Dec. 6, 1955 R. G. ATKINSON 2,726,008

CONTAINER WITH SOLDERLESS FULL LOCK SIDE SEAM IN END SEAM

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Fig. 1

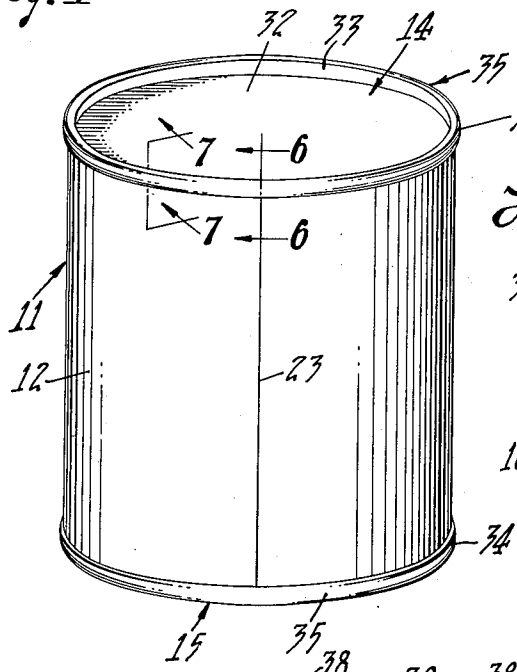


Fig. 2

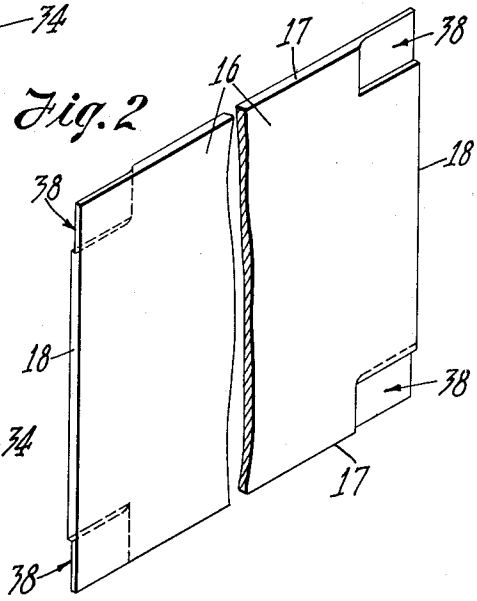


Fig. 3

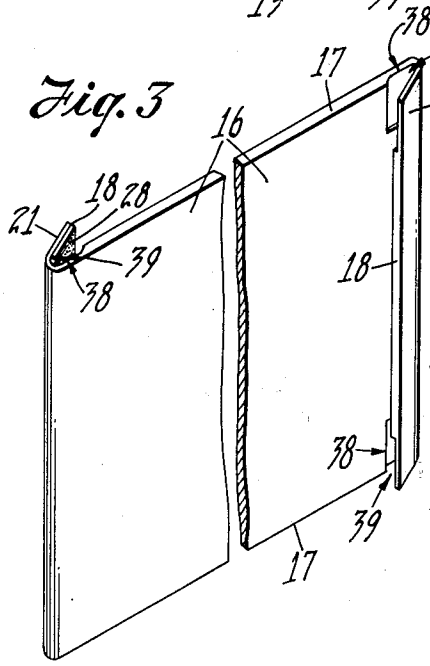


Fig. 5

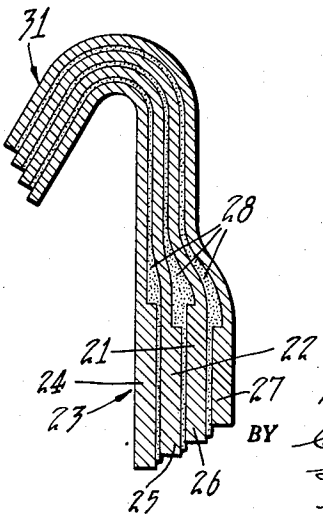
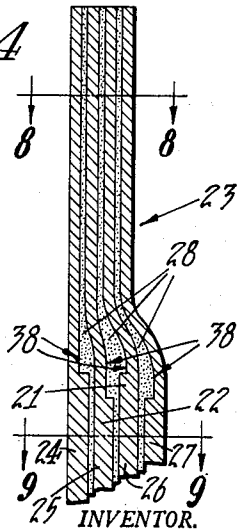


Fig. 4



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Fig. 6

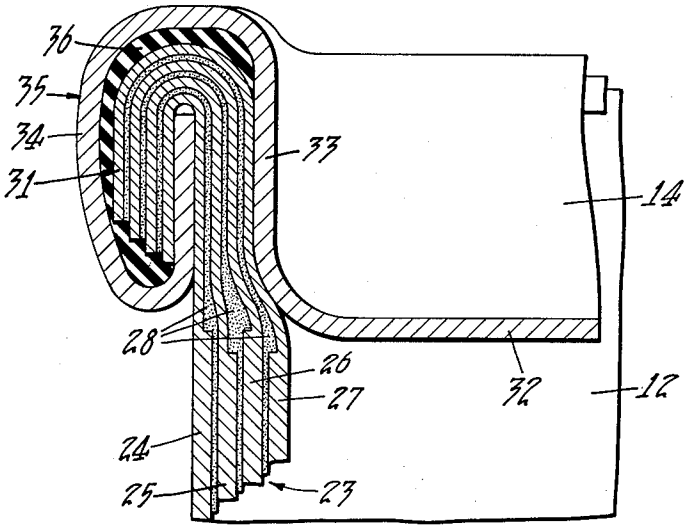


Fig. 8

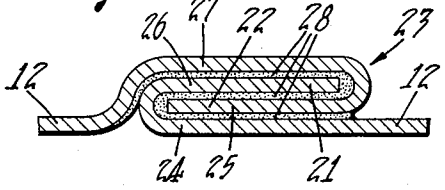


Fig. 9

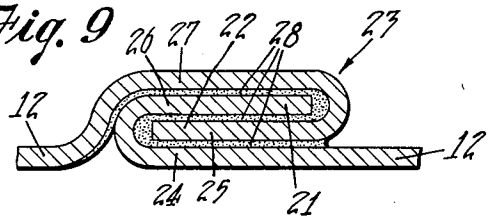
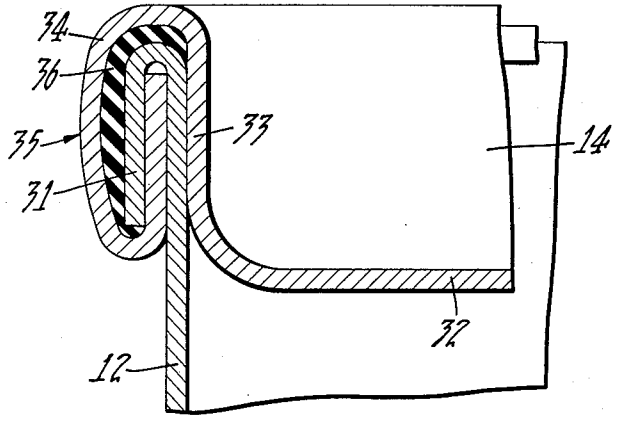


Fig. 7



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CONTAINER WITH SOLDERLESS FULL LOCK SIDE SEAM IN END SEAM

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Application April 23, 1953, Serial No. 350,568

3 Claims. (Cl. 220—77)

The present invention relates to sheet metal containers or cans having solderless side seams and has particular reference to such cans having full lock seams which at their ends are reduced in thickness for incorporation in the end seams which secure the end closures to the can body.

An object of the invention is the provision in a sheet metal can of a solderless hermetic side seam wherein the seam extends for the full length of the can body and is of the full lock or interfolded variety for its entire length right into the end seams to provide maximum strength to the seam area of the body.

Another object is the provision of such a can wherein the terminal end portions of the lock side seam are reduced in thickness to overcome excessive bulk in the end seam folds while retaining the full lock feature to the terminal ends of the seam so that the ends of the side seam can be readily flanged and incorporated in interfolded end seams, which unite the end closure members to the body, without in any manner adversely affecting the formation of end seams which are proper and hermetic.

Numerous other objects and advantages of the invention will be apparent as it is better understood from the following description, which, taken in connection with the accompanying drawings, discloses a preferred embodiment thereof.

Referring to the drawings:

Figure 1 is a perspective view of a sealed sheet metal can embodying the instant invention;

Figs. 2 and 3 are perspective schematic views illustrating the body blank from which the body of the can in Fig. 1 is made, Fig. 3 showing the side seam marginal edge portions of the blank bent into side seam hooks, parts of the blanks being broken away;

Figs. 4 and 5 are enlarged fragmentary longitudinal sections through the upper portion of the side seam of a can body made from the blank shown in Figs. 2 and 3, Fig. 4 showing the seam before flanging of the body and Fig. 5 showing the same seam after flanging;

Figs. 6 and 7 are enlarged vertical sectional views of the end seams of the can shown in Fig. 1, the views being taken substantially along vertical planes indicated by the lines 6—6 and 7—7 respectively in Fig. 1, portions of the can being broken away; and

Figs. 8 and 9 are transverse sectional views through the side seam of the can shown in Fig. 1, the views being taken substantially along the lines 8—8, and 9—9 in Fig. 4.

As a preferred or exemplary embodiment of the invention the drawings illustrate a cylindrical container or can 11 (Fig. 1) comprising a one-piece tubular sheet metal body 12 and sheet metal top and bottom closures or end closures 14, 15.

The can body 12 is made from a one-piece flat blank 16 (Fig. 2) of substantially rectangular configuration defined by horizontal edges 17 and vertical side seam edges 18. The marginal edge portions adjacent the side seam edges 18 are reversely bent for the full height of the

blank as shown in Fig. 3 to produce a pair of reversely disposed side seam hooks 21, 22 which are interfolded as shown in Figs. 8 and 9 to provide a full lock side seam 23 having four thicknesses or layers 24, 25, 26, 27 of body material hermetically bonded together with a cement 28 interposed between the layers. The open ends of the body are provided with conventional outwardly and downwardly turned flanges 31 (Figs. 6 and 7) to receive and permanently unite the top and bottom closures 14, 15 to the body.

The top and bottom closures 14, 15 preferably are similar in construction and comprise a countersunk panel wall 32 (Figs. 6 and 7) surrounded by an upright side wall 33 which fits within the open end of the can body and engages tightly against the inner face of the body side wall. The upright wall 33 of the closures merges into a flange 34 which extends over and is interfolded around and under the flanges 31 of the body in a conventional double end seam 35. A sealing compound 36 interposed between the interfolded flanges 31, 34 is utilized to render the end seams 35 fully hermetic.

At the side seam 23 of the body 12, the four fully locked or interfolded layers 24, 25, 26, 27 of the seam extend into and along the body flange 31 to its outer peripheral edge as best shown in Figs. 5 and 6 and are interfolded with the flanges 34 of the top and bottom closures 14, 15 for permanent incorporation in the end seams 35 as shown in Fig. 6. In order to reduce the bulk of these four layers of body material where they extend into the end seams 35, the portions of the side seam 23 which are incorporated in the end seams 35 are reduced to substantially one half their thickness so that in fact they are equal substantially to two thicknesses of body material although they still comprise four layers (see Fig. 8). Thus the reduced thickness seam retains the full lock construction but is of a thickness comparable to the conventional lap seam section usually provided for incorporation in the end seams of cans.

This reduction in thickness at the ends of the side seam 23 is effected by reducing the thickness of each of the four layers to substantially one half of their original thickness. This reduction preferably is made in the flat blank 16 before the blank is formed into a can body 12. For this purpose the corner portions of the blank 16 (see Figs. 2 and 3) are reduced in thickness to substantially one half the thickness of the blank, to provide reduced corner areas 38. These corner areas 38 extend inwardly from the longitudinal vertical side seam edges 18 for a distance equal substantially to twice the width of the side seam 23, and extend inwardly from the transverse horizontal body edges 17 for a distance equal substantially to twice the width of the end seams 35. These reduced corner areas 38 may be produced in any suitable manner, as by cutting away the material of the blank or by swedging or rolling or other appropriate means.

It should be observed that as shown in Fig. 2 the corner areas 38 along one side seam edge 18 of the blank 16 are disposed on one face of the blank while the corner areas along the other side seam edge 18 are disposed on the opposite face of the blank. Thus when the side seam hooks 21, 22 are formed the reduced corner areas 38 are substantially folded in half as best shown in Fig. 3 and a pocket 39 is provided in the ends of the side seam hooks 21, 22 for the better distribution of the cement 28 between the seam layers when the seam is formed and bumped.

Hence when the side seam 23 is formed in the body 12, the reduced corner areas 38 permit the four layers of body material at the opposite longitudinal ends of the seam to be compressed into a seam thickness of substantially half the thickness of the remaining or intermediate portion of the seam, and hence these reduced thickness

end portions may be readily incorporated in the end seams 35 without any detrimental effects while still retaining the full lock construction of the side seam to its terminal ends.

It is thought that the invention and many of its attendant advantages will be understood from the foregoing description, and it will be apparent that various changes may be made in the form, construction and arrangement of the parts without departing from the spirit and scope of the invention or sacrificing all of its material advantages, the form hereinbefore described being merely a preferred embodiment thereof.

I claim:

1. A hermetic sheet metal container, comprising in combination a tubular body having a solderless fully locked side seam, and a closure member secured to an end of said body by an interfolding of flange parts on the body and on the closure member to produce an end seam, said body side seam comprising a plurality of interfolded hooks on said body bonded together with a cement and extending the entire length of the body including its flange parts with the adjacent end portions of said hooks incorporated in the closure member end seam, said end portions of said interfolded side seam hooks included in said end seam being of reduced thickness to constitute substantially one half the thickness of the remainder of the side seam.

2. A hermetic sheet metal container, comprising in combination a tubular body having a solderless fully locked side seam, and top and bottom closures secured to the ends of said body by an interfolding of flange parts on the body and on the closures to produce an end seam,

said body side seam comprising a plurality of integral interfolded hooks on said body bonded together with a cement and extending the entire length of the body including its flange parts, the opposite end portions of said hooks being incorporated in the closure end seams, each of the interfolded hook portions of said side seam included in said end seams being of reduced thickness to constitute substantially one half of its thickness in the remaining intermediate portion of the side seam to facilitate incorporation of said side seam in said end seams.

3. A hermetic sheet metal container, comprising in combination a tubular body having a solderless fully locked side seam, and top and bottom closures secured to the ends of said body by an interfolding of flange parts on the body and on the closures to produce end seams, said body comprising a one-piece flat rectangular blank the corners of which are reduced in thickness to substantially one half of the remaining blank thickness, said body side seam comprising a plurality of interfolded hooks on said body bonded together with a cement and extending the entire length of the body including its flange parts with the opposite end portions of said hooks incorporated in the closure end seams, said end portions of said side seam hooks including said reduced corner areas to reduce the thickness of said side seam hooks in said end seams.

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