Aug. 7, 1962 T. P. GARDNER 3,048,300

REINFORCED SIDE SEAM CONSTRUCTION FOR LARGE CAPACITY CANS

Filed July 2, 1958 2 Sheets-Sheet 1

Fig. 1.

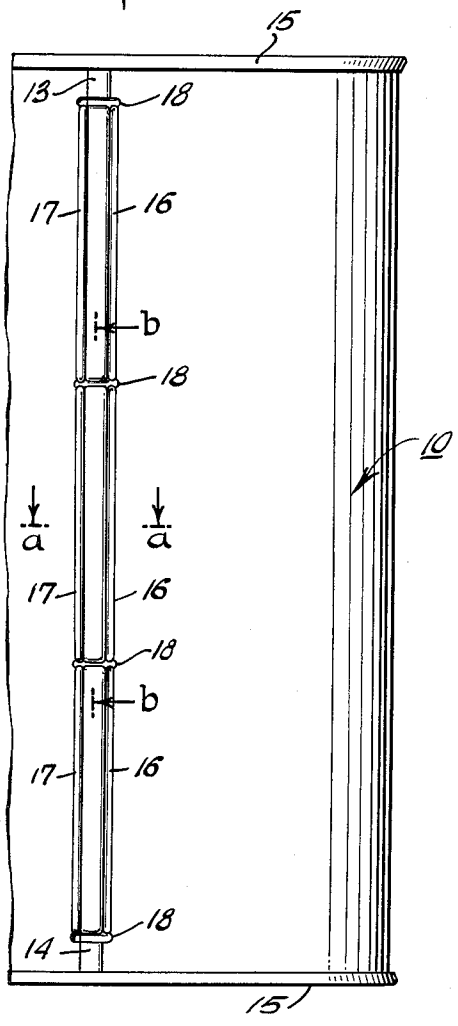
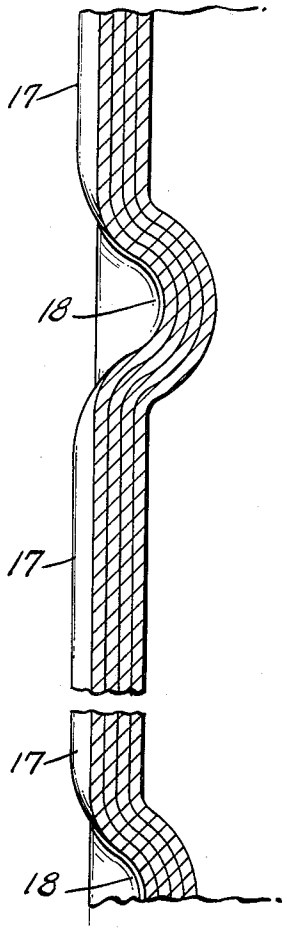


Fig. 2b.



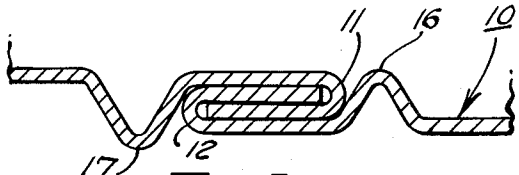


Fig. 2a.

Aug. 7, 1962 T. P. GARDNER 3,048,300

REINFORCED SIDE SEAM CONSTRUCTION FOR LARGE CAPACITY CANS

Filed July 2, 1958 2 Sheets-Sheet 2

Fig. 3a.

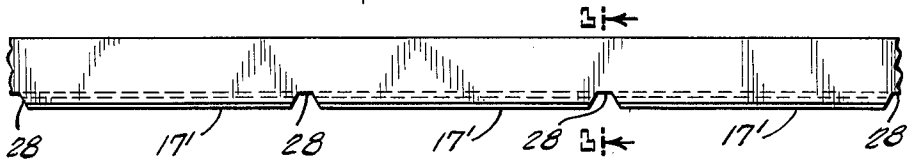


Fig. 3b.

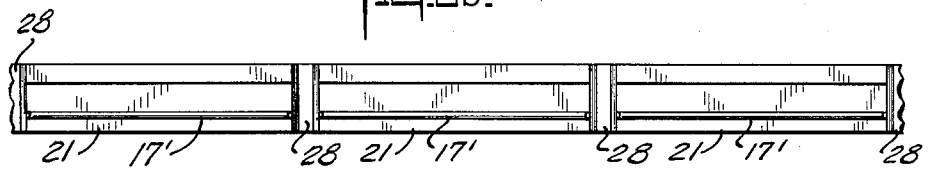


Fig. 4b.

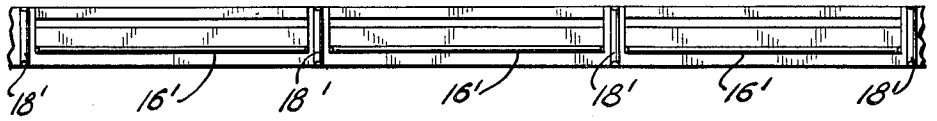


Fig. 4a.

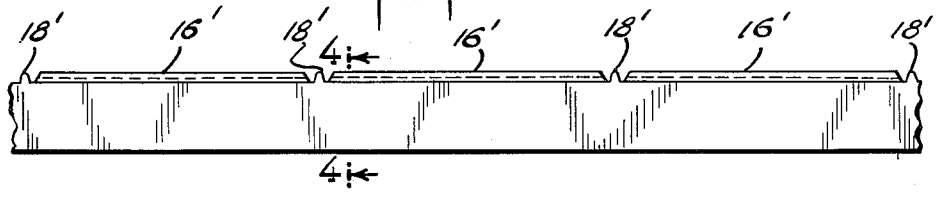


Fig. 3c.

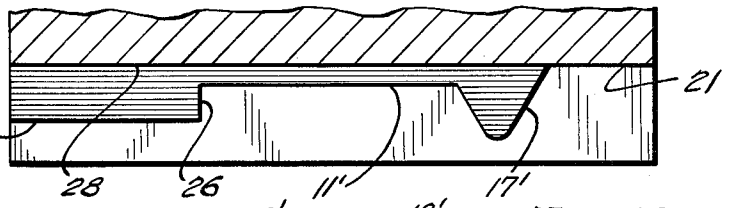
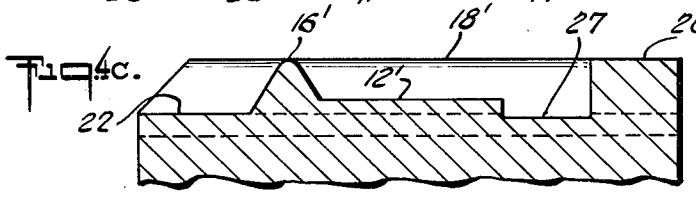


Fig. 4c.



United States Patent Office

3,048,300

Patented Aug. 7, 1962

3,048,300

REINFORCED SIDE SEAM CONSTRUCTION FOR LARGE CAPACITY CANS

Thomas P. Gardner, Port Arthur, Tex., assignor to Texaco Inc., a corporation of Delaware

Filed July 2, 1958, Ser. No. 746,218
1 Claim. (Cl. 220—77)

This invention relates generally to side seam construction for metallic containers and more particularly to reinforce cemented side seams for relatively large diameter containers.

Present side seam construction consists of reversely bent edges of the container blank pressed together into tightly hooked contact with each other, prior to the application of solder. The increasing employment of cemented side seam construction in the manufacture of cans is of economic importance, since it makes possible the use of black iron as a replacement for the more expensive tin plate, necessary with soldered seams. Cemented side seams are satisfactory in cans of one quart liquid capacity made either of tin plate or black iron, but when used in larger cans, for example, of one gallon capacity, the can wall tends to bulge at the seam and eventually seam failure results, because of the greater force exerted by the liquid against the side seam.

Accordingly, it is an object of the present invention to provide an improved container of large capacity having a cemented side seam construction.

Another object of the present invention is to provide means for reinforcing the cemented side seam of a relatively large capacity metallic container.

Still another object of the present invention is to provide a means for making an improved and strengthened cemented side seam for a container of large capacity.

These and other objects, features and advantages of the present invention will become apparent from the following description in the specification when read in conjunction with the accompanying drawings wherein:

FIG. 1 shows a portion of a completed cylindrical can with the reinforced side seam;

FIG. 2*a* is an enlarged cross sectional view taken along the line *a*—*a* of FIG. 1;

FIG. 2*b* is an enlarged partial sectional view of the reinformed side seam taken along the line *b*—*b* of FIG. 1;

FIGS. 3*a* and 3*b* are side elevation and face views, respectively, of the upper die or steel used in forming the side seam of the present invention;

FIG. 3*c* is an enlarged cross sectional view taken along the line 3—3 of FIG. 3*a*;

FIGS. 4*a* and 4*b* are side elevation and face views, respectively, of the lower die or hammer used in forming the side seam of the present invention; and

FIG. 4*c* is an enlarged cross sectional view taken along the line 4—4 of FIG. 4*a*.

The objects of invention are attained by the use of reinforcing corrugations parallel to and adjacent the side seam of a can body to provide lateral rigidity to the can seam. To further strengthen the seam, corrugations transverse to and through the seam may be applied.

Referring to FIGS. 1 and 2*a* of the drawings, there is disclosed a can body indicated generally at **10**, with the edges bent back reversely to each other so as to provide inside and outside interlocking hooks, **11**, **12**, FIG. 2*a*. The ends of the edges forming the hooks are cut away (not shown) so that when the seam is formed, the end portions at **13**, **14**, FIG. 1, lap over each other and are flanged to the can ends **15**, **15**, by double seaming or the like, by methods well known to the art.

Referring to FIG. 2*a*, there is shown, in enlarged cross section, the interengagement of the hooks **11**, **12**, which are interlocked by being pressed together between the

steel of FIGS. 3*a*, 3*b* and 3*c* and the hammer of FIGS. 4*a*, 4*b* and 4*c*. In addition to the interlocking of the hooks, the seam is reinforced by the provision of the longitudinal corrugations or grooves **16**, **17**, parallel to and adjacent the hooks, providing not only columnar rigidity but also structural support for the bases of the hooks to prevent their disengagement, as seen clearly in FIG. 2*a*.

The reinforced seam is further strengthened by the use of a series of spaced transverse crimps or indentations **18**, which divide the seam into shorter columnar sections and seal off the seam from the lapped ends. FIG. 2*b* is an enlarged section through the length of the seam, showing the outwardly projecting corrugation **17** and one of the indentations **18**. The use of the spaced crimps or indentations **18** may be omitted if the length of the reinforced seam is not too extensive.

Referring to FIGS. 3*a*, 3*b* and 3*c* and FIGS. 4*a*, 4*b* and 4*c*, the ribs on the forming dies, which produce the corrugations and indentations **16**, **17** and **18**, are disclosed respectively at **16'**, **17'** and **18'**. When the steel and hammer press the reversely bent edges of the can body together, the interlocking hooks **11** and **12** are nested between the ribs **16'** and **17'** and rest against the recessed bed faces **11'**, **12'**, FIGS. 3 and 4, respectively, while the ribs **16'** and **17'** press against the can body adjoining the hooks at the end part **26** of the recessed bed face **11'** and the groove at **27**, respectively. The face **20** of the hammer (FIG. 4*c*) holds the can body in contact with the bottom of longitudinal groove **21**, FIG. 3*c*, while the longitudinal seat face at **22** holds the can body at the opposite side of the seam in contact with the longitudinally extending shelf at **23**, FIG. 3*c*.

The transverse indentations at **18** are pressed out when rib **18'** forces the interlocking hooks into the transverse groove **28**, FIGS. 3*a*, 3*b* and 3*c*. When the transverse indentations are not employed, the longitudinal ribs **16'** and **17'** and their complementary recessed portions at **26** and **27** on the faces of the steel and hammer are uninterrupted throughout their extent.

Thus there has been shown and described a new and improved side seam for a large diameter cylindrical container, which may be cemented in the manner disclosed in my copending application for patent, Ser. No. 680,577, filed on August 27, 1957, together with means for forming the improved side seam. Although the description has been directed specifically to a cylindrical container having a cemented side seam, the side seam reinforced with corrugations may be applied to any shape of container made of black iron or tin plate and having an elongated side seam and which may be soldered instead.

Obviously, many modifications and variations of the invention, as hereinbefore set forth, may be made without departing from the spirit and scope thereof, and therefore, only such limitations should be imposed as are indicated in the appended claims.

I claim:

In a container, a body having the opposing edges of the blank from which it is formed joined together in a side seam of interlocked, reversely bent hooks extending between lapped edges at the ends of said side seam where said hooks are cut away, the wall of the can body adjacent said seam having a pair of reinforcing corrugations deformed therefrom into contact with each of the bases of said hooks and extending from lapped edge to lapped edge of said seam thereby to impart columnar rigidity thereto, said side seam throughout the extent of said hooks having a plurality of relatively widely spaced indentations normal to said corrugations spaced equally along the length of said seam to limit columnar length therein and at the ends of the hook portion thereof separating said lapped edges from the hooked portion of

said seam, said indentations being restricted in length to extend from one reinforcing corrugation to the other reinforcing corrugation.

References Cited in the file of this patent

UNITED STATES PATENTS

93,139	Trageser	July 27, 1869
398,655	Sagendorph	Feb. 26, 1889
468,485	Sagendorph	Feb. 9, 1892
593,558	Ams	Nov. 16, 1897
663,385	Hobbs	Dec. 4, 1900
697,955	Thompson	Apr. 15, 1902
700,575	Thompson	May 20, 1902
2,342,109	Atkinson	Feb. 22, 1944
2,390,094	Geertsen	Dec. 4, 1945
2,424,188	Pearson	July 15, 1947
2,517,310	Henchert	Aug. 1, 1950
2,688,419	Henchert	Sept. 7, 1954