

[54] **HINGED PLASTIC CLOSURE FOR SHEET METAL CANS**

3,095,995 7/1963 Foster .....220/60 R  
3,246,792 4/1966 Brackmann .....220/31 S

[72] Inventors: **John A. Foster; Carl A. Filipowicz**, both of Rockford, Ill.

*Primary Examiner*—George E. Lowrance  
*Attorney*—Wolfe, Hubbard, Leydig, Voit & Osann, Ltd.

[73] Assignee: **J. L. Clark Manufacturing Co.**, Rockford, Ill.

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[57] **ABSTRACT**

[21] Appl. No.: **79,069**

The open end of a tubular sheet metal container of rectangular cross-section is closed by telescoping down over an outwardly and downwardly turned flange near the container lip a cover of resilient plastic having a depending peripheral skirt with a tab depending from one shorter end thereof and secured against the outer side of the container wall by integral projections pressed through holes in such wall. The cover is held releasably in closed position by nibs projecting inwardly from the skirt near the free end thereof and interlocked beneath the edge of the hem flange.

[52] U.S. Cl. ....**220/31 S**

[51] Int. Cl. ....**B65d 43/16**

[58] Field of Search .....220/31 R, 31 S, 60 R

[56] **References Cited**

**UNITED STATES PATENTS**

3,412,890 11/1968 Rich .....220/31 S X  
3,417,897 12/1968 Johnson .....220/60 R

**7 Claims, 9 Drawing Figures**

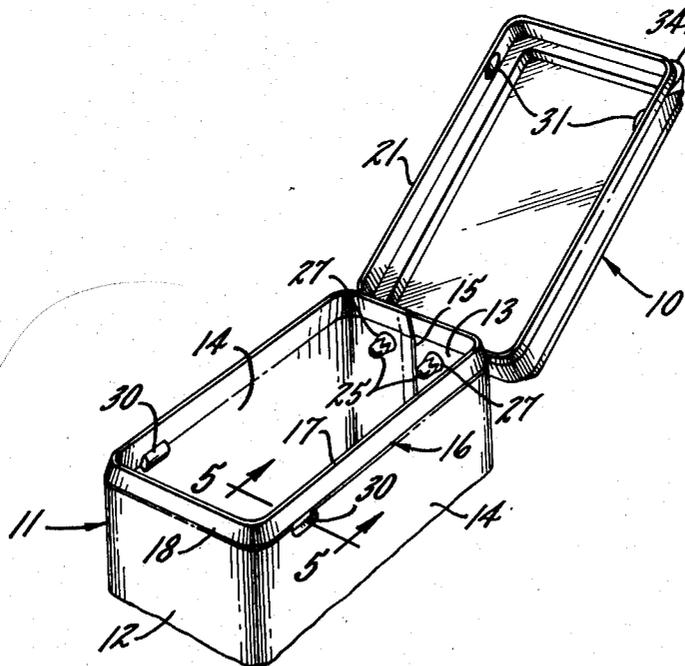


Fig. 1.

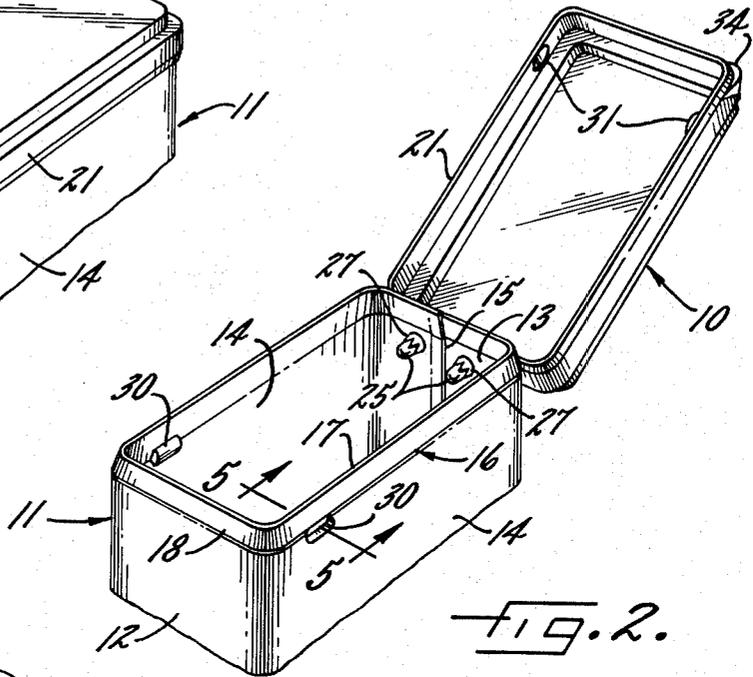
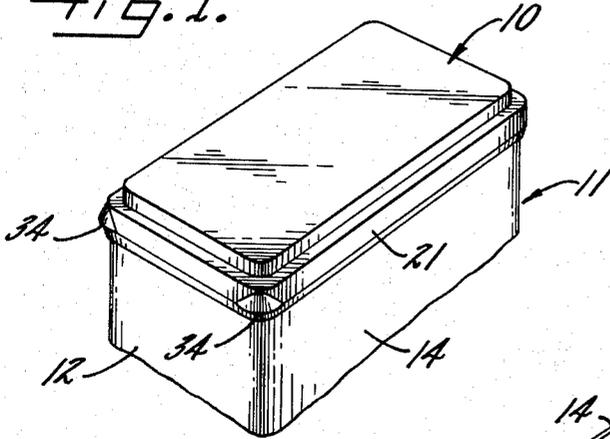


Fig. 2.

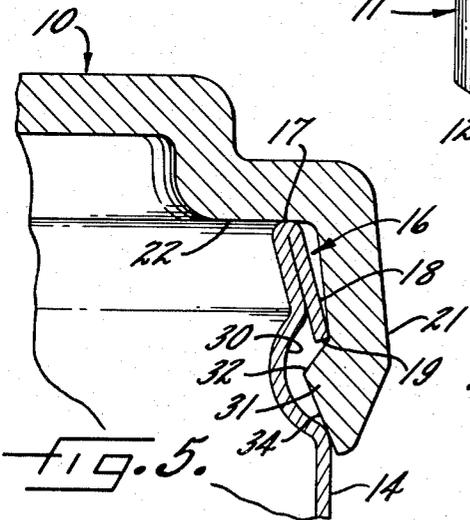


Fig. 5.

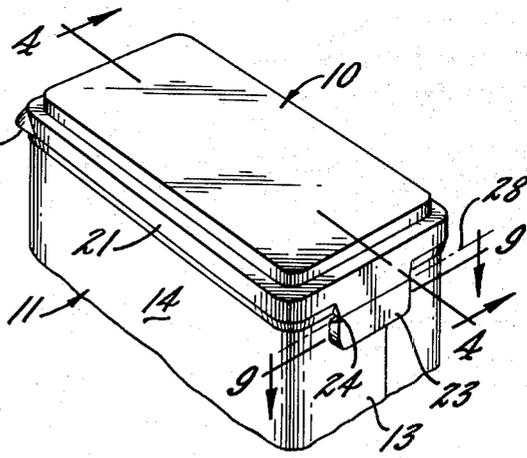


Fig. 3.

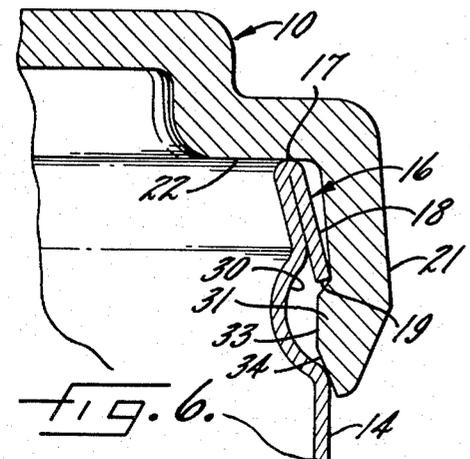


Fig. 6.

INVENTORS.  
 JOHN A. FOSTER  
 CARL A. FILIPOWICZ  
 BY  
 Wolfe, Hubbard, Leydig, Voit & Osann  
 ATTORNEYS.

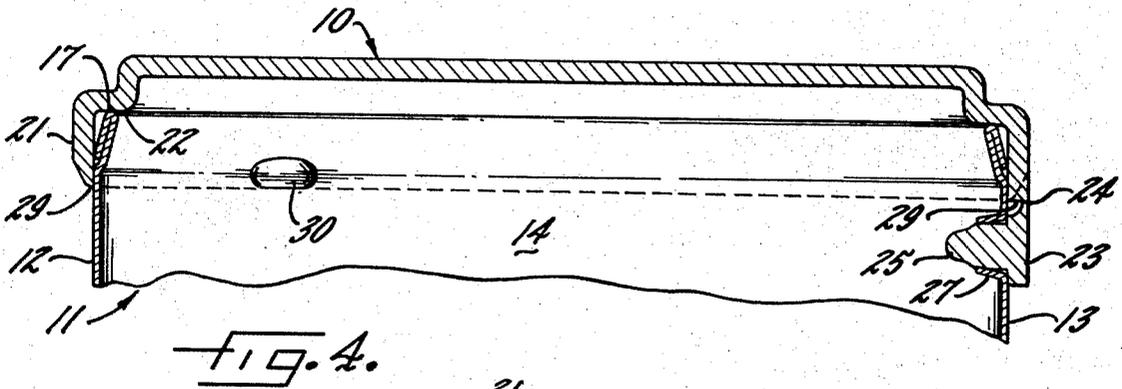


FIG. 4.

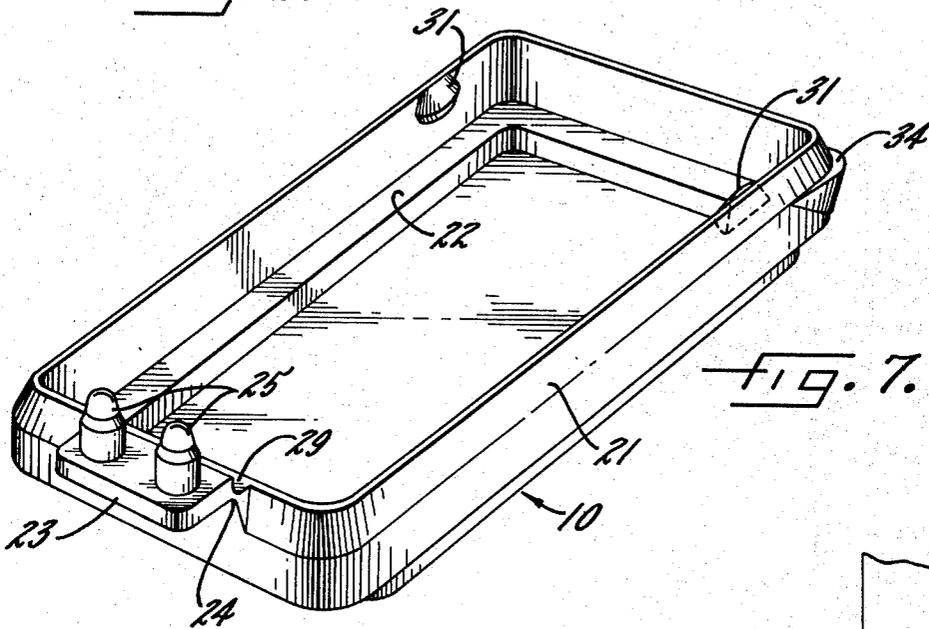


FIG. 7.

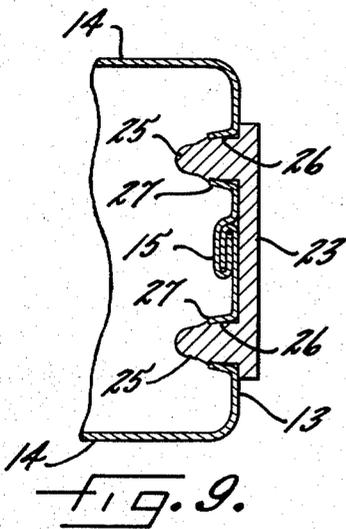


FIG. 9.

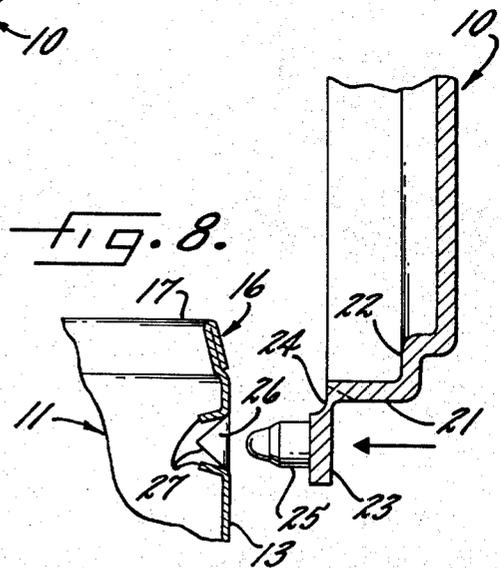


FIG. 8.

INVENTORS.  
JOHN A. FOSTER  
CARL A. FILIPOWICZ  
BY  
Wolfe, Hubbard, Leydig, Voit & Osann  
ATTORNEYS.

# HINGED PLASTIC CLOSURE FOR SHEET METAL CANS

## BACKGROUND OF THE INVENTION

The invention relates to containers having a tubular body of sheet metal normally closed by a cover of molded plastic permanently and hingedly secured to the open end of the container and having a depending skirt which, in the closed position, interlocks with the edge of a depending flange around the container opening. Containers of this general type are disclosed in U.S. Pat. Nos. 3,095,995 and 3,412,890.

## SUMMARY OF THE INVENTION

The present invention provides on a sheet metal container of rectangular cross-section a cover of resilient plastic hinged below the container lip across one short wall thereof through the medium of a tab depending from a skirt at one short end of the cover. Projections integral with a short end of the skirt are pressed through holes in said wall so that the junction between the tab and the skirt edges forms a hinge permitting swinging of the cover into and out of abutment with the container lip to close the container or open the full cross-section thereof.

The invention also resides in the novel means for holding the cover closed less securely after its initial manual opening, this objective being achieved by virtue of the shearing off of part of a plastic securing nib in the initial service opening of the cover.

## BRIEF DESCRIPTION OF THE DRAWINGS

FIGS. 1 and 2 are fragmentary perspective views of a container embodying the present invention with the dispensing opening closed and opened.

FIG. 3 is a similar perspective looking toward the hinged end of the cover.

FIG. 4 is a fragmentary section taken along the line 4—4 of FIG. 3.

FIGS. 5 and 6 are fragmentary and enlarged sections taken along the line 5—5 of FIG. 2 before and after opening of the container following the initial assembly of the plastic cover thereon.

FIG. 7 is a perspective view of the plastic cover as initially molded.

FIG. 8 is a cross-section taken along the line 8—8 of FIG. 7 but with the cover as originally molded positioned for assembly on the container.

FIG. 9 is a fragmentary cross-section taken along the line 9—9 of FIG. 3.

## DESCRIPTION OF THE PREFERRED EMBODIMENT

In the form shown in the drawings, the invention is incorporated in a container having a cover 10 of molded resilient plastic swingable between closed position (FIG. 1) and an open position (FIG. 2) in which the full cross-section of a tubular body 11 of rectangular cross-section is uncovered. The body is made of sheet metal with relatively narrow end walls 12 and 13 and substantially wider side walls 14. The ends of the metal sheet are interlocked with each other to form a seam 15 (FIGS. 2 and 9) which preferably is disposed on the inner side of the end wall 13, thus leaving the outer surface of this wall substantially flat as shown in

FIG. 3. Preferably, the metal at the open end of the body is turned outwardly and then reversely so as to form a hem 16 defining the container lip 17 and having a narrow flange 18 which is inclined somewhat downwardly and outwardly from the lip. The free edge 19 of the flange faces downwardly and is disposed substantially in the plane of the side walls 14.

The cover, which is composed of resilient plastic such as polyethylene, is generally flat and formed with a depending substantially right angular skirt 21 which extends around its entire periphery of the body and projects below an inner peripheral ledge 22. The skirt is somewhat deeper than the hem flange and is sized to telescope quiet closely down over the hem until the ledge 22 comes into abutment with the lip 17 as shown in FIG. 4.

In accordance with the present invention, the skirted cover is fastened to the body 11 through the medium of a tab 23 molded integral with the lower edge and depending from one short end of the cover skirt and secured against the end wall 13 so that the junction 24 between the skirt edge and the tab defines a hinge disposed below the body lip 17 and permitting swinging of the cover into and out of abutment with the lip (FIGS. 1 and 4) or upwardly to open the full cross-section of the container top as shown in FIG. 2.

The tab is substantially flat and, as the cover comes from its mold, projects outwardly from the lower edge of the skirt substantially parallel to the top of the cover as shown in FIG. 7. The tab is substantially flat and generally rectangular and forms a rigid connection between two projections 25 laterally spaced apart across the wall and disposed normal to the tab near opposite ends of the latter. The projections are somewhat pointed at their ends and thus adapted to be pressed through holes 26 punched in the wall 13, preferably in a manner to leave edges 27 thereof more or less jagged. As the somewhat larger diameter projections are pressed through the holes from the position shown in FIG. 8, the entire area of the tab comes against the body wall 13 and the jagged edges 27 bite into the plastic as illustrated in FIGS. 4 and 9. The tab is thus anchored securely to and flat against the end wall 13.

At the junction 24 between the tab and the skirt, the plastic is made thin enough to flex readily about an axis 28 and define a hinge which permits easy swinging of the cover between the closed and open positions (FIGS. 1 and 2). Proper telescoping of the skirt and body lip during such swinging is achieved by locating the hinge axis relative to the container lip 17, such axis being disposed in this instance at the lower edge 29 of the skirt 21 substantially in the vertical plane of the outer surface of the skirt.

Coacting formations on the exterior of the body lip and the interior of the skirt and preferably located near the free end of the cover 10 are adapted to pass each other and interengage with a snap action to hold the cover closed after it comes into abutment with the container lip. Herein, the lower edge 19 of the hem flange 18 constitutes one of these formations. The other is a nib 31 cast integral with the skirt on the interior thereof preferably at or, as in the present instance, near the free end of the cover.

To expose the hem edge 19 for the desired engagement with the nib 31, this edge is spaced a short

distance from the opposed side wall 14 of the container body as by depressing the metal 30 of the side wall 14 inwardly as shown in and immediately below the hem edge so as to receive the nib and allow the same to enter the recess and snap inwardly beneath the flange edge 19 as the cover in closing comes into abutment with the lip 17. The under surface 34 of the nib and the outer surface of the hem flange are somewhat inclined as shown in FIG. 5 so that by virtue of these inclines and the resiliency of the plastic, the nib and skirt will be cammed outwardly as the cover in being closed approaches abutment with the lip. Then, when the nib passes the edge 19 of the hem, it snaps inwardly beneath this edge thus holding the cover securely in closed position as shown in FIG. 5. In the present instance, two such nibs 31 are molded on the interior of the skirt on opposite sides of the cover and near the free end thereof as shown in FIG. 7.

In another aspect of the invention, the nibs 31 are made long and strong enough for a substantial length of the outer ends to interlock with the edge 19 of the hem flange as shown in FIG. 5 when the cover is initially assembled on the container and closed as described above. But, owing to the sharpness and rigidity of the hem edge 19 and the character of the plastic of the nibs, the inner end portions 32 thereof will be sheared off in the initial opening of the cover leaving a flatter inner surface 33 on the nibs. As molded, the nibs project about 0.020 of an inch from the interior of the skirt and about 0.005-0.010 thereof is sheared off in the initial service opening of the cover. Since the nibs are composed of resilient plastic, they will be compressed endwise in the initial opening of the cover so that after the shearing action, a sufficient length of the nibs will remain to be compressed and again snap in under the flange edge 19 as the cover is again closed and brought into abutment with the lip as shown in FIG. 6.

The nibs 31 thus constructed and arranged relative to the hem flange may, after the original assembly and closure of the cover, be sheared off partially and the cover released and swung open by upward pressure applied manually to a finger tab 34 projecting from the skirt at the free end of the cover. Two such lift tabs are provided in the present instance and either may be used to lift the cover and utilize the hem edge 19 to shear off the ends of the nibs and effect the initial opening of the cover by the original purchaser of the filled container.

The substantially greater security in holding the cover closed after the initial assembly is advantageous in enabling the cover to be applied by the container manufacturer while leaving the bottom of the body opening for ease of filling with the desired material after which a bottom wall is applied and crimped onto the lower end of the body in accordance with conventional procedure. In the handling of the container to effect such filling and bottom closing, the body is usually supported upside down, gripped securely during the bottom closing and thereafter stripped endwise out of its grippers. By virtue of the secure holding of the cover on the container lip by the nibs 31 after the initial assembly, the danger of opening the cover and losing the container contents is minimized. But after the initial opening and shearing off of the outer ends of the nibs 31, subsequent openings of the cover by the eventual user are achieved with light lifting force exerted on one of the tabs 34.

The hinging of the cover on the end wall 13 through the medium of the external skirt tab 23 and opening of the entire cross-section of the container end is particularly advantageous not only in facilitating pouring of the contents out of the container across the other end wall 12 but also in minimizing the danger of the contents, such for example as mustard seeds, getting in between the exterior of the container wall and the hinge tab. The possibility of preventing reclosure of the cover or releasing the anchor formed by the projections 25 in the normal service use of the container is effectively minimized.

We claim:

1. A dispensing container having, in combination, a sheet metal tubular body of rectangular cross-section having a lip around its open end, a generally flat and rectangular cover of molded resilient plastic having a depending peripheral skirt adapted to telescope closely down over the exterior of the lip around the entire periphery of said open end, a generally flat tab molded integral with the lower edge of said skirt and constituting a depending extension of the skirt across one edge of the cover so as to lie against the outer surface of one upright wall of said body, said one wall having holes therethrough laterally spaced apart below the edge of said skirt and within the area of said tab, projections of larger radial cross-section than said holes molded integral with said tab and pressed into and through said holes to cause the edges of the holes to bite into the sides of the projections and anchor the tab securely to said body and flat against said one body wall, the junction between said skirt and said tab being sufficiently thin and flexible to form a hinge disposed outside of said one wall and substantially along the skirt edge so as to permit swinging of the entire cover into and out of telescoping and abutting relation with said body lip whereby the entire cross-sectional area of said open end of the body is opened and exposed when the cover is swung away from closed position, and means on the interior of said skirt and the exterior of said lip interengageable with each other as said cover comes into abutment with said lip to hold the cover releasably in closed position against the lip.

2. A container as defined in claim 1, in which the ends of the rectangular body cross-section and of said skirt are substantially shorter than the sides and said tab depends from one of said shorter skirt ends so that the container contents may, after opening of said cover, be poured out of the container across the opposite short end of said lip without contact with the hinged end of the skirt.

3. A container as defined in claim 1, in which said tab is formed as a single piece of said plastic integrally and rigidly joining said anchoring projections so as to maintain accurate spacing thereof during insertion of the projections through said holes.

4. A container as defined in claim 1, in which said body lip is formed by an outturned hem and said holding means includes a nib integral with said projecting inwardly from said skirt at a point spaced from said hinge and adapted to snap in beneath the free lower edge of said hem.

5. A container as defined in claim 4 in which said nib is long enough to hold the cover securely in its initial abutment with said lip while permitting its tip to be sheared away during the initial opening of the cover,

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enough of the nib remaining after such shearing to be compressed in passing said hem flange and snap in beneath the edge thereof in subsequent closings of the cover against said lip.

6. A container as defined in claim 5, having a plurality of said nibs projecting inwardly from opposite sides of said skirt adjacent the free end of said cover.

7. A container as defined in claim 1, in which said

body is composed of a sheet of metal whose ends are bent and interlocked with each other to form a seam extending downwardly from said lip along the inner surface of said one end wall, the outer surface of such wall abutting the inner face of said tab being substantially flat.

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