

Dec. 19, 1939.

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2,183,888

APPARATUS AND PROCESS OF PACKAGING FRUIT

Filed Nov. 21, 1938

2 Sheets-Sheet 1

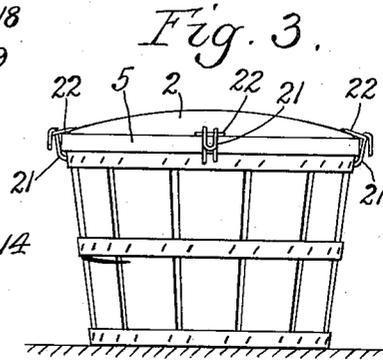
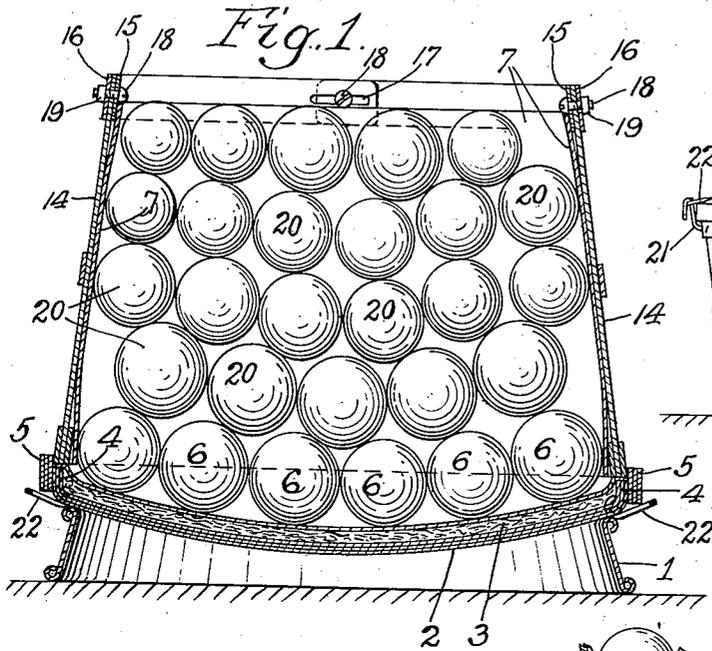


Fig. 4.

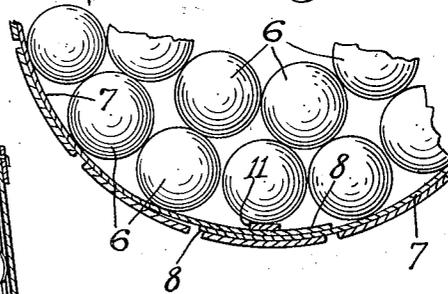
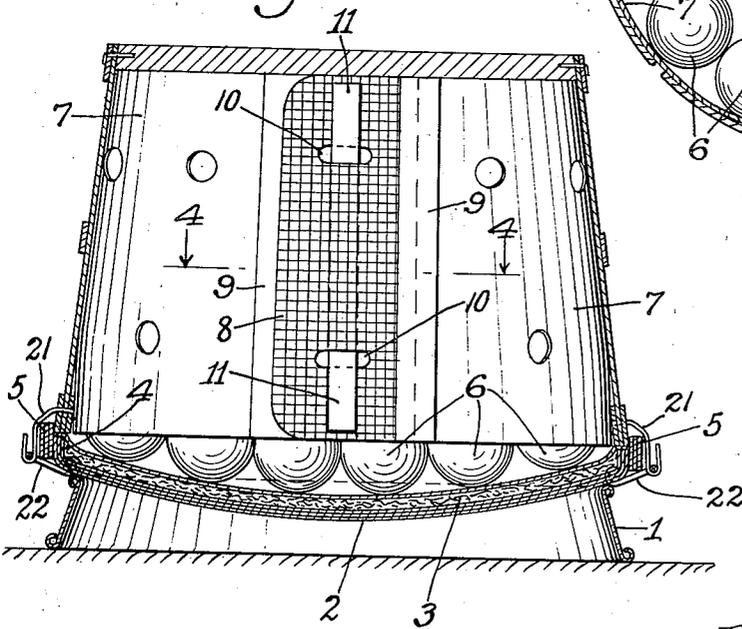


Fig. 2.



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Fig. 5.

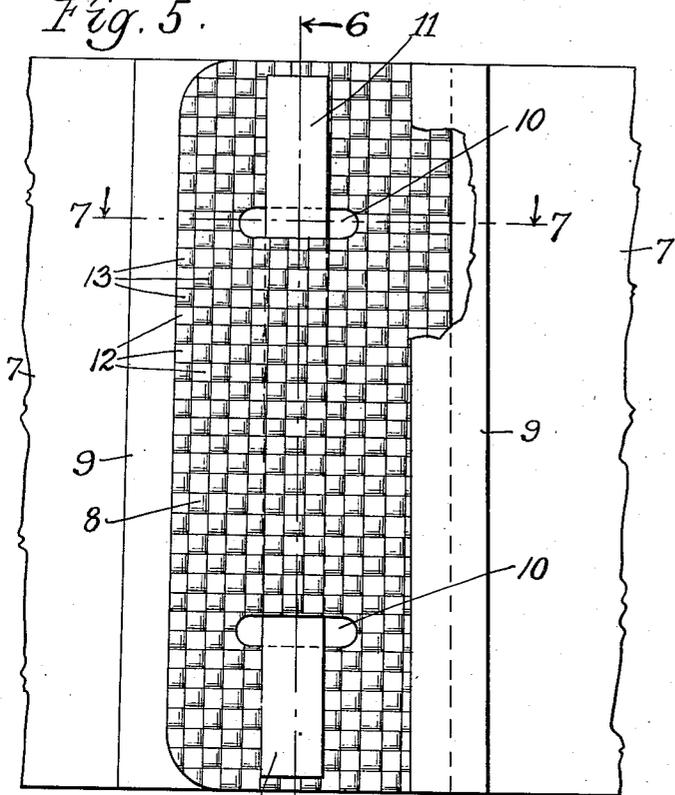


Fig. 6.

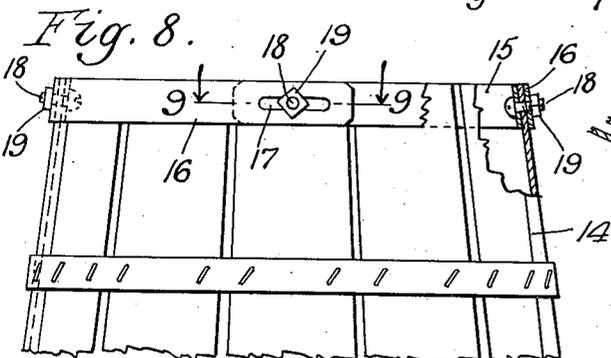
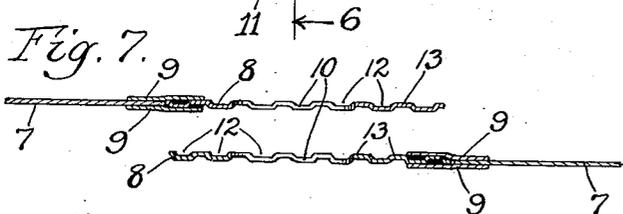
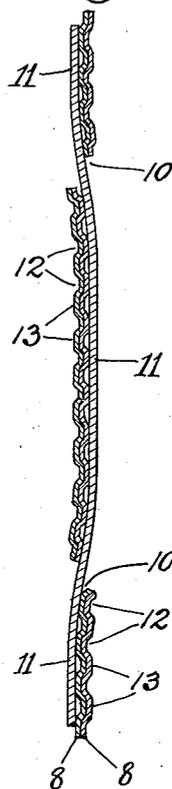
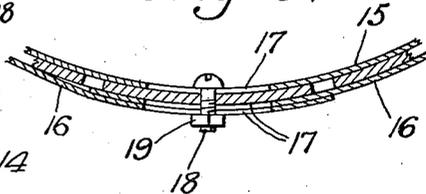


Fig. 9.



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## UNITED STATES PATENT OFFICE

2,183,888

APPARATUS AND PROCESS OF PACKAGING  
FRUIT

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3 Claims. (Cl. 226—17)

This invention relates to apparatus and process of packaging fruit and the like and has for one object to provide a new and improved apparatus and process which will more firmly package the fruit, which will take up less room in shipping and wherein the deterioration of the fruit is reduced and the packages when opened are more slightly.

In the past, it has been customary to package fruit by first arranging a layer of fruit by hand upon a face plate, then applying to that face plate, a breakable paper liner which extends upwardly therefrom, then placing over the liner a metal tub, the liner being of approximately the same size and shape as the tub. Then the fruit is poured into the tube to fill it. When the tub is withdrawn the liner remains in place, being of sufficient strength to hold the mass of fruit in position long enough for a basket to be inverted over the mass of fruit and brought down into the same place as the tub. The basket and face plate are then inverted, the face plate is removed and a top is applied to and fastened on the basket. The top, ordinarily of thin open work veneer, conforms generally to the contour of the face plate.

The baskets vary widely in size and shape depending among other things upon the factory from which they are made, the time and weather conditions under which they are manufactured. This being the case, it is necessary that the tub be small enough so that the minimum size basket when inverted over the package of fruit will fit the package with sufficient working clearance to permit placing the basket irrespective of variations in shape. As a result, when a basket larger than the minimum is used, there is a great deal of space between the package and the basket. In inverting the basket and in handling it for covering it and shipping, the package of fruit will settle in the basket and expand to exert a sufficient pressure to brake the paper liner at one or more places so that the fruit settles down in the basket below and out of contact with the cover. Thus many of the baskets will contain a mass of fruit which does not quite fill them. While the excess space is not very great, it is sufficient to permit a considerable range of movement of the contents which of course results in rubbing and the like in shipping and handling, thus permitting deterioration of the fruit. Also because the fruit has settled down in the basket, the face which was prepared by hand against the face plate will be disarranged and present a less slightly appearance than it would did this not take place.

I propose to obviate these difficulties by providing a form for the package of fruit which will be of substantially identically the same size and shape as the container in which it is shipped, thus there will be no settling and no disarrangement of the fruit in the container as a result of handling or shipping. I propose to do this by segregating the baskets as they are received at the packing house to prevent intermingling of baskets of different size and shape. Every shipment of baskets, perhaps every carload will be uniform so I propose to select from each carload, one of the baskets, knock the bottom out of it, reinforce the bottom with a metal or other reinforcing ring and use that basket as the tub or form for all the fruit packages to be shipped in the baskets from the carload or lot or shipment from which the one basket was selected. Variation in size and shape of the baskets in any group being negligible it becomes possible when one of the baskets is reinforced and used as a form or tub to be sure that each basket is entirely filled. When one basket is used as a form, the other baskets of the lot will fit a molded package of fruit which has been molded by that form and there will be no change in the arrangement of the contents and no disarrangement of the hand placed package face. I propose to use a liner which is adjustable to conform to a wide range of form sizes. It is the brake liner which is covered in my Patent No. 2,128,653. This brake liner adjusts itself to the form and retains that adjustment after the form is withdrawn when the basket replaces the form and during shipment.

In order further to avoid disarrangement of the contents of the package, I dispense with the use of a separate face plate and provide a smooth, cushioned, curved continuous closed top which is disclosed in my co-pending application Serial Number 231,720. This top is placed on a supporting member and used as a face plate. The brake liner is applied. It is adjusted to fit the form, the form is applied and filled, then the form is withdrawn and a basket of identical size and shape replaces it. It is fastened to the top and the basket is then shipped.

The conventional type of open-work relatively flimsy veneer top cannot be used satisfactorily as a face plate because owing to its open character, the fruit will not lie level but the new type of continuous top or cover can be used because it will act as a face plate and when the basket is inverted, the top being fastened to the basket, the top reinforces the basket. There is no movement, expansion, vibration or change and the fruit is

snugly and firmly held between the top which originally acted as a face plate and the brake liner which is snugly engaged by the walls of the basket because it was initially put in position such that it could make such snug engagement. The basket is therefore always completely filled with fruit. Space is saved and there is no opportunity for movement, rubbing and the like between the individual articles in the basket or between the contents as a unit and the basket.

Other objects will appear from time to time throughout the specification and claims.

This invention is illustrated more or less diagrammatically in the accompanying drawings, wherein—

Figure 1 is a vertical section through a package of fruit which is in process of being molded according to my invention;

Figure 2 is a side elevation in part section and with parts omitted, similar to Figure 1;

Figure 3 is a side elevation of a closed completed fruit package;

Figure 4 is a detail part section along the line 4—4 of Figure 1;

Figure 5 is an enlarged side elevation of a portion of my package or basket liner;

Figure 6 is a section along the line 6—6 of Figure 5;

Figure 7 is a section along the line 7—7 of Figure 6 showing the liner ends separated and the key omitted;

Figure 8 is a side elevation in part section of the mold form;

Figure 9 is a section along the line 9—9 of Figure 8.

Like parts are indicated by like characters throughout the specification and drawings.

1, is an annular work supporting ring. 2, is a basket or package cover adapted to be placed thereupon at the initial stage of the employment of my process for filling baskets and packages of fruit. 3, is a cushion permanently attached to the under concave face of the cover or lid. The cover or lid is provided with a flanged periphery 4, and reinforcing ring 5.

A layer of fruit is arranged in precise order upon the basket top by hand as indicated at 6, in Figure 4. During this time the basket top serves as a face plate for the proper supporting and positioning of the manually arranged fruit which is to form the face of the basket when it is opened. 7, is a liner comprising an elongated strip of paper or other similar flexible tough and substantially non-breakable and non-extensible fabric. It terminates at either end in a brake tab or extension 8, which is fastened to the body of the strip by any suitable means as for instance the adhesive strips 9. These tabs or extensions have mating elongated apertures 10, through which a key or stick 11, is adapted to be threaded to hold them together as indicated in Figures 5 and 6. These tabs are made of corrugated paper or other suitable material, having alternate rectangular depressions and bosses 12, and 13.

This liner is assembled in a ring, being so held by the key 11, because the apertures 10 are longer than the width of the key 11, the liner is adjustable in size and shape. It is preferably so cut and preformed that it normally forms a ring, the upper diameter of which is less than the lower. It is applied to the basket top 2, and is adjustable so as to conform thereto and to encircle the layer of fruit.

14, is a mold or package form. It is placed upon the basket top 2, surrounding the liner and the liner is then adjusted so as to be in contact about its entire periphery with the entire inner surface of the mold 14.

The mold 14, is preferably formed by taking one of the baskets from a single lot, removing the bottom and reinforcing the upper unsupported edge thus left by concentric adjustable reinforcing metal bands 15, 16, which metal bands are slotted at their ends as indicated at 17, for adjustment and held together on the outside and inside of the form by bolts 18 and nuts 19.

When this form is in place with the liner inside it, engaging and being supported by the outer periphery of the basket cover, fruit is poured into the form as indicated at 20, until the form is completely filled. The fruit exerts a pressure on the liner and upon the form and because it exerts a pressure on the liner, it tends to force into interlocked position the alternate bosses 12 and depressions 13, in the opposed liner ends. The key, being subject also to the pressure of the fruit assists in this operation so that while the liner is conveniently and easily adjustable before pressure is put upon it to be accurately placed in and fitted to the form, once the fruit is placed in the liner, the pressure of the fruit causes the liner terminal tabs to so intermesh that the liner is amply strong enough to support the weight of the fruit and to maintain the package or molded form of fruit in exactly the same shape and arrangement whether the mold is there or not.

The operator then lifts off the basket form and replaces it by one of the baskets of the lot from which the basket form was selected. These baskets have interlocking wire elements 21, which engage the staples 22, on the head and these elements are bent down as indicated in Figure 3, to lock the basket and top or cover together. All this takes place without any manipulation of the basket or of the liner. The liner having made a snug fit with the form makes a snug fit with the basket. The fit can be made a close one because the basket is always smaller at the bottom than at the top and since it is inverted for filling, there is no trouble about withdrawing the form and replacing the basket. Since the form and the basket are of the same size, the basket makes a snug fit with the liner encircling the molded package or body of fruit and so the basket is completely filled when it is turned right side up and stood on its bottom there is no movement of the fruit and no expansion or contraction of the liner. The liner remains continuous and the fruit is entirely protected by the liner from contact with the walls of the basket.

The container which is here illustrated is the usual type of wood or veneer basket. It might be made of many other materials. It might be solid or open as the case may be. The cover or top, while preferably made of hard paper stock might be of metal or thermoplastic or other suitable material.

The liner referred to is a fabric liner. It is preferably of paper. It might be of any type of paper and may or may not be impregnated with water-proofing or other material. It might even be a woven fabric or textile.

While I have illustrated my device as applied to packaging fruit, it will be understood that any

other loose, fragmentary objects might be so packaged.

Because my invention involves molding a package of fruit once and for all into the size and shape in which it is to be shipped, it will be obvious that in order to make this possible, the mold, the package and the container must all be tapered. If the mold were cylindrical, then the effort to withdraw it upwardly would be met with friction throughout its entire excursion and the same would be true of the effort to apply the container. This would cause distortion of the molded fruit package, tearing of the liner, etc., but when the mold is tapered upward, movement causes an immediate disengagement of the mold and the liner, leaving the liner and the package intact and the application of the tapered container is possible then because the tapered container does not contact the liner and package until the container of substantially identically the same size and shape as the mold is seated on the package and on the face plate or cover.

The specification above set out indicates a preferred solution of the problem wherein the basket top or cover itself is used as the face plate for arranging the fruit. Obviously, however, separate preformed face plates of any suitable material may be used, and the cover or top may be applied to the basket subsequently. I also indicate that preferably one of the baskets of a group or lot is used as the form. Metal or other suitable forms may, however, be used provided the form is of such size that the molded package of fruit snugly fits the basket. There is of course a disadvantage to using a separate form in that it becomes necessary to have a form available for each size and shape of basket or container and since there is a wide range of sizes or differences in sizes and shapes it would necessitate the preparation of a large number of forms. I have shown the brake liner made with the corrugated interlocking tabs cemented to the body of the liner by adhesive strips. Obviously this is merely one method of doing it and the corrugations might be disposed in the strip or the tabs might be otherwise attached to the strip by riveting or cementing or other suitable means.

The important thing is that in order to produce the result I wish to obtain, the relationship between the face plate and the form and the liner will be such that when a package of fruit has been molded on the face plate and the container is inverted on the package and the package is reversed and the top is applied, there will at no stage in the process from the completion of the molded package of fruit until the container with its contents is shipped be any change in size or shape or arrangement of the molded package. This is only possible when the molded package conforms accurately to the size and shape of the container in which it is finally shipped. It will not do to rely upon a liner independent of the close intimate support of the container to hold the molded package in proper size and shape. There must be a snug fit. It is safe to rely upon the liner to support the molded package during the short interval when the top or mold is

withdrawn and during which the container is being applied and all of the time the brake liner must be supported and it must be so supported that it does not break and if it does this results in a loose package and consequent deterioration of fruit.

With respect to the liner itself, it is important to know that while fruit baskets or containers have been used with tubs to form the pack, the tub being removed, the pack being held by the liner until the basket is in place, the important difference between what I propose to do and my liner is that whereas in the past the liner would break by the pressure of fruit in returning even though strong enough to hold the pack in shape during the transposition process from tube to basket, my liner does not break. It always holds the pack both during the packing process and afterwards. In a sense my liner can be said to be one which brakes and does not break, whereas the liners of the prior art are all of them break liners.

I claim:

1. The process of packaging fruit and the like which consists in selecting a single container at random from a large group of substantially identical fruit containers, removing the closed bottom thereof and reinforcing the raw edge thus left, using the resultant form to mold preformed fruit bodies by manually arranging a layer of fruit, the diameter of which is substantially equal to the maximum interior diameter of the form, encircling this layer of fruit with an adjustable fabric container liner, placing the form over the layer of fruit so that it encloses the liner, adjusting the liner so that it snugly fits the inner periphery of the form, then filling the liner and form with fruit at random, withdrawing the form, leaving the fruit body supported by the liner, replacing the form by a complete container from the group above referred to.

2. The process of packaging fruit and the like which consists in selecting a single container at random from a large group of substantially identical fruit containers, removing the closed bottom thereof, using the resultant form to mold preformed fruit bodies by manually arranging a layer of fruit, the diameter of which is substantially equal to the maximum interior diameter of the form, encircling this layer of fruit with an adjustable, fabric container liner, placing the form over the layer of fruit so that it encloses the liner, adjusting the liner so that it snugly fits the inner periphery of the form, then filling the liner and form with fruit at random, withdrawing the form, leaving the fruit body supported by the liner, replacing the form by a complete container from the group above referred to.

3. The method of packing fruit consisting in using a fruit container the bottom of which has been removed as a package forming element for the fruit to be packed, packing the fruit therein, then withdrawing the container and replacing it with respect to the package thus formed by another substantially identical fruit container the bottom of which is in place and fastening the cover on the container which houses the fruit.

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