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STORAGE AND DISPENSING UNIT

Filed June 17, 1963

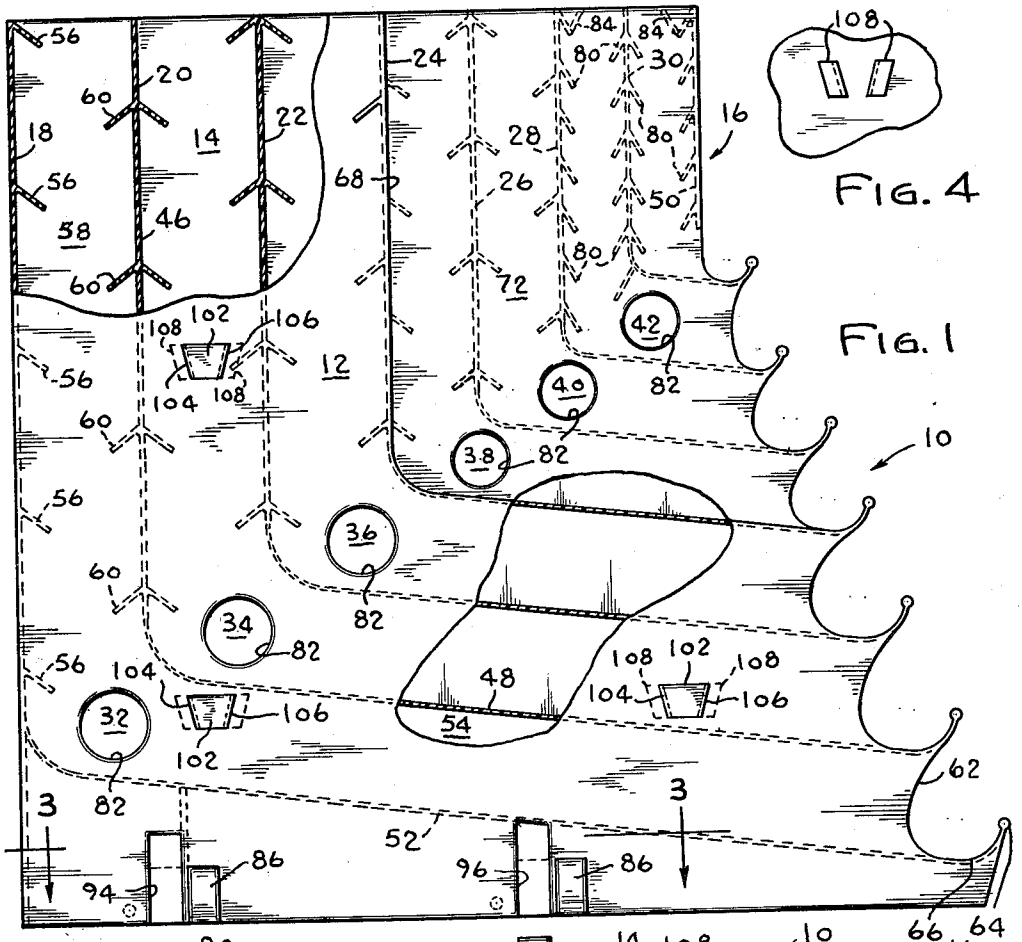


FIG. 1

FIG. 4

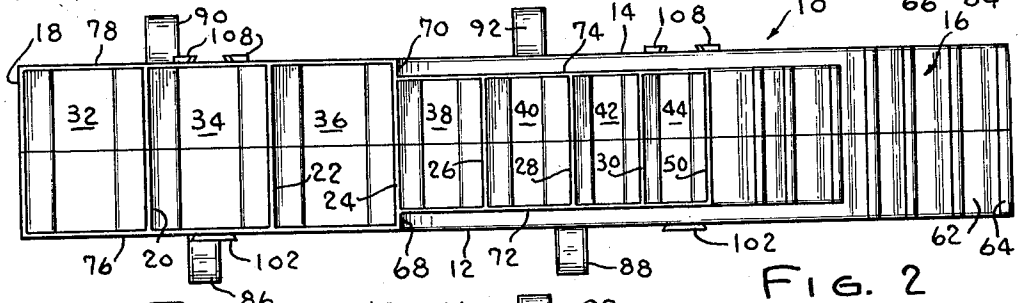


FIG. 2

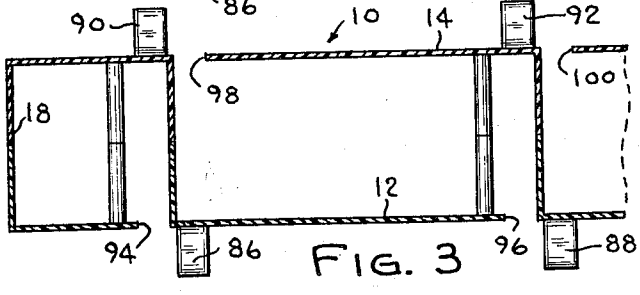


FIG. 3

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STORAGE AND DISPENSING UNIT

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This invention relates to a structure for storing and dispensing batteries and like articles.

Among the objects of this invention are to provide a self-service dispenser which will accommodate various size batteries, requires a minimum of attention and has maximum storage capacity while occpuying a minimum of space.

Another object of this invention is to provide a self-service dispenser of batteries constructed to permit horizontal stacking of a number of dispensers in such a manner as to provide a generally integrated structure.

A further object of this invention is to provide a self-service dispenser of various size batteries which also functions in the nature of a point of purchase display.

A more general object of this invention is to provide the foregoing objects while maintaining a simple and economical construction.

For the achievement of these and other objects of this invention, it is proposed to provide a dispenser the interior of which is divided into a number of open-ended compartments for receiving and storing batteries. Each compartment includes a generally vertical portion which includes means, preferably in the form of baffles, arranged to define a tortuous path for the batteries as they pass through the vertical portion. Each compartment also includes a portion disposed at a slight angle to the horizontal and communicating with the vertical portion for delivery of the batteries to the front of the dispenser for selective removal. Between compartments, the cross sectional area varies to accommodate various size batteries and, as the cross sectional area varies, the angle at which the baffles are disposed also varies so that the different size batteries can be accommodated while maintaining a free and unretarded flow of batteries through the tortuous path defined in the vertical portion of each compartment.

Another aspect of this invention lies in the provision of a dispenser which includes means for accommodating the support members of each dispenser so that the support members do not interfere when a number of dispensers are stacked horizontally. Furthermore, each dispenser is provided with mating and interlocking members arranged in aligned pairs on opposed sides of the dispenser so that they form an interlocking connection between adjacent dispensers when the dispensers are stacked horizontally.

Other objects and advantages will be pointed out in, or be apparent from, the specification and claims, as will obvious modifications of the embodiment shown in the drawings, in which:

FIG. 1 is a side elevation of a dispenser;

FIG. 2 is a top plan view of the dispenser;

FIG. 3 is a sectional view along lines 3—3 of FIG. 1; and

FIG. 4 is a partial view of the side of the dispenser opposite to that illustrated in FIG. 1.

With particular reference to the drawings, a battery dispenser 10 has a generally rectangular shape defined by opposed side walls 12 and 14, a front portion 16 and a rear wall 18. A plurality of relatively spaced partitions 20–30 divide the area defined by the side walls and front and rear portions into a plurality of compartments 32–44. Each partition includes a vertical section and a generally horizontal section, for example partition 20 includes a vertical section 46 and a generally horizontal section 48. It will be noted that rear wall 18 cooperates in forming

compartment 32 and a front wall 50 cooperates in forming compartment 44. Since they are practically identical in construction, only one compartment will be described in detail.

Horizontal sections 48 and 52 form horizontal portion 54 of compartment 32 and are disposed at a slight angle to the horizontal to give a slight forward pitch to the horizontal portion of compartment 32. A series of baffles 56 extend angularly from rear wall 18 into vertical portion 58 of the compartment and similar baffles 60 extend angularly from the vertical section of partition 20 into the vertical portion. Baffles 56 and 60 are staggered with respect to each other so as to define a tortuous path through vertical portion 58. The inward extension of the baffles is selected so that the battery placed in the vertical portion cannot pass in a straight line through that portion but must follow a tortuous path defined by the baffles. The spacing between vertically adjacent baffles is determined by the size of the battery to be stored in the compartment and is such that the batteries fit snuggly but with adequate clearance to allow a free flow of batteries without the danger of jamming. With such an arrangement, batteries are inserted through the upper open end of compartment 32 and will proceed downwardly through the vertical portion of the compartment but, due to the staggered baffles, its downward travel is continuously interrupted impeding its downward speed and causing it to follow a tortuous path. The batteries are delivered from the vertical portion of the compartments to the front of the dispenser by horizontal portions 54. The horizontal portion 54 terminates in an opening 62 in front portion 16 of the dispenser and a stop 64 is provided to limit the travel of the battery. The stop may assume any suitable form, however, in this instance the lower horizontal section 52 has its outer end turned up to form a lip 66 which is spaced from the opening 62, providing a stop and a substantially open area for easy removal of batteries. Batteries can be loaded into compartment 32 until they completely fill the horizontal portion 54 or, if desired, until they completely fill both the vertical and horizontal portions. As a battery is removed from the front of the dispenser another battery is moved against stop 64 to provide a continuous supply of batteries.

With reference to FIG. 2, it will be noted that side walls 12 and 14 are stepped at 68 and 70 to provide side wall portions 72 and 74 which are spaced inwardly of side wall portions 76 and 78. With this arrangement compartments 32, 34 and 36 will accommodate batteries of one axial length whereas compartments 38–44 will accommodate batteries having a shorter axial length. Furthermore rear wall 18 and partitions 20, 22 and 24 are uniformly spaced apart so that compartments 32, 34 and 36 will accommodate batteries of identical diameter. Partitions 24 and 26 and 28 are also uniformly spaced apart but a distance less than the distance between the partitions 20, 22 and 24 so that they will accommodate batteries having a smaller diameter as compared to compartments 32, 34 and 36. Similarly, partitions 28 and 30 and front wall 50 are spaced apart a uniform distance but less than the distance between partitions 24, 26 and 28 so that compartments 42 and 44 will accommodate batteries having an even smaller diameter.

It will be noted that as the size of the compartments decreases, i.e. the cross sectional area decreases, the angles at which the baffles in the compartments are disposed with respect to their respective vertical section decreases. More particularly and with reference to compartments 42 and 44, baffles 80, which are staggered on either side of each of the vertical portions of compartments 42 and 44, are disposed at a lesser angle to their respective vertical sections than are baffles 56 and 60 so

that the batteries of smaller diameter can be accommodated while insuring a free flow of the batteries along the tortuous path defined by baffles 80 and without the danger of jamming. Accordingly, the dispenser can accommodate various size batteries and the individual compartments are so arranged as to have a maximum storage capacity while occupying a minimum counter space. Furthermore, a self-service dispenser is provided which requires a minimum of attention after the initial filling. Although the danger of jamming the batteries is minimal, it is desirable to provide an opening 82 in each of the compartments for use in the event that jamming does occur.

It will be noted that the baffles are also positioned to facilitate loading of the batteries in that the batteries can be firmly held while positioning them on the uppermost baffle and then released to further minimize the danger of breakage which might result from dropping the batteries into the compartments. It will be noted that in the smaller compartments 42 and 44, wherein batteries of substantially smaller diameter will be loaded and stored, a lip 84 is provided on each of the uppermost baffles in those compartments to facilitate battery loading. Furthermore, this positioning of the baffles prevents reaching into the compartments and withdrawing batteries from the top of the vertical portion.

As was stated above, the particular angle at which the baffles are disposed and their angular extension into the vertical portions of the compartments, whether they be in the larger or smaller compartments, is determined by the size of the battery to be stored therein and is such that the baffles are positioned to provide a snug battery fit to interrupt the downward travel of batteries while minimizing the danger of jamming. Similarly, the width of each compartment is such that they will accommodate the axial length of the batteries snugly to provide a free flow without excessive movement of the batteries which might cause jamming.

Preferably, the dispenser is molded of a clear plastic material and in two sections which are joined by a suitable adhesive. By using a clear plastic material the dispenser can also function in the nature of a point of purchase display in that purchasers will not only see the batteries which are offered for sale but as a battery is removed and another battery is moved to the front of the dispenser an interesting motion is produced in the vertical portion of the compartment.

The dispenser includes support members 86 and 88 extending from side wall 12 and support members 90 and 92 extending from side wall 14. With reference to FIG. 2 it will be noted that the support members on one side wall are offset from the support members on the opposite side wall. Side wall portion 12 is also provided with openings 94 and 96 and side wall 14 is provided with openings 98 and 100. The openings in one side wall are aligned with the support members on the opposite side wall, for example openings 94 and 96 of side wall 12 are aligned with support members 90 and 92 extending from side wall 14. With this arrangement of support members and openings, a number of dispensers can be stacked horizontally and their respective support members are received by openings in the adjacent dispenser so that there is no interference between adjacent dispensers.

The dispenser is also provided with means for forming an interlocking connection between adjacent dispensers when they are stacked horizontally. More particularly, side wall 12 includes a plurality of trapezoidal or wedge-shaped members 102 having vertical edges 104 and 106 which slope inwardly toward the side wall. Side wall 14 includes rails 108 arranged in pairs with the confronting edges thereof sloping inwardly to the side wall to define an opening for receipt of members 102. Each of the openings defined by rails 108 are aligned with wedge-shaped member 102 on the opposite side wall so that, when the dispensers are aligned horizontally, the wedge-

shaped members are received in those openings and dove-tail with the rails to establish a positive interlocking connection between the dispensers. It will be noted that where a dove-tail interlocking connection such as that just described is used openings 94, 96, 98 and 100 are higher than support members 86, 88, 90 and 92 thereby permitting the support members to be received in their respective openings 94–100 to allow the side walls of adjacent dispensers to abut in making the dove-tail connection.

Although this invention has been illustrated and described in connection with a particular embodiment thereof, it will be apparent to those skilled in the art that various changes and modifications may be made therein without departing from the spirit of the invention or from the scope of the appended claims.

What I claim is:

1. A dispenser comprising, in combination, opposed side walls, opposed end walls extending between said side walls, means separating the area defined by said side walls into a plurality of compartments, a plurality of support members and means for receiving said support members arranged on said side walls in pairs, each of said pairs comprising a support member on one side wall aligned with means for receiving said support member on the other side wall, and a plurality of interlocking members arranged on said side walls in pairs, each pair comprising a projection on one side wall aligned with means on the opposite side wall defining an opening complementary to and adapted to interlock with said projection.

2. A dispenser comprising, in combination, opposed side walls, opposed end walls extending between said side walls, means separating the area defined by said side walls and end walls into a plurality of compartments each including a first generally vertical portion and a second portion arranged at a slight angle to the horizontal and opening into one of said end walls, means in each of said vertical portions defining a tortuous path therethrough, a plurality of support members and means for receiving said support members arranged on said side walls in pairs, each of said pairs comprising a support member on one side wall aligned with means for receiving said support member on the other side wall, and a plurality of interlocking members arranged on said side walls in pairs, each comprising a projection on one side wall aligned with means on the opposite side wall defining an opening complementary to and adapted to interlock with said projection.

3. A dispenser comprising, in combination, opposed side walls, opposed end walls extending between said side walls, means separating the area defined by said side walls into a plurality of compartments, a plurality of support members extending from each of said side walls with the support members on one side wall relatively spaced from each other and offset from the support members on the opposite side wall, an aperture in each side wall aligned with a support member on the opposite wall, a plurality of generally wedge-shaped members, and means for receiving and forming an interlocking connection with said wedge-shaped members, said wedge-shaped members and said receiving means arranged with a wedge-shaped member in a side wall aligned with receiving means on the other side wall.

4. A dispenser comprising, in combination, opposed side walls, opposed end walls extending between said side walls, means separating the area defined by said side walls and end walls into a plurality of compartments each including a first generally vertical section and a second section arranged at a slight angle to the horizontal and opening into one of said end walls, means in each of said vertical sections defining a tortuous path therethrough, a plurality of support members extending from each of said side walls with the support members on one side wall relatively spaced from each other and offset from the support members on the opposite side wall, an aperture in

each side wall aligned with a support member on the opposite wall, a plurality of generally wedge-shaped members, and means for receiving and forming an interlocking connection with said wedge-shaped members, said wedge-shaped members and said receiving means arranged with a wedge-shaped member in a side wall aligned with receiving means on the other side wall.

5. A dispenser comprising, in combination, opposed side walls, opposed end walls extending between said side walls, a plurality of partitions each including a first generally vertical section and a second section extending from said first section toward one of said end walls at a slight angle to the horizontal, said partitions arranged in relative spaced relation within the area defined by said side and end walls and defining a plurality of compartments having generally vertical and horizontal portions opening to said one end wall, a plurality of opposed projections extending into each of said vertical compartment portions and positioned in relative staggered relationship on opposed sides thereof to define a tortuous path therethrough, a plurality of support members extending from each of said side walls with the support members on one side wall relatively spaced from each other and offset from the support members on the opposite side, an aperture in each side wall aligned with a support member on the opposite wall, a plurality of wedge-shaped members, and means for receiving and forming an interlocking connection with said wedge-shaped members, said wedge-shaped member and said receiving means arranged with a wedge-shaped member on one side wall aligned with receiving means on the other side wall.

6. The dispenser of claim 5 including stop means arranged in spaced relation from the open end of each of said horizontal portions.

7. The dispenser of claim 5 wherein said side walls are stepped and the distance between partitions defining said compartments varies so that said compartments vary in cross sectional area.

8. The dispenser of claim 7 wherein said projections in said vertical compartment portions comprise baffle members alternately arranged on and extending angularly from opposed vertical sections of said vertical portions, the angle of said baffles decreasing as the cross sectional area of said compartments decreases.

9. A dispenser comprising, in combination, opposed stepped side walls, opposed end walls extending between said side walls, a plurality of partitions each including a first generally vertical section and a second section extending from said first section toward one of said end walls at a slight angle to the horizontal, said partitions arranged in relative spaced relation within the area defined by said side and end walls with the distance between partitions varying to define a plurality of compartments which vary in cross sectional area and have a generally vertical portion and a generally horizontal portion opening to said one end wall, and a plurality of baffle members alternately arranged on and extending angularly from opposed vertical sections into each of said vertical compartment portions and positioned in relative staggered relationship to define a tortuous path through said vertical sections, the angle of said baffle members decreasing as the cross sectional area of said compartments decreases.

10. A dispenser for batteries and the like comprising, in combination, opposed stepped side walls, opposed end walls extending between said side walls, a plurality of partitions each including a first generally vertical section and a second section extending from said first section at a slight angle to the horizontal, said partitions arranged in relative spaced relation within the area defined by said side walls and said end walls with the distance between adjacent partitions varying to define a plurality of compartments which vary in cross sectional area and have a first generally vertical portion and a second portion extending from said first portion at a slight angle to the horizontal, and baffle means in each of said vertical portions defining angularly disposed surfaces relatively vertically spaced along each of said vertical sections with the angular surfaces on one vertical portion offset from the vertical portion on an opposed vertical section to define a tortuous path for batteries through the vertical portions of said compartments, the angle of the surfaces defined by said baffle means decreasing as the cross sectional area of said compartments decreases.

11. The dispenser of claim 10 wherein said compartments have an upper loading end and a discharge end in one of said end walls and wherein one of the angular surfaces defined by said baffle means is disposed at said loading end of each of said compartments.

12. The dispenser of claim 10 wherein said dispenser is made of a transparent plastic.

13. The dispenser of claim 12 wherein said angular surfaces extend inwardly of vertical compartment portions with the angular surfaces on one of said vertical sections terminating in spaced relation to the angular surfaces on an opposed vertical section a predetermined horizontal distance less than the width of said batteries.

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