Nov. 30, 1943. A. J. CHAMBERLAIN 2,335,647

CONTAINER

Filed Oct. 7, 1940

Fig. 1.

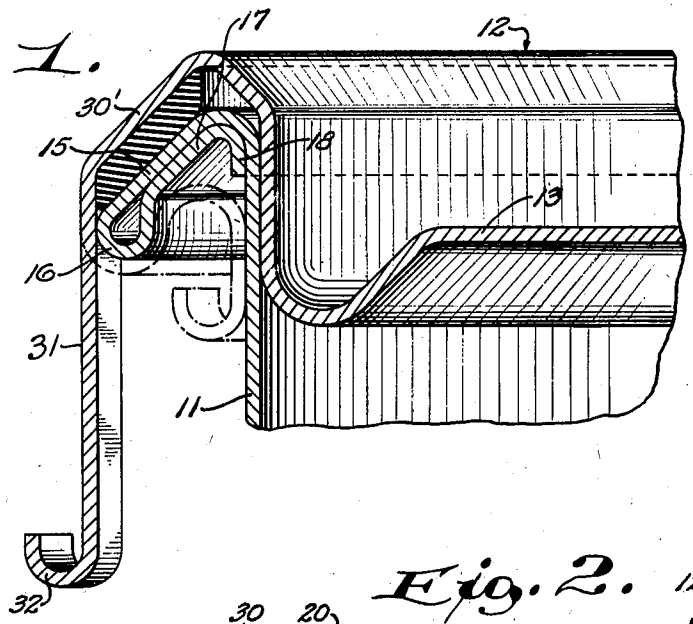
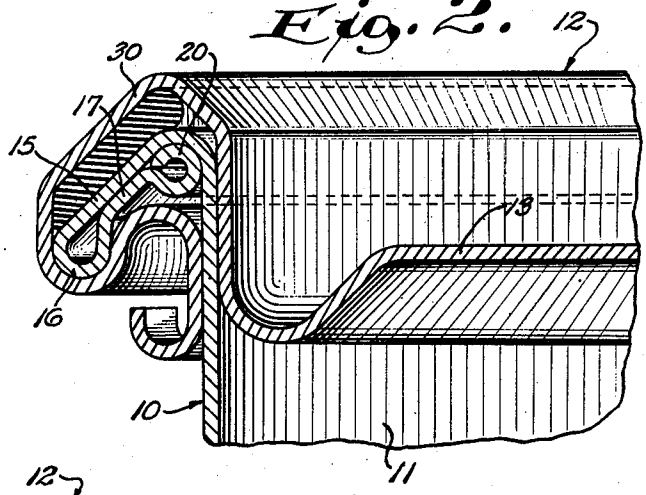


Fig. 2.



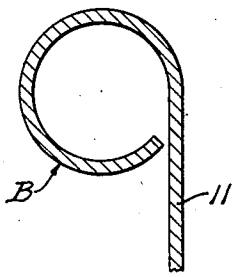


Fig. 4.

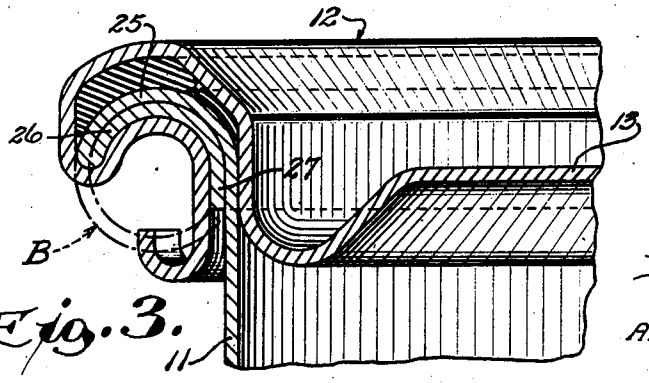


Fig. 3.

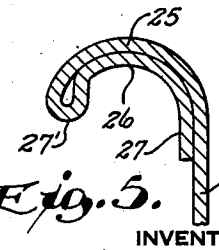


Fig. 5.

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2,335,647

CONTAINER

Alfred J. Chamberlain, Milwaukee, Wis.

Application October 7, 1940, Serial No. 360,111

4 Claims. (Cl. 220—59)

This invention relates to an improvement in containers, and more particularly in metal containers such as are now commonly used for packaging, shipping, and storing materials such as paints and other liquids or fluids, semi-liquids, and plastic substances.

The present invention is in the nature of an improvement of my Patent No. 1,770,892, granted July 15, 1930, for "Containers."

The object of the present invention is to render the production of a container of this character far more economical and yet increase its strength, stiffness, and rigidity, and establish these qualities in those portions of the container most liable to be subjected to blows, impacts, or rough usage in general.

Containers of the type embodying the present invention have the upper open end of these body portions formed with an outwardly and downwardly extending flange, the top surface of which affords a gasket. The lower edge of this flange is rolled inwardly to provide a strengthening bead and better adapt the flange formation to function as a locking shoulder for the bendable lugs of a closure or removable end head, which also has a downwardly and outwardly extending flange or rim portion. A gasket is compressed between the flanges of the container and its closure when the lugs are bent into locking position whereby to hermetically seal the container.

As heretofore constructed, containers of this character had the flange formation of their upper open end formed by a series of rolling operations, a manufacturing process which is time-consuming and costly. Then, again, with containers of this character, there is a definite limitation as to the gauge of metal that may be employed. The I. C. C. specifications require a certain minimum gauge, but practical reasons preclude the utilization of heavy gauge metal. To make the containers of this kind practically available in the market the gauge of the metal must be kept down in order to keep the costs within practical limits, and furthermore the containers must be light so as to be convenient to handle and comparatively inexpensive to ship.

The present invention provides an improved container construction of this type which may be readily produced in an economical and simple two stage operation involving the use of ordinary forming dies and avoiding the necessity of rolling or spinning operations. While it is practical to employ light gauge metal, nevertheless the flange formation at the upper end of the container is so constituted as to be of requisite strength, stiffness, and rigidity and will resist distortion even when subjected to impacts or blows, or other rough usage, and this even though the cover be removed. Containers of this character frequently are shipped separately from their closures which are packaged separately, and when so shipped the flanged formations are very liable to be distorted or bent out of shape unless they are constituted in the manner proposed by the present invention.

Other objects and advantages reside in certain novel features of the construction, arrangement, and combination of parts which will be hereinafter more fully described and particularly pointed out in the appended claims, reference being had to the accompanying drawing forming a part of this specification, and in which:

Figure 1 is a fragmentary view in transverse vertical cross section, showing a portion of a container and a container cover or closure embodying the present invention, the securing lugs of the cover being shown prior to being bent in full lines and being illustrated in dotted lines in the position which they assume when bent into interlocking engagement with the flange formation of the body portion;

Figure 2 is a fragmentary view in transverse cross section, showing another construction embodying the present invention and illustrating the cover applied and its securing lugs bent to locking position;

Figure 3 is a fragmentary view in transverse vertical cross section, showing still another form of the invention;

Figure 4 is a fragmentary sectional view illustrating the initial step involved in the formation of the flange at the upper open end of the container; and

Figure 5 is a fragmentary sectional view of the upper end of the container and embodying a slight modification of the construction shown in Figure 3.

Referring to the drawing, it will be seen that in all forms of the invention a container, designated generally as 10, is provided, the container having a cylindrical body portion 11. A closure, designated generally at 12, is provided for the container and has a cup-shaped central portion 13 equipped at its periphery with a flange stucture which will be hereinafter more fully described.

In all forms of the invention the upper end of the container is first formed over into a circular bead formation, designated at B in Figures 3 and 4, this being accomplished by an ordinary punch-

ing die. After being formed into the bead structure shown in Figure 4, the bead formation is then subjected to the action of another set of forming tools, or of a punch and die, which are shaped to effect the desired and final formation of the flange.

As illustrated in Figure 1, the flange formation may be constituted of an outwardly and downwardly inclining generally frusto-conical gasket seat flange 15 integral with the upper edge of the body portion of the container and forming therewith a downwardly opening annular pocket having an interior angle at the juncture between the gasket seat flange and the body of the container. Around the lower edge of the flange 15 is a loop formation 16 which continues upwardly as a reinforcing flange or layer snugly engaged with the underside of the flange 15 and merging at its upper end into a drawn shell formation 18 which extends around and in press-fitted engagement with the upper cylindrical portion of the body of the container. A structure of this character is extremely strong, stiff, and rigid, and will not be distorted by ordinary impacts or blows.

In the construction shown in Figure 2, the container has a gasket seat flange 15, connecting and strengthening loop formation 16, and underlying layer or reinforced flange 17 as before, but the flange 17 instead of merging into a drawn shell band or structure is reversely curved to form a tubular reinforcing bead 20 which is snugly fitted in the interior angle between the body portion and the upper end portion of the flange 15.

In the construction illustrated in Figure 3, the container has an integral flange 25 at its upper end, which is rounded and is provided with an integral reinforcing layer or flange 26 which merges into a drawn shell formation 27 press-fitted on the upper end of the body portion of the container. This construction shown in Figure 3 may be modified in the manner illustrated in Figure 5 by the provision of a loop formation 27 at the juncture of the flange 25 and its reinforcing flange or layer 26.

In all forms of the invention the container may be equipped with a closure or cover 12, and, as indicated, each closure 12 has a cupped central portion 13 adapted to be fit down in the upper open end of the container. The cover 12 is provided with an inverted trough-like outer rim portion 30, which, while providing an enclosure or housing for the gasket seat flange of the body portion, is spaced from said gasket seat flange as well as from the top edge of the body portion. At this edge this inverted trough-like edge of the cover terminates substantially flush with the lower edge of the gasket seat flange and is provided with a plurality of depending securing lugs 31 having upturned hook-like lower ends 32. A gasket 33 is placed on the gasket seat flange 15 and when the cover is secured in position is compressed between this gasket seat and the overlying flange provided by the inclined portion 30' of the rim portion 30 of the cover. To secure the gasket into position the lugs are bent upwardly in the manner shown in dotted lines in Figure 1 and in full lines in Figures 2 and 3.

In all forms of the invention the container at its upper open end is provided with a flange affording a gasket seat and with an underlying reinforcing flange which provides a double-wall thickness to strengthen the flange formation and render it more stiff and rigid and better adapted to resist distortion when actually in use. The action of the reinforcing flange is substantially enhanced, and the structure is further improved by combining with it either the drawn shell formation, which fits flush in the interior angle between the gasket seat flange and the body of the container, and is press-fitted on the body portion of the container, or else by forming up the reversely rolled bead structure, such as is shown at 20 in Figure 2.

While I have shown and described several constructions in which the invention may be advantageously embodied, it is to be understood that the constructions shown have been selected merely for the purpose of illustration or example, and that various changes in the size, shape, and arrangement of the parts may be made without departing from the spirit of the invention or the scope of the subjoined claims.

I claim:

1. A metallic container comprising a body portion having an opening at its upper end and provided around said opening with an outwardly and downwardly inclined flange affording a frusto-conical gasket seat forming with the body of the container a downwardly opening annular pocket, a reinforcing flange underlying and in continuous surface-to-surface engagement with the gasket seat flange throughout the entire circumferential extent thereof and for, at least, substantially the major portion of their confronting areas, an open loop formation integral with and connecting the lower edges of said flanges, a drawn shell formation integral with the upper edge of the reinforcing flange and press-fitted on the upper part of the body portion of the container and within said annular pocket, a gasket on said seat, a metallic closure for said opening having a downwardly and outwardly inclined rim portion engageable with said gasket, and bendable securing lugs carried by said rim portion and adapted to be bent up into locking engagement with the exposed inner surface of the loop formation and with the opposed outer peripheral portion of the container.

2. A metallic container comprising a body portion having an opening at its upper end and provided around said opening with an outwardly and downwardly inclined flange affording a frusto-conical gasket seat forming with the body portion of the container an interior angle, a reinforcing flange integral with the lower edge of said gasket seat flange and underlying and in continuous surface-to-surface engagement therewith throughout the entire circumferential extent thereof and for, at least, substantially the major portion of their confronting areas, the upper edge of the reinforcing flange being reversely rolled and snugly fitted in the interior angle between the container and the gasket seat flange and being in direct reinforcing contact with the upper part of the body portion of the container throughout the circumferential extent thereof, a gasket on said seat, a metallic closure for said opening having a downwardly and outwardly inclined rim portion engageable with said gasket, and bendable securing lugs carried by said rim portion and adapted to be bent up into locking engagement with the exposed under surface of the reinforcing flange and with the opposed outer periphery of the container.

3. A metallic container comprising a body portion having an opening at its upper end and provided around said opening with an outwardly and downwardly inclined flange affording a frusto-

conical gasket seat forming with the body of the container a downwardly opening annular pocket having an interior angle, a reinforcing flange integral with the lower edge of said gasket seat flange and underlying and in continuous surface-to-surface engagement therewith throughout the entire circumferential extent thereof and for, at least, substantially the major portion of their confronting areas, an open loop formation integral with and connecting the lower edges of said flanges the upper edge of said reinforcing flange having a reinforcing formation integral therewith, said reinforcing formation being rolled along the surface of said interior angle and in direct surface contact with the upper portion of the container below the flange formation at the upper end thereof and throughout the entire circumferential extent of the body portion of the container, a gasket on said seat, a metallic closure for said opening having a downwardly and outwardly inclined rim portion engageable with said gasket, and bendable securing lugs carried by said rim portion and adapted to be bent up into locking engagement with the exposed under surface of the reinforcing flange and with the opposed outer peripheral portion of the container.

4. A metallic container comprising a body portion having an opening at its upper end and provided around said opening with an outwardly and downwardly inclined flange affording a frusto-conical gasket seat forming with the body of said container an interior angle, a reinforcing flange underlying the gasket seat flange and being in continuous surface to surface engagement therewith throughout the entire circumferential extent thereof, and for at least substantially the major portion of their confronting areas, a lower open loop formation integral with and connecting the lower edges of said flanges, the upper edge of said reinforcing flange being rolled into said interior angle between the container and the underside of the gasket seat flange to form an upper open loop formation snugly fitted into said angle, said upper loop formation being in direct reinforcing contact with the upper part of the body portion of the container throughout the circumferential extent thereof, the said reinforcing flange being directly connected to said upper and lower loop formations and acting as a stiffening strut therebetween, a gasket on said seat, a metallic closure for said opening having a downwardly and outwardly inclined rim portion in engagement with said gasket, and bendable securing lugs carried by said rim portion and adapted to be bent up into locking engagement with the exposed undersurface of the reinforcing flange and with the opposed outer periphery of the container.

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