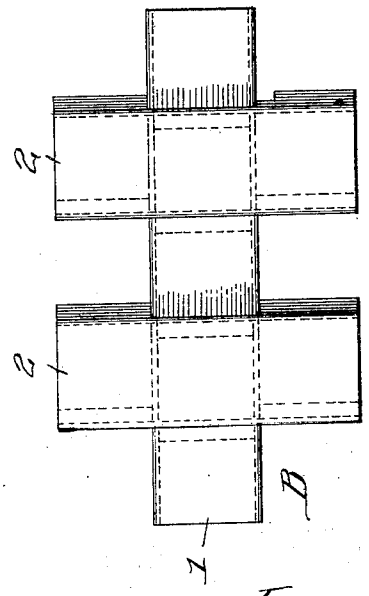


Fig. 2.

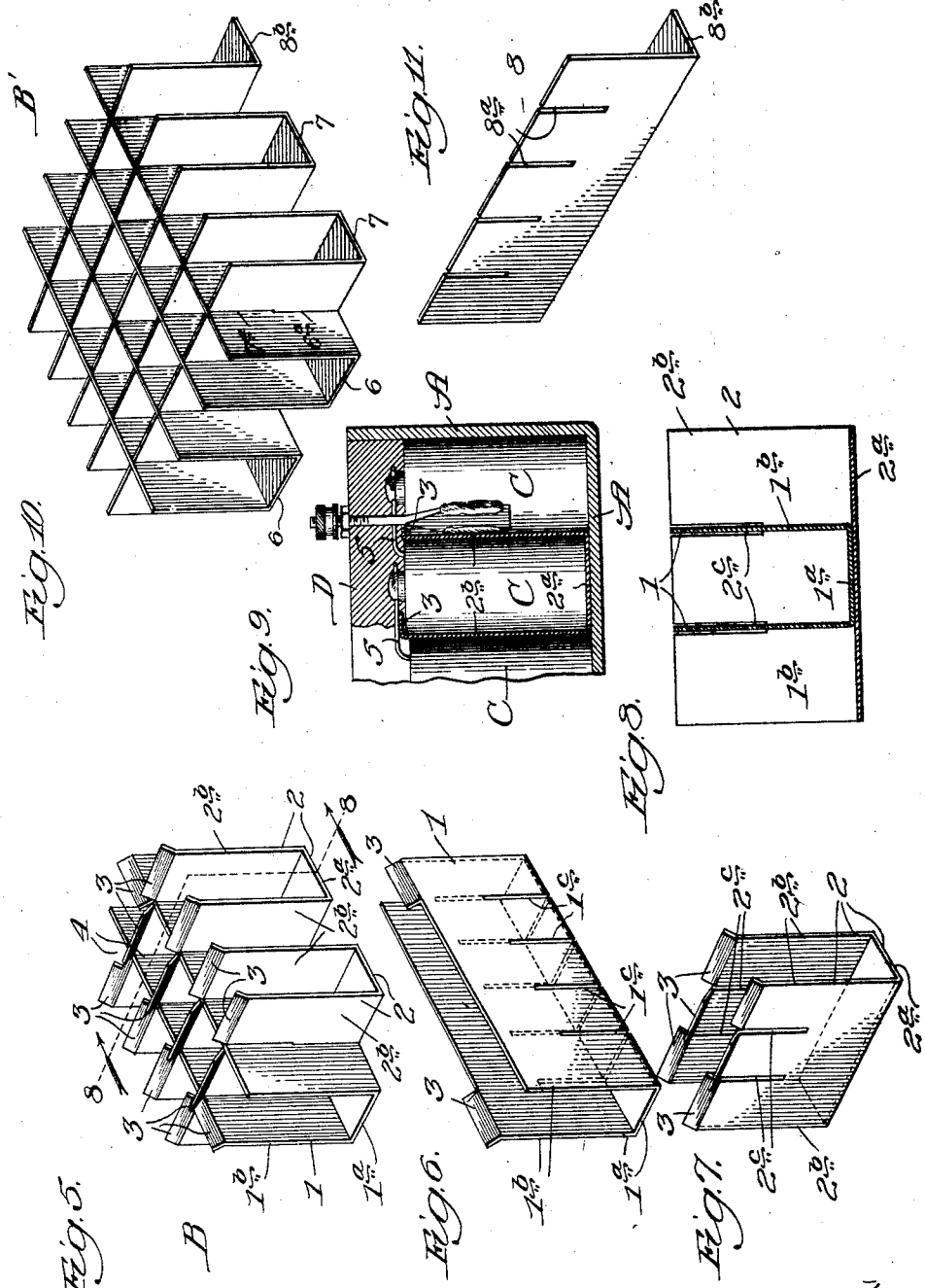
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UNITED STATES PATENT OFFICE.

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DRY BATTERY AND METHOD OF CONSTRUCTION.

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This invention relates particularly to the assembly of dry cells to form a battery; and the primary object is to provide a simple, cheap and effective construction and method whereby the cells and connections will be durably insulated.

The invention is illustrated in its preferred embodiment in the accompanying drawings, in which—

Fig. 1 represents a plan view of a fifteen-cell battery involving the invention, the view omitting some of the cells and the sealing compound; Fig. 2, a bottom plan view of the partition-structure employed in the battery shown in Fig. 1; Fig. 3, a top plan view of a partition-structure adapted for use in a thirty-cell battery; Fig. 4, a bottom plan view of the same; Fig. 5, a top perspective view of the structure shown in Fig. 2; Fig. 6, a perspective view of one of the U-shaped cardboard members shown in Fig. 5; Fig. 7, a perspective view of one of the U-shaped, transversely disposed cardboard members shown in Fig. 5; Fig. 8, a transverse vertical sectional view taken as indicated at line 8—8 of Fig. 5; Fig. 9, a broken vertical sectional view taken as indicated at line 9—9 of Fig. 1; Fig. 10, a top perspective view of the structure shown in Fig. 3; and Fig. 11, a perspective view of an L-shaped cardboard member employed in the structure shown in Fig. 10.

Referring to the construction shown in Figs. 1 and 2 and in Figs. 5 to 9, inclusive, the construction illustrated comprises a box, or container, A; a partition-structure B, forming cell compartments; dry cells C in said compartments; and a sealing compound D filling the space between the cells and above the same in the container.

The container, or box, A, may be made of pasteboard, if desired.

The partition-structure, or cell-cavity structure, B, preferably comprises a central longitudinal cardboard member 1 which is of U-shaped cross-section; and a pair of transverse cardboard members 2 of U-shaped cross-section, these members being provided with suitable slits, or kerfs, and having an interfitting relation, as will best be understood from Figs. 5 to 8, inclusive.

The member 1 comprises a bottom 1^a and upstanding flanges 1^b. The member is provided at its lower portion with transverse slits, or kerfs, 1^c, which cut through the bottom and also through the flanges to about the center of the height of the flanges. Each transverse member 2 comprises a bottom 2^a and vertical flanges 2^b. The flanges 2^b are provided with vertical slits, or kerfs, 2^c, which extend downwardly from the upper edges of the flanges to an intermediate point.

Also, it is preferred to provide the upper edges of the flanges of the different members with tabs 3, where needed, these tabs being bent over after the cells are introduced and serving to prevent the wire connections between the cells from coming into contact with the upper edges of the zinc cups.

The longitudinal U-shaped member 1 and the two transverse U-shaped members 2 are fitted together in a manner which will be readily understood from Figs. 5 and 8. Thus, when the members are interfitted, the uncut lower portions of the flanges 2^b are received in the transverse slits 1^c with which the lower portion of the member 1 is provided, and the uncut upper portions of the flanges 1^b of the member 1 are received in the slits 2^c with which the upper portions of the flanges 2^b are provided.

The spacing of the slits, or kerfs, in the various partition members are so arranged that the slits of the transverse members will register in plan with the slits of the longitudinal member. Thus, when the structure is assembled, there are provided cell-cavities 4 of uniform size and of rectangular cross-section. The outer rows of cavities are completed when the partition-structure B is introduced into the container A, the edges of the vertical flanges then abutting against the vertical walls of the container.

It will be understood from Fig. 2 that when the members forming the partition-structure are assembled, some of the cell-cavities are provided with bottoms, and some are left unprovided with bottoms. The cell-cavities provided with bottoms alternate with those which are not provided with bottoms, and there is no case where two adjacent cell-cavities are unprovided with bottoms. When the partition-structure is introduced into the container A, the bottom of the container affords a wall which constitutes a bottom for those cell-cavities which

are not provided with bottoms in the partition-structure itself. It will be noted that in the event of the escape of electrolyte from any cell, it cannot pass to an adjacent cell because of intervening walls.

Any suitable material, or composition, may be employed in constructing the partition-structure. It is preferred to employ cardboard, water-proofed by means of creosote, asphaltum, paraffin, or other suitable substance of water-proofing and insulating character.

In practice, the slits, or kerfs, are so narrow as to form close contact with the flanges which they accommodate, so that there is a close interfitting relation. The connections between the cells may be made in any desired manner. In the illustration given, the carbon pole of a given cell C is connected with the zinc cup of the next adjacent cell by a wire 5. The tabs 3 are bent over so as to underlie the wire connections and prevent any possibility of contact with the upper edge of the zinc can. After the cells have been assembled in the cell-cavities, and suitably connected, a pitch, or wax, compound is poured into the upper portion of the container. This molten compound also flows down into the spaces in the cell-cavities around the cells. The sealing compound is designated D in Fig. 9.

In the construction shown in Figs. 3, 4, 10 and 11, the partition-structure is designated B′. In this structure the tabs are omitted from the upper edges of the flanges. These figures show a partition-structure suitable for a battery of thirty cells. This structure comprises two U-shaped longitudinal members 6; two transverse U-shaped members 7; and one transverse L-shaped member 8. The vertical flanges of the several members are provided with slits, or kerfs, in the manner stated with reference to the previously described construction. Thus, the longitudinal members 6 have their bottoms and the lower portions of their vertical flanges provided with transverse slits, 6^a; the transverse members 7 have the upper portions of their vertical flanges provided with slits, 7^a; and the transverse member 8 has the upper portion of its vertical flange provided with slits, 8^a. The horizontal flange 8^b of the member 8 affords a bottom wall.

The partition-structure B′ is introduced into a container of suitable size, and the battery is completed in the manner stated in connection with the previously described construction.

From the description given, it will be understood that a container may, in accordance with the invention, be divided into cell-cavities by introducing a partition-structure of the character described, and that the improved partition-structure is itself of such a character as to properly separate each cell from each adjoining cell. This is true with respect not only to the vertical partition walls, but also with respect to the bottom walls. It is incidental to the construction that at some points, as for example, where a botom wall 2^a crosses beneath the bottom wall 1^a, the partition-structure itself provides two thicknesses of wall at the bottom, and at other points, the bottom walls of the partition-structure may provide only a single thickness; and at still other points, the partition-structure itself provides no bottom wall, in which case the cell rests directly upon the bottom of the container A.

The foregoing detailed description has been given for clearness of understanding only, and no unnecessary limitations should be understood therefrom, but the appended claim should be construed as broadly as permissible, in view of the prior art.

What I regard as new, and desire to secure by Letters Patent, is:

A battery partition-structure comprising a plurality of parallel independent cardboard members of U-shaped cross-section, each of said members having transverse slits intersecting its bottom wall and the lower portions of its flanges, and a transversely disposed U-shaped cardboard member having the upper portions of its flanges provided with slits, said members having interfitting engagement at said slits and the bottom wall of the transverse member underlying portions of the bottom walls of the first-mentioned members and said flanges having tabs formed integrally with their upper portions, for the purpose set forth.

EDWIN E. MEISEKOTHEN.