March 22, 1938. M. P. LINK 2,111,566

CONTAINER

Filed Feb. 15, 1936

Fig. 1.

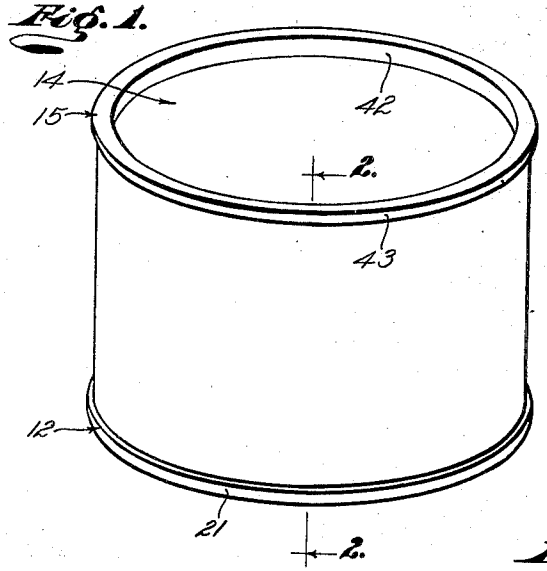


Fig. 2.

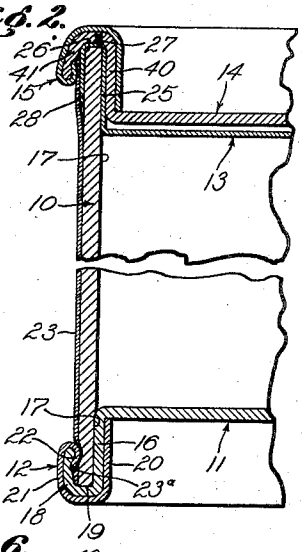


Fig. 6.

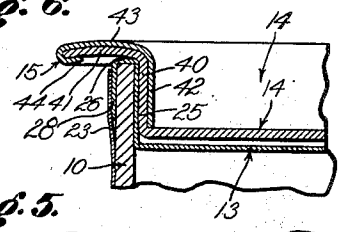


Fig. 3.

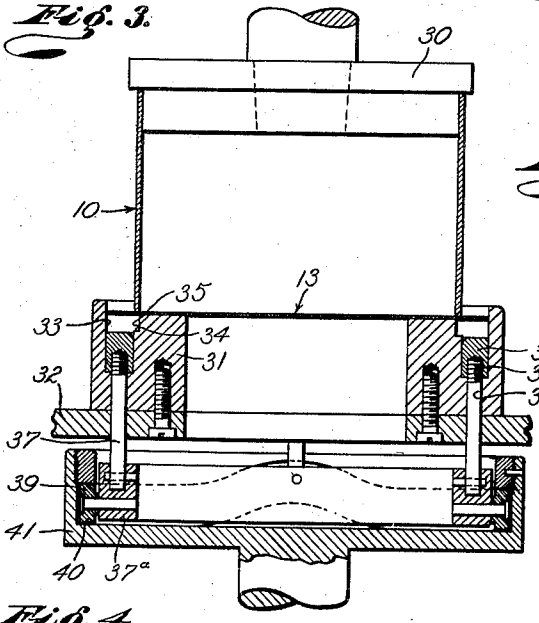


Fig. 5.

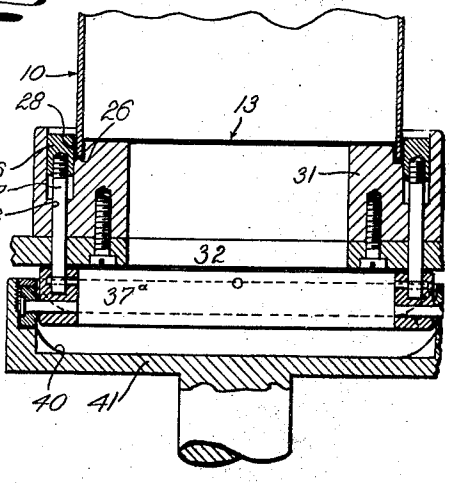
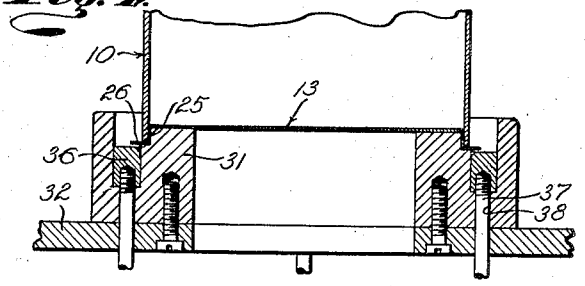


Fig. 4.



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UNITED STATES PATENT OFFICE

2,111,566

CONTAINER

Maximilian Paul Link, Los Angeles, Calif.

Application February 15, 1936, Serial No. 64,081

10 Claims. (Cl. 229—5.7)

This invention relates to containers and relates more particularly to containers formed of paper, cardboard stock and other fibrous materials. A general object of this invention is to provide an improved inexpensive sealed container.

Another object of this invention is to provide a container formed of paper or other fibrous material and embodying a novel head or closure comprising an inner seal or head that may be readily ruptured to permit the removal of the contents and an outer protective head that is removable and capable of replacement to preserve the contents after breaking of the inner head.

Another object of this invention is to provide a container embodying an inner frangible seal or closure and an outer removable cover or head, which container may be readily filled through the bottom after the application of the said head and then fully sealed by applying the bottom closure or head with a simple seaming mechanism.

Another object of this invention is to provide a container of the character mentioned that may be furnished to the packager with the inner seal or head applied and the outer head or cover applied by partial seaming or final seaming, as desired, and with the bottom head partially seamed to the container body for easy removal to permit filling of the container and following the filling operation the bottom head may be re-applied and finally seamed to the container body to completely close and seal the container.

Another object of this invention is to provide a container of the character mentioned that is sanitary and that may be fully sealed without permitting particles of adhesive to enter its interior.

Another object of this invention is to provide a container of the character mentioned in which the inner head or frangible seal is pressed against the internal surface of the container body, an end surface of the container and the external surface of the container body and may be secured to the container body at any or all of these surfaces by suitable adhesive.

Another object of this invention is to provide a container of the character mentioned in which the inner head or frangible seal is drawn taut across the interior or opening of the container and is ironed out or smooth at the exterior of the container.

Another object of this invention is to provide a container of the character mentioned in which the seam where the inner head or closure and the outer head or cover are secured to the body is small and compact and does not detract from the appearance of the container.

Another object of this invention is to provide a container of the character mentioned in which the application of the heads or closures does not subject the container tube or body to fracturing or distorting forces and may be accomplished without pushing or inserting a die or block in the container body.

Another object of this invention is to provide a container of the character mentioned in which the label or decorative covering of the container body may cover and conceal the outer flange of the inner seal or head and may be tightly forced onto the container body by the sealing of the cover or outer head to the body.

Another object of this invention is to provide a container of the character mentioned that is fully sealed to preserve the contents and that is strong to dependably withstand shipping and handling.

The various objects and features of my invention will be fully understood from the following detailed description of a typical preferred form and application of my invention, throughout which description reference is made to the accompanying drawing, in which:

Fig. 1 is a perspective view of a container of the character provided by the invention. Fig. 2 is an enlarged fragmentary longitudinal sectional view of the container taken substantially as indicated by line 2—2 on Fig. 1. Fig. 3 is a vertical detailed sectional view of a suitable apparatus for forming and applying the inner head showing the parts in position for the first operation. Fig. 4 is a view similar to Fig. 3 showing the positions of the parts following the first operation. Fig. 5 is a view similar to Fig. 3 showing the parts following the second operation and Fig. 6 is an enlarged fragmentary longitudinal detailed sectional view of the container seam prior to the curling or seaming of the ring and outer head rim.

The container of the present invention may be designed and formed for containing substances of various characters, for example, the invention may be embodied in containers intended to hold powder, granular substances, pastes, creams, liquids or jellies. In the following detailed disclosure I will describe a typical form of the invention and the manner of forming and applying its inner and outer closures or heads, it being understood that this description of a typical embodiment of the invention is not to be construed as limiting or restricting the invention.

The container of the invention illustrated in the drawing comprises, generally, a body 10, a bottom head 11, means 12 securing the bottom head 11 to the body 10, an inner seal or closure head 13, a top head or protective cover 14 and means 15 for removably securing the head or cover 14 to the body 10.

The body 10 is tubular and may be a section or piece of suitable tubular stock. The body 10 may be formed of paper, fiber or other fibrous material or a suitable combination of fibrous materials. The container body 10 may be of any cross sectional configuration. In the particular case illustrated in the drawing the body 10 is cylindrical or round in cross section. The body 10 may be formed of spirally wound strips of material or may be formed of convolutely wrapped stock. If the contents of the container make it necessary or desirable the internal surface of the body 10 may be treated or coated to be impervious to the contents. The body 10 is preferably of substantially uniform wall thickness and its ends are preferably flat and normal.

The bottom closure or head 11 is provided to seal off what I will term the lower end or bottom of the body 10. The head 11 is formed of paper, cardboard, or like fibrous materials or combinations of such materials. The inner surface of the head 11 may be coated or treated to be impervious to the container's contents or may be covered with paper or other suitable material. The head 11 is shaped to fit within the body 10 and in the case illustrated is round or disc shaped. In accordance with the invention the head 11 is provided with an axially or downwardly projecting annular flange 16. The flange 16 may be slightly flared to wedge against the internal surface 17 of the body 10. A radial or outwardly projecting flange or rim 18 is provided on the flange 16. The rim 18 is adapted to bear on the bottom end 19 of the body 10 and is rolled or seamed against the outer surface of the body 10 as will be hereinafter described. The rim 18 lies in a plane substantially parallel with the plane of the head 11 prior to the application or seaming of the head to the body 10. The flange 16 and its rim 18 are integral with the head 11. In the simple form of the invention illustrated in the drawing the head 11 is flat, it being obvious that it may be embossed or shaped as desired.

The means 12 for securing the bottom closure or head 11 to the body 10 may be the same as the seam or securing means fully described and claimed in my co-pending application entitled "Container", Serial No. 48,846, filed November 8, 1935. The means 12 is such that the head 11 may be loosely secured to the body 10 before delivery to the packager to permit the easy removal of the head and following the filling of the container the head 11 may be re-applied and the means 12 seamed by a simple seaming operation to finally seam the head 11 to the body 10. The means 12 includes a ring 20 formed of metal or the like within the flange 16 of the head 11. The ring 20 is substantially cylindrical and bears against the internal surface of the flange 16. The inner end of the ring 20 may bear on the diaphragm or body of the head 11. The ring 20 is shaped and proportioned to evenly engage the internal surface of the flange 16. The seaming ring 20 includes a flange 21 at its outer or lower end to engage about or overlie the rim 18. When the ring 20 is assembled on the head 11 the flange 21 lies in a plane substantially parallel with the head 11 and is adapted to engage against the flat radial rim 18. The flange 21 is proportioned to project outwardly beyond the periphery of the rim 18. The projecting peripheral edge portion of the flange 21 is rolled about the periphery of the rim 18 to form a lip or projecting portion 22 on the inner side of the rim. The flange 21 and the rim 18 are rolled or bent inwardly so that the projecting portion 22 bears against the exterior of the body 10. When the body 10 is provided with a label or external decorative covering 23 the projecting portion 22 of course engages this covering.

The seaming operations bending the rim 18 and the flange 21 inwardly draw the rim 18 tightly against the end 19 of the body 10. If desired this seaming of the head 11 to the body 10 may be completed at the original seaming operation, that is, the flange 21 and the rim 18 may be finally seamed or rolled inwardly so that the portion 22 grips or clamps against the body to secure the bottom head 11 to the body. In other instances it may be preferred to only partially roll the flange 21 and the rim 18 inwardly so that the portion 22 removably grips or clamps against the body 10 whereby the head 11 may be removed from the body for the purpose of filling the container. The body of the flange 21 holds the flange 16 of the head 11 against the internal surface 17 of the body 10 and the projecting portion 22 rolled inwardly as described above, clamps against the body 10 so that the body wall and the flange 16 are gripped between the ring 20 and the projecting portion 22. The inwardly turned edge 23^a of the portion 22 may bite into the rim 18 to securely connect the ring 20 and the head 11. It will be apparent that when the head 11 is partially seamed to the body 10 as described above, and is then removed to permit the filling of the container, that it properly fits the body 10 when re-applied for final securing or seaming to the body.

The inner frangible closure or head 13 seals off the body 10 within or under the cover 14 being in the nature of a frangible drum or diaphragm closure. The head 13 may be formed of relatively thin paper, transparent paper, "cellophane", or combinations of paper and "cellophane" or transparent paper. The head 13 may be a single imperforate membrane of paper or "cellophane" or it may be a sheet of paper or the like having an opening or window closed by "cellophane" or transparent paper whereby the contents of the container are visible upon the removal of the cover 14. Where the contents of the container 10 are to be comminuted or granulated material the closure or head 13 may be perforated whereby the contents may be sifted through it. It may be desirable to form the head 13 of an inner perforated sheet and an outer imperforate sheet adapted to be torn away to permit the contents of the container to be sifted through the perforated sheet.

Prior to its application to the body 10 the head 13 may be a simple flat sheet or an assembly of flat sheets. The head 13 is disc shaped and originally of greater diameter than the body 10. When applied to the body 10 the head 13 is shaped or formed to have a flange 25 bearing against the internal surface 17 of the body, a flange 26 bearing against the end 27 of the body and a flange 28 bearing against the outer surface of the body 10. The major portion or body of the head 13 is spaced inwardly from the end 27 of the body 10 a distance equal to the width of its flange 25. It is preferred to secure the

frangible head 13 to the body 10 by adhesive. In practice any one or all of the flanges 25, 26 and 28 may be secured to the body 10 by adhesive. It may be preferred to only secure the outer flange 28 to the body 10 by adhesive to preclude the possibility of adhesive from contaminating the contents of the container and from falling into the container after it has become dry.

While it is apparent that various means may be employed to assemble the frangible seal or head 13 on the body 10 I have illustrated one simple mechanism for quickly and effectively forming the head 13 on the body and securing the head to the body with the adhesive. The mechanism illustrated comprises a chuck 30 and a die 31. The die 31 is fixed to a suitable stationary support 32 and has an annular groove 33 in its upper side. The groove 33 has an upwardly facing shoulder 34 on its inner wall and a cylindrical surface 35 extending upwardly from the shoulder 34. A ring 36 is shiftable vertically in the groove 33 between a position below the shoulder 34 to a position where it projects above the shoulder 34. The ring 36 has an internal surface slightly greater than the external surface of the body 10. Posts or rods 37 are attached to the ring 36 and are shiftable in openings 38 in the die 31 and the support 32. The lower ends of the rods 37 are secured to a ring 37a. Rollers 39 are rotatably mounted on the ring 37a and operate in a cam race 40 in a rotatable cam 41. The cam race 40 has spaced elevated portions and as the cam 41 rotates the rollers 39 cooperating with the race 40 cause the ring 36 to be alternately moved up and down.

The seal or head 13 is first positioned on the die 31 as illustrated in Fig. 3 of the drawing. The positioning of the head 13 on the die 31 may be manual or automatic and the outer wall of the groove 33 operates to center or position the head on the die. The container body 10 is arranged on the chuck 31, as shown. A line of suitable adhesive may be placed on the external surface of the container body 10 or on the upper surface of the head 13 adjacent its periphery. If desired or believed necessary the end 27 and the inner surface 17 may be provided with adhesive to assist in securing the head 13 to the body. The chuck 30 is moved downwardly so that the end 27 of the body bears downwardly against the head 13 to draw the head between the surface 35 and the internal surface 17 of the body and between the shoulder 34 and the end 27 of the body as shown in Fig. 4 of the drawing, providing the head 13 with its flanges 25 and 26. The cooperation between the rollers 39 and the race 40 then causes the ring 36 to be moved upwardly while the container body 10 is held in position on the die. The upward movement of the ring 36 forces or wipes the peripheral portion of the head 13 onto the exterior of the body 10 to form the flange 28. The surface of the ring 36 engaging the head 13 may be suitably rounded to properly form the flange 28 against the body 10. The ring 36 is preferably heated by an electric heating element of the like to more readily form the flange 28 with a minimum of crinkling and wrinkling. The heated ring 36 also assists in setting or drying the adhesive which secures the flange 28 to the body 10. When the container is to be provided with a label or decorative covering 23 it is desirable to have the flange 28 as smooth and regular as possible. Accordingly, a second ring (not shown) may be employed to iron out any wrinkles or irregularities in the flange 28. Following the forming of the flanges 25, 26 and 28 the ring 36 moves downwardly and the chuck 30 moves upwardly allowing the container body with its head 13 to be removed from the chuck. Following the attachment of the frangible seal or head 13 to the body 10 the protective cover or head 14 may be removably secured to the body.

The cover or head 14 is removably secured to the body 10 to protect the frangible head 13 and form a convenient cover for the container following the rupturing or opening of the head 13. The head 14 may be similar to the bottom head 11. If desired or practical the head 14 may be identical with the head 11. The head 14 may be formed of paper, cardboard stock or combinations of such fibrous materials. The removable head 14 is generally disc shaped and adapted to fit within the flange 25 of the head 13. An axially projecting annular flange 40 is provided on the head 14 and an annular rim 41 projects outwardly from the flange 40. As originally formed, the rim 41 is substantially flat and in a plane parallel with the body of the head 14. The head 14 is proportioned so that the rim 41 is adapted to engage the flange 26 and the body or diaphragm of the head 14 is adapted to have suitable slight clearance with the body of diaphragm of the frangible head 13, as shown in Figs. 2 and 6 or the drawing. If desired, the body of the head 14 may engage or rest on the body of the frangible head 13. The cover or removable head 14 may be provided with a label or printing and may be embossed or built up by filling or a pad, or the like, to be of any desired height and shape.

The means 15 for removably securing the cover or head 14 to the body 10 is similar to the above described means 12. The means 15 comprises a ring 42 which may be identical with the ring 20. The ring 42 is substantially cylindrical and bears against or fits within the flange 40 of the head 14. The ring 42 includes an outwardly or radially projecting flange 43. The ring 42 is preferably formed of metal or other material capable of being rolled or seamed. The flange 43 engages on or overlies the rim 41 and is proportioned to project outwardly beyond the periphery of the rim prior to the seaming or forming operation. In seaming the head 14 to the body 10 the projecting peripheral portion of the flange 43 is rolled over the edge portion of the rim 41 as shown in Fig. 6 of the drawing to form a projecting rim or portion 44 which grips the rim. The rim 41 and the flange 43 are then bent or seamed inwardly so that the rim 41 and the curled portion 44 engage or grip the body 10. In the event that a label or decorative covering 23 is provided on the body it is preferably pasted over the flange 28 of the head 13 and the projecting portion 44 and the rim 41 are adapted to grip or engage against the covering 23. In most instances it is preferred to seam the flange 43 and the rim 41 so that the portion 44 and the rim only slightly or partially grip the body 10 whereby the cover or head 14 remains on the body until deliberately removed. The head 14 may be removed without an implement and may be re-applied to the body without difficulty.

It is believed that the utility and practicability of the container provided by this invention may be readily understood from the foregoing detailed description. The frangible seal or head 13 may first be applied to the body 10 as described above, and the removable head 14 may be par-

tially seamed or secured to the body over the head 13. The lower closure or head 11 may then be partially seamed to the body 10 to permit its ready removal. The container is then ready for delivery to the packager and may be easily filled by removing the head 11. Following the filling of the container the head 11 may be re-applied to the container from which it was detached and finally seamed to the container body whereby the container is tightly sealed to protect its contents. When it is desired to open the container the removable head 14 is readily removable without the use of an implement. Removal of the head 14 exposes the frangible head 13. If the head 13 is provided with a vision window or is formed of transparent material the character, quality or color of the contents of the container may be visible through it. If the head 13 is perforate or provided with a perforate element the contents may be readily sifted through it. The head 13 may be easily broken and torn out to make the interior of the container fully accessible. Following the breaking of the head 13 and the withdrawal of a portion of the contents of the container the head 14 may be re-applied to the body 10 to form a protective closure for the upper end of the container. When the head 13 is torn out the inside diameter of the seam may be increased tending to make the head 14 appear loose fitting. The curled outer portion 44 of the ring 42, however, bears against the body 10 and holds the head 14 to the body 10 with the desired degree of tightness. The frangible seal or head 13 is inexpensive and may be easily embodied in the container without complicating its formation or construction. The seam at the lines of connection of the heads 13 and 14 with the body 10 is small and compact. The rings 20 and 42 of the securing means add to the strength and durability of the container and may be finished to add to its appearance. If desired the head 14 may be tightly seamed to the body 10 by curling the portion 44 tightly against the body 10. If this is done it may be necessary to employ an opening device to remove the head 14 so that it may be retained as a replaceable cover for the container.

Having described only a typical preferred form and application of my invention, I do not wish to be limited or restricted to the specific details herein set forth, but wish to reserve to myself any variations or modifications that may appear to those skilled in the art or fall within the scope of the following claims.

Having described my invention, I claim:

1. A container comprising, a body, a frangible inner seal having flanges engaging against the inner and outer surfaces and an end of the body, adhesive sealing at least one of said flanges to the body whereby the seal is independently sealed to the body to close the same, and an outer readily removable head on the body extending over and engaging the seal and seamed to the body for removal independently of the seal.

2. A container comprising, a body, a frangible closure head sealed to and closing the body, the head comprising a flange engaging the internal surface of the body, and a flange engaging the external surface of the body, adhesive securing at least one of said flanges to the body whereby the frangible head is independently sealed to the body, and an outer protective closure for the body arranged over the said head and having parts seamed to grip the body through the medium of said flanges to be removable independently of the said head.

3. A container comprising, a body, a frangible closure head sealed to the body to independently close an end of the same, the head comprising a flange engaging the internal surface of the body, and a flange engaging the external surface of the body, at least one of said flanges being adhesively sealed to the body, an outer protective fibrous closure arranged over said head and having flanges engaging over the first mentioned flanges, and means frictionally holding the outer closure to the body for manual removal, said means including a metal ring seamed on the flanges of said closure.

4. A container comprising, a body, a frangible closure head sealed to and closing the body, the head comprising a flange engaging the internal surface of the body, and a flange adhesively sealed to the external surface of the body, a manually removable outer protective closure arranged over the frangible head and fitted within the first mentioned flange, a flange on the said closure, and a metal ring fitted in the said closure and having a flange seamed on the flange of the removable closure frictionally forcing the same against the second mentioned flange to retain the removable closure in place.

5. A container comprising, a body, a frangible closure head independently sealing an end of the body, the head comprising a flange engaging the internal surface of the body, and a flange engaging the external surface of the body, adhesive securing at least one of said flanges to the body, a manually removable protective closure engaging within the first mentioned flange to extend over the frangible head, a flange on the removable closure, and a ring fitted in the removable closure and having a flange seamed on the flange of the removable closure to secure the ring to the removable closure and frictionally holding the flange of the removable closure against the second mentioned flange.

6. A container comprising, a tubular body, a frangible closure head for the body having a flange engaging against the internal surface of the body, a flange engaging against an end of the body and a flange engaging the exterior of the body, a removable cover having a flange engaging the first mentioned flange, a flange engaging the second mentioned flange, and a flange at the exterior of the third mentioned flange, and means for removably securing the cover to the body comprising a ring engaging the flanges of the cover and having a part turned under the edge of the last mentioned flange of the cover and removably clamping against the third mentioned flange of the closure head.

7. A container comprising, a tubular body, a frangible closure head for the body having a flange engaging against the internal surface of the body, a flange engaging against an end of the body and a flange engaging the exterior of the body, a removable cover having a flange engaging the first mentioned flange, a flange engaging the second mentioned flange, and a flange at the exterior of the third mentioned flange, and means for removably securing the cover to the body comprising a ring engaging outwardly against the first mentioned flange of the cover, a flange on the ring bearing against the other flanges of the cover, and a part on the flange of the ring rolled about the edge of the last mentioned flange of the cover to grip the same and removably engage against the third mentioned flange of the closure head.

8. A container comprising, a tubular body, a

frangible closure head for the body having a flange engaging against the internal surface of the body, a flange engaging against an end of the body and a flange engaging the exterior of the body, a removable cover having a flange engaging the first mentioned flange, a flange engaging the second mentioned flange, and a flange at the exterior of the third mentioned flange, and means for removably securing the cover to the body comprising a metal seam ring engaging the flanges of the cover and having a part turned under the edge of the last mentioned flange of the cover and removably clamping against the third mentioned flange of the closure head.

9. A container comprising, a container body, a frangible inner seal sealed to the body to constitute an independent closure therefor, and a fibrous outer head covering the said seal and partially seamed to the body to be frictionally engaged with the body at the internal and external surfaces of the same for manual removal from the body.

10. A container comprising, a body, a frangible closure head sealed to the body to close an end of the same, the head comprising a flange engaging the internal surface of the body, and a flange engaging the external surface of the body, an imperforate outer protective closure over said head having flanges engaging against both flanges of the head, and means for removably frictionally holding the flanges of the outer closure in gripping cooperation with the flanges of the frangible head to secure the outer closure to the body for removal from the container independently of the frangible head.

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