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3,395,839

INSERT FOR EASY OPENING CAN END

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FIG. 1

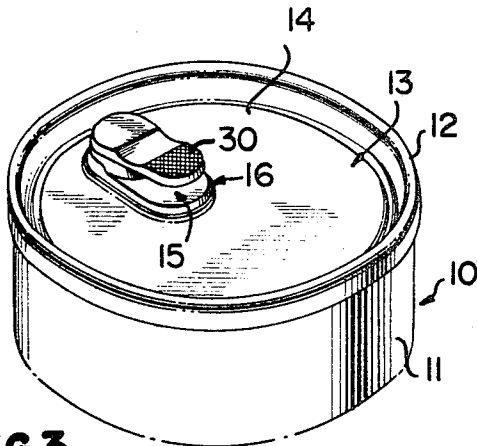


FIG. 2

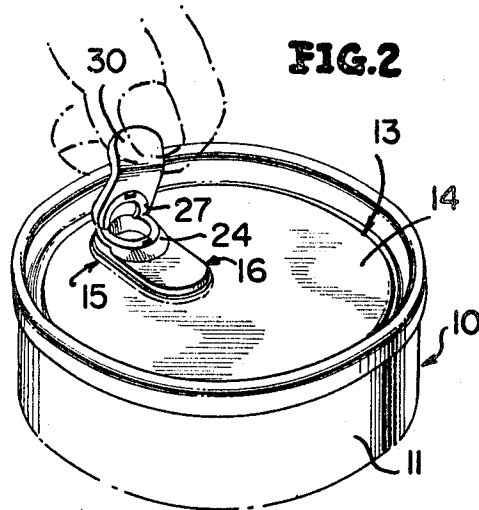


FIG. 3

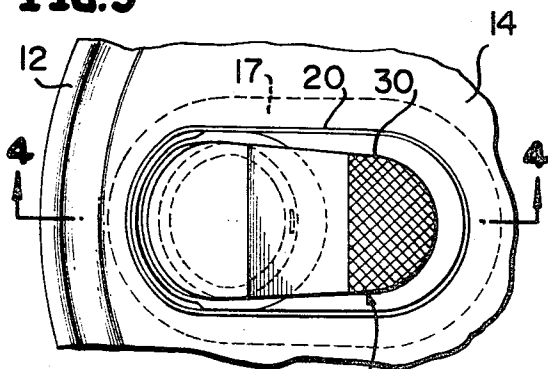


FIG. 5

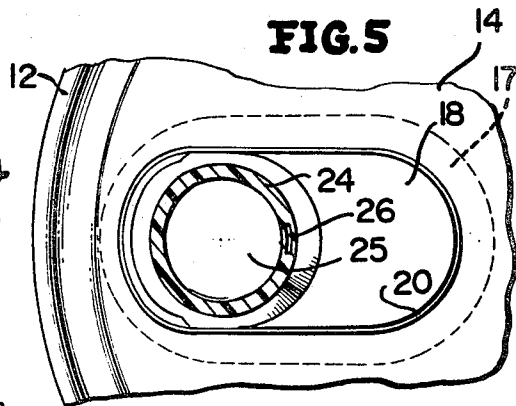


FIG. 4

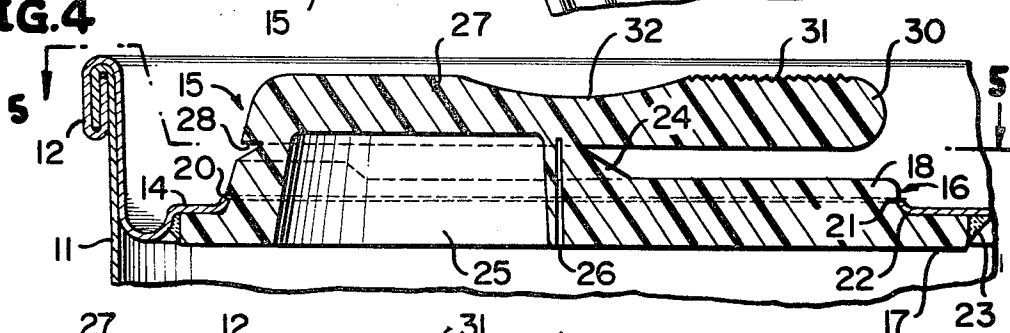
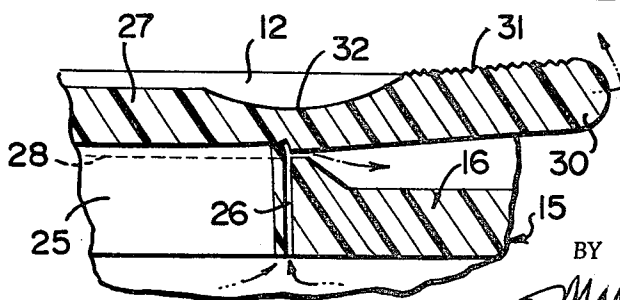


FIG. 6



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INSERT FOR EASY OPENING CAN END

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ABSTRACT OF THE DISCLOSURE

This disclosure relates to an easy opening container end having an elongated radially extending opening formed therein with the opening defined by an upstanding flange. A plastic insert is snapped into the opening, closing the same and being sealed to the can end. The insert has an upstanding projection in which there is formed a dispensing passage and a vent passage. The upper portion of the projection is removable in a manner to first uncover the vent passage to vent the can and thereafter uncover the dispensing opening. This is accomplished by means of an integral tab which overlies a base portion of the insert.

This invention relates in general to new and useful improvements in easy opening cans, and more particularly to a plastic insert for a conventional type of can end, which insert, when incorporated in the can end, makes the can end of the easy opening type.

Easy opening can ends of the type now most commonly found on the market have three major deficiencies. First, inasmuch as the portion of the can end which is torn out in the opening of the can is formed of metal, both the throw-away portion and the remaining portion present raw edges on which a person may easily be cut. Secondly, the proper securing of a pull tab to the tear out portion of the can end has continued to present a problem with there being undesired percentages of failures. Thirdly, because the opening of the can requires a manual tearing of the metal of the can end, in most instances it has been most feasible to utilize the more expensive aluminum than the conventional sheet steel in the manufacture of the can ends.

In view of the foregoing, it is the primary object of this invention to provide an insert which may be readily snapped into an aperture formed in an end panel of a can end and wherein the relationship of the insert to the end panel is such that any desired type of metal, preferably steel, may be utilized in the formation of the can end.

Another object of this invention is to provide a novel plastic insert which is readily adaptable to be inserted in an aperture formed in an end panel of a can end, the plastic insert including a base having an upstanding projection and the projection having formed therein passages which open downwardly through the base and which are closed by an upper portion of the projection, and there being provided means for facilitating the manual removal of the upper portion of the projection so as to open the upper ends of the passages.

Another object of this invention is to provide a plastic insert of the foregoing type wherein one of the passages is relatively narrow and is in the form of a vent passage and the other of the passages is relatively large and is in the form of a dispensing passage or spout, and the means for removing the upper portion of the projection are such that the vent passage is first opened and then the dispensing passage is opened.

Another object of this invention is to provide a novel easy opening plastic insert which may be readily snapped into an aperture in an end panel of a can end and sealed

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with respect thereto and the plastic insert being readily openable to facilitate the dispensing of a liquid from within the can.

With the above and other objects in view that will hereinafter appear, the nature of the invention will be more clearly understood by reference to the following detailed description, the appended claims and the several views illustrated in the accompanying drawing.

In the drawing:

FIGURE 1 is a fragmentary top perspective view of an easy opening can formed in accordance with this invention.

FIGURE 2 is a fragmentary top perspective view similar to FIGURE 1 and shows the manner in which the can is opened for the purpose of dispensing a liquid contained therein.

FIGURE 3 is an enlarged fragmentary plan view of the can of FIGURE 1 and shows the specific details of the easy opening feature thereof.

FIGURE 4 is an enlarged fragmentary vertical sectional view taken along the line 4-4 of FIGURE 3.

FIGURE 5 is a fragmentary horizontal sectional view taken generally along the line 5-5 of FIGURE 4.

FIGURE 6 is an enlarged fragmentary vertical sectional view showing the manner in which the vent passage is uncovered prior to the uncovering of the dispensing passage.

Referring now to the drawing in detail, it will be seen that there is illustrated in FIGURE 1 a can formed in accordance with this invention, the can being generally referred to by the numeral 10. The can 10 includes a conventional can body 11 to which there is secured at one end by means of a double seam 12 a can end which is generally referred to by the numeral 13. The can end 13 includes an end panel 14 which has mounted therein a plastic insert which is the primary feature of this invention, the plastic insert being referred to by the numeral 15. With the exception of the modification of the end panel 14 to receive the plastic insert 15, the can end 13 may be of a conventional construction and may be formed of any suitable metal although it is most advantageous to use the most economical metal, such as steel plate.

Referring now to FIGURE 4 in particular, it will be seen that the insert 15, which is formed of any suitable resilient and relatively inexpensive plastic material, includes a base 16 which is generally oval in outline. The base 16 is formed of two parts, the lower part defining a flange 17 and the upper part being in the form of a plug 18. The base 16 is particularly adapted for mounting within a large aperture formed in the end panel 14 in sealed relation to the end panel 14.

In order to facilitate the mounting of the plastic insert 15, the end panel 14 is provided with an aperture which corresponds in outline generally to that of the plug 18 and which aperture is defined by an upstanding flange 20. The flange 20 is relatively narrow and when the plug 18 is snapped through the aperture, the flange 20 will bite into the periphery of the plug 18 to form an interlock therewith and prevent the accidental movement of the plug 18 back through the aperture. It is to be noted that the flange 20 is seated within a seat 21 in the periphery of the plug portion 18. The seat 21 will normally be formed by the compressed engagement of the plug portion 18 with the flange 20, but if it is desired to obtain a maximum interlock between the plug portion 18 and the flange 20, the seat 21 may be partially pre-formed.

Normally, an effective seal between the end panel 14 and the base 16 will be formed by the combined sealing action of the flange 17 against the underside of the end panel 14 and the engagement of the flange 20 and the seat 21. However, in order to assure that a seal does

exist, a suitable sealing compound may be applied as at 22. Furthermore, under certain circumstances, additional sealing compound may be applied as at 23 around the periphery of the flange 17. It is to be understood that the plastic insert 15 may be readily snapped into the end panel 14 and the necessary sealing compound applied through the use of automatic apparatus.

The plastic insert 15 also includes an upstanding projection 24. The projection 24 is formed at one end of the base 16 and is generally circular in cross section, as is shown in FIGURE 5. There is formed in the base 16 a large dispensing opening 25 which is generally symmetrically arranged with respect to the projection 24. The dispensing opening or passage 25 extends from the underside of the base 16 up into the projection 24, but terminates short of the top of the projection 24. A vent passage 26 is also formed in the base 16 and extends upwardly into the projection 24. As is clearly shown in FIGURE 5, the vent passage 26 is relatively narrow, but is elongated. The vent passage 26 is formed in the cylindrical wall portion of the projection 24 in the manner clearly shown in FIGURE 5.

It will be readily apparent from FIGURE 4 that the upper part of the projection 24 normally closes the dispensing passage 25 and the vent passage 26. This upper part, which is identified by the numeral 27, is generally defined by a peripheral weakening line 28. It is to be noted that the peripheral weakening line 28 is disposed below the upper end of the dispensing passage 25 and the upper end of the vent passage 26. Thus, when the upper portion 27 of the projection 24 is removed, the passages 25 and 26 will be opened.

In order to facilitate the removal of the upper portion 27, there is provided a pull tab 30 which is formed integrally with the upper portion 27 and extends therefrom. The pull tab 30, as is best shown in FIGURE 3, is disposed in overlying relation to the base 16 and is generally aligned therewith. In order to facilitate the gripping of the pull tab 30, the upper surface thereof is roughened, as by knurling, at 31. Also, generally at the intersection of the pull tab 30 with the upper portion 27, the plastic insert 15 is transversely grooved or relieved as at 32. This makes the connection between the pull tab 30 and the upper portion 27 of the projection 24 of minimum resistance to bending so that the pull tab 30 may be easily lifted to facilitate the gripping thereof.

At this time it is pointed out that the dimensions of the projection 24 and the pull tab 30, as well as the relationship thereof with respect to each other and the base 16 is such that they may be readily passed through the aperture formed in the end panel 14. Thus, the plastic insert 15 may readily be of a one-piece construction and may be readily snapped in place without any special orientation of the plastic insert with respect to the end panel 14 except that the alignment of the plug portion 18 with the aperture formed in the end panel.

In view of the fact that the vent passage 26 is disposed immediately adjacent the connection of the pull tab 30 with the projection upper portion 27, it will be seen that when a lifting force is first applied to the pull tab 30 and rupture of the projection 24 occurs along the weakening line 28, the tearing of the projection 24 will be first in that portion through which the vent passage 26 passes. Thus, the vent passage 26 is first communicated to the atmosphere in the manner shown in FIGURE 6. In this manner, the pressure within the can 10 is vented in advance of the actual opening thereof.

After the initial venting of the can 10 occurs, the further upward pull on the tab 30 will result in the continued tearing of the upper portion 27 from the remainder of the projection 24 along the weakening line 28 so that the entire upper portion 27 is removed from the projection 24. The dispensing passage 25 will then be uncovered and the contents of the can 10 may be readily poured therefrom through the dispensing opening or throat 25.

In view of the fact that the portion of the plastic insert 15 removed in the opening of the can 10 has no sharp edges and is formed of a material which will preclude any cutting of one contacting the same, it will be seen that the removed part of the plastic insert 15 may be readily disposed of in any desired manner. Furthermore, it will be readily apparent that there will exist no raw edges on the remaining part of the plastic insert in the opening of the can, whereby the accidental cutting of one on the can while the contents thereof are being dispensed is eliminated.

It will be readily apparent from the foregoing that the primary deficiencies of the present easy opening cans have been eliminated. In view of the fact that the parts torn during the opening of the can are formed of a relatively soft resilient plastic material, no raw edges are present either on the removed portion or the portion remaining attached to the remainder of the can. Furthermore, inasmuch as the insert is merely snapped into an aperture formed in the end panel of the can end, it is not necessary that the can end be formed of a relatively expensive metal, such as aluminum. In addition, since the insert may be readily snapped into place within the perforated end panel by automatically operating mechanism, it will be seen that the cost of applying the plastic insert to the end panel will be extremely low. In addition, there can be no failure of the opening feature of the resultant can.

Although only a preferred embodiment of the plastic insert has been specially illustrated and described herein, it is to be understood that minor variations may be made in the structural details of the plastic insert and the relationship thereof to the can end without departing from the spirit and scope of the invention, as defined by the appended claims.

I claim:

1. An improvement in easy opening containers, said improvement comprising an insert particularly adapted for securement in fixed position relative to an opening in a container, said insert being of a one-piece construction and including a base, a longitudinal projection extending upwardly from said base, a relatively small vent passage and a larger dispensing passage opening through said base and extending upwardly into said projection and terminating within a transversely extending upper portion of said projection, and said upper portion being removable by tearing from the remainder of said projection along a plane disposed below the upper ends of said vent passage and said dispensing passage.

2. The improvement of claim 1 wherein said projection is peripherally weakened in alignment with the lower edge of said upper portion along said plane.

3. The improvement of claim 1 wherein a tab extends transversely from an edge of said upper portion to facilitate the tearing off of said upper portion, said tab extending from an area of said upper portion adjacent said vent passage whereby said vent passage is automatically opened in advance of said dispensing passage.

4. The improvement of claim 1 wherein a tab extends from said upper portion to facilitate the tearing off of said upper portion, said tab extending from an area of said upper portion adjacent said vent passage whereby said vent passage is automatically opened in advance of said dispensing passage, said tab being spaced above and aligned with said base transversely outwardly of said passages.

5. The improvement of claim 1 wherein a tab extends from said upper portion to facilitate the tearing off of said upper portion, said tab extending from an area of said upper portion adjacent said vent passage whereby said vent passage is automatically opened in advance of said dispensing passage, said base having a plug portion for insertion in the container opening, and said tab being spaced above said base and lying wholly within an axial projection of said plug portion transversely outwardly of said passages.

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6. The improvement of claim 1 wherein a tab extends from said upper portion to facilitate the tearing off of said upper portion, said tab extending from an area of said upper portion adjacent said vent passage whereby said vent passage is automatically opened in advance of said dispensing passage, said upper portion and said tab both being of a reduced thickness at their line of juncture whereby initial bending of said tab relative to said portion is facilitated.

7. The improvement of claim 1 wherein said container opening is defined by a peripheral flange extending outwardly from the interior of the container in converging relation, and said base including a plug portion having a force fit through said opening with said peripheral flange biting into said plug portion.

8. The improvement of claim 1 wherein said container opening is defined by a peripheral flange extending outwardly from the interior of the container in converging relation, and said base including a plug portion having a force fit through said opening with said peripheral flange biting into said plug portion, said base also including a base flange engageable with the interior surface of said container forming a seal therewith and limiting outward movement of said base through said opening.

9. The improvement of claim 1 wherein a tab extends from said upper portion to facilitate the tearing off of said

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upper portion, said tab extending from an area of said upper portion adjacent said vent passage whereby said vent passage is automatically opened in advance of said dispensing passage, said opening being formed in an end panel of a can end and being elongated radially, and said projection being disposed at the radially outer end of said base and said tab projecting radially inwardly in alignment with said base.

10. The improvement of claim 1 wherein said projection below said removable upper portion is tubular in accordance with the cross section of said dispensing passage, and said vent passage is formed in a wall portion of said tubular projection portion.

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