

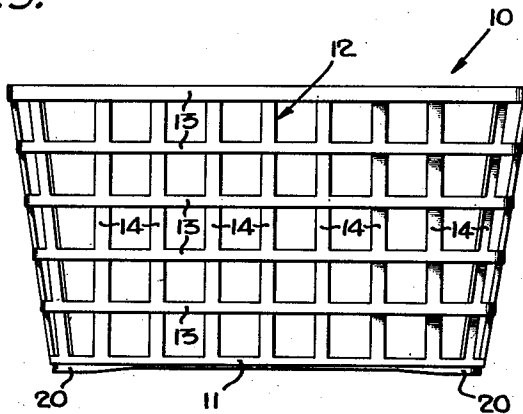
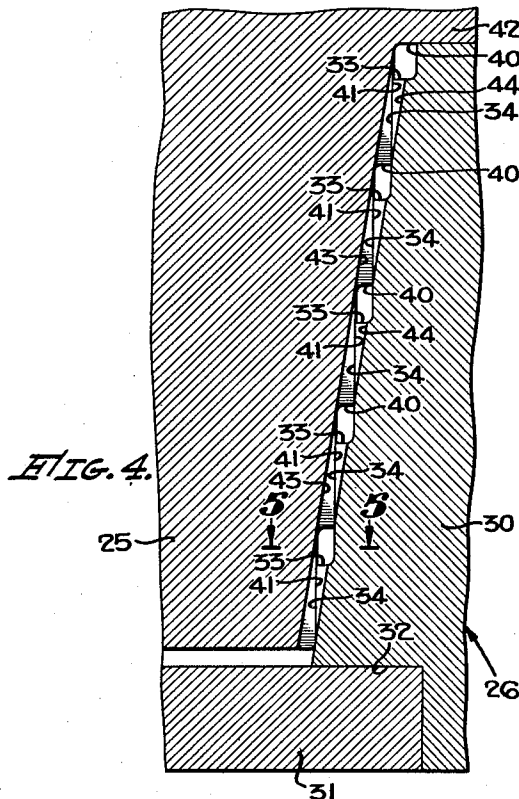
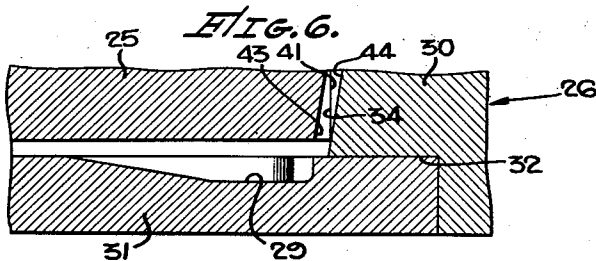
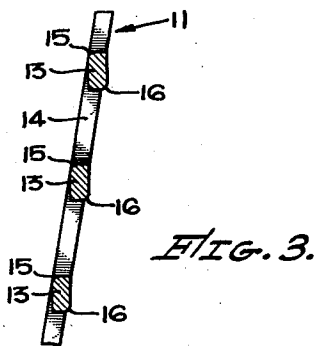
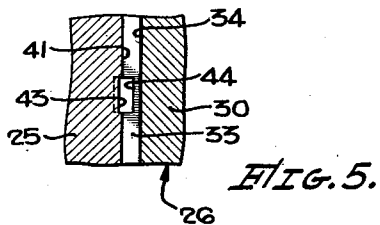
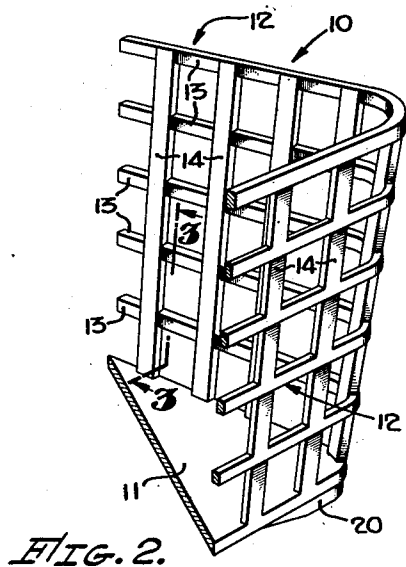
June 12, 1951

H. G. LONG
MOLDED PLASTIC BASKET

2,556,590

Filed March 28, 1949

2 Sheets-Sheet 1



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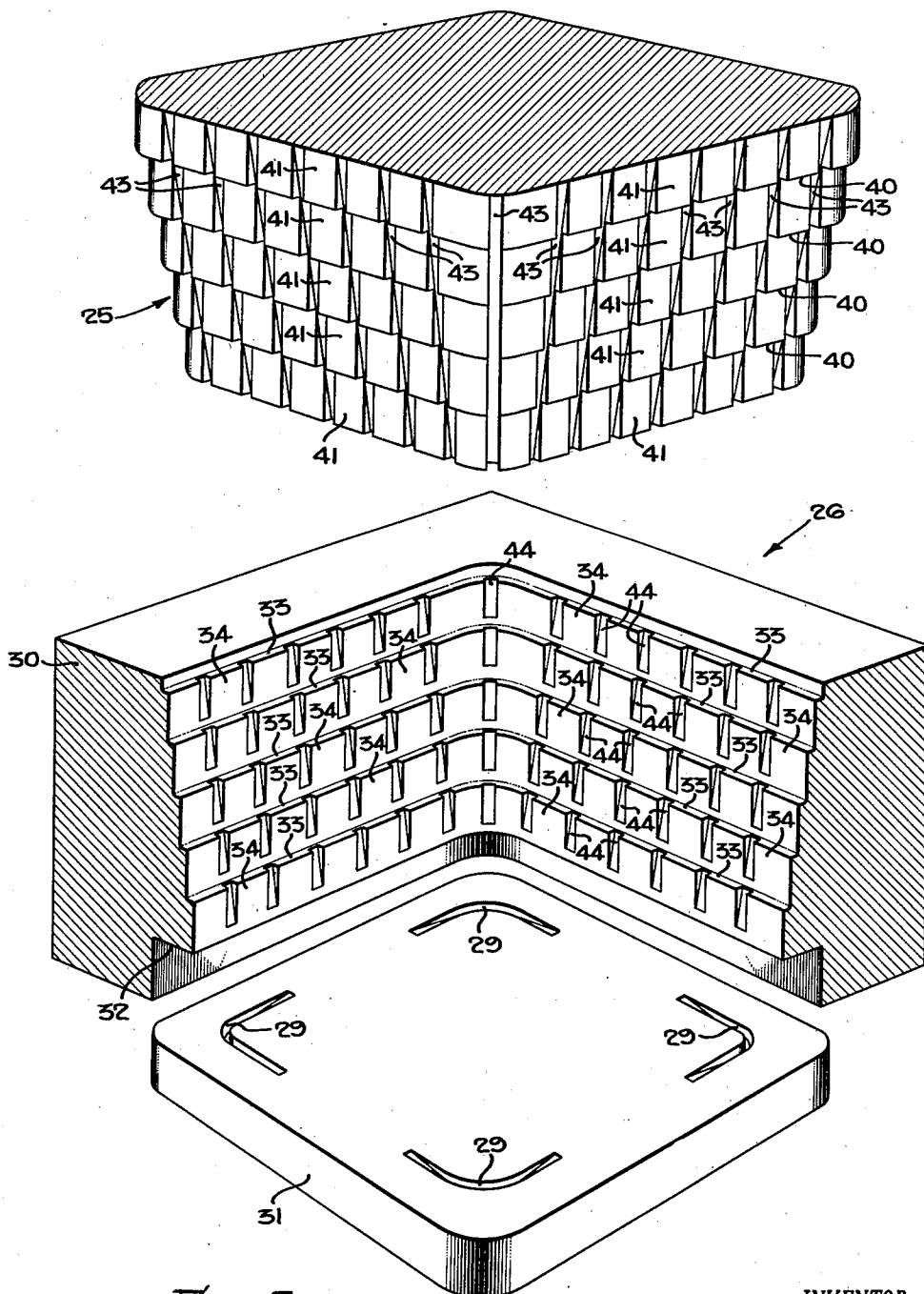
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2 Sheets-Sheet 2



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MOLDED PLASTIC BASKET

Harry G. Long, Los Angeles, Calif.

Application March 28, 1949, Serial No. 83,791

7 Claims. (Cl. 220—83)

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The present invention relates to baskets or boxes of the type in which berries, as well as other small fruits and vegetables, are shipped to market and sold, and the primary object of the invention is to provide a berry box designed particularly for injection-molding of plastic or other composition in a simple two-piece die.

In order to compete in price with conventional wood or paper berry boxes, it is essential that a plastic berry box contain the absolute minimum amount of material consistent with the strength requirements of the box in view of the physical properties of the plastic, and that the cost of the dies be held as low as possible. The present invention combines these desirable features to a degree heretofore unattainable, and for the first time, makes it possible to produce a molded plastic berry box that is superior to the conventional wood or paper box, and at a price competitive therewith.

In its preferred form, the berry box of the present invention is constructed with outwardly inclined side walls which are formed of a plurality of vertically spaced horizontal rails extending continuously around the box, and a plurality of laterally spaced risers joined integrally therewith, said risers and rails forming an open lattice of slender strips of plastic which are spaced together closely enough to confine the smallest berries yet, at the same time, far enough apart to leave sizeable openings which reduce the amount of plastic needed.

The principal difficulty in molding a berry box of this kind having openings in the side walls thereof, is the problem of forming the side wall openings in a two-piece die wherein the core member is pulled straight out of the cavity member in a direction nearly parallel to the side walls. While the problem might conceivably be solved by the use of complex dies having cam-operated retractable core elements to form the side wall openings, such dies are extremely expensive to make and costly to keep up, and are therefore unsuited for the present purpose where die costs must be held to the absolute minimum.

In the present invention, the lattice of plastic strips with the openings therebetween is formed in a network of interstices in the die formed by cooperating channels, shoulders, and ledges on the adjoining sides of the mating core and cavity members. To this end, the sides of the cavity member are stepped outwardly as they rise from the bottom in a series of vertically spaced, upwardly facing ledges which are separated from one another by vertical wall portions. The sides

of the core member are similarly stepped to provide a series of vertically spaced, overhanging shoulders separated from one another by vertical wall portions; and each of the shoulders on the core member cooperates with its corresponding ledge on the cavity member to form the horizontal interstices, or channels, in which the rails of the box are molded. The wall portions on the core and cavity members have a plurality of laterally spaced slots formed therein which cooperate to form the vertical interstices in which the risers of the box are molded. The parting line of the core and cavity members between each pair of adjacent rails extends from the outer surface of the lower rail to the inner surface of the higher rail. By virtue of this arrangement, all of the outside and bottom surfaces of the berry box are formed in the cavity member of the die; the inside and top being formed in the core member of the die; and the lateral surface of the risers between adjacent pairs of rails being formed partially in the cavity member and partially in the core member. The core member can be withdrawn from the cavity member, and the molded berry box can be expelled from the cavity member; hence the requirements of a two-piece die are satisfied.

Among other advantages, the openings in the plastic berry box of the present invention enable the purchaser to inspect the berries in the bottom of the box without pouring the berries out into the hand, and also provide good drainage and ventilation, whereby the berries can be washed and quickly dried. Another factor contributing to improved ventilation and drainage is the provision of legs at the four corners of the box which raise the bottom up from any supporting surface and permit circulation of air beneath the box.

A further object of the invention is to provide a plastic berry box of the lattice construction described, having smooth inside wall surfaces free from any projections or protuberances which might tend to bruise the berries.

The foregoing and other objects and advantages of the present invention will become apparent to those skilled in the art upon consideration of the following detailed description of the preferred embodiment thereof, reference being had to the accompanying drawings, wherein:

Figure 1 is a side elevational view of a plastic berry box embodying the principles of my design; Figure 2 is a fragmentary perspective view of one corner of the same;

Figure 3 is a fragmentary vertical section, taken at 3—3 in Figure 2;

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Figure 4 is a fragmentary section taken along a vertical plane through a portion of the die in which the berry box is molded, showing the core member inserted into the cavity member in position to receive the charge of plastic;

Figure 5 is a fragmentary horizontal section through the die, taken at 5—5 in Figure 4;

Figure 6 is a fragmentary vertical section taken through one bottom corner of the die to show one of the interstices in the base of the cavity member in which one of the feet of the box is formed; and

Figure 7 is an exploded, partially cutaway perspective view of a two-piece die for making the plastic berry boxes.

The berry box of the invention is designated in its entirety by the reference numeral 10 and is seen to comprise a generally square bottom 11 having outwardly inclined side walls 12 extending upwardly from the edges thereof. For the purpose of simplifying the drawings, the bottom 11 is shown in Figure 2 as being solid, although in the preferred embodiment, the bottom would be latticed in the same way as the side walls.

Each of the side walls 12 is formed of a plurality of vertically spaced, horizontal rails 13 which extend continuously around the box, and joined integrally with these rails are a plurality of laterally spaced risers 14. Preferably, each of the risers 14 extends continuously and in a straight line from the bottom edge of the side wall 12 to the top edge thereof, although it should be understood that this is not necessarily the case and the continuity of the risers might be interrupted without departing from the scope of the invention. Each of the risers 14 and rails 13 is preferably generally rectangular in cross-section, with the inside top corners and outside bottom corners of the rails being radiused at 15 and 16, as shown in Figure 3. The inside surfaces of the risers 14 are flush with the smooth curve of the top inside corners of the rails 13, and the risers thus present a smooth and uninterrupted surface from top to bottom, completely free of any projections or protuberances that might tend to bruise the berries contained within the box.

Formed on the underside of the bottom 11 at the four corners thereof are short legs 20 which serve to hold the bottom of the box above a supporting surface so that air can circulate under the box.

One important detail of the design of this plastic berry box will be noted in Figure 3, where it will be seen that each of the rails 13 is displaced outwardly from the rail below by a distance substantially equal to the width of the rail. Thus, the inside surface of one rail is spaced laterally outward from the outside surface of the rail below by a distance such that a line connecting the top outside corner of one rail with the bottom inside corner of the rail above is inclined approximately one degree outwardly from true vertical. The purpose of this slight angle is to provide draft for the parting line between the core member and cavity member of the die.

The die in which the berry basket just described is molded is shown in Figures 4 to 7, inclusive, and is seen to comprise a core member 25 and a cavity member 26. The cavity member 26 may be made in one piece, or, as in the embodiment illustrated herein, it may comprise a body portion 30 and a base plate 31. The base plate 31 is flat-topped and has channels 29 formed therein at the corners, in which the legs 20 of the box are molded. The top surface of the base

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plate 31 may also have bosses raised thereon which cooperate with the bottom of the core members 25 to form the openings in the bottom of the berry box when the box bottom is latticed.

The marginal edges of the base plate 31 fit within a recess 32 formed in the underside of the body portion 30, and the two parts are secured together in any suitable manner.

The side walls of the cavity in member 30 are formed to provide a plurality of vertically spaced, upwardly facing ledges 33 which extend horizontally around the inside of the cavity. The ledges 33 are progressively stepped back from the bottom edge of the cavity to the top edge thereof, and are separated from one another by vertical wall portions 34, which are inclined outwardly from true vertical by approximately one degree to provide draft.

The core member 25 is likewise stepped on its sides to form a plurality of vertically spaced, downwardly facing shoulders 40 which extend horizontally around the core member and are separated from one another by vertical wall portions 41. The wall portions 41 are likewise made with a one degree taper, and are adapted to lie flat against the wall portions 34 of the cavity member 30. As shown in Figure 4, the top portion of the core member 25 is provided with an overhanging portion 42 which abuts against the top of the cavity body 30 to gage the depth of insertion of the core member into the cavity member.

When the core member 25 is thus inserted into the cavity member 26, each of the ledges 33 and its corresponding shoulder 40 are spaced apart from one another to form a horizontally extending interstice in which one of the rails of the box is molded. The bottom surface of the rail is formed by the upwardly facing surface of the ledge 33, and the outside surface of the rail is formed by the vertical wall portions 34 immediately above the ledge; while the top surface of the rail is formed by shoulder 40, and the inside surface of the rail is formed by the vertical wall portions 41 on the core member immediately below the shoulder.

The wall portions 41 of the core member 25 have a plurality of laterally spaced slots 43 formed therein which are perpendicular to the shoulders 40 and extend from the bottom edge of the core member to the top edge thereof. The slots 43 are cut to a depth such that the bottom surfaces thereof are substantially flush with the inside corners formed at the junctions of the wall portions with the shoulders 40 at their upper end, and the bottoms of the slots 43 are thus smooth and uninterrupted from top to bottom. The vertical wall portions 34 of the cavity body 30 are likewise formed with a plurality of laterally spaced slots 44 which register with the slots 43 in the core member to form vertical interstices in which the risers 14 of the box are molded. As best shown in Figure 4, the slots 44 are preferably cut to a depth such that the bottoms of the slots lie in a plane intersecting the top outside corners of the rails 13, leaving the bottom outside corners of the rails projecting slightly outward from the plane of the outside surfaces of the risers 14.

The network of interstices or channels in the die forming the rails and risers of the box are interconnected with one another, and when plastic is forced into the die, the plastic material fills these interstices and is then quickly chilled to solidify the material so that the berry box can

be expelled from the cavity member 26 when the core member is withdrawn. Any suitable plastic may be used, although I have found that styrene is probably the most satisfactory, being relatively inexpensive, unaffected by fruit acids or moisture, reasonably strong and flexible, and dimensionally stable.

The die illustrated and described herein is relatively simple and inexpensive to build, and the core member 25 can be withdrawn from the cavity member 26 without interference. When the core member is fully removed from the cavity member, the molded berry box 10 can readily be expelled from the cavity member, since no part of the cavity member overhangs any part of the box. The parting line of the core and cavity member between each pair of adjacent rails extends from the outer surface of the lower rail to the inner surface of the higher rail, with one degree of draft being provided therein to facilitate the withdrawal of the core member.

While I have shown and described in considerable detail what I believe to be the preferred embodiment of my invention, it is to be understood that such details are not restrictive and that various changes may be made in the shape and arrangement of the several parts without departing from the broad scope of the invention, as defined in the appended claims.

I claim:

1. A molded composition berry box or the like comprising a bottom having outwardly inclined side walls extending upwardly from the edges thereof, each of said side walls being formed of a plurality of vertically spaced horizontal rails and a plurality of laterally spaced vertical risers joined integrally therewith, and each of said rails being horizontally offset outwardly from the adjacent lower rail by a distance equal at least to the thickness of the rail, whereby the outermost edge of each of the lower rails lies within the vertical projection of the innermost edge of the adjacent upper rail.

2. A molded composition berry box or the like comprising a bottom having outwardly inclined side walls extending upwardly from the edges thereof, each of said side walls being formed of a plurality of vertically spaced horizontal rails and a plurality of laterally spaced vertical risers joined integrally therewith, each of said rails being horizontally offset outwardly from the adjacent lower rail by a distance equal at least to the thickness of the rail, whereby the outermost edge of each of the lower rails lies within the vertical projection of the innermost edge of the adjacent upper rail and the inside surfaces of the risers in each of said side walls lying within a plane contiguous to the innermost surface of each of the rails of said side wall, whereby said risers and said rails cooperate to form a smooth inner surface free of projections.

3. A molded composition berry box or the like comprising a bottom having outwardly inclined side walls extending upwardly from the edges thereof, each of said side walls being formed of a plurality of vertically spaced horizontal rails and a plurality of laterally spaced vertical risers joined integrally therewith, each of said rails being horizontally offset outwardly from the adjacent lower rail by a distance equal at least to the thickness of the rail, whereby the outermost edge of each of the lower rails lies within the vertical projection of the innermost edge of the adjacent upper rail, said horizontal rails having vertically elongated cross-sections, with

the upper inside corner portions thereof rounded to avoid a cutting edge injurious to the contents of the basket.

4. A molded composition berry box or the like comprising a bottom having outwardly inclined side walls extending upwardly from the edges thereof, each of said side walls being formed of a plurality of vertically spaced horizontal rails and a plurality of laterally spaced vertical risers joined integrally therewith, each of said rails being horizontally offset outwardly from the adjacent lower rail by a distance equal at least to the thickness of the rail, said horizontal rails having vertically elongated cross-section, whereby the outermost edge of each of the lower rails lies within the vertical projection of the innermost edge of the adjacent upper rail, with the upper inside corner portions thereof rounded to avoid a cutting edge injurious to the contents of the basket, said rounded corner portions being formed substantially tangential to the plane defined by the inside surfaces of the risers.

5. A molded composition berry box or the like comprising a bottom having outwardly inclined side walls extending upwardly from the edges thereof, each of said side walls being formed of a plurality of vertically spaced horizontal rails and a plurality of laterally spaced vertical risers joined integrally therewith, each of said rails being horizontally offset outwardly from the adjacent lower rail by a distance equal at least to the thickness of the rail, whereby the outermost edge of each of the lower rails lies within the vertical projection of the innermost edge of the adjacent upper rail, said horizontal rails being vertically elongated in cross-section, and having slightly outwardly inclined inner and outer side surfaces, and a top surface, said inside surface and said top surface merging with one another on a curve.

6. A molded composition berry box or the like comprising a bottom having outwardly inclined side walls extending upwardly from the edges thereof, each of said side walls being formed of a plurality of vertically spaced horizontal rails and a plurality of laterally spaced vertical risers joined integrally therewith, each of said rails being horizontally offset outwardly from the adjacent lower rail by a distance equal at least to the thickness of the rail, whereby the outermost edge of each of the lower rails lies within the vertical projection of the innermost edge of the adjacent upper rail, said horizontal rails being vertically elongated in cross-section, and having slightly outwardly inclined inner and outer side surfaces, and top and bottom surfaces, said top and inside surfaces merging with one another on a curve, and said outside and bottom surfaces merging with one another on a curve.

7. A molded composition berry box or the like comprising a bottom having outwardly inclined side walls extending upwardly from the edges thereof, each of said side walls being formed of a plurality of vertically spaced horizontal rails and a plurality of laterally spaced vertical risers joined integrally therewith, and each of said rails being horizontally offset outwardly from the adjacent lower rail by a distance equal at least to the thickness of the rail, whereby the outermost edge of each of the lower rails lies in the plane of vertical projection of the innermost edge of the adjacent upper rail.

HARRY G. LONG.

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