Oct. 21, 1941. R. C. TAYLOR 2,259,498

CAN BODY

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Fig. 1

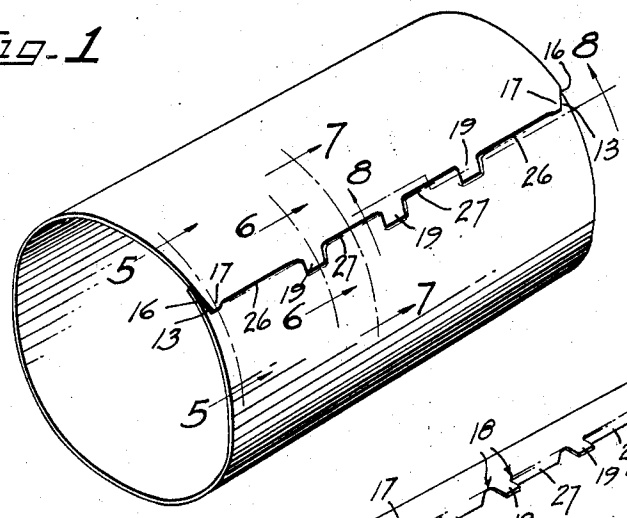

Fig. 2

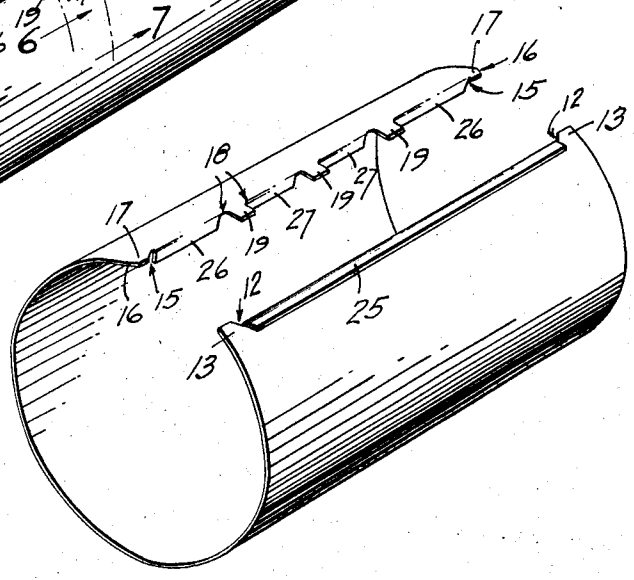

Fig. 3

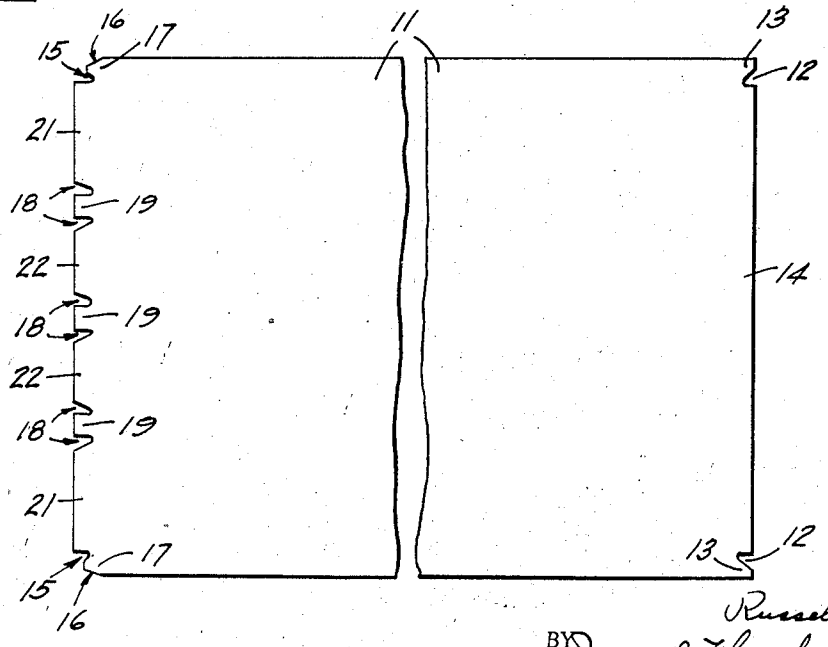

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Fig-4

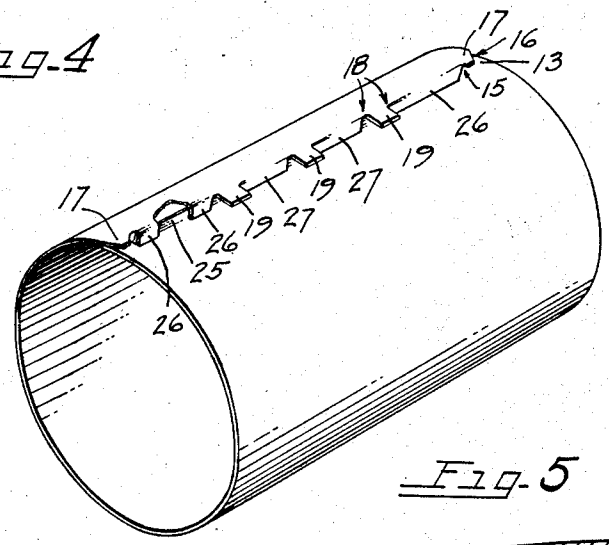


Fig-5

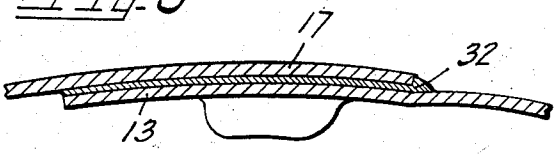


Fig-6

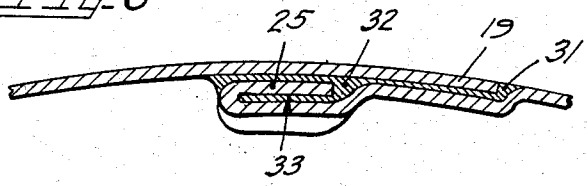


Fig-7

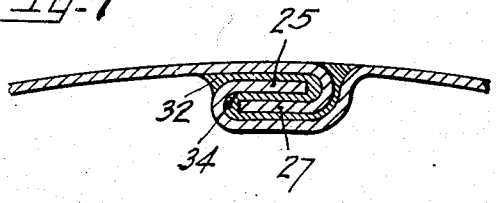
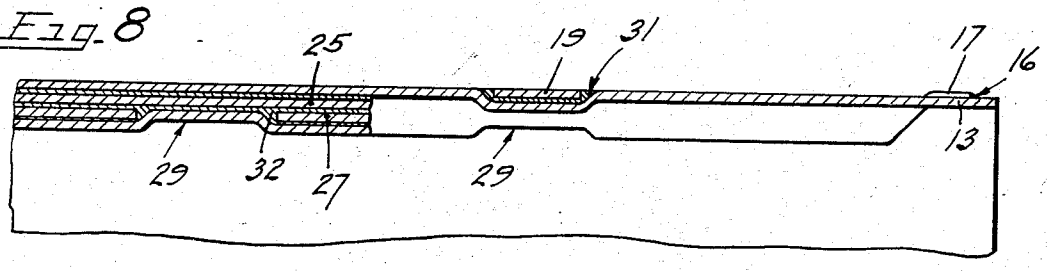


Fig-8



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UNITED STATES PATENT OFFICE

2,259,498

CAN BODY

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Application October 14, 1937, Serial No. 169,027

3 Claims. (Cl. 220—76)

The present invention relates in general to reenforcement of cans and has more particular reference to improvements in reenforcing the side seam of the can body being more specifically an improvement on the can body disclosed in the Groenke Patent 2,064,537, issued December 15, 1936.

The present invention contemplates the provision of a can capable of withstanding the high internal pressures developed in some liquids such as beer when enclosed and hermetically sealed in the can and pasteurized or otherwise treated. This invention not only has the full holding strength of the Groenke side seam just referred to but has in addition overlapped soldered sections which are distributed in spaced relation along the side seam.

An object of the invention is the provision of a can body capable of withstanding high internal pressures having a reenforced side seam made up of a plurality of sections or zones of different thicknesses of metal and having alternate interlocking hooks and overlaps which are separated by reentrant notches which permit the escape of air or gases when the side seam is soldered, this construction providing a side seam of maximum strength and pressure resistance.

A still further object of the invention is the provision of a soldered side seam made up of alternate interlocked and overlapped sections formed along one of the parts of the side seam and these sections have close bonding connection with a longitudinally extending hook formed as another part of the side seam.

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 can body embodying the present invention the body being shown after the side seam has been completed, the parts closed and hermetically sealed together;

Fig. 2 is a perspective view of a tubular shaped partially formed can body showing one stage in the creation of the side seam;

Fig. 3 is a face view of a bady blank properly cut to provide for the can body shown in Figs. 1 and 2;

Fig. 4 is a view similar to Fig. 2 showing a further step in the formation of the side seam;

Figs. 5, 6 and 7 are enlarged transverse sectional details taken at different positions along the side seam being substantially sections across the seam at the lines 5—5, 6—6 and 7—7 in Fig. 1; and

Fig. 8 is an enlarged fragmentary longitudinal section partially broken away of a portion of the side seam as viewed along the broken sectional line 8—8 in Fig. 1.

As illustrated in the drawings and particularly in Fig. 3 a formed and notched cam body blank 11 is first provided. One of the free edges of the body blank is notched to form end notches 12 there being illustrated two such end notches, one each adjacent the two ends of the blank. This provides an end lap region 13 at each corner of the blank and a longitudinal central part 14 extending along the edge and in between the end notches.

On the opposite side edge of the blank similar end notches 15 are cut one adjacent each corner of the blank. At each of these positions the corner is clipped off along an angular line 16 leaving an angular end lap region 17 at each end of the blank. A series of pairs of reentrant notches 18 are also cut in the blank being spaced apart along the edge, each pair of notches defining a lug 19 therebetween. This notching of the blank edge produces end edge sections 21 between each end notch 15 and the single notch 18 of the pair adjacent. It also isolates two central edge sections 22 which come between spaced reentrant notches 18 intermediate the adjacent lugs 19.

The blank is rolled or otherwise bent into cylindrical shape as illustrated in Fig. 2 and the longitudinal blank edge 14 is bent back to provide a single continuous hook 25. In a similar manner the blank edges 21 on the opposite side of the blank are bent in to provide a pair of hooked-in sections 26 and the intermediate edge sections 22 are bent in the same manner to provide a pair of turned-in hooked sections 27. This produces the structure illustrated in Fig. 2.

The open edges of the formed blank are then united, the longitudinal or single continuous hook 25 being engaged with the turned-in hook sections 26 and the turned-in hook sections 27 as illustrated in Fig. 4. The angular or cut-away lap portions 17 come just outside of the end lap sections 13 and the lugs 19 project over the outside wall of the can body. A bumped side seam is then formed by pressing together the interlocked parts, this action bringing the angular end lap sections 17 into metal to metal contact with the end lap sections 13 and the lugs 19 are

also pressed into close engagement with the body wall adjacent the hook 25.

In this bumping or pressing of the seam parts the metal along the edge directly under the extended lugs 19 is pressed outwardly to fill in the space as illustrated at 29 in Fig. 8. At the same time each lug 19 is pressed down into the seam, this action forming a pocket or hollow 31.

The bending of the edges of the blank, the interlocking of the hook parts and the pressing together of the seam sections as just described are all done automatically during the manufacture of the can by the usual body maker or other type of body forming machine. The side seam is then hermetically sealed by the introduction of solder applied from the outside in the usual manner. The distribution of the solder in the finally prepared seam is graphically illustrated in Figs. 5, 6, 7 and 8, the solder being designated by the numeral 32.

As will be observed by referring to Fig. 5 the inner lap section 13 is indented or slightly depressed to receive the lap portion 17. The parts 13, 17 are first bumped into close metal to metal contact and then the solder 32 flows into and tightly bonds these parts together.

Fig. 6 more clearly illustrates how the lug 19 is pressed into the body wall to provide the pocket 31 which is filled with solder. At this point the section of the longitudinal hook 25 which is directly under the lug 19 is pressed tight against the other part of the hook or flattened as indicated at 33, this hook zone for a width equal to the lug 19 not being inter-hooked with the other parts of the seam. Solder 32 at this position not only fills in the pocket 31 but also flows between and binds together the flattened sections of the hook 25 and also binds it with the body wall at the base of the lug 19. The resulting exterior wall of the can is in this manner made flush.

In Fig. 7 there is illustrated the full hooked position of the hook 25 where it inter-engages with one of its three hooks 27, this interlocking being designated by the numeral 34. Here again solder closely binds the parts together. In Figs. 5 to 8, inclusive, which are drawn to an enlarged scale it has been necessary to greatly exaggerate the thickness of the body wall and also the thickness of the solder. This should be kept in mind when viewing these figures. In reality there is metal to metal contact in the lapped and hooked sections and the film of solder therebetween is indeed very thin.

This construction and the use of different types of sections of interlocked and overlapped edges together with the complete venting afforded by the reentrant notches 18, reenforce the side seam and prevents any pulling away or unrolling of the intermediate seam parts. The resulting can body is much stronger than a can body not so reenforced and experiment has shown that such a can body may be embodied in a can suitable for packaging beer where great internal pressures are often developed.

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 reenforced can body capable of resisting high internal pressures, said can body being formed from a metal blank having the major part of one marginal edge bent into an inner longitudinally disposed upwardly and outwardly extended hook and having its opposite marginal edge formed with outer downwardly and inwardly extending interlocking hooks and alternate relatively narrow overlapping portions separated by open substantially V-shaped reentrant notches, said interlocking hooks being inter-engaged with the longitudinally extended hook of the opposite marginal edge in the side seam, said overlapping portions engaging the outer surface of the body adjacent the seam and being pressed into such surface so as to form a flush exterior for the can body, all engaged parts of said seam being soldered together in a hermetic joint, said open reentrant notches permitting free escape of air and gases when said side seam is soldered.

2. A reenforced can body capable of resisting high internal pressures, said can body comprising a tubular metal blank having the major part of one marginal edge bent into an inner longitudinally disposed upwardly and outwardly extended hook and having its opposite marginal edge formed with outer downwardly and inwardly extending interlocking hooks and alternate relatively narrow overlaps separated by open V-shaped reentrant notches to provide vent spaces in between said interlocking hooks, said interlocking hooks being inter-engaged with the longitudinally extended hook of the opposite marginal edge in a side seam, said overlaps engaging the outer surface of the body and being pressed in a distance equal to one thickness of the metal to provide a flush body exterior, the body wall portions of the seam adjacent said pressed in part on the interior being pressed together and reducing the thickness of the seam at each overlapped lug to reenforce the side seam and to provide a metal to metal contact throughout, permitting solder to penetrate all thicknesses of the metal of said seam when it is bumped and soldered, said vent spaces formed by said reentrant notches permitting free escape of air and gases when said side seam is soldered.

3. A sheet metal can comprising a body having the edge portions thereof joined by a solder bonded side seam including lap portions at the ends of the side seam, an inner hook extending all the way from the inner lap section at one end of the seam to the inner lap section at the other end of the seam, a series of spaced outer hooks disposed between the outer lap portions at the ends of the side seam and adapted to engage said inner hook, the metal between said spaced hooks being extended laterally of the side seam so as to lap the outer face of the body wall, said extended portions being inset into the body wall so as to be substantially flush therewith, and a solder bond extending throughout the limits of the side seam and the limits of the extended portions for uniting the same and for covering the edges of the lap sections so that no raw edge of metal is exposed either on the inside of the can body or the outside thereof.

RUSSELL C. TAYLOR.