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(54) **Manual device to facilitate the emptying of tubes storing pastry products**

(57) Manual device (1) designed to facilitate the emptying of tubes (2) storing pasty products, comprised of a pair of flat, substantially elongated arms (3,4), articulately joined together at one of their ends by way of a means of coupling (5) comprised of a pair of tabs (5a), folded orthogonally and provided with respective orifices (5b), axially aligned, at the end of the first arm (3), and a pair of extensions (5c), folded orthogonally and provided with respective protuberances (5d), at the end of the second arm (4), determining a space between said coupled arms (3,4) through which an empty, flattened portion of the tube may be inserted and slid. Furthermore, said arms are provided with inflexions (7a,7b) whose fold lines (7c, 7d) are parallel with and close to the axis whereon the respective arms swing, and are designed to pinch the tube together and to prevent the passage towards the closed end of the tube of the product stored in the same.

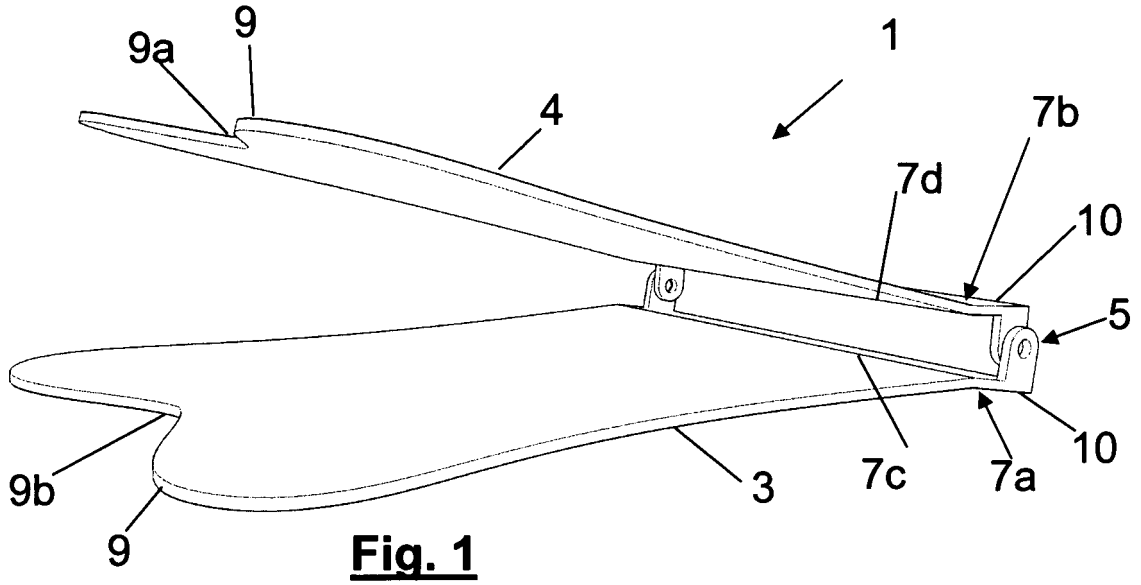

Fig. 1

EP 1 780 137 A1

Description

Technical Field of the invention

[0001] The invention relates to a manual device designed to facilitate the emptying of tubes storing pasty products, such as toothpaste, cosmetics, adhesive, paint pastes, or sealants and/or silicones.

Background of the invention

[0002] Currently, the majority of pasty products, such as toothpaste, cosmetics, adhesive, paint pastes or sealants and/or silicones are stored in flexible, tubular containers. These tubular containers require manipulation to empty the same, which consists of exerting pressure with the fingers from the rear end of the tube, towards its front end, in order to push the paste stored and to cause its egress through a nozzle provided for that purpose at the said front end of the tube.

[0003] When the user exerts pressure on the tube with the thumbs of his/her hand, the pressure transmitted to the paste is irregular; as a result of this, part of the pasty product accumulates inside the tube at its rear part, in spite of the fact that the product stored is expelled through the nozzle of the tube. As a result, it is difficult to extract all the paste content from the tube without repeating the emptying manoeuvre several times.

[0004] On the other hand, nowadays the majority of these tubes are manufactured from polymeric materials, one of whose properties is their elasticity; therefore, although the tube may be easily deformable in order to extract the paste through the nozzle of the tube, said tube recovers its original position due to its elastic behaviour, and whenever it is desired to extract paste, the same operation must be performed again, repeatedly and with greater intensity, in order to extract the paste once more.

[0005] With the object of trying to resolve some of the difficulties of this manual operation and of alleviating the task of emptying, in the State of the Art there exist a number of manual devices for facilitating the emptying of pasty material from the tube storing the same. Among these devices may be found the device disclosed in patent document DE3627701, which discloses a pincer which consists of two plastic pressure keys configured symmetrically one in relation to the other, and a metal bar or pin to which both keys are rotably joined. This device requires a laborious manufacturing process as it is composed of three component parts, and besides, it does not guarantee the extraction of the totality of the pasty material stored in the tube.

[0006] Another example of these manual devices is disclosed in patent document ES1057275. In said document, a paste ejection regulating device is disclosed, consisting of two component parts which can be coupled together at one of their ends, allowing one part to swing with regard to the other, forming a type of pincer. Although the manufacture of this latter device is less laborious, it likewise does not guarantee the total emptying of the paste stored in the tube.

Explanation of the invention

[0007] In order to provide a solution to the problems outlined above, a manual device designed to facilitate the emptying of tubes storing pasty products is disclosed.

[0008] In essence, the device is characterised in that it is comprised of a pair of flat, substantially elongated arms, articulately joined together at one of their ends by way of a means of coupling comprised of a pair of tabs, folded orthogonally and provided with respective orifices, axially aligned, at the end of the first arm, and a pair of extensions, folded orthogonally and provided with respective protuberances, at the end of the second arm; the tabs and the extensions being adapted so that the arms are joined by the lodging of the protuberances of one arm in the orifices of the other, determining a space between said coupled arms through which an empty, flattened portion of the tube may be inserted and slid, and in that said arms are provided with inflexions whose fold lines are parallel with and close to the axis whereon the respective arms swing, and they are designed to pinch the tube together and to prevent the passage towards the closed end of the tube of the product stored in the same when the arms are brought together in order to exert pressure on the portion of the tube placed between them and to expel, by means of this pressure, the product stored in the tube through the nozzle of the same.

[0009] The aforementioned manual device is especially designed, as is disclosed in these characteristics, to be manufactured in only two component parts.

[0010] In accordance with another characteristic of the invention, the edges of the free ends of the arms are each provided with cut-outs whose profile is complementary to that of the nozzles of conventional tubes.

[0011] In accordance with another characteristic of the invention, the fold lines of the inflexions determine an appendix on each of the arms of the device, said appendices being divergent from each other when said arms are parallel and whereon the means of coupling is arranged.

Brief description of the drawings

[0012] In the attached drawings, a preferred embodiment of the manual device for facilitating the emptying of tubes storing pasty substances which is the object of the invention is shown as a non-limiting example. In said drawings:

Figure 1 is a schematic perspective depiction a manual device according to the invention;

Figure 2 is a schematic elevational view of the device in Figure 1, in its operating position;

Figure 3 is a schematic sectional view of the device in Figure 1, wherein details of the means of coupling

5 between the arms which comprise said device may be seen; and

Figure 4 is a schematic view of the device in Figure 1 at rest on a shelf.

Detailed description of the drawings

[0013] The manual device 1 depicted in Figure 1 is designed to facilitate the emptying of tubes storing toothpaste products. Said device is composed of a pair of elongated, flat arms 3 and 4, which are articulately joined together at one of their ends by a means of coupling 5. Said manual device 1 is therefore composed of only two component parts which, by way of a stamping and folding process, adopt the final shape of arms 3 and 4 depicted in Figures 1, 2, 3 and 4. In this way, the process of producing these is simplified and manufacturing costs are reduced, avoiding operations such as welding or riveting, in comparison with other known devices.

[0014] As is depicted in greater detail in Figure 3, exaggeratedly for easier understanding, the means of coupling 5 is comprised of a pair of tabs 5a, folded orthogonally and provided with respective orifices 5b, axially aligned, at the end of the first arm 3, and a pair of extensions 5c, folded orthogonally and provided with respective protuberances 5d, at the end of the second arm 4, the measurements being such that arms 3 and 4 are articulately joined by means of housing the protuberances 5d of arm 4 in the orifices 5b of arm 3.

[0015] In order to facilitate the rotating movement between arms 3 and 4, the profile of the tabs 5a and of the extensions 5c is rounded, so that said profiles do not interfere with the inner wall of the opposing arms. Specifically, in the example of Figure 3, said characteristic prevents the extensions 5c from interfering with the rotation of the arms of the device due to their ends abutting against arm 3.

[0016] When both arms 3 and 4 are coupled, a space 6 between them is formed, through which an empty and flattened portion of the tube 2 is inserted and slid, the manual device 1 being configured longitudinally with the tube 2, as depicted in Figure 2.

[0017] Furthermore, arms 3 and 4 are both equipped with inflexions 7a and 7b, whose fold lines 7c and 7d are parallel with, and close to the axis whereon the respective arms 3 and 4 swing, as portrayed in Figure 1. Said fold lines 7c and 7d are designed to pinch tube 2 together and to prevent the passage towards the closed end of tube 2 of the product stored in the same when arms 3 and 4 are brought together in order to exert pressure on the portion of tube 2 placed between them and to expel, by means of this pressure, the product stored in tube 2 through the nozzle 8 of the tube 2.

[0018] In accordance with the depictions in Figures 1 and 2, the edges of the free ends 9 of arms 3 and 4 are each provided with cut-outs 9a and 9b. The profile of said cut-outs 9a and 9b is complementary to that of the nozzles 8 of conventional tubes 2, thus guaranteeing the total emptying of the pasty product from the tube 2, it being possible to exert pressure by means of arms 3 and 4 on the front end of the tube 2 without interfering with the nozzle 8 of said tube 2, which will be partially surrounded by cut-outs 9a and 9b of arms 3 and 4 respectively.

[0019] Fold lines 7c and 7d of arms 3 and 4 each determine appendices 10 at the opposite ends to their free ends, which are divergent from each other when arms 3 and 4 are parallel. These appendices 10 are designed to restrict the opening of arms 3 and 4 by abutment of appendix 10 of one arm against appendix 10 of the opposite arm. When this happens, the device 1 remains open with its arms 3 and 4 essentially disposed perpendicularly one in relation to the other; thus, said device 1, with the tube 2 held between arms 3 and 4, may rest on the edge of a horizontal surface, such as a shelf, by resting one of its arms 3 or 4 on said surface, as portrayed in Figure 4. In the example of the drawings, the means of coupling 5 is arranged on said appendices 10 of arms 3 and 4.

[0020] As may be seen in Figure 2, the lateral edges 11 of the respective arms 3 and 4 are slightly curved inwards, which permits easier grasping of the device 1 in order to move it longitudinally with regard to the paste tube 2.

[0021] It should be mentioned that the manual device 1 of the invention may be manufactured from two sheets of metallic material such as carbon steel, stainless steel or similar, subjected to a process of stamping, punching and pressing (to provide the sheet with orifices 5b and protuberances 5d) and folding (to provide the sheet with orthogonal tabs 5a and extensions 5c) which give rise to arms 3 and 4, or by means of a process of moulding by injection of a plastic or polymeric material.

Claims

1. Manual device (1) designed to facilitate the emptying of tubes (2) storing pasty products, such as toothpaste, cosmetics, adhesive, paint pastes, or sealants and/or silicones, **characterized in that** it comprises a pair of flat, substantially elongated arms (3 and 4), articulately joined together at one of their ends by way of a means of coupling (5) comprised of a pair of tabs (5a), folded orthogonally and provided with respective orifices (5b), axially aligned, at the end of the first arm (3), and a pair of extensions (5c), folded orthogonally and provided with respective protuberances (5d), at the end of the second arm (4); the tabs (5a) and the extensions (5c) being adapted so that the arms (3 and 4) are joined by the lodging of the protuberances (5d) of one arm in the orifices (5b) of the other, determining a space (6) between said coupled arms (3 and 4) through which an empty, flattened portion of the tube (2) may be inserted and slid, and **in that** said arms (3 and 4)

are each provided with inflexions (7a and 7b) whose fold lines (7c and 7d) are parallel with and close to the axis whereon the respective arms (3 and 4) swing, and are designed to pinch the tube (2) together and to prevent the passage towards the closed end of the tube (2) of the product stored in the same when the arms (3 and 4) are brought together in order to exert pressure on the portion of the tube placed between them and to expel, by means of this pressure, the product stored in the tube (2) through the nozzle (8) of the same.

2. Device (1) according to claim 1, **characterized in that** the edges of the free ends (9) of the arms are each provided with cut-outs (9a and 9b) whose profile is complementary to that of the nozzles (8) of conventional tubes (2).

3. Device (1) according to either of the preceding claims, **characterized in that** the fold lines (7c and 7d) of the inflexions (7a and 7b) determine an appendix (10) on each of the arms (3 and 4) of the device 1, said appendices (10) being divergent from each other when said arms (3 and 4) are parallel and whereon the means of coupling (5) is arranged.

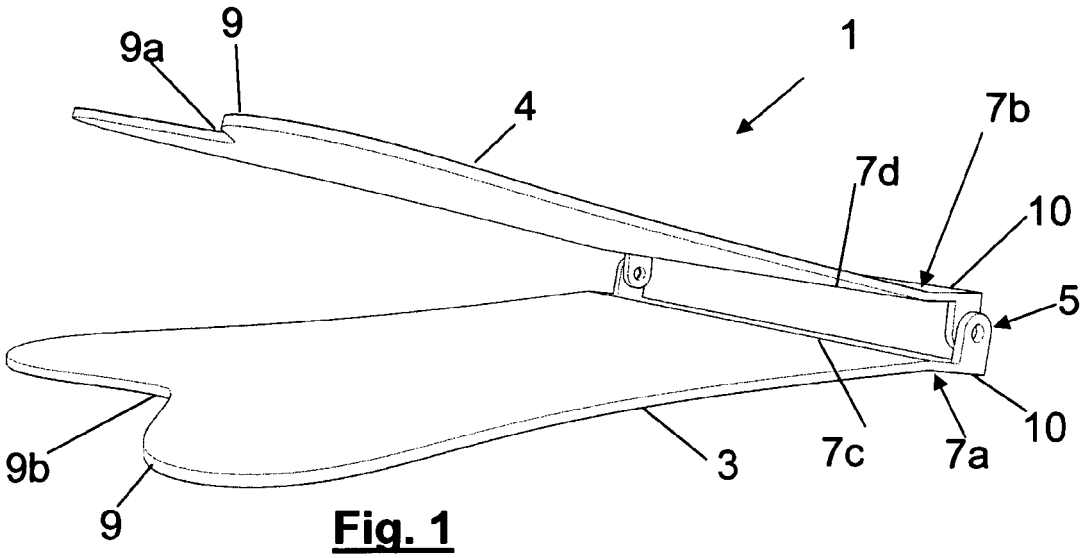

Fig. 1

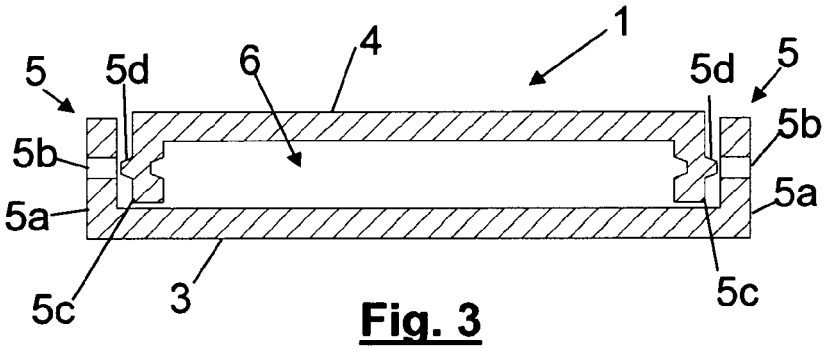

Fig. 3

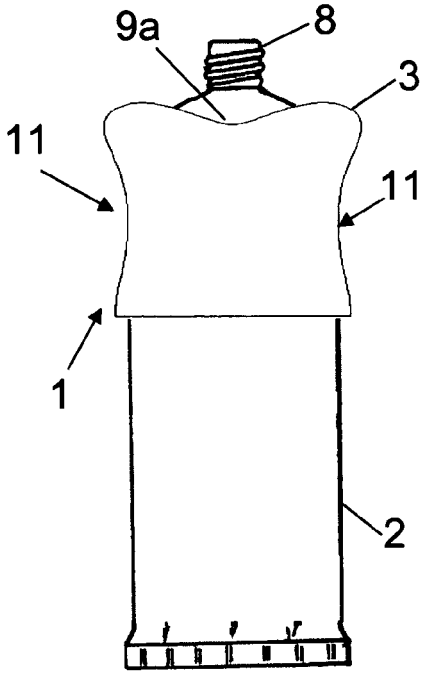

Fig. 2

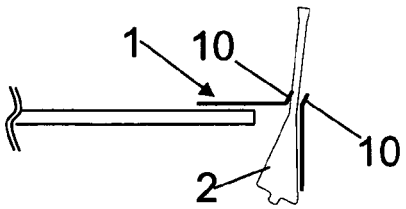

Fig. 4

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EUROPEAN SEARCH REPORT

Application Number
EP 06 38 0260

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 6 234 353 B1 (LIGHT HOMER E [US]) 22 May 2001 (2001-05-22) * figures *	1	INV. B65D35/28
A	US 5 743 434 A1 (LIGHT HOMER EDWIN [US]) 28 April 1998 (1998-04-28) * figures *	1	
A	US 5 683 013 A1 (MORRISON ADAM P [US]) 4 November 1997 (1997-11-04) * figures *	1	
A	US 2 643 029 A1 (JOHN CHAPMAN WILLIAM ET AL) 23 June 1953 (1953-06-23) * figures *	1	
A	NL 1 004 869 C1 (NEW PRODUCTS & SYSTEMS B V [NL]) 23 June 1998 (1998-06-23) * figures *	1	
			TECHNICAL FIELDS SEARCHED (IPC)
			B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	21 February 2007	Fournier, Jacques

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21-02-2007

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- DE 3627701 **[0005]**
- ES 1057275 **[0006]**