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54 An injection moulded plastics tray or crate particularly for transporting hard fruit.

57 An injection moulded crate or tray comprising upstanding walls 1,2 and a bottom 4.

The lower side of the bottom 4 is integral with two cases 5 extending parallel to an upstanding wall. The case or cases 5 open into a circumferential bottom edge 6. A pair of opposite walls 7,8 of each case 5 converges towards the centre of each case 5.

The bottom 4 of the crate or tray inclines from each of the cases 5 towards the bottom edge 6, the bottom part between the cases 5 being a flat part.

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An injection moulded plastics tray or crate,
particularly for transporting hard fruit.

The invention relates to an injectionmoulded plastics crate or tray having upstanding walls and a bottom, particularly for transporting hard fruit.

Such a crate or tray has to meet the requirements that the
5 bottom is sufficiently rigid thus preventing the so-called
"trampoline"effect" during transporting of fruit; the bottom
is not allowed to sag under the load of the contents of
the crate or tray when its underside is unsupported even
not after a long period of time; the bottom should be so
10 flat so that it cannot form impressions on the contents of
the crate or tray and the underside of the crate or tray
should have such a configuration that no dirt can gather
at that location, whilst an incidental contact between
subjacent fruit and said bottom should not cause an impression
15 of the bottom in said fruit.

In order to meet these requirements, a thick, solid bottom
could be used, but this presents the disadvantages, that
the crate or tray becomes heavy, that much plastics material
has to be used and that the production of said crate or tray
20 with respect to the required period of cooling of the latter,
is very timeconsuming.

The use of reinforcing ribs under the bottom of the plastics crate or tray present the disadvantage that on stacking the respective crates or trays containing fruit, impressions of said ribs might occur in said fruit, so that also this measure does not offer a beneficial solution.

The present invention now aims to overcome these disadvantages and this is attained according to the invention in that such a plastics crate or tray is characterized in that the bottom of the crate or tray is reinforced by means of at least one case, the upper wall of said case being integral with the bottom.

The plastics crate or tray in accordance with the invention presents the advantage that a proper reinforcement of the bottom is obtained, whilst the case or cases can be given such a shape that fruit resting thereupon, will not be damaged or impressed by said case or cases.

The case or cases are formed simultaneously with injection moulding the tray or crate by using male moulding cores. In order to retract the cores easily and without damaging the inner walls of the case or cases opposite walls of a case preferably converge towards the centre of a case.

So as to permit an optimum and effective injection moulding operation, the case or cases and at least the lower wall thereof, comprises at least one case aperture through which the core can be supported during the injection moulding

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operation. In order to reinforce the area around said case aperture this area is preferably reinforced by reinforcing ribs.

- The bottom of the crate or tray preferably inclines from at least one of the upper walls of a case towards the side regions of the bottom, running parallel therewith. The provision of vent apertures in the lower portions of the bottom, simultaneously effects an outlet for liquid, such as washing liquid and of dirt, if any.
- 10 Preferably the shape of the bottom of the plastics crate or tray is chosen in such a manner that said crate or tray may at least rest upon a floor through parts differing from a case or cases according to the invention. The latter measure is very convenient, as damage of fruit due to the
- 15 presence of case according to the invention, need not necessarily be taken into account when entirely filling a plastics crate or tray and subsequently stacking a second filled crate or tray thereupon.

- In order to improve a more even positioning of the plastics crate or tray upon the floor, the lower side of the circumference of the bottom comprises a bottom edge into which the case or cases open. The height of said bottom edge is preferably such that a case or cases cannot contact the floor at the location where a crate or tray rests upon
- 20 said floor, so that the case or cases are unable to distort the bottom of the crate or tray, thus causing a damage of its contents. By locally providing the latter bottom edge with edge apertures an outlet for liquid, such as washing or leakage liquid and of dirt, is provided.
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Should the height of two opposite parts of the above-described bottom edge be, at least locally, greater than that of two other opposite parts of the edge and the case or cases a plate can be inserted between the
5 higher bottom edge parts of the crate or tray and the floor, for conveying purposes.

The present invention will be illustrated, by means of an embodiment as shown in the accompanying drawings, wherein:

10 Figure 1 shows a perspective view of a plastics crate or tray according to the invention;

 Figure 2 shows a cross-section of the plastics crate or tray according to line II-II in figure 1;

 Figure 3 shows a cross-section of part of the plastics
15 crate or tray according to line III-III in figure 1;

 Figure 4 shows a lower view of part of the bottom of a plastics crate or tray in accordance with the invention.

The plastics crate or tray of fig. 1 consists of two longitudinal side walls 1 and two transverse side walls 2
20 being interconnected, by means of preferably hollow corner parts 3 for supporting superposed trays or crates; the plastics crate or tray further comprises a bottom 4 connected with the longitudinal side walls 1 and the transverse side walls 2. Underneath the bottom 4 two hollow cases 5 are provided,
25 which preferably open into a circumferential bottom edge 6 of the bottom 4 so that each case 5 has two open ends.

The plastics crate or tray according to the invention comprises venting apertures, reinforcement ribs, handles and so on as known per se and which will not be described.

- Fig. 2 shows a cross-section according to line II-II in fig. 1. As can be seen in fig. 2, the case 5 converges towards the centre from both its two open ends. The tapering embodiment of the case facilitates the removal of injection moulding cores and prevents furthermore damages to the walls of a case 5.
- Fig. 2 also shows that the centre of the case presents an aperture 7 formed during the injection moulding process by a support (not shown) of the injection moulding mould in order to support the extremities of cores (likewise not shown) around which core a case 5 is injection moulded. In order to reinforce the area of each case 5 around the case aperture 7, reinforcement ribs 8 are provided in the vicinity of the case aperture 7.

- Fig. 3 shows a partial cross section of the plastics crate or tray according to line III-III in fig. 1. According to this preferred embodiment two cases 5 are situated above the plane through the free ends of a circumferential bottom edge 6, whilst the bottom 4 inclines from the case or cases 5 towards bottom edge portions running parallel with said case or cases. At suitable points of the lower portions of bottom 4, bottom apertures 9 are provided for an outlet of liquid and moisture and for obtaining some ventilation. The bottom part between the two parallel cases 5 is a flat bottom part.

The provision of one or more apertures 10 in the bottom edge 6 allows a ventilation and outlet of e.g. washing or leakage water from the part of the floor below the plastics crate or tray.

- 5 By giving one pair of opposite portions of bottom edge 6 a greater height than the other pair of opposite portions and the case or cases 5, a slit-shaped opening between the floor and the crate or tray placed thereupon, is obtained. By pushing a plate through said opening to
10 below the crate or tray, said crate or tray becomes easily conveyable by means of, for example, a fork lift truck.

It should be noted that a lack of said bottom edge 6 and a direct contact of the cases 5 with the floor, would only permit such a conveyance by shifting a single crate or tray
15 or a stack of said crates or trays resting upon the floor.

Fig. 4 is a bottom view of an area including and surrounding aperture 7, of a sleeve 5. This figure also shows the reinforcing ribs 8, as previously illustrated in figures 2 and 3, each rib at least extending between two walls of a
20 case and the converging shape of a case 5.

In some cases it may be recommended to close the open ends of a hollow case 5 with closing lips 13 which are hingeably connected with the bottom of case 5. The lips 13 are then provided with nocks 14 which engage depressions or apertures
25 15 in the upper part of a case.

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As already mentioned hereinbefore the lower side
of the cases 5 present case apertures 7 formed during
injection moulding due to the presence of supports for
the cores as required for forming the cases 5. These
5 case apertures 7 may be closed by means of covers 11
with .nocks 12 engaging the bottom part of a case 5.

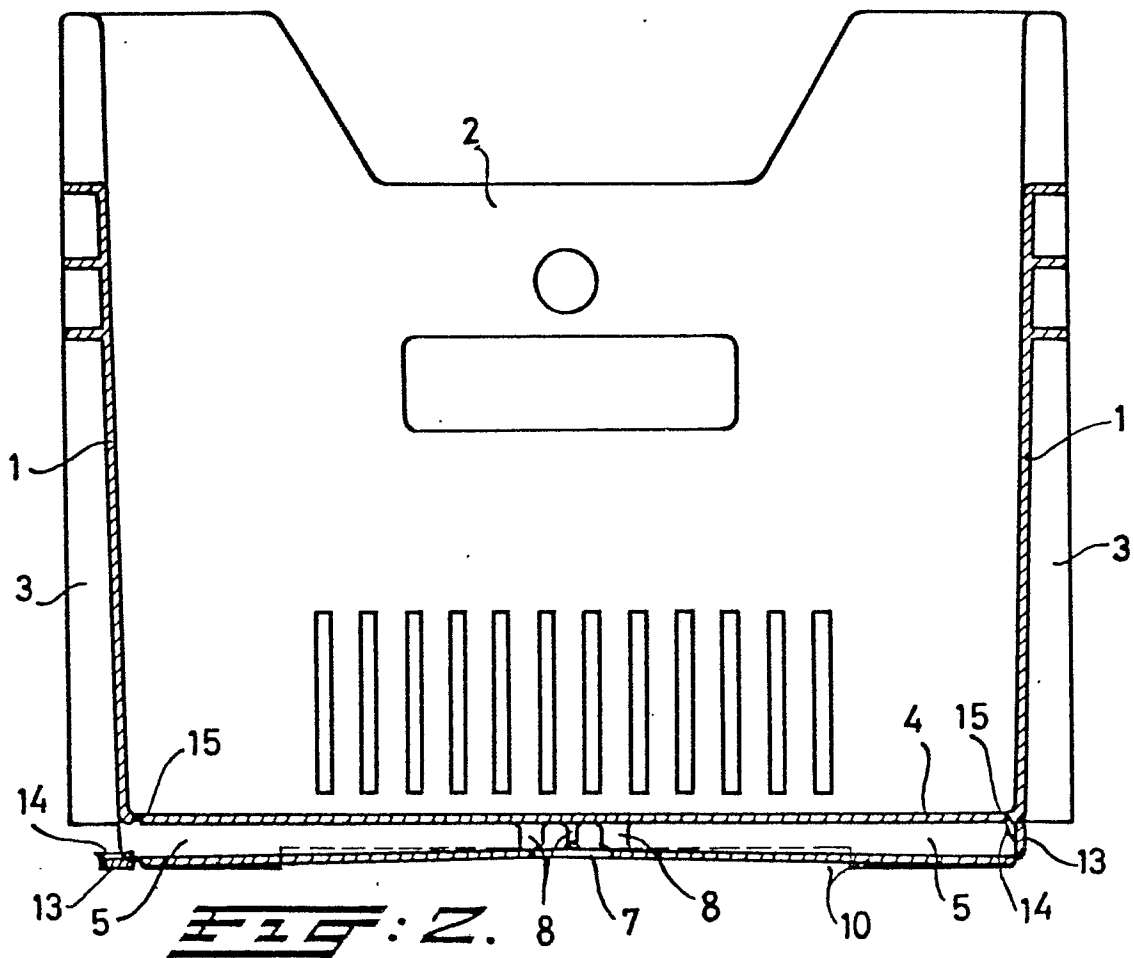
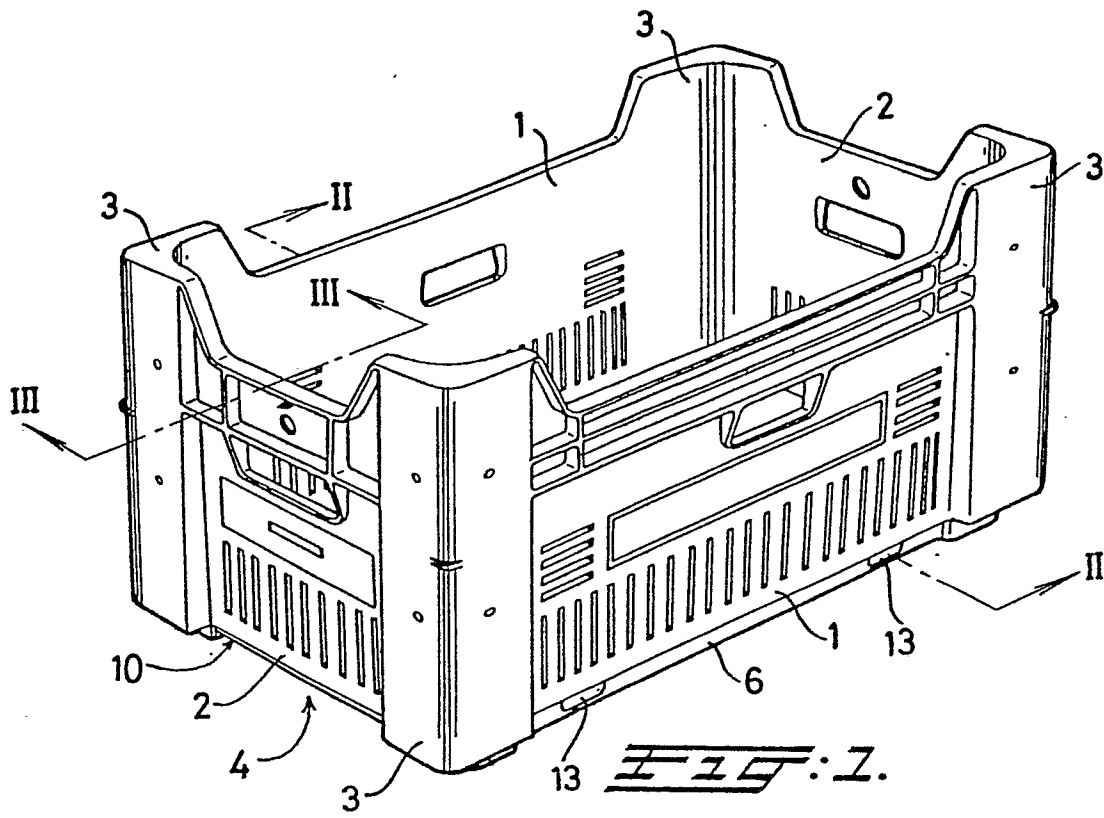
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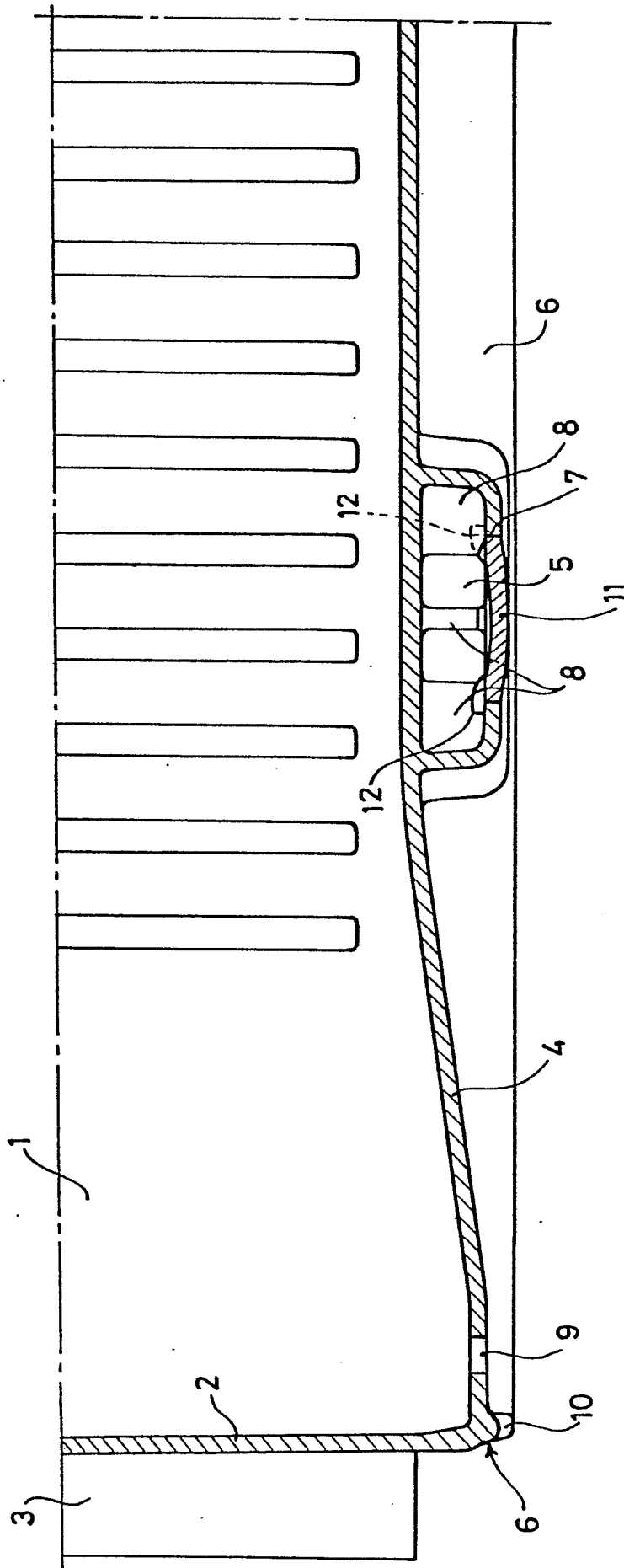
CLAIMS:

1. An injection moulded plastics crate or tray having upstanding walls and a bottom, particularly for transporting hard fruit, characterized in
5 that the bottom (4) of said plastics crate or tray is reinforced by means of at least one case (5), the upper wall of said case (5) being integral with the bottom (4).
2. A plastics crate or tray according to claim 1, characterized in
10 that a pair of opposite walls (7,8) of a case (5) converges towards the centre of a case (5).
3. A plastics crate or tray according to claim 1 or 2, characterized in
that the vicinity of the centre of a case (5) comprises at
15 least one case aperture (7).
4. A plastics crate or tray according to claim 3, characterized in
that the area near said case aperture (7) is reinforced by means of reinforcing ribs (8).
- 20 5. A plastics crate or tray according to one or more of the preceding claims, characterized in
that the bottom of said plastics crate or tray (4) inclines at least at one side from the upper edge of a case (5) towards
25 a portion of the bottom edge (6) extending parallel with said case (5).

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6. A plastics crate or tray according to one or more of the preceding claims 1 to 4, characterized in that the crate or tray comprises two parallelly extending cases (5) the bottom (4) substantially having a horizontal plane between the two cases (5) and none of said cases (5) projecting below the other portions of the plastics crate or tray.
7. A plastics crate or tray according to claim 5 or 6, characterized in that the lower portions of the bottom comprise bottom apertures (9).
8. A plastics crate or tray according to claims 5 to 7, characterized in that the cases extend into a circumferential edge (6) of the bottom (4), preferably said edge (6) is higher than the case or cases .
9. A plastics crate or tray according to claim 8, characterized in that the lower side of said edge (6) is locally provided with edge apertures (10).
10. A plastics crate or tray according to claims 7 or 8, characterized in that the dimensions of the case or cases (6) and bottom edge (6) are thus that the edge projects locally to beyond said case or cases.





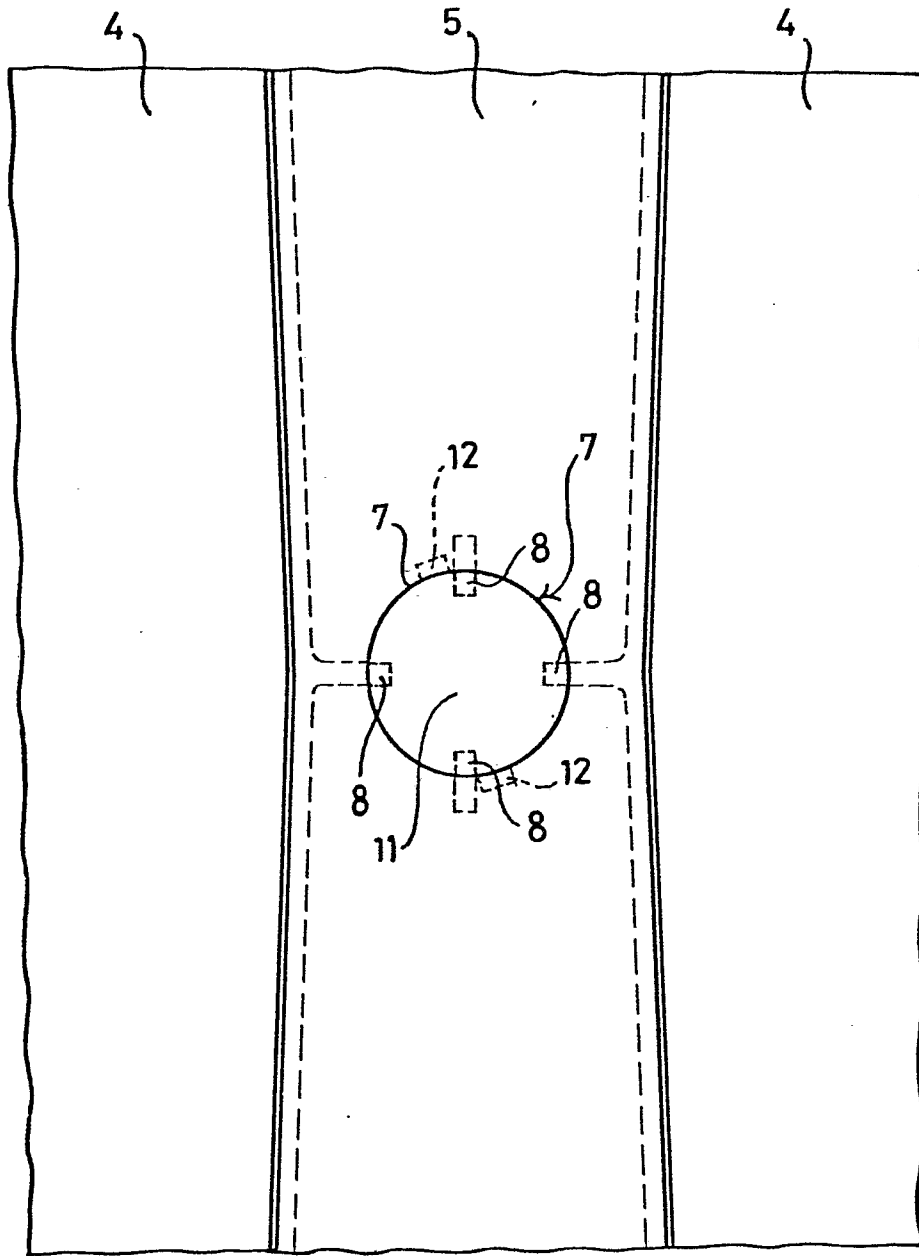


Fig. 4.