



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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<p>(21) International Application Number: PCT/SE96/00342</p> <p>(22) International Filing Date: 19 March 1996 (19.03.96)</p> <p>(30) Priority Data: 9501169-8 31 March 1995 (31.03.95) SE</p> <p>(71) Applicant (for all designated States except US): NORDEN PAC DEVELOPMENT AB [SE/SE]; P.O. Box 845, S-391 28 Kalmar (SE).</p> <p>(72) Inventor; and (75) Inventor/Applicant (for US only): LINNER, Hans [SE/SE]; Jutnabbevägen 15, S-392 36 Kalmar (SE).</p> <p>(74) Agents: GRAUDUMS, Valdis et al.; Albihn West AB, P.O. Box 142, S-401 02 Göteborg (SE).</p>		<p>(81) Designated States: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, ARIPO patent (KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).</p> <p>Published <i>With international search report. In English translation (filed in Swedish).</i></p>
<p>(54) Title: PACKAGING CONTAINER</p>		
<p>(57) Abstract</p>		
<p>The invention relates to containers, especially to single-dosage rectal tubes. To eliminate return after squeezing with ensuing pump/suction effect, the tube body is divided into two part-walls with relatively different wall thicknesses. The part-wall with the larger thickness serves as a support for the thinner part-wall and the thickness relationship prevents return to the original shape.</p>		

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Packaging container

The invention relates to a packaging container and more particularly to a container which is emptiable by means of squeezing. The invention especially relates to a single dosage tube, suitable for rectal use amongst other things.

The state of the art in this field covers a number of particular plastic tube concepts. One such concept is based on conventional tube technology, where a tube body manufactured by extrusion is heat-sealed to an emptying spout. By making the attachment part of the emptying spout of thinner material, normally by means of injection moulding, in the area thereof which is to be fixed to the container part, which area more to the worse is only able to be reduced in thickness to a limited extent for technical reasons, an attempt is made at achieving a maximum degree of emptying. The idea is that a complete emptying (evacuation) of the product in the packaging will be achieved by squeezing the tube body and said connection portion of the emptying spout.

Another concept is based on forming the tube body semi-spherically and the "breast portion" of the emptying spout in a correspondingly complementary shape. Emptying of the product in the tube occurs by means of the container body being pressed in towards the breast portion.

The known solutions to the problem of emptying of the product in the tube however have the drawback that the tube body presents a return tendency as soon as it ceases to be forcibly held in place.

This tendency to return back to the original shape of the tube body results in the occurrence of a suction effect or pumping effect, meaning that in practice the intended purpose of achieving complete emptying of the tube cannot be solved in a satisfactory manner. Even when the tube body is completely squeezed together, a certain amount of product remains in the emptying spout. The problem however is that this remaining product is not able to flow out before the suction occurs and the remaining product is conveyed back into the tube body.

The object of the present invention is to overcome the problem of the sucking-back of the product.

To meet this object, a container is provided which comprises a container body and an emptying spout connected thereto, wherein the emptying spout is joined to a hollow chamber in the container and a first and a second part-wall define the outer walls for a first and a second container body half respectively. The container is characterized in that said part-walls have relatively different wall thicknesses (different with respect to each other), at least along a portion thereof.

In a particular embodiment, a basic container is provided, comprising a container body and an emptying spout connected therewith, whereby the container body presents symmetry with respect to at least a plane through a central axis of the container body, and whereby the plane of symmetry and a first part-wall of the container body define a first container body half, and the plane of symmetry and a second part-wall of the container body define a second container body half.

The container is notable in that said part-walls present relatively different wall thicknesses, at least in the area along the borderline which separates the part-walls.

5 In a preferred embodiment, the part-walls have relatively different, but constant, wall thicknesses.

In one embodiment, the part-wall with the smaller thickness has a portion which forms a part-wall of the emptying spout.

10 The ratio between the thicknesses of the part-walls is chosen so that the container body and, where the case arises, the emptying spout, presents deadfold characteristics after emptying of the container by means of pressing the thinner part-wall towards the thicker one.

15 In a practical embodiment, the part-walls are formed of the same material by injection moulding the container body and the emptying spout as an integral unit of thermoplastic material.

20 In the embodiment of a rectal tube, the emptying spout is elongated and extends in the direction of said central axis.

25 The invention also provides a method of manufacturing containers comprising a container body and an emptying spout joined therewith, whereby the container body presents symmetry with respect to at least a plane through a central axis of the container body, and whereby the plane of symmetry and a first part-wall of the container body define a first container body half, and the plane of symmetry and a second part-wall of the container body define a second container body half.

The method is characterized in that the part-walls of the container body and the emptying spout are injection moulded as an integral unit so that the part-walls have relatively different wall thicknesses, at least in the area along the borderline which separates the part-walls, and preferably over the whole area of the respective part-walls.

The invention will now be exemplified and additionally clarified with reference to the accompanying drawings, in which:

- 10 Fig. 1 is a side view of a tube, in the present case a rectal tube, in accordance with the invention,
- Fig. 2 is a view in a direction at 90° relative to that in Fig. 1,
- Fig. 3 is a view from above of the tube in Fig. 1,
- 15 Fig. 4 shows the tube in Fig. 1 in a compressed state,
- Fig. 5 is a side view of a second embodiment of the rectal tube,
- Fig. 6 is a view from above of the tube in Fig. 5, and
- Fig. 7 is a longitudinal cross-sectional view, through
20 the central axis of the tube in Fig. 5.

The tube in Fig. 1 comprises a container body 10 and an emptying/evacuation spout 11. The container body or the tube body 10 as well as the emptying spout 11 are injection moulded as an integral unit of thermoplastic material, for example of polyethylene or polypropylene. An imaginary separation line between the spout and the body is positioned at the level indicated by the dashed line 12.

The emptying spout is, in its external form, of the usual type for rectal tubes and thus has an encircling groove 13 which defines the introduction depth in certain applications. Internally, at the level 12, there is no welded transition between the body and the spout, which
5 allows an optimal formation of the transition area.

The tube body 10 has container body halves 14 and 15 of different wall thicknesses. The halves 14, 15 are defined by a plane of symmetry through the central axis 16 of the
10 container and first and second part-walls 17, 18 respectively, of the container body.

In the embodiment according to Figs. 1 to 4, the shape of the container body is oval, in accordance with that which is shown in Fig. 3. The thickness of the part-wall 17 is
15 considerably less than that of part-wall 18, the ratio lying in the range of about 1:2-1:6. This thickness ratio means that the part-wall 18 constitutes a fixed support wall for the thinner part-wall 17 after the part-wall 17 has been pressed into the position shown with dashed lines
20 in Fig. 4. In a similar position, there is insufficient return tension-energy in the thinner part-wall 17 for the part-wall to return to its original shape after the pressing force has been removed.

In the shown embodiment, the partial walls 17, 18 have
25 individual single (constant) wall thicknesses over the whole area thereof. The injection moulding technique proposed in accordance with the invention however also allows the possibility of achieving a partial reduction in the wall thickness, e.g. in the area along the borderline
30 19 which separates the container body halves. In this way, it should be possible to form a reduced wall thickness presenting a hinge joint along the whole borderline 19, or parts thereof.

The bottom seal 20 of the tube in Figs. 1 - 4 can be made in different ways, for example by means of a hot air sealing technique.

5 In the embodiment shown in Figs. 5 - 7, reference numerals have been used corresponding to those in Figs. 1 - 4, however with the addition of an apostrophe.

10 The tube in Figs. 5 to 7 has a tube body 10' with a basic circular shape. Additionally, the extent of the reduced thickness wall 17' has been lengthened up into the breast area 21 of the emptying spout 11'. This is shown by the dotted line 22.

The intention of this is to achieve an even more complete emptying than that which is achieved by the embodiment in Figs. 1 - 4.

CLAIMS

- 5 1. Container, comprising a container body (10) and an emptying spout (11) joined therewith, wherein the emptying spout is joined to a hollow chamber in the container and wherein a first (17) and a second (18) part-wall define the outer walls for a first (14) and second (15) container body half respectively,
10 characterized in that said part-walls (17, 18) present relatively different, homogeneous wall thicknesses, and in that the part-wall (17) with the lesser thickness has a portion (22) which forms a part-wall of the emptying spout.
- 15 2. Container, comprising a container body (10) and an emptying spout (11) joined therewith, wherein the container body presents symmetry with respect to at least a plane through a central axis (16) of the container body, and wherein the plane of symmetry and
20 a first part-wall (17) of the container body define a first container body half (14), and the plane of symmetry (16) and a second part-wall (18) of the container body define a second container body half (15), characterized in that the ratio between the
25 thicknesses of the part-walls (17, 18) is chosen so that the container body and the part-walls of the emptying spout present deadfold characteristics after emptying the container by pressing the thinner part-wall towards the thicker one.
- 30 3. Container according to claim 2, characterized in that the part-walls are formed of the same material by

injection moulding the container body and the emptying spout as an integrated unit of thermoplastic material.

4. Method of manufacturing containers comprising a container body and an emptying spout joined therewith, whereby the container body presents symmetry with respect to at least a plane through a central axis of the container body, and whereby the plane of symmetry and a first part-wall of the container body define a first container body half, and the plane of symmetry and a second part-wall of the container body define a second container body half, characterized in that the container body is injection moulded so that the part-walls have relatively different, homogeneous wall thicknesses, and in that the part-wall with the lesser thickness is given an extent such that it also forms a part-wall for the emptying-spout.

1/2

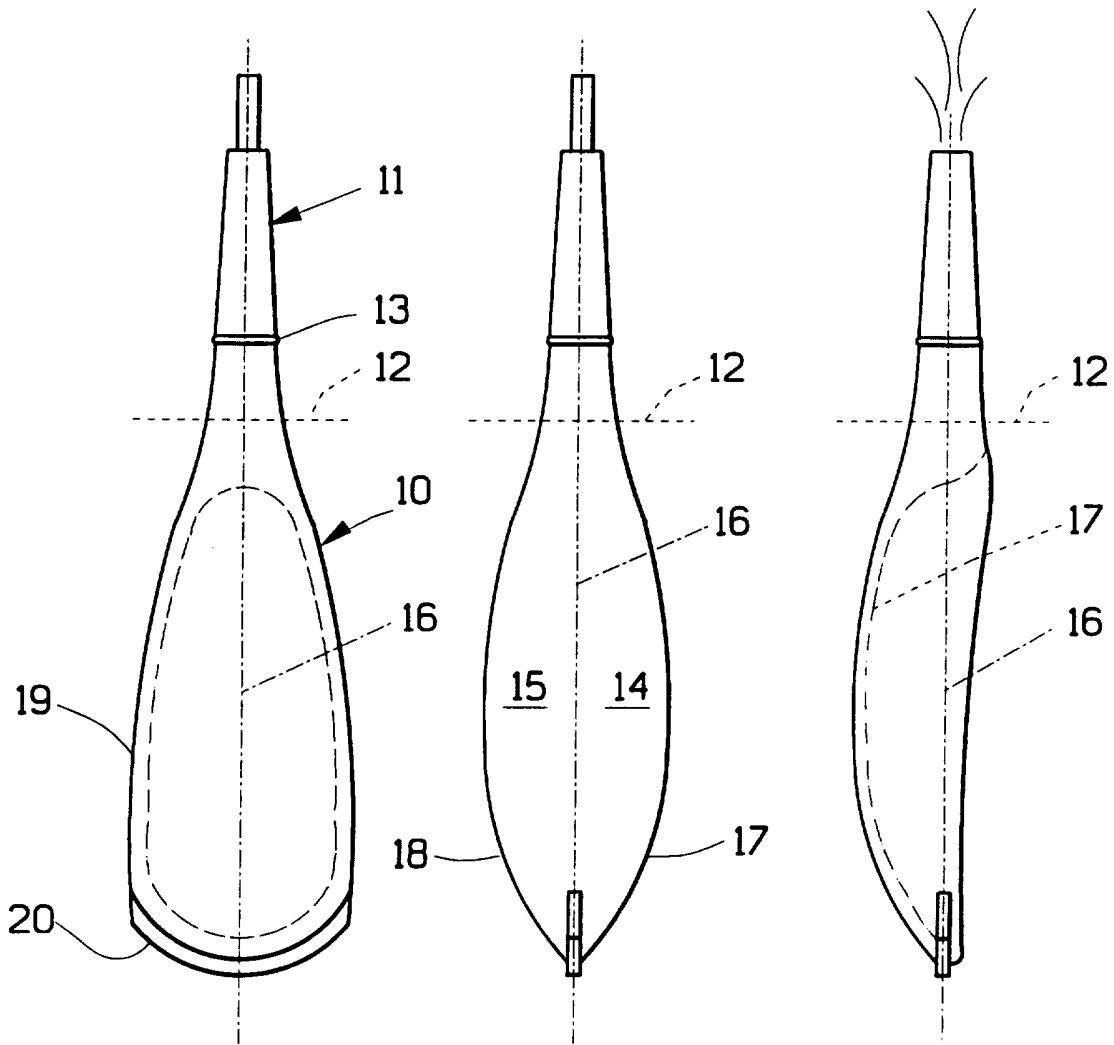


FIG. 1

FIG. 2

FIG. 4

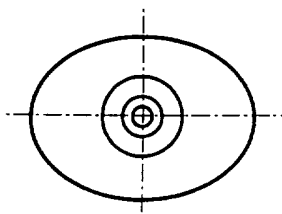


FIG. 3

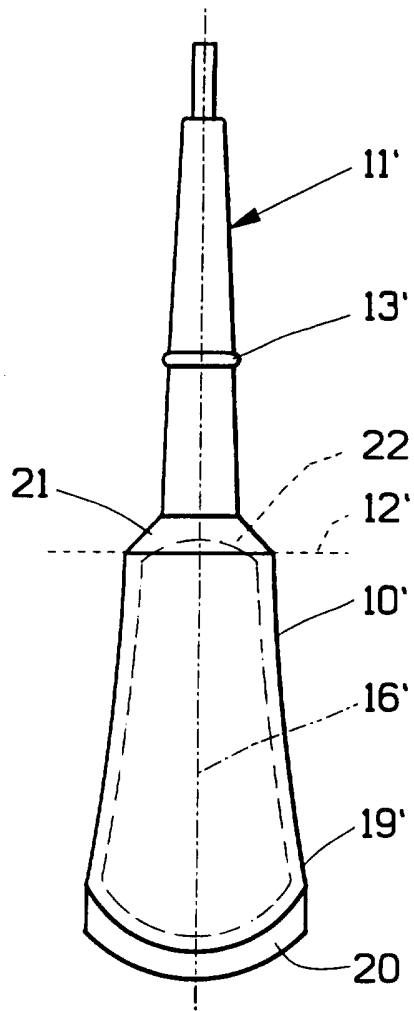


FIG. 5

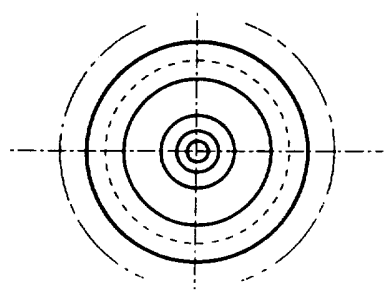


FIG. 6

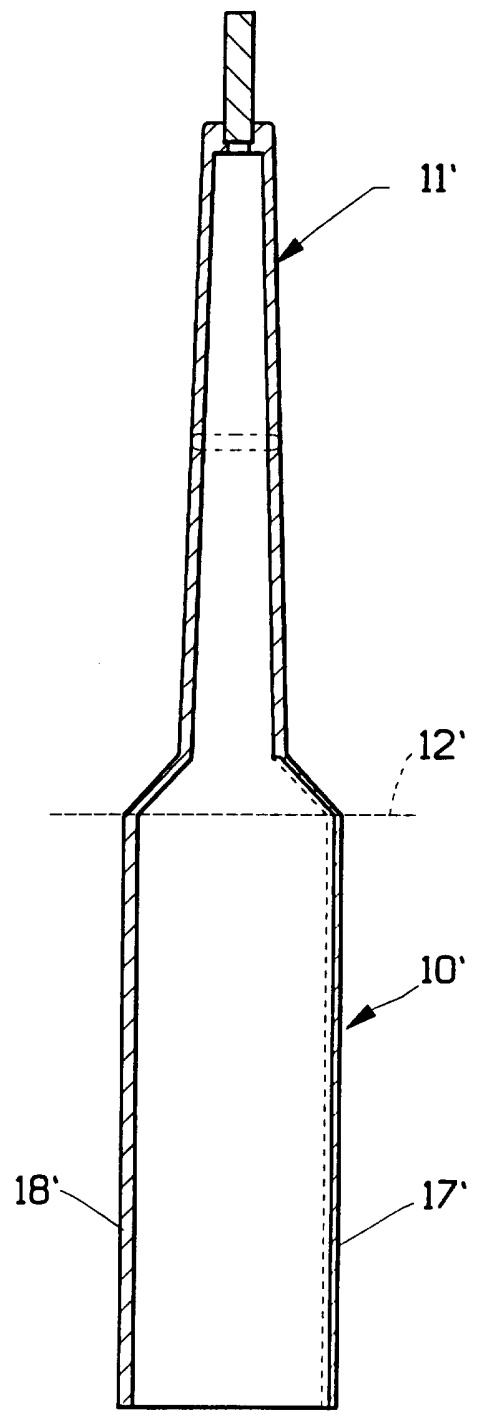


FIG. 7

INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE 96/00342

A. CLASSIFICATION OF SUBJECT MATTER
IPC6: B65D 35/08, A61J 1/00 According to International Patent Classification (IPC) or to both national classification and IPC
B. FIELDS SEARCHED
Minimum documentation searched (classification system followed by classification symbols) IPC6: B65D, A61J, A61M
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched SE,DK,FI,NO classes as above
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DK 103686 C (MERCK & CO., INC.), 9 May 1966 (09.05.66), figures 1-5 --	1-4
A	DK 156415 B (SOCIETE NOUVELLE DE BOUCHONS PLASTIQUES S.N.B.P.), 21 August 1989 (21.08.89), figures 3.5,6 --	1-4
A	US 2512115 A (K.SENFF), 20 June 1950 (20.06.50) --	1-4
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Further documents are listed in the continuation of Box C.
 See patent family annex.

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DK-C- 103686	09/05/66	NONE	
DK-B- 156415	21/08/89	NONE	
US-A- 2512115	20/06/50	NONE	
US-A- 4013073	22/03/77	NONE	