Aug. 14, 1951 F. J. COSTELLO 2,564,298

HINGED PLUG COVER FOR CONTAINERS

Filed Nov. 25, 1947

FIG. 1.

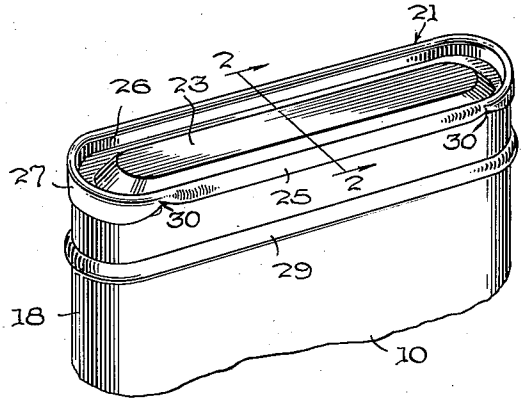


FIG. 5.

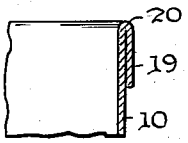


FIG. 2.

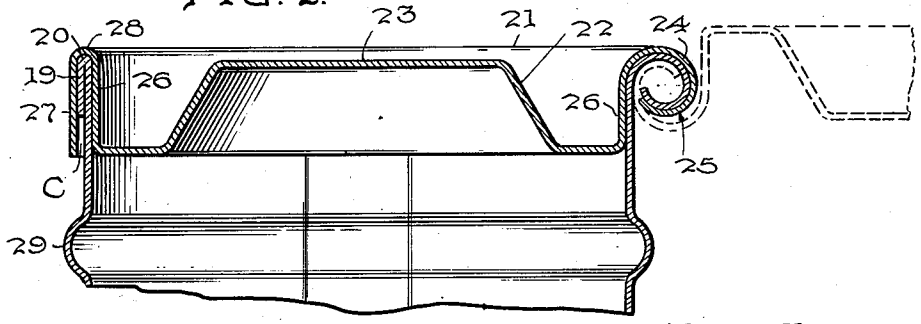
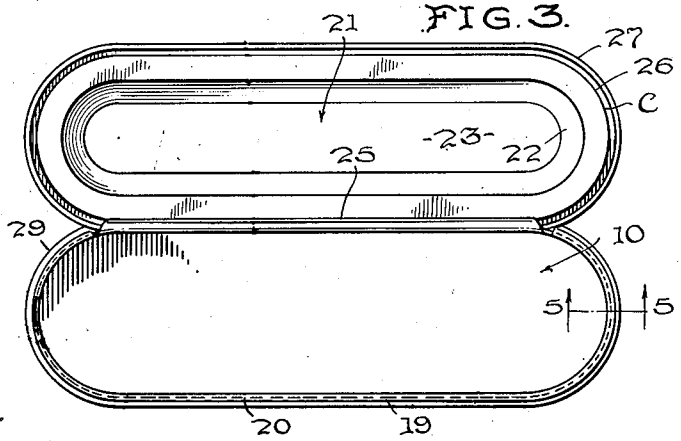


FIG. 3.



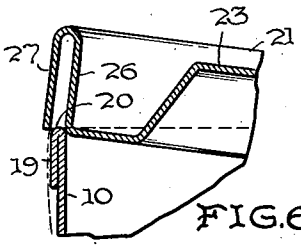


FIG. 6.

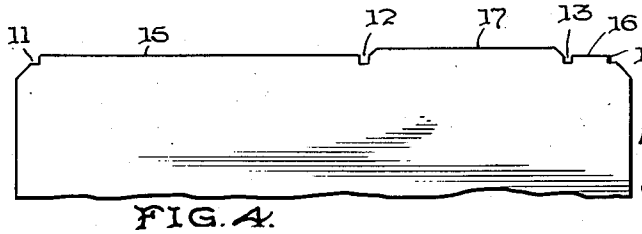


FIG. 4.

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UNITED STATES PATENT OFFICE

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HINGED PLUG COVER FOR CONTAINERS

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Application November 25, 1947, Serial No. 787,975

2 Claims. (Cl. 220—31)

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The present invention relates to cans and their closures in general and in particular to cans having hinged covers of the friction plug type.

It has been my purpose to improve upon the can closure disclosed in my prior United States Patent No. 2,296,599 of September 22, 1942.

When placed on the market in the form of a pocket-size tobacco container, the can closure which was made in accordance with that patent manifested certain defects. In the order of their seriousness, these defects will now be stated. (1) The curled beads on the ends and especially the distal side of the cover projected sufficiently far outward to cause the cover to open when contacted in a particular manner by adjacent cans in the normal handling of packaging, shipping and storage. Aside from the spilling of the contents or exposure of any unspilled contents to the atmosphere resulting from such accidental opening, there was a more serious consequence. The revenue seals became broken, which amounted to violation of the Federal revenue laws. (2) The open edge of the curl on the distal side of the cover did not offer sufficient sealing contact, particularly when the rim of the can had become the least distorted by careless handling when the can was open. In fact distortion of the can rim often caused failure of proper closing of the cover without the knowledge of the user. (3) Because of the continuous similarity of the rolled bead, or curl, all around the sides and ends of the cover, it was found to be difficult for the user to determine quickly, without inspection of the directions printed on the can, which edge of the cover should be pushed up to open the same. In darkness or poor light, this disadvantage was most troublesome.

There still exists a want for a pocket-size tobacco can having a plug type cover which will render the can air-tight when closed and which is hinged to the can proper by the inter-curled portions formerly used so as to allow the cover to open widely at least to one hundred and eighty degrees (180°). The overall object of the present invention is to develop a can possessing these primary requisites while at the same time eliminating the defects of the earlier model.

An object is to flatten the hem on the can rim from one side of the cover hinge to the other and to replace the curl on the ends and distal side of the cover by an inverted U-shaped flange whose opposite walls will engage, over a wide area, the flat opposite faces of said hem to cure the defects of my earlier invention even without any other changes.

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Another object is to supplement the improved features just mentioned by the provision of a circumferential rib in the can body adjacent to the cover which will form a guard for the open edge of the cover flange to further insure against accidental opening.

A still further object is to provide a strengthening panel in the cover which serves the additional purpose of facilitating application of a revenue stamp.

Various other objects and advantages of the invention will be apparent from the specification and the drawing accompanying the same.

In the drawing which forms a part of the specification by reference and which illustrates the improved can or receptacle as now being manufactured:

Figure 1 is a fragmentary perspective view of the top portion of a pocket tobacco can embodying the invention;

Figure 2 is a fragmentary vertical sectional view on an enlarged scale taken on the line 2—2 of Fig. 1;

Figure 3 is a top plan view of the can, on the same scale as in Fig. 2, with the cover opened;

Figure 4 is a fragmentary view on a reduced scale showing the form of the blank at the open end of the can;

Figure 5 is a fragmentary sectional view on line 5—5 of Fig. 3; and

Figure 6 is a similar view of my improved can in the same condition.

Referring to the drawing more in detail, the invention is here shown as applied to a can of sheet metal, or other suitable material, which is of flat oval section such as is commonly used as a pocket-size tobacco container, but it is to be understood that the invention is applicable to any can having an open end to which the side walls extend to form the rim of the opening, whether or not the area of the opening is co-extensive with the cross-sectional area of the can. However, I prefer to utilize the general form of can disclosed in my prior patent, wherein the opening is co-extensive with the cross-sectional area in order that no obstruction to free pouring of the contents is presented. I have also continued to utilize the inter-curled type of hinge which is located entirely outside the can body and permits wide opening of the cover.

Before making a detailed comparison between the old features of construction and the new, the latter will be described in their entirety.

The blank from which the can body 10 is formed is substantially similar to the blank for

my previous can. As shown in Fig. 4, it is notched at its upper margin, as indicated at the points 11, 12, 13 and 14 to divide the said margin into rim portions 15 and 16 and flap portion 17, which are to form the rim structure of the open end of the can. The body 10 of the can is formed by bending the blank into a flat tubular form of oval cross-section, as shown in Fig. 1, with the side edges of the blank formed into the rolled seam 18, the rim flap portions 15 and 16 having previously been bent down over the outer surface of the can body to provide a reinforced hemmed rim 19 with a rounded edge lip 20 for the open end of the can. The side notches 11 and 14 clear the blank of the reinforcing material at the end of the seam so as to permit the seam to be freely formed and to avoid undue thickening of the rim at the point of termination of the seam.

Unlike the hem at the rim of my former can, which had its front portion lapped to leave a slight space between it and the body of the can, the present hem is perfectly flat all around the rim from one end of the hinge-flap to the other. The hem, however, is of substantial width, for reinforcing purposes and to provide a wide area to contact the sealing flange of the cover 21.

The plug cover 21 differs from the usual shape of a shallow pan, as employed in my former invention, in that it is provided with an upstruck central panel 22 having a top face 23 which is substantially flush with the upper marginal edge of the cover. This panel serves to stiffen the cover and also to facilitate application of the Federal revenue stamp required on tobacco products, which stamp (not shown) may thus adhere to the top face 23 at the position where it crosses the top of the can with its ends adhering to the body of the can.

The back edge of the cover 21 is formed with an outwardly extending lateral flap or section 24 which is coextensive with and arranged in superimposed relation to the flap portion 17 of the can body, the two being curled inwardly, as shown in Fig. 2, to form the hinge 25 in a manner understood in the art.

Referring in particular to Fig. 2, it will be observed that the cooperating hinge portions 24 and 17 are curled loosely together to form an interlocking nested-flap hinge 25. The term "loosely curled" is here used to distinguish from the type of rolling utilized to form a rigid joint or rolled seam and is to be understood to indicate a curling or rolling of the parts into sufficient closeness to prevent undue lost motion while permitting a free relative rotary movement of the cover from the full to the dotted line positions shown in Fig. 2. It is also to be understood that the clearance shown therein between the hinge elements is somewhat exaggerated for the sake of clearness in showing the structure, but that in practice these clearances are reduced to a minimum consistent with ease in operation of the hinge.

A most important feature of the improved construction of the cover, in combination with its other features, is that the cover has the stock of its marginal edge, between the ends of the hinge 25, formed to provide two parallel walls 26 and 27 joined at the tops by a rounded or curved bend 28 (which differs very materially from the former curl 22 of Patent No. 2,296,599), thus providing an inverted U-shaped channel or groove c of considerable depth and affording a smooth fit with the lip 20 of the can opening and having a tight frictional engaging contact over a large area with opposite sides or faces

of the hemmed rim 19 of the body of the can 10, when the cover is closed tight thereupon, as shown in Figures 1 and 2. It will be observed that the inner flange or wall 26 is flat and coextensive with the entire open end of the can body 10 and frictionally engages the same on the inner marginal face or surface of said opening for a distance substantially greater than the hemmed rim area 19, while the outer flange or wall 27 is flat and extends around the ends and distal side of the cover from one end of the hinge joint 25 to the other, with the ends of the flange 27 and the ends of the hinge section 24 merging into each other as shown at 30 in Figure 1, and is formed parallel to the wall 26 and co-extensive with the latter wall from top to bottom of the cover so as to project to a considerable distance below the hem 19, as will be seen particularly in Figure 2.

Furthermore, in the can of the present construction, the outer flange 27 lies flat against the wall of the can body and does not present a lateral projection, as does a bead or curl, that may be engaged by edges of other cans packed contiguous to it and which may contact under said bead or curl and, by relative movement or vibration, push upwardly against such bead or curl to open the cover. As a further safe-guard in this connection, I have provided a circumferential lateral and outwardly extending rib 29 on the can body 10 just below the open edge or hemmed rim 19 and the hinge 25, the purpose of which is twofold. The presence of rib 29 below and adjacent to the edge of the cover flange 27 on its distal side and ends, affords a guard against contact of adjacent or contiguous cans with said edge of the cover which might cause accidental opening of the cover. Even without this rib, accidental opening is very unlikely because of the flatness of the flange 27, but it does provide additional protection. Another function of the rib 29 is that it further reinforces the hemmed rim 19 against serious distortion of said rim.

By comparing the old structure disclosed in my said previous Patent No. 2,296,599, and the new structure now disclosed in this application, the great advantage of the new over the old should be apparent. Referring first to my previous patent, it will be noted that the open or distal edge of the curl will traverse only approximately half of the width of the hem on the can rim during closing movement and, because of the fact that the interior space within the hem results in a thickening of the hem at the upper edge thereof, the said distal edge will impinge against the hem at its upper edge when closing. This was done intentionally so that the open edge of the curl would snap over the thickened portion of the hem and thereby form a more secure fastening for the cover. To open the cover against this snap action requires a pressure of the user's thumb in the normal method of overcoming friction so as to cause undue flexing of the front portion of the can rim, which, in most instances, results in permanent distortion of the rim. This distortion is not apt to occur in the use of the new completely flattened hem 19, in combination with the walls 26 and 27 which gives a smooth sliding fit. Turning to Fig. 6 it will be observed that the open edge of the new flange 27 will clear the hemmed rim 19 of the can by an appreciable distance during descent of the cover toward closed position. As a result, slight distortion of the hemmed rim 19 could be present without any impinging of the edge of the flange 27 against the rim which would interfere with the closing. After the cover has

been closed tight, because of the fact that the flange 27 and interior wall 26 of the cover very closely confine the can rim throughout the entire extent of the hem, the frictional contact between cover and can rim is sufficient to hold the cover as tightly as is necessary. At the same time, the closing and opening action is extremely smooth and free from any snapping or jerking. The fit between can body and cover all around the hemmed rim 19 is also perfectly airtight, because the channel formed between flange 27 and wall 26 has precisely the same cross-sectional configuration as the hemmed rim 19 of the can body and flange 27 and the hinge part 25 of the cover are continuous as shown in Figure 1.

Although certain specific embodiments of the invention are shown and described, it is quite obvious that many modifications thereof are possible. The invention, therefore, is not to be restricted except insofar as is necessitated by the prior art and by the spirit of the appended claims.

That which is claimed, as new, is:

1. A container of stiff sheet material comprising a flat tubular body oval in cross-section and having two substantially straight parallel opposite side walls and curved end-walls, the rim of said side and end walls forming an opening at one end of said body, said rim along one of said side walls having an outwardly projecting curled hinge portion, said rim being formed with a flat exterior hem from one end of the hinge portion to the other end of said portion, a cover for said opening and having an outwardly projecting hinge portion complemental to the hinge portion on said body and having the marginal area of the cover from one end of its hinge portion to its other end formed into an inverted-U-shape, the opposing surfaces of the inverted-U being substantially parallel and being spaced from each other to form a channel of the same cross-sectional configuration and substantially of the same width as the thickness of said rim to snugly receive the latter with a frictional surface fit on its opposite sides, said hinge portions of said body and cover being hingedly inter-curled, and the inner portion of said marginal area of said cover along said hinge portions forming an uninterrupted continuation of the inner leg of said inverted U-shaped channel to contact the inner wall surface of said rim of the body below the hinged portions, the hinge projecting portion of said cover and the adjacent flat portion of the outer leg of said channel being continuous with and merging into each other and forming a seal at both ends of the hinge portions.

2. A hinged closure type container of the character described, comprising, in combination, a metal can-body having a top opening defined by opposite relatively long straight front and back edges and opposite relatively short curved side edges of the can-body, said can-body at said opening having an overturned marginal portion therearound and overlapped upon itself, except for a hinge portion along one of said straight edges of said opening, in face to face contact to form a hemmed rim portion at said opening with a flat outer surface which is parallel to the inner surface and with a rounded top edge; a plug-cover of sheet metal hinged on the can-body, said cover having a side wall extending continuously and entirely about the cover and adapted to fit within and contact the inner fall of the can body at its opening to form a closure seal for the opening, the top edge of the side wall of the cover being provided with a flange extending continuously therearound, said flange having a downwardly extending flat portion parallel with and spaced from the side wall of the cover and bearing against said flat outer surface of the said hemmed rim portion for the entire peripheral length of the latter and having the remainder of said flange inter-curled with the overturned hinge portion of the can-body to form a hinged joint therewith, the curled part of said flange merging integrally at its ends into the ends of said flat portion of said cover flange; said flange, curl and the merging of the ends of the cover flange with said curl forming a closure seal continuously and uninterruptedly about the entire periphery of the outside of the can-body about the can-body opening.

FRANK J. COSTELLO.

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