Dec. 14, 1937. A. L. KRONQUEST 2,102,208

PROCESS OF PACKAGING BEER IN OPEN TOP METAL CONTAINERS

Original Filed July 24, 1935

Fig. 1.

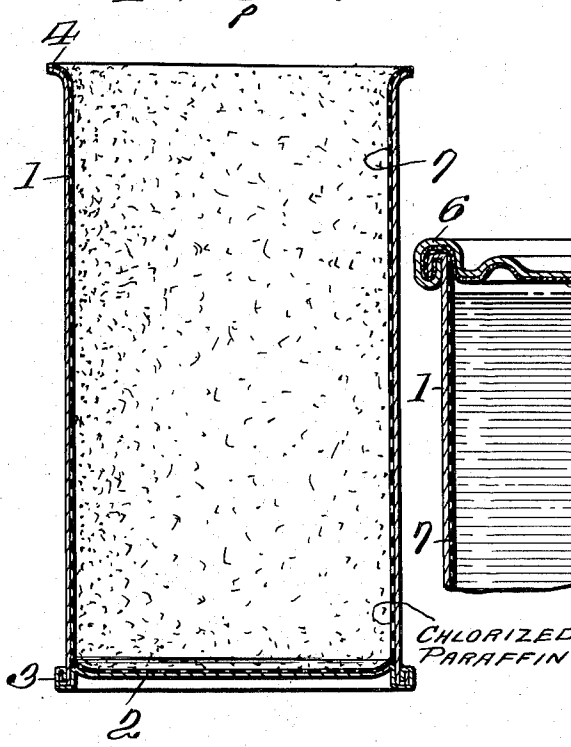


Fig. 3.

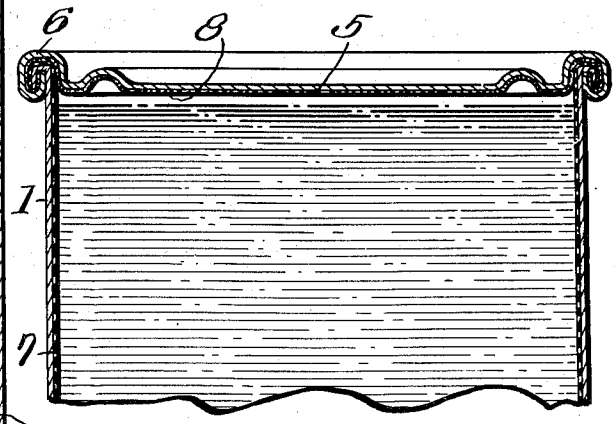
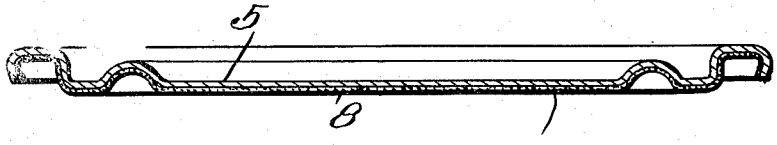


Fig. 2.



THERMO PLASTIC ENAMEL

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PROCESS OF PACKAGING BEER IN OPEN TOP METAL CONTAINERS

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2 Claims. (Cl. 99—182)

The invention relates to new and useful improvements in the packaging of beer in open top metal containers.

An object of the invention is to provide a process whereby beer can be sealed in an open top metal container and then pasteurized without any injurious effects of the metal of the container on the beer.

A further object of the invention is to provide a process of the above character wherein the inner surface of the metal container is completely covered with a thermoplastic coating which has a melting point well above the temperature necessary to heat the sealed container for the pasteurizing of the beer.

These and other objects will in part be obvious and will in part be hereinafter more fully disclosed.

In the drawing—

Figure 1 is a vertical sectional view through an open top container which has been provided with a thermo-plastic coating preparatory to the placing of the beer therein;

Fig. 2 is a vertical sectional view through a container end which is provided with a thermoplastic enamel coating on the inner face thereof, heat treated and prepared for closing the container, and

Fig. 3 is a view of the upper portion of the closed container.

In the drawing, there is shown more or less diagrammatically what is well known in the art as an open top container. This open top container includes a body portion 1 to which an end 2 is attached by double seaming indicated at 3. The body portion 1 is flanged as indicated at 4. After the product is placed in the container, then an end indicated at 5 is attached thereto by a double seam 6 which seals the container. It is well known that beer when contacting with tin clouds, and therefore, in order to use a metal container made from tin plate for the packaging of beer, it is necessary to completely cover the metal with a coating which has no clouding effect upon the beer.

The present invention has to do with a method of making and treating a container so as to provide a suitable coating covering the entire inner surface of the metal container so as to prevent the beer from contacting with the metal at any time. It is well known that when metal sheets are coated with an enamel that has no clouding effect upon the beer, the bending or drawing of the sheet to form the ends and to form the body seams, is likely to fracture the enamel coating so as to expose the metal therebeneath. Even if the can body and the bottom end thereof is coated with enamel, the shaping of the parts is likely to fracture the enamel coating and render the container thus formed unsuitable for the packaging of beer.

The container shown in Fig. 1, before it is filled with the beer, is treated so as to coat the entire inner surface thereof with a thermo-plastic material which has no clouding effect upon the beer. Such a coating is indicated at 7 in the drawing. A suitable thermo-plastic material for this purpose is found in what is known commercially as "Cerese EE" wax. The melting point of such a thermo-plastic material is approximately 155° F., which is well above the temperature to which it is necessary to heat the beer for pasteurizing the same, and therefore, when the container is coated with such a thermoplastic material, its character or condition will not be disturbed when heat is applied to the container for pasteurizing the beer sealed therein. This Cerese wax will not flake or craze at normal refrigerating temperatures.

The paraffin wax is heated to a temperature of approximately 250° F., and the liquid wax is then poured into the container as shown in Fig. 1, until it is approximately half full. The wax is caused to flow over the entire inner surface of the container, and is poured therefrom, leaving a film of wax covering every portion of the container. At the side seam and also at the double seam joining the bottom end to the body of the container, the crevices formed by the interfolding of the metal parts will be filled with the wax. The wax is heated to the temperature stated so that when contacting with the walls of the container the liquid wax will be at a sterilizing temperature and will sterilize the inner walls of the container and form on the walls when cooled a sterile film or covering of wax. The coating of wax is preferably applied to the container just before the container is filled with the beer.

The end 5 for closing the container is coated on its inner face with a thermo-plastic material of a different character than the paraffin wax. Such a coating is indicated at 8 in Fig. 2 of the drawing. While it is practical to coat the interior of the container with the paraffin wax just before it is filled, it is more difficult to coat the inner face of the end which is to close the container and to apply the end without scratching or fracturing the wax coating, and therefore, a thermoplastic enamel is used which is sufficiently hard

to resist scratching or fracturing during handling. In the forming of the ends, the metal is coated in the flat with an enamel which is thermo-plastic and which becomes soft and fluid in form at a temperature of approximately 300° F. This is a temperature well above the normal temperature to which the container must be heated for the pasteurizing of the beer, and therefore, such an enamel coating on the inner surface of the closure end will not be, in any way, disturbed or changed during the heat necessary for the pasteurizing of the beer. One form of enamel which may be used for this purpose is produced by the bringing together of the following ingredients. 200 grams, 35% solution polymerized vinyl acetate in toluene; 100 grams, 65% alkyd resin (phthalic anhydride—fatty acid—glycerine) in toluene; 75 grams, acetone; 4 grams, liquid petrolatum. After the sheet has been coated with the thermo-plastic enamel, it is then cut into suitable blanks which are die-shaped to form the ends for the closing of the container. During the die-shaping of the end, the enamel coating is put under severe strain and may be ruptured at minute points so as to expose the metal beneath the coating. Therefore, after the end is shaped it is subjected to heat so that the enamel is raised to a temperature which will render it fluid, with the result that the enamel will flow and close up all of the fractures and produce a coating which completely covers the surface of the container end. The container end thus formed is shipped with the open top container to the packer. This enamel, as noted above, is of sufficient hardness so as to resist fracturing under normal handling.

After the open end container has been filled, then the end with this thermo-plastic coating is applied and secured to the body portion by double seaming. This seals the container. After the container is sealed, it is heated preferably by immersing the same in a water bath to a temperature of approximately 140° F. This will pasteurize the beer. The raising of the container to this temperature does not, however, in any way, affect the thermo-plastic coating on the interior surface thereof, which remains intact, completely covering the metal and preventing the beer from contacting therewith.

The can end 5 is described as having a coating on its inner face. It may be coated on its outer face with the same material. It is essential, however, that the thermo-plastic enamel coating shall cover the entire inner face of the end. While the base metal from which the container is made is referred to as tin plate, it will be understood that other forms of metal plate may be used in the making of the container body or the end.

It is obvious that other forms of thermo-plastic coatings may be used, but it is essential that the melting point of the thermo-plastic material shall be well above the pasteurizing temperature of the beer.

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

1. The process of packaging beer in an open top metal container consisting in heating a petroleum derivative of the paraffin group and having a melting point above 140° F. to render the same fluid, flowing said material over the entire inner surface of the open top container, filling the container with beer, seaming an end to the container for sealing the same, the inner surface of which end is coated with a modified polymerized vinyl resin having a melting point above 140° F., which coating is raised to a temperature for rendering the same fluid after the end is die-shaped and prior to the seaming of the same to the container, and subjecting the sealed container to heat for pasteurizing the beer.

2. The process of packaging beer in an open top metal container consisting in heating a petroleum wax having a melting point above 140° F. to render the same fluid, flowing said fluid wax over the entire inner surface of the open top container, filling the container with beer, seaming an end to the container for closing the same, the inner surface of which end is coated with a thermo-plastic enamel having a melting point above 140° F., which coating is raised to a temperature for rendering the same fluid after the end is die-shaped and prior to the seaming of the same to the container and subjecting the sealed container to heat for pasteurizing the beer.

ALFRED L. KRONQUEST.