United States Patent

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[54] **EASY-OPENING CAN END**

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[52] **U.S. Cl.**.....**220/54**

[51] **Int. Cl.**.....**B65d 17/24**

[58] **Field of Search**.....220/54, 48; 215/46 A

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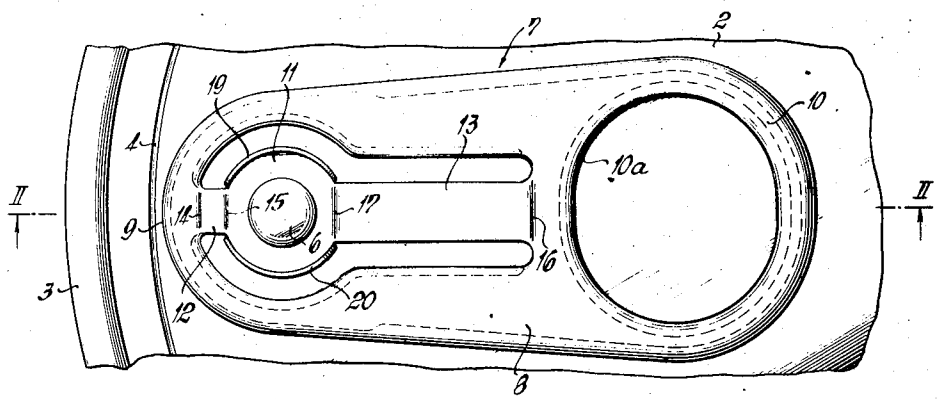
[57] **ABSTRACT**

The specification discloses a tear open can or container lid in which the lid has a score line defining a weakened region surrounding an area to be torn out. Connected to the area to be torn out is a tab which has a rigid outer region and a rigid inner region near one end of the outer region and flexibly connected thereto with the inner region fixedly connected to the area to be torn out of the lid.

8 Claims, 7 Drawing Figures



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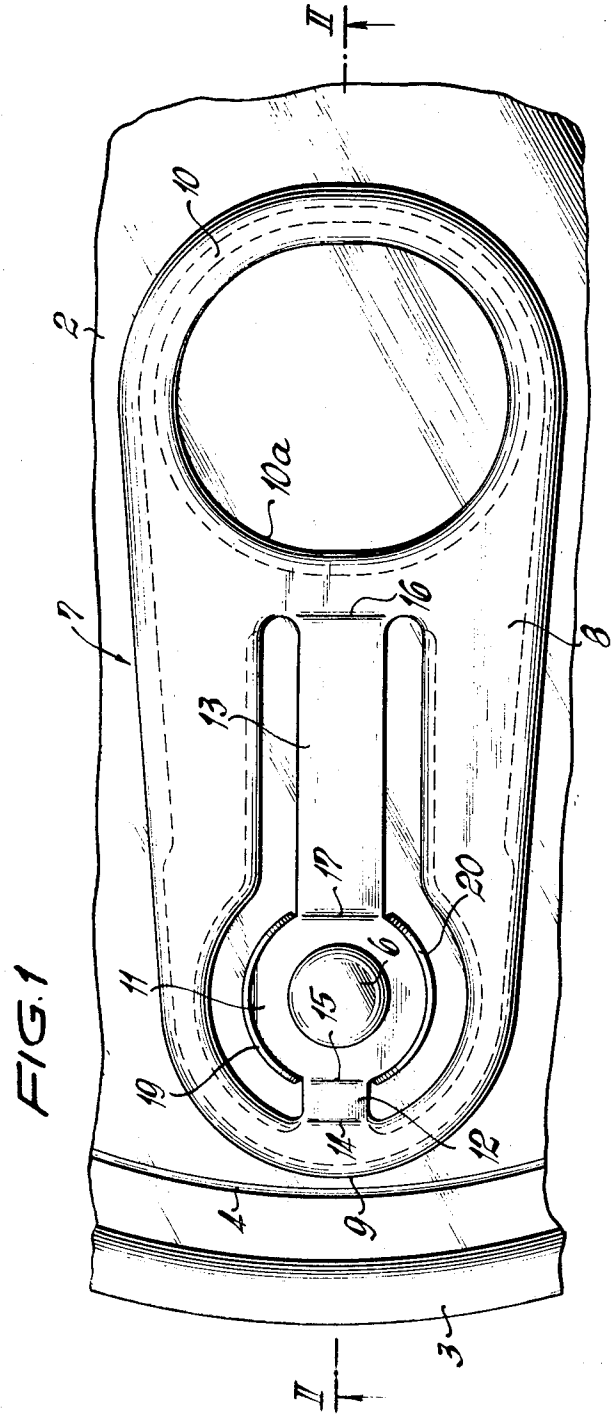

FIG. 1

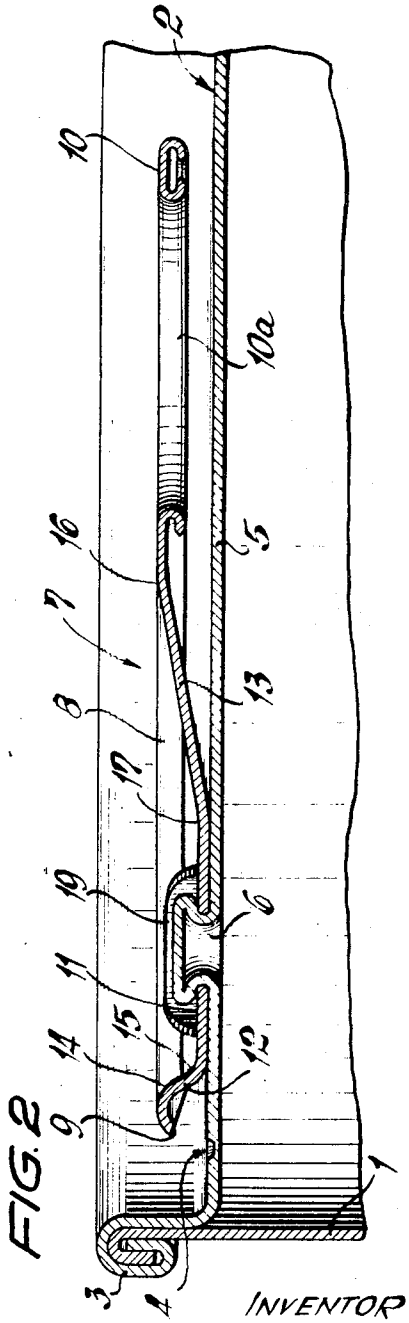

FIG. 2

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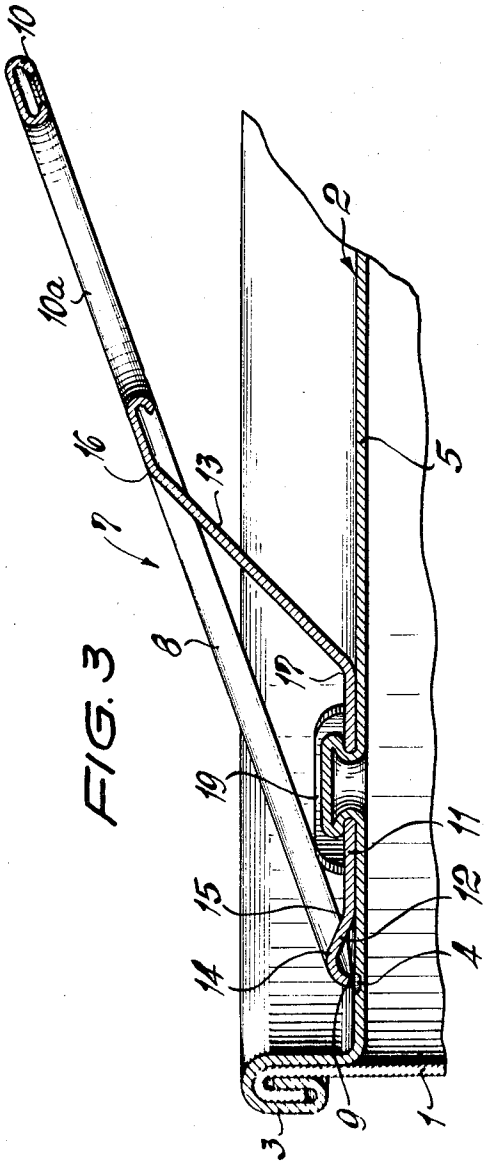

FIG. 3

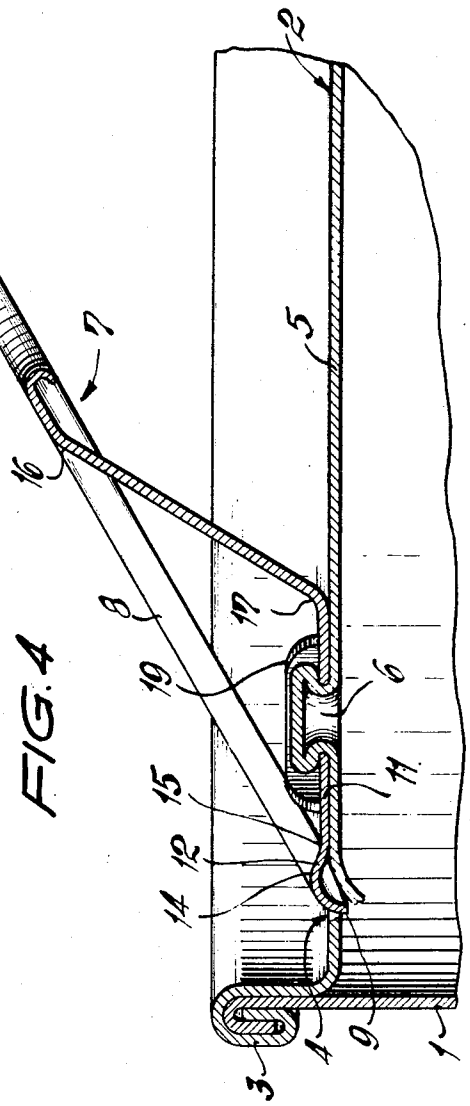

FIG. 4

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FIG. 5

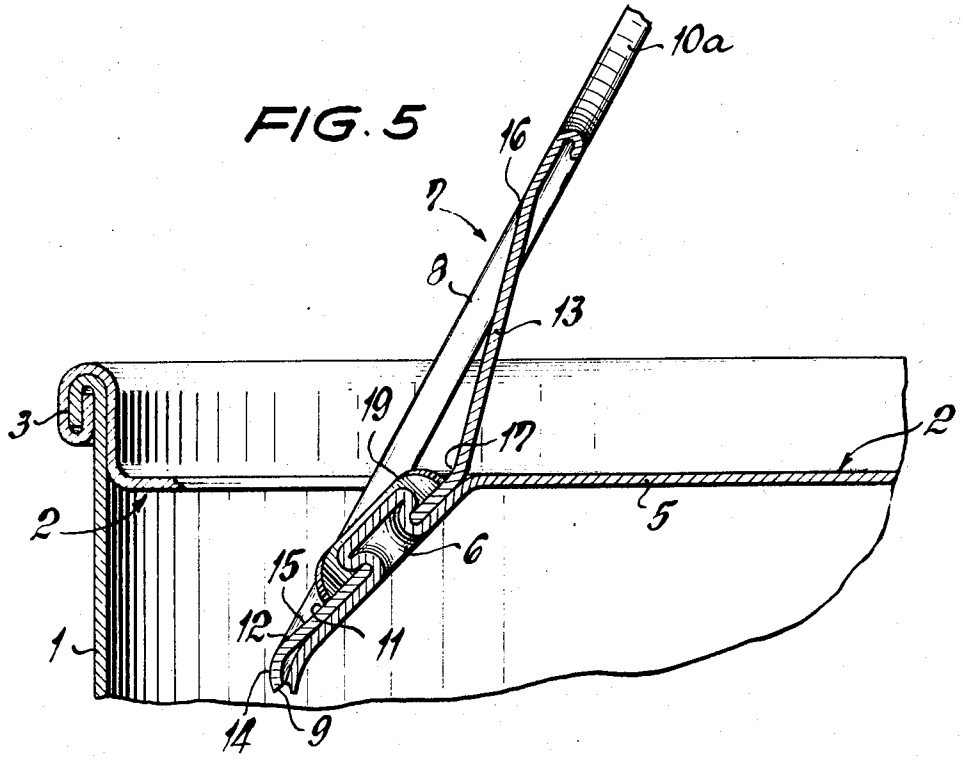

FIG. 6

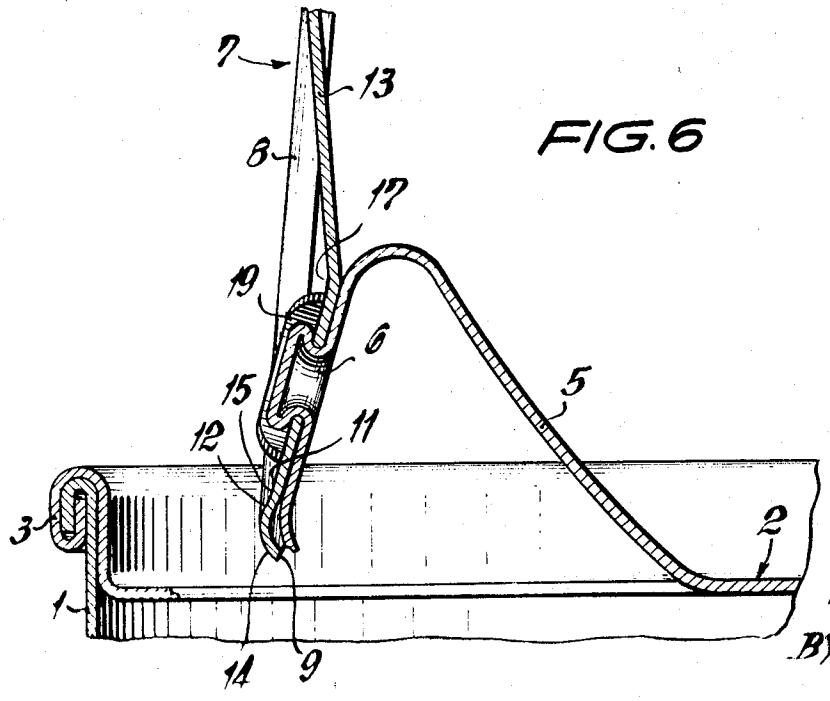

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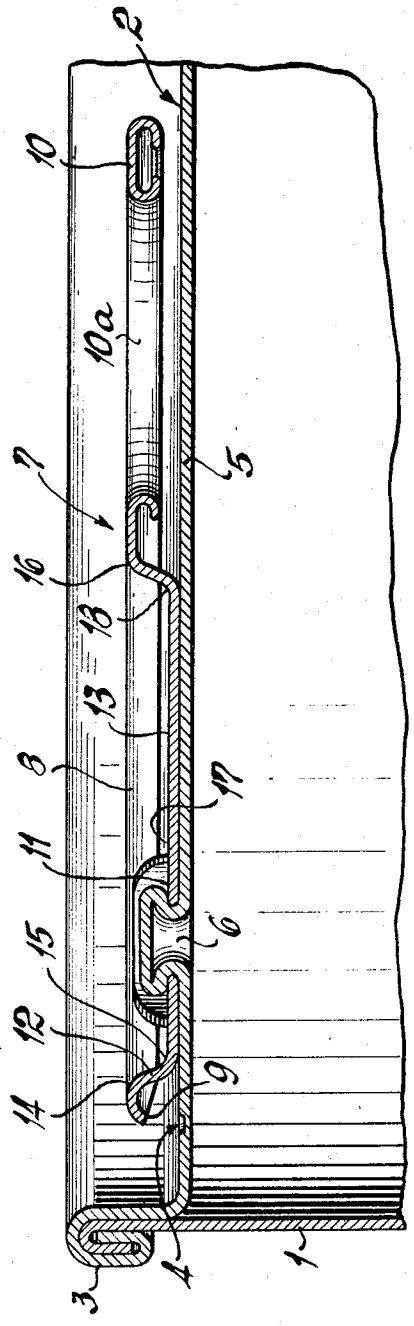
FIG. 7



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EASY-OPENING CAN END

The present invention relates to a built-in can opener and, more specifically, concerns a pull tab for a container panel in which a portion of the panel weakened by a score line can be removed.

It is known to form a pull tab of sheet metal and to connect the same to a can panel by means of a rivet that has been formed as an integral part of the end panel.

It is furthermore known to design the pull tab in the form of a two-arm lever, one end of which is normally located above the score line of the end panel and is adapted in response to the lifting of the oppositely located end forming a pull ring to break open the score line and will, in response to a further upward movement of the pull tab and subsequent pulling thereon be able to fully remove the separable part of the container panel.

The drawback of these heretofore known arrangements consists in that the rigid pull tab rests along its surface on the container panel and therefore cannot be lifted.

It has also been suggested to provide the pull tab at its connecting portion with the container panel, with a bendable ear, the connecting line of which with the rigid pull tab forms a swivel joint which permits lifting of the tab whereby the panel may be broken at the score line. This arrangement has the drawback that the pull tab is, at its front section, strongly subjected to distortion so that deformation and even breakage occurs, and consequently, the pull tab cannot be used for the intended purpose.

It has furthermore become known in the separable range of the container panel to provide a second score line in the vicinity of the connecting area of the pull tab, said second score line breaking first in response to the lifting of the pull tab. Disadvantageous in this arrangement is the fact that there exists the danger of an unintentional further breaking of the auxiliary score line up to the main score line which would make impossible a removal of the container panel.

It is, therefore, an object of the present invention to provide a container panel or end surface with a pull tab in such a way that the above outlined drawbacks will be overcome.

It is another object of this invention so to design the container panel and pull tab therefor, that the container panel cannot accidentally be opened while being transported or stacked.

These and other objects and advantages of the invention will appear more clearly from the following specification, in connection with the accompanying drawings, in which:

FIG. 1 illustrates a top view of a container panel designed in conformity with the present invention.

FIG. 2 represents a section taken along the line II—II of Fig. 1.

FIG. 3 shows the arrangement of Fig. 2 with a lifted pull tab shortly prior to the breaking of the score line.

FIG. 4 shows a further opening stage of the construction according to the invention following the opening stage of Fig. 3.

FIG. 5 shows a still further advanced opening stage after the score line has been further broken and the pull tab has been moved further upwardly with regard to Figs. 3 and 4.

FIG. 6 shows the further separation of the removable portion of the container panel.

FIG. 7 represents a modified design of the pull tab according to the present invention.

Referring now to the drawings in detail, and Figs. 1 – 6 thereof in particular, the container 1 is connected to the container panel 2 by a conventional double seam 3. The container panel 2 is provided with a score line 4 closed in itself which defines the separable region 5 of the container panel 2. A pull tab 7 is fixedly connected to the separable part 5 by means of a rivet 6 which is formed out of the panel. The pull tab 7 comprises a rigid part 8, the front end of which, serves as breaking edge 9 while its rear end has the form of a ring 10 which surrounds a finger hole 10*a*. The pull tab furthermore comprises a likewise riveted connecting section 11 which is riveted to the container panel 2. The two rigid parts 11 and 12 of the pull tab 7 are pivotally interconnected by a front connecting strip 12 and a rear connecting strip 13. The front connecting strip 12 is, by means of the upper joint 14, connected to the rigid section 8 by the upper joint 14, and by the lower joint 15 is connected to the rigid section 11, whereas the rear connecting strips 13 are, by means of joints 16, connected to part 8 and by means of joint 17 connected to part 11. The joints 14, 15, 16 and 17 are determined by the merging area of the connecting strips 13 with the rigid strips 8 and 11. Since during the opening operation, the connecting strips 12 and 13 are subjected to pull only, the joints 14, 15, 16 and 17 may be as described.

Figs. 2 – 6 clearly illustrate the function and operation of the pull tab 7 according to the invention. More specifically, Fig. 2 shows the pull tab 7 prior to its actuation for opening the container panel, in other words, according to Fig. 2 the pull tab occupies its normal position when the container panel 2 is closed. Fig. 3 shows a first phase in the opening procedure of the container panel according to which the pull tab 7 is lifted to such an extent that the breaking edge 9 just rests on the score line 4. When comparing Figs. 2 and 3 with each other, it will be evident that by lifting the pull tab 7, the breaking edge 9 which in the condition of Fig. 4 is set back with regard to the score line 4 has simultaneously moved forward and downwardly in Fig. 3.

Fig. 4 shows the pull tab 7 in a position in which the breaking edge 9 has just broken through the score line 4.

Fig. 5 illustrates how in response to a further lifting of the pull tab 7 a certain section of the separable portion 5 of the container panel 2 is pressed downwardly. Finally, Fig. 6 illustrates the further separation of the separable portion 5.

Fig. 7 shows a modified pull tab 7a with a further joint 18 in the connecting strip 13. When moving the pull tab upwardly, the distance between the two joints 16 and 17 increases. This will further facilitate the opening or separating operation because the pull tab 7 permits a higher lifting operation before the breaking edge 9 breaks open the score line 4.

It is, of course, to be understood that the present invention is, by no means, limited to the particular structures shown in the drawings, but also comprises any modifications within the scope of the appended claims.

What is claimed is:

1. In a pull open container cover, a score line following a closed path and defining a weakened line sur-

rounding a region of the cover to be broken loose and torn out of the cover to open the container and a pull tab connected to said region, said pull tab comprising a first rigid section parallel to and adjacent said cover and having one end disposed adjacent one edge part of said region and a second end remote from said edge part, said tab comprising a second rigid section between the said ends and near said one end and connected to said region of the cover, and means flexibly interconnecting said section of said tab so that when said second end of said tab is lifted away from said cover the said one end of said tab will break said region of the cover loose at said one edge part whereupon said tab can be pulled to tear said region completely out of said cover.

2. A pull open container cover according to claim 1 in which said means flexibly interconnecting said rigid section of said tab comprise connecting strips extending in the direction from one end of said tab to the other and each strip being bendable adjacent each said section.

3. A pull open container cover according to claim 2 in which said strips include a shorter strip extending from said one end of said first rigid section to one side of said second rigid section and a larger strip extending from the other side of said second rigid section to the said second end of said first rigid section.

4. A pull open container cover according to claim 3 in which said longer strip includes an offset region which straightens out as the tab is lifted away from said cover to increase the effective length of said longer strip.

5. A pull open container cover according to claim 3 in which said second section of said tab is made rigid by upwardly turned edge portions thereof.

6. A pull tab for use with a tear open container lid and comprising an elongated member having outer rigid portion and an inner rigid portion near one end of the outer rigid portion and flexible elements extending in the direction of the length of said member and interconnecting said portions, said inner portion being adapted to be fixed to the part of a container lid to be torn therefrom to open the container.

7. A pull tab according to claim 6 in which said member is a metal strip and has the marginal portion thereof formed to impart stiffness to the outer portion thereof, said strip having slots therein defining said inner portion thereof and the said flexible elements which connect the said portions together.

8. A pull tab according to claim 7 in which said member has a fingerhole therein at the end opposite said one end thereof.

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