Aug. 21, 1945. H. CAREW 2,383,290

ADJUSTABLE CLOSED OR SEALED CONTAINER

Filed July 17, 1943

Fig. 1.

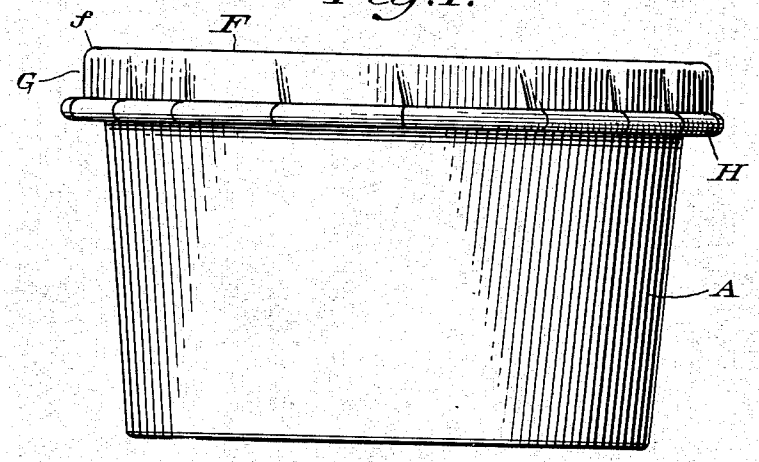


Fig. 2.

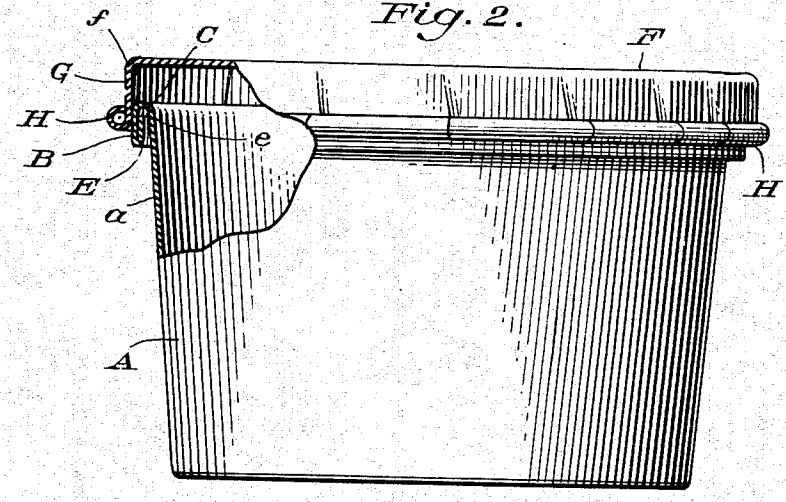


Fig. 3.

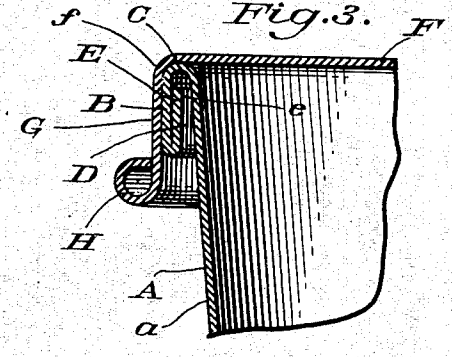
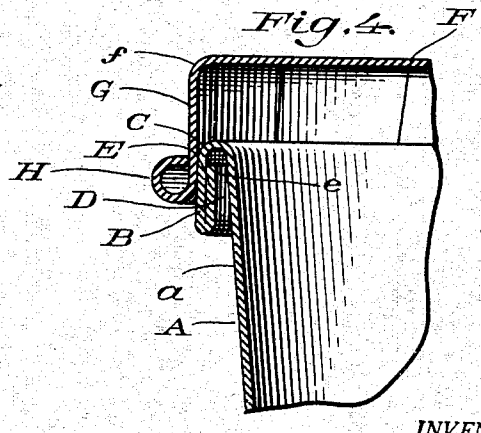


Fig. 4.



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UNITED STATES PATENT OFFICE

2,383,290

ADJUSTABLE CLOSED OR SEALED CONTAINER

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Application July 17, 1943, Serial No. 495,173

7 Claims. (Cl. 229—5.5)

This invention relates to the art of paper containers, and more especially to an adjustable closed or sealed paper container, wherein the body of the container and closure thereof may occupy self-adjusting relationships without impairing their closed or sealed function, to increase the capacity or area within the closed container as expansion of the contents of the container may necessitate.

In the practice of freezing food—ice cream for example—paper containers have been largely resorted to. Where it is desired to dispense such food articles in frozen condition, as in small paper cups, or in relatively large containers from which portions of the contents are to be dispensed, the ice cream, or other ingredients to be frozen, are first introduced into the cups or containers, the containers capped to enclose or seal the contents, and then the filled containers subjected to the freezing temperature of a compartment designed for that purpose. I have mentioned the different sizes of containers, as controlled by the small portion or bulk of the article to be sold, because the considerations to which I shall now allude apply to a greater or less extent to all goods adapted to be frozen in the containers and where the same is subject to expansion under quick freezing processes.

With the foregoing in mind, and realizing that in the practices referred to there is a constant difficulty or damage encountered in the freezing operation, by reason of the expansion of the contents of the containers and constant disruption of the seal or connection of the cap or closure of the container, relative to the body of the latter, the primary object of my present invention specifically resides in the provision, in combination with a suitable paper container, of a paper cap therefor having a wide range of adjustment longitudinally of the container to close and seal the same circumferentially of the container and cap flange, throughout a substantial area longitudinally of the container, whereby to enlarge the area within the container and cap to allow for the expansion referred to, without damage or disarrangement, such as exposing the container contents or affording undue access of the external air, dust, etc., to the interior of the container and contents therein.

The preferred embodiment of my invention comprises a paper cup or container of upwardly flaring shape to facilitate nesting of the containers in stack formation, as is usual, the open top portion of the container having a flange arched away from and turned down to occupy a vertical plane separated from the body of the container, said flange being made rigid by an inturned thickness of the material secured against the inner wall of said flange, but away from the adjacent wall of the container and away from the arch or bend constituting the juncture between the flange and inclined wall of the container, whereby a circumferential outstanding relatively rigid ring is constituted by the double wall flange. The outstanding location of the said flange, directed away from the wall of the container, allows for a substantial degree of change of shape, bulge or the like, under the influence of the contents within the container. The embodiment of the invention under discussion also includes a closure or sealing cap having a down-turned rim terminating in the rolled lower edge, the same being preferably formed of a single piece of paper, pleated throughout the flange, and rolled or beaded at the edge whereby the latter constitutes a flexible ring, acting like a spring, to engage over and down past the flange on the container. The flange on the container being substantially rigid, the flexible and expansible roll on the flange of the lid, though normally of the same interior diameter as the exterior diameter of the relative rigid ring or flange on the body, will exert a gripping influence between the rigid flange or ring and the flange of the cover, augmented by the more secure gripping of the spring or flexible ring constituted by the beaded flange, adapted normally to engage below the end of the lower edge of the rigid ring or flange, and subsequently to travel upwardly on the exterior face of the rigid flange to the extent required by the expansion of the cup contents within the container and lift of the lid while, at all times within the range of adjustment, maintaining a close fit of the cap on the container owing to the influence of the roll or beaded edge circumferentially of the flange of the rigid ring and also because of the contact of the flange of the cap above the bead thereof with the said rigid ring.

The preferred embodiment of the invention, above generally outlined, is illustrated in the accompanying drawing and will be further set forth in detail herein.

In the drawing—

Figure 1 is an elevation of the container, the flange or ring on the body of the cup being completely concealed by the flange of the cover or lid.

Figure 2 is a similar view showing the cover or lid raised to an elevated position when the beaded edge of the cover or lid rides and impinges upon

the outer surface of the flange or ring on the container, parts being broken away and shown in section to better illustrate the engagement between the lid and body and their relative positions referred to.

Figure 3 is a fragmentary vertical sectional view showing the lid or top in its lowermost position on the container body; and

Figure 4 is also a similar fragmentary vertical sectional view, enlarged with respect to the same illustration in Figure 2, showing the beaded edge of the cover or lid elevated with respect to the body and impinging upon the outwardly spaced flange or ring on the body.

Referring more specifically to the drawing wherein like reference characters designate the same parts in the several views, A represents the body of a cup or container formed of paper and flaring from the bottom upwardly so as to be nestable with other cups when desired, and B is a vertical depending flange united with the upper edge of the container by an arch or relatively open curve C to provide a wide space or area D between the body of the cup and the flange B and without lateral reinforcement of the wall *a* of the cup, for purposes which will appear. E is an up-turned terminal portion of the flange B, closely connected in parallel and surface-abutting relationship to the flange B so that the two parts B and E, referred to, constitute a very strong and relatively rigid ring arranged circumferentially of the body of the container. Because of the space D, alluded to, there is ample room for this reinforcement of the ring or flange without the up-turned or inner flange portion E reinforcing or interfering in any way with the flexibility of the wall *a* of the container and its curved connection C with the flange B depending therefrom.

Because of the arrangement of the relatively rigid flange or ring on the cup body A, as above described, it is to be appreciated that the wall of the cup being of substantial flexibility, because of its paper formation, said wall may give and take, so to speak, outwardly and inwardly, as permitted by the space D and arch connections C, as compelled by the expansion of the ice cream contents under the freezing operation, it being observed that the upper end *e*, of the up-turned inner part E of the flange B, terminates well short of the arch connection or gradual bend C so as to offer no obstruction in that area which might cause some interference with the staple connection of the reinforced flange B, it being the desire that all portions of the flange B and up-turned part E be away from any impairing influence flowing from the outwardly flexing of the wall *a* of the container under the expansion of the container contents, which would be present if the reinforcing up-turned part of the flange B was crowded into the space immediately below the arch connection C and against said arch.

F designates the flat cover portion of the lid which is in one piece to lie horizontal and flat against the arch bend or connection C, between the container wall *a* and reinforced flange B, the corner of the lid being rounded as at *f* to fit said curved or arched connection C and having a downwardly turned parallel flange G, occupying a vertical plane the same as the reinforced flexible flange B of the body A. The lid is of a pleated formation, in other words, it is formed from a single piece of paper with the edges pleated and downwardly turned from the top member F and overlapped to impart the desired circular formation of the flange G. The lower end of the flange G, or downwardly turned and pleated portion of the cover, is terminated in a roll H of a size and compactness to impart sufficient strength and bearing surface for contact either below the double wall flange B or circumferentially against the outer face of the latter. The advantage of this beaded flange G of the lid is that, as before stated, it acts like a spring or a flexible ring, keeping the cover lid on the container even when the disc part of the lid does not come in contact with the top of the container. When the container is filled and the contents frozen, as when used in the quick freezing of foods, the contents are expanded, pushing the lid away from the position it was in at the time of filling, which it will be understood is a position with the beaded or rolled edge H of the cover pressing somewhat inwardly beneath the double wall rigid flange B of the body of the container A. The outside diameter of the substantially rigid ring B is substantially the same as the inside diameter of the flange G on the lid, so that there will be a close riding fit in the movement of the beaded flange G over the face of the rigid flange B and maintaining the sealing or firm securement of the cap and body together whatever the adjustment between the same throughout the height of the flange G; and normally, as stated, when the container is filled and capped the beaded edge H of the cap will bind upon the lower edge of the reinforced or relatively rigid flange B, within position to be forced upwardly along the face of the flange B as demanded by the swelling of the frozen contents of the container and the raising of the flat top F of the lid to an elevated point with reference to the container, as marked by the extent of expansion of the ice cream or food product desired to be protected and sealed at all times while permitting the self-adjustment of the seal.

It is desirable, particularly in some cases, that the body of the container and cap, as stated, be formed of paper, paraffined or the like to render the same impervious to moisture. The use of the paraffin in a mechanical structure, such as herein described, is particularly useful in that the double wall flange B is thereby made all the more rigid and the smooth surfaces of the said wall and pleated wall of the cup may have a more secure sealing contact and greater smoothness for movement.

By having the roll on the cover flange, of the character and arranged as set forth, it will be appreciated that I not only secure the advantages of permitting expansibility of the area within the container to correspond with the expansion of the freezing or frozen contents, but the roll projected beyond the lower end of the corresponding flange B of the container, insures the holding of the lid or cover in place while the filled containers are being handled carelessly or indifferently and disposed of, such as being placed in ice cream cabinets and the like.

It will be further noted that because of the peculiar construction, arrangement and association of parts of my expansible container, the container and lid portions can be made of thin or light weight paper.

While I have illustrated but the one embodiment of the invention, herein disclosed, it is appreciated that the invention is capable of being embodied in other forms and devices involving minor details of arrangements and parts so that it is not my intention that the invention is limited to the specific illustration save as the following claims point to such limitations.

I claim:

1. A paper container comprising a tapered body having at its open top portion a relatively rigid ring offset to occupy a vertical position laterally of the inclined wall of the body and connected to the latter by an arched portion bridging the area between the ring and wall, the rigidity of the ring being augmented by folding the material of the ring back upon itself and spaced throughout away from contact with the wall of the body so that the wall may change its contour under expansion of container contents without affecting said ring, in combination with a cover having a depending relatively resilient imperforate flange concentric to the ring of the body and of a diameter to hug the ring and have riding frictional engagement therewith to permit the cover to be raised under said expansion of the container contents to correspondingly enlarge the capacity of the container while maintaining sealing relationship between the cover flange and the ring throughout their range of adjustment.

2. A paper container comprising a tapered body having at its open top portion a relatively rigid ring offset to occupy a vertical position laterally of the inclined wall of the body and connected to the latter by an arched portion bridging the area between the ring and wall, the rigidity of the ring being augmented by folding the material of the ring back upon itself and spaced throughout away from contact with the wall of the body so that the wall may change its contour under expansion of container contents without affecting said ring, in combination with a cover having a depending relatively resilient imperforate flange concentric to the ring of the body and of a diameter to hug the ring and have riding frictional engagement therewith to permit the cover to be raised under said expansion of the container contents to correspondingly enlarge the capacity of the container while maintaining sealing relationship between the cover flange and the ring throughout their range of adjustment, the cover flange terminating at its lower edge in a roll or bead adapted to project below the bottom edge of the rigid ring when the cover is in completely closed position.

3. A paper container comprising a body having at its open top portion a relatively rigid ring offset laterally from the wall of the body and connected to the latter by an arched portion bridging the area between the ring and wall, the rigidity of the ring being augmented by folding the material of the ring back upon itself and spaced throughout away from contact with the wall of the body so that the wall may change its contour under expansion of container contents without affecting said ring, in combination with a cover having a depending relatively resilient imperforate flange concentric to the ring of the body and of a diameter to hug the ring and have riding frictional engagement therewith to permit the cover to be raised under said expansion of the container contents to correspondingly enlarge the capacity of the container while maintaining sealing relationship between the cover flange and the ring throughout their range of adjustment.

4. A paper container comprising a body having at its open top portion a relatively rigid ring offset laterally from the wall of the body and connected to the latter by an arched portion bridging the area between the ring and wall, the rigidity of the ring being augmented by folding the material of the ring back upon itself and spaced throughout away from contact with the wall of the body so that the wall may change its contour under expansion of container contents without affecting said ring, in combination with a cover having a depending relatively resilient imperforate flange concentric to the ring of the body and of a diameter to hug the ring and have riding frictional engagement therewith to permit the cover to be raised under said expansion of the container contents to correspondingly enlarge the capacity of the container while maintaining sealing relationship between the cover flange and the ring throughout their range of adjustment, the lower edge of the cover flange being rolled or beaded to form a relatively resilient band adapted to encircle the ring of the body and have a holding and sealing contact therewith throughout the range of adjustment of the cover.

5. A paper container comprising a body having at its open top portion a relatively rigid ring offset laterally from the wall of the body and connected to the latter by an arched portion bridging the area between the ring and wall, the rigidity of the ring being augmented by folding the material of the ring back upon itself and spaced throughout away from contact with the wall of the body so that the wall may change its contour under expansion of container contents without affecting said ring, in combination with a cover having a depending relatively resilient imperforate flange concentric to the ring of the body and of a diameter to hug the ring and have riding frictional engagement therewith to permit the cover to be raised under said expansion of the container contents to correspondingly enlarge the capacity of the container while maintaining sealing relationship between the cover flange and the ring throughout their range of adjustment, the lower edge of the cover flange being rolled or beaded to form a relatively resilient band adapted to encircle the ring of the body and have a holding and sealing contact therewith throughout the range of adjustment of the cover, the beaded flange of the cover being of a length to project below the ring and be in holding engagement with the bottom edge thereof when the cover is in completely closed position.

6. A paper container comprising a body having at its open top portion a ring offset to occupy a position laterally of the wall of the body and connected to the latter by an arched portion bridging the area between the ring and wall, the rigidity of the ring being augmented by folding the material of the ring back upon itself and spaced throughout away from contact with the wall of the body so that the wall may change its contour under expansion of container contents without affecting said ring, in combination with a cover having a depending relatively resilient imperforate flange adapted to fit around said ring, the lower part of the flange being rolled or beaded to form a relatively resilient band or ring encircling the ring on the body and having a riding frictional contact therewith, permitting the cover to be raised under said expansion of container contents to correspondingly enlarge the capacity of the container while maintaining a substantially uniform sealing relationship between the cover and body throughout their range of adjustment.

7. A paper container comprising a body having at its open top portion a ring offset to occupy a position laterally of the wall of the body and connected to the latter by an arched portion bridging the area between the ring and wall, the rigidity of the ring being augmented by folding the material of the ring back upon itself and spaced throughout away from contact with the wall of the body

so that the wall may change its contour under expansion of container contents without affecting said ring, in combination with a cover having a depending relatively resilient imperforate flange adapted to fit around said ring, the lower part of the flange being rolled or beaded to form a relatively resilient band or ring encircling the ring on the body and having a riding frictional contact therewith, permitting the cover to be raised under said expansion of container contents to correspondingly enlarge the capacity of the container while maintaining a substantially uniform sealing relationship between the cover and body throughout their range of adjustment, the flange of the cover and the rigid ring on the body being of substantial depth to permit a substantial range of adjustment between the body and cover, and the flange of the cover being of relatively greater depth than the ring so that when the cover is completely closed onto the body the rolled or beaded edge thereof will act as an elastic ring or band in any position it occupies dependent upon the adjustment of the cover on the body to enlarge or restrict the capacity of the container when in normally filled condition or when increased under the expansion of its contents.

HERMAN CAREW.