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# (54) Container handle locking device

(57) A device (4) for engaging a container handle (5) comprises at least one tubular member (41) for receiving an end part (51) of the handle. Internal flexible tongues, protruding inwardly from the wall of the tubular member (41), are designed to engage a rim protruding from the handle end part. As the walls of the tubular member are substantially uninterrupted, their structural rigidity is not compromised and a very strong engagement device is achieved. The device may be utilised in a plastics container such as a bottle crate (1).

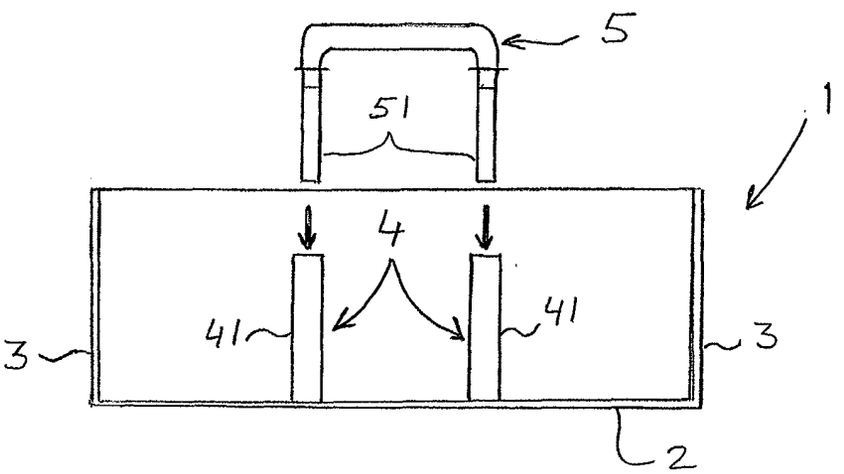


Fig. 1

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## Description

**[0001]** The present invention relates to a container handle locking device. More in particular, the present invention relates to a handle for a container, such as a crate, which handle can be manufactured separately from the container, and which can subsequently be lockingly mounted on the container. The present invention further relates to a container, such as a crate, provided with a handle.

**[0002]** Various containers, such as crates, are known which have handles allowing the container to be lifted and carried. Bottle crates, for example, typically have handle openings in opposite side walls. Instead of, or in addition to the handles in the side walls a crate may have a central handle. Such a central handle is particularly suitable for lifting or carrying the crate with one hand only.

**[0003]** It has been found that it is advantageous to produce such a central handle separately from the crate and to later attach the handle to the crate. This has the advantage of allowing a simpler mould in the case of moulded containers, and to allow the separately produced handle to have a different colour or even to be produced of a different material from the remainder of the crate.

**[0004]** Producing handles separately introduces the problem of securely fixing the handle onto the container. In contrast to handles which are integral with the body of the crate, separately produced handles require a device for attaching the handle to the container body. It will be evident that the handle should not come loose during the use of the container.

**[0005]** British Patent GB 1 383 878 discloses a plastic bottle crate having a separately produced handle member. This known handle member comprises a wall having a handle aperture. Positioning fingers extend below the wall and, in use, extend on either side of a partition of the crate. The handle member is locked in its position by flanges which fit under edges of the side walls of the crate. Flexing the side walls outward disengages the handle member. In this known arrangement, there is a considerable risk that the crate walls bend outwards due to the weight of the contents of the crate, thus accidently releasing the handle member. In addition, this known arrangement requires partitions to be present in the crate.

**[0006]** Belgian Patent BE 1 013 062 discloses a plastic bottle crate having a central handle which is produced in a separate mould. In this known arrangement, the handle is substantially U-shaped, the end parts of the U being received in tubular members which are integral with a partitioning walls of the crate. These tubular members each have an upper end where the U-shaped handle is inserted and a lower end where an end part of the handle is engaged. The lower end of each tubular member is provided with slots which allow the wall of this slotted section of the tubular member to flex outward. This in turn allows a flange protruding radially from the an of the handle to pass a ridge provided inside the slotted section, locking the handle end part in the tubular member as the walls flex back and return to their original shape.

**[0007]** Although this known device provides a satisfactory locking of the handle, it has several disadvantages. Firstly, the flexible wall sections may be pried open by a user of the crate, thus loosening the device and creating the risk that the handle may accidently be released. Secondly, this known arrangement requires the lower ends of the tubular members to be unconnected to the base of the crate as the slotted wall sections at these lower ends must be able to flex apart. Consequently, the tubular members cannot be directly connected to the base of the crate and an indirect connection via e.g. partitioning walls is necessary. This in turn has the disadvantage of limiting the application of this arrangement to crates in which such partitioning walls are present.

**[0008]** It is therefore an object of the present invention to overcome these and other problems of the Prior Art and to provide a device or mechanism for engaging a container handle which does not require partition walls to be present in the container.

**[0009]** It is a another object of the present invention to provide a device or mechanism for engaging a container handle which may be directly connected to a base of the container.

**[0010]** It is a further object of the present invention to provide a device or mechanism for engaging a container handle which is economical and easy to use.

**[0011]** Accordingly, the present invention provides a device for engaging a container handle which comprises at least one elongate end part provided with a substantially radial ridge, the device comprising at least one substantially tubular member for receiving the elongate end part and engaging said ridge, characterised in that the tubular member is provided with internal flexible tongues protruding inwardly so as to engage said ridge.

**[0012]** That is, instead of wall parts flexing outward, internal tongues are designed to flex and engage the ridge of the handle. This poses no constraints on the walls of the tubular members. In a preferred embodiment, therefore, the internal flexible tongues are located in an uninterrupted section of the tubular member, that is, in a section of the tubular member having walls without slots. These uninterrupted wall sections are stronger and therefore provide a more secure locking of the handle. It is, of course, possible to combine the internal flexible tongues with slotted, flexible wall sections but in the device of the present invention it is not necessary to interrupt the wall sections of the tubular members. Advantageously, the entire tubular member preferably is substantially uninterrupted.

**[0013]** A substantially uninterrupted wall section of the tubular member can easily be mounted on a surface or base without the need for additional supports, such as the partitioning walls of the Prior Art. As a conse-

quence, such additional supports can be omitted.

**[0014]** In a preferred embodiment, the internal flexible tongues are located near a top end of the tubular member. That is, the flexible tongues are located in a section of the tubular members relatively close to the insertion opening of the respective tubular member. It will be understood, however, that this is not essential and that alternative embodiments can be envisaged in which the internal flexible tongues are located further away from the insertion opening, possible near the opposite end of the tubular member.

**[0015]** To ensure an easy insertion of the handle into the tubular member(s) and to enhance the locking action of the mechanism, it is preferred that the internal flexible tongues protrude inwardly at an acute angle relative to the tubular member, away from the insertion opening, preferably at an angle ranging from 10° to 45°.

**[0016]** In a preferred embodiment, the tubular member(s) is/are integral with the container. That is, the tubular member(s) and the container constitute a single element which is preferably moulded in a single process. However, it is also possible to produce the tubular member(s) separately and to then mount them on the container by welding, glueing, or screwing in a suitable opening provided for this purpose. The tubular member (s) may extend from the base of the container. The internal flexible tongues could be produced separately but are preferably integral with the tubular members.

**[0017]** Although a single tubular member may be provided, it is preferred that two tubular members are provided for engaging a particular handle, although more than two tubular members per handle can also be envisaged. A container may be provided with more than one handle and may have a corresponding number of tubular members.

**[0018]** The present invention further provides a container, such as a bottle crate, provided with a device or mechanism as defined above. The present invention also provides a handle for use in a device as defined above. In a particularly advantageous embodiment, a gripping part of the handle is at least partially covered with a layer of relatively soft material, preferably a plastomer. Such a relatively soft layer makes the lifting and carrying of the container more comfortable. Additionally, or alternatively, the handle can be provided with markings or indicia.

**[0019]** The present invention will further be explained below with reference to exemplary embodiments illustrated in the accompanying drawings, in which:

Fig. 1 schematically shows, in a cross-sectional view, a container provided with a device according to the present invention.

Fig. 2 schematically shows, in a cross-sectional view, a preferred embodiment of a device according to the present invention.

Fig. 3 schematically shows, in side view, part of a handle for use with the device of the present invention.

Fig. 4 schematically shows, in side view, a preferred embodiment of a handle for use with the device of the present invention.

**[0020]** The crate 1 shown merely by way of non-limiting example in Fig. 1 comprises a base 2 from which side walls 3 extend. A device or mechanism 4 according to the present invention comprises tubular members 41 which also extend from the base 2. In the preferred embodiment shown, the base 2, the side walls 3 and the tubular members 41 all constitute a single integral part which is preferable made of a plastics material, such as HDPE (high density polyethylene) by injection moulding. It is, however, also possible to produce at least some of the side walls 3 and the tubular members 41 separately and to then assemble them using glue, welding or mechanical means such as screws.

**[0021]** As shown in Fig. 1, the end parts 51 of a substantially U-shaped handle 5 may be inserted into the device 4. Although the handle 5 is preferable made of a suitable plastics materials such as HDPE, it may also be made of other materials such as metal or wood.

**[0022]** As shown in the cross-section of Fig. 2, the tubular members 41 of the device 4 each have a set of internal tongues or lips 42 which protrude inward. These tongues 42, which in the preferred embodiment are integral with the walls of the tubular member 41, are designed to engage the ridge 53 of the handle part 51 shown in Fig. 3. As shown in Fig. 2, the tongues 42 slope away from insertion opening 43 and are positioned at an angle of approximately 30° relative to the walls of the tubular member 41 so as to facilitate the insertion of the handle. As shown in Fig. 3, the handle end part 51 has a ridge 53 and a flange 54. When the handle end part 51 is inserted into the tubular member 41 of Fig. 2, the ridge 53 pushes the tongues 42 apart. Once the ridge 53 has passed the tongues 42, the tongues flex back and prevent the ridge 53 from moving back, thus locking the handle end part 51 in the tubular member 41. The flange 54, which protrudes substantially radially from the handle end part 51, then rests on the top edge 44 of the tubular member 41. The distance between the tongues 42 and the top edge 44 is designed to match the distance between the ridge 53 and the flange 54. It is noted that in the embodiment shown the substantially radially extending ridge 53 does not extend beyond the handle end portion, in contrast to the flange 54. It is further noted that the flange 54 is not essential and may be omitted in certain embodiments.

**[0023]** The handle end part 51 of Fig. 3 is shown to be constituted by ribs 52 so as to have a substantially X-shaped cross-section. The tongues 42 (Fig. 2) are arranged in such a way that the ribs 52 can pass between openings between the tongues. In the preferred embodiment, a circular arrangement of eight tongues is provided, but other numbers, such as four or sixteen, are also possible.

**[0024]** The insertion end of the handle part 51 has bevelled part 55 to facilitate the insertion into a tubular member 41. It will be understood that these features are non-essential and that a handle end part having a substantially circular cross-section can also be used, with or without a bevelled insertion end. It is, however, necessary for the handle end part 51 to have a protrusion equivalent in function to the ridge 53, which protrusion can be engaged by the flexible tongues 42 or equivalent engagement means.

**[0025]** In the embodiment of Fig. 4 the handle 5 has a gripping part 56 which is at least partially covered with a relatively soft layer 57. Such a soft layer 57 may for example be made of a thermoplastic elastomer, such as SEBS (styrene ethylene butadyene styrene). Relatively soft handle layers and methods of applying such layers are discussed in more detail in European Patent Application 03078279.1 (D.W. Plastics).

**[0026]** Alternatively, or additionally, the handle 5 may be provided with indicia, such as the brand of the product carried in the container and/or the type of packaging of the product. In the latter case, the handle of a beer crate could, for example, read "24x0.5", indicating that 24 bottles of 0.5 litres may be carried in this container. It is noted that this feature may also be applied in handles which are not fixed onto a container using the handle engagement device of the present invention. In particular, a handle showing indicia or other text and/or markings could also be integral with the container.

**[0027]** Although the flexible tongues 42 are shown in Fig. 2 to be located near the insertion opening 43, they could also be located further away from the insertion end, for example near the base 2 of the container. The location of the ridge 53 (Fig. 3) or its equivalent would of course be adjusted accordingly. Instead of a single set of tongues, grouped in a circular arrangement as shown in Fig. 2, two or more set of tongues could be provided with corresponding ridges 53. The substantially circular arrangement of the tongues 42 could be replaced by another arrangement, corresponding with the particular shape and cross-section of the handle end part 51. Similarly, the tubular members 41 need not have a substantially circular cross-section and could, for example, also have a substantially oval, hexagonal, square or triangular cross-section.

**[0028]** It therefore 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.

## Claims

1. A device (4) for engaging a container handle (5) which comprises at least one elongate end part (51) provided with a substantially radial ridge (52), the device comprising at least one substantially tubular member (41) for receiving the elongate end part (51) and engaging said ridge (52), **characterised in that** the tubular member (41) is provided with internal flexible tongues (42) protruding inwardly so as to engage said ridge (52).

2. The device according to claim 1, wherein the internal flexible tongues (42) are located in an uninterrupted section of the tubular member (41).

3. The device according to claim 1 or 2, wherein the entire tubular member (41) is substantially uninterrupted.

4. The device according to any of the preceding claims, wherein the internal flexible tongues (42) are located near a top end of the tubular member (41).

5. The device according to any of the preceding claims, wherein the internal flexible tongues (42) protrude inwardly at an acute angle relative to the tubular member (41), away from the insertion opening, preferably at an angle ranging from 10° to 45°.

6. The device according to any of the preceding claims, integrally formed with a plastics container (1).

7. A container (1) provided with a device (4) according to any of the preceding claims.

8. A handle (5) for use with a device (4) according to any of the preceding claims.

9. The handle according to claim 8, wherein a gripping part (56) is at least partially covered with a layer (57) of relatively soft material, preferably a plastomer.

10. The handle according to claim 8 or 9, wherein markings or indicia are provided, the markings or indicia preferably providing an indication of the contents of the corresponding container.

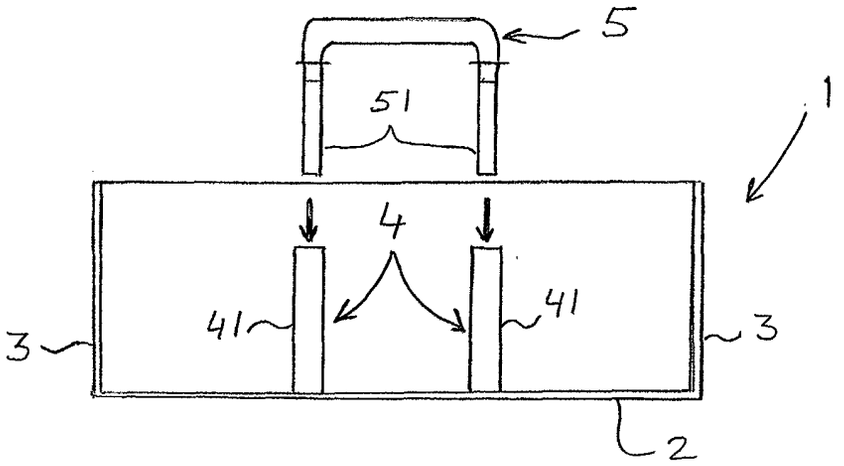


Fig. 1

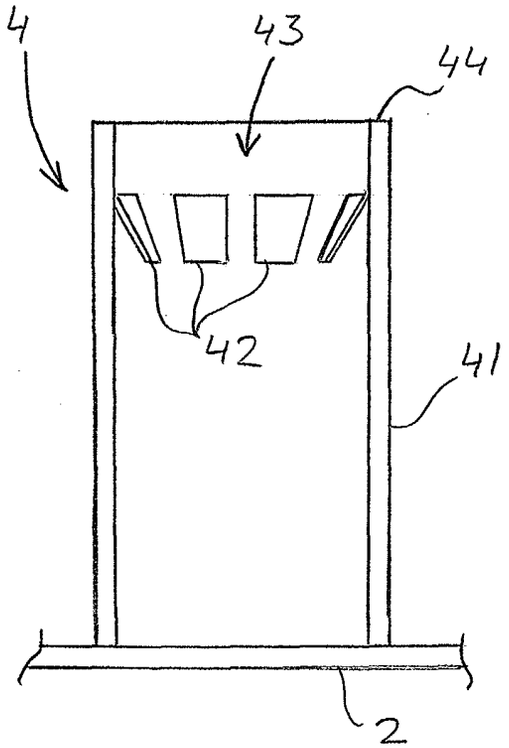


Fig. 2

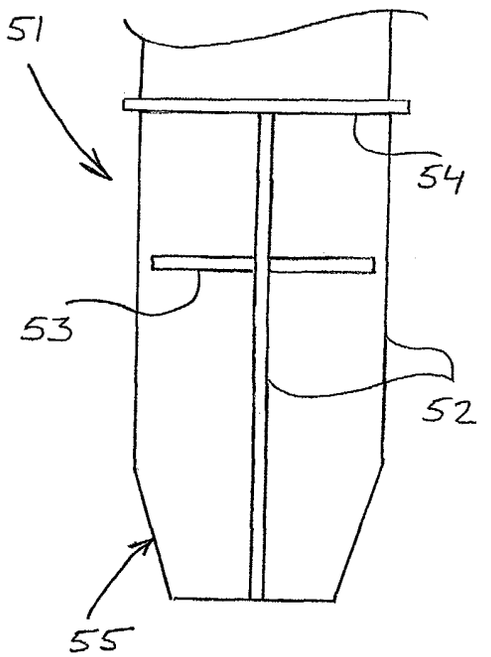


Fig. 3

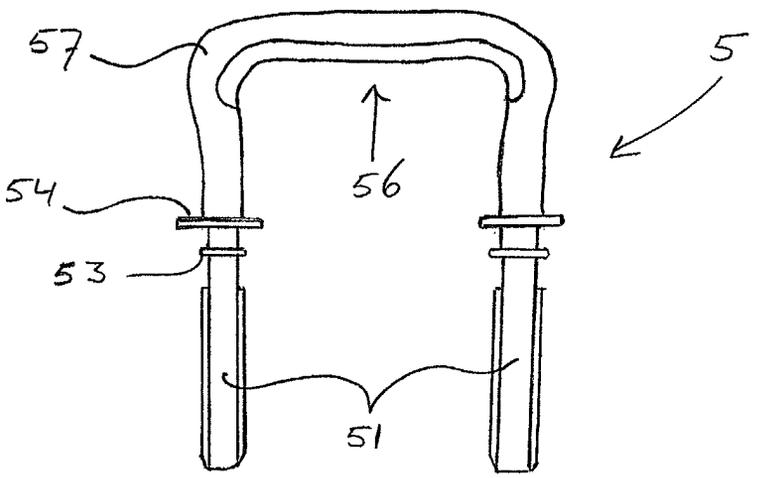


Fig. 4

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Application Number
EP 03 07 8897

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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 |
|---|---|---|
| MUNICH | 23 March 2004 | Balz, O |

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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## ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 03 07 8897

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