Jan. 10, 1956 C. H. DIXON 2,730,288

CONTAINER WITH RECLOSABLE POURING OPENING

Filed Dec. 28, 1949 4 Sheets-Sheet 1

FIG. 1

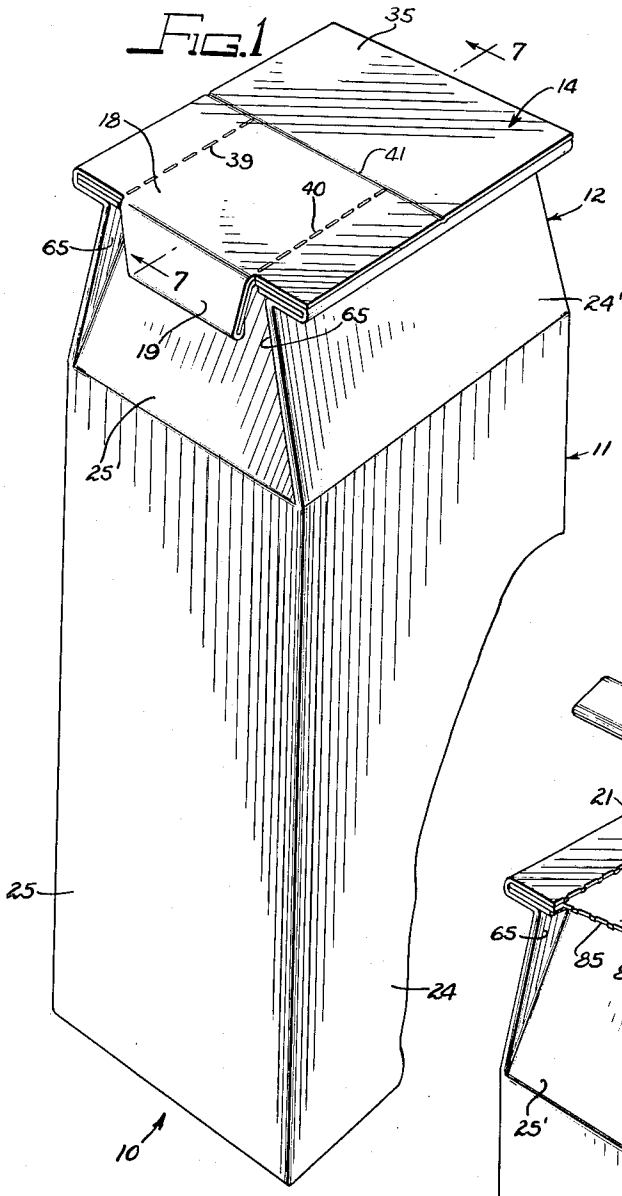


FIG. 2

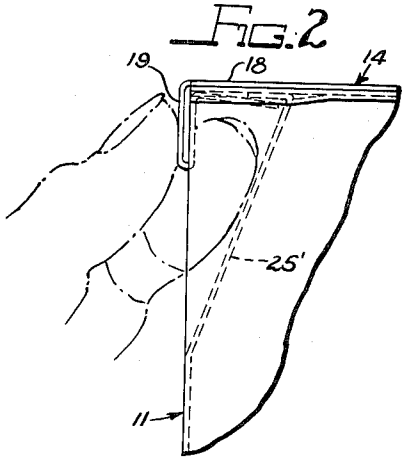
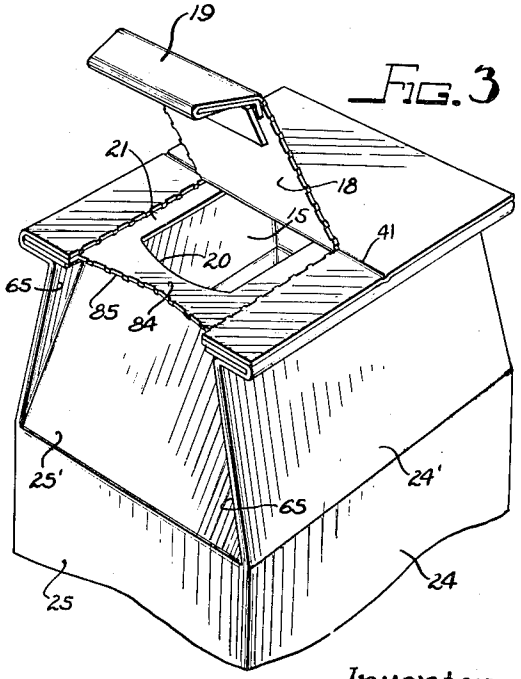


FIG. 3



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4 Sheets-Sheet 2

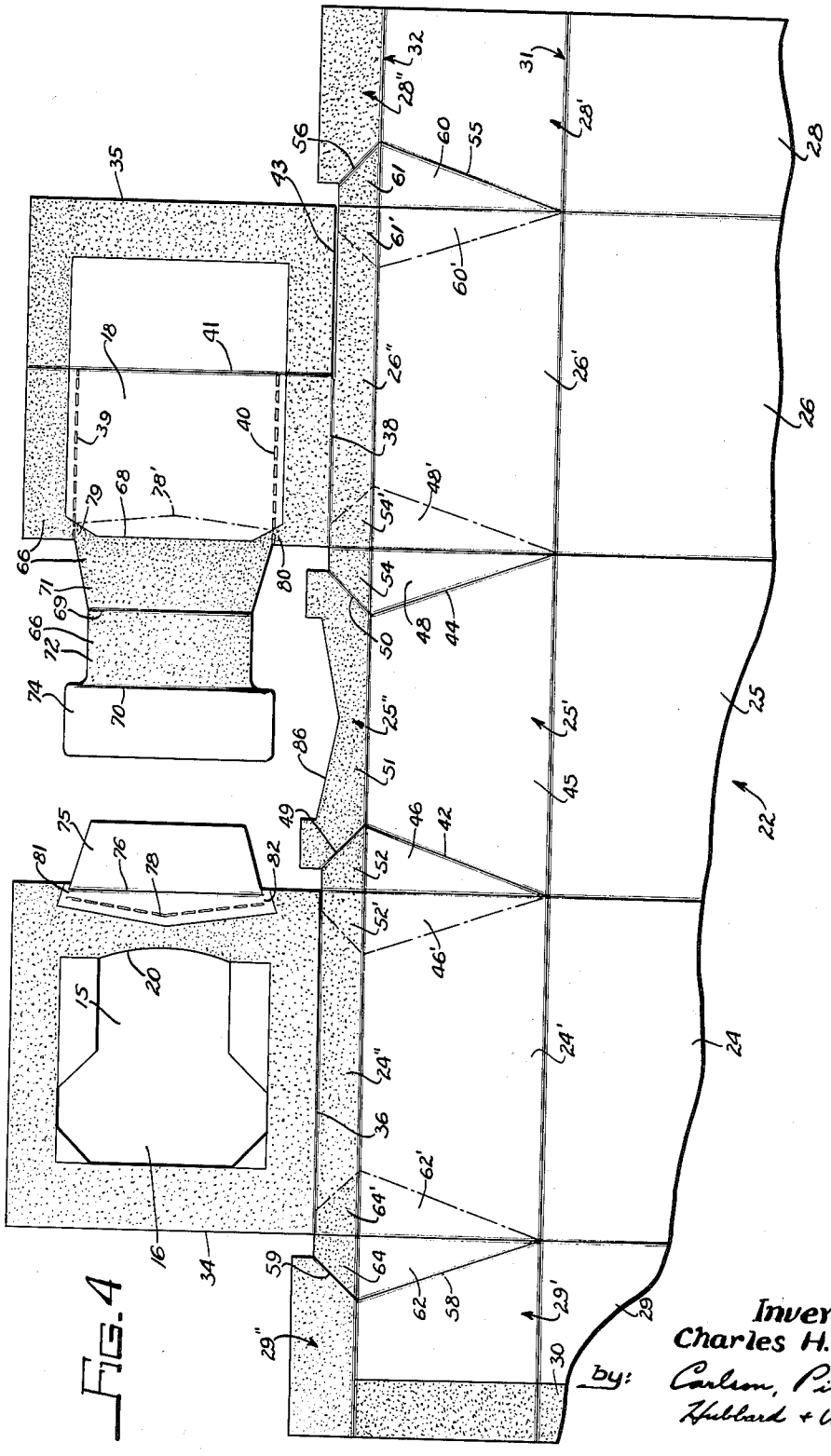


FIG. 4

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4 Sheets-Sheet 3

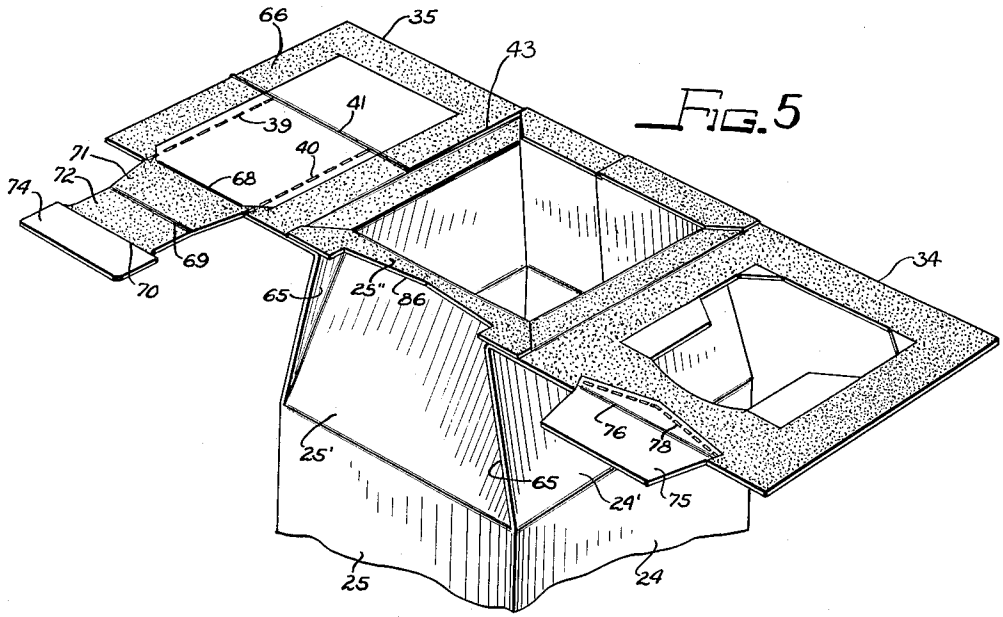


FIG. 5

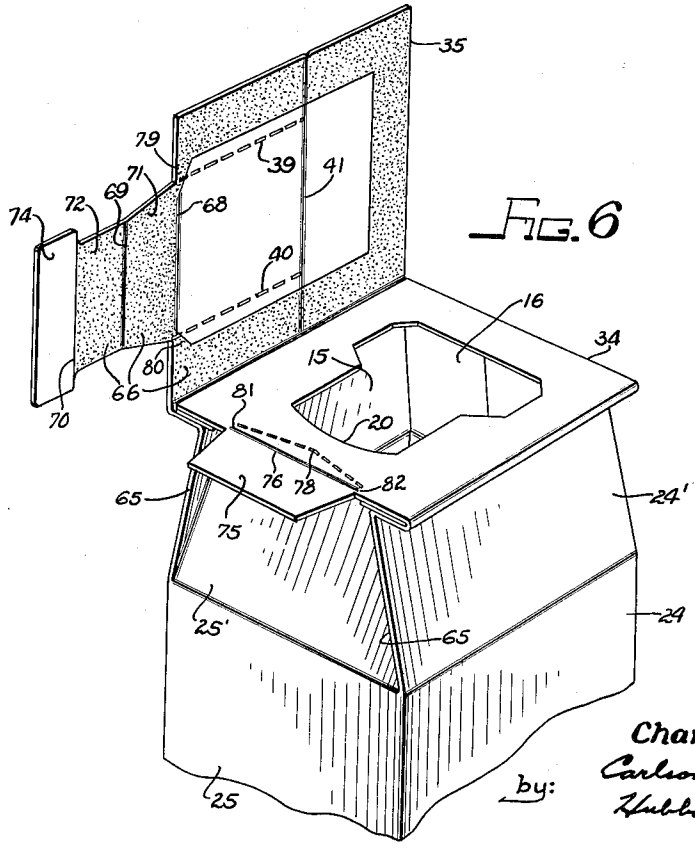


FIG. 6

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Fig. 7

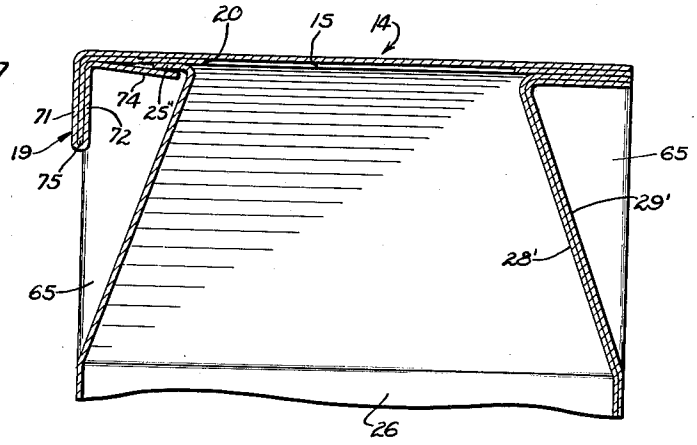


Fig. 8

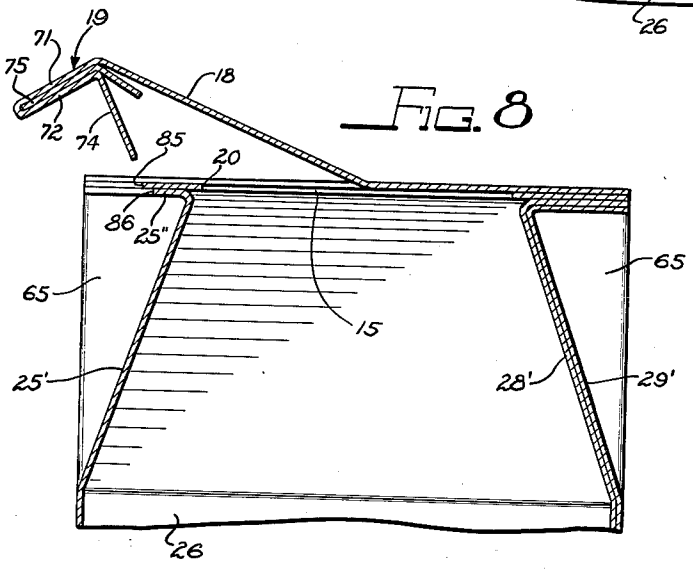
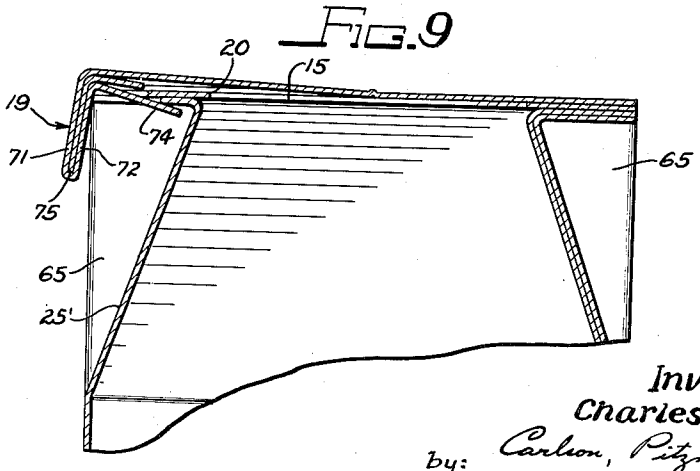


Fig. 9



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2,730,288

CONTAINER WITH RECLOSABLE POURING OPENING

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Application December 28, 1949, Serial No. 135,430

6 Claims. (Cl. 229—17)

The present invention relates generally to containers and more specifically to a disposable, self-sustaining container of paper or the like having a novel and improved reclosable pouring opening of the general type disclosed in U. S. Patent No. 2,270,617, issued January 20, 1942, to Racy D. Bennett. The invention finds particular, but by no means exclusive, utility in flat topped containers adapted for distributing milk and other dairy products.

One object of the present invention is to provide a container having a liftable member sanitarily covering the pouring opening and initially disposed in fluidtight relation with the container wall, such container including means whereby the liftable member may be reclosed and positively but releasably latched in such position over the pouring opening.

Another object is to provide a container of the character set forth and wherein the liftable member can be broken loose to expose the pouring opening by the application of a relatively slight force to a novel gripping tab, permitting the container to be opened without the use of the fingernail or any other opening instrument.

A further object is to provide a container of the character set forth and capable of being constructed economically from a relatively simple, single sheet blank which can be cut out by means of a high speed carton converting machine.

Other objects and advantages will become apparent as the following detailed description proceeds, taken in connection with the accompanying drawings, wherein:

Figure 1 is a perspective view of an illustrative container embodying the present invention and showing the liftable member in its initial fluidtight closed position.

Fig. 2 is an enlarged fragmentary side elevation of the container of Fig. 1 and showing the manner in which the liftable member can be gripped by the fingertips.

Fig. 3 is a fragmentary perspective view of the upper portion of the container illustrated in Fig. 1 but showing the liftable member in its raised position whereby the pouring opening becomes exposed.

Fig. 4 is a plan view detailing the inside face of the blank from which the illustrative container of Fig. 1 may be constructed.

Figs. 5 and 6 are fragmentary perspective views illustrating sequentially certain of the steps involved in forming the top closure of the container of Fig. 1.

Fig. 7 is an enlarged fragmentary vertical sectional view taken through the upper portion of the container of Fig. 1 and in the plane of the line 7—7.

Figs. 8 and 9 are enlarged fragmentary vertical sectional views similar to Fig. 7 but illustrating sequentially the manner in which the liftable member may be latched in place upon reclosure.

While the invention is susceptible of various modifications and alternative constructions, a preferred embodiment has been shown in the drawings and will be described below in considerable detail. It should be understood, however, that there is no intention to limit the invention

to the specific form disclosed, but on the contrary, the intention is to cover all modifications and alternative constructions falling within the spirit and scope of the invention as expressed in the appended claims.

Referring more specifically to the drawings, there is shown in Fig. 1 an exemplary tubular container 10 embodying the present invention. The container 10 is of the self-supporting, disposable type, being formed from paper or other suitable sheet material and being coated or impregnated with a suitable substance to render it fluidtight and capable of holding liquids such as milk. The container 10 comprises a main body portion 11 which in the present instance happens to be substantially square in cross section. At its base, the body 11 may be provided with any appropriate bottom closure, the details of the latter being quite independent of the present invention. At its upper end, the body portion 11 merges into a tapering transition portion 12 which is surmounted by a flat top closure 14. The structure of the flat top closure 14 includes a reclosable pouring opening 15 and preferably a sealable filling opening 16. Overlying the reclosable pouring opening 15 is a lift tab 18 which may be swung upwardly from closed position by the application of force from the fingertips to a gripping tab 19 integrally connected with the lift tab and protruding beyond the marginal overhang of the top closure 14, as indicated in Fig. 2. Such action of course serves to expose the pouring opening 15 for dispensing of the contents of the container. The periphery of the opening 15 is cut so that a portion of it adjacent the liftable end of the tab 18 will serve as a pouring weir 20 when the container is raised to dispensing position. In addition, the pouring opening 15 is so dimensioned relative to the lift tab 18 that it will have a substantial sanitary margin 21 of stock below and flanking the pouring weir and underlying the lift tab 18.

Preferably, the container 10 is formed from a flat blank 22 of heavy paper stock or other suitable sheet material, the inside face of such blank being illustrated in Fig. 4. By means of a suitable pattern of score lines and perforations, the blank 22 is divided into a plurality of panels and areas which are utilized for the walls of the container and the closure parts when the container is erected. Thus the central and major area of the blank 22 is scored to define side panels 24, 25 and 26, together with fractional side panels 28 and 29. All of these side panels serve to define the major body portion 11 of the erected container, the fractional side panels 28, 29 being lapped over and joined together as by means of adhesive band 30. Connected to these side panels adjacent their upper edges are a plurality of rectangular extensions 24', 25', 26', 28' and 29', all separated from their corresponding side panels by a common transverse score line 31. The fractional panel extensions 28', 29' are lapped over and glued in a manner similar to the lapping of the panels 28, 29 by an adhesive area which is a continuation of the strip 30. The upper extremities of the panel extensions 24' to 29', inclusive, are defined by a second common score line 32 parallel to the line 31. Connected to the panel extensions 24' to 29', inclusive, along the score line 32 are a plurality of parts which form the top closure 14 of the container. Included in this group are flange panels 24'', 25'', 26'', 28'' and 29'' which correspond to the respective ones of the side panel extensions. In addition to the foregoing, the blank 22 includes two additional major parts of the top closure 14, namely, flaps 34, 35 which are respectively connected to flange panels 24'', 26'' along score lines 36, 38. The central portion of the panel 34 is formed with a relatively large T-shaped aperture, a portion of which serves as the pouring opening 15 and another portion of which serves as the filling open-

ing 16 of the container. The flap 35 includes a pair of laterally spaced lines 39, 40, wherein the stock is perforated or otherwise weakened, and which define lift tab 18, the material between these lines being extended so as to provide material for the gripping tab 19. Running transversely of the flap 35 and substantially through the inner termini of the lines 39, 40 is a score line 41 which defines a hinge line for the lift tab 18. The score line 41 also defines a hinge line for the portion of the flap 35 which normally overlies the filling opening 16 and, together with cut 43 which partially separates the flap 35 from the flange panel 26'', permits such portion to be raised for filling purposes without disturbing the lift tab or the dispensing opening.

In order to render the upper and lower surfaces of the top closure 14 accessible from the exterior of the container 10 for sealing purposes, provision is made for causing the flange panels 24'', 25'', 26'', 28'' and 29'' to turn outwardly upon erection of the carton. This is done by scoring the blank 22 so as to create a sort of bellows fold between the transition portion 12 and the top closure of the container. Accordingly, the panel extension 25' has impressed thereon symmetrically disposed score lines 42, 44 converging upwardly so as to divide its area into a subpanel 45 having the shape of an isosceles trapezoid with a base equal in width to that of the side panel 25, and a pair of relatively small subpanels 46, 48 of right triangular shape flanking the subpanel 45. By the same token, the flange panel 25'' has impressed thereon score lines 49, 50 commencing respectively at the intersections between the score line 32 and the ends of the lines 42, 44. These lines diverge upwardly so as to define in the flange panel 25'' an elongate central subpanel 51 overlying the subpanel 45 and a pair of flanking trapezoidal subpanels 52, 54 overlying the subpanels 46, 48. Similarly, the fractional side panel extensions 28', 29' and the associated fractional flange panels 28'', 29'' are respectively scored by lines 55, 56, 58, 59 in such a manner that when joined together by the adhesive strip 30 they will have a substantially identical pattern of related subpanels. Thus, the panels 28', 28'' include triangular subpanel 60 and trapezoidal subpanel 61 while the panels 29', 29'' will include triangular subpanel 62 and trapezoidal subpanel 64.

To secure the component parts of the top closure 14 in fluidtight relation after the container 10 is erected and filled, a suitable pattern of adhesive material is applied to the flange panels as well as to certain marginal areas of the flaps 34, 35. While various adhesives may be used for this purpose, it has been found highly satisfactory to employ a thermal setting material applied by a printing process and which can be activated in response to heat and pressure.

The steps in erecting the carton 10 from the blank 22 are not complicated and may readily be performed by machine or manual means. Assume first that the blank 22 has been erected into an open-ended tube by folding the same along the score lines between its side panels and by securing together through the use of the adhesive strip 30 the fractional side panels 28, 29 along with their extensions 28', 29'. Assume further that the bottom closure of the container has been completed in the usual manner. If the tube should then be manipulated so that its adjacent side panels are at right angles to each other, the application of external forces to the upper regions of the side panel extensions 25', 28'—29' tending to fold the same inwardly will tend to swing the upper ends of the opposed side panel extensions 24', 26' inwardly, causing the latter to hinge about the score line 31. If additional external forces should now be brought to bear upon the upper portions of the side panel extensions 24', 26' while maintaining the forces on the panels 25', 28'—29', the flange panels 24'', 25'', 26'' and 28''—29'' will commence to fold outwardly. The application of a relatively slight downward force to

the latter will cause the container to assume the condition illustrated in Fig. 5. As a necessary incident to such action, the subpanels 46, 52 fold over onto side panel extension 24' and its associated flange panel 24'', occupying the dotted line positions indicated in Fig. 4 by the reference characters 46' and 52', respectively. The subpanels 48, 54 likewise fold over against fractional side panel 26' and its associated flange panel 26'', occupying the dotted line positions indicated by the reference numerals 48', 54', respectively. Similar action occurs on the opposite side of the container, the subpanels 60, 61 folding over upon side panel extension 26' and flange panel 26'' to occupy the positions indicated at 60' and 61'. Subpanels 62, 64 also fold over against side panel extension 24' and flange panel 24'' to occupy the positions indicated at 62' and 64'. Such folding action produces a relatively deep and open V-groove around the underside of the top closure 14 and at the same time strengthens the transition portion 12 of the container by defining corner ribs 65 therein (Figs. 1, 3, 5 and 6). From this point on, the top closure 14 of the container 10 may be completed in a simple and straightforward manner. Thus the outturned flap 34 may be swung through 180° and folded downwardly upon the upper faces of the flange panels, from the position of Fig. 5 to that shown in Fig. 6. Thereupon, the flap 35 may be folded downwardly upon the upper face of the flap 34 and the gripping tab 19 completed. The subsequent application of heat and pressure to the marginal portions of the closure 14 serves to activate the adhesive and seal the closure. It might be noted in passing that the half of the flap 35 overlying the region of the filling opening 16 is preferably left unsealed until after the container has been filled.

Turning now to the manner in which the novel gripping tab 19 is constructed, it will be noted that the parts which make up the tab 19 are held together by a continuous band of adhesive 66 which completely encircles the pouring opening 15 and sealingly connects the flaps 34 and 35. In the present instance, the adhesive band 66 is applied in a strip of substantially uniform width over the marginal areas adjacent three of the four sides of the flap 35. Along the fourth side of the flap 35, which lies at the front of the container as viewed in Fig. 1, the adhesive band 66 covers a substantial portion of a longitudinal extension of the lift tab 18 (see Figs. 4, 5 and 6). Such extension is divided by score lines 68, 69, and 70 into fractional panels 71, 72 and 74, the adhesive being applied only to the two inside panels 71, 72. Referring more specifically to Fig. 6, it will be perceived that the upper face of the flap 34 provides ample area for secure engagement with the band 66 constituting the adhesive coated area of the flap 35. That substantially uniform strip of the band 66 running along the marginal edge portions of three sides of the flap 35 merely engages the underlying and corresponding areas of the flap 34 when the flap 35 is folded down upon the latter. During such action, however, only a portion of the remaining adhesive coated area in the band 66, namely, that of lift tab extension panel 71, will initially contact the panel 34. Such contact is made against a holding tab 75 integral with the flap 34 and projecting forwardly therefrom. The holding tab 75 includes a score line 76 recessed inwardly from the front edge of the flap 34. A weakened or perforated line 78 partially separates the tab 75 from the main portion of the flap 34. During the course of effecting a fluidtight seal between the flaps 34 and 35, the lift tab extension panel 72 is bent through an angle of 180° about the score line 69 and pressed into contact with the underside of the holding tab 75, the panel 74 being bent back toward the panel 72 at the same time. When heat and pressure are applied to the flaps 34, 35 to activate the adhesive in the top closure 14, including that of the band 66, the major portion of holding tab 75 becomes adhesively sandwiched between the lift tab extension panels 71, 72. When this step has been completed, the

panels 71, 72, along with the sandwiched portion of the holding tab 75, are bent downwardly at about 90° to the top closure as indicated in Fig. 1, the panel 71 bending about score line 68 and the tab 75 bending about score line 76. These members of course constitute the depending gripping tab 19 of multiple ply thickness and by means of which the lift tab 18 is manipulated. With the gripping tab in its depending position, it might be noted that the lift tab panel extension 74 has one end fixed to the gripping tab and its opposite end free, such free end nesting against the stock on the underside of the marginal overhang of the top closure 14. The distance between the fixed end and the free end of the panel extension 74 is no greater than the marginal overhang of the top closure.

Although the perforation lines 39, 40 defining the main lateral edges of the lift tab 18 are located within that portion of the area of the flap 35 encircled by the adhesive sealing band 66, they do not violate the fluidtight integrity of the container 10. This is due in part to the fact that the lines 39, 40 do not overlie the pouring opening but instead overlie the sanitary margin 21 which is integral with the flap 34. It is also due to the fact that the perforations or weakened portions of the lines 39, 40 become sealed by the paraffin or other material with which the container may be coated or impregnated.

Provision is made for permitting the lift tab 18 to be broken loose and raised to expose the pouring opening 15 upon the application to the gripping tab 19 of a relatively slight but deliberately applied force and entirely without the use of the fingernail or any other opening instrument. This is accomplished by a novel correlation between the gripping tab 19, the adhesive band 66, and the particular disposition of the perforation lines utilized in the flaps 34, 35. Referring to Figs. 4 and 6, it will be noted that the encircling adhesive band 66 on the underside of the flap 35 has two necked-down portions 79, 80 adjacent the ends of the panel 71 and the lateral extremities of the tab 18. These areas lie between the left-hand edge of the flap 35 (as viewed in Fig. 4) and the termini of the weakened perforation line 78 which occupies a position shown at 78' on flap 35 when the top closure is completed and which divides the holding tab 75 from the flap 34. Since separation of the tab 75 from the flap 34 must occur principally along the line 78, any resistance offered by the adhesive band 66 to the raising of the lift tab 18 would be negligible. Thus it will be seen that the retaining force holding the lift tab 18 in place is set up primarily by the unsevered stock between the perforations or weakened portions of the lines 39, 40 and 78, together with that set up by the thin bridging portions of material 81, 82 in the flap 34 underlying the lines 39, 40 and bounded by the ends of the line 78 and the front or right-hand edge of the flap 34 (as viewed in Fig. 4). Some additional retaining force will exist between the lift tab extension panel 74 and the underside of flange panel 25'' and such force may be enhanced due to adhesion set up by the paraffin or other coating material on the container.

The total resistance to the lifting of the tab 18 for exposure of the pouring opening is sufficiently great to preclude accidental opening of an initially sealed container during shipment or handling. By reason of the liberal gripping area of the gripping tab 19, however, and the fact that the tabs 18, 19 are adapted to break loose from the various resisting area sequentially, it will be appreciated that the container can be opened by a user upon exertion of only a fingertip force on the gripping tab, Assuming the container to be in the condition of Figs. 1, 2 and 7, an outward and upward pull on the gripping tab 19 will serve to loosen the panel 74 from the underside of the flange panel 25'' and will cause the narrow bridges of stock 81, 82 adjacent the ends of the perforation line 78 to rupture due to a combination of shearing and tension forces. At about the same time, the lift tab 18 will start to tear loose at the outer termini of the perforation lines 39, 40. Continued lifting force on the tab 19 will cause progressive severing of the resisting strands of stock along the line 78 due to the fact that such line is not straight but V-shaped when viewed in plan. The severing action along the line 78 ultimately causes parting of the holding tab 75 from the flap 34 and leaves only the stock of perforation lines 39, 40 to resist further lifting of the tabs 18, 19. Due to the hinge connection between the tab 18 and the flap 35 along the score line 41, the remaining resisting strands of stock in the lines 39, 40 become progressively ruptured and leave the pouring opening 15 completely exposed.

During the course of initially raising the lift tab 18 and its gripping tab 19, there is defined in the sanitary margin 21 a pouring lip 84 which depends below the pouring weir 20 when the container is held in pouring position. Moreover, the severance of the holding tab 75 along the perforation line 78 produces an edge 85 of virgin paper stock on the pouring lip 84. The pouring lip 84 is supported by the underlying flange panel 25'' which has its outer edge recessed as at 86 so as not to interfere with the action of the lip 84. The recess 86 also precludes adhesive engagement between the flange panel 25'' and the holding tab 75, thereby contributing to the ease with which the lift tab 18 may be elevated.

In accordance with a further aspect of the invention, provision is made in the container 10 for positively but releasably holding the lift tab 18 in a reclosed position over the pouring opening 15. Referring once more to Figs. 4 and 7 to 9, inclusive, it will be noted that the outermost extension panel 74 of the lift tab 18 is so proportioned that its free end portion substantially underlies the flange panel 25'' by a considerable margin. Moreover, when the triple thickness gripping tab 19 is bent into depending relation with the plane of the top closure 14, it tends to acquire a set in this position and to return to it after being temporarily deflected as for the raising of the lift tab 18. By reason of the foregoing, the panel 74 and gripping tab 19 constitute an effective spring latch for positively securing the lift tab 18 in reclosed position after the same has been initially opened. The latching action is effective to afford protection to the pouring opening and yet readily permits disengagement of the parts for subsequent dispensing operations.

I claim as my invention:

1. In a disposable tubular container of paper or the like having a relatively flat end closure overlying the side walls of the container with an overlapping margin therearound, the combination of a first flap having a dispensing opening defining therein a pouring weir, a holding tab integral with said first flap but severable therefrom along a line located between the pouring weir and the adjacent edge of said first flap, said line being located so as to define a pouring lip between said weir and the adjacent edge of said first flap, a second flap overlying said first flap and adhesively secured thereto, a lift tab integral with said second flap and disposed in fluidtight overlying relation with the pouring opening and said severable line, a first extension panel on said lift tab overlying said holding tab and being adhesively secured thereto, a second extension panel on said lift tab but disposed in underlying relation with said holding tab and adhesively secured thereto, said first and second extensions and said holding tab being yieldably set in depending and substantially perpendicular relation to said lift tab, and a third extension panel disposed in underlying relation with a portion of said holding tab and the adjacent portion of said pouring lip.

2. In a tubular container of paper or the like having an end closure with an overhanging margin between its edges and the supporting wall of the container, the combination comprising a first flap having a dispensing opening therein, a second flap adhesively secured in overlying relation with said first flap, a lift tab hinged to said second flap and being substantially coplanar therewith, a series

of panel extensions on said lift tab, certain ones of said extensions having a portion of said first flap adhesively sandwiched therebetween and thereby defining a gripping tab, said gripping tab being bent into depending relation with said lift tab, the remaining one of said panel extensions being disposed in underlying latching relation with the overhanging margin of said end closure, said outermost extension being yieldably biased into such position by said gripping tab.

3. In a tubular container of paper or the like having a relatively flat end closure overlying the side walls of the container and a dispensing opening in said end closure, the combination of a hinged lift tab initially disposable in overlying relation with the dispensing opening, a holding tab attached to said end closure along a severance line running in a direction no-parallel with the edge of said end closure, a gripping tab hinged to said lift tab, and means joining said gripping tab to said holding tab, said gripping tab when lifted being adapted to initiate a progressive severing action freeing said holding tab from said end closure to permit elevation of said lift tab.

4. In a tubular container of paper or the like having a substantially flat end closure with a dispensing opening therein, the combination comprising a hinged lift tab disposable in overlying relation with the dispensing opening, a holding tab attached to said end closure along a severance line other than a straight line, a gripping tab fixed to said lift tab and also to said holding tab, said gripping tab and a portion of said holding tab being disposable in depending relation with said lift tab, said gripping tab being adapted to transmit a progressive severing force to said holding tab.

5. In a tubular container of paper or the like having a relatively flat end closure, the combination comprising a first flap having a pouring opening therein, a second flap adhesively secured in overlying relation with said first flap, a lift tab hinged to said second flap and initially disposable in sealed overlying relation with the pouring opening, a holding tab connected with said first flap along a severance line having its ends closer to the free edge of said holding tab than its intermediate portion, a plurality of panel extensions on said lift tab, and means adhesively sandwiching said holding tab between said panel extensions.

6. In a disposable tubular container of paper or the like having a main body portion, a transition portion, a relatively flat end closure having a weakened tear line defining the outer edge of a permanent marginal portion overhanging said transition portion, and means defining a pouring opening in said flat end closure, the combination comprising a lift tab overlying said pouring opening and said overhanging marginal portion and being swingable from an initial fluid tight position in the plane of said flat end closure to a raised position for exposure of said pouring opening; spaced substantially parallel score lines on said lift tab defining first, second and third extension panels on the free end thereof, said first panel being bent downwardly along one of said score lines in depending relation to said lift tab and protruding beyond the outer edge of said overhanging marginal portion of said end closure, said second panel being bent along one of said score lines through 180 degrees to form with said first panel a multiple ply gripping tab, and said third panel being bent along another of said score lines and projecting inwardly toward the transition portion of said container and terminating in a free end positioned beneath and against the underside of said overhanging marginal portion of said end closure to thus latch mechanically therewith for retention of the lift tab in reclosed position after initial raising of said lift tab.

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