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(54) Crate made of plastic, provided with at least one handle

(57) Crate made of plastic, in particular a bottle crate, which is provided with at least one handle (9), characterised in that the surface of the part of the handle (9) where the hand is to be placed when picking up the crate is at least partially formed of a layer (7) made of a plastomer.

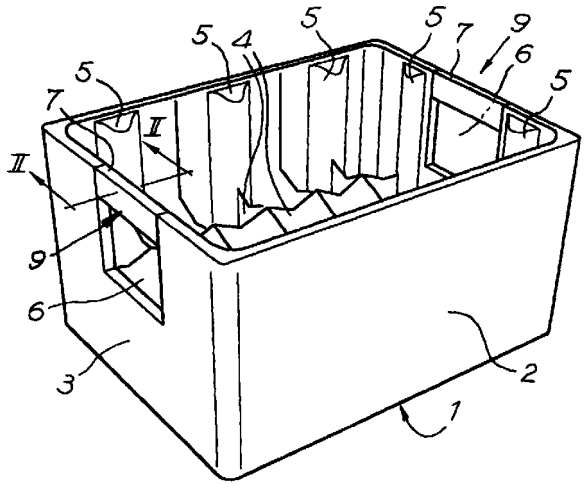

Fig. 1

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Description

[0001] The present invention concerns a crate made of plastic, in particular a bottle crate, which is provided with at least one handle.

[0002] The invention concerns crates provided with handle openings situated in two opposite longitudinal and/or cross side walls as well as crates in which the handle is provided in the middle.

[0003] In the first case, the wall part situated above the handle opening forms the actual handle.

[0004] In the latter case, the handle usually has the shape of a brace either or not extending above the side walls.

[0005] In all these known crates, the handle is made of the same plastic as the rest of the crate.

[0006] The plastic, usually polyethylene, is rather smooth, so that the grip on the handle is not so good.

[0007] In order to obtain a better grip, the bottom of the handle is provided with ribs or such in some crates, or with rounded recesses for the fingers, but the improvement of the grip is restricted.

[0008] The invention aims a crate made of plastic with at least one handle which excludes the above-mentioned and other disadvantages, whereby the handle allows for a better grip and the crate is easier to handle.

[0009] This aim is reached according to the invention in that the surface of the part of the handle where the hand is to be placed when picking up the crate is at least partially formed of a layer made of a plastomer.

[0010] This plastomer may be an ethylene octene copolymer, and in particular a metallocene ethylene octene copolymer, having a density of for example 880 to 915 kg/m^3.

[0011] Preferably, the entire zone where the hand is to be placed will be provided with such a layer made of a plastomer.

[0012] This layer can be superposed as well as countersunk in the handle, so that it does not protrude.

[0013] Said layer can be fixed as a loose part on the rest of the handle, for example it can be mechanically connected or glued, or it can be directly injection-moulded on the rest.

[0014] The layer is not only made of another material than the rest of the crate, it can also be of a different colour, so that the layer can be used for example as a distinctive mark for the content of the crate.

[0015] In order to better explain the characteristics of the invention, the following preferred embodiments of a crate according to the invention are described as an example only without being limitative in any way, with reference to the accompanying drawings, in which:

figure 1 shows a view in perspective of a crate provided with handles according to the invention;
figure 2 represents a section according to line II-II in figure 1;
figure 3 shows a view analogous to that in figure 1, but with reference to another embodiment of the crate and of the handle according to the invention;
figure 4 shows a section according to line IV-IV in figure 3.

[0016] Figure 1 represents a bottle crate which, as usual, consists of a bottom 1, four standing walls, namely two longitudinal walls 2 and two cross walls 3, and partitions 4 on the bottom 1 which divide the crate in compartments for the bottles.

[0017] The standing walls 2 and 3 can be single-walled as well as double-walled, as represented in figure 1, and they may contain or form strengthening ribs or strengthening columns 5.

[0018] In each of the two cross standing walls 3 is provided a handle opening 6 at a small distance form the top edge.

[0019] What is characteristic is that the part of the wall 3 which is situated above this handle opening 6 contains a surface formed of a layer of plastomer 7 and thus forms the actual handle 9 together with this layer of plastomer 7.

[0020] By plastomer is meant here an alkine plastomer which can be classified in between the hard plastics such as polyethylene and the rubberlike elastomers.

[0021] Their density is preferably situated between 880 and 915 kg/cm^3, and their melting point is preferably situated between 70 and 110°C.

[0022] Plastomers are soft to the touch and that is why they are called 'soft-touch'. They are flexible and tough, and their elastic modulus is preferably situated between 20 and 150 Mpa, they are resistant to cracks when being pleated, they can be easily dyed and they are highly cold-resistant.

[0023] They have a narrow molecular distribution of weight and a narrow co-monomer distribution.

[0024] The plastomer of the layer 7 preferably belongs to the same family of plastics as the material of which the rest of the crate is made.

[0025] A suitable plastic for the crate is polyethylene, whereas an ethylene octene copolymer is also a suitable plastomer, in particular a metallocene ethylene octene copolymer having a density between 880 and 915 kg/cm^3, which has obtained its particular characteristics by applying the metallocene catalyst technology.

[0026] Such a suitable plastic for the layer 7 is the plastic which is marketed by the Dutch company DEX-PLASTOMERS, a DSM/EXXON CHEMICAL joint venture, under the trade name 'exact'.

[0027] The part 8 of the wall 3 which is situated above the handle opening 6 and which forms the core of the actual handle is coated with the layer of plastomer 7. This layer 7 surrounds the part 8 entirely and is thus present on the entire zone where the hand is placed when the handle 9 is seized.

[0028] This part 8 can be made somewhat smaller than usual in such a crate, namely such that the layer 7 is countersunk in the wall 3 and thus does not protrude.

This part 8, made of relatively rigid or hard plastic, is preferably solid, as represented in figure 2, in order to make it sturdy.

[0029] The colour of the layer 7 is different from the rest of the crate, so that it can be used for distinguishing the content of the crate or merely for aesthetic reasons.

[0030] The layer of plastomer 7 can be injection-moulded on the part 8. After the crate has been injection-moulded in a mould without the layers 7, the layers of plastomer 7 of the handles are provided in a second mould by means of injection moulding.

[0031] According to a variant, these layers or plastomer 7 can be injection-moulded as separate and can subsequently be fixed on the parts 8, for example by means of gluing or by means of mechanical connections. In the latter case, every layer of plastomer 7 can be provided with protrusions which can be clamped or snapped in corresponding recesses in the part 8.

[0032] According to another embodiment of the crate, the handles 9 can be provided in the longitudinal side walls 2, or the crate may have such handles 9 both in the cross side walls 3 and in the longitudinal side walls 2.

[0033] Apart from handles 9 in the side walls 2 and/or 3, or instead of these, the crate may have a central handle 10 in the shape of a brace as in the embodiment represented in figures 3 and 4.

[0034] In this embodiment, the part of the handle 10 which coincides with the base of the U-shaped brace is coated all over with a layer of plastomer 7. The above-mentioned part has not been reduced in the given example, so that the layer of plastomer 7 is a superposed layer and thus a protruding layer, although it is possible, of course, to countersink this layer of plastomer 7 as well in the relative hard material of the handle 10.

[0035] In all these embodiments, the layer of plastomer 7 provides a better grip and the crate is easier to handle.

[0036] As both the material of the actual crate and the plastomer are compatible, preferably polyethylene and a polyethylene copolymer respectively, the materials do not need to be separated when recycling the crate. The crate as a whole with the plastomer can be ground and used for recycling.

[0037] The invention is by no means limited to the above-described embodiments represented in the accompanying drawings; on the contrary, such a crate made of plastic can be made in all sorts of variants while still remaining within the scope of the invention as described in the following claims.

[0038] In particular, the layer 7 must not necessarily entirely surround the part of a standing wall situated above the handle opening 6 in case of a handle 9, nor the bottom of the brace in case of a central handle 10. It is sufficient that this layer 7 is provided there where the hands are placed to take up the crate with the handle 9 or 10.

Claims

1. Crate made of plastic, in particular a bottle crate, which is provided with at least one handle (9,10), characterised in that the surface of the part of the handle (9,10) where the hand is to be placed when picking up the crate is at least partially formed of a layer (7) made of a plastomer.

2. Crate according to claim 1, characterised in that the plastomer is an ethylene octene copolymer.

3. Crate according to claim 2, characterised in that the plastomer is a metallocene ethylene octene.

4. Crate according to any of the preceding claims, characterised in that the plastomer has a density between 880 and 915 kg/m^3.

5. Crate according to any of the preceding claims, characterised in that the entire zone where the hand is to be placed will be provided with such a layer (7) of plastomer.

6. Crate according to any of the preceding claims, characterised in that the layer of plastomer (7) is superposed.

7. Crate according to any of claims 1 to 5, characterised in that the layer of plastomer (7) is countersunk in the handle (9,10), so that it does not protrude.

8. Crate according to any of the preceding claims, characterised in that the layer of plastomer (7) is fixed on the rest of the handle (9,10) as a loose part, for example is mechanically connected or glued onto it.

9. Crate according to any of claims 1 to 4, characterised in that the layer of plastomer (7) is injection-moulded directly on the rest of the handle (9,10).

10. Crate according to any of the preceding claims, characterised in that the layer of plastomer (7) has a different colour compared to the rest of the crate.

11. Crate according to any of the preceding claims, characterised in that the layer of plastomer (7) is made of the same type of plastic as the rest of the crate, but whereby the plastic is softer, however, thanks to additive agents.

12. Crate according to any of the preceding claims, characterised in that the handle (9) is formed of the part which is situated above a handle opening (6) in a standing side wall (2 or 3), and in that the layer of plastomer (7) is situated on the surface of this part.

13. Crate according to any of the preceding claims, characterised in that it has a central handle (10) and in that the layer of plastomer (7) is situated on the top end of this handle (10).

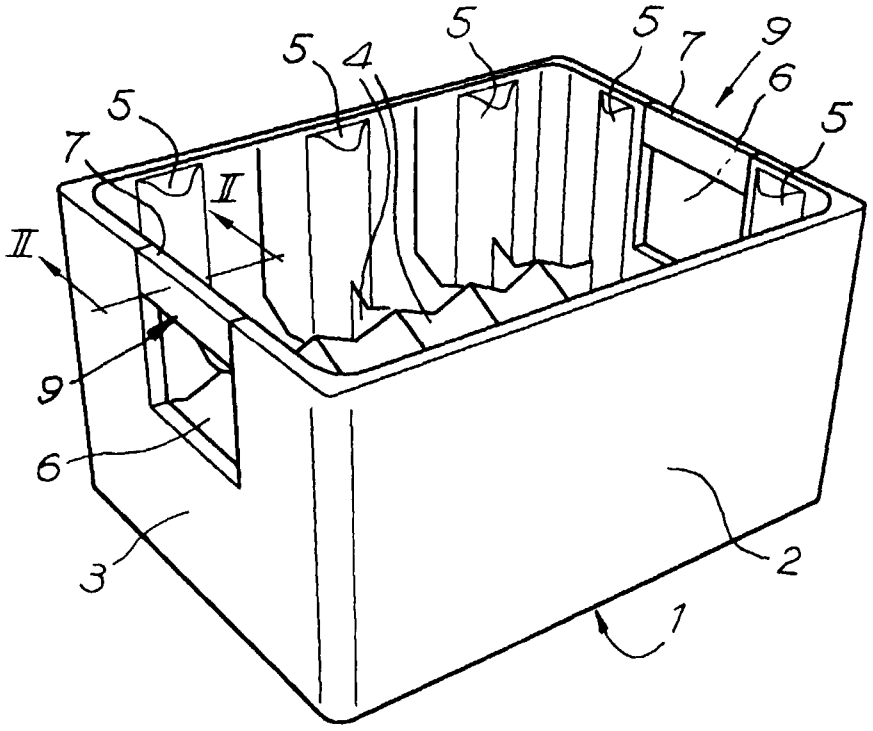

Fig.1

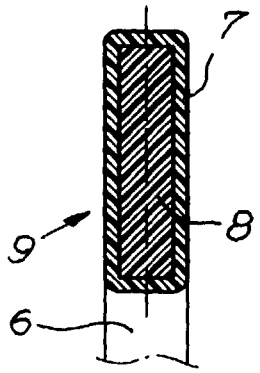

Fig.2

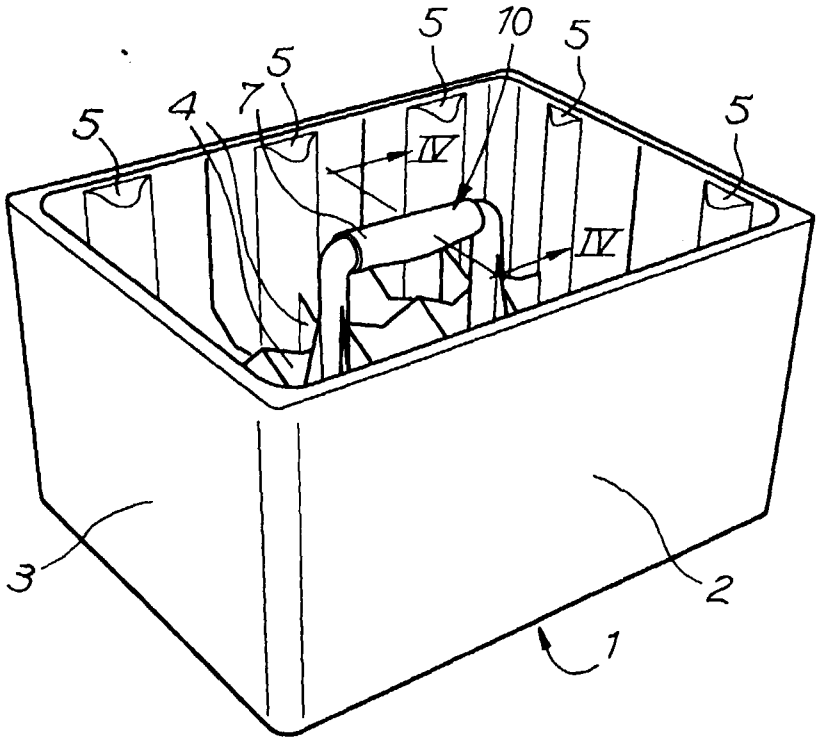

Fig.3

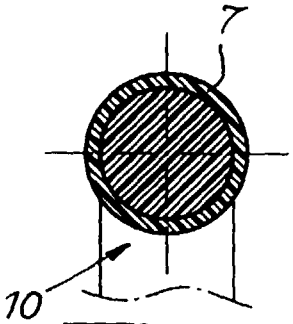

Fig.4

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EUROPEAN SEARCH REPORT

Application Number
EP 99 20 3373

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	DE 40 22 884 A (SCHÖLLER-PLAST) 23 January 1992 (1992-01-23) * the whole document *	1,5-9, 12,13	B65D1/24
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	21 January 2000	Gino, C

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