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(54) **Coloured plastic crate**

(57) A crate (1) made of plastic has a base (2) and at least two side walls (3) upstanding from the base. At least part (8) of the surface of the crate is painted so as to provide a colour different from the colour of the plastic. In this way, a crate having at least two different colours

may be provided. A method of providing a crate (1) having at least two colours comprises the steps of providing a crate made of plastic having a first colour, and then painting at least part (8) of the crate using a paint having a second preferably different colour. The crate may be used as a bottle crate.

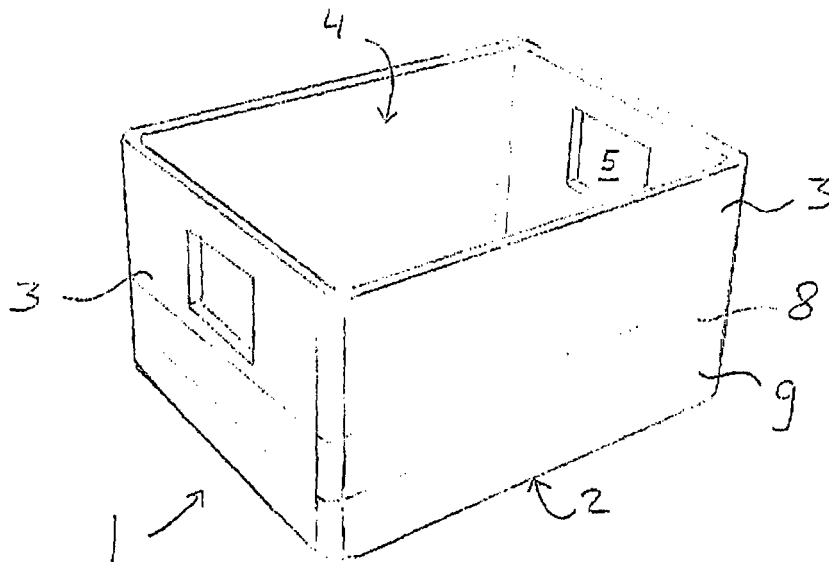


Fig. 1

Description

[0001] The present invention relates to a plastic crate. More in particular, the present invention relates to a plastic container for bottles and similar objects, the plastic container being provided with at least one coloured surface.

[0002] It is well known to use colours in plastic crates. Typically, plastic crates are injection moulded from a base material to which colorants have been added, the resulting crate having a single, uniform colour, for example grey, black or blue. However, it is often desirable for a crate to have two, three or even more colours to improve its appearance, to boost the recognition of brand colours, and/or to enhance its visibility in poor light.

[0003] In plastic crates, such as bottle crates, additional colours are typically applied using labels, in particular so-called in-mould labels. A well-known technique for applying labels is the in-mould labelling (IML) technique where a label (having any desired pattern) is placed in the mould before injection-moulding the crate. The IML technique, however, has several disadvantages. The sizes of in-mould labels that can be applied are often limited. In particular, when a label is required that completely surrounds the crate, the "closed" circumference will have a visible seam.

[0004] Three types of seams can be distinguished. A first type leaves a gap between two edges of the label, showing the crate through the gap. A second type has an overlapping label edge, which is also visible. The overlapping edge will typically not bond well to the overlapped edge and come loose, which may lead to tearing of the label. In addition, dirt may collect under the overlapping edge. A third type of seams is folded, thus avoiding loose edges. However, the technique of folding seams is complicated and therefore relatively expensive.

[0005] Any seam will be all the more visible when the crate is stacked and the seams are not aligned. Providing two seams, one on either side of the crate and both carefully positioned so as to ensure alignment, is often less desirable. The problem of seams can be avoided by in-moulding a label having a closed circumference but this requires very small tolerances and is therefore relatively expensive.

[0006] It can thus be seen that the conventional IML technique has several disadvantages which make it less suitable for providing multiple colours in a plastic crate. In addition, the IML technique is not suitable for applying a colour on any parts of the crate having a more complex shape, such as dividers or cones that may be present in a bottle crate.

[0007] Instead of IML, a crate can be made from two (or more) differently coloured plastics which may be moulded either simultaneously or subsequently. Such a process, however, requires important modifications to the mould and is therefore relatively expensive. In addition, colour patterns defined by the mould cannot be easily changed.

[0008] It is therefore an object of the present invention to overcome these and other problems of the Prior Art and to provide a plastic crate having two or more colours that can be produced economically.

[0009] Accordingly, the present invention provides a crate made of plastic, the crate having a base and at least two side walls upstanding from the base, wherein at least part of the surface of the crate is painted.

[0010] By painting part of the (surface of the) crate, a crate having multiple colours can be obtained very economically. Any problems with seams are avoided, and the colours can be applied very quickly, in particular when spray-painting is used.

[0011] A very important advantage is that the colour (s) can be applied after the moulding of the crate. This allows a standard crate to be moulded which is subsequently provided with any desired colour(s), possibly even a single colour. If two or more distinct colours are used, they may have any desired boundaries. In contrast to colour patterns and/or boundaries defined by the mould, painted area boundaries can easily and inexpensively be changed.

[0012] An additional advantage of the present invention is the fact that a paint layer applied on the crate protects the material of the crate from UV (Ultra Violet) radiation. As is well known, UV radiation (which is contained in sunlight, for example) causes a degradation of most plastics. For this reason, the plastic material of which the crate is made, for example HDPE (High Density PolyEthylene), typically contains additives which prevent such degradation. If the crate is painted, these additives are no longer necessary, thus making the crate more economical.

[0013] A further advantage of the present invention is the fact that used and damaged crates can easily be re-conditioned. Re-painting a used crate is much more cost-effective than recycling by grinding and re-moulding. In addition, by painting the colour of an existing crate can be changed, which may be advantageous when a crate changes ownership or when a brewery or other crate user changes its brand colour scheme.

[0014] It is noted that there is a prejudice in the field of crate manufacturing against painting plastic crates. It is widely believed that painted crates are easily damaged and that paint can therefore not be used on plastic crates. The present inventor has overcome this prejudice and found that applying paint is a very economical and effective way of providing crates having multiple colours. Even if any damage occurs, the crate is easily re-painted, either entirely or partially.

[0015] It is preferred that the outer surfaces of the side walls are painted. However, the present invention is not so limited and the interior of the crate may be painted as well. The entire crate, including the lower surface of the base may be painted if desired.

[0016] In the crate of the present invention, the plastic has a first colour and the paint has at least a second colour. It is preferred that the first colour and the second

colour are different, so as to provide a colour contrast using only a single paint colour. However, the present invention is not so limited and the second (paint) colour may be substantially identical to the first (plastic) colour. In such embodiments, the paint (or at least part of the paint) may serve to shield the plastic material from UV radiation, or to cover an older paint layer.

[0017] The paint may have at least a third colour different from the second colour. That is, the paint may have at least two distinct colours, thus providing multiple colours, even if the plastic material of the crate is entirely covered by the paint.

[0018] The present invention also provides a method of providing a crate having at least two colours, the method comprising the steps of:

- providing a crate made of plastic having a first colour, and
- painting at least part of the crate using a paint having a second colour.

By painting at least part of the crate in a different colour, a very economical two-colour or multiple colour crate is obtained. It will be understood that the first and second colour are typically different, that is, they are distinct colours. This is, however, not essential and the second colour may even be identical to the first colour. In such crates, the paint layer may act as an UV filter, protecting the plastic against UV (Ultra Violet) radiation which would normally cause a degradation of the material

[0019] The paint may be metallic paint, containing metal particles, and/or have a metal (gold, silver, bronze) colour to give the appearance of a metal crate. However, any other colours may also be used.

[0020] Advantageously, the step of painting involves spray-painting. By spray-painting, relatively large surfaces can be painted in a short time. Alternatively, a brush, roller or other application tool could be used.

[0021] Preferably, the step of providing a crate made of plastic involves injection moulding. The crate of the present invention is preferably integrally made, that is, the crate consists of a single body of plastic. However, the crate of the present invention may also be assembled from a set of parts, for example separately made side walls mounted on a base member.

[0022] The present invention will further be explained below with reference to exemplary embodiments illustrated in the accompanying drawings, in which:

Fig. 1 schematically shows an exemplary embodiment of a crate in accordance with the present invention.

[0023] The plastic crate 1 shown merely by way of non-limiting example in Fig. 1 comprises a base 2 and side walls 3. Two side walls 3 are provided with handle openings 5. The side walls 3 define an interior 4. The crate of Fig. 1 is integrally moulded, although the invention is not

so limited.

[0024] In accordance with the present invention, the crate is at least partially painted. In Fig. 1 the crate 1 is shown to have a painted band 8 which extends over all four side walls 3. Below the painted area (band) 8, another painted area (or band) 9 is present. The top part of the side walls 3 is, in the example shown, not painted. If the plastic material of the crate, the upper painted area 8 and the lower painted area 9 all have different colours, a three-colour crate can be provided with only two colours of paint. Of course the area 9 may have the same colour as the upper painted area 8. Alternatively, the upper parts of the side walls 3 may also be painted, or the area 9 could be an unpainted area. Furthermore, the interior 4 of the crate could for example be left unpainted (bare plastic), while the exterior (outer surfaces of the side walls 3) could be painted. The side walls 3 can be either entirely or partially painted. Various alternatives will become apparent to those skilled in the art.

[0025] If the crate is not uniformly painted, that is, if two or more distinct colours are used or if not the entire plastic surface is to be painted, suitable shielding tools can be used to shield part of the crate while applying paint of a particular colour, which shielding tools are then removed.

[0026] As a paint layer provides protection against UV radiation, the plastic material of a crate that is painted over substantially its entire (outer) surface no longer requires protective additives. Accordingly, the material costs of the crate can be reduced. A better protection against UV radiation is obtained if the interior of the crate is also painted, including any dividers, cones, columns and other elements.

[0027] The crate of Fig. 1 has substantially even planar side walls. Advantageously, the side walls 3 may be provided with ridges extending from the top and/or the bottom of the side walls in the plane of the base 2. That is, such ridges may extend sideways so as to protect the side wall surfaces from damage.

[0028] The crate of the present invention is made of a suitable plastic material, such as PE (PolyEthylene) or HDPE (High Density PolyEthylene). The paint can be any suitable paint as may be determined experimentally. The paint may be based on solvents or be water-based. Any paint colour may be used, including but not limited to red, blue, grey, yellow, metal (e.g. copper, silver or gold) or metallic, brown, black, white, purple and pink.

[0029] As will be clear from the above discussion, the present invention also provides a method of providing a crate having at least two colours, the method comprising the steps of:

- providing a crate made of plastic having a first colour, and
- painting at least part of the crate using a paint having a second colour.

The step of painting preferably involves spray-painting,

although paint application tools may also be used.

[0030] The present invention is based upon the insight that painting a crate is a very economical way of obtaining a crate having multiple colours, much more economical than using inserts, in-mould labels and plastic material having multiple colours. 5

[0031] It will be understood by those skilled in the art that the present invention is not limited to the embodiments illustrated above and that many modifications and additions may be made without departing from the scope of the invention as defined in the appending claims. 10

Claims

1. A crate (1) made of plastic, the crate having a base (2) and at least two side walls (3) upstanding from the base, wherein at least part of the crate is painted. 15
2. The crate according to claim 1, wherein the outer surfaces of the side walls (3) are painted. 20
3. The crate according to claim 1 or 2, wherein the plastic has a first colour and the paint has at least a second colour. 25
4. The crate according to claim 3, wherein the first colour and the second colour are different.
5. The crate according to claim 3 or 4, wherein the paint has at least a third colour different from the second colour. 30
6. The crate according to any of the preceding claims, further comprising protective ridges extending from the side walls (3). 35
7. The crate according to any of the preceding claims, wherein at least some of the paint is metallic. 40
8. A method of providing a crate having at least two colours, the method comprising the steps of:
 - providing a crate (1) made of plastic having a first colour, and 45
 - painting at least part (8) of the crate using a paint having a second colour.
9. The method according to claim 8, wherein the first colour and the second colour are different. 50
10. The method according to claim 8 or 9, wherein the step of painting involves spray-painting. 55

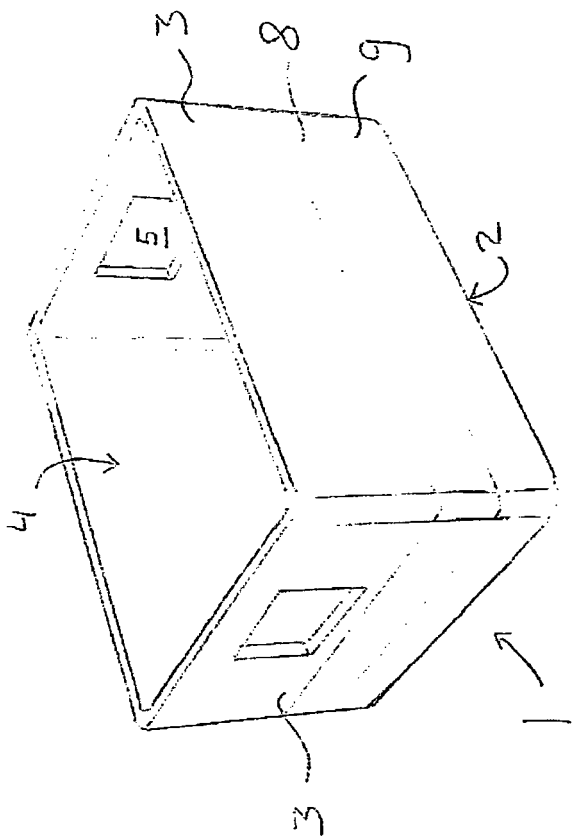


Fig. 1



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EUROPEAN SEARCH REPORT

Application Number
EP 05 07 5761

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 91 02 707 U1 (FRANZ DELBROUCK GMBH, 5750 MENDEN, DE) 23 May 1991 (1991-05-23) * the whole document *	1-6,8-10	B65D1/22 B65D1/24
X	DE 201 16 427 U1 (FRANZ DELBROUCK GMBH) 29 November 2001 (2001-11-29) * page 5, line 1 - page 6, line 19 *	1,7	
X	DE 89 16 070 U1 (SCHOELLER INTERNATIONAL ENGINEERING KG SPARRENBURG, UNTERENGSTRINGEN,) 9 September 1993 (1993-09-09) * page 2, line 18 - line 19 *	1-3,8,9	
X	DE 27 40 262 A1 (WAVIN B.V) 15 March 1979 (1979-03-15) * page 3, paragraph 3 - page 4, paragraph 1 *	1-4,6,8,9	
X	DE 102 39 319 A1 (SCHOELLER WAVIN SYSTEMS SERVICES GMBH; KARL EDER ROBUST-PLASTIK KUNSTS) 11 March 2004 (2004-03-11) * paragraph [0003] *	1-4,8,9	TECHNICAL FIELDS SEARCHED (Int.Cl.7) B65D
X	GB 1 063 110 A (FRIEDRICH STUCKENBROKER) 30 March 1967 (1967-03-30) * page 3, line 130 - page 4, line 2 *	1-6,8,9	
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 2 September 2005	Examiner Appelt, L
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 05 07 5761

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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02-09-2005

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
DE 9102707	U1	23-05-1991	NONE	

DE 20116427	U1	29-11-2001	BE 1015104 A3	05-10-2004
			CZ 20023342 A3	14-04-2004
			DE 20201899 U1	18-04-2002
			DK 200201487 A	09-04-2003

DE 8916070	U1	09-09-1993	DE 3839087 A1	10-05-1990
			AT 93195 T	15-09-1993
			AU 4640489 A	12-06-1990
			BR 8907162 A	26-02-1991
			DE 8915831 U1	26-09-1991
			DE 58905327 D1	23-09-1993
			WO 9005676 A2	31-05-1990
			EP 0396728 A1	14-11-1990
			JP 3030318 B2	10-04-2000
			JP 11130038 A	18-05-1999
			JP 3032872 B2	17-04-2000
			JP 3502192 T	23-05-1991
			US 5395010 A	07-03-1995

DE 2740262	A1	15-03-1979	NONE	

DE 10239319	A1	11-03-2004	BR 0313937 A	12-07-2005
			DE 20218154 U1	27-03-2003
			WO 2004024575 A1	25-03-2004
			EP 1532053 A1	25-05-2005

GB 1063110	A	30-03-1967	DE 1902973 U	22-10-1964
			DE 1900561 U	10-09-1964
			NL 6412077 A	16-08-1965
