May 28, 1963 P. F. GAWRON 3,091,361

CONTAINERS

Filed March 6, 1961 2 Sheets-Sheet 1

Fig. 1.

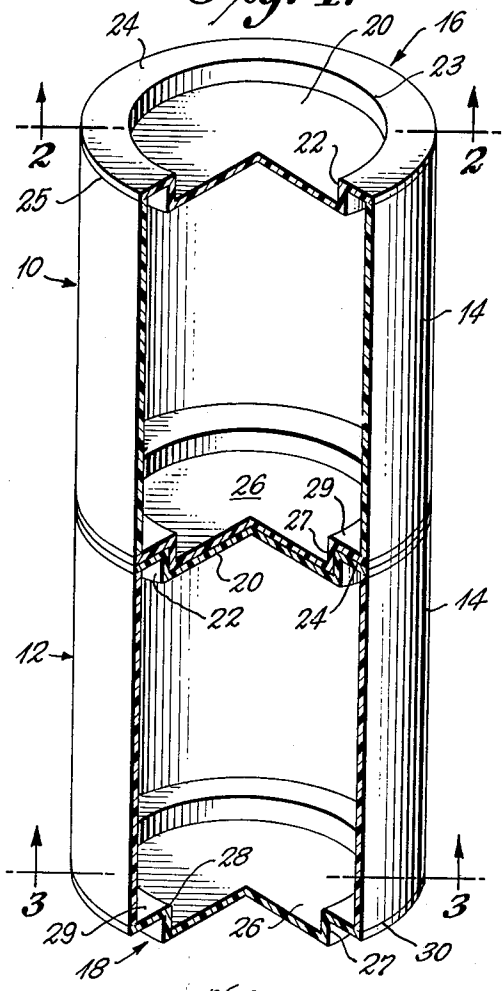


Fig. 4.

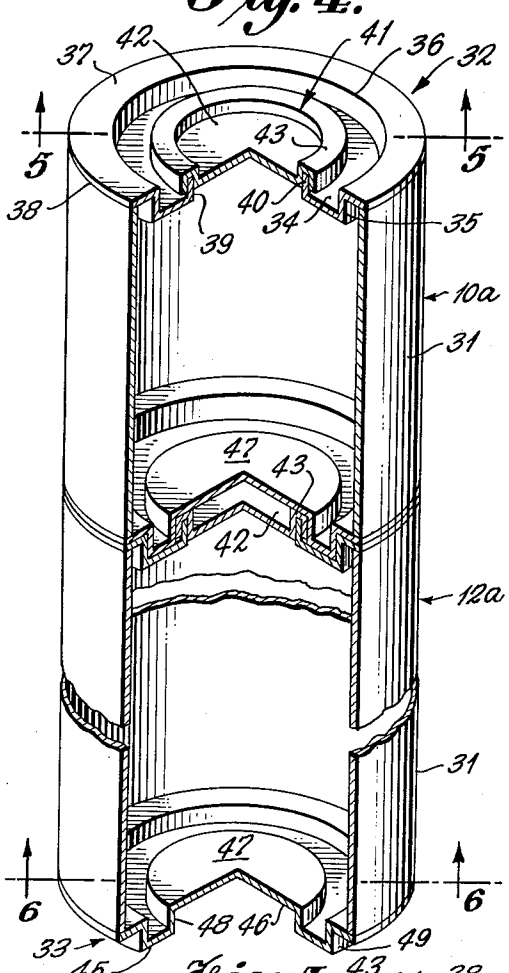


Fig. 2.

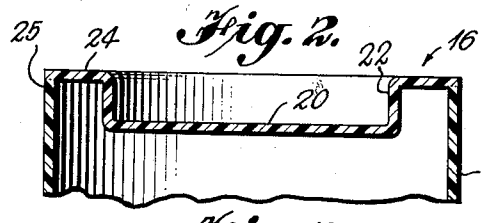


Fig. 5.

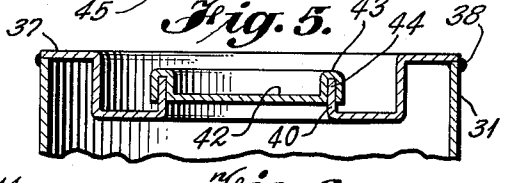


Fig. 3.

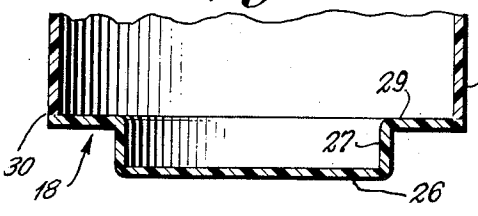
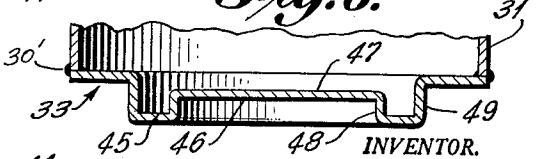


Fig. 6.



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Fig. 7.

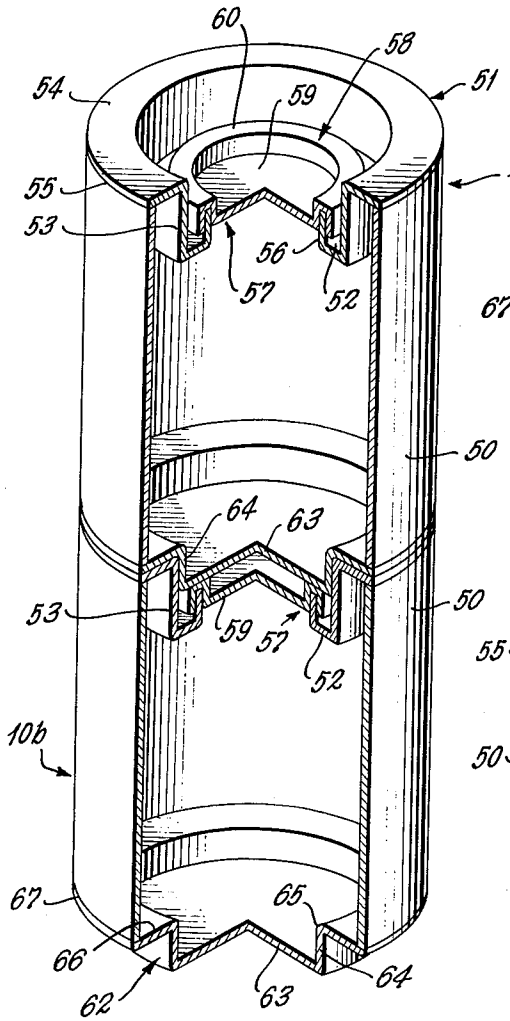


Fig. 8.

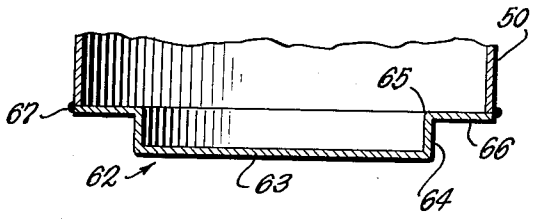
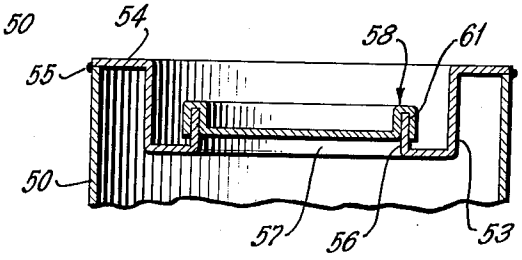


Fig. 9.



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3,091,361

CONTAINERS

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1 Claim. (Cl. 220—97)

This invention relates to containers and is directed particularly to improvements in containers designed for stacking.

In the manufacture of containers designed for marketing food products and other commodities such containers are conventionally made in such a way that it is difficult to stack them one upon the other and maintain the same in stacked arrangement. Considering the conventional metal cans, for example, these are made with flat end walls usually flanged around the edge and of the same diameter from one end to the other. Accordingly, when such containers are placed one upon the other there is only a narrow edge-to-edge contact between the flange at the top end of one can and the flange at the bottom edge of the overlying can. As a result such cans or containers can be easily knocked out of position and will slip one from the other and thus the entire stack may collapse to the great inconvenience and even with the risk of injury to persons whose duties require that the containers be kept in stacked condition or to person who may be standing near the stack at the time.

In view of the foregoing it is a particular object of the present invention to provide a new and novel type of container wherein a number of the same can be easily stacked one upon the other and wherein the ends of the container present broad surfaces which will guarantee the same maintaining position one upon the other.

Another object of the present invention is to provide a new and novel type of container wherein top and bottom walls are designed in such a way that a positive coupling can be established between the bottom wall of one container and the top wall of another container so as to positively preclude any possibility of the connected or stacked containers slipping laterally relative to one another.

Still another object of the invention is to provide a novel type of container wherein opposite end walls are formed one with a depressed portion and the other with an extended portion and wherein the circumferential measurement of the depending or extended portion is related to the interior measurements of the depressed portion whereby the extended portion of one container can be inserted or telescoped into the depressed portion of the other container so as to firmly couple the two containers together.

A still further object of the invention is to provide a new and novel type of container wherein the end walls are so designed that a portion of one end wall may be inserted into a portion of the other end wall of a duplicate container to secure the containers together and wherein further a portion of one end wall of the container is adapted to be opened to facilitate the extraction of the contents thereof.

The invention broadly contemplates in one embodiment thereof, a container or receptacle body having opposite end walls wherein one of such end walls is formed with a depressed or inset area, preferably of circular form, peripherally joined to an upstanding or outwardly extending flange and which flange is in turn joined to the inner edge of a flat annular portion and which annular portion is joined at its outer edge to the end edge of the container wall. Thus such flat annular portion presents a flat surface lying in a plane perpendicular or normal to the longitudinal axis of the container. The opposite end wall of the container embodies a central projecting or outwardly extending portion of the same configuration as the depressed portion at the opposite end and which projecting

portion is connected to an encircling inwardly projecting flange which in turn is joined to the inner edge of a flat annular rim portion and such rim portion being joined at its outer periphery to the adjacent end edge of the receptacle wall. In this construction the depressed portion and the projecting portion, or depressed area and the projecting area of the two end walls are so dimensioned that the projecting portion or area can be inserted into and frictionally secured in the depressed area portion of the opposite wall of a container of duplicate construction.

In a second embodiment of the invention the depressed area of the end wall has a central opening formed therein which is defined by an upstanding flange and a closure cap is provided for such opening which has a peripheral channel designed to receive the flange of the opening. The opposite end wall of the container of the second embodiment is formed to provide an outwardly opening socket portion which is of proper size and configuration to receive a cap on the opposite end of another container of duplicate construction.

In a third embodiment of the invention a receptacle is provided in which the end walls combine the features of the receptacle of the first embodiment and the receptacle of the second embodiment in that one end wall has the referred to depressed area formed with a central opening defined by an upstanding flange and a closure cap and the opposite end wall of the receptacle or container has a projecting portion or projecting area which in the central part thereof is flat and which enters the depressed area of the end wall of another container to bear upon the closure cap. In this third embodiment the said projecting portion of the said opposite end wall provides a wide flat surface upon which the container may rest when it is detached from another container. Also this third embodiment is designed primarily for marketing paints and other heavy type liquids and for this use it would be made in considerably larger size than the containers of the first and second embodiments.

The invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawings forming a part of this specification with the understanding, however, that the invention is not confined to a strict conformity with the showing of the drawings but may be changed or modified so long as such changes or modifications mark no material departure from the salient features of the invention as defined by the appended claim.

In the drawings:

FIG. 1 is a view in perspective of two containers constructed in accordance with one embodiment of the present invention and showing the same joined or coupled together in stacked relation, the containers being broken away to show details of the interconnecting portions of the adjacent or opposing end walls.

FIG. 2 is a sectional detail on an enlarged scale taken substantially on the line 2—2 of FIG. 1.

FIG. 3 is a sectional detail on an enlarged scale taken substantially on the line 3—3 of FIG. 1.

FIG. 4 is a perspective view showing two second or modified embodiments of the container structure in joined relation, with portions of the walls of the two containers broken away to show interconnecting portions of the adjacent or opposing end walls thereof.

FIG. 5 is a sectional view on an enlarged scale taken substantially on the line 5—5 of FIG. 4.

FIG. 6 is a sectional view on an enlarged scale taken substantially on the line 6—6 of FIG. 4.

FIG. 7 is a view in perspective corresponding to FIGS. 1 and 4, showing two containers of modified construction in stacked relation.

FIG. 8 is a sectional view corresponding to FIG. 3 through the bottom of one of the modified containers.

FIG. 9 is a sectional view corresponding to FIG. 5 through the top of one of the modified containers.

Referring now more particularly to the drawings, reference will first be had to FIG. 1, 2 and 3, which illustrate a first or simplified embodiment of the present invention. In this figure two of the containers are illustrated in stacked relationship or positioned one upon the other. These two containers are designated 10 and 12. However, since the containers 10 and 12 are of duplicate construction the following description of one will, of course, apply to the other. Accordingly, the same reference numerals will be used upon both of the illustrated containers.

The first embodiment of the invention comprises the body 14 which is here shown as being of cylindrical form, although it is to be understood that the invention need not necessarily be confined to a cylindrical container but may be of any form such as rectangular, square or the like. The container here illustrated may be formed of plastic and accordingly it is so illustrated but here again it is to be understood that while this is the case, the invention is not necessarily limited to the use of such material.

The container embodies the two opposite end walls which may be referred to as the top end wall generally designated 16 and the bottom end wall generally designated 18.

The top end wall 16 is formed in one piece from a suitable flat sheet of plastic, metal or whatever material is selected and is provided with a depressed central area 20, here shown as being circular in form. This depressed portion 20 is defined by a surrounding flange or wall 22, the top edge of which is joined to the inner periphery or edge 23 of a flat annular portion 24. This annular portion 24 presents a relatively wide outer surface which lies in a plane perpendicular to the longitudinal axis of the container and the outer edge or perimeter of the portion 24 is joined to the end edge of the wall 14 at 25, the join being effected in a suitable manner. For example, where the receptacle may be completely closed after being filled, the join between the end wall portion 24 and the end of the side wall 14 may be effected by fusing or cementing the plastic portions together. However, where the receptacle may be formed of some other material such as metal, obviously the join may be effected by soldering or the like.

The bottom end wall 18 is in effect a complete reversal of the top wall. Thus the bottom end wall comprises a central outwardly or axially projecting area or portion 26 joined to or defined by the surrounding flange 27 and this flange joins the inner edge 28 of a flat annular portion 29, the outer edge of which portion is joined in a suitable manner as at 30 by suitable means as hereinabove described with reference to the join 25 to the end edge of the wall 14.

It will be seen upon reference to FIGURES 2 and 3 particularly and also to the joined ends of the two containers 10 and 12, that the exterior or outside diameter of the projecting bottom wall portion or projecting bottom wall area 26 is approximately the same or slightly less than the inside diameter of the depressed top wall portion 20. Also it will be seen that the height of the flanges 22 and 27 of the top and bottom wall areas is such that when the projecting bottom wall area 26 is introduced into the depressed top wall area the flat outer surfaces of the adjacent annular portions 29 and 24 respectively will come into contact or rest one upon the other. Also, the opposing surfaces of the portions 20 and 26 will bear one against the other and consequently when the two cans are stacked in the manner shown in FIG. 1, their opposing surfaces will be in face-to-face contact throughout.

In the second embodiment of the invention as illustrated in FIGS. 4 to 6, it will be seen that one end wall of the receptacle is formed to provide an opening with a closure member which can be applied and removed as desired. The receptacles of the second embodiment shown in stacked relation are designated 10*a* and 12*a*. Such receptacle, like the one previously described, comprises the body wall portion 31 and the top and bottom or end walls 32 and 33 respectively.

The top wall 32 comprises the centrally positioned depressed portion 34 which is joined at its outer edge and defined by the upstanding flange 35, which flange in turn at its top edge is joined as at 36 to the flat annular portion 37 and the outer edge of this annular portion is joined as at 38 to the edge of the wall 31. This container is here shown as being formed of metal or other material and the join at 38 in this case may be effected by solder or other sealing means.

In the first described embodiment the depressed portion of the container which is designated 20, is shown as being plane while in this second embodiment the depressed portion 34 is broken by a central pour opening 39 defined by an outwardly extending lip. The opening 39 is covered or closed by a removable cap 41 which consists of the central disc portion 42 formed integrally with a channeled rim 43. The channel 44 of this rim 43 is of a size to snugly receive the lip 40. Thus, when the cap 41 is pressed down onto the lip and the latter is frictionally engaged in the channel, the dispensing aperture will be fully closed.

The bottom 33 comprises the outwardly projecting area 45 and the central part of this area is inwardly offset to form a socket 46 which embodies a central inset portion 47 defined by a flange 48 which couples the portion 47 with the area 45. Here the outwardly projecting area 45 actually constitutes a central part corresponding to and functioning in a manner similar to the projecting area 26 of the first described structure in that it is formed for extension into the depressed area on the opposite or top end of another container of duplicate construction.

The outer perimeter of the projecting area portion 45 joins a flange 49 which extends inwardly or toward the interior of the body 31 and this flange is joined at its inner or top edge with the inner edge of a flat annular portion 50 of bottom 33 which lies in a plane normal to the longitudinal axis of the body 31. This flat annular portion 50 is joined at its outer edge to the adjacent end edge of the body 31 to which it is fixed or sealed by soldering, welding or the like, as indicated at 30' in FIG. 6.

As is clearly shown in FIG. 4, the outwardly projecting area 45 of the upper container 10*a* is snugly frictionally engaged in the inset area 34 in the top of the lower container 12*a*. The inside diameter of the flange 48 is approximately the same as or slightly larger than, the overall or outside diameter of the channeled rim 43 of the cap or closure 41.

The outside diameter of the flange 49 is approximately equal to or slightly less than the inside diameter of the flange 35 of the top wall of the container.

Thus, the containers can be securely coupled together so that any number of such containers can be stacked and the stack will maintain its stability. At the same time the closure 41 of any container can be easily and quickly removed to facilitate removal of the contents of the container through the opening 39.

In the third embodiment of the invention as illustrated in FIGS. 7 to 9, the receptacle or container is in the form of a composite of the two hereinbefore described forms or types in that the top formation of one, such as the container 10*a* is combined with the bottom formation of the other such as the container 10. In this third embodiment the container is generally designated 10*b*.

While in illustrating the third embodiment the container has been shown as being approximately the same size as the containers 10 and 10*a*, for convenience of illustration, it is contemplated to use this third form or embodiment of the container in large sizes primarily for

containing paints and other heavy liquids. This third embodiment provides for easy storing and also provides a non-drip type of container.

The container **10***b* comprises the body or wall portion **50**. This body is shown as being of cylindrical form although it is to be understood that the invention is not limited in this respect since the same may be square or of any other contour.

The top end or top wall, generally designated **51**, comprises the centrally depressed portion **52** which at its outer edge joins an upstanding flange **53** and this flange in turn is joined at its top edge to the flat annular portion **54**. This flat annular portion **54** engages at its outer edge or periphery with and is joined to the top edge of the wall **50** at **55** and may be secured by welding or soldering or in any other suitable manner. The portion **52** joins an inner axially and outwardly extending annular flange **56** which defines a pour opening **57**. This pour opening is closed by the cap or lid **58** which consists of a central disc portion **59** joined to the channeled rim **60**. The channel **61** formed by this rim is designed to receive the flange **56** so that the cap **58** tightly closes the pour opening as shown.

The flange **53** is of materially greater height than the flange **56** so that the top of the cap **58** lies a substantial distance below the top of the annular portion **54** to facilitate the frictional engagement within the area defined by the flange **53** of the bottom portion of another receptacle of duplicate construction.

The bottom or opposite end wall **62** of the receptacle **10***b* corresponds to the bottom wall **18** of the receptacle **14**. This bottom end wall **62** comprises the central outwardly or axially projecting area or portion **63** which is joined to or defined by the encircling flange **64**. This flange in turn joins the inner edge **65** of a flat annular portion **66**. The periphery of this portion **66** engages and is secured in a suitable manner to the bottom end edge of the wall **50** as indicated at **67**, such connection or joinder being effected by welding, soldering or the like.

The overall or outside diameter of the flange **64** of the bottom wall corresponds to the inside diameter of the flange **53** forming a part of the top wall so that the projecting portion of the bottom wall of one receptacle or container can be inserted into and frictionally coupled with the top wall of a container of duplicate form or construction as illustrated in FIG. 7.

As is also illustrated in FIG. 7, the extension of the flange **53** of the top wall of the container above the top of the cap or closure **58** is sufficient to provide an area of frictional engagement with the bottom wall of another container to insure the secure connection together of two containers when placed one upon the other.

In addition to the foregoing the central part **63** of the bottom wall of the container provides, in a large size container, a wide area of contact with an underlying supporting surface which insures the stability of the container when it is placed upon a supporting surface.

As a further novel feature of this modified construction of the container **10***b*, the additional length of the flange **53** of the top wall insets the pour opening to an extent which prevents dripping when the container has been tipped for pouring out some of the contents and is then restored to its upright condition as any liquid retained on the lip of the pour opening, which constitutes the flange **56**, will run down into the space between the flanges **53** and **56**.

From the foregoing it will be seen that there is provided in the three embodiments illustrated and described, a container in which the top and bottom or opposite end walls are formed in a novel manner which will permit any number of containers so constructed to be assembled and stacked as desired.

While the containers have been here shown as being of circular or cylindrical form, it will be appreciated that the invention is not necessarily limited to this form since the top and bottom walls may be combined with or made a part of containers of any cross sectional design. Likewise, it will be seen that while the depressed and extended portions of the opposite walls of the container have been shown and described as circular, these portions also may be of some other form or contour and still maintain or possess the advantages herein described for the form shown.

I claim:

A container comprising a body portion and opposite end walls joined thereto, one of said end walls having a depressed area disposed inwardly of a first surrounding flat surface lying in a plane normal to the longitudinal center of the container and said area having an outer edge defined by one axially extending bordering flange, the other end wall having an outwardly projecting area disposed outwardly from a second surrounding flat surface lying in a plane parallel with said first flat surface and said projecting area having an outer edge defined by another bordering flange projecting axially outwardly from the second flat surface and the outside dimension of the other flange defining said projecting area being sufficiently less than the inside dimension of the flange bordering said depressed area whereby the flange bordering projecting area of the container will fit snugly into the depressed area of another container of duplicate construction to frictionally interlock therewith and to firmly couple one container to another whereby the containers may be tilted at a substantial angle to the vertical without separating, said depressed area being provided with an inner peripheral edge defining an opening therethrough, a peripherally continuous lip connected to said inner peripheral edge and projecting axially outwardly therefrom, said lip having an axial dimension less than said one bordering flange, a trough defined between said lip and bordering flange, a removable closure cap surrounding said lip and closing said opening, the other bordering flange dimensioned so that the projecting area of the other end wall of the container is spaced from the second surrounding flat surface at a distance substantially equal to the axial distance between the outer surface of the closure cap and said first surrounding flat surface whereby the projecting area of the container is adapted to extend into the depressed area of said container of duplicate construction and abut its cap, the outwardly projecting area being spaced radially inwardly and axially outwardly of the second surrounding flat surface, an inner flange connected to the periphery of the outwardly projecting area and projecting axially outwardly therefrom, a radial flange connected between the axially outer ends of the other bordering flange and the inner flange, said inner flange being so dimensioned that it will snugly engage the periphery of the cap of said container of duplicate construction so as to frictionally interlock therewith and said radial flange will have bearing contact with the depressed area of said container of duplicate construction.

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