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(54) Two part handle and method of manufacturing a two part handle

(57) A handle for a container where the handle comprises a gripping portion and two connection members, each connection member arranged to be able to connect one end of said gripping portion with one side of the container and where the handle further comprises a gripping element fastened to the gripping portion of the handle via fastening means such that a hollow space is formed between the gripping element and the gripping portion of the handle. In this way, the stiffness and strength of the handle can be increased without increasing the cost and/or weight of the handle. In addition, the gripping element can make the handle more comfortable to use. A method of manufacturing a two part handle is also disclosed.

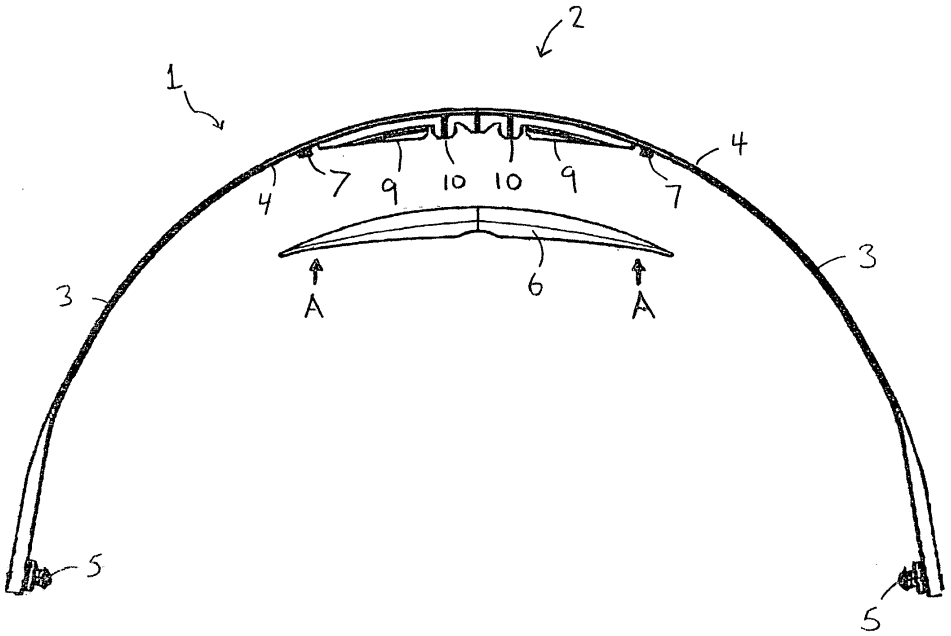

Fig. 2

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Description

[0001] The current invention relates to a plastic handle for a container and a method of manufacturing a plastic handle. The handle according to the invention comprises a gripping portion and two connection members, each connection member arranged to be able to connect one end of said gripping portion with one side of the container.

[0002] Handles of the kind mentioned above are well known to the person skilled in the art. For example, U.S. Patent Number 4,796,775 shows a typical example of a container with such a handle.

[0003] However, it is well known that handles of the above mentioned kind are not very strong and therefore flex under load. In addition, the handles are not very comfortable to hold since the profile of the handle cuts into the skin of the person who is lifting the container.

[0004] One solution to these problems is to increase the thickness of the material and give it a better profile. However, this increases the amount of material in the handle which increases both the cost and the weight of the handle. Other solutions, such as the one proposed by German patent document DE 199 36 229 A1, embeds a comfortable gripping portion in the mould of the handle during the injection moulding process of the handle. This however requires a complex mould since the gripping portion needs to be properly held in the mould during the injection moulding process.

[0005] A first aspect of the current invention is therefore to provide a handle as mentioned in the introductory paragraph which is stiff and strong while remaining inexpensive and light-weight.

[0006] A second aspect of the current invention is to provide a handle as mentioned in the introductory paragraph which is comfortable to use.

[0007] A third aspect of the current invention is to provide a handle as mentioned in the introductory paragraph which is simple to manufacture.

[0008] The above mentioned aspects are solved by providing a handle as mentioned in the introductory paragraph where the handle further comprises a gripping element fastened to the gripping portion of the handle via fastening means such that a hollow space is formed between the gripping element and the gripping portion of the handle. In this way, the stiffness and strength of the handle can be increased without increasing the cost and/or weight of the handle. In addition, the gripping element can make the handle more comfortable to use. In a typical case, the gripping element is fastened to the gripping portion of the handle after the formation of the two components. It should be mentioned that the hollow space could be completely enclosed or it could be partially open.

[0009] In a preferred embodiment, the gripping element can be fastened to the bottom side of the gripping portion of the handle. In this way, the gripping element is in direct contact with the hand of the user. The term bottom side refers to the bottom side of the handle when the handle is in a carrying position. The gripping element could also be made from a soft material or covered by a soft material which could furthermore make the gripping element comfortable to the hand of the user.

[0010] In another preferred embodiment the hollow space can be arranged in such a way that it extends in a direction which is parallel to the direction of the gripping portion. This arrangement of the hollow space gives extra stiffness to the gripping portion without increasing the weight significantly.

[0011] In another preferred embodiment, the gripping element can be fastened to the handle via a snap connection. The snap connection could for example comprise at least one protrusion arranged on the handle which engages with at least one corresponding hole in the gripping element. In this way, it is very simple to attach the gripping element to the gripping portion of the handle.

[0012] In order to further increase the strength of the handle, the handle could further comprise a ridge extending from the gripping portion of the handle. In a preferred embodiment, the ridge is a longitudinal ridge arranged parallel to the plane of the handle. The gripping element could be arranged to cover said longitudinal ridge, so that the user does not feel the ridge.

[0013] The handle as described above could be manufactured via a method comprising injection moulding a handle element which comprises a gripping portion and two connection members for connecting the gripping portion with the sides of the container, injection moulding a gripping element, and fastening the gripping element to the handle element once the handle element and the gripping element have been removed from their moulds. In this way a method is provided which is very simple to implement and which results in a strong and light-weight handle.

[0014] The invention will now be described in more detail with reference to the drawings, where:

Figure 1 shows a perspective view of an embodiment of a handle according to the invention after assembly,

Figure 2 shows a side view of the handle as shown in figure 1 before assembly,

Figure 3 shows a bottom view of the handle as shown in figure 1 before the gripping element is mounted on the gripping portion,

Figure 4 shows a bottom view of the handle as shown in figure 1 after the gripping element has been mounted on the gripping portion, and

Figures 5-7 show respectively a top, side, and bottom view of the gripping element of the handle shown in figure 1.

[0015] Figures 1 and 2 show a handle 1 comprising a

gripping portion 2, two connection members 3 which connect each end 4 of the gripping portion 2 to the sides of the container (not shown) via tabs 5 which engage with holes (not shown) in the sides of the container. The handle 1 further comprises a gripping element 6 fastened to the gripping portion 2 of the handle 1.

[0016] Note that in the current embodiment, the connection members 3 and the gripping portion 2 are formed as a single injection moulded component. However, the connection members and the gripping portion can be formed as separate elements within the scope of the invention.

[0017] In figure 2, the gripping element 6 is shown just before assembly. The arrows A show the direction in which the gripping element 6 is moved in order to connect it to the gripping portion 2 of the handle 1. The gripping element 6 is attached to the gripping portion 2 via fastening means 7, 8 which in this example is a snap connection. The snap connection comprises protrusions 7 on the gripping portion 2 of the handle and complementary holes 8 on the gripping element 6. The protrusions 7 and the holes 8 are formed such that the gripping element 6 is held in place on the gripping portion 2 when the protrusions 7 are snapped into the holes 8.

[0018] The gripping portion of the handle further comprises a longitudinal ridge 9 which extends from the gripping portion 2 in the plane which is parallel to the plane B of the handle 1. The longitudinal ridge stiffens the gripping portion 2 of the handle 1. In order to prevent relative displacement between the gripping portion 2 and the gripping element 6 when load is applied to the handle, further protrusions 10 on the gripping portion 2 engage with corresponding depressions 11 on the gripping element 6.

[0019] It can furthermore be seen from the figures, that the gripping element 6 has a transverse cross section which is roughly U shaped and that the open end of the U shaped cross section mates with the gripping section when the gripping element is fastened to the gripping portion 2. In this way, a hollow space is formed between the gripping element and the gripping portion. This hollow space stretches in a direction which is aligned with the longitudinal direction of the gripping portion.

[0020] One example of a manufacturing method for a handle according to the invention is now described. In a first step, the handle element 2, 3 comprising the gripping portion 2 and the connection member 3 is injection moulded in a first mould. In a second step, the gripping element 6 is injection moulded in a second mould. In a third step, the two injection moulded components are removed from their respective moulds and fastened to each other with a robot.

[0021] It should be obvious to the person skilled in the art that the embodiment of a handle according to the invention as described above is just one example of a handle according to the invention. The scope of the invention should therefore not be limited to the example as described above.

[0022] For example, the gripping element 6 of the above embodiment is shown fastened to the bottom of the handle, however, the gripping element 6 could also be fastened on the top side of the handle. In this case, the portion of the handle in contact with the user's hand would be the gripping portion of the handle and not the gripping element.

[0023] Within the scope of the invention, many different types of fastening means could be imagined. In the current example, the fastening means is a snap connection. The fastening means, in this example a snap connection, could be made detachable or it could be made non-detachable. The fastening means could also be, for example, one or more screws. Furthermore, the fastening means could be glue or any other chemical substances which cause the gripping element and the gripping portion of the handle to be bound together. The gripping element and the gripping portion can also be fastened to each other by melting them together. This list is not exhaustive and the person skilled in the art should be able to identify other suitable fastening means which are within the scope of the current invention.

[0024] Furthermore, it should be obvious to the person skilled in the art that the handle according to the invention can be manufactured via many different manufacturing methods. The scope of the invention should therefore not be limited to the example method described above. For example, the sequence of the steps could be changed, the number of moulds changed, and so on without departing from the scope of the invention.

Claims

1. A plastic handle (1) for a container, said handle comprising:

   - a gripping portion (2),
   - two connection members (3), each connection member arranged to be able to connect one end (4) of said gripping portion with one side of the container,

   characterized in that the handle further comprises

   - a gripping element (6) which is fastened to said gripping portion of the handle via fastening means (7,8) such that a hollow space is formed between the gripping element and the gripping portion of the handle.

2. A handle (1) according to claim 1, **characterized in that** said gripping element (6) is fastened to the bottom side of the gripping portion (2) of the handle.

3. A handle (1) according to claim 1 or 2, **characterized in that** said hollow space extends in a direction which is parallel to the direction of the gripping portion (2).

4. A handle (1) according to claim 1, 2 or 3, **characterized in that** the gripping element (6) is fastened to the gripping portion (2) of the handle via a snap connection (7,8).

5. A handle (1) according to claim 4, **characterized in that** the snap connection (7,8) comprises at least one protrusion (7) arranged on the handle which engages with at least one corresponding hole (8) in the gripping element (6).

6. A handle (1) according to any one of claims 1-5, **characterized in that** the handle further comprises a ridge (9) extending from the gripping portion (2) of the handle.

7. A handle (1) according to claim 6, **characterized in that** the gripping element (6) is arranged to cover said ridge (9).

8. A container with a handle (1) according to any one of claims 1-7.

9. A method of manufacturing a plastic handle (1) for a container, said method comprising the steps of:

   - injection moulding a handle element (2,3) which comprises a gripping portion (2) and two connection members (3), said connection members arranged to be able to connect the gripping portion with the sides of the container,
   - injection moulding a gripping element (6), and
   - fastening the gripping element to the handle element such that a hollow space is formed between the gripping element and the gripping portion of the handle.

10. A method according to claim 9, **characterized in that** said gripping element (6) is fastened to said handle element (2,3) via a snap connection (7,8).

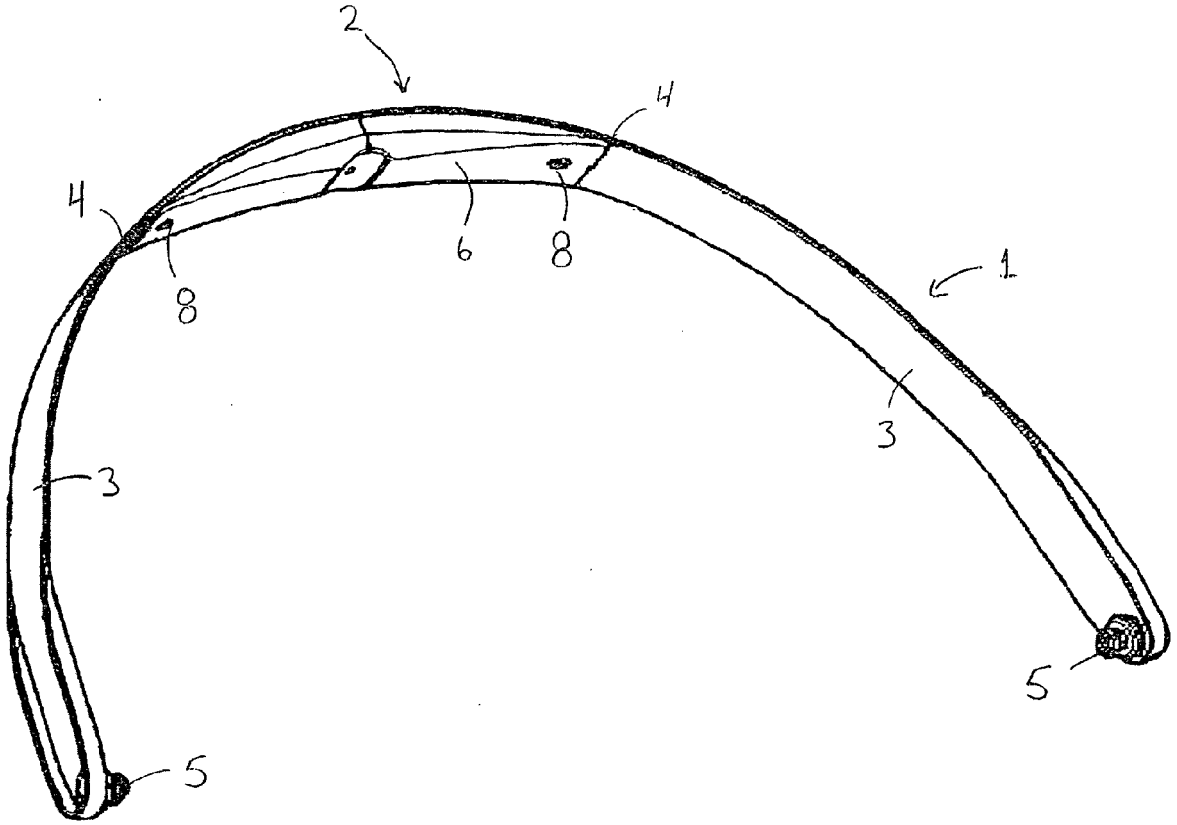

Fig. 1

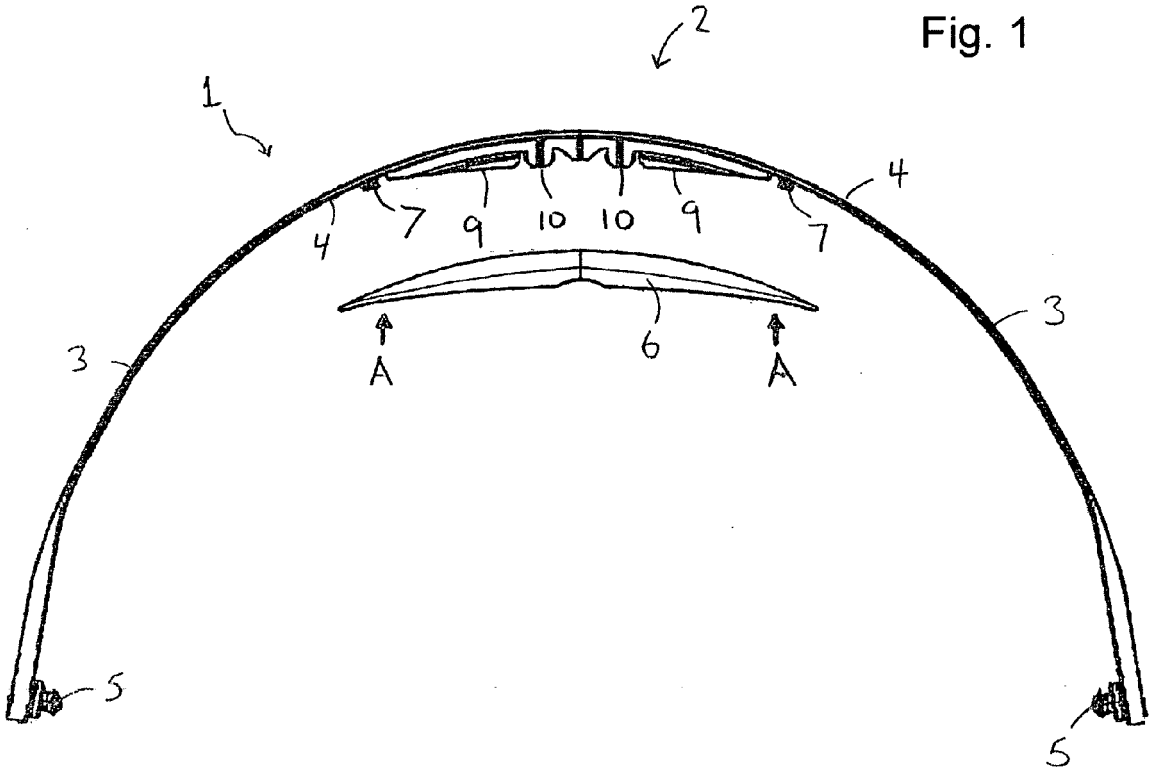

Fig. 2

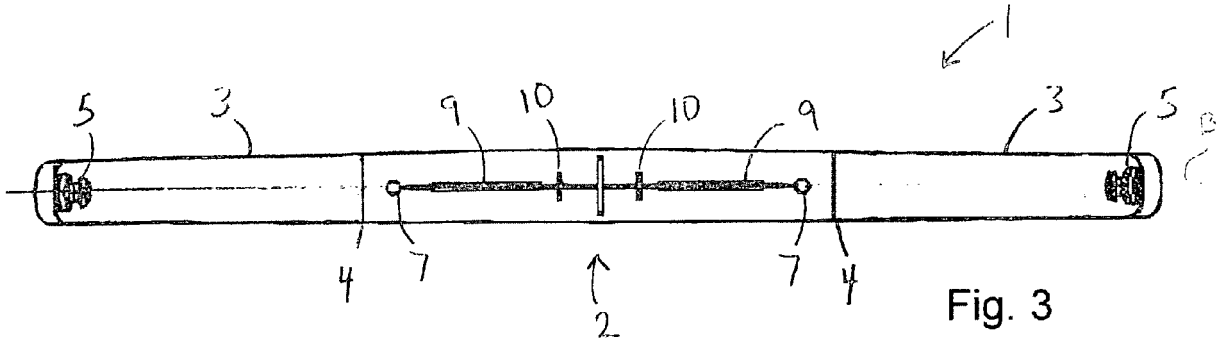

Fig. 3

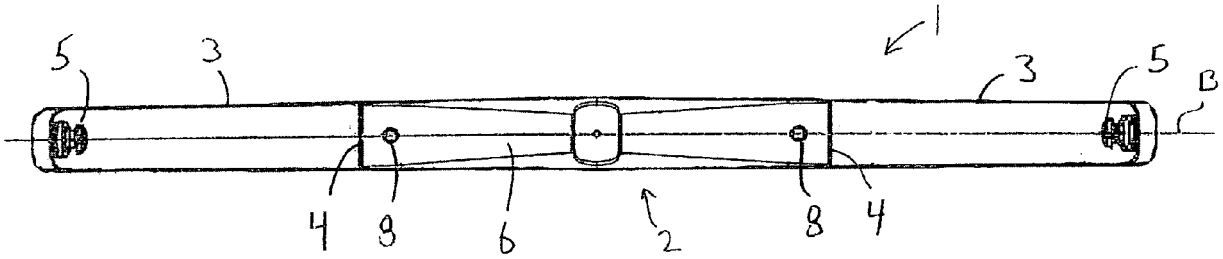

Fig. 4

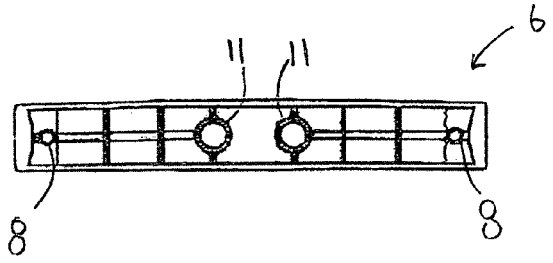

Fig. 5

Fig. 6

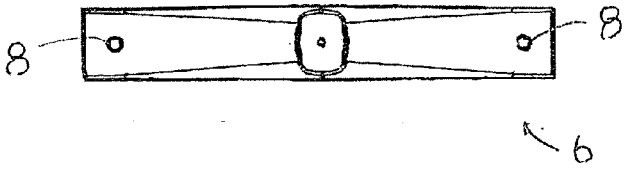

Fig. 7

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EUROPEAN SEARCH REPORT

Application Number
EP 06 38 8030

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X Y	DE 36 44 679 A1 (HOEFLER,BERND,DR; CREMER,DIETHER) 14 July 1988 (1988-07-14) * column 1, line 44 - column 2, line 34; figures 1-3 *	1-3,8,9 4,10	INV. B65D25/32
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A	US 2 684 797 A (SCHULTE CHARLES E) 27 July 1954 (1954-07-27) * figures 1,4 *	1-10	
A	US 2 754 869 A (BARTELS HENNING G) 17 July 1956 (1956-07-17) * figure 1 *	1-10	

TECHNICAL FIELDS SEARCHED (IPC)

B65D
A47J

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	9 August 2006	Bevilacqua, V

CATEGORY OF CITED DOCUMENTS

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09-08-2006

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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