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(54) **Refuse container for thermal destruction**

(57) A disposable refuse container (1) (ecological bin) for thermal destruction, comprising at least one side wall (3) made of low quality material connected to a base (2), formed by injection moulding a plastic material which bonds to said side wall (3) during said moulding step.

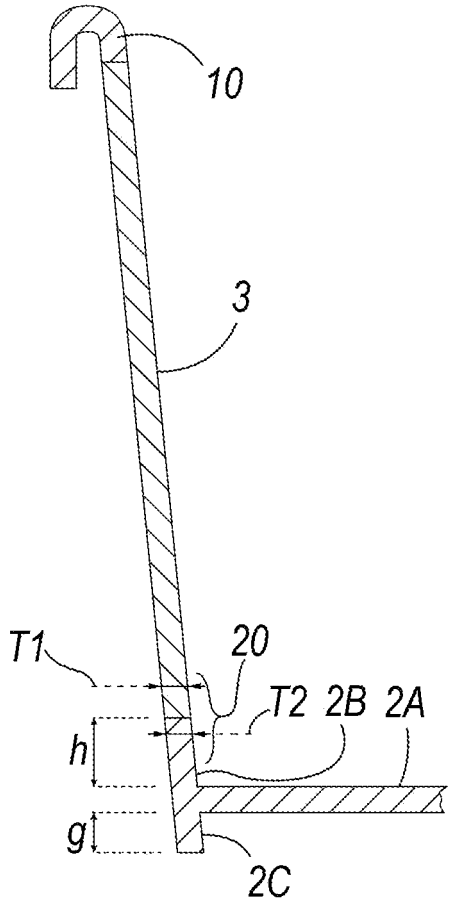


Fig. 5

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Description

[0001] The present invention relates to a container for refuse for thermal destruction. Refuse is known to be collected in containers which are then sent to thermal incinerators.

[0002] The containers used for this purpose are usually made of cardboard and are provided with plastic bags inserted into their interior; the refuse is placed in the plastic bags, which are then suitably closed.

[0003] The containers of this type present the considerable drawback of not being able to retain wet refuse or refuse stored in moist environments.

[0004] The container described in utility model application MI2005U000101 of 25/03/2005 of which the owner of the present application is co-owner, presents a base made of corrugated polypropylene fixed to cardboard side walls.

[0005] The container base is formed from a pair of flaps projecting from the sides and joined together along a central line of the container.

[0006] Even if the bond is properly formed, leakages occasionally take place along this line.

[0007] The container is also fairly unstable as the container base is never perfectly flat, so compromising stability.

[0008] DE2123472, US2002/05627, FR-A-2302241 and USA3973689 describes containers made with a plastboard side wall.

[0009] The containers of the prior art present problems in correspondence of the welding zone between the side wall and the base. It is to be noted that usually the containers, once filled with wastes, are superposed one to the other, loaded on a cargo and shipped to a recovery or destruction facility.

[0010] During the transport the container that is at the base of the column supports all the weight of the superposed containers, and usually it brokes laterally in correspondence of the welding zone.

[0011] The aim of the present invention is therefore to provide a container for refuse for thermal destruction by which the stated drawbacks of the known art are eliminated.

[0012] Within the scope of this aim, an object of the invention is to provide a container which ensures perfect retention of any liquid matter which may escape into it from the refuse, and that is more resistant, expecially when subjected to the weight of other containers superposed.

[0013] Another object of the invention is to provide a stable container which rests perfectly on the surface on which it is positioned.

[0014] The stated aim, together with these and other objects, are attained according to the present invention by a container for refuse for thermal destruction in accordance with the accompanying claims.

[0015] Advantageously, the container of the present invention is able to be associated with a lid which closes it perfectly.

[0016] Further characteristics and advantages will be more apparent from the ensuing description of a preferred but non-exclusive embodiment of the container for refuse for thermal destruction, illustrated by way of non-limiting example in the accompanying figures, in which:

Figure 1 is a perspective view of a container according to the present invention;
Figures 2 and 3 show respectively a detail of the container and a container lid;
Figure 4 shows a container base;
Figure 5 shows a cross-section through the container taken on a sectioning line perpendicular to a side wall thereof; and
Figure 6 shows a section through a wall of the container in a direction parallel to the figure, taken at a connection portion between the side wall and the base.

[0017] With reference to said figures, these show a container for refuse for thermal destruction, or an ecological bin, indicated overall by the reference numeral 1.

[0018] The container 1 comprises a base portion 2 made of a plastic material such as polypropylene, by injection moulding.

[0019] The base portion 2 comprises a lower wall 2A formed integrally with an annular element 2B which projects from the lower wall 2A and is connected to a side wall 3 of the container.

[0020] The side wall 3 of the container 1 is mode of low quality material such as corrugated cardboard or cellular polypropylene. It can also be made of traditional cardboard. Preferably, it is formed from a punched blank which is then folded and suitably glued or bonded, to assume a substantially parallelepiped appearance. The side wall 3 bonds to the base 2 (and in particular to the annular element 2B) during the injection moulding of the base.

[0021] This is achieved by injecting the plastic material to form the base into the mould in which the side wall 3 is already present. In this manner the plastic material perfectly adheres and bonds to the side wall.

[0022] If the wall is made of cellular material, the liquid plastic penetrates partially into the apertures 4 present at the head of the (corrugated) cellular element, as can be seen in the section of Figure 6. This enables a very stable bond to be formed between the constituent material of the container lateral portion and the container base 2.

[0023] According to the present invention the an annular element 2B presents a head border frontally welded with a frontal head border of the side wall 3, as it can be noticed form fig 5.

[0024] This allow a better transmission to the base, and hence to the soil, of the weight supported by the side wall. The weight transmitted from the side wall is directly transferred to the base, thus preventing damages to the

container in proximity of the welding zone 20.

[0025] As it can be notice from fig 5, the internal surface of the annular element and the internal surface of the side wall are substantially aligned in proximity of the welding zone 5. This is very important. In fact liquid wastes can slide from the side wall to the base directly, without stopping for example in correspondence of steps. The presence of liquid wastes on surfaces in contact with the side wall can damage the side wall itself, that is advantageously made in a material that can be less resistant to the liquids than the material of what the base wall is made.

[0026] As a further improvement the annular element 2B and the side wall 3 in proximity of the welding zone 20, presents substantially the same tickness t1,t2, so as that also the external surface of the annular element and the external surface of the side wall are substantially aligned. An external surface free of steps makes the stock and transport of the containers easier. Advantageously the containers can also be put one into the other when empty.

[0027] Advantageously the base 2 comprises a projecting rim 2C providing a stable support on the ground for the container, the annular element having a height h between 2 and 20% of the height of the entire container side wall. The rim 2C can also be absent.

[0028] The presence of the annular element 2B formed integrally with the lower wall 2A, enables the container to maintain a perfect seal against liquid matter on its base. The part in proximity to the container mouth can present closure flaps of the type conventionally provided on cardboard containers or boxes.

[0029] Alternatively the container 1 can be provided with a shaped profile (as in the case described herein), also formed by injection moulding plastic material which bonds directly to said side wall during said moulding step.

[0030] In other words the shaped profile 5 is formed directly within the mould into which the plastic material is injected and where the container side wall 2 is already present.

[0031] Advantageously the shaped profile 5 presents at least one handle, but preferably two, to facilitate container transport.

[0032] The shaped profile allows coupling to a container lid 7, for example made of plastic. In this manner the container closure is much better than closure achieved with conventional flaps formed on a cardboard blank.

[0033] Moreover, given the presence of a plastic-plastic fit, it is simple to form snap means 15 on the lid or profile, ensuring perfect container closure or, even more advantageous, preventing the container from being further opened once closed. This is particularly useful for containers intended for transporting hospital refuse.

[0034] Alternatively, the lid can be hinged to the shaped profile 5.

[0035] The present invention also comprises a particularly ecological lid suitable for the afore described containers. It is shown in Figures 3 and 9 where it comprises an upper wall of low quality material, for example the same as that with which the container side wall is made. This upper wall is connected to a further shaped profile, cooperating with the first during container closure. The further shaped profile 10 is made by injection moulding plastic material which bonds to said upper wall during the moulding step.

[0036] Essentially, in producing the lid 7, the upper wall 9 is firstly inserted into the mould, after which the plastic material to form the further shaped profile 10 is injected into the mould, and simultaneously bonds to the upper wall 9 in a totally similar manner to that already seen for the side wall.

[0037] Essentially, the method for producing the disposable container for refuse for thermal destruction comprises the steps of placing in a mould at least one container side wall 3 formed of low quality material, then injecting a plastic material into the mould such that said plastic material forms the container base by bonding to at least a portion of said side wall.

[0038] Simultaneously the plastic material injected into the mould forms at the container opening a shaped profile which also bonds to said at least one wall of plastic material.

[0039] Advantageously the low quality material used for the side wall 3 and for the upper wall 9 of the lid is cellular polypropylene, corrugated cardboard or normal cardboard, but is preferably polythene coated.

[0040] The material with which the base 2, the shaped profile 5 and the further shaped profile of the container lid are formed is polypropylene

[0041] The operation of the container for refuse for thermal destruction according to the invention is evident from that described and illustrated, and is substantially as follows.

[0042] It can be used to contain refuse, for example by inserting into its interior a plastic bag of suitable dimensions.

[0043] When the container of the invention is full, the upper opening is closed by the lid 7 which, when placed on the container, is locked to the container by the automatic snap means in a non-removable manner. The closed container is sent to the incinerator.

[0044] The refuse contained in the container can be of any type, in particular including moist refuse, because any liquid matter released from the refuse will remain trapped in the container and especially in its base 2, blocked by the annular wall 2B.

[0045] In addition, even if the container is stored on wet surfaces, this does not negatively affect the retention of liquid matter, because again in this case the liquid matter is retained in the container base portion of impermeable plastic material.

[0046] According to an important variant, the further profile of the lid 7 presents an undercut for housing the rim 2C projecting from the base of an identical container, this enabling very stable container stacking.

[0047] Advantageously, incineration is performed on

a container presenting only a minimum plastic part (usually the base portion, the upper profile and the perimeter of the lid)), hence limiting the temperature rise within the furnace and limiting the release of pollutant substances into the atmosphere.

[0048] The container formed in this manner is also very economical compared with traditional bins made entirely of plastic, while maintaining the same flexibility in use and the same capacity for retaining liquid matter.

[0049] In this respect it should be considered that the cost of a container formed according to the invention is less than the cost of washing and transporting traditional plastic bins, which are emptied onto the dump and then reused.

[0050] The use of a container such as that described is more hygienic than traditional plastic bins which are washed and reused. The question assumes particular importance especially in hospital or sanitary contexts.

[0051] Some embodiments of the container of the invention have been described, but others can be conceived by utilizing the same inventive concept.

[0052] In practice, any materials and dimensions can be used, according to requirements and to the state of the art.

Claims

1. A disposable container (1) for refuse for thermal destruction, comprising at least one side wall (3) made of low quality material connected to a base (2), said base (2) being formed by injection moulding a plastic material which bonds to said side wall (3) during said moulding step, said base (2) presenting a lower wall (2A) from which an annular element (2B) formed integrally with said lower wall extends, and to which said at least one wall (3) is bonded, **characterized in that** the annular element presents a head border frontally welded with a frontal head border of said at least one side wall (3).

2. A container according to the preceding claim wherein the internal surface of the annular element and the internal surface of the side wall are substantially alligned in proximity of the welding zone.

3. A container according to claim 2, wherein the annular element (2B) and the side wall (3) in proximity of the welding zone, presents substantially the same tickness, so as that also the external surface of the annular element and the external surface of the side wall are substantially alligned.

4. A container as claimed in one or more of the preceding claims, wherein in proximity of the container opening a shaped profile (5) is present also formed by injection moulding a plastic material which bonds to said side wall (3) during said moulding step.

5. A container as claimed in the preceding claim, wherein said shaped profile presents at least one handle (6) for facilitating container transport.

6. A container as claimed in claim 4, **characterised in that** said shaped profile presents means (15) able to cooperate snap-wise to close a lid associable with said shaped profile.

7. A container as claimed in the preceding claim, wherein the snap means (15) enable the container to be closed irreversibly.

8. A container as claimed in the preceding claim, wherein the annular element has a height between 2% and 10% of the height of the entire container side wall.

9. A container as claimed in one or more of the preceding claims, wherein a rim (2C) extends from said lower wall to act as a support for the container on the ground.

10. A method for producing a disposable container (1) for refuse for thermal destruction, comprising the steps of:

    - placing in a mould at least one container side wall formed of low quality material, and
    - injecting a plastic material into the mould such that said plastic material forms the container base by frontally bonding to at least a frontal portion of said side wall.

11. A container as claimed in one or more of the preceding claims, wherein the low quality material (3, 9) is cellular polypropylene.

12. A container as claimed in one or more of the preceding claims, wherein the low quality material (3, 9) is corrugated cardboard or normal cardboard, preferably polythene coated.

13. A container as claimed in one or more of the preceding claims, wherein the material with which the container base (2) or shaped profile is formed is polypropylene.

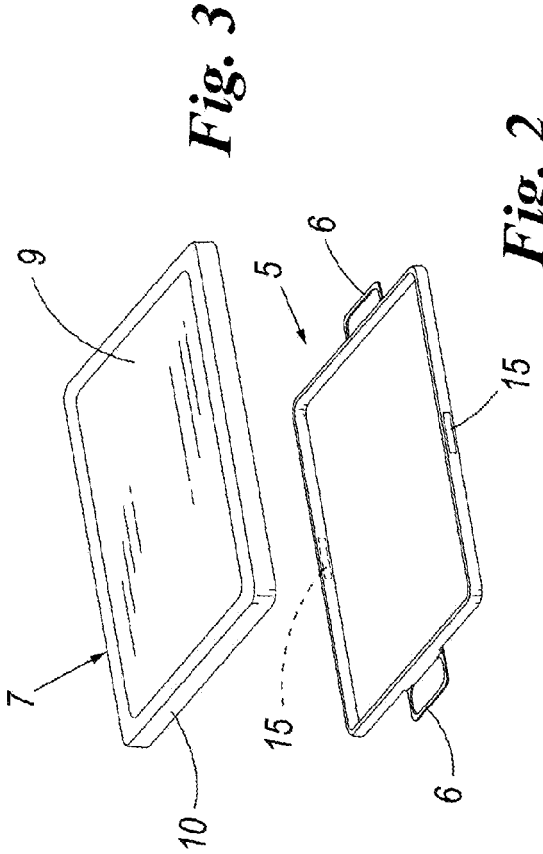


Fig. 3

Fig. 2

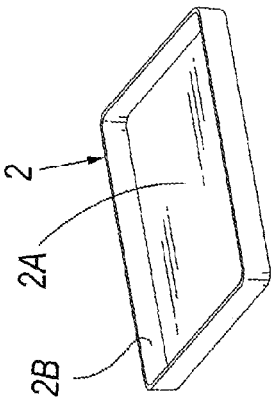


Fig. 4

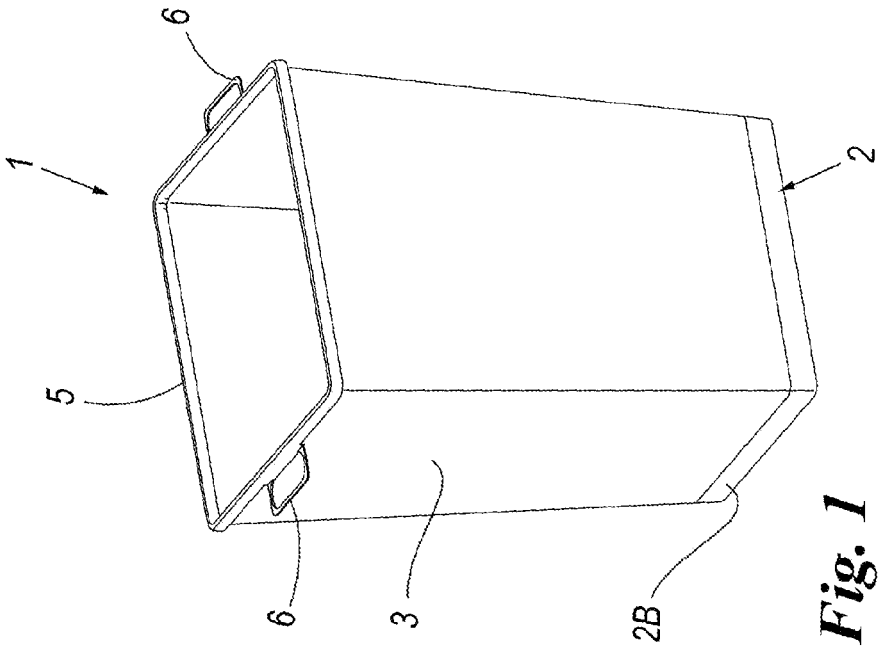


Fig. 1

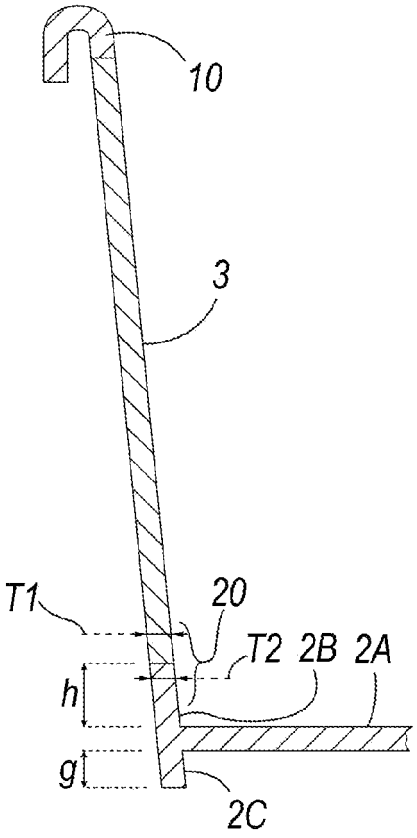


Fig. 5

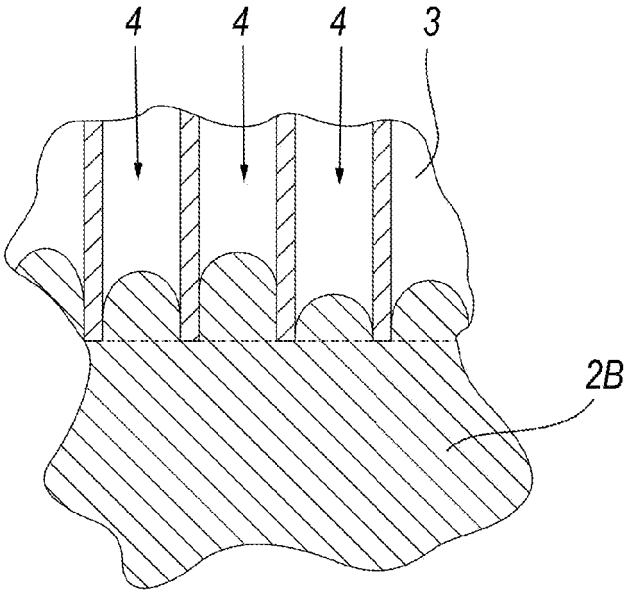


Fig. 6

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Application Number
EP 10 16 1641

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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 June 2010	Smolders, Rob

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