Nov. 18, 1958 J. HENCHERT 2,860,812

CONTAINER HAVING TEAR STRIP

Filed July 6, 1955 3 Sheets-Sheet 1

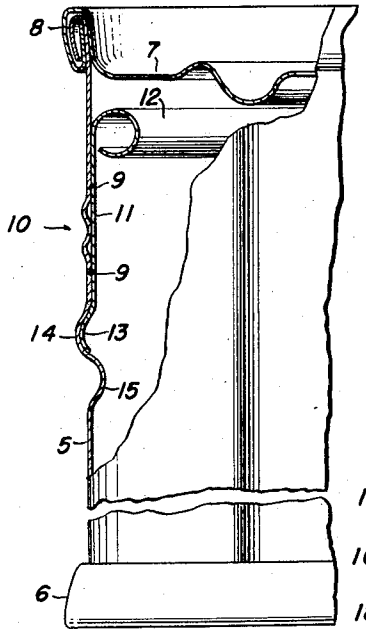


FIG. 1

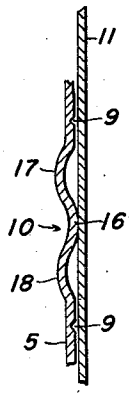


FIG. 3

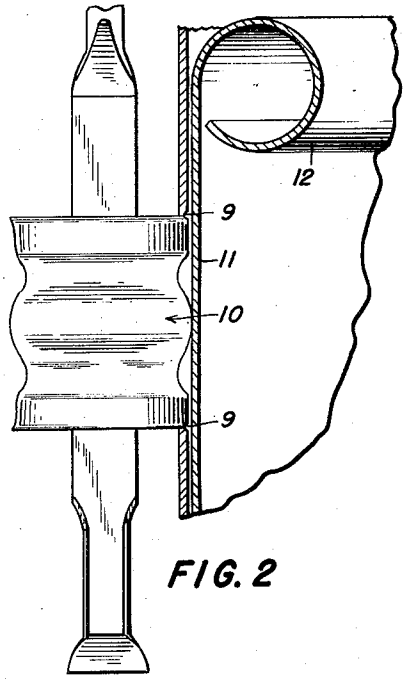


FIG. 2

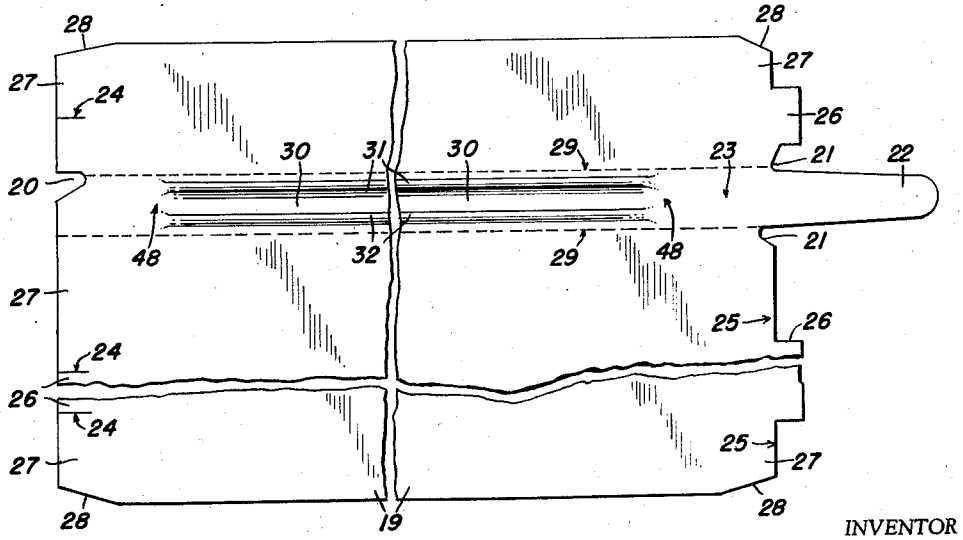


FIG. 4

INVENTOR

John Henchert

BY Mason, Porter, Dille & Stewart

ATTORNEYS

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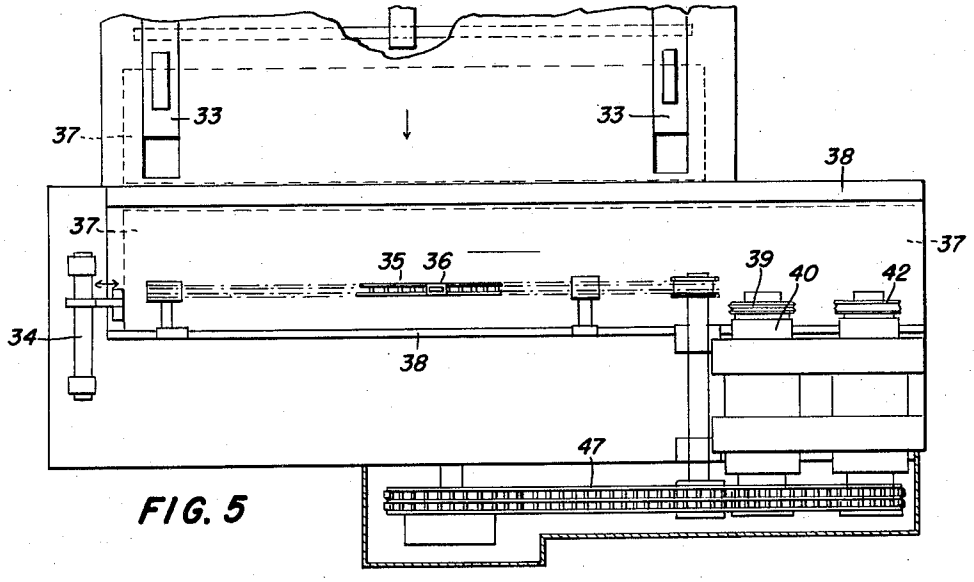


FIG. 5

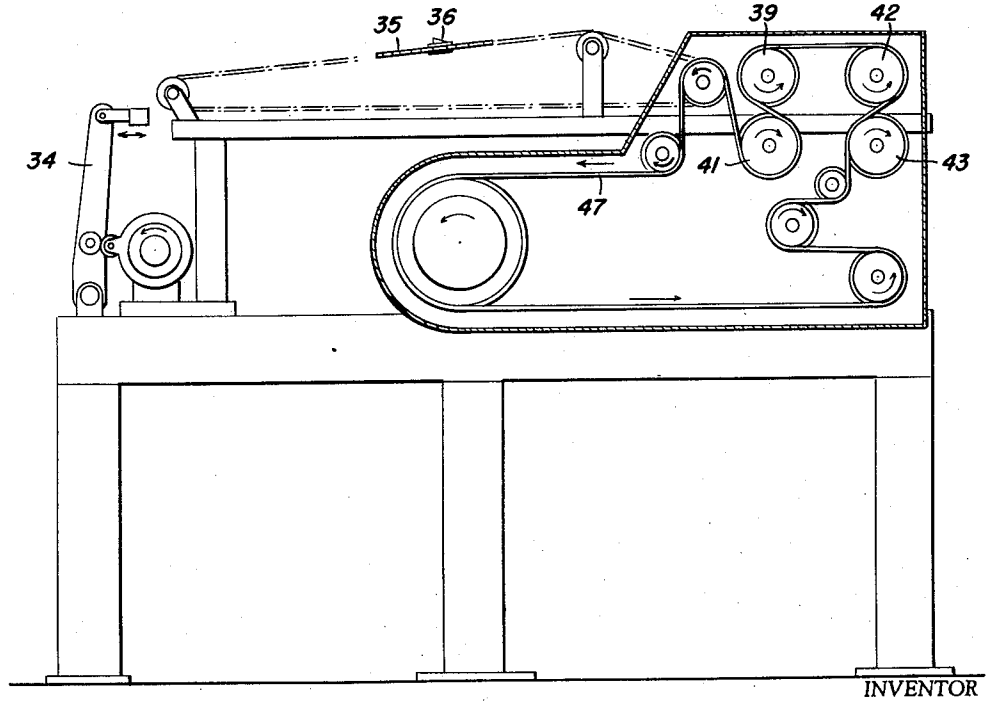


FIG. 6

INVENTOR

John Henchert

BY Mason, Porter, Diller & Stewart

ATTORNEYS

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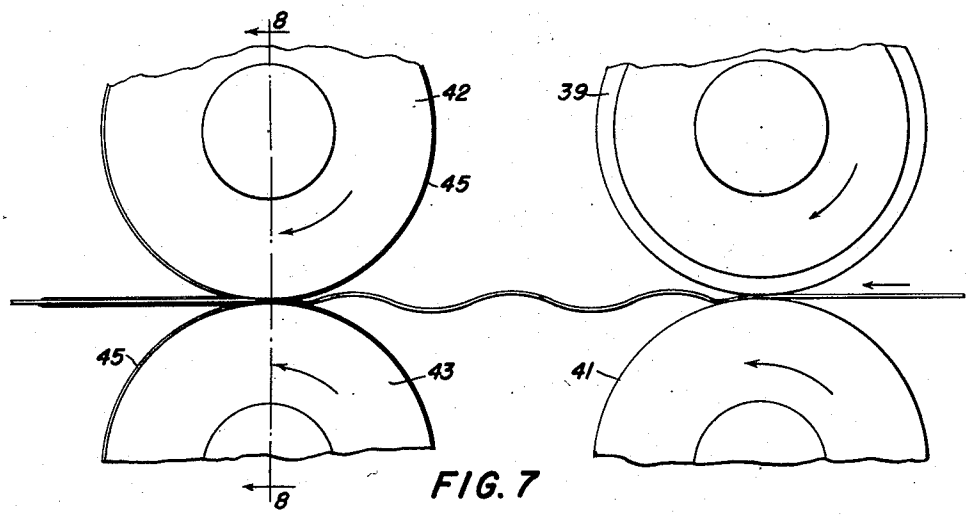


FIG. 7

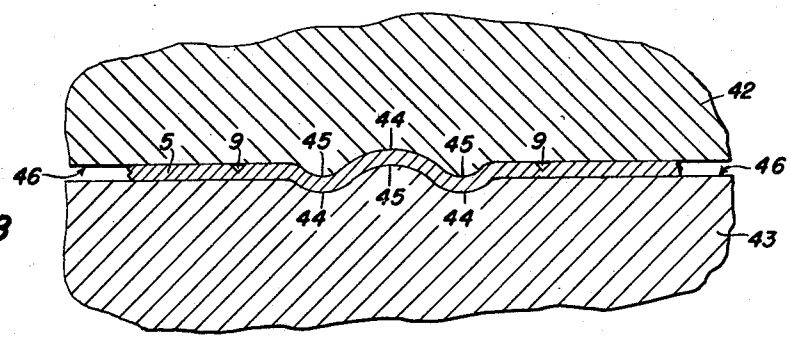


FIG. 8

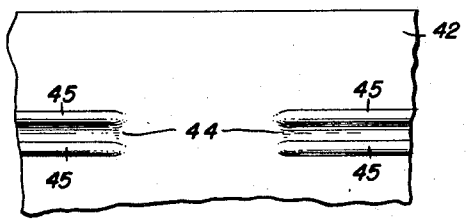


FIG. 9

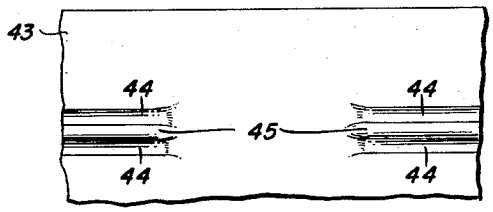


FIG. 10

INVENTOR

John Henchert

BY Mann, Porter, Miller & Stewart

ATTORNEYS

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2,860,812

CONTAINER HAVING TEAR STRIP

John Henchert, River Forest, Ill., assignor to Continental Can Company, Inc., New York, N. Y., a corporation of New York

Application July 6, 1955, Serial No. 520,195

7 Claims. (Cl. 220—54)

The invention relates generally to metallic receptacles, and more particularly to collar cans wherein are provided tear strips adapted to be wound on keys and by this means torn out of the body walls of the cans in order to effect an opening of the cans, and it primarily seeks to provide a novel tear strip structure and a novel method of forming the same.

In cans of the character stated the tear strips are defined by parallel score lines which surround the cans adjacent the upper end closures thereof, and a collar is mounted in the upper end of each can opposite its tear strip in position for extending upwardly from the upper extremity of the can body resulting from the tearing out of the tear strip, thereby to maintain the desired can body wall height and provide a support neck over which the skirt or body wall portion remaining attached to the upper end closure can be telescoped to effect a reclosure of the can.

Much difficulty has been experienced in the opening of conventional forms of collar cans because the conventional tear strips are springy, smooth and flat, and in the course of the winding of a tear strip about a key the winding strip tends to side slip or wind off line. This problem is aggravated by the springy nature of the tear strips and the tendency of the strips to partially spring out or unwind each time the key is released by a person opening a can preparatory to obtaining a new grip on the key after each partial winding of the strip. It is a purpose of the present invention to provide a novel rib and groove arrangement on each tear strip subject to nesting as the strip is being wound about a key and in a manner assuring against side slipping and off line winding of the strip.

Single and even double ribbed tear strips have been known heretofore, but in these known structures the ribbing has been projected wholly outward or wholly inward with relation to the plane or cross section of the can body wall, and these arrangements have proven disadvantageous for a number of reasons. One disadvantage has been the necessity of projecting the ribs too far outwardly or inwardly of the can body wall plane or cross section in order to provide a practical depth of ribbing. When it has been sought to provide projection of the ribbing wholly inward of the can body wall the inward projections presented problems incidental to the mounting of the can collars. When it is sought to provide projection of the ribbing wholly outward of the can body wall the depth of the can body wall the depth of the ribbing must be curtailed in order to avoid provision of unsightly and impractical outward projections. Also, outward ribbing alone, single or double, has been found somewhat objectionable in that it tends to provide such localized rigidity in the ribbing and leverage during the tearing out of a given strip that there is a resulting tendency to turn outwardly, the raw metal edge at the remaining can body top extremity, and this outwardly turned edge is positioned for damaging contact by a user of the can. An object of the present invention is to provide a collar can

structure wherein is included a tear strip embodying multiple ribbing placed in a novel manner effective to avoid the disadvantages hereinabove enumerated.

It has also been noted that in known practices of scoring the can body blanks to define the tear strips therein the rolling contact of the scoring rolls serves to distort and wave the edge of the body blank adjacent and paralleling the score lines, making it necessary to pass the blanks through flat surfaced, wave flattening rolls in order to remove the objectionable marginal waves created during the scoring of the blanks. According to another feature of the present invention the formation of the tear strip ribbing is accomplished by rolling contact through the medium of ribbing and flattening roll action subsequent to the scoring action and simultaneously serving to form the ribbing and remove from the blanks all marginal waving created incidental to said scoring action. It has also been found that this manner of forming the tear strip ribbing simultaneously with the rolling out or flattening of the wavy marginal portions created by the scoring action provides a flexing roll-like function in breaking the grain in the tear strip and removing therefrom substantially all tendency to spring outwardly about the key when gripping of the key is released by a person opening the can, as aforesaid.

Another object of the invention is to provide a can of the character stated including a tear strip having therein at least three ribs, one projecting in one direction beyond the plane or cross section of the can body wall, and the other two projecting in the opposite direction beyond said wall, thus making it possible to provide a deeper rib and groove centrally of the three rib arrangement than at the other rib locations and without objectionable projection of any of the ribs at either side of the wall plane or cross section.

A further object of the invention is to provide a novel tear strip rib placement of the character stated wherein the center rib is projected inwardly of the body wall approximately .007 of an inch and the rib to each side of the center rib is projected outwardly of said wall approximately .007 of an inch, thereby providing with this limited and yet entirely satisfactory rib projection a center rib approximately .014 of an inch in depth, much greater than could otherwise be provided without objectionable projection of ribbing beyond either side of the body wall plane or cross section.

A still further object of the invention is to provide a novel method of forming collar can bodies including the steps of moving the body blanks through scoring rolls to provide the tear strip defining scores, and then through tear strip ribbing and flattening rolls effective simultaneously to form ribs in parallel relation along the score line defined tear strips and flatten out wavy marginal portions of the blanks created incidental to the scoring action.

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 side elevation illustrating a collar can embodying the invention, a portion of one side of the can adjacent the top thereof being broken away to show the positioning of the collar and tear strip.

Figure 2 is an enlarged fragmentary sectional view showing the tear strip in the process of being torn out, the same being partially wound onto a key.

Figure 3 is an enlarged fragmentary vertical cross section showing the specific ribbing arrangement on the tear strip.

Figure 4 is an enlarged face view of a formed body blank from which the can body may be made, parts intermediately of the ends and the top and bottom of the blank being broken away.

Figure 5 is a somewhat diagrammatic plan view illustrating the blank scoring rolls and the rib embossing and blank margin flattening rolls, the devices for feeding the blanks to said rolls also being shown.

Figure 6 is a somewhat diagrammatic side elevation showing the parts illustrated in Figure 5.

Figure 7 is an enlarged fragmentary side view showing portions of the scoring rolls and the embossing and blank margin flattening rolls, a blank being shown between the cooperating roll sets and having the tear strip area thereof defined by the scoring rolls and ribbed or embossed by the embossing and flattening rolls and having the wave created incidental to the scoring action removed by the flattening portion of said embossing and flattening rolls.

Figure 8 is a fragmentary sectional view taken on the line 8—8 on Figure 7 and showing the embossing and flattening rolls engaging and reshaping a blank passing therebetween.

Figures 9 and 10 are partial developments of the cooperating embossing and flattening rolls showing how the cooperative ribbing and grooving in the rolls terminate so as to avoid embossing of the tear strip area adjacent the seam margins of the blanks and the tongue extension thereof.

In the example disclosure of the invention herein illustrated, the improved collar can structure includes a body generally designated **5**, a bottom end closure **6** and a top end closure **7**, said closures being secured in place on the flanged can body by the usual double rolled seam structures as at **8**.

Score lines **9** define a tear strip **10** near the upper end of the can body, and opposite this tear strip a collar **11** is mounted in the body in the manner clearly illustrated in Figures 1 and 3, said collar having an inwardly directed curl **12** at its upper end, and its lower end anchored as at **13** in the outwardly directed body bead **14** immediately above the inwardly directed body bead **15**. It is to be understood that the collar mounting beading **14**, **15** may be formed after insertion of the collar into the formed can body.

According to the invention, the tear strip **10** is equipped with an inwardly projecting center rib **16**, an upper outwardly projecting rib **17** above the center rib, and a lower outwardly projecting rib **18** below the center rib. In this particular illustration, each of the ribs **16**, **17** and **18** is projected inwardly or outwardly approximately .007 of an inch beyond the plane or cross section of the body wall **5**. It will be clearly apparent by reference to Figure 3 of the drawings that this particular placement and dimensioning of the tear strip ribbing provides a center rib **16** of approximately .014 of an inch, thus providing the desired depth of ribs and grooves without projecting any rib an impractical distance inwardly or outwardly beyond the body wall plane or cross section so that it would comprise an unsightly projection or one which would interfere with practical mounting of the collar within the upper portion of the can body.

The can body **5** shown in the previously described illustrations, preferably, but not necessarily, is made up from a blank **19** as illustrated in Figure 4. Such blanks may first be fed with a long edge forward, or in a direction perpendicular to the length of the blank, through suitable apparatus for notching the blank at **20** at one end and at **21** at its other end in the tear strip area, and providing the tongue extension **22** on the tear strip area **23** defined by the score lines. During such feeding of the blanks they are also slit at **24** at one end and notched at **25** at the other end to provide the hook margins **26** and lap areas **27**, and also may be angle cut at **28** at their corners. This having been accomplished the blanks are then fed

in the direction of their length through scoring rolls to form parallel scores **29** defining the tear strip and thence through embossing and flattening rolls which simultaneously flatten the wave provided in the blank margin adjacent the tear strip area and provide the inwardly projected center rib **30** and the upper and lower oppositely projected ribs **31** and **32** along the tear strip area **23** defined between the score lines **29**.

Portions only of the apparatus for feeding and shaping the blanks are shown diagrammatically herein, reciprocating feed means for feeding the blanks in a direction perpendicular to their length being indicated at **33**, reciprocating feed means for feeding the blanks in the direction of their length are indicated at **34** and are effective to present the blanks to the feeder chains **35** having thereon suitably spaced feed dogs **36** which feed the blanks over supporting table means **37** and between gaging devices **38** to the roll sets.

The blanks being fed by the chains **35** first pass between the upper scoring roll **39** rotatably supported at **40** and the lower plain surfaced opposing roll **41**, and then said blanks pass between the upper and lower ribbing rolls **42** and **43** which include in addition to the grooving at **44** and ribbing at **45**, plain straightening surfaces **46** which are effective in the manner previously described for removing the wave created at the marginal portion of the blanks beside the tear strip area. Roll driving devices are diagrammatically illustrated and generally designated **47**, and it is to be understood that the driving devices are so coordinated that the ribbing and grooving on the cooperating upper and lower rolls **42** and **43** will be placed so as to terminate the ribbing on the tear strip at **48**, short of the position of the tongue extension **22** and the seam area at each end of the blank, as will be clearly apparent by reference to Figures 4, 9 and 10.

It will be apparent from the foregoing that the tear strip includes three ribs, one projecting in one direction beyond the plane or cross section of the can body wall, and the other two projecting in the opposite direction beyond said wall, thus making it possible to provide a deeper rib and groove centrally of the three-rib arrangement than at the other rib locations, without objectionable projection of any of the ribs at either side of the wall plane or cross section. It will be noted by reference to Figure 3 that the inward projection of the rib **16** provides an outwardly opening groove between the crests or high points of the upper and lower ribs **16**, **17** which is approximately twice the depth, or in other words the degree of projection of any one of the tear strip ribs **16**, **17** and **18**.

The particular method of passing the blanks first through the scoring rolls and then through the rolls which simultaneously emboss the rib arrangement in the score line defined tear strip and straighten out the marginal wave in the blank created incidental to the scoring action is novel and provides marked advantages. This particular manner of providing the rib arrangement in the tear strip provides a flexing roll-like function in breaking the grain in the tear strip and removing therefrom substantially all tendency to spring outwardly about the key when gripping of the key is released by a person opening the can. It is possible in the use of the disclosed tear strip arrangement to apply a key to the tongue **22** and wind the strip thereon with the strip ribs and grooves accurately and firmly nested in a manner securing the winding strip against side slip and off-winding.

While example disclosures of the structure and method steps are made herein, it is to be understood that the disclosed structure and practices may be varied without departing from the spirit and scope of the invention as defined in the appended claims.

I claim:

1. In a can structure of the character described, a body wall provided with a tear strip defined by parallel score lines extending circumferentially about the wall, and

at least three parallel spaced rib means extending about the wall within the confines of the tear strip with an intermediate rib projecting in one direction from the wall cross section and the two immediately adjacent ribs projecting in the opposite direction from the wall cross section, thereby to provide cooperating rib and groove means effective to nest and prevent side slipping of the tear strip as it is wound about a key in the process of being torn out of the wall.

2. In a can structure of the character described, a body wall provided with a tear strip defined by parallel score lines extending circumferentially about the wall, and at least three parallel spaced rib means extending about the wall within the confines of the tear strip with the intermediately disposed rib projecting inwardly with relation to the wall and each of the other ribs projecting outwardly with relation to the wall, thereby to provide cooperating rib and groove means effective to nest and prevent side slipping of the tear strip as it is wound about a key in the process of being torn out of the wall.

3. Can structure as defined in claim 2 wherein the inwardly and outwardly directed ribs are three in number and are projected substantially like distances beyond the cross section of the body wall, thereby to cause the intermediately projected rib to provide an outwardly presented groove extending between the crests of the outwardly projected ribs and which is substantially twice the depth of projection of any individual rib beyond the body wall.

4. Can structure as defined in claim 2 wherein there is included a collar arranged in the can body with its upper and lower extremities respectively extending above and below the score line defined tear strip, and means anchoring the collar to the body wall in snug fitting contact within the inwardly projected tear strip rib.

5. Can structure as defined in claim 2 wherein the inwardly and outwardly directed ribs are three in number and are projected substantially like distances beyond the cross section of the body wall, thereby to cause the intermediately projected rib to provide an outwardly presented groove extending between the crests of the outwardly projected ribs and which is substantially twice the depth of projection of any individual rib beyond and body wall,

and there also being included a collar arranged in the can body with its upper and lower extremities respectively extending above and below the score line defined tear strip, and means anchoring the collar to the body wall in snug fitting contact within the inwardly tear strip rib.

6. Can structure as defined in claim 2 wherein the inwardly and outwardly directed ribs are three in number and are projected substantially like distances beyond the cross section of the body wall, thereby to cause the intermediately projected rib to provide an outwardly presented groove extending between the crests of the outwardly projected ribs and which is substantially twice the depth of projection of any individual rib beyond the body wall, and there also being included a collar arranged in the can body with its upper and lower extremities respectively extending above and below the score line defined tear strip, and means anchoring the collar to the body wall in snug fitting contact within the inwardly projected tear strip rib, said can body also including a side seam structure through which the tear strip extends to terminate in a key receiving tongue, and the rib means being terminated at each end of the tear strip short of the position of the seam structure.

7. In a can structure of the character described, a body wall provided with a tear strip defined by parallel score lines extending circumferentially about the wall, and at least three parallel spaced rib means extending about the wall within the confines of the tear strip with the intermediately disposed rib projecting inwardly beyond the wall cross section and each of the other ribs projecting outwardly beyond the wall cross section, thereby to provide cooperating rib and groove means effective to nest and prevent side slipping of the tear strip as it is wound about a key in the process of being torn out of the wall.

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