

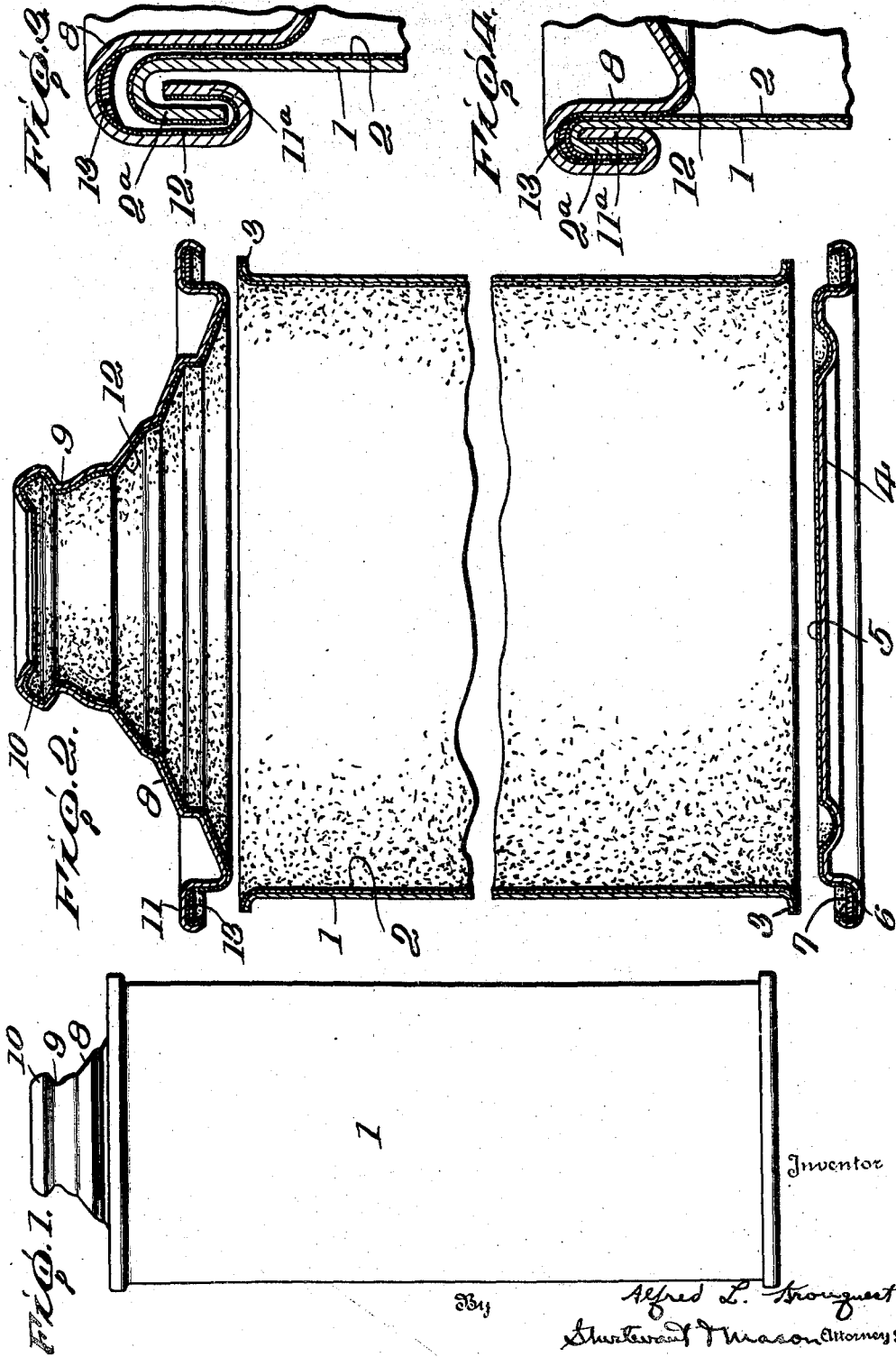
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METHOD OF MAKING A METAL CONTAINER FOR BEER

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METHOD OF MAKING A METAL CONTAINER FOR BEER

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1 Claim. (Cl. 113—121)

The invention relates to new and useful improvements in a method of making metal containers for beer. It is well known that beer when placed in a metal container, if it comes in contact with the metal, a chemical reaction occurs resulting in clouding the beverage.

An object of the present invention is to provide a method of making a container whereby every particle of metal with which the beer, under pressure, can contact with, is covered by a coating which has no clouding effect upon the beer.

In the drawing—

Figure 1 is a side view of the container made by the improved method;

Fig. 2 is an enlarged sectional view through the end closures and the body of the container prior to the joining of the parts and after said parts have been coated preparatory to joining;

Fig. 3 is an enlarged sectional view through one of the seams with the parts loosely engaged in order to show the extent to which the coating which will not cloud the beer is carried into the seam, and

Fig. 4 is an enlarged section of the seam in its finished form.

The container for the beer is made of sheet metal, and it includes a body portion which is indicated at 1. This body portion is preferably made of tin. The sheet of tin is cut to the proper size and is formed into a cylindrical body. The edges are joined by either a lock and lap or a lap seam to which solder is applied so as to make a tight seam. After the can body is thus formed, it is flanged. This is accomplished by turning the metal at each end thereof outwardly into a projecting flange which is substantially at right angles to the body portion. This flange is of the usual type and serves as a means for the joining of the ends to the body. The body, so far, is formed in the usual manner. In carrying out the method of the present invention, the body is then coated on the inside throughout the entire extent and substantially to the peripheral edges of the flanges, with a coating which has no clouding effect upon the beer when contacting with the coating. It is well known that if the beer contacts with even a very small portion of the metal, that a reaction takes place which causes the clouding of the beer, and it is therefore, essential that the entire inner surface of the can body shall be covered with this protecting coating so that the beer cannot contact therewith. The coating is preferably made from an asphalt base. Any coating may be used, however, which can be applied to the surface of the

can body after it is formed by flowing or by spraying, and which, upon drying, will produce a set coating covering the entire inner surface of the metal and the flanges, or the greater portion thereof. It is not desirable to use a coating which must be set by the application of heat exceeding 250° F., for the reason that the side seam containing solder is likely to be affected by the heating operation so as to cause a leak in the side seam.

In Fig. 2 of the drawing, the body 1 is shown as having a coating 2 applied to its inner wall and extending all the way to the outer edges of the flanges 3, 3. As noted above, it may terminate short of the outer edge, but it should extend well beyond the curved portion joining the flange to the body wall, so that the coating, when the seam is formed, will extend into the seam formation. The lower end of the container is indicated at 4. This is formed of sheet metal which may be coated in the manner above described, but it is preferable to coat this end after it has been shaped in a die press with an enamel which may be set by the application of heat, for the reason that in the handling of the end, it is almost necessary to contact with the enameled face, and unless the enamel is hard and capable of resisting scratching when contacting with other parts, damage is likely to occur so that the coating will not be affected to prevent the clouding of the beer. If the coating is scratched or broken so that the beer may reach through and contact with the metal, it is likely to cloud.

The coating on the end 4 is indicated at 5. This end is provided with the usual annular channel 6, and in this channel is placed a sealing gasket 7, which likewise is of a substance that will not cloud the beer. If the end 4 is coated with an asphalt base such as used on the body of the container, it may be that the sealing gasket 7 will not be necessary. The coating material itself will seal the joint formed between the end and the body wall by the rolling of the metal parts into a double seam. After the end is prepared in the manner above described, it is placed on the body in the usual way with the flange 3 extending into the channel 6 of the end, and then the parts are rolled into a double seam as indicated in Figures 3 and 4.

The closure end may be made similar to the bottom end, but it is preferably made so as to provide a pouring mouth similar to a bottle mouth. As shown in Fig. 2, this upper closure end is indicated at 8, and it is drawn so as to

provide a mouth portion 9 having a circumferential bead 10 at its upper end adapted to receive and retain the ordinary crown seal for hermetically closing the container. This end, as noted above, may be otherwise shaped and otherwise closed. It is provided with a peripheral channel portion 11. After the end is drawn to the shape just described, it is then coated by flowing a coating thereon, or by spraying as indicated at 12. This coating may be of an asphalt base, but it is preferably of a resin base which is baked, or to which heat is applied in order to set the coating. When the coating is applied after the end is shaped, any breaking through of the tin coating, when the end is made from tin plate, will be covered by the coating, and there will be a smooth, hard surface completely covering the metal on the inner face thereof, and preventing the beer from, in any way, contacting with the metal. This coating extends all the way to the edge of the lip at the mouth of the container, and it extends preferably into the channel and all the way across the channel. In the channel 11 may be placed a sealing material 13 of the usual character. As noted above, if the asphalt coating is used, it is possible that the sealing gasket will not be necessary. After the end has been formed in the manner above described, it is then applied to the container body, and the coated flange 3 will contact with the sealing material 13 in the channel portion 11 of this end 8. After the parts are thus applied, then the flange and the channel portion 11 are subjected to the curling action of a seaming roll, and the parts rolled into a double seam.

In Fig. 3 of the drawing, a cross sectional view through one of the seams joining the end members to the body wall is shown, with the parts loosely rolled together, for the purpose of illustrating more clearly the extent to which the coating on the inner faces of the end and the body wall are carried into the double seam. In this view, the body wall 2 is shown as extended into the double seam as indicated at 2a. The flange of the end is rolled into the double seam as indicated at 11a. The sealing material is shown in a general way at 13. It will be noted that the coating 12 on the end 8 extends all the way around in the double seam, practically to the end of the turned in portion 11a. Likewise, the coating 2 on the body wall extends all the way around to the end of the curled-in portion 2a. If the beer in the container which is under pressure works its way into the double seam, it does not contact with the metal, but it still contacts with these coated walls which extend into the double seam.

Many efforts have been made to coat the container after the ends are secured to the body wall. When the beer is sterilized to a temperature of 140° F., considerable internal pressure is developed which, of course, varies in proportion to the percentage of CO₂ gas present. The usual pressure is around ninety pounds per square inch, and this has the effect of bulging the ends of the ordinary container outwardly, thereby causing a separation of the enamel between the can end and the body wall when the can is coated after the ends have been secured to the body wall.

There is another step in the method of making the container which is preferably employed in order to insure that the inner coated surfaces of the ends and the body will not, in any way, be

scratched or marred or fractured during the handling thereof. It is the usual practice in the making of metal cans to make and flange a body in one line of machines, to make the ends in another, and after they are prepared to feed the ends along guideways so that they are assembled on the body for seaming. In the making of the beer can described, the can body after it is flanged is passed to a machine where it is coated, and it is then dried and the coating set ready for the finishing of the can body. The ends are coated and the coating thereon set or baked, and then the ends are placed on the can body just as it comes from the drier where the coating is set, so that during the travel of the can body and the ends along the guideways to the seaming machine, the ends and the body are assembled, and the parts of the can body and the end coming in contact with the guide rails along which it passed, is the outer surface of metal forming these parts. The inner surface which is coated is completely protected from any contact with the guide rail during the conveying of the can body to the seaming station. While this method of handling the ends and the can body may not be essential to the method of forming the can body described above, which includes the step of coating the body all the way to the edge of the flanges and the ends all the way to the edges of the curled portions before the parts are united, nevertheless, it is of an advantage in that it protects the coating and gives the double assurance that the finished can body will have a coated surface, unbroken, extending all the way out into the seams joining the parts.

While the invention has been described as particularly useful in the forming of a metal container for the storing and the sale of beer, it will be understood that it may be used in connection with other beverages and other products where it is desired to maintain the product out of contact with the metal.

It is obvious that changes in the steps of the method described above and of the coating of the can parts, and changes in the steps of the method described in the handling of the metal parts, may be made without departing from the spirit of the invention as set forth in the appended claim.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent, is—

The method of making sheet metal containers for beer, consisting in forming a sheet of metal into a cylindrical body and joining the edges thereof by a solder-bonded side seam, flanging the can body and subsequently applying a coating over the entire inner surface of the can body and to a substantial distance onto the flanges thereof, which coating has no clouding effect upon the beer when contacting therewith, die-shaping top and bottom metal ends and subsequently applying to the inner face of said ends a coating which has no clouding effect upon the beer when contacting therewith, said coating extending onto and substantially across the channel portions of the ends, applying to said channel portions on the ends a plastic sealing material, placing the ends on the coated body portion and subjecting said body and assembled ends to a seaming operation at room temperature for curling the peripheral edge portions of the ends and can body into hermetic seams.

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