Dec. 21, 1937. L. STURGES 2,102,862

METHOD OF REINFORCING A MILK CAN NECK

Filed Dec. 24, 1936

Fig. 1

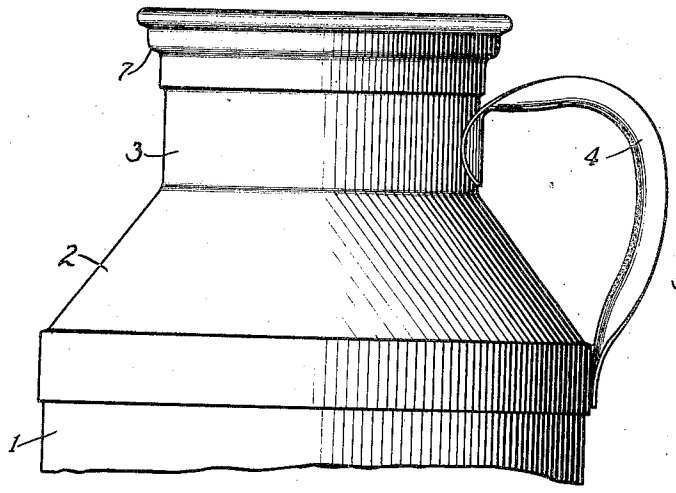



Fig. 2

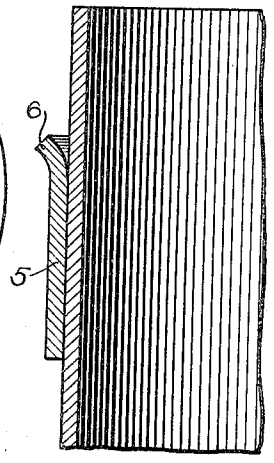



Fig. 3

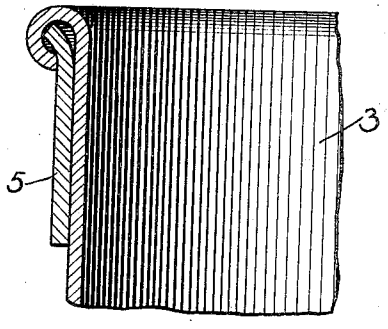



Fig. 4

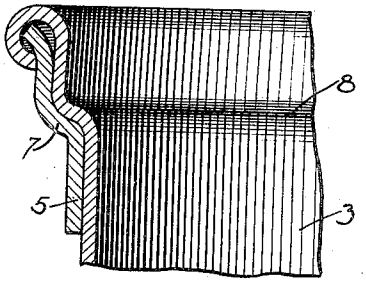
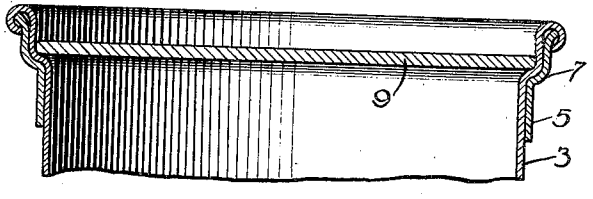



Fig. 5




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## METHOD OF REINFORCING A MILK-CAN NECK

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5 Claims. (Cl. 113—120)

The present invention relates to milk can construction and more particularly to a method of reinforcing necks of milk cans to prevent distortion thereof, incidental to rough usage of the cans, to such extent as to prevent ready application of closures to the cans for re-use.

It has been demonstrated repeatedly, by experience, that the necks of milk cans, particularly cans of small sizes such as one gallon, two gallon, and three gallon capacities, which utilize cardboard or like closures, are many times so dented and deformed by rough usage as to make it impossible to seal the necks of such cans by such closures. When such damages occur, it is necessary to have the can necks straightened, a proceeding involving spending of money and loss of use of the cans.

The present invention overcomes the above mentioned objections by providing a can so constructed as to have its neck suitably reinforced to withstand rough usage to which such cans are subjected, and at all times afford a truly circular opening for the reception of a closure member.

Generally speaking, the invention contemplates the provision of a reinforcing hoop about a can neck, which is secured in place by beading the can neck over the hoop, and the neck and hoop expanded to form a seat for a closure, thereby greatly strengthening the neck and preventing denting or distortion to such a degree as prevents ready re-use. Cans constructed in accordance with the present invention are much stronger and withstand deformation better than cans of the type now in use.

An object of the present invention is to provide a milk can having a reinforced neck to prevent distortion in use.

Another object of the present invention is to provide a method of reinforcing necks of milk cans to afford greater rigidity against distortion.

A further object of the present invention is to provide a novel milk can construction.

The above, other, and further objects of the present invention will be apparent from the following description and accompanying drawing.

The accompanying drawing illustrates an embodiment of the present invention, and also a can constructed in accordance with the methods of the present invention, and the views thereof are as follows:

Figure 1 is a side elevational view of the upper end of a milk can constructed in accordance with the principles and by the method of the present invention;

Figure 2 is a fragmental enlarged vertical sectional view through a portion of a neck of a can before the neck is beaded, and showing a reinforcing hoop about the neck in position to be secured in place;

Figure 3 is a view of the neck and reinforcing hoop after the neck has been beaded over the hoop;

Figure 4 is a fragmental sectional view of the construction of Figure 3 after the neck and hoop have been expanded to rigidify the neck, and to provide a seat for a closure; and

Figure 5 is a fragmental vertical sectional view through a milk can of the present invention, showing a closure in place on its seat.

The drawing will now be explained.

A milk can constructed in accordance with the present invention has the usual body **1** and breast **2**. Formed as a part of the breast **2** is an upstanding cylindrical neck portion **3** which is of greater length than the finished neck. A handle **4** is secured in position with one end fastened to the completed neck of the can and the other end secured in place against a breast flange which is soldered or otherwise fastened to the body **1**, in accordance with common practice.

In order to strengthen and rigidify the neck of the can, a hoop or ring **5** of an internal diameter to fit closely about the neck portion **3** of the can is fashioned with its upper margin flared outwardly as at **6**. The hoop or ring **5** is then applied over the cylindrical neck portion of the can with its flared upper margin spaced inwardly or downwardly from the upper margin of the neck portion **3**. The neck is then subjected to suitable machine operations to bead over that portion of the neck above the hoop into the shape and formation illustrated in Figure 3. This beading of the upper portion of the neck secures the ring or hoop in place.

After the step illustrated in Figure 3, the neck and hoop are subjected to suitable expanding action to form an outstanding annular flange, designated at **7**, in the formation of which an internal seat **8** is fashioned for a closure member **9**. The portion of the neck above the seat **8** during the formation of the expanded portion of the neck and hoop, is given a slight inclined shape outwardly convergent from the seat **8**, so as to necessitate compression of the closure **9** when it is inserted in place against the seat. This formation adds strength to the extremity of the neck portion and at the same time prevents ready displacement of the closure, thereby assuring complete sealing of the can at all times, except when the closure is intentionally removed.

The formation of the neck portion, as described, that is to say with a multi-ply wall at the seat, and immediately above the seat, provides a construction which is resistive of ordinary forces, incidental to rough usage of the can, to dent or otherwise distort the extremity of the neck portion. This construction, therefore, provides one wherein the cans so manufactured may be used time after time without damage to the contour of the margin of the neck portion, thus assuring ready application of the closure 9, for a longer duration of time than is possible with the cans in use at the present time.

The closures 9, usually employed for cans of the character herein described, are made of cardboard or other suitable material, suitably impregnated with paraffin, something like milk bottle caps. These caps are held in place frictionally by engagement of the marginal portions of the caps with the walls surrounding the milk can seats. By the inclination of the necks above the seats, added holding effect is secured so that the likelihood of the closures 9 being dislodged, due to rough usage of the cans when filled, is remote.

After the cans have been constructed in the manner herein described, they usually are coated with tin in accordance with established practice.

It will be observed that the can of the present invention is one which has a reinforced neck, reinforced by multi-ply construction, and in addition is expanded or offset to further strengthen the neck. The beading of the upper portion of the neck proper over the reinforcing ring or hoop additionally strengthens the margin of the neck portion to prevent deformation in use.

Milk cans of the smaller capacities, such as one gallon, two gallon, and three gallon, are constructed at the present time with the necks of single thickness material, with the upper margins of the necks beaded over to make smooth edges. It has been found that as thus constructed these margins become dented or deformed to such point as to prevent re-use of the cans without first having to straighten the necks. The time consumed in returning the cans to the factory for straightening is considerable, and the money expense involved in shipping charges and in maintaining an extra number of cans on hand makes it desirable that cans of greater strength than at present manufactured be available.

The invention has been described herein more or less precisely as to details, yet it is to be understood that the invention is not to be limited thereby as changes in the arrangement and proportion of parts, and equivalents may be substituted, without departing from the spirit and scope of the invention.

The invention is claimed as follows:

1. A method of reinforcing the neck of a milk can or like article to prevent distortion due to rough use, including the steps of forming the can neck as a cylinder, forming a hoop with its upper margin flared, applying the hoop about the cylindrical neck with the upper margin of the hoop spaced downwardly from the upper margin of the neck, beading the portion of the neck above the hoop over the flared margin of the hoop, and then expanding the upper portions of the neck and hoop outwardly between the margins of the hoop to form a seat for a substantially flat lid.

2. A method of reinforcing the neck of a milk can or like article to prevent distortion due to rough use, including the steps of forming the can neck as a cylinder, forming a hoop with its upper margin flared, applying the hoop about the cylindrical neck with the upper margin of the hoop spaced downwardly from the upper margin of the neck, beading the portion of the neck above the hoop over the flared margin of the hoop, then expanding the upper portions of the neck and hoop outwardly between the margins of the hoop to form a seat for a substantially flat lid, and inwardly inclining the portion of the expanded neck above the seat to prevent ready displacement of the lid.

3. A method of reinforcing the neck of a milk can or like article to prevent distortion due to rough use, including the steps of forming the can neck as a cylinder, forming a hoop with its upper margin flared, applying the hoop about the cylindrical neck with the upper margin of the hoop spaced downwardly from the upper margin of the neck, beading the portion of the neck above the hoop over the flared margin of the hoop, and subjecting the upper portions of the neck and hoop to expanding action to provide a seat for a lid and to inwardly incline the inner wall of the neck between the seat and the upper margin of the neck to prevent ready displacement of the lid.

4. That improvement in the manufacture of milk cans to prevent distortion of the can neck to such shape as will not readily receive a closure, which consists in applying a reinforcing hoop about the can neck, then expanding the upper portions of the neck and hoop to provide a substantially flat annular seat for a closure.

5. That improvement in the manufacture of milk cans to prevent distortion of the can neck to such shape as will not readily receive a closure, which consists in applying a reinforcing hoop about the can neck, expanding the upper portions of the neck and hoop to provide a seat for a closure, and inclining the neck inwardly above the seat to reduce the diameter of the neck margin.

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