

Sept. 27, 1932.

A. G. HOPKINS

1,879,873

SHEET METAL CAN

Filed July 27, 1932

Fig. 1.

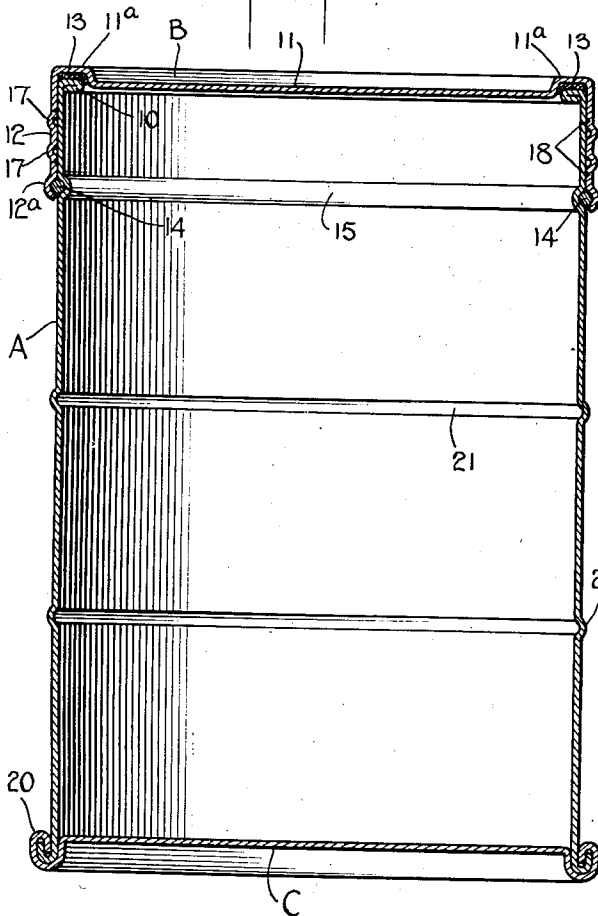


Fig. 2.

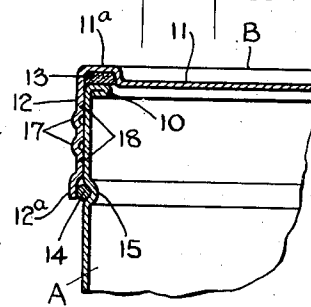


Fig. 4.

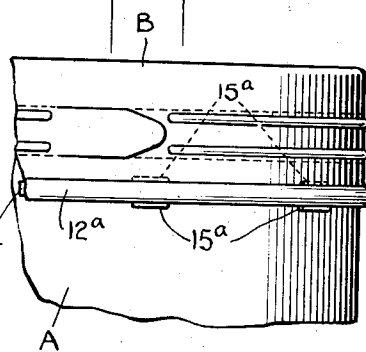


Fig. 5.

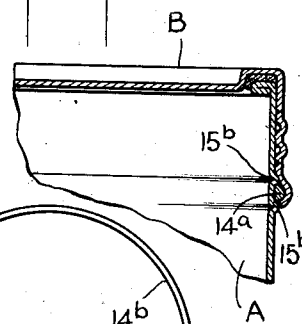


Fig. 3.

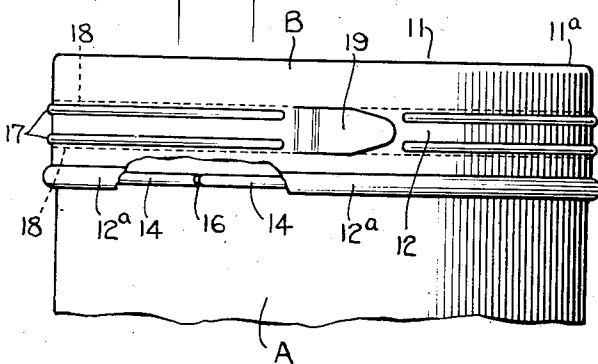
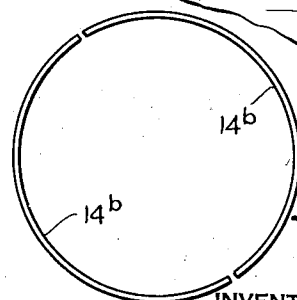


Fig. 6.



INVENTOR

Arthur G. Hopkins

BY

James & Franklin

ATTORNEYS

UNITED STATES PATENT OFFICE

ARTHUR G. HOPKINS, OF MASPETH, NEW YORK, ASSIGNOR TO METAL PACKAGE CORPORATION, OF NEW YORK, N. Y., A CORPORATION OF DELAWARE

SHEET METAL CAN

Application filed July 27, 1932. Serial No. 625,091.

This invention relates to metallic receptacles such as sheet metal cans, and relates more particularly to sheet metal cans of the air-tight or "vacuum" type provided with a tearing strip for opening the same.

The prime object of my present invention centers about the provision of an improved sheet metal can of the double closure and vacuum sealed type, one of the closures being provided with a tearing strip which when removed leaves a slip cover adapted for use with the can until the contents have been consumed.

In my copending application Serial No. 463,411 to sheet metal can filed June 24, 1930, I disclose an improved vacuum can of this type comprising a can body having a top edge and a formed circumferential bead located a short distance from said top edge and protruding outwardly from the side of the can body, and a can top cooperating therewith and consisting of a cover wall adapted to mate with or fit onto the top edge of the can body and a depending wall having a bottom edge which is rolled together into a permanent lock seam joint with the said formed circumferential bead of the can body whereby the cover wall and the top edge of the can body are forced into close and sealing engagement; the depending wall of the can top is also provided with a plurality of weakened lines defining a tear strip, which tear strip when removed leaves a slip cover for the can. This forms one of the closures of the can, the other closure comprising a can bottom which may be lock seamed to the bottom edge of the can body, and which said closure is preferably attached in position after the can has been filled with its contents.

I have found that the process of manufacture of this sheet metal can may be greatly facilitated and rendered more economical, to produce, moreover, an improved sheet metal can structure, by providing for the formed circumferential bead of the can body an anchoring element preferably in the form of a ring separate from the can body, which anchoring element is seated in or onto the can body in the position occupied by the bead, the depending wall of the can top being anchored

to said anchoring element for effecting the sealing engagement between the can body and the can cover. By this means I am enabled to eliminate a number of forming operations required to form the said circumferential bead and a number of other forming operations required to mate the bottom edge of the depending wall of the can cover with the said bead. Moreover, by virtue of the anchor or hold provided or presented by the anchoring element or ring, a more effective seal is produced between the top edge of the can body and the cover wall of the can top. I have also found that this seal may be even further improved by forming the top of the can body into a flat edge and by providing in the cover wall a flat annular part which holds the sealing medium and which is adapted to mate with the said top flat edge of the can body. The making of these improvements constitutes the prime object of the present invention.

To the accomplishment of the foregoing and such other objects as will hereinafter appear, my invention consists in the sheet metal can elements and their relation one to the other, as hereinafter more particularly described in the specification and sought to be defined in the claims. The specification is accompanied by drawing, in which:

Fig. 1 is a cross-sectional elevational view of the sheet metal can of the present invention in completed assembly,

Fig. 2 is a cross-sectional fragmentary view showing the relation of parts of the can prior to anchoring the top closure to the can body,

Fig. 3 is an elevational view of the part of the can body shown in Fig. 2 and showing the exterior appearance thereof, and particularly of the tearing strip employed, and

Figs. 4 to 6 are views showing modifications.

Referring now more in detail to the drawing, the sheet metal can is of the type comprising a can body A, a top closure generally designated as B, and a bottom closure generally designated as C, both top and bottom closures being attached or joined to the can body without the use of soldered seams to

provide a perfectly air-tight can structure suitable for use as a vacuum container.

The body A preferably consists of a single sheet of metal suitably formed to give the can the desired configuration, which in the present case is cylindrical; and the mouth or upper edge 10 of said can body is preferably curled and crimped to form a top sealing surface, which surface is preferably made substantially flat, as clearly shown in the drawing. The closure or can top B comprises a cover wall 11 and a depending wall 12 having a slip or engaging fit over the top of the can body, the said cover wall 11 being preferably dished so as to provide a marginal annular portion 11^a also desirably flat so as to cooperate with the flat edge 10 of the can body and which annular portion forms a recess for a sealing medium or compound 13. In the assembling of these parts, requisite pressure is applied to the closure B to insure a perfect seal between the flat sealing edge 10, the sealing compound 13 and the recess formed by the annulus 11^a, Fig. 2 of the drawing showing the parts prior to the application of pressure, and Fig. 1 showing the relation of the parts after pressure has been applied and the parts locked together by the means to be described presently.

To lock the parts in the assembled relation shown in Fig. 1, I provide a separate anchoring element which in one of its simplest aspects consists of a wire ring 14 which may be slipped onto the can body into a seating means located a short distance below the top edge of the can body, which seating means in one of its simplest aspects may consist of an inwardly directed circumferential groove 15. To permit the wire ring to be readily slipped onto the can body, the same may comprise a split ring, indicated at 16 in Fig. 3 of the drawing. The ring when seated defines an outwardly directed bead around the smooth surface of which appropriate parts of the depending wall 12 of the can closure may be readily anchored. Preferably the depending wall 12 is made of a height such that the lower edge portion 12^a thereof overlies the anchoring ring 14 when the can top or closure is applied to the can body, as shown in Fig. 2, and such that when the requisite pressure is applied to the closure the said lower edge 12^a of the depending wall underhangs the anchoring ring 14 in position to be readily curled or crimped around and beneath and thus anchored to the ring, as clearly shown in Fig. 1 of the drawing. The forming operations for producing the anchoring means on the can body and for producing the locking of the closure to the can body are thus rendered extremely simple and a close fitting and tight seal at the upper edge of the can is assured.

The can closure A is preferably provided with a tear or rip strip located intermediate the anchoring element and the top edge of

the can body, and desirably embodies the rip strip construction set forth and claimed in my copending application filed concurrently herewith, Serial No. 625,090. The rip strip comprises a section integral with the depending wall 12 formed by the parallelly arranged and outwardly struck beads 17, 17 and the score lines 18, 18, the beads 17, 17 being arranged preferably within but closely adjacent to the score lines 18, 18. These beads serve to greatly stiffen and strengthen the rip strip by reason of the channel effect created thereby, the beads also acting as guides or tracks when rolling up the rip strip, thereby constraining the rip strip to roll up in a smooth, straight and even manner. The said rip strip is provided with a tab 19 which may be if desired (but need not be) sealed against leakage, the said tab being adapted to receive a winding or rip strip key of the conventional type. When the rip strip is torn or removed from the can, the anchoring elements 12^a, 14 and 15 remain on the can in permanent locked relation, while the remaining part of the closure A forms a slip cover for the can.

The bottom and filling closure C of the can is of the conventional type, the same being lock seamed at the bottom edge of the can body, as at 20, in a manner well known to the art. The can body may also be provided with intermediate circumferential beads 21, 21 for strengthening purposes, it having been found desirable to use such strengthening beads in the can construction of the present invention, since I have found that in the use of cans embodying the present invention, very high vacuums may be effected.

The sheet metal can of the present invention is attended with many advantages in can manufacture and in the use of the resulting product. It will be noticed that the removal of the rip strip does not in any way alter the height of the can or container. The upper portion of the can is held rigid due to a number of contributing causes. The extreme upper edge of the can has a curled and crimped portion of a double thickness of metal which strengthens the said edge to a marked degree. The upper section of the can is also stiffened by virtue of the encircling wire ring 14 and its seating bead 15. The upper portion of the can body is thus rendered very rigid and as a result will maintain a close cooperating fit with the can closure. The can closure is also rigid due to its configuration, due also to the rip strip beads 17, 17, and due further to the anchoring engagement of the lower edge of the closure with the anchoring ring 14. Due to this rigidity and strengthening of the closure, it also maintains a close cooperating fit with the rigid upper portion of the can body. In view of the fact that a substantially perfect seal is produced at the upper end of the can, combined with the conventional double seam at the lower end of the

can, it is apparent that no soldered seams are necessary. When the rip strip is removed, the upper section of the can body still retains its rigidity due now not only to the factors mentioned, but also to the permanently anchored lower edge 12^a of the can closure. The cans may be manufactured in large quantities at a very low cost due to the simplified processing steps used in the manufacture thereof.

The simplified processing permits the can bodies to be made without unduly stressing or straining the material thereof, since the seating groove 15 may be shallow and requires no special formation. By means of the present invention, rip strip cans of various odd cross-sectional shapes may be made such as elliptical, square shaped and the like, such odd shapes being difficult to make where the can has to be specially formed to produce anchoring elements integral therewith; the use of separate anchoring elements as herein set forth permits these odd shaped can structures to be readily manufactured.

In Figs. 4 to 6 I show a number of possible modifications that may be made in the structure of the anchoring means. In Fig. 4 the seating groove 15 is replaced by a plurality of spaced protruding nibs 15^a in which the separate wire ring is seated. In Fig. 5 the seating means is formed by two small parallel beads 15^b, 15^b and the separate anchoring element is formed by a wire 14^a substantially semi-circular instead of circular in cross-section. Thus the inwardly directed groove may be eliminated, and only that outward protrusion provided which is serviceable for anchoring purposes. In Fig. 6 there is shown a ring made up of two parts (and which may be made of more than two parts) instead of a split ring, the parts of which ring may be received by such nibs 15^a, 15^a of Fig. 4 with a forced fit.

It will be apparent that while I have shown and described my invention in the preferred form, many changes and modifications may be made in the structure disclosed without departing from the spirit of the invention, defined in the following claims.

I claim:

1. A sheet metal can comprising a can body having a top edge and provided with seating means located a short distance below said top edge, a separate anchoring element held by said seating means, a can top consisting of a cover wall adapted to fit onto and make sealing engagement with the top edge of the can body and a depending wall having a part overlying said anchoring element, and means in said overlying part of said depending wall anchored to said anchoring element for holding the said cover wall and top edge of the can body into mutual close and sealing engagement, and the depending wall of said can top being provided with a plurality of weakened lines defining a tear strip, said tear

strip being located intermediate the anchoring element and the top edge of the can body.

2. A sheet metal can comprising a can body having a top edge and provided with an inwardly directed groove located a short distance below said top edge, an anchoring ring seated in said groove and defining an outwardly directed bead, a can top consisting of a cover wall adapted to fit onto and make sealing engagement with the top edge of the can body and a depending wall having a bottom edge overlying said anchoring ring, said bottom edge being rolled under and anchored to said anchoring ring when the can top is forced into closure position whereby the said cover wall and top edge of the can body are locked into mutual close and sealing engagement, and the depending wall of said can top being provided with a plurality of weakened lines defining a tear strip, said tear strip being located intermediate the anchoring ring and the top edge of the can body.

3. A sheet metal can comprising a can body having a mouth, said body having such formation as to provide a seating means below said mouth, a separate rigid anchoring element held by said seating means, a can top consisting of a cover wall adapted to fit onto and make sealing engagement with said mouth of the can body and a depending wall engaging the wall of the can body having a part overlying said anchoring element, means in said overlying part of said depending wall shaped onto and beneath and anchored to said anchoring element, the said depending wall between the anchoring element and said mouth being under tension by virtue of the action of the anchoring element against its seating means and the anchoring of said depending wall part to the anchoring means, and means in said can top separated from said anchoring element for severing the can top from the can body.

4. A sheet metal can comprising a can body having a mouth, said body having such formation as to provide a seating means below said mouth, an anchoring ring held by said seating means, a can top consisting of a cover wall adapted to fit onto and make sealing engagement with said mouth of the can body and a depending wall engaging the wall of the can body and having a part overlying said anchoring ring, a sealing medium interposed between said mouth and the said cover wall of the can top, means in said overlying part of said depending wall shaped onto and beneath and anchored to said anchoring ring, the said sealing medium being compressed by virtue of the action of the anchoring ring against its seating means and the anchoring of said depending wall part to the anchoring ring, and means in said can top separated from said anchoring ring for severing the can top from the can body.

5. A sheet metal can comprising a can body having a top edge and provided with seating means located a short distance below said top edge, a separate anchoring element held by said seating means, a can top consisting of a cover wall adapted to fit onto and make sealing engagement with the top edge of the can body and a depending wall having a part overlying said anchoring element when the can top is placed in closure position, means in said overlying part of said depending wall adapted to be shaped onto and anchored to said anchoring element for holding the said cover wall and top edge of the can body in mutual close and sealing engagement, and means in said can top separated from said anchoring element for severing the can top from the can body.

Signed at New York in the county of Kings and State of New York, this 26th day of July, A. D. 1932.

ARTHUR G. HOPKINS.