Feb. 26, 1963 J. HENCHERT 3,079,031

METAL BAND DOUBLE SEAMED TO METAL CAN FOR ATTACHING ELASTIC TRANSPARENT END THERETO

Filed Feb. 23, 1960 2 Sheets-Sheet 1

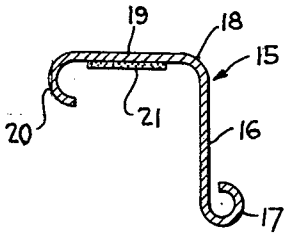


Fig. 2

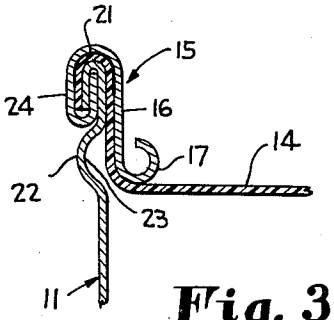


Fig. 3

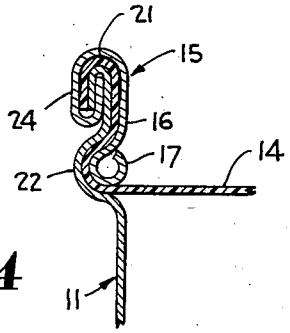


Fig. 4

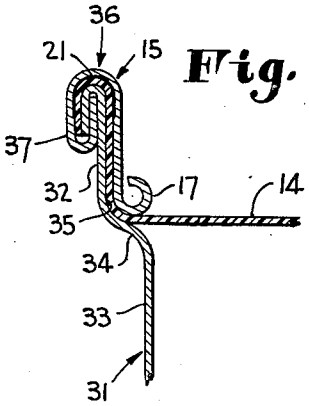


Fig. 5

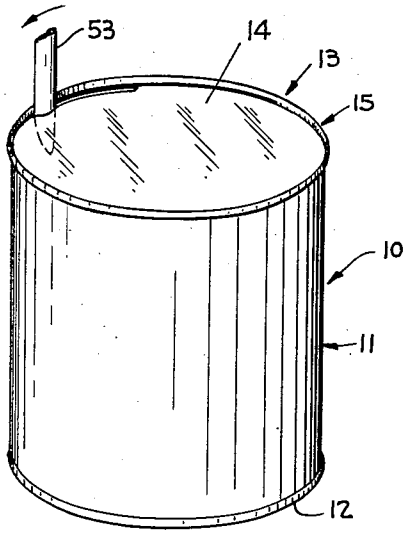


Fig. 1

JOHN HENCHERT
INVENTOR.

BY Mason, Porter, Miller & Turner

ATTORNEYS.

Feb. 26, 1963 J. HENCHERT 3,079,031

METAL BAND DOUBLE SEAMED TO METAL CAN FOR ATTACHING ELASTIC TRANSPARENT END THERETO

Filed Feb. 23, 1960 2 Sheets-Sheet 2

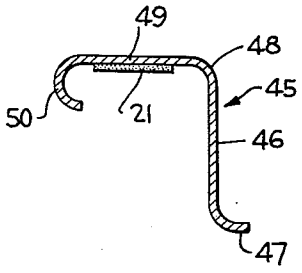


Fig. 6

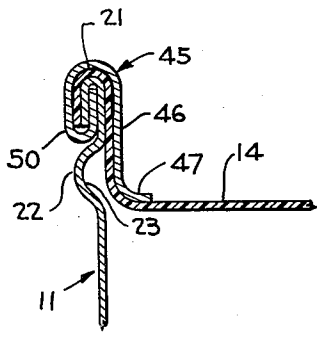


Fig. 7

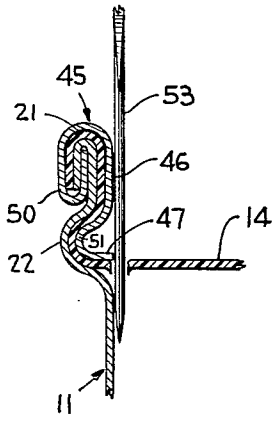


Fig. 8

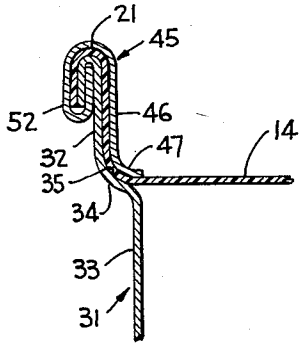


Fig. 9

JOHN HENCHERT
INVENTOR.

BY
Mason, Porter, Hilles & Stewart
ATTORNEYS.

United States Patent Office 3,079,031 Patented Feb. 26, 1963

3,079,031

METAL BAND DOUBLE SEAMED TO METAL CAN FOR ATTACHING ELASTIC TRANSPARENT END THERETO

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

Filed Feb. 23, 1960, Ser. No. 10,407
11 Claims. (Cl. 220—27)

This invention relates to new and useful improvements in container construction, and more particularly relates to a novel metal can having an elastic transparent end attached thereto by means of a metal band which is double seamed to the metal can.

In opening a can with a can opener, the can opener does not always sufficiently remove the can end disk so that the opening cut by the can opener is of the same cross-section as that of the can body. This is particularly true when hand types of can openers are utilized. As a result, it is often difficult to slide solidly packed foods, such as dog food, out of the can in bulk form.

In view of the foregoing, it is an object of the invention to provide a container wherein the upper end of the container body is outwardly offset, and the end wall of the container is formed of a readily severable material so that the end wall may have a disk removed therefrom corresponding to the cross-section of the container, and thus permit the ready removal of solidly packed products from the container.

Another object of the invention is to provide a novel can which includes a can body having one end thereof formed by a readily severable member which is retained in place by a ring, the ring being seamed to the can body and clamping the readily severable material to the can body in sealed relation, whereby the can has all of the advantages of conventional types of cans, and at the same time, may be easily opened by a knife or similar cutting element, thereby eliminating the necessity for special openers for the can.

Still another object of the invention is to provide a novel container construction which includes a container body having an end wall formed of a readily severable material, the readily severable material being secured to the container body in sealed relation by a retaining ring, with the readily severable material being disposed between the retaining ring and the container body, and the retaining ring being seamed to the container body, the retaining ring having an upper inner portion which is disposed flush with the inner surface of the container body so that the two, in cooperation with each other, function as a guide for a knife or other cutting implement to facilitate the severing of the readily severable material forming the end wall in such a manner that the container is completely opened at one end and compact products packaged therein may be removed through the open end of the container.

A further object of the invention is to provide a novel container end construction which includes a container body having an outwardly directed annular bead adjacent the end thereof, the bead defining an inner recess, an end wall of readily, severable, flexible material closing the end of the container, and a retaining ring engaged over and seamed to the end of the container body, with the end wall material clamped therebetween, the retaining ring having a lower portion which is forced outwardly into the recess defined by the bead as a last step in the end-forming operation so as to tension the end wall forming material.

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 perspective view of a can formed in accordance with the invention and having the end wall thereof removed by means of a knife, only the lower portion of the knife blade being illustrated.

FIGURE 2 is an enlarged vertical sectional view through a retaining ring used in securing the end wall forming material to the can body.

FIGURE 3 is an enlarged fragmentary vertical sectional view taken through the end of the can of FIGURE 1, after the retaining ring has been seamed to the can body.

FIGURE 4 is an enlarged fragmentary vertical sectional view similar to FIGURE 3, and shows the can as it appears after the lower portion of the retaining ring has been forced outwardly into the recess defined by the bead of the can so as to tightly stretch the end wall forming material across the open end of the can body.

FIGURE 5 is an enlarged fragmentary vertical sectional view similar to FIGURE 4, and shows a modified form of can end construction.

FIGURE 6 is an enlarged transverse sectional view through a modified form of retaining ring.

FIGURE 7 is an enlarged fragmentary vertical sectional view taken through a partially completed can end construction, the view being similar to FIGURE 3 but utilizing the retaining ring of FIGURE 6.

FIGURE 8 is an enlarged fragmentary vertical sectional view showing the completed can end construction of FIGURE 7 and a knife blade in position removing the central portion of the end wall of the can.

FIGURE 9 is an enlarged fragmentary vertical sectional view taken through the upper end of a modified form of can construction, the view being similar to FIGURE 5, but utilizing the retaining ring of FIGURE 6.

Referring now to the drawings in detail, a can formed in accordance with the invention is illustrated in FIGURE 1, the can being generally referred to by the numeral **10**. The can **10** includes a can body **11** having the lower end thereof closed by a can end **12** which is double seamed to the can body **11** in the customary manner. The upper end of the can body **11** is closed by a can end assembly, which is the subject of this invention, the can end assembly being generally referred to by the numeral **13**.

The can end **13** is formed of two separate components. These components are a can end forming member **14** and a retaining ring **15**, the retaining ring **15** being seamed to the upper end of the can body **11** and serving to secure the end wall forming member **14** to the can body **11** in sealed relation.

The initial shape of the retaining ring **15** is best illustrated in FIGURE 2. The retaining ring **15** initially includes a vertical flange **16** which terminates at its lower end in an inwardly and upwardly curving curl **17**, which curl is partially open. The flange **16** corresponds generally to the chuck wall of a conventional can end, and terminates at its upper end in a curved portion **18** which corresponds to the seaming panel radius. The retaining ring also includes an upper flange **19** which corresponds to the conventional seaming panel. The terminal end of the retaining ring **15** is in the form of the conventional curl **20**. If desired, sealing compound **21** may be disposed on the underside of the flange or seaming panel **19**.

In the form of the invention illustrated in FIGURES 3 and 4, the can body **11** is provided adjacent the upper end thereof with an outwardly directed bead **22** which defines an inner recess **23**, the surface of the recess **23** functioning as a seat in the manner to be described hereinafter.

In the forming of the can end assembly 13, the end wall forming member 14 is placed over the upper end of the can body 11 after the desired product has been packaged therein. The retaining ring 15 is then set in place, and the can 10 passes through a conventional double seaming machine. As a result, the retaining ring 15 is secured to the upper end of the can body 11 by the formation of a conventional double seam 24, with the outer part of the end wall forming member 14 being disposed within the seam between the retaining ring 15 and the can body 11. During the formation of the seam 24, the sealing compound 21 readily flows within the retaining ring 15 to form the necessary seal.

After the double seaming operation has been completed, the wall 16 remains vertically disposed and the curl 17 lies inwardly of the inner surface of the can body 11. Accordingly, subsequent to the double seaming operation, the lower portion of the wall 16 and the curl 17 are forced outwardly into the recess 23 at which time the formation of the curl 17 is completed. It is to be noted that in the outward movement of the curl 17, the end wall forming member 14 is drawn taut and is brought into engagement with the seat defined by the wall of the recess 23. At the same time, the bead 22 is reformed as the curl 17 is seated therein and the double seam is compacted so that the final relationship of the curl 17, the bead 22 and the double seam 24 is substantially as illustrated in FIGURE 4.

At this time, it is pointed out that the can body 11 may be of any conventional type. The retaining ring 15 is preferably formed of aluminum, although other materials may be utilized. The end wall forming member 14 is formed of a plastic material which may be readily stretched without breaking, cracking or affecting its appearance. It has been found that polyethylene sheet material is particularly satisfactory for the purpose. It is also desirable that the material from which the end wall forming member 14 is formed be transparent so that the contents of the can 10 may be viewed prior to opening.

In FIGURE 5, a modified form of can body 31 is illustrated. The can body 31 has an outwardly offset upper portion 32 which is connected to the main body portion 33 of the can body 31 by a reverse radius 34. The upper inner part of the reverse radius 34 defines a seat referred to by the numeral 35.

The can body 31 will have the lower end thereof closed by a conventional can end, such as the can end 12, the lower can end not being illustrated. The upper end thereof is closed by a can end assembly generally referred to by the numeral 36. The can end assembly 36 includes the retaining ring 15 and the end wall forming member 14. However, in forming the can end assembly 36, it is necessary that the end wall forming member 14 have the material thereof relatively tightly stretched at the time the retaining ring 15 is positioned in that there is no final outward movement of the lower portion of the retaining ring to stretch the material of the end wall forming member 14. The retaining ring 15 is secured to the upper end of the can body 31 in the normal seaming operation, with the retaining ring 15 being secured to the can body 31 by a conventional double seam 37. The curl 17 urges the material of the end wall forming member 14 against the seat 35.

It is to be noted that the inner surface of the curl 17 is disposed in alignment with the inner surface of the can body 33. Thus, like the can end assembly 13, all of the components of the can end assembly 36 are disposed outwardly of the inner surface of the can body 31.

Reference is now made to FIGURE 6, wherein a modified form of retaining ring 45 is illustrated. The retaining ring 45 includes an inner vertical flange 46 which is in the form of a chuck wall and which terminates at the lower end thereof in an inwardly directed curved portion 47. The upper end of the flange or chuck wall 46 terminates in a seaming panel radius 48 which, in turn, terminates in an outwardly directed horizontally disposed flange or seaming panel 49. The seaming panel 49 terminates in an inwardly and downwardly directed curl 50. If desired, the sealing compound 21 may be applied to the underside of the seaming panel 49. It is to be noted that the retaining ring 45 differs from the retaining ring 15 only in that in lieu of the curl 17, there is provided only a curved portion 47.

In FIGURE 7, the can body 11 is provided with the retaining ring 45 which secures in place the end wall forming member 14. In this view, the can end assembly is only partially completed, with the retaining ring being secured to the can body by a conventional double seam 50. This double seam is identical to the double seam 24 and the outer edge portion of the end wall forming member 14 is disposed between the retaining ring 45 and the can body 11 within the double seam 50.

After the retaining ring 45 has been double seamed to the can body 11, the lower portion of the chuck wall 46 is outwardly deformed and, together with the curved portion 47, defines an outwardly directed bead 51. The bead 51 corresponds generally to the bead 22 and is disposed within the recess 23. The bead 51, during its formation, forces the material of the end wall forming member 14 outwardly into tight engagement with the seat defined by the surface of the recess 23. During this operation, the seam 50 is moved outwardly slightly so that the inner surface of the chuck wall 46, the inner end of the curved portion 47, and the inner surface of the can body 11 are in alignment. At the same time, the material of the end wall forming member 14 is stretched taut across the open end of the can body 11, and the depth of the bead 22 is increased.

In FIGURE 9, the end wall forming member 14 is illustrated as being applied to the can body 31, utilizing the retaining ring 45. The retaining ring 45 is secured to the offset upper portion 32 of the can body 31 by means of a conventional double seam 52 which is identical with the double seam 37. In the formation of the double seam 52, the outer edge portion of the end wall forming member 14 is disposed between the retaining ring 14 and the can body 31 to provide an effective seal. As in the case of the can end assembly of FIGURE 8, when the double seam 52 is being formed, the sealing compound 21, when utilized, will flow throughout the seam and provide an effective seal between the end wall forming member 14 and the can body 31.

When the can end assembly of FIGURE 9 is being formed, it is necessary that the plastic material of the end wall forming member 14 be tightly stretched across the open end of the can body 31. When the retaining ring 45 is double seamed to the can body 31, the material of the end wall forming member 14 is disposed between the chuck wall 46 and the upper outwardly offset portion 32 of the can body 31. The curved portion 47 of the retaining ring 45 forces the material of the end wall forming member 14 against the seat 35. It is to be noted that the inner edge of the curved portion 47 is in alignment with the inner surface of the can body main portion 33.

Reference is now made to FIGURE 8 in particular, wherein a knife blade 53 is illustrated in the process of cutting away the main portion of the end wall forming member 14. In utilizing the knife blade 53, the upper part of the chuck wall 46, the terminal edge of the curved portion 47, and the inner surface of the can body 11 may be utilized as a guide. In this manner, a disk of the end wall forming member 14 may be removed with the cross-section of the disk corresponding exactly to the cross-section of the inner surface of the can body 11. By following this procedure, a simple readily-available implement, such as a knife, may be utilized for the purpose of opening the can 10, and when so opening the can, remove a portion of the can end which correponds to the cross-section of the can body so that tightly packed

products, such as dog food, for example, may be removed from the can as a unit. It is to be understood that corresponding portions of the can end assemblies of FIGURES 4, 5 and 9 will also function as suitable guides for a knife blade or other cutting implement.

It is also to be noted that by forming the end wall of the can body from a readily severable material, such as polyethylene, the can may be readily opened without the use of any special opener, which opener is not always available. Further, by forming the end wall of the can from polyethylene, which is transparent, the contents of the can may be viewed.

While the present invention has been described as being in the form of a can end assembly, it is to be understood that the end assembly may be used with other types of containers.

From the foregoing, it will be seen that novel and advantageous provision has been made for carrying out the desired end. However, attention is again directed to the fact that variations may be made in the examples disclosed herein without departing from the spirit and scope of the invention, as defined in the appended claims.

I claim:

1. In a container construction, a container body, a removable end wall closing one end portion of said container body, and a retaining ring securing said end wall to said container body, said one end portion of said container body being outwardly offset with respect to the main portion of said container body, said container body one end portion including an outwardly directed bead adjacent said container body main portion, said bead defining an inner recessed seat, said retaining ring having an arcuate cross sectional lower portion seated in said seat and clamping said end wall against said seat, and said retaining ring being disposed entirely outwardly of the inner surface of said container body main portion, whereby when said end wall is severed immediately adjacent to said retaining ring access to the interior of the container is free of obstructions.

2. The container construction of claim 1 wherein said arcuate cross sectional lower portion is in the form of an outwardly directed bead.

3. The container construction of claim 2 wherein said end wall is composed of resilient plastic material and is retained in a stretched state by the coaction between the lower outwardly directed bead of the retaining ring and the outwardly directed bead of the container body.

4. The container construction of claim 1 wherein said arcuate cross sectional lower portion is in the form of a curl.

5. The container construction of claim 4 wherein the removable end wall is composed of a resilient plastic material and is held in a stretched state between the outwardly directed bead of the container body and the lower portion curl of the retaining ring.

6. The container construction of claim 1 wherein said container body is in the form of a metal can body, said end wall is formed of a transparent plastic material, and said retaining ring is formed of aluminum.

7. The container construction of claim 1, wherein said end wall is composed of a resilient plastic material and said lower arcuate cross sectional portion of the retaining ring clamping said plastic end wall in a stretched state between said retaining ring and said outwardly directed container body bead.

8. A method of securing an elastic end to a can utilizing a metal band comprising the steps of providing a can having a flanged can body, placing the elastic end across the can body, positioning the metal band over the elastic end, seaming the metal band to the can body and clamping outer portions of elastic end therebetween, and after the completion of the seaming operation moving a lower inner portion of the metal band outwardly to tension the material of the elastic end.

9. A method of securing an elastic end to a can utilizing a metal band comprising the steps of providing a can having a flanged can body, the can body having an outwardly directed bead below the flange thereof and the lower inner end of the band terminating in a partially formed curl, placing the elastic end across the can body, positioning the metal band over the elastic end, seaming the metal band to the can body and clamping outer portions of elastic end therebetween, and then moving a lower inner portion of the metal band outwardly into the bead to tension the material of the elastic end together with the simultaneous completion of the curl.

10. The method as defined by claim 9 wherein the outwardly directed bead of the can body is further outwardly displaced during the moving of the lower inner portion of the metal band outwardly into contact therewith so as to outwardly displace the seamed connection between the flanged can body and the metal band.

11. In a container construction, a container body, a removable end wall closing one end portion of said container body, a retaining ring securing said end wall to said container body, said one end portion of said container body being outwardly offset with respect to the main portion of the container body, said container body one end portion including an outwardly directed bead adjacent said container body main portion, said bead defining an inner recessed seat, said retaining ring having an arcuate cross sectional lower portion seated in said seat and clamping said end wall against said seat, and said retaining ring being disposed entirely outwardly of the inner surface of said container body main portion with the most inwardly disposed portion of said arcuate cross sectional lower portion of the ring being generally aligned with the inner surface of said container body main portion and defining a guide for a severing tool to facilitate the removal of a central portion of said end wall.

References Cited in the file of this patent

UNITED STATES PATENTS

333,179	Walsh	Dec. 29, 1885
1,740,872	Pearson et al.	Dec. 24, 1929
2,022,780	Peters	Dec. 3, 1935
2,251,987	Conway	Aug. 12, 1941

FOREIGN PATENTS

209,056	Great Britain	Mar. 13, 1924
443,349	Great Britain	Feb. 26, 1936
458,541	Great Britain	Dec. 22, 1936