June 4, 1968 H. F. W. ARFERT ETAL 3,386,614

EASY-OPENING MEANS FOR A CONTAINER

Filed Feb. 23, 1966 2 Sheets-Sheet 1

FIG-1

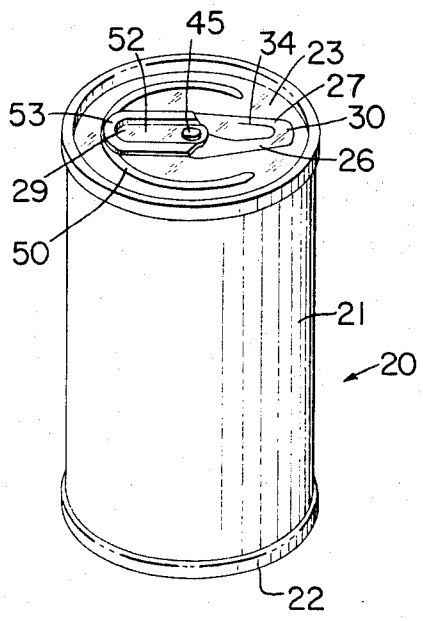


FIG-2

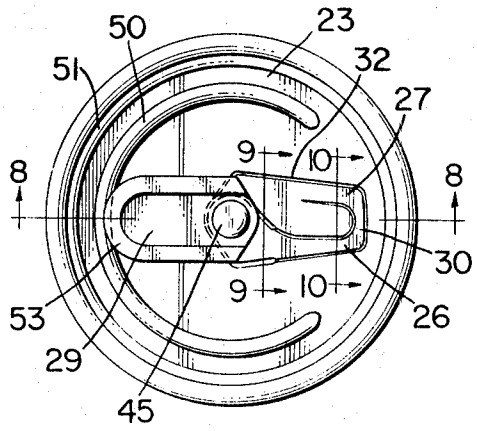


FIG-3

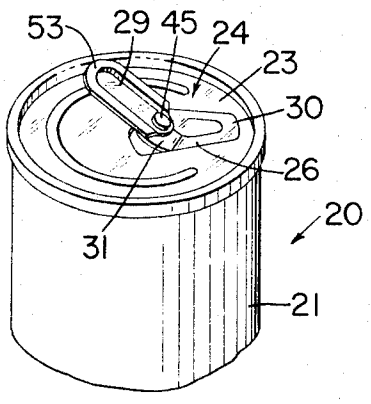
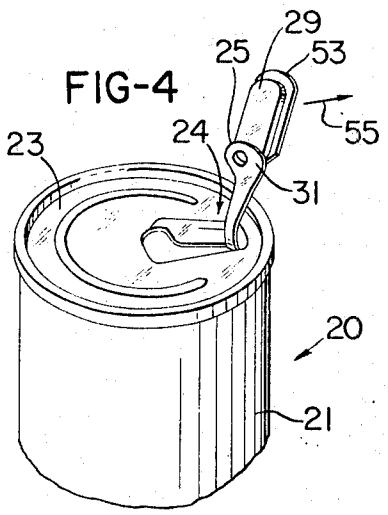


FIG-4



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FIG-5

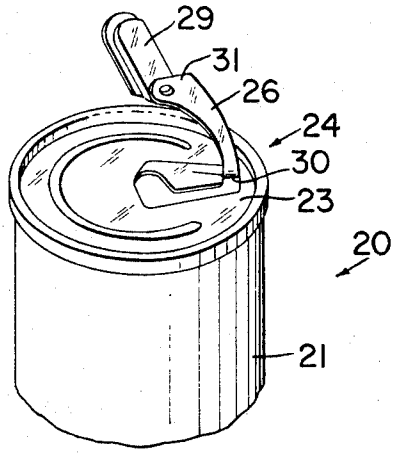


FIG-6

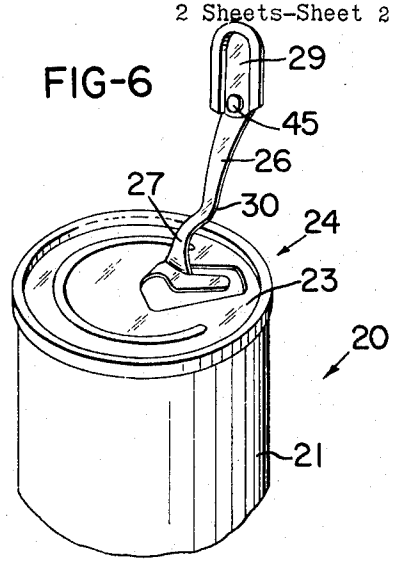


FIG-8

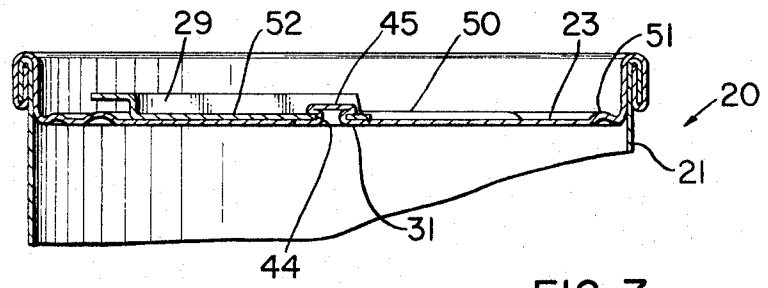


FIG-7

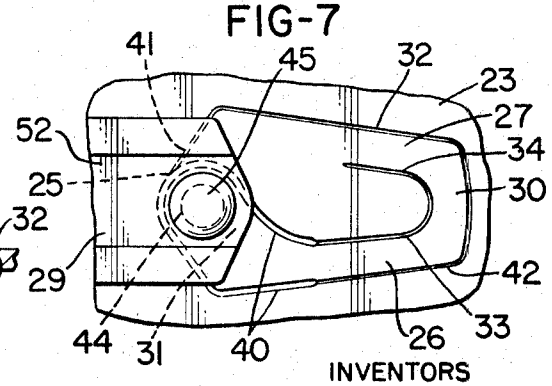


FIG-9

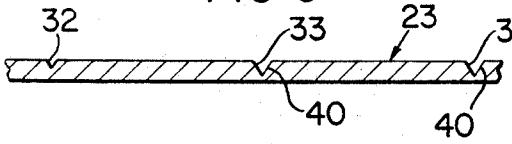
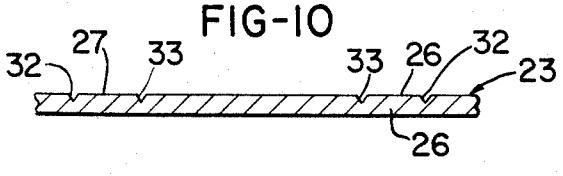


FIG-10



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3,386,614

EASY-OPENING MEANS FOR A CONTAINER

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10 Claims. (Cl. 220—54)

ABSTRACT OF THE DISCLOSURE

This disclosure relates to an improved easy-open opening means for a cylindrical beverage can, or the like, which comprises a pair of elongated strips provided in an end wall thereof and arranged alongside each other so as to extend from the center portion of such end wall substantially radially toward the outer periphery thereof. A corresponding substantially radially extending dispensing opening is provided in the end wall of such can by severing first one of such strips and then the other in a sequential manner whereby a pulling force of comparatively small magnitude is sufficient to provide the dispensing opening.

This invention pertains to opening means and more particularly to an improved easy-open opening means for container means and to an improved method for making such easy-open opening means.

There are various pull tab devices in current use which are used to provide openings in beverage cans. Such pull tab devices generally require the application of a comparatively large force to provide the required opening. Some of such pull tab devices employ rings or the like to make it easier to apply a comparatively large force. The basic problem, however, is caused by deficiencies of present opening means making it necessary to apply a large force in order to provide a desired opening in such beverage cans.

Accordingly, it is a feature of this invention to provide an improved opening means overcoming deficiencies of present opening means and making it possible to provide an opening in surface means while applying a force of small magnitude.

Another feature of this invention is to provide such improved opening means for wall means of container means economically and without requiring expensive special equipment.

Another feature of this invention is to provide an improved opening means for container means in which pull tab means used in association therewith to provide a desired opening in such container means need not be of any special configuration in order to provide such opening.

Another feature of this invention is to provide an improved opening means of the character mentioned in which the opening provided by such opening means is started simply and effectively by the application of minimum force.

Another feature of this invention is to provide improved opening means for the provision of an opening in a beverage can or the like in which the initial opening area is of comparatively large size with the initial application of such minimum force thereby minimizing the tendency of popping or spraying of beverage as often happens with currently used pull tab opening devices.

Another feature of this invention is to provide an improved method for making easy-open opening means simply and economically.

Another feature of this invention is to provide an improved method for making such easy-open opening means for container means in which an opening is provided

in such container means with application of minimum force and without danger of injury to the user of such container means.

Another feature of this invention is to provide an improved method for making such easy-open opening means in which wall means of such container means is weakened a minimum amount to enable pulling out of a portion thereof to provide an opening thereby assuring maximum protection for contents of the container means.

Another feature of this invention is to provide an improved method for making opening means to provide an elongated opening in a beverage can or the like in which such opening means includes means enabling tearing out of a pair of elongated strips arranged in side by side relation and defining such opening.

Therefore, it is an object of this invention to provide an improved opening means having one or more of the novel features of this invention as set forth above or hereinafter shown or described.

Another object of this invention is to provide an improved method for making such opening means for use on container means or the like.

Other objects, uses, and advantages of this invention are apparent from a reading of this description which proceeds with reference to the accompanying drawings forming a part thereof and within:

FIGURE 1 is a perspective view of cylindrical container means having the improved opening means of this invention provided in the top end wall thereof.

FIGURE 2 is a view looking normal to such top wall.

FIGURE 3 is a perspective view of the top end portion of the container means of FIGURE 1 showing the first stage in the sequence of tearing out a pair of elongated side by side strip means to provide an opening in the top wall of such container means.

FIGURE 4 is a perspective view similar to FIGURE 3 showing a later stage in the provision of such opening in such top wall.

FIGURE 5 is a perspective view similar to FIGURE 4 showing a still later stage in the provision of such opening.

FIGURE 6 is a perspective view similar to FIGURE 5 illustrating a final stage in the provision of such opening prior to tearing out the remaining attached portion of such strip means.

FIGURE 7 is an enlarged plan view with parts broken away particularly showing such pair of elongated strip means defining the opening in the top wall.

FIGURE 8 is an enlarged sectional view on the line 8—8 of FIGURE 2.

FIGURE 9 is an enlarged sectional view on the line 9—9 of FIGURE 2.

FIGURE 10 is an enlarged sectional view on the line 10—10 of FIGURE 2.

While the various features of this invention are hereinafter illustrated and described as being particularly adaptable for providing improved opening means for cylindrical container means such as beverage containers for beer, carbonated beverages, or the like, and to an improved method for making such opening means, it is to be understood that the various features of this invention can be utilized singly or in any combination thereof to provide opening means for other articles and uses as desired.

Therefore, this invention is not to be limited to only the embodiment illustrated in the drawings because the drawings are merely utilized to illustrate one of the wide variety of uses of this invention.

In the exemplary embodiment of this invention illustrated in FIGURES 1–10, container means shown as a right circular cylindrical beverage container or can 20

having the improved opening means and incorporating the improved method for making such opening means of this invention is illustrated.

As shown particularly in FIGURES 1, 6 and 7 beverage can 20 has an elongated cylindrical wall 21 and a pair of end walls at opposite ends of cylindrical wall 21 shown as bottom wall 22 and top wall 23. Top wall 23 has easy-open opening means therein for forming an elongated opening, designated generally by the numeral 24, in such top wall. Opening 24 commences generally at the central portion of top wall 23 and extends from a point shown at 25 radially toward the outer periphery of such top wall.

The opening means of this invention comprises first and second elongated strip means designated respectively by the numerals 26 and 27 arranged alongside each other and having common end means or a common end in spaced relation from point 25 and designated generally by the numeral 30. Common end 30 is located adjacent the periphery of top wall 23.

Pull means including a pull tab 29 is provided and is fastened to an end portion 31 of strip 26. End portion 31 adjoins point 25 and defines the inner terminal end of strip 26 opposite common end 30. The opening 24 is provided in top wall 23 by grasping pull tab 29 and severing or pulling out first end portion 31 of strip 26 as shown in FIGURE 3, followed in sequence by the remainder of strip 26, common end 30, and strip portion 27 as shown respectively in FIGURES 4, 5, and 6.

As will be apparent from the drawings and as mentioned above the severing of first strip 26 and then strip 27 to provide opening 24 of this invention considerably reduces the magnitude of force required to provide such opening over what would be required to pull out the entire width strip as defined by the combined widths of strips 26 and 27. This advantage of requiring a smaller force eliminates the requirement for special pull tabs or the like.

Strips 26 and 27 are defined by score means in wall 23 comprising first score means or score line designated generally by the numeral 32 and completely outlining the outside periphery of such strips 26 and 27, and second score means or score line designated generally by the numeral 33 and defining common edge means or a common edge of strips 26 and 27.

Both score lines 32 and 33 commence from common point 25 and as will be apparent from FIGURE 7 of the drawings. Score line 32 commences from point 25 and extends from such point so as to completely outline the periphery of strips 26 and 27 and terminate again at point 25. Score line 33 also commences at point 25 and extends within the outline of score line 32 roughly bisecting the area within score line 32.

Score line 33 has a hooking terminal end portion designated by the numeral 34 at its end opposite point 25. The hooking terminal end portion assures that the common end 30 and strip portion 27 are both pulled out upon pulling pull tab 29 without tearing thereof.

Score means 32 and 33 include deep score means designated by the numeral 40 and extending from point 25 so as to completely outline the terminal end portion 31 of strip 26. The deep score means are illustrated particularly in FIGURE 7 and may be compared with the remaining score means by viewing FIGURES 9 and 10 of the drawings. Deep score means 40 assures that end portion 31 is easily pulled free from top wall 23 with minimum effort to start forming opening 24 in top wall 23.

As will be apparent from FIGURES 2 and 7 of the drawings, score line 32 has a generally V-shaped portion indicated at 41 diverging from point 25 and a U-shaped portion 42 in which the open terminal ends of U-shaped portion 42 are connected to the open terminal ends of the V-shaped portion 41. The base of the U-shaped portion 42 has a smaller width than the open end thereof.

The score means 33 in this example preferably extends

from point 25 and is preferably spaced an equal distance apart from one leg of the V-shaped portion 41 of score means 32, the adjoining leg of U-shaped portion 42 of score means 32, and the base leg of the U-shaped portion 42. As previously mentioned, score line 33 has hooking terminal end portion 34. Terminal end portion 34 extends along the opposite leg of the U-shaped portion 42 preferably the same, above mentioned, equal distance apart therefrom. This arrangement assures that strip 26, common end 30 and strip 27 are easily torn out or severed in the sequence stated without tearing or damaging the strips themselves and thus assuring opening 24 is correctly formed.

The pull means of this example of the invention comprises pull tab 29 as previously mentioned. Pull tab 29 has hole means or a hole 44 in one end thereof adapted for receiving rivet means therethrough. The rivet means or rivet 45 is formed as an integral part of the terminal end portion of strip 31. As shown in FIGURE 8, an integral part of end portion 31 is extended through hole 44 of tab 29. Tab 29 is fixed to end portion 31 by riveting rivet 45 in position to overlap that part of end portion 31 adjacent hole 44. This technique assures that tab 29 is positively fixed to end portion 31 thereby enabling the forming of opening 24 merely by grasping tab 29 and pulling.

Top wall 23 has concentric ridge means or ridges therein designated by the numerals 50 and 51. Ridges 50 and 51 provide added rigidity to top wall 23 thereby increasing the strength thereof.

Deep score means 40 is provided only along a comparatively small portion, designated end portion 31, of strip 26, see FIGURES 7, 9, and 10. This minimum amount of deep scoring assures that top wall 23 maintains maximum structural integrity, yet is provided with means for easy initial severing of end portion 31 using a small force. An initial opening is provided in top wall 23 corresponding to the full area of portion 31 practically instantaneously upon pulling tab 29 thus assuring that beer or a carbonated beverage, for example, carried within can 20 does not tend to spray out during opening thereof. Once opening 24 has been started the force required to completely define such opening is also very small because of the sequential tearing of narrow strip means.

Pull tab 29 has a recessed portion 52 therein and opening 44 is provided in one terminal end portion of recessed portion 52. Tab 29 also has a raised end 53 formed by recessing portion 52 thereof. Raised end 53 makes it easier to grasp tab 29 enabling insertion of a fingernail or the like thereunder. Can 20 is then readily opened with the application of minimum pulling force on tab 29.

The score means 32, 33, and 40 provided in top wall 23 of container 20 may be provided using standard machinery and in any known manner. Further, the method of forming such score means in top wall 23 and arrangement thereof to define easily severed elongated strips 26 and 27 with their common end 30 and comprising the opening means assure the forming of opening 24 by exerting a force of minimum magnitude and without damaging the adjoining portions of top wall 23 or injury to one opening container 20.

The manner of severing or pulling out each strip 26 and 27 will be readily seen from FIGURES 3–6 of the drawings. Pull tab 29 is grasped and initially pulled whereby due to deep score means 40 a minimum amount of force severs end portion 31. Strip 26 is then pulled out by pulling such strip in a first direction, indicated generally by the arrow 55, away from point 25 and hence generally toward common end 30. Common end 30 is then pulled out, with strip 27 being pulled out last by applying pulling forces through common end 30 and pulling in a direction generally opposite the direction shown by arrow 55 which of course is away from the previous position of common end 30. The pulling action is thus very simple—radially away from starting point 25 and back toward such point.

Beverage container 20 in this example of the invention

preferably has a metallic cylindrical wall **21** and metallic bottom and top walls **22** and **23** respectively. It will be appreciated that other suitable materials such as plastics, for example, could also be used. Top wall **23** is preferably formed of a material which has high structural strength yet which is easily severable once it has been scored in the manner disclosed by this invention. Top wall **23** is preferably formed of a metal containing aluminum or the like. While container **20** of this disclosure is right circular cylindrical in shape it will be appreciated that the opening means and method for providing such opening means is independent of the shape of the container or surface means on which it is used.

The terms "top," "bottom," etc. have been used in this disclosure of the invention merely to identify wall means of container **20** as illustrated in the drawings. It will be appreciated that the container may be oriented in any desired manner and that the use of such terms should not be considered limiting in any way.

Thus, it is seen that an improved container means having improved opening means has been provided in which the opening means comprises first and second elongated strip means which are separately severable from the wall means of such container means to define an opening therein yet requiring a comparatively small magnitude force to be applied to provide such opening. The improved opening means also has means assuring that the opening action is easy to start and provides a comparatively large opening area immediately upon commencing the opening action.

Further, this invention provides an improved method for making such easy-open opening means economically, yet providing container means having maximum structural strength.

While the form of the invention now preferred has been disclosed as required by statute, other forms may be used, all coming within the scope of the claimed subject matter which follows.

What is claimed is:

1. Container means having easy-open opening means comprising, tubular wall means having a pair of end wall means arranged at opposite ends thereof, first and second elongated strip means comprising one of said end wall means, said first and second strip means being arranged alongside each other from the central portion of said one end wall means toward the outer periphery thereof and having common end means, and pull means fastened to the end portion of said first strip means opposite said common end means enabling grasping thereof and pulling out said first strip means by pulling in a first direction generally toward said common end means and upon pulling out said common end means pulling out said second strip means by applying a pulling force through said common end means and in a direction generally opposite said first direction, said first and second elongated strip means being more easily severed in a sequential manner by a comparatively small magnitude pulling force which is directed substantially perpendicular to said outer periphery during pulling in said first direction as well as during pulling in said opposite direction to define an elongated dispensing opening in said one end wall means which extends from said central portion toward said outer periphery.

2. Container means as set forth in claim **1** in which said first and second strip means are defined by score means in said one end wall means and said common end means is arranged adjacent said outer periphery so that said pull means is fastened to said first strip adjacent said central portion of said one end wall means.

3. Container means as set forth in claim **2** in which said one end wall means has a circular peripheral outline and said score means comprises, first score means completely outlining the outside periphery of said first and second strip means, and second score means defining common edge means of said first and second strip means, said second score means having a substantial portion thereof lying adjacent a radial line of said one end wall means.

4. Container means as set forth in claim **3** in which the combined width of said first and second strip means gradually decreases toward said common end means to thereby require a smaller pulling force adjacent said common end means and assure portions of said strip means adjoining said common end means will remain substantially intact upon changing the pulling direction from said first direction toward said peripheral edge to said opposite direction away from said peripheral edge and toward the central portion of said one end wall means.

5. Container means as set forth in claim **3** in which said second score means has a hooking terminal end portion arranged adjacent said outer periphery and defining said common end, said hooking end portion assuring that said common end and second strip are both pulled out without tearing thereof.

6. Container means as set forth in claim **5** in which said pull means comprises pull tab means having hole means in one end portion thereof and rivet means extending through said hole means and fixing said pull tab means to said end portion of said first strip means.

7. Container means as set forth in claim **6** in which said rivet means is formed using an integral part of said first strip means.

8. Container means as set forth in claim **1** in which said tubular wall means comprises generally right circular cylindrical wall means and said pair of end wall means comprises a pair of circular end wall means.

9. Container means as set forth in claim **7** in which said tubular wall means comprises generally right circular cylindrical wall means, said pair of end wall means comprises a pair of circular end wall means, said pull tab means extends outwardly from said rivet means within the confines of said cylindrical wall means, and the combined width of said first and second strip means gradually decreases toward said common end means to thereby require a smaller pulling force adjacent said common end means and assure portions of said strip means adjoining said common end means will remain substantially intact upon changing the pulling direction from said first direction toward said peripheral edge to said opposite direction away from said peripheral edge and toward the central portion of said one end wall means.

10. Container means as set forth in claim **9** in which said pull tab means includes means enabling easy grasping thereof and a substantial portion of said dispensing opening coincides with a small sector of said circular end wall means.

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