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[54] **CONTAINER APPARATUS**
22 Claims, 13 Drawing Figs.

[52] U.S. Cl..... **312/283,**
312/200, 312/266

[51] Int. Cl..... **A47b 88/02**

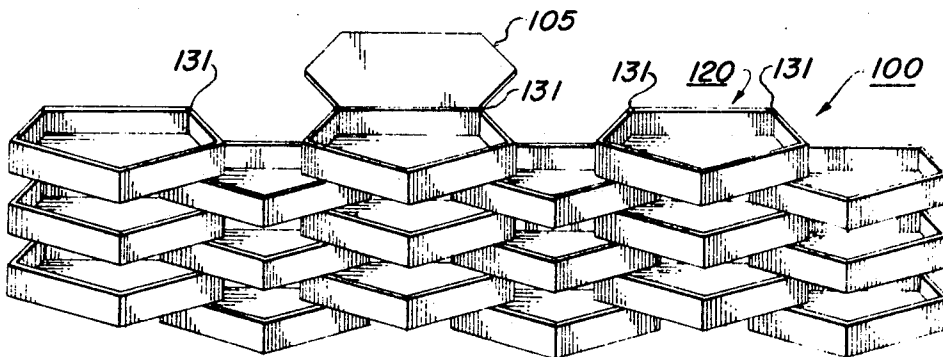
[50] Field of Search..... **312/201,**
200, 285, 296, 283; 206/45.11; 211/130, 169, 168;
220/6

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ABSTRACT: A container apparatus comprising a plurality of operatively connected interleavable receptacles forming a closed unitary structure when in a closed position. Each of the plurality of receptacles is preferably supported from a sidewall in a position such that the receptacles will be interleaved when the container is closed and will be spaced apart when the container is open providing ready access to the contents contained therein.



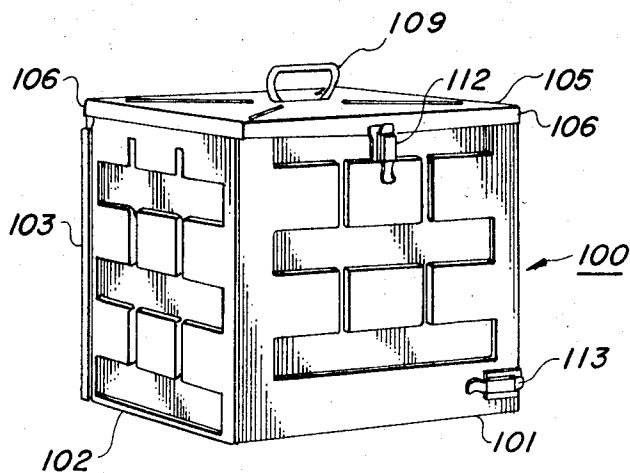


FIG. 1

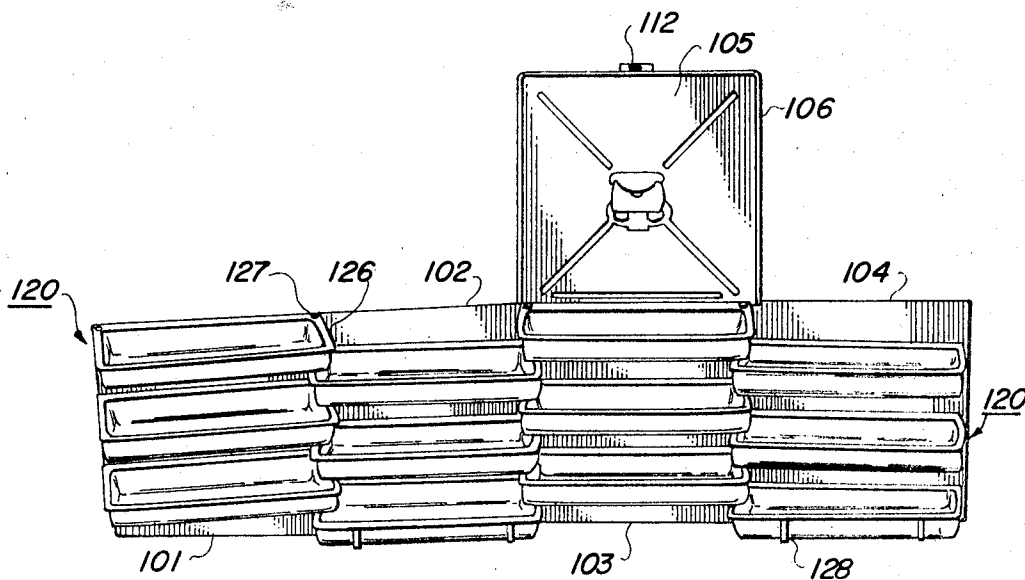
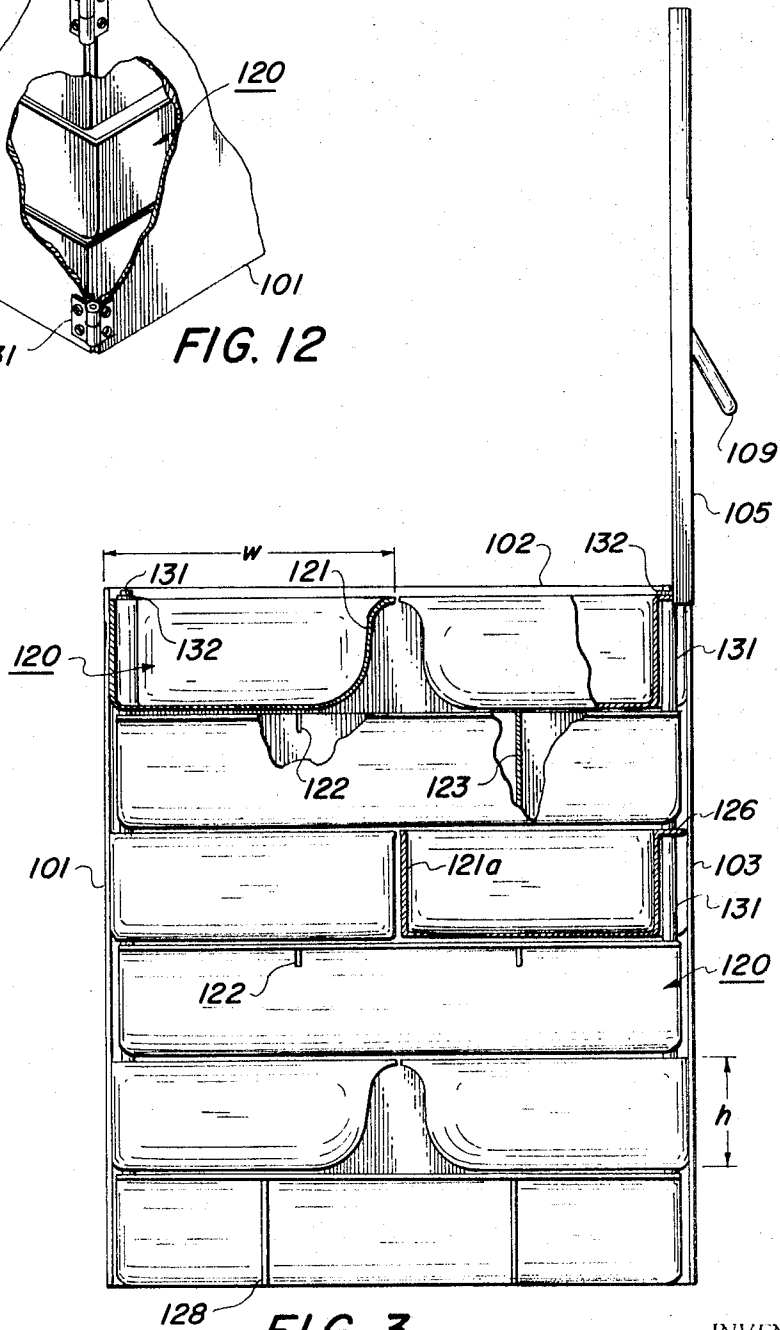
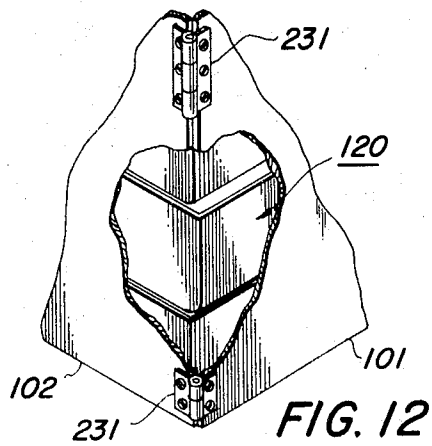


FIG. 2

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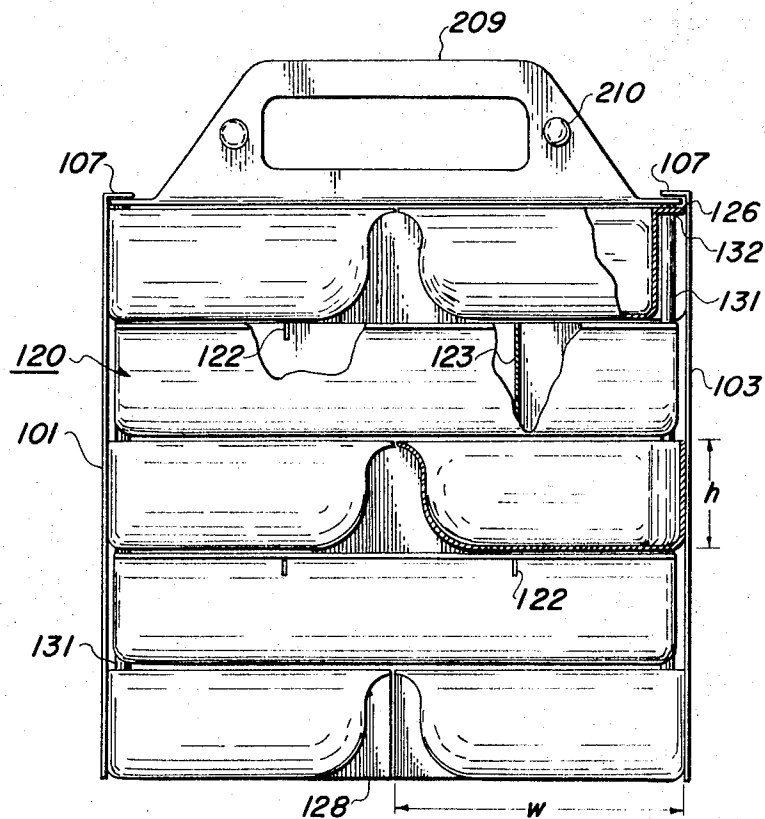


FIG. 7

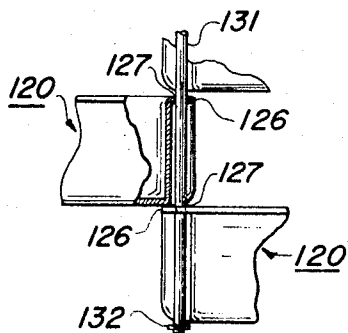


FIG. 4

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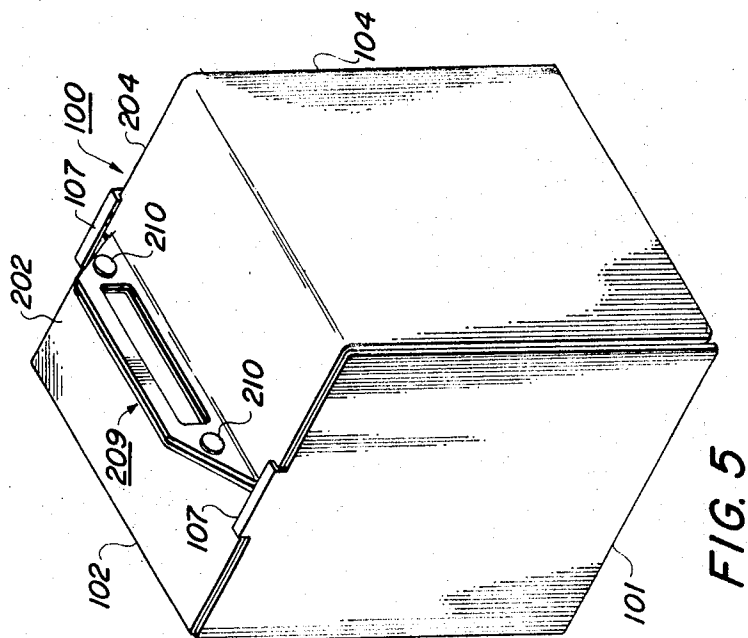


FIG. 5

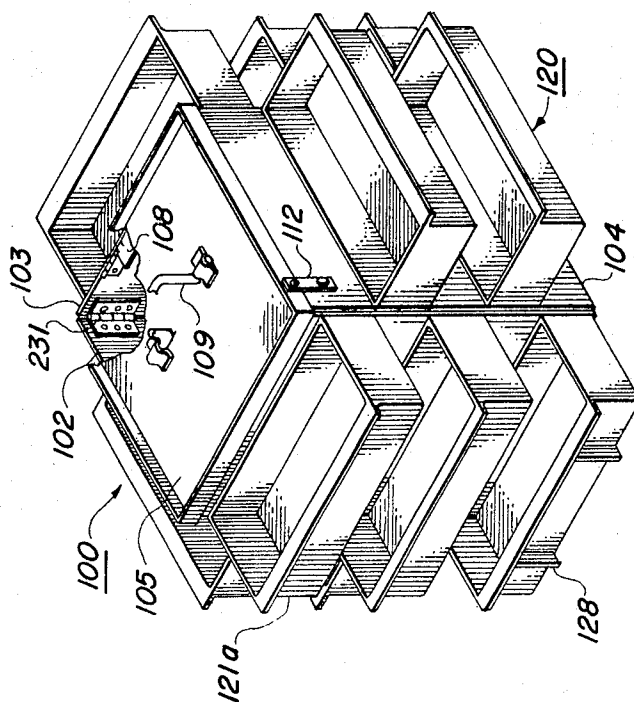


FIG. 13

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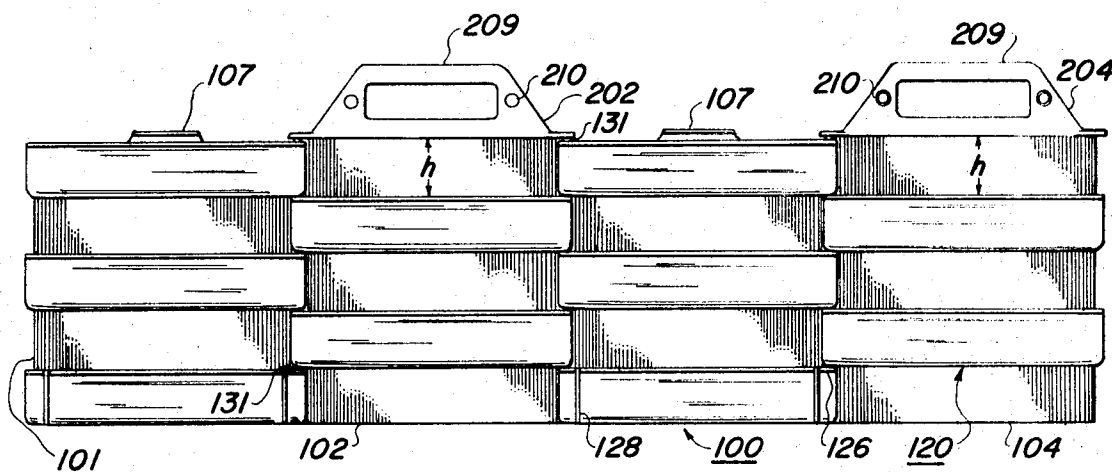


FIG. 6

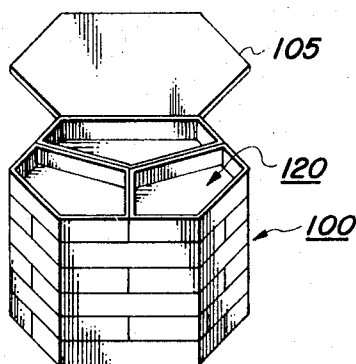


FIG. 8

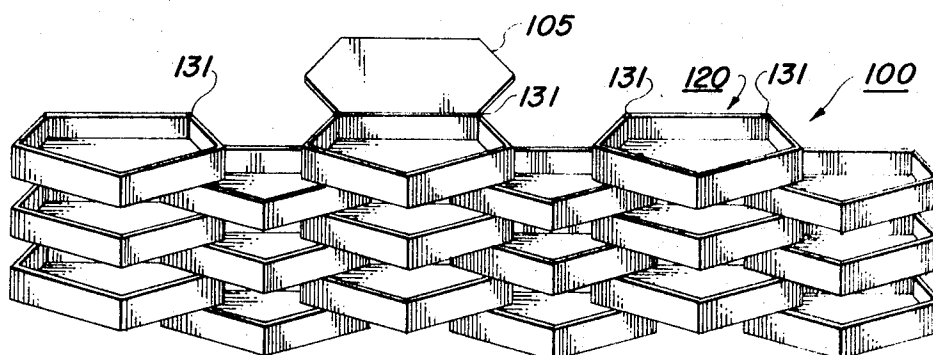


FIG. 9

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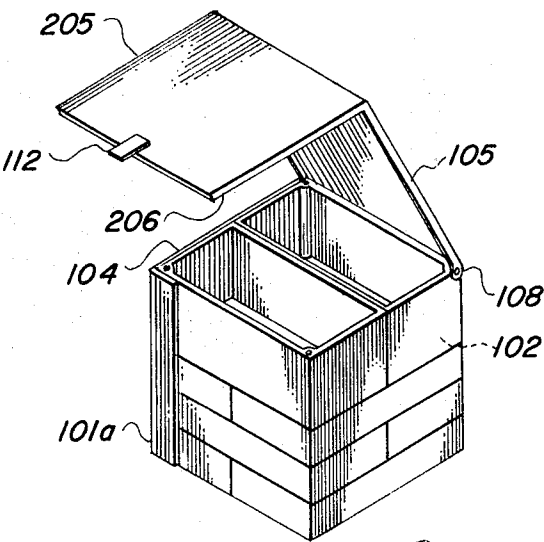


FIG. 10

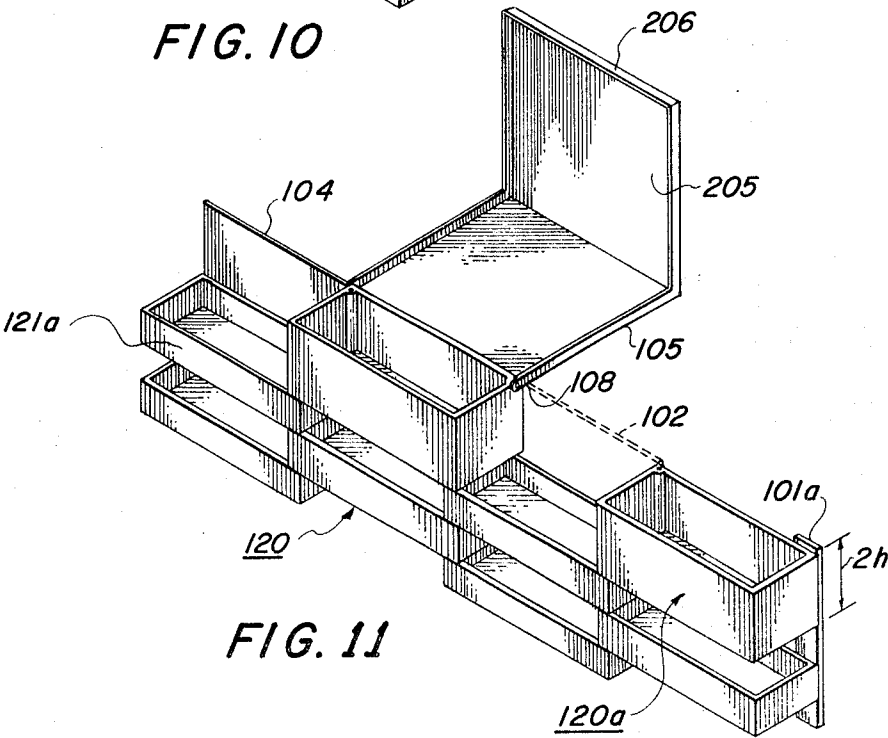


FIG. 11

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CONTAINER APPARATUS

BACKGROUND OF THE INVENTION

This invention relates to containers and in particular to containers comprising multiple interleaving receptacles.

More specifically, this invention relates to a container having a plurality of receptacles interleavable with each other to form a unitary portable structure adapted upon opening to position each of the receptacles in a manner whereby all the contents contained therein are observable and readily accessible.

In many applications, for example, the assembly of electronic equipment, it is very desirable to have a convenient receptacle for various components utilized in assembling a finished product. Assembly line production, whereat various components are manually assembled, requires that an assembler be provided with a quantity of components sufficient to maintain production schedules and conveniently accessible to minimize nonproductive time occasioned by frequent misplacement of parts. In addition, a large amount of nonproductive time is occasioned by assemblers having to return to a central parts repository to replenish depleting component stocks.

Various attempts have been made to solve these aforementioned problems of maintaining a sufficient quantity of components in a readily accessible convenient manner to minimize wasted labor both in physical movement and in time required to replenish depleting supplies of working material. One such attempt has been to provide each assembler or work station with a set of fixed bins in which various components are stored. However, such a system has not proven to be entirely satisfactory in that even though the components are readily accessible to an assembler a substantial amount of nonproduction time is still occasioned by replenishing depleting parts supplies.

The present invention comprises a readily portable container which may be filled with items, such as components utilized in the assembly of electronic equipment, at a central parts repository and delivered to an assembler at a work station whereat the container is opened to provide a convenient readily accessible supply of component parts. Therefore, no nonproduction time is occasioned due to assemblers leaving their work station. An empty container may be returned to the central parts repository for refilling thereby eliminating the need for intermediate packaging or containers heretofore utilized in delivering components to a fixed-bin work station.

In other applications, such as home service repairing, it is very convenient to have a repair kit or parts container wherein all of the replacement components and/or tools in the kit are readily observable and accessible when the container is opened yet the container must be very compact when closed to permit ease of carrying to various repair sites. These same requirements of a container wherein all of the contents are readily observable and accessible when the container is opened, yet a compact unitized container is formed upon closing are necessary for such containers as a salesman's display case, a fishing tackle box or a sewing kit.

SUMMARY OF THE INVENTION

Therefore, it is an object of this invention to improve container apparatus.

It is another object of this invention to improve container apparatus having a plurality of receptacles for containing various items by operatively connecting the walls of the container to each other such that upon opening the container each of the receptacles is positioned in a manner such that all of the items contained therein are observable and accessible.

A further object of this invention is to improve container apparatus having a plurality of receptacles for containing various items by operatively connecting the receptacles such that upon closing the container the receptacles are interleaved to form a compact unitary structure.

Still another object of this invention is to improve multiple receptacle containers by operatively connecting the walls or receptacles of the container such that upon closing the container the receptacles supported therefrom will interleave in a manner to prevent the contents from spilling during transportation.

A further object of this invention is to improve container apparatus by operatively coupling the walls or receptacles of the container such that the container may be opened to various positions and maintained in a stable configuration.

These and other objects are attained in accordance with the present invention wherein there is provided a container comprising a plurality of interleavable receptacles, each of the plurality of receptacles adapted to be pivoted between adjacent receptacles such that the container may be opened into various positions wherein the contents of the receptacles are observable and accessible or closed to form a unitary portable structure.

DESCRIPTION OF THE DRAWINGS

Further objects of this invention, together with additional features contributing thereto will become apparent from the following detailed description of several embodiments of the present invention when read in conjunction with the accompanying drawings, wherein:

FIG. 1 is a front perspective view of one embodiment of the invention with the container closed to form a unitary spill-proof structure;

FIG. 2 is a front elevation of the container apparatus of FIG. 1 opened into a position to reveal the contents contained therein;

FIG. 3 is an enlarged end view of the container apparatus of FIG. 1 with a sidewall and receptacles supported therefrom removed, portions broken away, and the top cover opened to better illustrate the structural features thereof;

FIG. 4 is an enlarged detailed illustration of the interconnection of the container receptacles to each other and the position of adjacent receptacles relative to each other;

FIG. 5 is a front perspective view of another embodiment of the invention in a closed position to form a unitary portable structure;

FIG. 6 is a front elevation view of the container apparatus shown in FIG. 5 opened into an operative position;

FIG. 7 is an enlarged end view of the container apparatus of FIG. 5 with a sidewall having a depending top cover forming portion and receptacles supported therefrom removed and portions broken away to better illustrate the structural features thereof;

FIG. 8 is a front perspective view of another embodiment of the invention in a closed position;

FIG. 9 is a front elevation view of the container apparatus shown in FIG. 8 in an opened position;

FIG. 10 is a front perspective view of yet another embodiment of the invention with a modification to the top cover, a receptacle, and the sidewalls;

FIG. 11 is a front perspective view of the container apparatus of FIG. 10 in an opened position;

FIG. 12 is an enlarged detailed illustration of an alternate interconnection for the container sidewalls and the position of adjacent receptacles supported therefrom relative to each other; and

FIG. 13 is a front perspective view of a container apparatus of the type illustrated in FIGS. 1-4 with the alternate interconnection of FIG. 12 and having structural modifications as illustrated thereby.

DESCRIPTION OF PREFERRED EMBODIMENTS

Referring now to the subject matter of this invention, there is shown in FIG. 1 a container 100 comprising a plurality of sidewalls 101, 102, 103 and 104 which are operatively connected to each other to define the container 100. A top cover 105 is supported from sidewall 103 by means of a hinge 108

appropriately secured to the top cover and sidewall as by a plurality of rivets. The top cover 105, when in a closed position, extends beyond the closed sidewalls 101, 102, 103 and 104 and has depending side portions 106 which serve to support and seal the closed unit. A handle 109 is appropriately secured to the top cover, as by rivets, for carrying the closed unit. A portion of a latch 112 is secured to one of the depending side portions of top cover 105 and is adapted to be connected with the complimentary portion of latch 112 supported on sidewall 101 for securing the unit in a closed position as when transporting the container. A second latch 113 connecting sidewall 104 with side wall 101 is also utilized to secure the container during transportation.

Each of the sidewalls 101, 102, 103 and 104 has depending therefrom a plurality of receptacles 120, each receptacle 120 being appropriately supported from a sidewall for example as by solvent or heat bonding. As best shown in FIGS. 2 and 3, the receptacles 120 are positioned on the sidewalls such that the receptacles supported from adjacent sidewalls are positioned intermediate the receptacles of each adjoining sidewall. In addition, each of the receptacles is spaced from another receptacle supported on the same wall a distance defined by the height "h" of the receptacles carried by the adjoining sidewall (FIG. 3). The receptacles 120 may be formed with a sloping forward wall 121 to facilitate the removal of small items contained therein or the forward wall may be upright (121a) to maximize spillproofing when the container is closed. In addition, a plurality of slots or grooves 122 are provided in each receptacle to support dividers 123 for selectively dividing the capacity of individual receptacles to permit each receptacle to be utilized for containing items of differing sizes or kind.

As shown in FIG. 4, the sidewalls 101, 102, 103 and 104 are operatively connected to each other as by pivoted connection of the receptacles supported therefrom. Each of the receptacles 120 is formed with a flange portion 126 having an aperture 127 through which passes a bearing shaft 131 to interconnect the sidewalls 101 with 102, 102 with 103, and 103 with 104 by alternately passing through the receptacles 120 supported from each wall. Suitable retaining rings 132 are secured in appropriate slots at each end of the bearing shafts 131 to retain the shafts in a proper position to permit the sidewalls to be pivoted relative to each other about the bearing shafts. The overlapping of adjoining receptacles supported on adjacent sidewalls increases the rigidity and stability of the container. The receptacles extend a width "w" approximately one-half the width of an adjoining sidewall so that when the container is closed the bottoms of each pair of receptacles effectively forms a cover or top for the pair of receptacles which have been interleaved below. As shown, the lowermost receptacles are each formed with an extension or leg 128 to assist in stabilizing the container when it is in an open position.

Referring now to FIGS. 5, 6, and 7 there is shown in detail a second embodiment of the invention wherein like reference numerals indicate like parts. As shown in the drawings, the interconnecting of sidewalls 101, 102, 103 and 104 and the positioning of the receptacles 120 on the walls is substantially the same as disclosed with reference to the first disclosed embodiment. However, as best shown in FIGS. 5 and 6, sidewalls 102 and 104 are each formed with a depending portion 202 and 204, respectively, having an upward turning end terminating in a handle 209. When the container 100 is closed the two depending portions 202 and 204 meet to form a top cover and a handle 209 for carrying the container. The uppermost receptacles 120 supported from the sidewalls 102 and 104 are spaced a distance "h" from the depending, handle-forming portions so that the contents of these receptacles is as equally observable and accessible as the other receptacles when the container is in an open position. Sidewalls 101 and 103 are each formed (FIG. 5) with an upright portion having an inward turning end forming a support brace 107. When the container 100 is closed, the inward turning ends of the support brace 107 extend over the depending portions 202 and 204 of

sidewalls 102 and 104, respectively, to support and secure the closed unit. A pair of conventional snap-tab-type locks 210 are appropriately secured in the handle 209 to latch the container closed when desired, as during transportation.

As shown in FIGS. 8 and 9, the invention is not limited to square or rectangular configurations but may be constructed in various configurations as long as the receptacles may be pivoted about each other to define a container 100 wherein the receptacles 120 interleave to form a unitary structure upon closing the container. Receptacles 120 may be omitted from a sidewall if desired, although it should be noted that the omission of a receptacle will prevent the forming of a top for a receptacle positioned beneath the space when the container 100 is closed.

Furthermore, as shown in the embodiment illustrated in FIGS. 10 and 11, the top cover 105 may be formed with an extended portion 205 having depending edges 206. Since the extended portion 205 extends along the length of the sidewall 101 and the depending edges 206 extend about the junction of the sidewalls 101 and 102, and 101 and 104, only one latch 112 is necessary to secure the container for transportation. Furthermore, the hinge 108 joining the top wall 105 with sidewall 103 allows the top cover to be opened until it contacts the sidewall 103 to transform the depending portion 105 into a shelf or table.

In addition, a sidewall (101a) may be modified such that the receptacles are supported therefrom only along a portion of one side to permit access to the contents of the receptacles from either side of the container. Such a sidewall (101a) still allows a unitary spillproof structure to be formed upon closing the container due to the interleaving of adjoining receptacles 120. If desired, a sidewall, such as 102 and 103, may be omitted entirely due to the interconnection of the receptacles with a receptacle adjoining at each end.

In addition, a receptacle (120a) may be constructed such that it has a depth greater than the other receptacles 120, for example 2h. When utilizing such a receptacle (120a), the configuration of the other receptacles is slightly modified (FIG. 11) such that their position will allow the receptacles to interleave upon closing the container. Similarly, a receptacle may be constructed having twice the width of the receptacles 120 or 2w, and the opposing receptacles omitted.

The container apparatus 100 may be latched in an open position, as shown in FIG. 13, by modifying the sidewalls 101, 102, 103 and 104 such that adjacent sides do not interfere with an adjoining sidewall when opened into the position shown or utilizing the alternative pivot structure as illustrated in FIG. 12. A hinge 231 is appropriately secured to the outer side of the adjoining sidewalls as by rivets and pivotally connects sidewall 101 to 102, 102 to 103 and 103 to 104. The shaft 131 may, therefore, be omitted and the receptacles 120 supported from the sidewalls as true cantilevers. A latch is appropriately secured to the inner side to top cover 105 and latches the top cover to the inner side of sidewall 104. A second handle is appropriately secured to the inner side of top cover 105 to allow the container to be transported in an open position with the contents of the receptacles 120 readily observable and accessible.

While there has been shown and described various preferred embodiments of the invention it is obvious that changes in form could be made by one skilled in the art as by providing various sizes and numbers of receptacles or various numbers of sidewalls without departing from the invention; and it is intended, therefore, that the invention be not limited to the exact forms shown and described nor to anything less than the whole of the invention as set forth in the appended claims.

I claim:

1. A container apparatus adapted for opening into a first position to provide ready access to the receptacles supported therein and closing to interleave the receptacles forming a unitary portable structure, the apparatus including

a first plurality of receptacles supported in horizontal planes spaced a predetermined vertical distance apart relative to each other,

a second plurality of receptacles positioned adjacent said first plurality of receptacles and supported in horizontal planes parallel to said first plurality of receptacles and spaced a predetermined vertical distance apart relative to each other, and

means operatively connecting said first plurality of receptacles with said second plurality of receptacles such that said first and second plurality of receptacles are unitarily pivotable relative to each other between a first position wherein said first and second pluralities of receptacles are supported in horizontal planes and positioned substantially parallel to each other and a second position wherein said first and second pluralities of receptacles are interleaved in parallel horizontal planes and positioned substantially transverse of each other.

2. The apparatus of claim 1 wherein said first plurality of receptacles includes a first and second series of receptacles, each one of said series positioned adjacent said second plurality of receptacles.

3. The apparatus of claim 2 wherein said second plurality of receptacles includes a first and second series of receptacles each one of said series of receptacles positioned adjacent one of said series of said first plurality of receptacles.

4. The apparatus of claim 3 wherein said first series of said first plurality of receptacles is operatively connected to said first series of said second plurality of receptacles,

said first series of said second plurality of receptacles is operatively connected to said second series of said first plurality of receptacles, and

said second series of said first plurality of receptacles is operatively connected to said second series of said second plurality of receptacles such that upon pivotal movement from said first to said second positions said second series of said second plurality of receptacles will be interposed between and transverse of said first series of said first plurality of receptacles.

5. The apparatus of claim 4 wherein said first and second series of said first plurality of receptacles are connected to said first and second series of said second plurality of receptacles by means of pivot shafts passing alternately through a portion of a receptacle of one of said series of said first plurality and a portion of a receptacle of one of said series of said second plurality to unitarily interleave each one of said series of said first plurality relative to each one of said series of said second plurality.

6. The apparatus of claim 1 wherein said first plurality of receptacles are positioned with a portion of each of said receptacles overlying a portion of one of said second plurality of receptacles such that each receptacle of said first plurality is positioned adjacent to one of said receptacles of said second plurality and interposed in the vertical space therebetween.

7. The apparatus of claim 6 wherein said means operatively connecting said first plurality of receptacles with said second plurality of receptacles comprises a pivot shaft passing alternately through a portion of one of said first plurality of receptacles and a portion of one of said second plurality of receptacles such that said first and second pluralities of receptacles are interleavable relative to each other about said pivot shafts.

8. The apparatus of claim 1 wherein said first and said second plurality of receptacles are each supported on one side from a sidewall.

9. The apparatus of claim 8 including a top cover supported from one of said sidewalls and extending over said interleaved first and second pluralities of receptacles when said pluralities are pivoted to said second position.

10. The apparatus of claim 9 wherein said top cover includes a depending portion extending parallel to said sidewalls supporting said top cover, and

means connecting said top cover to said sidewall for opening said top cover into contact with said sidewall extending said depending portion perpendicular to said sidewall to form a work platform.

11. The apparatus of claim 8 wherein said sidewalls supporting said first plurality of receptacles are each formed with a depending top cover forming portion extending parallel to said receptacles and having an upward turning portion forming a handle.

12. The apparatus of claim 11 wherein the sidewalls supporting said second plurality of receptacles are each formed with a depending support brace extending parallel to said receptacles and transverse of said top cover forming portions when said pluralities of receptacles are interleaved in said second position to secure the container.

13. The apparatus of claim 11 wherein said handle includes fastening means for securing the container in a closed position.

14. The apparatus of claim 9 including fastening means for securing the container in a closed position.

15. The apparatus of claim 14 wherein said fastening means includes a fastener for securing a sidewall supporting said first plurality of receptacles to a sidewall supporting said second plurality of receptacles.

16. The apparatus of claim 1 wherein said receptacles are formed with a sloping sidewall.

17. The apparatus of claim 1 wherein said receptacles are formed with an upright sidewall.

18. The apparatus of claim 1 wherein one of said first plurality of receptacles includes an extended portion forming a support leg for stabilizing the container when said plurality of receptacles are pivoted into said first position opening the container.

19. The apparatus of claim 1 wherein said means operatively connecting said first plurality of receptacles with said second plurality of receptacles comprises sidewalls supporting each of said first and second pluralities of receptacles and pivotally interconnected such that said first and second pluralities of receptacles are interleavable relative to each other upon movement into said second position.

20. The apparatus of claim 19 wherein said interconnected sidewalls are movable between said second position whereat said sidewalls form a closed peripheral surface enclosing said interleaved receptacles and a display position whereat said sidewalls form a closed peripheral surface extending said receptacles outwardly therefrom.

21. The apparatus of claim 20 including a top cover supported from one of said sidewalls and movable into contact with an opposite sidewall when said sidewalls pivoted into a display position.

22. The apparatus of claim 21 including fastening means for securing the container in said display position.