Oct. 24, 1961 O. W. STONE ET AL 3,005,654

PAPERBOARD CAN HOLDER

Filed May 13, 1955 4 Sheets-Sheet 1

Fig:1.

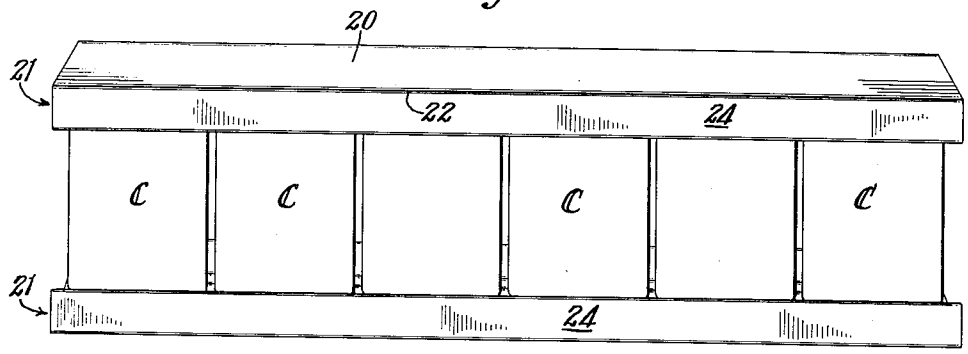


Fig:2.

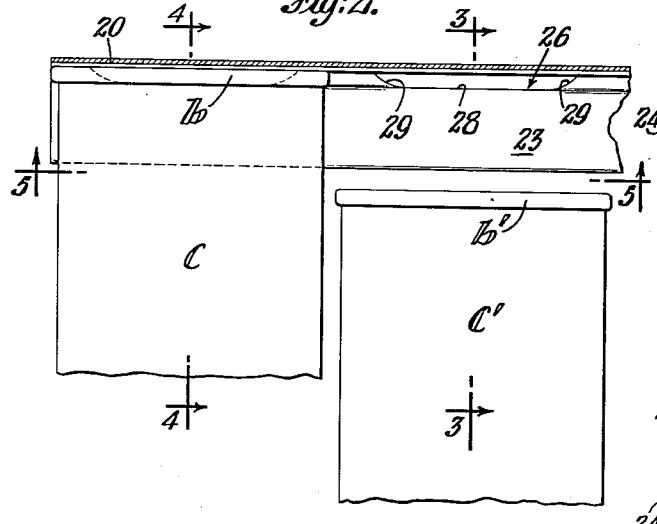
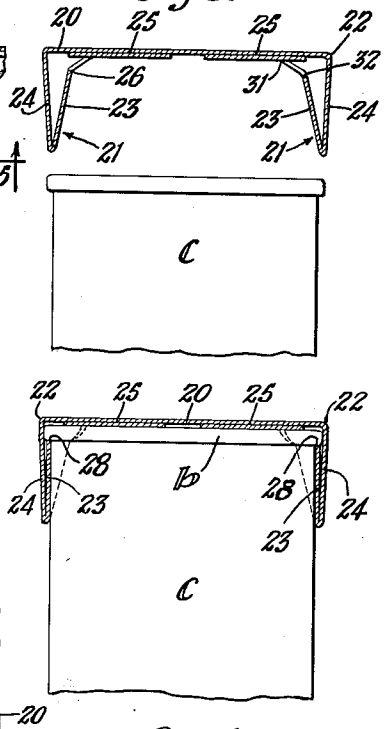


Fig:3.



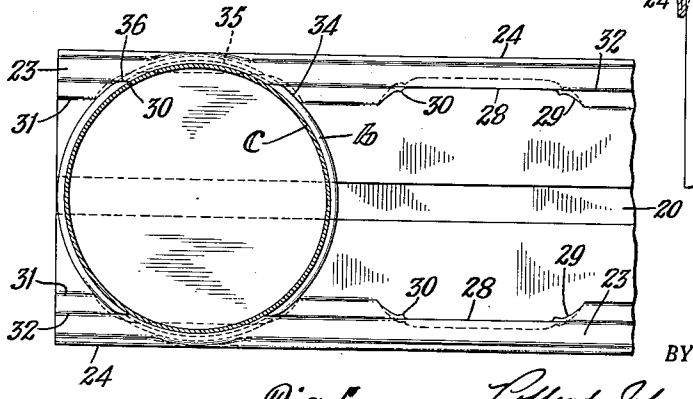


Fig:5.

Fig:4.

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Oct. 24, 1961 O. W. STONE ET AL 3,005,654

PAPERBOARD CAN HOLDER

Filed May 13, 1955 4 Sheets-Sheet 2

Fig:6.

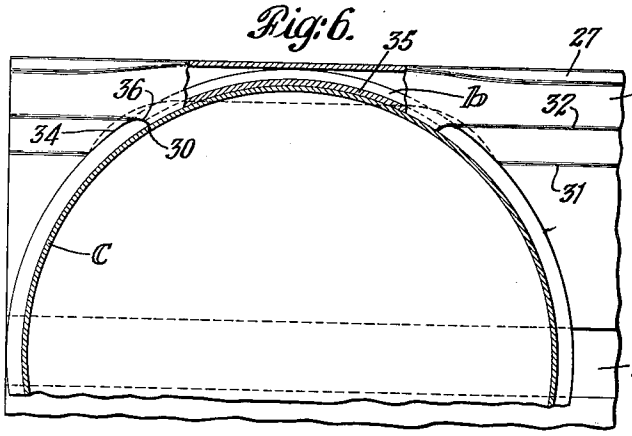


Fig:7.

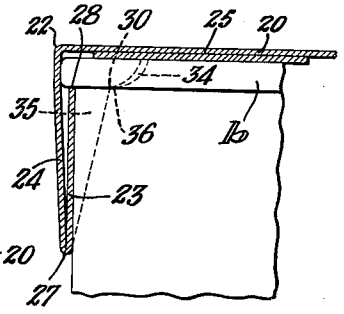


Fig:10.

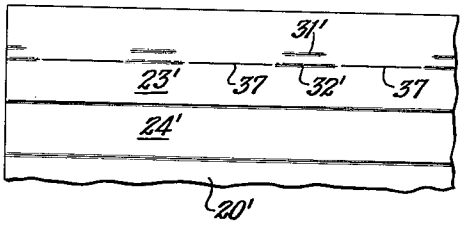


Fig:11.

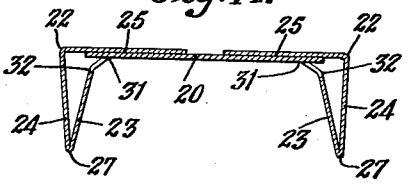


Fig:8.

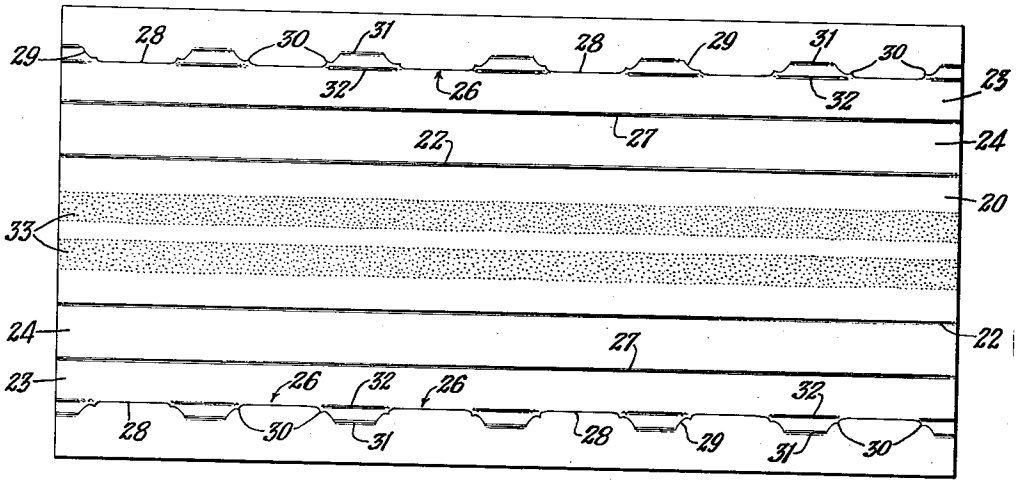
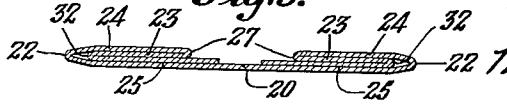


Fig:9.



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Oct. 24, 1961 O. W. STONE ET AL 3,005,654

PAPERBOARD CAN HOLDER

Filed May 13, 1955 4 Sheets-Sheet 3

Fig:12.

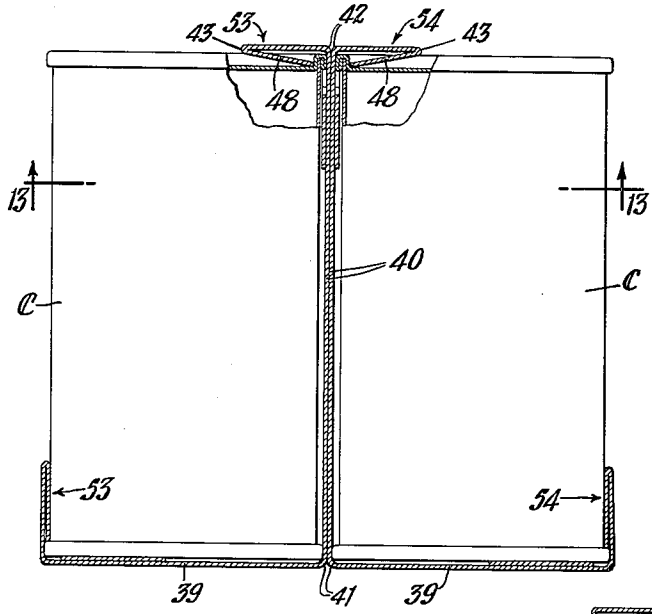


Fig:14.

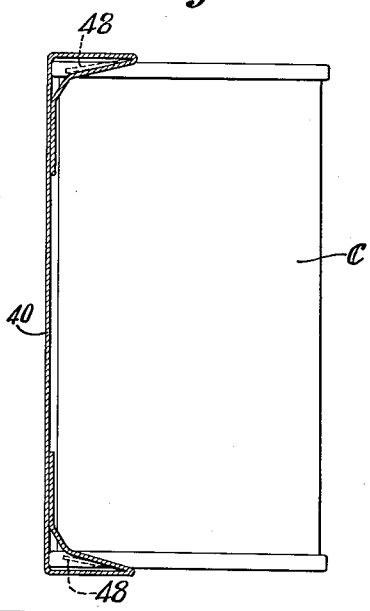


Fig:15.

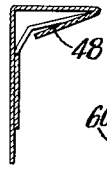


Fig:13.

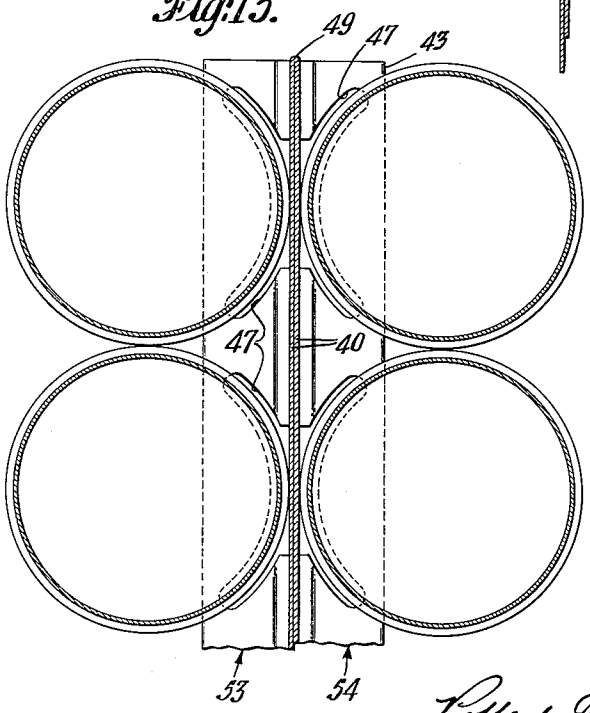
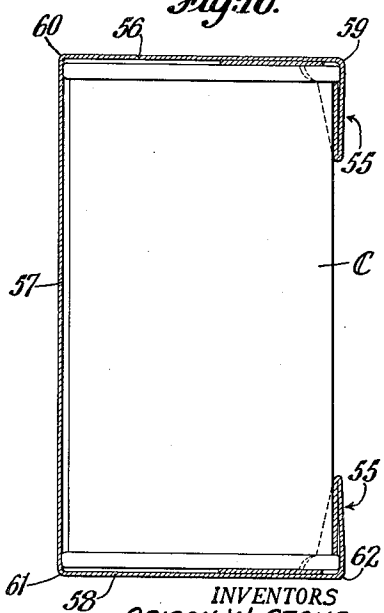


Fig:16.



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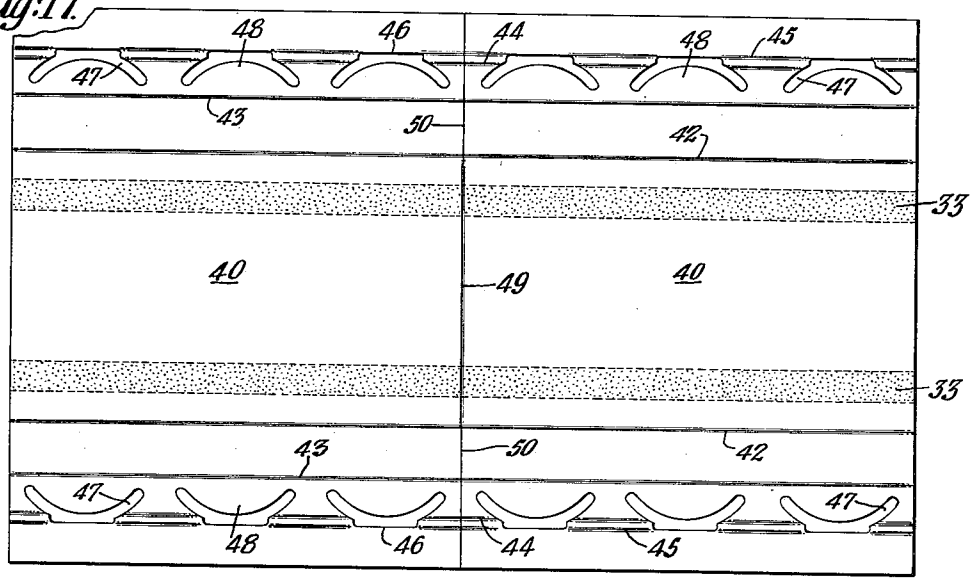
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Oct. 24, 1961 O. W. STONE ET AL 3,005,654

PAPERBOARD CAN HOLDER

Filed May 13, 1955 4 Sheets-Sheet 4

Fig:17.



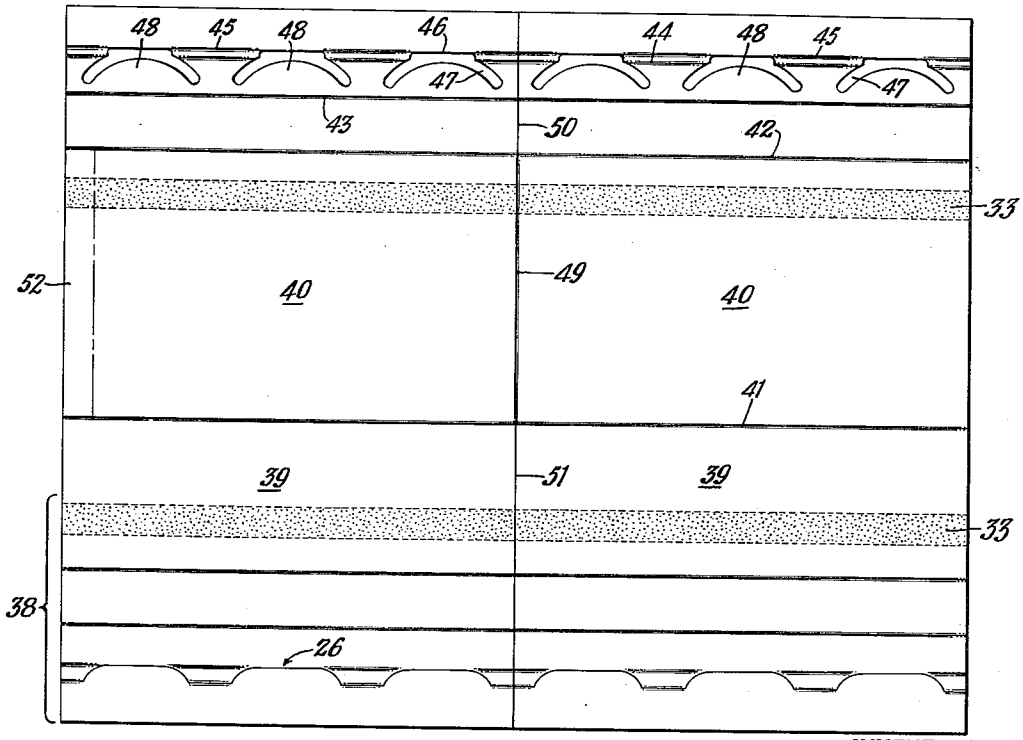


Fig:18.

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United States Patent Office 3,005,654 Patented Oct. 24, 1961

3,005,654

PAPERBOARD CAN HOLDER

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Filed May 13, 1955, Ser. No. 508,078
1 Claim. (Cl. 294—87.2)

The invention relates to a paperboard holder for cans, such as those used for beer and ale and which usually are made of metal and sealed with "beaded" ends, and for other containers having types of end closures generally similar in configuration to such beaded ends.

Summary

We have discovered an improved way of packaging cans in open-sided and open-ended holders, or containers, of thin paperboard. According to our invention it is possible to "tie" a row of cans—say six cans of beer—tightly together with only a light channel shaped cup which is simply snapped over the tops of the cans. When such a paperboard channel constructed as we disclose is applied to the ends of the cans, one to the top and one to the bottom for example, the cans are so securely locked together that it is virtually impossible to separate them without tearing the paperboard.

Our invention consists of an open-sided paperboard holder for cans having beaded ends, comprising a body terminating in a pair of opposed locking flanges, each extending at approximately right angles to the adjoining wall of the body and being formed as an extension adjoining said wall at a fold line, this extension being folded back on itself and adhesively secured to the body wall to form a double walled flange whose sides are spaced apart where they adjoin the body. The inner wall of this double flange tends to pull the outer wall inwardly toward the cans, and the inner wall has cuts to receive the beaded ends of the cans so that when the cans are inserted, they exert an outward force on the locking flanges, causing portions of the inner walls thereof adjacent the cuts to be tensioned into a position surrounding adjacent portions of the can bodies. Such tensioning of the inner wall increases the effectiveness of the locking action so that any pull tending to spread out the locking flanges to release the cans only tightens the gripping action.

Another advantage of our invention is that a single holder or a single pair of holders of a given size will accept sets of tall cans or sets of short cans of the same diameter so that it is unnecessary to stock different sizes of holders for the different height cans. Also, a single bottom holder can be used for cans of assorted heights so long as the cans are of the same diameter.

Other objects and advantages will appear as the description proceeds.

Description

In the drawings wherein we have illustrated the best mode contemplated by us of carrying out our invention:

FIG. 1 is a perspective view of our preferred form of holder as applied to packaging six cans of beer in a single row with only the ends of the cans covered, all four sides of the package being open.

FIG. 2 is a detail vertical longitudinal sectional view of one end of the package of FIG. 1 (scale enlarged).

FIG. 3 is a transverse sectional view taken as indicated at 3—3 in FIG. 2.

FIG. 4 is a transverse sectional view taken as indicated at 4—4 in FIG. 2.

FIG. 5 is a horizontal sectional view taken as indicated at 5—5 in FIG. 2.

FIG. 6 is a detail view of a portion of FIG. 5, to an enlarged scale.

FIG. 7 is a detail view of a portion of FIG. 4, to an enlarged scale.

FIG. 8 is an inside face view of the paperboard blank from which the holder of FIGS. 1 to 7, inclusive, is constructed.

FIG. 9 is a vertical transverse sectional view of the same holder in its flat folded form as manufactured and shipped to customers.

FIG. 10 is a detail view of a portion of a blank for a holder of slightly modified form.

FIG. 11 is a sectional view similar to FIG. 3 but illustrating another slight modification in the construction.

FIG. 12 is a vertical transverse sectional view of another modification designed to hold two rows of three cans each, arranged back to back.

FIG. 13 is a horizontal sectional view taken as indicated at 13—13 in FIG. 12.

FIG. 14 is a vertical transverse sectional view of another modified construction.

FIG. 15 is a detail sectional view of a portion of FIG. 14, showing the upper locking flange as seen before insertion of a can.

FIG. 16 is a vertical transverse sectional view of a further modification.

FIG. 17 is an inside face view of the paperboard blank from which the holder of FIG. 14 is made.

FIG. 18 is a similar view of the blank from which the holder of FIGS. 12 and 13 is made.

Referring to FIGS. 1 to 9 inclusive, we will now describe the construction of a holder embodying our invention in one of its preferred forms. FIG. 1 shows a pair of holders, each in the form of a channel fitting over the respective ends of the cans C. In this case the holders are being used for tying together a set of six cans. Each holder comprises a body **20** terminating in a pair of opposed locking flanges **21**, **21**, each locking flange extending at approximately right angles to the adjoining wall of the body and being formed as an extension adjoining said wall at a fold line **22**. The extension is folded back on itself and adhesively secured to the body wall as at **25**, forming a double walled flange whose sides are spaced apart where they join the body as clearly shown in FIG. 3. The inner wall **23** of the flange tends to pull the outer wall **24** inwardly toward the cans, as may be seen in FIGS. 3 and 4, and the inner wall has cuts **26** (FIG. 2) to receive the beaded ends *b* of the cans.

A result of constructing the holders in the manner described is that when the cans are inserted into the holder, they exert an outward force on the locking flanges which in turn causes portions of the inner wall **23** adjacent cuts **26** to be tensioned into a position surrounding portions of the can bodies. This tensioning of the inner wall greatly increases the effectiveness of the locking action so that, if there is any tendency to spread the locking flanges apart (or even if an attempt is made to pull them apart), the grip of the locking flanges is increased rather than diminished. Indeed we have found that the gripping action is so strong that ordinarily it is not possible to remove the cans without rupturing the holder. Even though the holders are open ended, we have found further that the little paperboard caps shown in FIG. 1 exert such a powerful grip on the beaded ends of the cans that with a six can pack as shown, weighing six pounds or more, the entire pack can be supported in a vertical position, by using the top can as a handle for lifting, indicating a most amazing strength exceeding anything which would be predicted upon consideration of the lightness of the paperboard stock and the thinness of the beads at the ends of the cans—not to mention the fact that the ends of the caps are open except where the inner walls **23** are tensioned inwardly over the beads and partially around the cylindrical side walls of the cans.

The construction of the holder of FIGS. 1 to 9, and the manner in which it is fabricated and locked on the cans, will now be described in somewhat more detail, referring first to FIG. 8 which is an inside face view of the paperboard blank from which this holder is constructed. In first viewing the blank itself, it will readily be appreciated that in view of the simple rectangular form of the blank, there has been achieved an absolute maximum in economy of paperboard stock. This results from the fact that in cutting out the blanks, there is no waste, the series of blanks cut from a single sheet occupying the entire area thereof. Using a conventional cutting and scoring die, cuts and scores are formed in the manner shown in FIG. 8, including parallel scores for the fold lines **22** to which reference has previously been made. Scores **27** define fold lines at the edges of the locking flanges. Two series of cuts **26** to which reference has been made, are formed in the positions shown near the edges of the blank. Each of these cuts has a straight portion **28** and arcuate ends **29**. Also, we prefer that there should be projecting shoulders **30** adjacent the junctions of the straight and arcuate portions although it is possible to omit these shoulders if desired. Also in our preferred construction, there are parallel score lines in the inner wall **23** of the locking flange, one of these score lines **31** being in line with the point where the inner wall upon tensioning begins to pull around the beads of the cans, and the other of these score lines **32** being approximately in line with the straight portion **28** of cuts **26**. A suitable adhesive such as glue, is applied to the inside face of the blank along the stippled areas **33**.

This is done as the blanks are run through a conventional folding and gluing machine in which the blanks are folded into the form shown in FIG. 9, this being the flat folded form of the finished holders as manufactured and shipped to customers, ready for use in packaging.

One holder may be applied to the tops of the cans and another holder to the bottoms, although in some cases it may be preferable to use only a single holder, either at the top or at the bottom. The cans may be inserted in a bottom holder by simply dropping them downwardly between the locking flanges.

In the case of the construction specifically illustrated in FIG. 1, after the row of six cans has been placed in the lower holder, the upper holder is simply pressed down over the tops of the cans and the locking action is fully automatic. What happens during the application of the holder, or upon insertion of the cans into the holder, will be understood from a comparison of FIGS. 2, 3, 4 and 5. It will be observed that the inner walls **23** of the locking flanges are pressed outwardly as the can is inserted so that at points where they are contacted by the cans, these inner walls move from the position shown in FIG. 3 to that shown in FIG. 4. There also might be a slight tendency to straighten up the outer walls **24** of the locking flanges. As this occurs, two things happen: first, the bead *b* of the can passes the straight portion **28** of cut line **26** and just at the moment that the can is fully seated in the holder, a portion of the inner wall **23** snaps underneath the tiny ledge at the base of the bead *b* of the can (FIGS. 4 and 7). This action is assisted by reason of the outward thrust of the sides of the can against the locking flanges which in turn exert a pull on adjacent portions of the inner wall **23**, pulling the arcuate portions **29** of the cut tightly around the bead of the can, substantially contacting the bead in the form of a helix (see **34**, FIGS. 6 and 7). Secondly, at the same time that portion of the inner wall **23** of each flange which lies between the arcuate portions **29** of the cuts is wrapped tightly against the body of the can. This has the additional effect of increasing the lateral extent of the bearing between the straight portion **28** of the cut and the tiny ledge at the base of bead *b*. The wrapping of inner wall **23** around the body of the can may be noted at **35** in FIG. 6.

The shoulders **30** to which reference has previously been made (when present), fit over the inner ends of the bead *b* of the can as may be seen at **36** in FIG. 6 (and see also FIG. 7).

Reference is now had to FIG. 10 which is a detail view of a portion of a blank for a holder of slightly modified form. The construction is the same as that described with reference to FIGS. 1 to 8 except in the particular to be noted, the body **20'** corresponding to the body **20**, and the inner and outer walls **23'** and **24'** of the locking flanges corresponding respectively to the inner and outer walls **23** and **24** of the previous form. However in the embodiment of FIG. 10, cuts **37** have only a straight portion corresponding to the straight portion **28** of the cuts **26** in the previous form. When the blank of FIG. 10 is set up in the same manner as has been described, the step of applying the holder to the cans produces a tearing action in the paperboard stock between the ends of cuts **37** and approximately the ends of scores **31'** (the latter corresponding to scores **31** of the previous form). In this way the holder adapts itself to the outline of the end of the can. The resultant locking action is much the same as before.

It is also possible to omit the inner score **31** in the blank of FIG. 8 as the application of the holder to the cans will cause the inner wall **23** to curve or break substantially in line with this score. We have found however that the locking action is somewhat more effective when the scoreline **31** is employed.

Another possible modification is shown in FIG. 11, the change consisting in securing the extension to the outside of the body instead of to the inside thereof (compare FIG. 11 with FIG. 3).

FIGS. 12, 13 and 18 illustrate a modification of our invention which is useful where it is desired to package the cans in two rows. For example, if there are to be six cans, they will be, arranged back to back, in two rows of three cans each. Referring to FIG. 18, the lower part **38** of the blank may be of exactly the same construction as the lower half of the blank of FIG. 8. In the drawing this part of the construction is exactly the same except for omission of the shoulders **30** between the arcuate and straight portions of the cuts **26**. Therefore it will be unnecessary to repeat a detailed description of this portion of FIG. 18. The body portion of the blank consists of a bottom wall **39** and side wall **40** defined by parallel scores **41** and **42**. The extension of the side wall **40** which is to form the double walled flange at the top of the holder, is formed with a series of parallel scores **43**, **44** and **45**, score **43** being the fold line for the edge of the upper locking flange, **45** being the score line at the base of the inner wall of such flange, and score **44** being an intermediate break line. Scores **43**, **44** and **45** correspond to scores **27**, **32** and **31** respectively of FIG. 8. Cut lines **46** correspond to cut lines **26** of the previous construction. However, in this form, the cut lines are extended to form arcuate openings **47** of substantial extent to receive the upper ends of the beads of the cans and form a series of auxiliary locking tabs **48** of generally arcuate form. This extension is double folded and glued in the same manner as has been described with reference to FIG. 9. A vertical score line **49** and adjoining cut lines **50**, **51** divide the blank into two sections of equal length. When these two sections are folded about score line **49** and brought back to back (see FIGS. 12 and 13), the outer ends thereof—i.e. the ends opposite the fold line **49**—may be secured together, as by gluing over the area **52** or by means of a suitable locking flap. This completes the holder as set up for use. It will be noted that in this case the body terminates in a pair of opposed locking flanges **53**, **53** and a second pair of opposed locking flanges **54**, **54**, each locking flange extending at approximately right angles to the adjoining wall **39** or **40** of the body. In the case of the upper locking flanges

53 and 54, the locking action is supplemented by the auxiliary locking tabs 48 which seat behind the inner edge of the beads of the cans as may be seen in FIG. 12.

In FIGS. 14, 15 and 17, we have illustrated another modification in which, like the embodiment of FIGS. 1 to 9, the holder is of simple channel form, but in the modified construction this holder fits over the sides of the cans instead of over their ends. As before, insertion of the cans exerts an outward force on the opposed locking flanges, causing portions of their inner walls to be tensioned into a position surrounding adjacent portions of the can bodies. Both the upper and lower ends of the blank of FIG. 17 are made like the upper end of the blank of FIG. 18, as will be clearly understood from a comparison of these two views, without the necessity of repeating any of the detailed description. In the completed holder the auxiliary locking tabs 48 are present at both the top and the bottom.

The further modification shown in FIG. 16 has a pair of opposed locking flanges 55, each of the same construction as the locking flanges 21 in the construction of FIGS. 1 to 9 inclusive. However, in this case the body of the holder comprises a top wall 56, side wall 57, and bottom wall 58, the locking flanges adjoining the top and bottom walls of the body. The several walls of the body are defined by parallel score lines 59, 60, 61 and 62. Score lines 60 and 61 form fold lines which act as hinges during the operation of inserting the cans in the holder. The cans may first be lined up on the bottom wall 58, engaging lower locking flange 55, and then the upper wall or cover 56 is simply pushed down over the tops of the cans, whereupon it snaps automatically into locked position. The nature of the locking action is again the same.

The terms and expressions which we have employed are used in a descriptive and not a limiting sense, and we have no intention of excluding such equivalents of the invention described, or of portions thereof, as fall within the purview of the claim.

We claim:

An open-sided paperboard holder for containers having beaded ends, comprising a body terminating in a pair of opposed locking flanges, each locking flange extending at approximately right angles to the adjoining wall of the body and being formed as an extension adjoining said wall at a fold line, said extension being folded back on itself about a fold line, said extension being reversely folded about a fold line adjacent its free end, the portion thereof between said free end and the latter fold line lying against the wall and being adhesively secured thereto, said extension thereby forming a double walled flange whose sides are spaced apart where they adjoin the body, the inner wall thereof having cuts to receive the beaded ends of the containers, and the inner wall of the erected flange of the empty holder at points between said cuts being disposed thusly: that main portion of said inner wall which lies between the cuts and the edge of the flange being normally inclined outwardly and the remaining portions, which constitute connecting webs between said main portion and the reversely folded portion, being inclined outwardly at a smaller angle to the body than that represented by the inclination of said main portion, so that the connecting webs are in a position to pull said main portion toward the center of the body and draw it more tightly around the containers, said connecting webs being scored where they adjoin said main portion of the inner wall.

References Cited in the file of this patent

UNITED STATES PATENTS

2,236,858	Speeger	Apr. 1, 1941
2,245,064	Bemiss	June 10, 1941
2,331,038	Meller	Oct. 5, 1943
2,359,298	Brogden	Oct. 3, 1944
2,554,190	Hennessey	May 22, 1951
2,646,911	Holmberg	July 28, 1953
2,701,661	Murray	Feb. 8, 1955
2,764,284	Arneson	Sept. 25, 1956