

[54] METHOD OF APPLYING LABEL TO TUBULAR CAN BODY

[75] Inventor: Irving Nerod, Wayne, N.J.

[73] Assignee: American Can Company, Greenwich, Conn.

[22] Filed: Aug. 2, 1973

[21] Appl. No.: 385,150

[52] U.S. Cl. 113/120 A

[51] Int. Cl. B21d 51/26

[58] Field of Search 113/120 R, 120 A; 220/66, 220/67; 156/69, 218, DIGS. 8-13; 40/306, 307

[56] References Cited

UNITED STATES PATENTS

| | | | |
|-----------|---------|----------------|-------------|
| 706,635 | 8/1902 | Booth | 113/120 A |
| 1,355,563 | 10/1920 | Nichols | 156/DIG. 11 |
| 1,365,073 | 1/1921 | Allerton | 72/423 |

2,868,403 1/1959 Mattingly et al. 156/DIG. 11

FOREIGN PATENTS OR APPLICATIONS

163,213 5/1921 Great Britain 156/DIG. 11

Primary Examiner—Richard J. Herbst
Attorney, Agent, or Firm—Robert P. Auber; Paul R. Audet; George P. Ziehmer

[57] ABSTRACT

A method of applying a label to a tubular can body comprising outwardly flanging the ends of the can body, applying the label thereto by using the radii of curvature between the flanges and the can body wall as a guide to properly align the label on the can body, and double seaming an end closure to the can body so that all longitudinal marginal edge portions of the label are between the double seam cover hook and can body wall.

3 Claims, 6 Drawing Figures

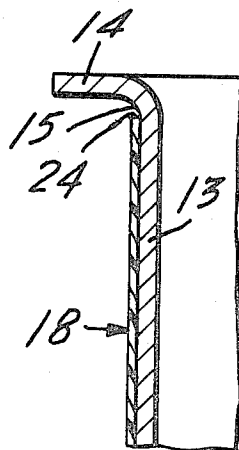


FIG. 1

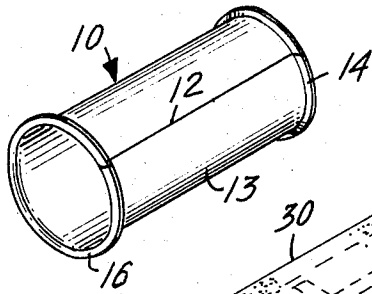


FIG. 2

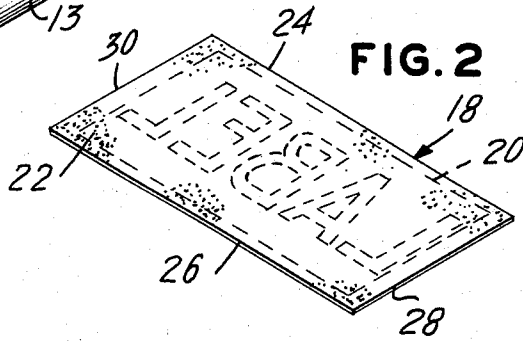


FIG. 3

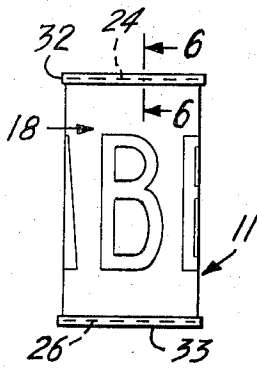
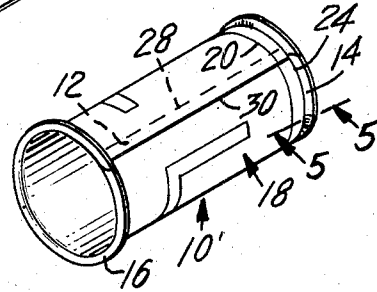


FIG. 4

FIG. 5

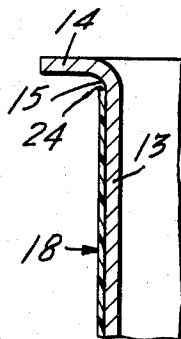
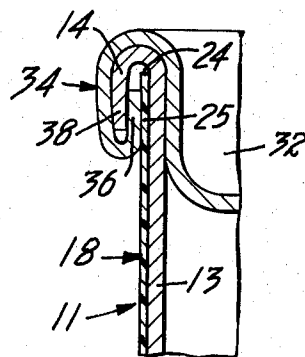


FIG. 6



METHOD OF APPLYING LABEL TO TUBULAR CAN BODY

BACKGROUND OF THE INVENTION

This invention relates to tubular containers and has particular reference to methods of applying labels to tubular can bodies.

Methods of forming can bodies having labels thereon are well known in the art. One method is to adhere a label to the entire surface of a body blank and form a side-seamed tubular can body therefrom wherein the short edges of the label are secured within the can body side seam. A more common method is to apply the label to a fully formed tubular can body after end closures are double seamed thereto so that the longitudinal marginal edges of the label are adjacent but not inside the double seams. Both of these methods are disadvantageous, the former because the labels are often damaged during the side seaming operation, and the latter because there are registration problems due to criticality of label widths. Variations under allowed width tolerances leave exposed metal between the label's longitudinal edges and the can's double seams. This often allows water to seep behind and loosen the labels, and the exposed body wall metal, though usually coated, tends to rust faster when it is covered by a label. Such methods have also been found too slow for present high speed commercial can manufacturing lines.

It is an object of this invention to provide a method of applying labels to tubular can bodies which overcomes the aforementioned and other disadvantages of such and other known methods.

It is an object of invention to provide a method which simplifies accurate, registered placement of a label on a tubular can body.

An object of this invention is to provide a method of applying a label to a tubular can body which greatly reduces the criticality of variations under allowed label width tolerances.

Another object of this invention is to provide a method of applying a label to a tubular can body which provides 100 percent can body wall coverage.

Another object of this invention is to provide a method of applying a label to a tubular can body which allows for horizontal alignment of the label at its overlap and allows for matched, registered decorations.

Another object of this invention is to provide a method of applying a label to a tubular can body, which seals the label at the double seam, reduces rusting of can body wall metal and prevents water from getting behind and loosening the label.

Still another object of this invention is to provide a method of applying a label to a tubular can body, which is economical, practical and adaptable for use in high speed commercial can manufacturing lines.

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 drawing, discloses a preferred embodiment thereof.

SUMMARY OF THE INVENTION

This invention is in a method of applying a label to a tubular can body which comprises outwardly flanging the marginal end portions of the tubular can body to form radii of curvature between the flanged marginal

end portions and the can body wall, applying the label to the can body wall, the label being of a size that covers the can body wall and that extends substantially to the radii of curvature, and, during the applying step, using the radii of curvature to guide and properly align the label onto the can body. The method can also include the step of double seaming top and bottom end closures to the flanged marginal end portions of the labelled tubular can body and securing all longitudinal marginal edge portions of the label between the can body wall and the double seam cover hooks.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a perspective view of an unlabelled, flanged tubular can body.

FIG. 2 is a perspective of a label having printing on its under surface.

FIG. 3 is a perspective view showing the can body of FIG. 1 having the label of FIG. 2 applied thereto.

FIG. 4 is a side elevation of the tubular can body of FIG. 3, having end closures double seamed thereto.

FIG. 5 is an enlarged cross section taken substantially along line 5—5 of FIG. 3.

FIG. 6 is an enlarged cross section taken substantially along line 6—6 of FIG. 4.

DETAILED DESCRIPTION OF THE INVENTION

FIG. 1 is a perspective view of an unlabelled tubular can body generally designated 10, having a lapped side seam 12, a body wall generally designated 13, and marginal end portions flanged outwardly in the form of flanges 14, 16.

FIG. 2 is a perspective view of a label generally designated 18, which can have decorative matter such as print 20 (dashed lines) on its undersurface, and adhesive 22 (stippled) on its upper surface. Label 18 has longitudinal edges designated 24, 26 and short edges designated 28, 30.

FIG. 3 is a perspective view of the flanged tubular can body 10 of FIG. 1 having label 18 of FIG. 2 applied thereto. The labelled tubular can body is designated 10'. As shown in FIG. 3, the label width is such that its longitudinal edges 24, (26 not shown) extend substantially to the radii of curvature adjacent respective flanges 14, 16, and its length is such that its short edges 28, 30 overlap to cover side seam 12.

FIG. 4 is a side elevation of a labelled, flanged and closed tubular can body generally designated 11. Can body 11 is the labelled, flanged tubular can body 10' of FIG. 3 having top and bottom end closures 32, 33 secured thereto as by conventional double seams. FIG. 4 shows that longitudinal edges 24, 26 of label 18 are secured within the junctions or double seams formed of the flanged can body wall and end closures 32, 33, and that label 18 covers the all of can body wall 13 between the end closures.

FIG. 5 is an enlarged cross section taken substantially along line 5—5 of FIG. 3 and shows longitudinal edge 24 of label 18 extending substantially to radius of curvature 15 adjacent the junction of can body wall 13 and flange 14.

FIG. 6 is an enlarged cross section taken substantially along line 6—6 of FIG. 4 and shows longitudinal marginal edge portion 25 of label 18 secured within double seam 34 formed of end closure 32 and wall flange 14 of finished, closed tubular can body 11. FIG. 6 shows the preferred method of securing label 18 within the

junction of the end closure and can body wherein marginal edge portion 25 of label 18 is lockingly abuttingly engaged between end closure cover hook 36 and wall 13 of finished can body 11. It is to be noted that all of marginal edge portion 25 of label 18 is between cover hook 36 and wall 13, and that no portion of marginal edge portion 25 is between body hook 38 and cover hook 36. The preferred method of securing the label within a double seam provides a hermetic securement which does not damage label 18, which provides double seam seal-off of label 18 and 100 percent coverage of the can body wall, each of which characteristic tends to prevent the body wall metal from rusting, and prevents water from getting behind and loosening the label from the body wall.

In the method of applying a label to a tubular can body according to this invention, the marginal end portions of a tubular can body are outwardly flanged to form radii of curvature between the flanged marginal end portions and the can body wall. Any suitable means such as conventional body-maker machines can be employed for flanging the marginal end portions. The angle and the radius which forms the curvature between the flange and the can body wall can be any suitable angle and radius which allow a label to be guided onto the can body wall and which will provide a proper hermetic securement of an end closure to the can body. For metal can bodies the angle of the flange is from about 0° to 5° upward from a line drawn perpendicular to the can body wall of an upright tubular can body. For fiber cans, the flange angle is greater and may be up to about 25°, measured from the same line. The radius of the curvature of flanged metal cans can be from about 0.030 to about 0.100 inches, though it usually is about 0.078 inches.

Once the tubular can body is flanged, a pre-cut label is applied thereto. As the label is being applied, the radii of curvature between the can body flange and the can body wall are used as guides to properly align the longitudinal edges of the label onto the can body wall in a manner that positions such edges substantially parallel to the ends of the can body, and the short edges of the label substantially parallel to the central axis of the can body, and to the can side seam, if there is one.

Any suitable conventional method and means can be employed for applying the label to the flanged can body. Commonly, individual labels are taken from a supply such as a pre-cut stack, by a transfer arm which picks up the label, usually by means of a vacuum, and transfers and applies it to a rotating tubular can body carried on an adjacent rotating turret. Either or both the can body or the undersurface of the label has a suitable adhesive preapplied thereto. Commonly, the adhesive is a hot-melt and is in a heated, tacky condition so that the label adheres quickly to the rotating can body.

The flanged, labelled can body then has one or two end closures seamed to its open end or ends. If the can body has a closed end such as in the case of a drawn and ironed aluminum can, the can is filled with a product or goods and a top end closure is secured thereto.

If the can body has two open ends, a bottom end closure is seamed to the bottom end, the can body is filled and then a top end closure is secured thereto. Preferably, end closures are double seamed to the flanged can body. Any conventional double seaming method and means can be employed so long as they do not destroy or adversely affect the integrity or function of the label or the double seams.

The adhesive utilized to adhere the label to the can body can be any suitable conventional adhesive. For rapid applications of labels to the entirety of can body walls, water resistant, quick-tack, hot-melt adhesives such as wax-based or ethylenic acidic adhesives are preferred.

Can bodies to which labels can be applied according to the method of this invention include any conventional metal tubular can bodies such as made from conventional tinplate, steel and aluminum materials. Fibrous can bodies can also be employed. The can bodies may but need not be side seamed.

Label 18 can be made of any suitable material, of any thickness and of any number of layers. Suitable materials are thermoplastics, metal foils and fibrous materials such as paper or composites. Preferably the label is not made solely of a light guage paper.

It is thought that the invention and many of its attendant advantages will be understood from the foregoing description, and it is apparent that various changes may be made in the steps of the method and materials described without departing from the spirit and scope of the invention or sacrificing all of its material advantages, the methods and materials hereinbefore described being merely preferred embodiments thereof.

I claim:

1. A method of applying a label to a tubular can body which comprises:

outwardly flanging the marginal end portions of a tubular can body to form radii of curvature between the flanged marginal end portions and the can body wall,

applying the label to the flanged can body wall, the label being selected to be of a size that covers the can body wall and that extends substantially to the radii of curvature, and

during the applying step, using the radii of curvature to guide and properly align the label onto the can body.

2. The method of claim 1 wherein there is also included the step of double seaming an end closure to the labelled tubular can body in a manner that secures all longitudinal marginal edge portions of the label between the can body wall and the double seam cover hook.

3. The method of claim 1 wherein there is also included the step of double seaming top and bottom end closures to the labelled tubular can body in a manner that secures all longitudinal marginal edge portions of the label between the can body wall and the double seam cover hooks.

* * * * *