April 16, 1940. C. E. McMANUS ET AL 2,197,434

CONTAINER

Filed Feb. 26, 1937

Fig. 1.

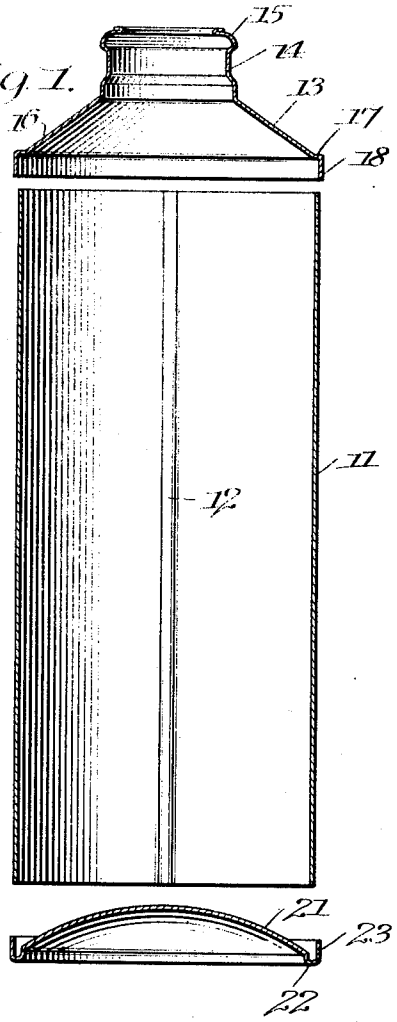


Fig. 2.

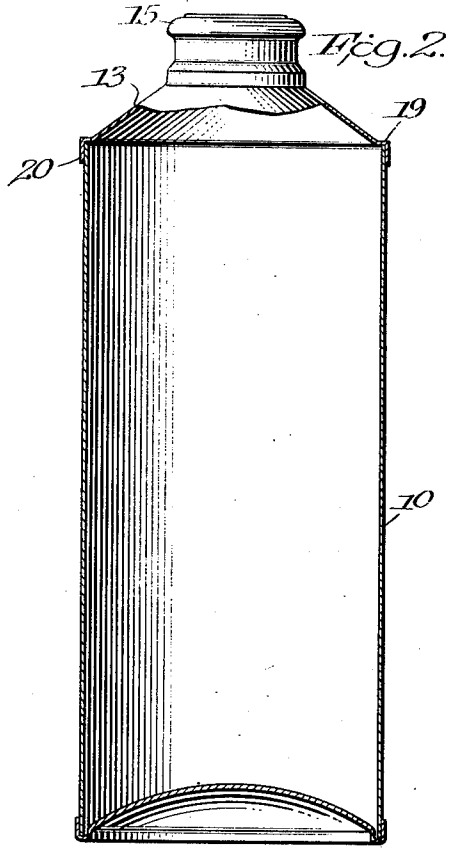


Fig. 3.

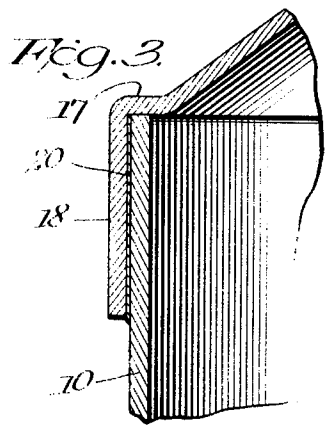
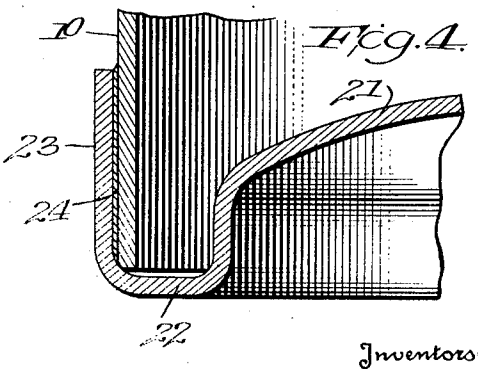


Fig. 4.



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CONTAINER

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Application February 26, 1937, Serial No. 127,982

1 Claim. (Cl. 220—1)

This invention relates to containers of the type having a small opening or pouring mouth at one end adapted to be closed by a detachable cap.

The container is preferably made of sheet metal and is cylindrical with a conical top terminating in a neck provided with a cap receiving finish. The cap or closure for the can is preferably of the crimped or crown type.

One feature of the invention resides in the elimination of the usual folded type of seam for uniting the top or bottom to the container body. Instead, the top or bottom is formed with a flange having an overlapping fit with the adjacent wall of the container body and the overlapped portions are soldered together.

A construction of this character lends itself to large scale production by automatic machinery in which the top and bottom are simultaneously applied to the can body and the assembly then soldered. However, with a conical top there has frequently resulted a curling in of the adjacent sealing edge of the body due to the contact of the inclined wall of the top with the straight wall of the body under the axially applied assembly pressure. This is not conducive to a tight joint and has caused numerous rejects. Also, this curling in causes the engagement of the top and body to be irregular, throwing the can off center in the assembly machine, and thus produces a non-uniform engagement of the bottom with the body.

It is the purpose of this invention to overcome these difficulties and to also produce a can to which may be applied a crown or crimped cap by the usual automatic crowning machinery without danger of collapsing the top due to the high crowning pressures.

To this end, we reduce the diameter of the base of the conical top slightly and between the base of the cone and the vertical attaching flange of the top there is formed a horizontally extending portion integrally uniting the said flange and cone. This horizontal or flat ring-like portion is of a width substantially equal to or slightly greater than the thickness of the metal of the top edge of the body. The laterally extending intermediate ring-like portion on its underface contacts with the upper edge of the body, and avoids the previous objection of curling of the upper edge of the body. Moreover the flat ring-like horizontal extension of the cone being relatively narrow, transmits the assembly strains and the crowning strains directly to the body and avoids any possibility of collapse or downward movement of the top within the body. As to the latter, it is important to observe that where a fold or conventional type of seam is used for uniting a conical top with the body, it is practically impossible to form a seam without having a groove about the periphery of the cone which is objectionable from the standpoint of weakening the can in the presence of crowning pressures. Moreover, such a construction presents the further difficulty of assembly in that it is necessary to have an internal presser member as well as an external presser member in order to form a satisfactory folded seam. The present invention obviates both of these objections and affords a container which is strong, leakproof, and may be easily assembled.

We have illustrated in the accompanying drawing a preferred embodiment of the invention, but it is to be understood that the construction illustrated may be changed and modified without departing from the spirit of the invention.

Referring to the drawing wherein we have illustrated one embodiment of the invention:

Figure 1 is a plan view showing the parts of the container ready to be assembled.

Figure 2 is a sectional view showing the can body assembled.

Figure 3 is a detail sectional view showing the manner in which the top is secured to the body; and

Figure 4 is a detail sectional view showing the manner in which the bottom is secured to the body.

Referring to Figures 1 and 2, the container is formed of sheet metal and is indicated as a whole at 10, and includes a body 11 whose edges are seamed together in a conventional manner as shown at 12 to form an open ended cylinder. The top is indicated as a whole at 13 and includes the neck 14 provided with a cap receiving finish, preferably for receiving a crown or crimped cap as shown at 15. The body 13 of the top is inclined as shown and is preferably conical as indicated at 16. At the base of the cone 16, the metal of the cap extends outwardly substantially horizontally to form a ring-like flattened portion or area 17. This area is of relatively narrow dimension as shown. Integral with the flattened ring-like area 17 is a downwardly extending circular attaching flange 18.

Referring to Figure 3, when the top 13 is assembled upon the body 11, the undersurface of the ring-like area 17 abuts and is supported by

the top edge of the body 11. It will be noted that the lateral area of the ring-like portion is substantially equal to the thickness of the metal of the body 11. By this construction all opportunity for curling inward of the upper edge portion of the body is avoided since there is a flat bearing contact between the undersurface of the ring 17 and the top edge of the body. Such a flat surface contact enables the assembly and crown applying pressure to be transmitted uniformly and along lines paralleling the container wall thereby avoiding any tendency to distort or curl the upper edge of the can body.

Referring again to Figure 3, it will be noted that when the top is applied to the body, that the downwardly extending flange 18 overlies the adjacent upper portion of the body to which it is soldered or otherwise secured as shown at 20. It will be noted that the conical portion 13 of the top is at all times above the plane of the flattened ring-like area 17 and the flange 18 so that not only is the assembly pressure uniformly transmitted to produce the surface contact between the ring-like area and the upper edge of the body, but in the completed can, the crowning pressures will be directly transmitted to the body 11, and there will be no force tending to cause body portion 13 to collapse at its upper edge into the body when a cap is applied. That is to say, the present construction assures a properly assembled can and one which will possess the necessary strength to resist the high crowning pressures encountered with automatic capping machinery.

The bottom of the container is indicated at 21, it being preferably arched as shown and having a peripheral groove 22 and an upwardly extending attaching flange 23 which overlaps the outside bottom edge of the container as shown in Figure 4. The overlapping portions are secured together in any suitable manner, preferably by soldering 24. In some cases, the bottom will be integral with the body of the container.

In assembling a container of the present type, it is customary for large scale production to apply the bottom 21 and the top 13 simultaneously to the body 11. By reason of the construction of the top which includes the ring-like area 17, curling in of the top edge of the body is avoided so that not only is the top uniformly applied to the body, but it remains centered in the assembly machine whence the bottom likewise is uniformly applied. This is important, not only in preserving the desired appearance of the can, but particularly in assuring that the can will have the desired strength and be positively leakproof.

While we have illustrated a cylindrical type of metal container or can, it is to be understood that the construction may be modified in connection with containers of various shapes. Also, while the invention is particularly useful in connection with metal containers, it is applicable also to containers made of other materials.

In referring herein to the lateral dimension of the ring-like area 17 as being substantially equal to the thickness of the metal of the top edge of the can, we mean that the dimensional area of the ring 17 is equal to or sufficiently greater than the metal thickness of the top edge to afford the proper face to face contact, whereby curling in of the top edge of the body is avoided under assembly pressure and collapse of the top within the body is prevented under crowning pressures.

We claim:

A container for sealing high pressure beverages such as beer by the use of a crown type closure applied to the container under normally high, vertical crowning pressure, said container comprising a sheet metal cylindrical body, a bottom end member, and an upper end member secured to the upper end of the can body, said upper end member comprising a neck having an inwardly extending, upwardly facing surface positioned for cooperation with the sealing pad of a crown closure, an outwardly projecting shoulder under which the skirt of the closure may be crimped, and a lower portion forming with said shoulder a circumferential groove, said upper end member further comprising a frusto-conical portion joined integrally at its upper end to the lower end of the aforesaid lower portion and being characterized by the absence of reinforcing corrugations and the like and terminating at its lower end in a narrow, outwardly projecting, substantially horizontal, annular flange overlying and abutting the upper edge of the cylindrical body, and a downwardly projecting, vertically disposed, cylindrical flange at the outer margin of the horizontal flange, the cylindrical flange being disposed exteriorly of and closely embracing the upper end of the cylindrical can body, the lower end of said frusto-conical portion terminating above and substantially adjacent the upper end of the body, said horizontal flange serving as a means to transmit to the end of the body vertical components of force resulting from vertical crowning pressure applied to the upper end of said neck and transmitted thereto by the frusto-conical portion, and said cylindrical flange serving as a reinforcing element to withstand horizontal components of force resulting from said crowning pressure and transmitted to the end of the can and the circumference of the end member by said frusto-conical portion.

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