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H. S. SCHUTTE

2,024,951

PACKAGE

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Fig. 1.

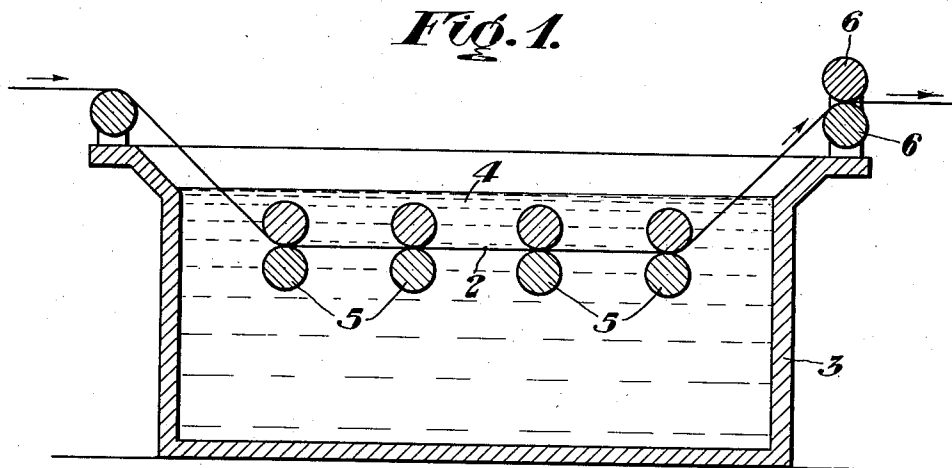


Fig. 2.

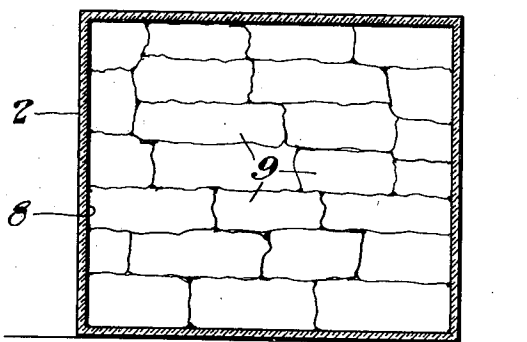
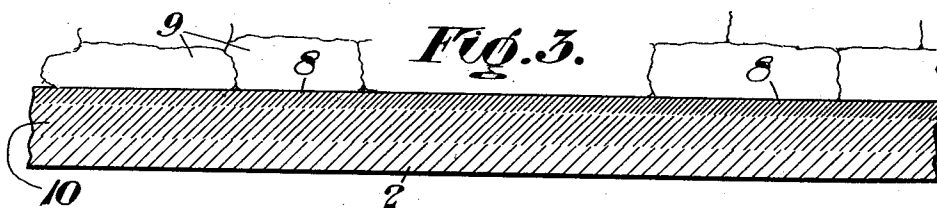


Fig. 3.



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UNITED STATES PATENT OFFICE

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PACKAGE

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Application June 9, 1932, Serial No. 616,351

2 Claims. (Cl. 206—46)

This invention relates to the manufacture of foodstuff packages made from tin plate, and has for its object the provision of a novel package composed of tin plate having a passive surface.

In the canning industry, one of the undesirable features encountered in the packing of certain food products is a dark discoloration of the interior surfaces of containers made from tin plate. This is particularly pronounced in the various meat commodities and, while the edibility of the goods is not affected by the discoloration, the unattractive appearance of a discolored can militates against the ready sale and marketability of the product by arousing suspicion as to its real quality.

The present invention produces a novel package from tin plate in which the chemical reactivity of the surface layer of tin has been altered in such a manner as to prevent or reduce to a minimum the formation of tin sulfide under the conditions prevailing in a can packed with meat products and the like.

The passive surface produced by this invention is formed by the deposition or formation on the surface of the tin plate of an extremely thin, generally transparent film of another substance, the depth of which is generally considered to be the equivalent of one or a very few molecules, and which does not affect the appearance of the tin underneath the film coating but nevertheless the coating functions as a barrier to the progress of certain chemical reactions.

In the drawing:

Figure 1 is a sectional view of a form of apparatus which may be utilized to treat the material of which the container of the novel package is composed.

Figure 2 is a sectional view of the entire package.

Figure 3 is a greatly enlarged fragmentary sectional view of the container.

In carrying out this invention the freshly tinned strips or plates as shown at 2, immediately after they have been cleaned to remove the oil deposited during the tinning operation, are conducted singly and in procession through a treatment tank 3 where they are immersed in a neutral aqueous solution of an oxidizing agent 4, preferably either sodium or potassium permanganate. The strength of the solution of the oxidizing agent is preferably maintained at a concentration of approximately five per cent. and the solution is heated to a desirable temperature, usually in the range of from 150 degrees to 190 degrees Fahrenheit. During the immersion

of the tinned strips or plates 2 in the oxidizing solution they are passed between suitable pairs of rollers 5, and the rolls of the pairs of rollers are operated at spaced differential speeds to provide a scrubbing action during the passage of the tinned material through the solution.

In order to accelerate the action of the aqueous solution of the oxidizing agent, the solution may be agitated or the tin plate may be subjected to a scrubbing action in order to destroy the oil film on the plates and expose the tin to attack.

As the tinned strips or plates 2 pass out of the oxidizing solution, all excess solution is preferably removed by squeezing rolls 6 and the plates are dried in any desired manner. The dried plates are then passed through a standard branning machine similar to that commonly used to remove the oil from tin plates, which branning machine serves to insure the removal of all moisture from the surfaces of the treated plates.

The tinned strips or plates 2, as they pass from the branner, have an extremely thin, film-like coating 8 of oxid on their surfaces which is transparent but is sufficient to resist the formation of sulfide stains when the material is used in the form of cans or containers for meat products and the like.

In Figure 2 of the drawing the strip or plate 2 is shown as being formed into a substantially rectangular container in which there is disposed a meat product 9, while in Figure 3 a greatly enlarged fragment of the container is illustrated. The numeral 10 in Figure 3 represents a zone of gradual and uniform transition from substantially pure tin-oxide 8 to the substantially pure tin of the surface of the strip or plate 2 from which the container is made. The mergence of the tin-oxide with tin-plate in this gradual and uniform transition provides a tight impervious inner surface which is an integral part of the container wall.

This surface is proof against any foodstuffs having ingredients which chemically react with tin to form a tin compound of unsightly appearance.

While I have shown and described one specific embodiment of my invention, it will be understood that I do not wish to be limited exactly thereto, since various modifications may be made without departing from the scope of my invention as defined by the following claims.

I claim:

1. A package consisting of foodstuffs enclosed in a tin-plated metallic container, the foodstuffs

having ingredients which chemically react with tin to form a tin compound of unsightly appearance, the inner walls of the container comprising zones of differing characteristics, the inner zone
5 being tin-oxide which merges with the tin-plate in such manner that it provides a tight impervious inner surface which is an integral part of the container wall.

2. A package consisting of foodstuffs enclosed
10 in a tin-plated metallic container, the foodstuffs having ingredients which chemically react with

tin to form a tin compound of unsightly appearance, the inner walls of the container comprising zones of differing characteristics, the innermost zone being tin-oxide which merges with the tin-plate in such manner that there is a gradual
5 and uniform transition from substantially pure tin-oxide to substantially pure tin, thus providing a tight impervious inner surface which is an integral part of the container wall.

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