April 26, 1966 J. S. BOZEK 3,247,997

EASY OPENING PULL TAB CAN END WITH WIDE TEAR STRIP

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FIG. 1

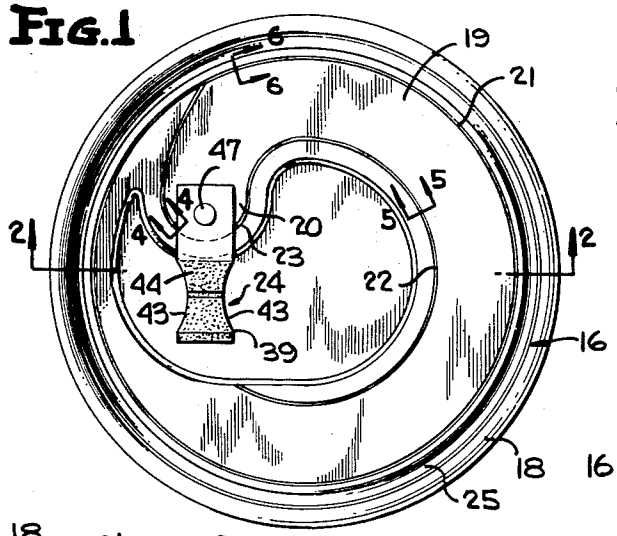


FIG. 4

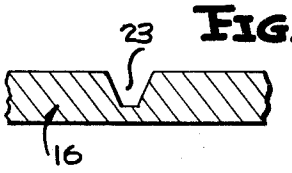


FIG. 5

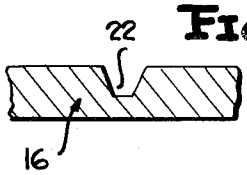
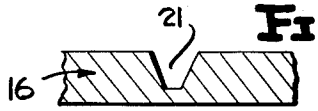


FIG. 6



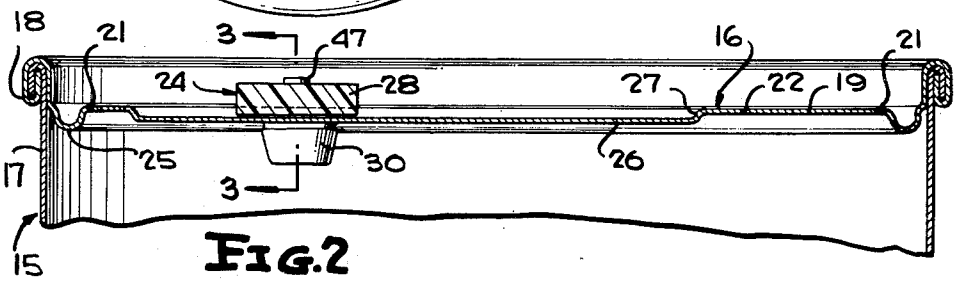


FIG. 2

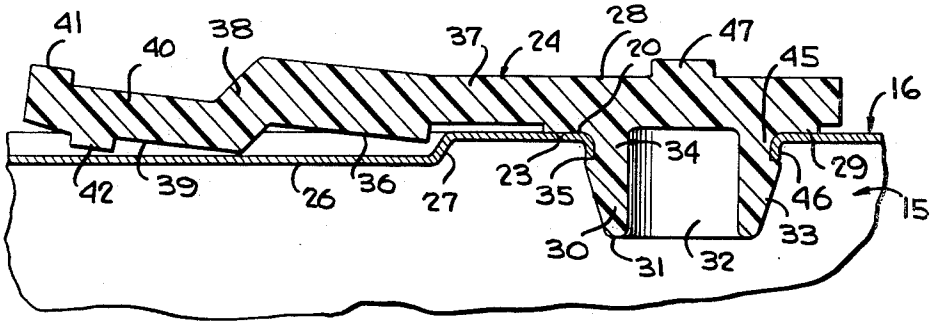


FIG. 3

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EASY OPENING PULL TAB CAN END WITH WIDE TEAR STRIP

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FIG.7

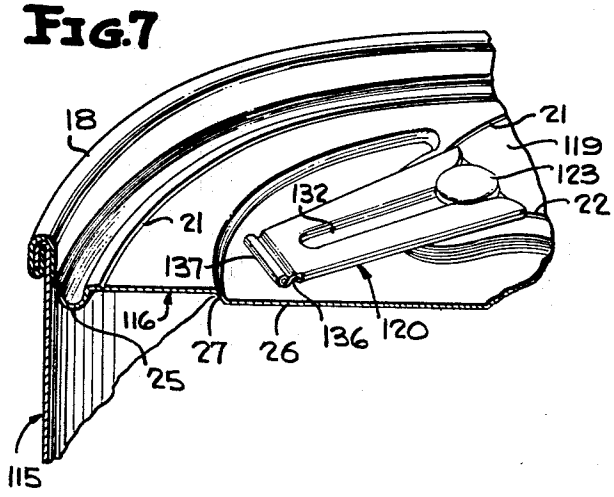


FIG.8

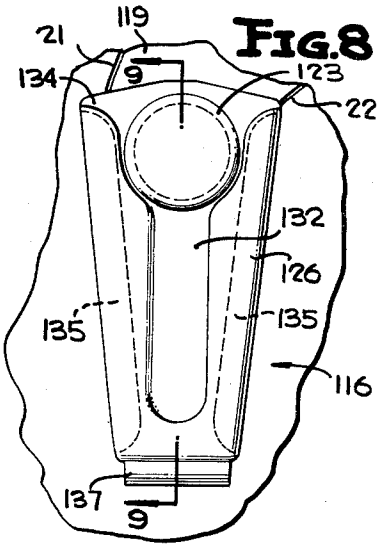
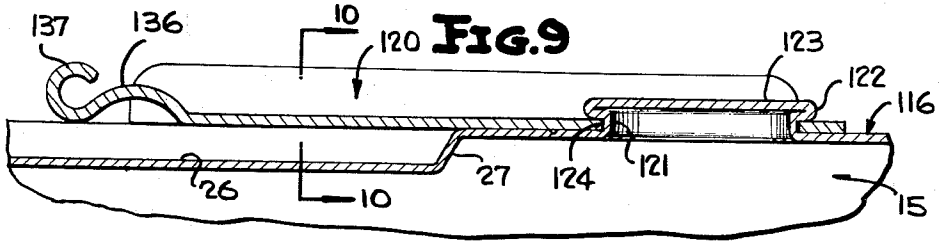


FIG.9



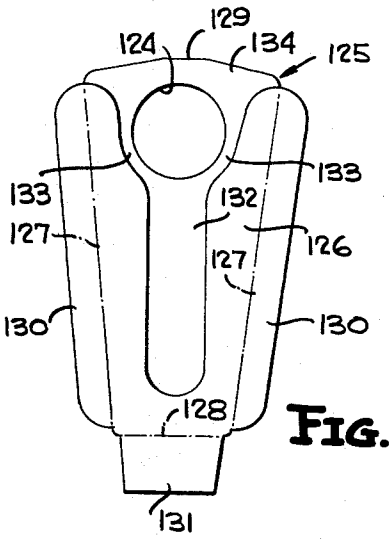
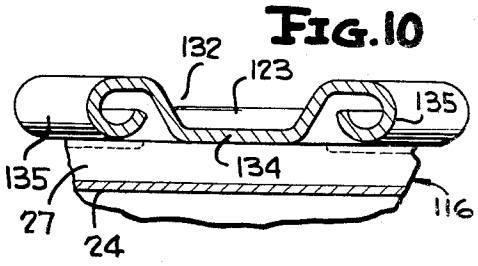


FIG.11

FIG.10



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EASY OPENING PULL TAB CAN END WITH WIDE TEAR STRIP

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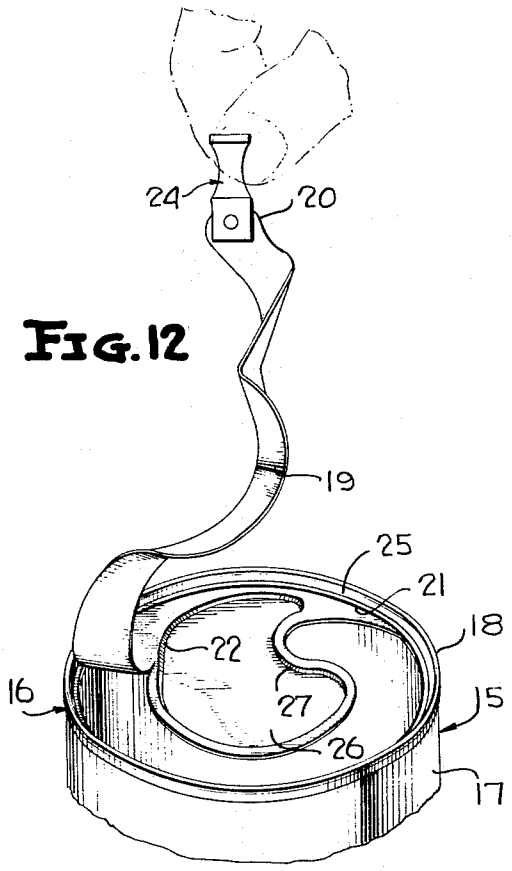


FIG. 12

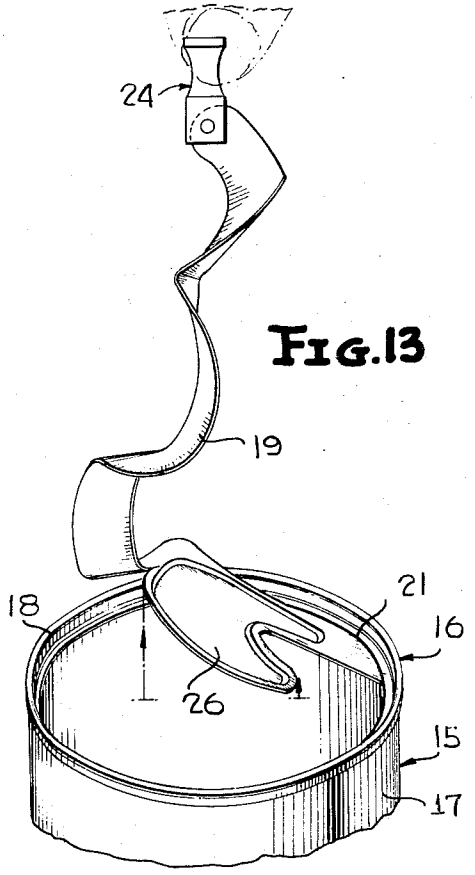


FIG. 13

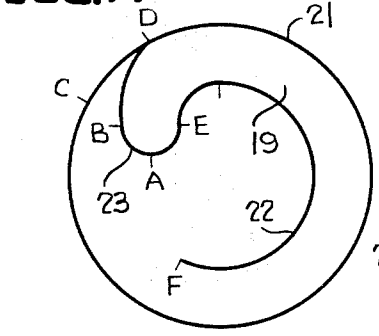


FIG. 14

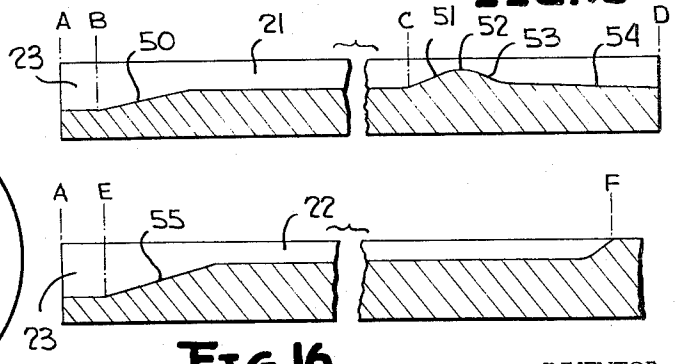


FIG. 15

FIG. 16

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EASY OPENING PULL TAB CAN END WITH WIDE TEAR STRIP

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Filed Jan. 3, 1964, Ser. No. 335,560
2 Claims. (Cl. 220—54)

This application is a continuation-in-part of Serial No. 291,415, filed June 28, 1963, now Patent No. 3,195,768.

This invention relates in general to new and useful improvements in the manufacture of containers, and more specifically relates to a container end which is particularly adapted for opening without the use of any tools or opening elements other than those which are parts of the container.

In the past, it has been necessary for one to have a special opener in order to open containers of the type wherein products are dispensed through the ends of the containers. Recently, there have been developed container ends with tear strips defined therein by weakening lines and the tear strips have attached thereto pull tabs to facilitate the tearing of the tear strips along the weakening lines. Such container ends have five major deficiencies. The deficiency producing the problem from the standpoint of maintaining a seal is that after the container ends have been weakened to define the tear strips, any shock imparted to the container, particularly to the container end, may cause rupture of the container end along one of the weakening lines. On the other hand, if the weakening lines are made too shallow, then the tear strips cannot be removed with the desired ease.

Another problem encountered is the economical attachment of a pull tab to the tear strip in a manner wherein a seal is maintained between the pull tab and the tear strip. The third problem has been in the formation of a proper pull tab which is small enough to be confined within the normal recessed end of a container, such as a can, and at the same time be of sufficient strength and size to be effectively gripped in a manner necessary to effect the tearing of the tear strip from the container end.

The other two deficiencies of present container ends relate to the removal of a major portion of the end panel in the opening thereof. The presently available can ends have a relatively narrow tear strip which has insufficient cross section to maintain its shape as it is torn from the container end. As a result, the tear strip assumes an almost straight line relationship with the result that as one pulls on the tear strip, one's hand becomes quite distant from the can end and towards the end of the tear strip removing operation, it becomes extremely difficult to continue to pull the tear strip. In fact, often it has become the normal reaction of people to release the pull tab and to grip an intermediate portion of the tear strip close to the can end and thus continue the tear strip removing operation. Due to the fact that the removed tear strip has fine, yet very sharp burrs along the edges thereof, any relative moving of one's hand with respect to the tear strip in this new position results in the cutting of one's fingers.

The fifth major deficiency of presently available can ends of the type to which this invention relates is that the relationship of the tear strip with respect to the end panel is such that as the tear strip approaches its point of detachment from the can end, that portion of the end panel which is attached to the tear strip for removal therewith has a tendency to pivot about the last point of attachment of the tear strip to the can end and to dip down into the product contained within the can. Then as the tear strip is finally torn from the can end, due partially to the springiness of the metal and partially to the inertia of the tearing operation, the removed portion of the end panel moves towards the person opening the can and the product which is disposed on the removed portion of the end panel is splashed upon the person opening the can.

In view of the foregoing, it is the primary object of this invention to provide a container end which has a peripherally extending tear strip with the tear strip being defined by an inner weakening line and an outer weakening line, the material of the container end adjacent the inner weakening line being reinforced by offsetting the container end immediately adjacent the inner weakening line and the material of the container end adjacent the outer weakening line being similarly reinforced by the offsetting of the material of the container end.

Another object of this invention is to provide a container end of the easy opening type, which container end includes a peripheral tear strip defined by weakening lines, the tear strip being relatively wide as compared to normal tear strips, and being defined by an outer weakening line and an inner weakening line, and the container end being offset adjacent each of the weakening lines throughout a major portion of the extent thereof to effect a reinforcing of the can end immediately adjacent the weakening lines so as to greatly reduce and, in most instances, eliminate the possibility of an accidental rupture of the container end along one of the weakening lines due to impact caused by rough handling during the normal shipment and storage of the container.

Still another object of this invention is to provide a novel container end which is circular in outline and which has a wide tear strip extending about the circumference thereof and being defined by weakening lines, the container end having an inwardly projecting rib surrounding an outer one of the weakening lines to reinforce the container end immediately adjacent the outer weakening line, and the central portion of the container end being inwardly recessed immediately adjacent the inner one of the weakening lines, the central recessed portion being generally kidney shaped in outline and serving to provide for the reinforcement of the inner weakening line throughout the extent thereof.

A further object of this invention is to provide a container end of the easy opening type wherein the container end is provided with a peripherally extending tear strip which is defined by weakening lines which include an outer weakening line, an inner weakening line, and an intermediate starting weakening line joining together the inner and outer weakening lines, the starting weakening line being the deepest of the three weakening lines, and the inner weakening line being the shallowest of the three whereby opening of the container end is facilitated while the accidental rupture of the container end along one of the weakening lines is, for all practical purposes, prevented.

Another object of this invention is to provide a container end of the type set forth in the above object wherein the outer weakening line, adjacent its outer terminal end thereof, is for a short distance decreased in height after which it again increases for the purpose of momentarily slowing down the tearing operation whereby at the time the tear strip and the associated portion of the end panel are removed, the tearing operation is relatively slow and there is a minimum tendency of the removed portion of the end panel to quickly advance towards the person opening the container, thereby eliminating any possibility of splashing any product which would normally adhere to the underside of the end panel, onto the person opening the container.

A still further object of this invention is to provide a novel container end which includes a tear strip extending generally about the periphery thereof and the tear strip being in part defined by an inner weakening line, a central portion of the container end being inwardly off-

set adjacent to the inner weakening line to reinforce the container end adjacent the inner weakening line, and a pull tab attached to a starting end of the tear strip, the pull tab including a grip portion which overlies the inwardly recessed central portion of the container end wherein gripping of the grip portion is facilitated.

Another object of this invention is to provide a novel plastic pull tab for use with a tear strip of a container end, the pull tab including an elongated body which is provided at one end thereof with a tubular plug portion adapted to be snapped through a flanged opening in a tear strip and form a seal with the tear strip surrounding the opening, the body terminating remote from the plug in a grip portion which has roughened surfaces and which is provided with longitudinally offset transversely extending ribs to facilitate the gripping thereof, the body portion being further provided with a central portion of reduced thickness to permit the initial bending of the pull tab body when gripped so that the necessary gripping of the grip portion may be attained.

Still another object of this invention is to provide a novel plastic pull tab in accordance with the foregoing wherein the pull tab is provided with an aligning pin on the upper surface thereof in alignment with the plug to facilitate the positioning of the pull tab with respect to the tear strip.

Another object of this invention is to provide a novel sheet metal pull tab which is reinforced by means of a central rib wherein the pull tab has a winged channel cross section, the rib being of an increased width adjacent one end of the pull tab and contoured for the reception of a head of a rivet utilized in the attachment of the pull tab to a tear strip.

Another object of this invention is to provide a sheet metal pull tab in accordance with the foregoing, wherein the end thereof remote from the end to which the rivet is attached is reversely curled and bowed transversely of the pull tab to form a grip portion which may be readily and securely gripped.

A still further object of this invention is to provide a sheet metal pull tab of the type set forth above wherein the side edges of the pull tab are reinforced through the longitudinal curling thereof.

Yet another object of this invention is to provide a container end of the easy opening type wherein a major portion of the end panel thereof is removed by tearing therefrom a tear strip, the tear strip being of an unusually wide width wherein the tear strip has a sufficient cross section to resist the straightening thereof to a generally straight line relationship and the tear strip, when torn from the container end assumes a generally helical configuration whereby the distance between the attached pull tab and the container remains a minimum during the opening of the container thereby greatly facilitating the tearing of the removable portion of the end panel from the container end.

Still another object of this invention is to provide a novel container end construction of the type wherein a major portion of the end panel thereof is torn therefrom in the opening of the container, the removed portion of the end panel including a circumferential tear strip and a central end panel portion, the tear strip being defined by inner and outer score lines with the inner score line terminating considerably short of the terminal portion of the outer score line to provide a rigid connection between the removable central end panel portion and the tear strip whereby the central end panel portion is lifted upwardly with the tear strip during the opening of the container as opposed to pivoting inwardly down into the container whereby the dipping of the removed part of the end panel into the product of the container being opened is eliminated.

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 drawings:

In the drawings:

FIGURE 1 is a plan view of a container or can end formed in accordance with this invention and shows the same attached to a can, the view showing the general outline of both the tear strip and the reinforcement of the can end.

FIGURE 2 is an enlarged fragmentary vertical sectional view taken through the center of the can of FIGURE 1 along the line **2—2** and shows the specific cross section of the can end.

FIGURE 3 is an enlarged fragmentary vertical sectional view taken along the line **3—3** of FIGURE 2 and shows the specific details of a plastic pull tab and the connection between the plastic pull tab and the tear strip of the can end.

FIGURES 4, 5 and 6 are fragmentary enlarged vertical sectional views taken along the lines **4—4**, **5—5** and **6—6**, respectively, of FIGURE 1 and show the cross sections of the score lines or weakening lines defining the tear strip.

FIGURE 7 is a fragmentary top perspective view of a can with portions broken away and shown in section and shows the specific details of a can end similar to that of FIGURE 1 but provided with a sheet metal pull tab secured to the tear strip by means of an integral rivet.

FIGURE 8 is an enlarged fragmentary plan view of the can end of FIGURE 7 and shows the specific details of the pull tab.

FIGURE 9 is an enlarged fragmentary vertical sectional view taken along the line **9—9** of FIGURE 8 and shows the specific relationship of the pull tab to the tear strip.

FIGURE 10 is an enlarged fragmentary vertical sectional view taken along the line **10—10** of FIGURE 9 and shows the specific cross section of the pull tab.

FIGURE 11 is a plan view of the sheet metal blank from which the pull tab of FIGURES 7 through 10 is formed.

FIGURE 12 is a fragmentary top perspective view of the container of FIGURE 2 and shows an intermediate step in the opening of the container, the generally helical configuration of the partially removed tear strip being shown.

FIGURE 13 is a fragmentary top perspective view of the container of FIGURE 12 immediately prior to the complete removal of that portion of the end panel which is removed during the opening of the container and shows the manner in which the last removed portion of the end panel moves upwardly with the tear strip as opposed to dipping down into the product within the container.

FIGURE 14 is a schematic view showing the outline of the weakening or score lines formed in a container end in accordance with this invention.

FIGURE 15 is an enlarged developed sectional view taken along the outer weakening line and shows the specific variations in depths of the outer weakening line through the length thereof, an intermediate portion of the weakening line being omitted.

FIGURE 16 is a developed sectional view similar to FIGURE 15 but taken along the inner weakening line.

Referring now to the drawings in detail, it will be seen that there is illustrated in FIGURE 2 a container or can, generally referred to by the numeral **15**. The can **15** is provided with a can end, generally referred to by the numeral **16**. The can end **16** is secured to a can body **17** of the can **15** in a conventional manner by means of a double seam **18**. The can end **16**, in accordance with this invention, is of the easy opening type which does not require any opener to effect the opening thereof.

In order to facilitate the opening of the can **15**, the can end **16** is provided with a peripheral tear strip **19** which has a starting end **20**. The tear strip **19** has the outer boundary thereof defined by an outer weakening or score line **21** which includes a continuous circular portion. The inner boundary of the tear strip **19** is defined by an inner weakening or score line **22** which, for the most part, is disposed concentric with the weakening line **21**. The starting end **20** of the tear strip **19** is, in part, defined by a starting weakening or score line **23** which connects together inner ends of the weakening lines **21** and **22**. The starting end **20** of the tear strip **19** is provided with a pull tab, generally referred to by the numeral **24**, to facilitate the rupture of the can end **16** along the weakening lines **21**, **22** and **23** and thus facilitate the opening of the can **15**. The details of the pull tab **24** will be set forth hereinafter.

It has been found that during shipment and other handling procedures cans oftentimes receive impacts of a nature which will rupture the same along one of the weakening lines. It is proposed to reinforce the can end **16** in a manner so as to be of a shock absorbing nature and thus greatly increase the capacity of the can end **16** to receive shock as compared to the other existing types of can ends having tear strips incorporated therein. To this end, it is first to be noted that the tear strip **19** is relatively wide as compared to the size of the can end **16** so that the tear strip in itself has a certain degree of flexibility. The can end is reinforced about a major portion of the weakening line **21** by the provision of an inwardly or downwardly projecting bead **25**, as is best shown in FIGURE 2. The bead **25** may flex to a certain degree should there be an inwardly directed force on the can in the vicinity of the seam **18**, thus preventing the transfer of rupturing force to the can end **16** along the weakening line **21**. In a like manner, the central portion of the can end **16** is reinforced by inwardly or downwardly depressing the same to form an offset central portion **26** having an upper peripheral wall or shoulder **27** which is disposed adjacent to the inner weakening line **22** and to the starting weakening line **23** throughout the extents thereof. From the foregoing, it will be seen that by shaping the can end at the time of its forming to provide the internal bead **25** and the inwardly offset portion **26** which does not require any additional forming step, the strength of the can end **16** may be greatly increased over the strength of similar can ends. In a like manner, by making the tear strip **19** wide as compared to customary tear strips, a certain degree of resistance to rupture may be obtained through the flexing of the tear strip **19** without any sacrifice in the opening advantages of the can end as compared to other can ends since the tearing of the tear strip is endwise and the width of the tear strip is immaterial as far as opening forces are concerned. An incidental but advantageous result of the inward offsetting of the central portion **26** of the can end **16** is to provide clearance for a grip portion of the pull tab **24**, as is shown in FIGURE 3, to facilitate the gripping thereof.

Reference is now made to FIGURES 4 through 6 and 14 through 16 wherein the specific details of the several weakening lines are shown. The weakening lines **21**, **22** and **23**, which are in the form of scores, are of different depths so that the various portions of the can end **16** have various resistances to tearing, thereby facilitating the proper opening of the can end. It is to be noted that the weakening or score line **23** is the deepest whereby the can end **16** is the weakest along the weakening line **23** and thus the initial tearing of the tear strip **19** from the can end **16** may be facilitated.

It is to be noted that the weakening line **21** is of a greater depth than the weakening line **22**. At this time it is pointed out that it is desirable that the tearing of the tear strip **19** from the remainder of the can end **16** be uniform. Therefore, the tearing along the score lines **21** and **22** should remain uniform and in radial alignment. It is first to be noted that the score line **21**, being the outer of the two score lines, is of a greater length, and therefore, the tear along the score line **21** is much longer than the tear along the score line **22**. Therefore, in order that the total tearing force along the two weakening lines **21** and **22** will be substantially the same, the score line **21** has been made deeper than the score line **22**. Furthermore, there is a general tendency to hold the pull tab **24** in a manner wherein a maximum tearing force is applied on the can end along the weakening line **22**. It has been found that the specific relationship of score line depths shown in FIGURES 4 through 6 and 14 through 16 provides for a tear strip arrangement which will be easily and uniformly torn from the can end.

Reference is now particularly made to FIGURES 14 and 15 with respect to the outer weakening line **21** and the associated part of the weakening line **23**. Starting at point A in FIGURE 14, which is at the center of the weakening line **23**, and continuing entirely around the outer weakening line **21**, it will be readily apparent from FIGURE 15 that the outer score line greatly varies in depth from one end to the other. The portion of FIGURE 14 between A and B is the starting weakening line **23**. It will then be seen that the depth of the score line gradually decreases for a short distance until the depth becomes constant and the final score line depth of the score line **21** is reached. This transition portion of the score line **21** is referred to by the numeral **50**. The score line **21** continues around a major portion of the can end at a constant depth until it reaches point C near the terminal end of the score line **21**, as is shown in FIGURE 14. At point C, with reference to FIGURE 15, the depth of the score line **21** abruptly decreases, as at **51**, until it reaches a minimum at **52**. The score line **21** then has a transition portion **53** which provides for a rapid increase in score line depth. The transition portion **53** is followed by a final score line portion **54** which may slightly increase in depth to the terminal end of the score line **21** at D. The specific configuration of the score line **21** will be described in detail hereinafter.

Referring now to FIGURES 14 and 16, it will be seen that starting at A and moving along the weakening line towards the weakening line **22**, the score line is of a constant depth until the point E is reached, at which point the score line **22** starts. The score line portion between A and E is the score or weakening line **23**. At E the depth of the score line begins to decrease and there is a transition portion **55**. The depth of the score line reduces until it becomes of a constant depth which is the depth of the score line shown in FIGURE 5. The depth of the score line **22** remains constant until the terminal end thereof is reached at F at which point the score line diminishes to nothing.

Referring now to FIGURES 1 and 3, it will be seen that the pull tab **24** is formed of a flexible plastic material and includes an elongated body **28** which is provided at one end thereof with a downwardly projecting part **29** carrying a tubular plug **30**. The plug **30** is provided with a rounded lower end **31** which opens internally into a bore **32** and continues externally into a tapered portion **33**. The plug **30** is of a reduced cross section, as at **34**, to define a shoulder **35**.

The body **28** of the pull tab **24** is downwardly thickened, as at **36**, so as to leave an intermediate portion **37** which is the thinnest and thus which is the weakest part of the pull tab body **28**. The thickened part **36** of the pull tab body is disposed upwardly at a slight angle to the plane of the remainder of the body **28**.

The thickened part **36** of the pull tab body terminates at its outer end in a downwardly sloping offset portion **38** which, in itself, may be considered part of a grip portion **39** of the pull tab **24**. The grip portion **39** includes a

sloping portion **40** which is integrally connected to the connecting portion **38** and which extends generally parallel to the thickened portion **36**. The grip portion **39** includes a terminal transversely extending rib **41** on the upper surface thereof. A second transverse rib **42** projects downwardly from the underside of the upwardly sloping portion **40** in longitudinally offset relation with respect to the rib **41**.

It is to be noted from FIGURE 1 that the grip portion **39** of the pull tab **24** has concavely curved side edges **43**. Further, the upper and lower surfaces of the grip portion **39** are roughened, as at **44**, to facilitate the gripping thereof.

The starting end **20** of the pull tab **19** is provided with an opening **45** therethrough which is defined by an inwardly or downwardly directed flange **46**. The tear strip is assembled with the pull tab **19** by snapping the plug **30** down through the opening **45** with the shoulder **35** compressively engaging the lower edge of the flange **46**. It is to be understood that there is compressive engagement between the plug **30** and adjacent portions of the tear strip **19** so that the plug **30** effectively seals the opening **45**.

At this time it is pointed out that the pull tab body **28** is provided with an upwardly projecting centering pin **47** which is co-axial with the plug **30** and may be suitably engaged by a pull tab applying tool (not shown) wherein centering of the plug **30** with the tear strip opening **45** may be assured during the application of the pull tab **24** to the tear strip **19**.

It is also to be noted that the relative construction of the pull tab **24** and the can end **16** is such that the grip portion **39** of the pull tab is partially recessed within the recessed central portion **26** of the can end **16**, and at the same time gripping of the grip portion **39** may be readily facilitated.

Reference is now particularly made to FIGURES 12 through 16 wherein the various stages in the opening of the can end **16** are shown. It is to be understood that in the opening of the can end **16**, an upward force is directed onto the pull tab **24** which, through its connection, exerts an upward force on the starting end **20** of the tear strip **19**. Sufficient force may be readily placed upon the starting end **20** to rupture the can end along the weakening line **23**. A continued upward pull on the pull tab **24** results in the tearing of the tear strip **19** from the remainder of the can end **16** along the weakening lines **21** or **22**. Due to the fact that the tear strip **19** is very wide as compared to the normal narrow tear strip, and because of the differential in lengths of the weakening lines **21** and **22**, it will be seen that as the tear strip **19** is removed from the can end **16**, it does not assume the straight line relation normally assumed by narrow tear strips, but assumes a generally helical configuration, as is clearly shown in FIGURE 12. Due to the generally helical configuration of the removed portion of the tear strip **19**, the distance between the pull tab **24** and the can end **16** remains at a minimum and this distance is one wherein the continued removal of the tear strip **19** may be conveniently accomplished.

The tearing of the tear strip **19** from the can end **16** continues until point C on the weakening line **21** is reached. At this point tearing along the weakening line **22** has been completed and the tearing of that portion of the can end which is to be removed is restricted to being along the weakening line **21**. It is to be noted from FIGURE 15 that the score line **21** becomes shallow starting at C and thus the resistance of the metal to tearing rapidly increases with the result that there is a momentary slowing down of the tearing operation. This also serves as a warning to the person opening the container **15** that the opening process is nearing an end. The general tendency of this increased resistance to tearing is for the person to momentarily stop tearing of the tear strip, after which the tearing operation is renewed and the final tearing out of the removable portion of the can end is accomplished.

Reference is now made to FIGURE 13 wherein it is shown that due to the rigidity of the depressed central portion **26**, and the fact that the score line **22** terminates far short of the terminal end of the tear strip **19**, it will be seen that the central portion **26** remains firmly attached to the tear strip **19** and remains in the plane of the associated portion thereof. Thus, during the final stages of the opening of the container **15**, the central portion **26** is lifted with the tear strip **19** in the manner shown in FIGURE 13, and as opposed to pivoting into the product within the container **15**, the removed portion of the container end **16** is lifted directly out of the plane of the end panel thereof. This eliminates the accumulation of the contents of the container **15** on the removed portion of the can end **16** and thereby splashing, which has occurred in the past with other types of easy opening container ends, is eliminated.

Referring now to FIGURES 7 through 11, it will be seen that there is illustrated a slightly modified form of can end construction. The can end is part of a can, generally referred to by the numeral **115** and in itself is referred to by the numeral **116**. The can end **116** is identical with the can end **16** with the exception of a minor variation in the construction of the tear strip thereof, the tear strip being referred to by the numeral **119**. Since all other portions of the can **115** are identical with like portions of the can **15** with the exception of a pull tab, which is referred to by the numeral **120**, like numerals will be given to like previously described parts.

In lieu of the flanged opening **45** formed in the tear strip **19**, the tear strip **119** is provided with an integral upstanding tubular rivet **121** which is crimped, as at **122**, to define an enlarged head **123**. The rivet **121** passes through an opening **124** in the pull tab **120** and the head **123** serves to retain the pull tab **120** on the rivet **121**.

It is to be noted that the pull tab **120** is formed of sheet metal and is formed from a blank generally referred to by the numeral **125**. The blank **125** includes a body portion **126** which is generally trapezoidal in outline and includes two diverging side edges **127**, a narrow end **128** and a wide end **129**. Wings **130** and **131** are connected to the pull tab body **126** along the side edges **127** of the end **128**, respectively.

The body **126**, for the major portion of the length thereof, is of a winged channel cross section, as is best shown in FIGURE 10. The body **126** is provided with a longitudinally extending depressed rib **132** which is widened adjacent the end **129**, as at **133**, to provide clearance for the head **123** of the rivet **121**. The rib **132** has a base **134**, as is shown in FIGURE 10. The base **134** becomes very enlarged and extends the full width of the body **126** at the end **129** thereof. The base **134** has the opening **124** formed therein.

It is to be noted that the rib **132** reinforces the body **126** against bending transversely of the axis of the pull tab **120**. The pull tab **120** is further reinforced by means of the curling of the wings **130** to define longitudinally extending curled reinforcing edges **135**.

The end of the pull tab **120** remote from the rivet **121** is transversely and upwardly bowed, as at **136**. Part of this bow is formed in the wing **131** and part is formed in the body **126**. Immediately adjacent the body **136** the wing **131** is upwardly reversely curled to define a curled transverse enlargement **137** which, together with the body portion **136**, defines a grip portion of the pull tab **120**.

It will be readily apparent that the pull tab **120** may be formed of relatively thin sheet metal and due to the specific configuration thereof, it will have sufficient strength to resist bending when an upward force is directed thereupon during the initial tearing or breaking of the tear strip **119** along the starting line thereof. At the same time, the connection between the rivet **121** and the pull

tab **120** will be sufficient to resist any accidental rupture of the pull tab **120** from the tear strip **119**. At this time it is pointed out that the grip portion of the pull tab **120** overlies the inwardly offset central portion **24** of the can end and thus facilitates the gripping thereof.

It is to be understood that the can end **116** has all of the structural advantages of the can end **16** and that the difference between the can end **116** as compared to the can end **16** is the difference in pull tab construction and the manner of attaching the two pull tabs to their respective tear strips.

It will be understood that when the can end **116** is opened utilizing the pull tab **120**, the opening operation will be that described with respect to the can end **16** and shown in FIGURES 12 and 13.

Although only preferred embodiments of the invention have been specifically illustrated and described herein, it is to be understood that minor modifications may be made in the can end construction in accordance with this invention within the spirit and scope of this invention, as defined in the appended claims.

I claim:

1. A container end, a tear strip defined in said container end by an outer peripheral weakening line and an inner weakening line connected together by a connecting starting weakening line in part defining a starting end of said tear strip, said container end having an offset central portion having a border of which a major portion thereof conforms in outline to said inner weakening line, said offset central portion sitffening said can end and thereby resisting parting of said weakening lines, and said inner weakening line terminating into said offset portion, with said offset central portion being carried by a terminal portion of said tear strip after the complete separation of said inner weakening line and maintaining its normal relationship to said tear strip during the final stages of tear strip removal whereby tilting of said offset central portion down into the interior of an associated container is prevented, said outer weakening line being of a maximum strength adjacent to but spaced from a terminal end thereof whereby during an opening operation there is a momentary slowing down of the opening operation prior to the final removal of said tear strip and springing of said central portion towards the starting end of said tear strip is restricted, and said outer weakening line being of a reduced strength between said maximum strength portion and said terminal end to facilitate the final removal of said tear strip.

2. In a container end of the type wherein a major portion of an end panel thereof is removed, a peripheral weakening line having a terminal end, said weakening line being of a maximum strength adjacent to but spaced from said terminal end whereby during an opening operation there is a momentary slowing down of the opening operation prior to the final removal of said end panel removable portion and springing of said removable portion away from the plane of said end panel is restricted, said weakening line being of a reduced strength between said maximum strength portion and said terminal end to facilitate the final removal of said end panel removable portion.

No references cited.

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