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(54) **Plastic crate with partially hollow handle.**

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Description

The present invention relates to a plastic crate according to the preamble of claim 1.

Such a crate is known from DE-A-38 23 650. In a particular embodiment of this known crate the lower edge of the handles is formed by a thick hollow part with a round cross section. The cavity in this hollow part is an elongated straight channel.

The known crate has the disadvantage that the shape of the handle is still not optimal in order to lie easily in the hand.

The object of the invention is to provide a plastic crate with improved handles.

This object is attained by a crate according to claim 1.

Due to the fact that the channel-shaped cavity is curved it is possible to provide the crate with a handle, which has also a hollow part at its upper edge, so that the handle lies very easily in the hand and also has the required strength, whereas it is still possible to mould the handle in a technically and economically advantageous manner.

Preferred embodiments of a crate according to the invention are claimed in the sub-claims.

The invention is explained in greater detail in the example of an embodiment which follows with reference the drawing, in which:

Fig. 1 is a view in perspective of a plastic crate according to the invention;

Fig. 2 is a view in perspective and on an enlarged scale of a handle part of the crate of Fig. 1, viewed from the inside of the crate;

Fig. 3 is a cross-section on a further enlarged scale of the handle of Fig. 2, along the line III-III in Fig. 2;

Fig. 4 is a longitudinal section on the same scale as in Fig. 3 of the handle of Fig. 2, along the line IV-IV in Fig. 3; and

Fig. 5 is a cross-section similar to Fig. 3 of a slightly modified embodiment of a handle of a crate according to the invention.

The crate shown in Fig. 1 comprises a bottom 1, two long vertical side walls 2 and 3, and two short vertical side walls 4 and 5. The side walls of the crate are made double-walled. The two long side walls 2 and 3 lying opposite each other are each provided at the top side with a handle 6, 7 respectively, which at the bottom side is bounded by a handle opening 8, 9 respectively.

The handles 6 and 7 are integral with the rest of the crate and are made partially hollow.

In Fig. 2 the handle part with the handle 7 is shown on an enlarged scale, the hollow part being indicated by the reference numbers 11a and 11b.

As indicated in Figs. 3 and 4, the cavity in the hollow part 11a, 11b is in the form of an elongated channel 12a, 12b which is surrounded by wall parts

13a, 13b together forming an essentially closed wall. In the embodiment shown, the channel-shaped cavity 12a, 12b is U-shaped, and the wall parts 13a, 13b form, as it were, a U-shaped tube. The channel-shaped cavity 12a, 12b has an essentially round cross-section. The legs of the U run parallel to the bottom 1 of the crate, and the wall parts 13a and 13b of the U-shaped channel 12a, 12b form the top and bottom part of the handle 7. A handle formed in this way lies well in the hand, so that great carrying comfort is achieved.

The wall parts 13a, 13b of the U-shaped channel 12 are connected to each other by a connecting wall part 14. In the embodiment of Figs. 3 and 4 this wall part 14 lies on the outside of the crate, with the result that the handle 7 on the outside of the crate is smooth.

The handle 6 is designed in the same way as the handle 7.

It is pointed out that the side walls 4 and 5 of the crate can also be provided with a handle, like the handles 6 and 7.

As indicated in Fig. 5, in a modified embodiment of a handle according to the invention the wall part 14' connecting the wall parts 13a, 13b can also be provided approximately in the longitudinal centre plane 15 of the handle. The advantage of this is that the stress distribution in the handle is better.

In the embodiment shown the channel-shaped cavity 12a, 12b is the shape of a U. The channel-shaped cavity can, however, be other shapes, for example the shape of a Z or an S.

A handle of a crate designed in the manner described above lies easily in the hand and can be formed in a technically and economically advantageous manner. A method for forming a handle according to the invention is described in Applicant's Netherlands patent application No. 9002483 entitled: "Method and device for forming a cavity in a plastic injection-moulded product".

In the example of an embodiment the invention is described for a crate of a particular shape. The invention is not, however, limited to such a crate, and can equally well be used for crates or trays of a different shape and different dimensions, provided with a framework or not.

Claims

1. Plastic crate with a bottom (1) and vertical side walls (2-5), in which at least one of the side walls (2; 3) is provided with a handle opening (8; 9), the part of the side wall (2; 3) between the upper edge of this handle opening and the upper edge of the corresponding side wall (2; 3) defining a handle (6; 7), the handle (6; 7) having a hollow part (11a, 11b), the cavity

(12a, 12b) in the hollow part (11a, 11b) being the shape of an elongated channel which is surrounded by wall parts (13a, 13b) together forming an essentially closed wall, **characterised in that** the channel-shaped cavity (12a, 12b) has at least two straight portions (12a, 12b) which run parallel to the bottom of the crate and are connected by at least a portion which is curved in the plane of the handle (6; 7), the wall parts (13a, 13b) of these straight portions (12a, 12b) forming the top and bottom part of the handle (6; 7).

2. Crate according to claim 1, **characterised in that** the channel-shaped cavity (12a, 12b) is U-shaped.

3. Crate according to claim 1 or 2, **characterised in that** the channel-shaped cavity (12a, 12b) has an essentially round cross-section.

4. Crate according to any of claims 1-3, **characterised in that** in the plane of the handle (6; 7) adjacent wall parts (13a; 13b) of the channel-shaped cavity (12a, 12b) are connected to each other by a connecting wall part (14; 14').

5. Crate according to claim 4, **characterised in that** the connecting wall part (14) lies in the outside face of the respective side wall (2, 3) of the crate.

6. Crate according to claim 4, **characterised in that** the connecting wall part (14') lies in the longitudinal centre plane (15) of the handle (6; 7).

Patentansprüche

1. Kunststoffkasten mit einem Boden (1) und vertikalen Seitenwänden (2 bis 5), bei dem zumindest eine der Seitenwände (2;3) mit einer Handgriffföffnung (8;9) versehen ist, wobei der Teil der Seitenwand (2;3) zwischen dem oberen Rand dieser Handgriffföffnung und dem oberen Rand der entsprechenden Seitenwand (2;3) einen Handgriff (6;7) bildet, der Handgriff (6;7) einen Hohlteil (11a,11b) aufweist und der Hohlraum (12a,12b) im Hohlteil (11a,11b) die Form eines langgestreckten Kanals hat, der von Wandteilen (13a,13b) umgeben ist, die zusammen eine im wesentlichen geschlossene Wand bilden, dadurch gekennzeichnet, daß der kanalförmige Hohlraum (12a,12b) zumindest zwei gerade Bereiche (12a,12b) aufweist, die parallel zum Boden des Kastens verlaufen und durch zumindest einen Bereich verbunden sind, der in der Ebene des Handgriffs (6;7)

gekrümmt ist, und die Wandteile (13a,13b) dieser geraden Bereiche (12a,12b) den oberen und den unteren Teil des Handgriffs (6;7) bilden.

2. Kasten nach Anspruch 1, dadurch gekennzeichnet, daß der kanalförmige Hohlraum (12a,12b) U-förmig ist.

3. Kasten nach Anspruch 1 oder 2, dadurch gekennzeichnet, daß der kanalförmige Hohlraum (12a,12b) einen im wesentlichen runden Querschnitt hat.

4. Kasten nach einem der Ansprüche 1 bis 3, dadurch gekennzeichnet, daß in der Ebene des Handgriffs (6;7) aneinandergrenzende Wandteile (13a;13b) des kanalförmigen Hohlraums (12a,12b) durch einen Verbindungswandteil (14;14') miteinander verbunden sind.

5. Kasten nach Anspruch 4, dadurch gekennzeichnet, daß der Verbindungswandteil (14) in der Außenfläche der jeweiligen Seitenwand (2,3) des Kastens liegt.

6. Kasten nach Anspruch 4, dadurch gekennzeichnet, daß der Verbindungswandteil (14') in der Längsmittlebene des Handgriffs (6;7) liegt.

Revendications

1. Caisse en matière plastique comportant un fond (1) et des parois latérales verticales (2 à 5), dans laquelle l'une au moins des parois latérales (2; 3) est munie d'une ouverture de poignée (8; 9), la partie de la paroi latérale (2; 3) entre le bord supérieur de cette ouverture de poignée et le bord supérieur de la paroi latérale correspondante (2; 3) définissant une poignée (6; 7), poignée (6; 7) qui possède une partie creuse (11a, 11b), la cavité (12a, 12b) définie dans la partie creuse (11a, 11b) ayant la forme d'un canal allongé entouré par des parties de paroi (13a, 13b) qui définissent conjointement une paroi essentiellement fermée, **caractérisée en ce que** la cavité en forme de canal (12a, 12b) possède au moins deux parties droites (12a, 12b) qui s'étendent parallèlement au fond de la caisse et qui sont reliées par au moins une partie courbe dans le plan de la poignée (6; 7), les parties de paroi (13a, 13b) de ces parties droites (12a, 12b) formant la partie supérieure et la partie inférieure de la poignée (6; 7).

2. Caisse selon la revendication 1, **caractérisée en ce que** la cavité en forme de canal (12a, 12b) a une configuration en U.
3. Caisse selon la revendication 1 ou 2, **caractérisée en ce que** la cavité en forme de canal (12a, 12b) a une section transversale essentiellement ronde. 5
4. Caisse selon l'une quelconque des revendications 1 à 3, **caractérisée en ce que** dans le plan de la poignée (6; 7) des parties de paroi adjacentes (13a; 13b) de la cavité en forme de canal (12a, 12b) sont reliées l'une à l'autre par une partie de paroi de liaison (14; 14'). 10 15
5. Caisse selon la revendication 4, **caractérisée en ce que** la partie de paroi de liaison (14) se situe dans la face extérieure de la paroi latérale (2, 3) correspondante de la caisse. 20
6. Caisse selon la revendication 4, **caractérisée en ce que** la partie de paroi de liaison (14') se situe dans le plan central longitudinal (15) de la poignée (6; 7). 25

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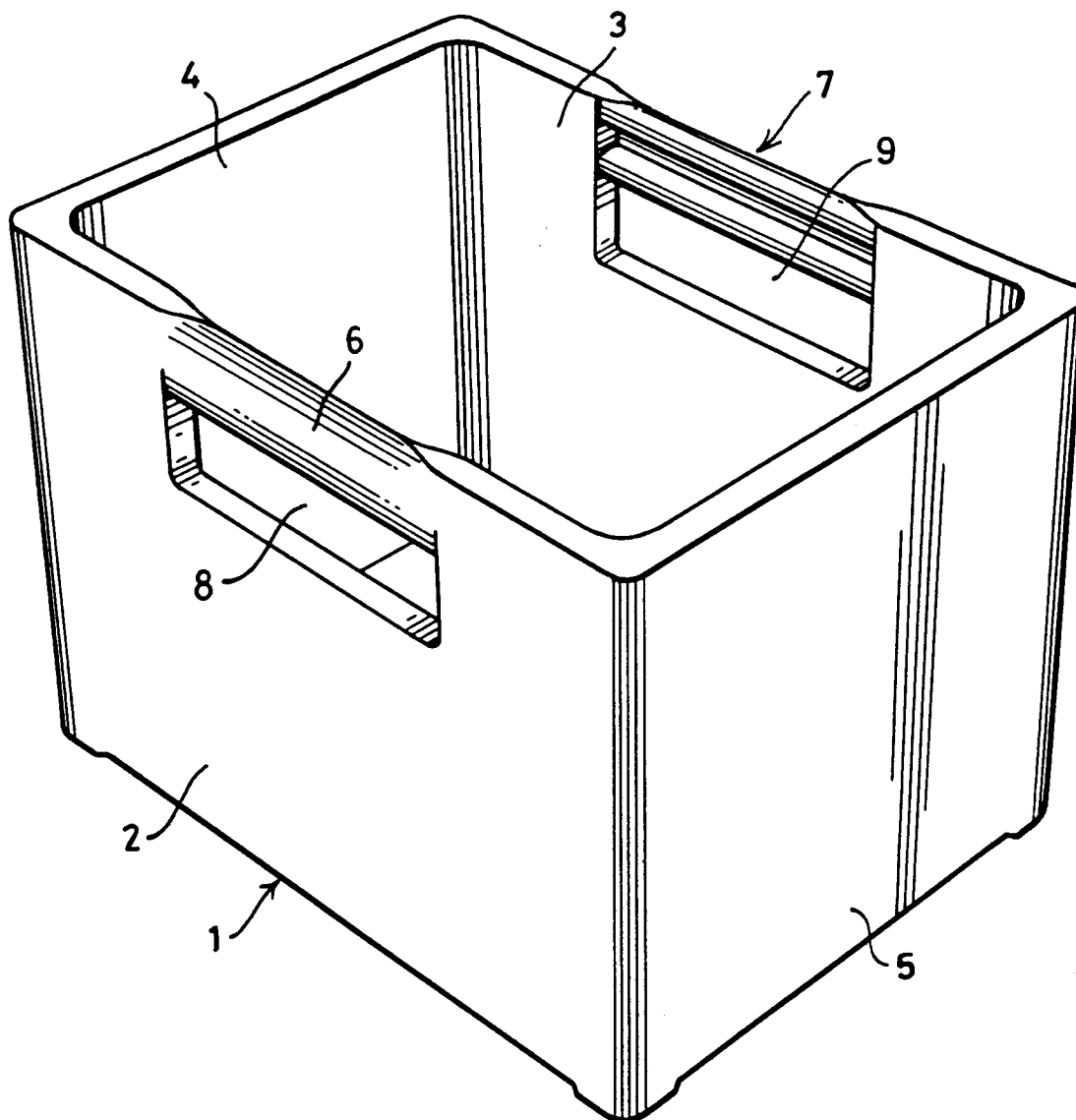


FIG. 1.

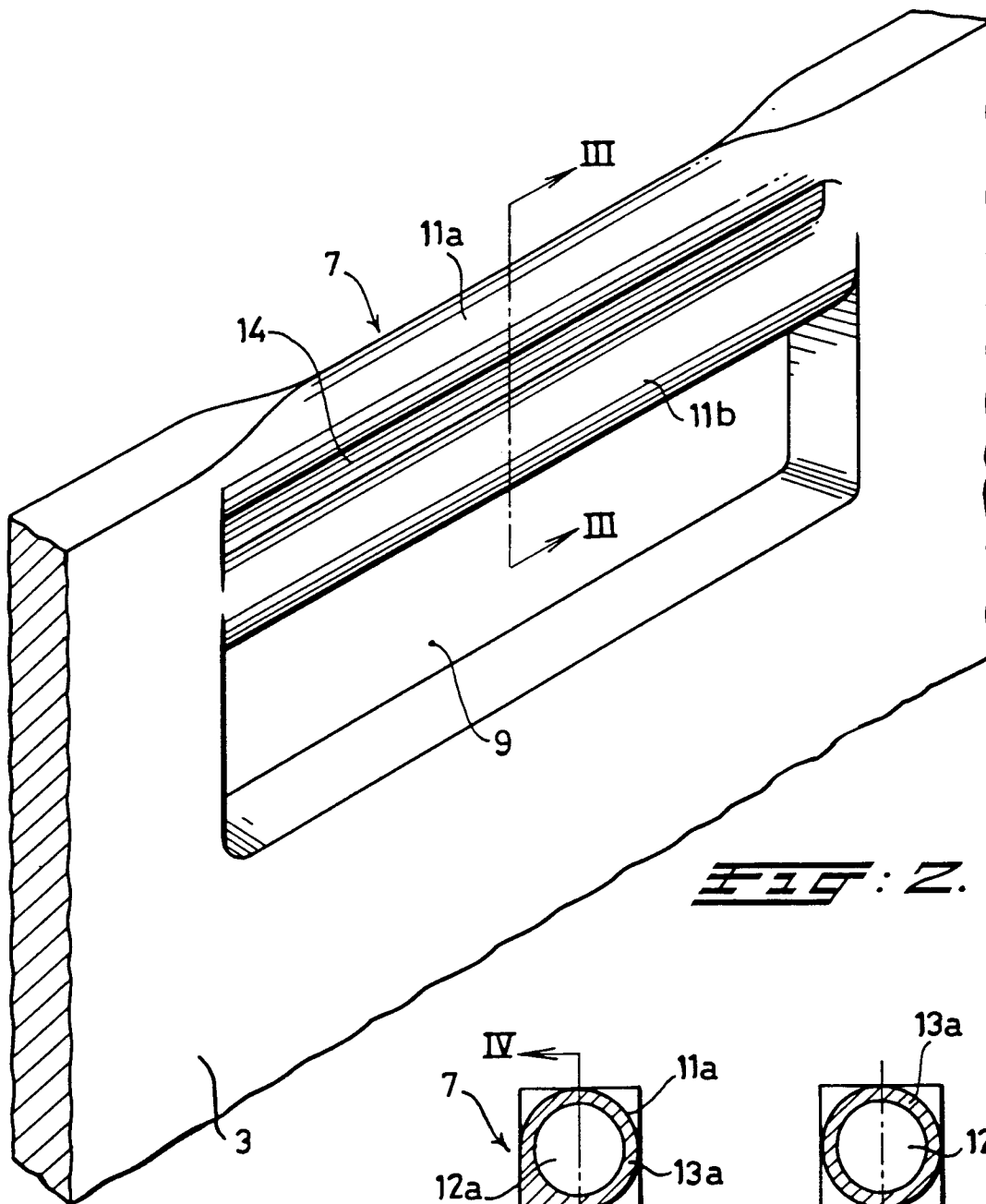


FIG. 2.

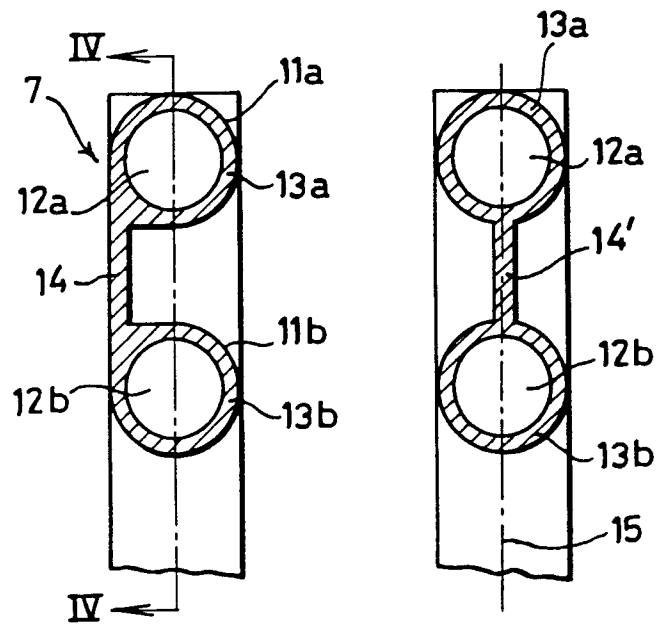


FIG. 3. FIG. 5.

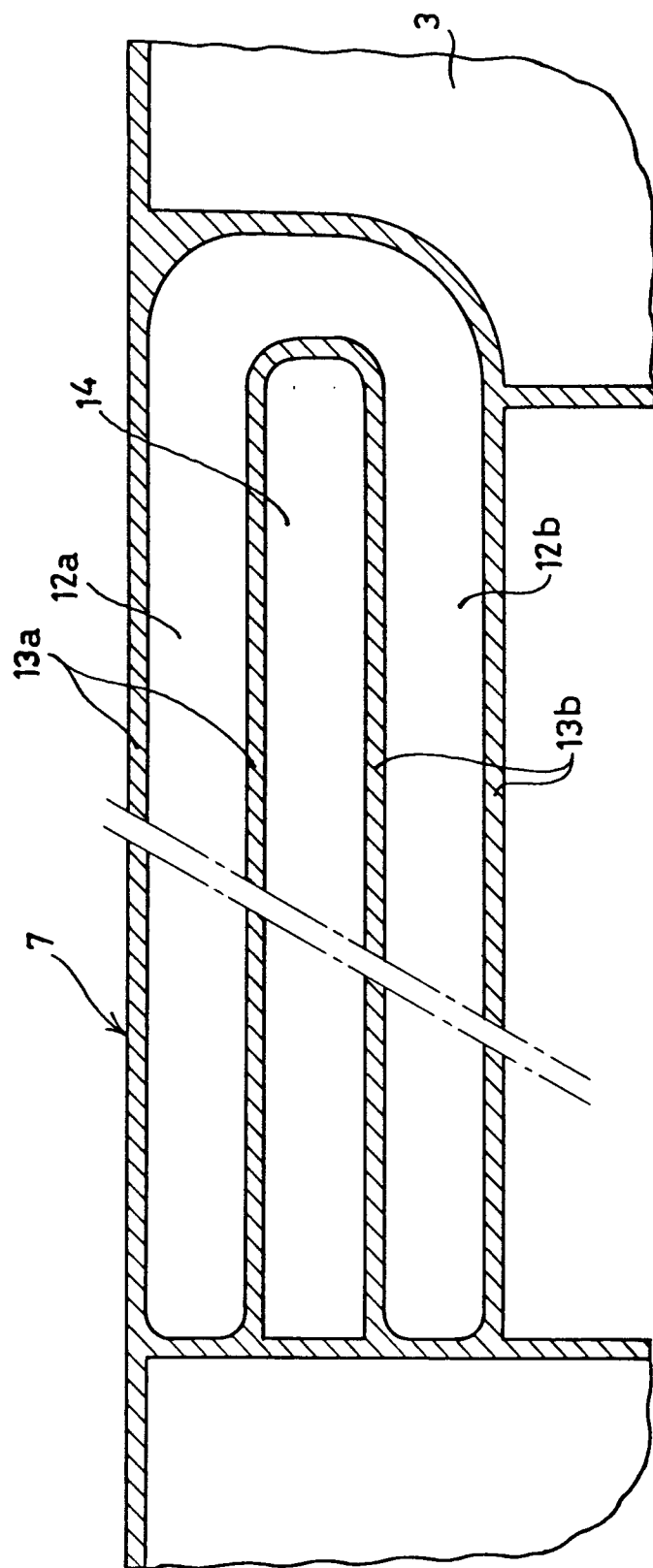


FIG. 4.