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**EUROPEAN PATENT APPLICATION**

⑲ Application number: 82850162.7

⑤ Int. Cl.<sup>3</sup>: **A 47 K 5/12**

⑳ Date of filing: 26.07.82

③ Priority: 14.08.81 SE 8104836

④ Date of publication of application:  
23.02.83 Bulletin 83/8

⑥ Designated Contracting States:  
AT BE CH DE FR GB IT LI LU NL SE

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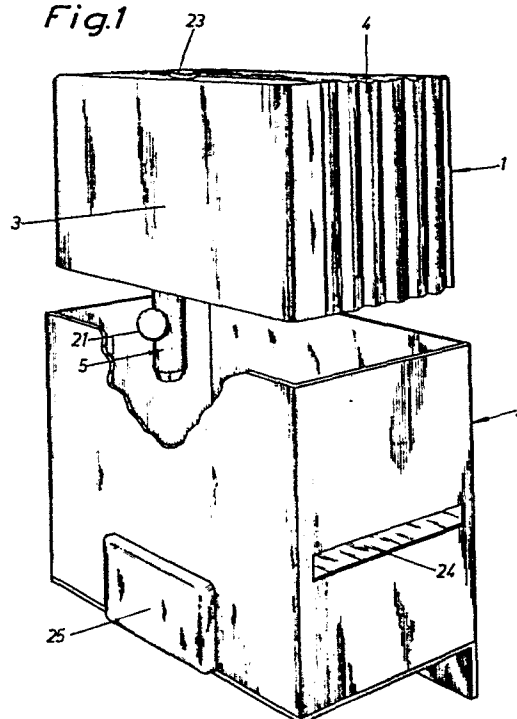
⑤ An improvement in expendable containers.

⑥ An improvement in expendable dispenser-type fluid containers. The expendable container (1) is formed in one integral piece and consists of three portions, viz. one (front) portion (3) which has comparatively thick walls and therefore is shape-resistant, one portion (4) which extends from the first portion and which has comparatively thin walls and therefore is collapsible/exhaustible, and a dispensing portion (5).

The expendable container (1) is made from plastics and the properties of the various portions (3, 4, 5) result from the different wall thicknesses of the portions. This is achieved by manufacturing the container in an extrusion operation followed by blow-moulding to the desired shape.

The dispensing portion is provided with a mechanism designed to dispense fluids in metered quantities and said mechanism may be of a kind known *per se*.

*Fig.1*



An Improvement in Expendable Containers

5 The subject invention concerns an improvement in expendable containers of the kind which are provided with a pump mechanism for dispensing metered quantities of fluids of varying viscosities. The improved container is designed to be used in association with a holder unit of a prior-art kind. The improved container in accordance with the invention is primarily intended for soap solutions and medical preparations.

10 Prior-art containers incorporating mechanisms for dispensing dosed quantities of soap solutions and similar fluids suffer from several drawbacks. They require supervision and servicing, since they often are positioned in premises where they are exposed to heavy wear and  
15 frequently also wanton destruction, such as in public lavatories and similar places. Lack of attendance and insufficient cleaning may result in malfunctioning of the device or in bacterial growth. Bacteria that have gained access to the interior of the container are  
20 entrained with the fluid dispensed therefrom and thus reach the consumer. As a result, under unfavourable conditions dispensing devices may act as disease carriers, which is quite unacceptable, particularly in hospitals.

25 A further disadvantage found in prior-art containers incorporating dispensing mechanisms is that unless they are equipped with expensive special means they allow evaporation of the fluid solution contained therein, making the solution more concentrated and more

viscous. This may lead to the entire dispensing device ceasing to function entirely.

One prior-art structure designed with a view to remedy the disadvantages outlined above consists of an expendable bag from which fluid is extracted by means of a special arm or by the consumer squeezing a flap formed on the bag. The flap has a dispensing valve welded thereon. The disadvantages of this prior-art structure are multifold. For instance, the bag and the dispensing mechanism are entirely unprotected against wanton destruction. In addition, they are comparatively fragile and as a result thereof are easily damaged when exposed to careless treatment or manipulation. This prior-art structure is also comparatively expensive to manufacture and must be produced in long series since complex tools are required to manufacture this dispenser device. A further disadvantage is that it is difficult to handle on account of its awkward shape.

The purpose of the subject invention is to provide an improved expendable dispenser-type fluid container by means of which the drawbacks outlined above are eliminated.

This aim of the invention is achieved by forming the expendable container with a shape-resistant dispensing portion and with at least one portion of the container with thin walls to render the container collapsible and exhaustible.

The invention also comprises a method of manufacturing the improved container according to which method the container is blow-moulded to the desired shape from an extruded synthetic-resin blank, during which blow-moulding operation the container is formed with at least one thin-walled portion and with one shape-resistant dispensing portion.

The invention will be described in closer detail in the following with reference to the accompanying drawings, wherein

5 Fig. 1 is an exploded view of an improved dispenser-type container in accordance with the invention and a holder unit of a prior-art kind,

Fig. 2 is a perspective view of an improved dispenser-type container in accordance with the invention when mounted in a holder unit,

10 Fig. 3 shows the structure of a prior-art dispensing mechanism that may be used in conjunction with the container in accordance with the invention,

Fig. 4 is a perspective view of a modification of the dispenser-type container in accordance with the invention when in filled condition, and

15 Fig. 5 is a lateral view of the same container when exhausted.

Fig. 1 shows an expendable container 1 in accordance with the invention. The container 1 is intended to be mounted on e.g. a holder unit 2 of a prior-art kind. The container 1 consists of a front portion 3 of a shape-resistant material, of a collapsible portion 4 which extends from the front part 3, and of a dispensing portion 5. The dispensing portion 5 is made of a shape-permanent material and may be of a type known per se.

25 The container 1 is made from plastics and produced in the process known as blow-moulding. Portion 5 is made as an integral part of the container. Because the container is designed to include a filler opening 23 and because the discharge or dispensing portion 5 is positioned close to the front portion of the container this portion will be thicker walled/more shape-resistant than the rear portion of the container. The latter portion

thus will constitute a pliant and easily deformable bellows-like container portion which projects from the comparatively rigid base, that is, the front wall of the container, that is portion 3. The portion 4 will  
5 collapse/be exhausted through the effects of the partial vacuum created as fluid is dispensed from the container.

A through-flow channel 6 leads from the container interior to an outlet opening 7. In the through-flow  
10 channel is disposed a lower valve portion 8 in which is formed a valve seat 9. The latter is spaced a certain distance from the outlet opening 7. The position of the valve portion 8 is determined by an interior shoulder 10 formed in the through-flow channel. A groove 11 is  
15 formed in the interior face of the valve portion 8.

In the groove 11 is mounted a valve mechanism 12. This mechanism comprises a disc 13 on which are secured an upper resilient arm 14 and a lower resilient arm 15. On the outer ends of the arms 14 and 15 are secured  
20 respectively valve body 16 and valve body 17, both in the shape of e.g. a sphere.

An upper valve portion 18 is inserted into the channel 6 so as to be mounted on top of the lower valve portion. In the upper valve portion 18 is formed an upper  
25 valve seat 19 and a channel 20 communicating a pressure bulb 21 with a void formed between valve seats 9 and 19, this void forming a valve chamber 22. The preferably balloon-shaped pressure bulb 21 forms part of the dispensing portion 5.

30 The arms 14 and 15 urge the valve spheres 16 and 17 with a certain bias force against the respective associated valve seats 19 and 9. The upper sphere is urged upwards while the lower one is pulled upwards.

In the position of rest of the dispensing portion the spheres therefore abut sealingly against their associated valve seats.

5 Fluid is filled into the container through the filler aperture 23 and the latter is then sealed, either through welding or by means of a screw cap.

10 The container is manufactured in the following manner. First, a blank of plastics is produced through extrusion. The final shaping is then obtained by blow-moulding the blank into the configuration of the finished container. The dispensing portion 5 is blow-moulded in the very same operation. In connection with the blow-moulding operation the valve components incorporated in the dispensing portion 5 are attached (see Fig. 3).

15 After the extrusion and blow-moulded operations the plastic shrinks somewhat, whereby the positions of the various components are determined permanently in an easy and efficient manner, which also means elimination of all risks of leakage.

20 The improved dispenser-type container in accordance with the invention provides a number of advantages. Empty containers may be stored neatly in a compressed condition, requiring minimum space compared with prior-art shape-resistant containers.

25 The collapsible bellows-like portion 4 of the container collapses gradually as fluid is extracted from the container and the degree of collapse or "squeezed" appearance of the container is indicative of the quantity of fluid that still remains inside the container. This quantity may be easily determined through a window 24 or similar means formed in the holder. This determination therefore may be made without requiring removal of any part of the cover of the container and consequently may be effected in the simplest possible manner.

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Dispensing or discharge of fluid is effected by compression of the pressure bulb 21 directly or by depressing a push button 25 formed in the holder and acting on the pressure bulb.

5           Another embodiment of the container which is somewhat modified compared with the one illustrated in Figs. 1 and 2, is shown in Figs. 4 and 5. The expendable container 26 in accordance with this embodiment has a rigid central portion 27 rather like a strap encircling  
10 the container. According to this embodiment both the rear and front of the container have thin walls and consequently a double-bellows effect is obtained. A filler aperture 28 corresponding to filler hole 23 in accordance with the embodiment of Figs. 1 - 3 is provided  
15 at the top of the central portion 27. On the lower face of the central portion 27 is provided a dispensing portion 29. In accordance with this embodiment the container forms two bellows 30, one on either side of the rigid central portion.

20           The dispensing portion 29 differs slightly from the dispensing portion 5 shown in Fig. 3. Portion 29 is provided with two pressure bulbs 31 instead of the single pressure bulb 21 appearing in the embodiment according to Fig. 3. The portion 29 is otherwise provided with a  
25 valve inset of an identical type to that shown in Fig. 3 and functions in the same manner.

          The container 26, shown in Fig. 4 in filled condition and in Fig. 5 in exhausted condition, is mounted in a holder of a kind known per se. As appears  
30 from Fig. 5 the container will occupy minimum space when in its exhausted condition. Obviously, it is possible to form the container entirely without rigid portions except in the areas of attachment of the filler hole and

the dispensing portion, in which case the container will assume the appearance of a balloon. The holder must of course in this case be given a corresponding balloon-like shape.

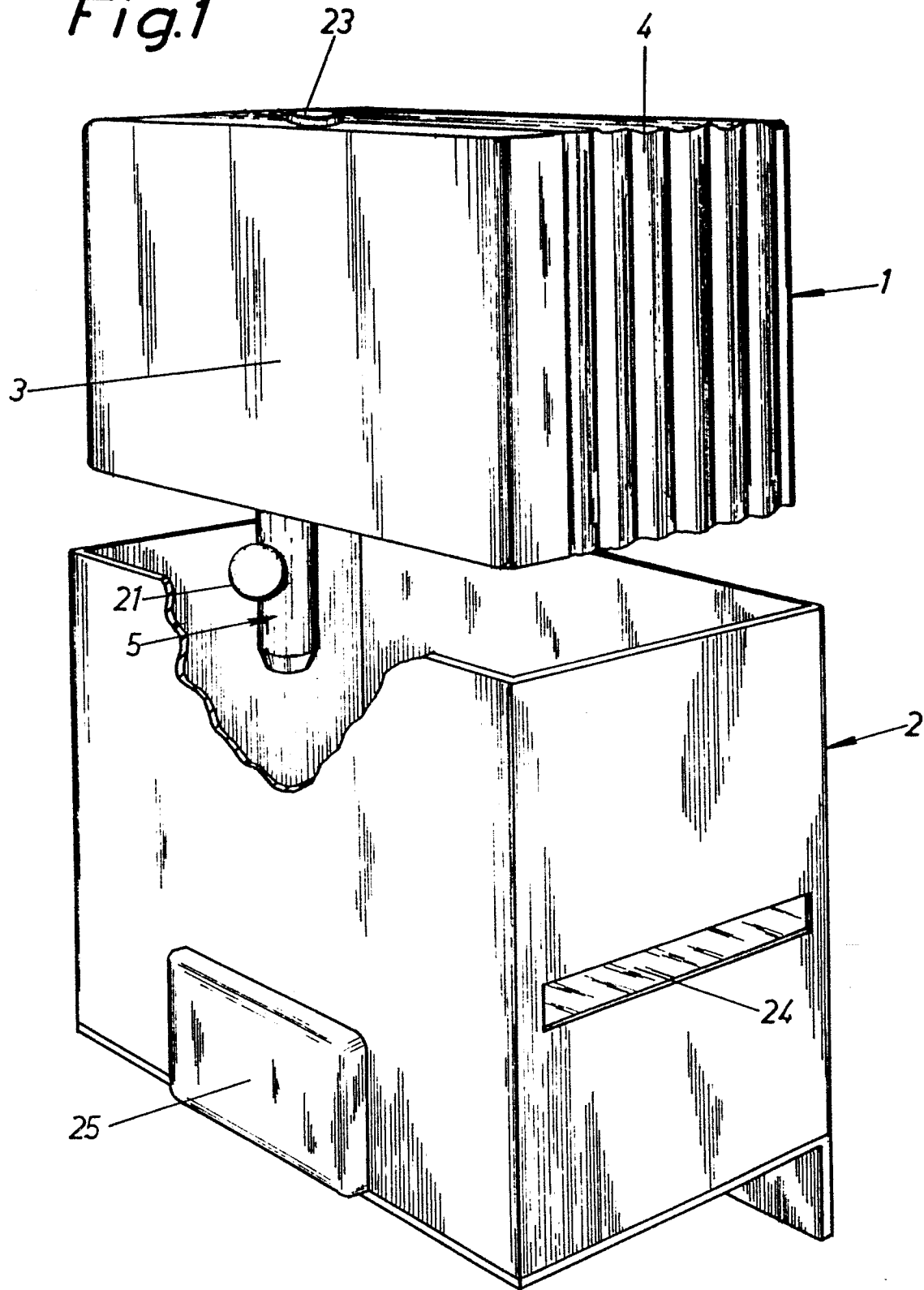
5           It should be obvious that it is possible to alter and modify the invention within the scope of the appended claims. The dispensing portions 5, 29 may be designed to fit other containers and dispensers having similar functions. Also, it is of course possible  
10   to mount the container according to the invention in other holders than the holder referred to above which is described in the pending Swedish Patent Application No. 8004153-6. It is likewise possible to manufacture the dispensing portions 5, 29 separately and then attach  
15   them to the container by welding, screwing or by some other means. However, containers manufactured in this way will be somewhat more expensive than containers manufactured according to the integrated method described in the afore-going.

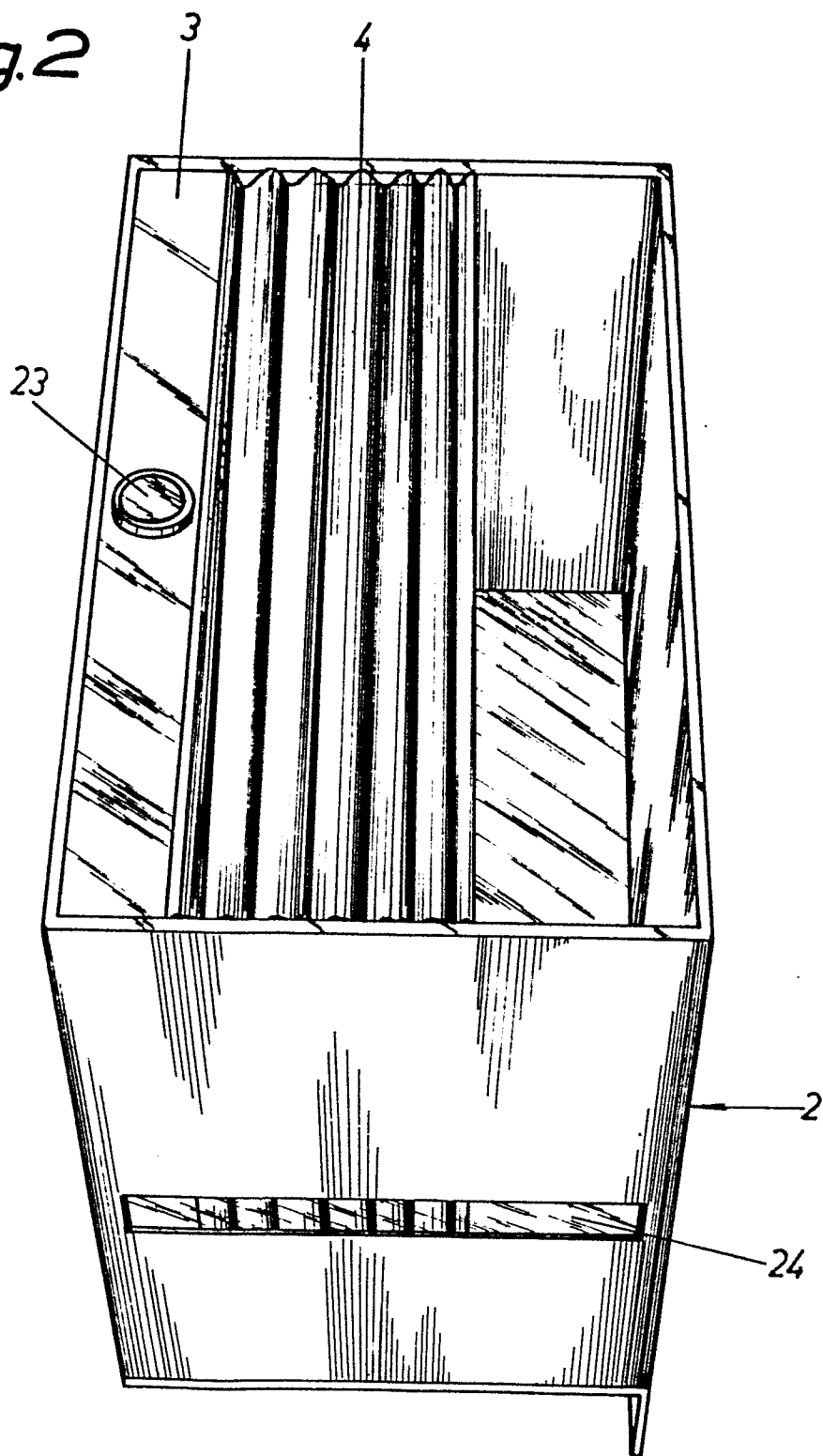
Claims

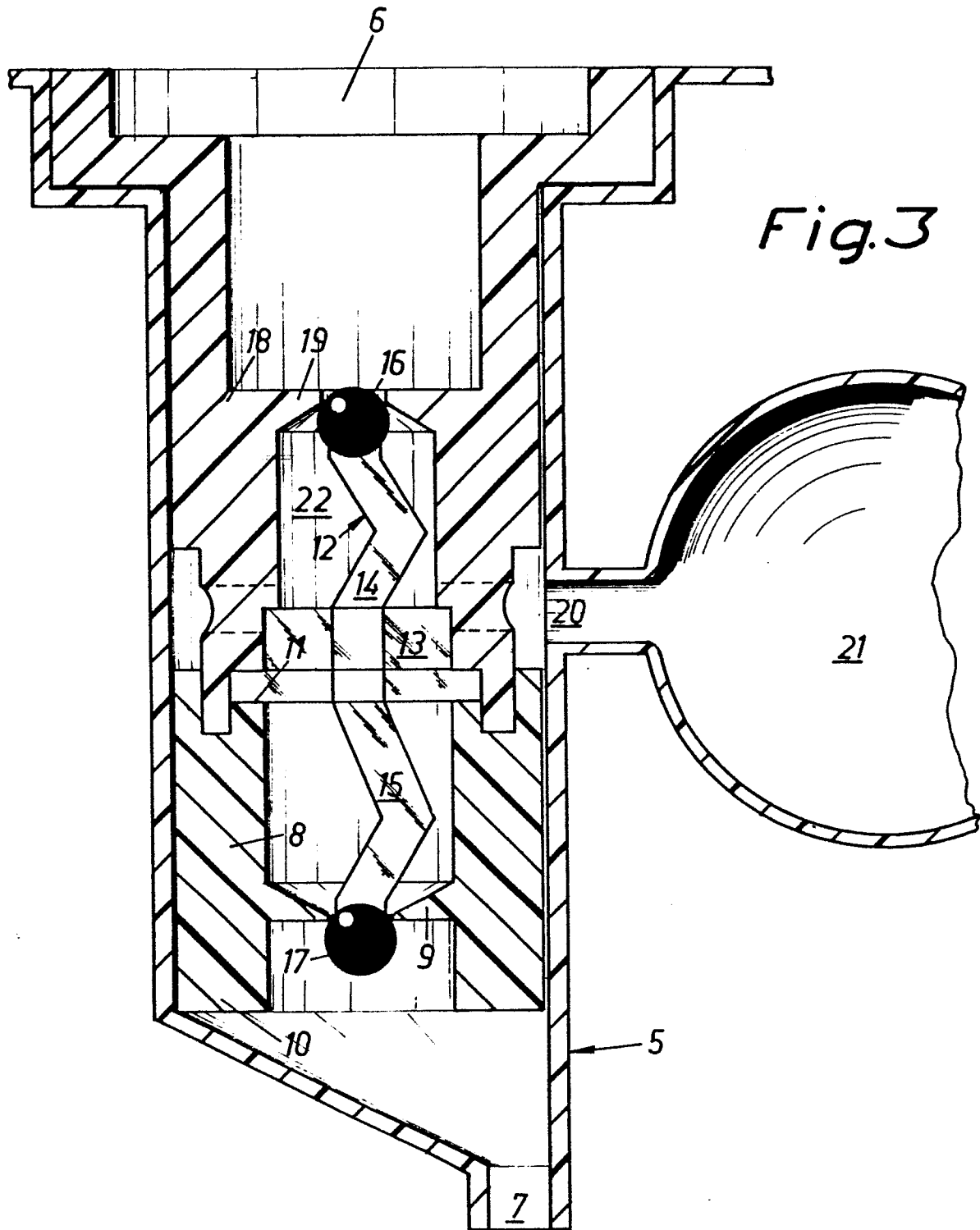
1. An improved expendable container of the kind which is provided with a pump mechanism for dispensing metered quantities of fluids of varying viscosity, c h a r a c t e r i s e d i n t h a t the container (1) comprises a shape-resistant dispensing portion (5, 29) and at least one thin-walled portion (4), whereby the container is rendered collapsible and exhaustible.
2. An improved container according to claim 1, c h a r a c t e r i s e d i n t h a t the container (1) is made from plastics.
3. An improved container according to claim 1 or 2, c h a r a c t e r i s e d i n t h a t one portion (3, 27) of the container (1) is thick-walled and shape-resistant.
4. An improved container according to claim 3, c h a r a c t e r i s e d i n t h a t one of the walls of the container is shape-resistant.
5. An improved container according to claim 3, c h a r a c t e r i s e d i n t h a t the container (1) has a thick-walled and shape-resistant central section (27) and that two thin-walled portions (30) of said container which extend from the central section serve as bellows in the dispensing of fluid from the container.

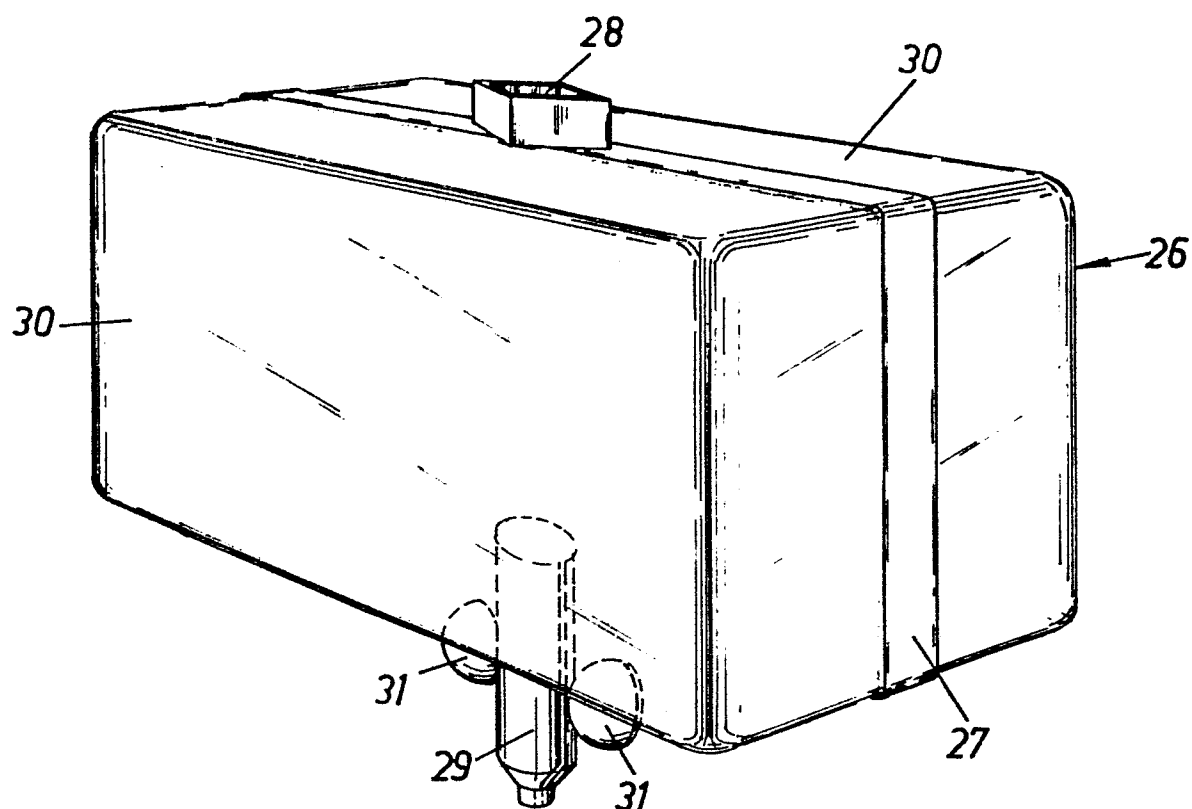
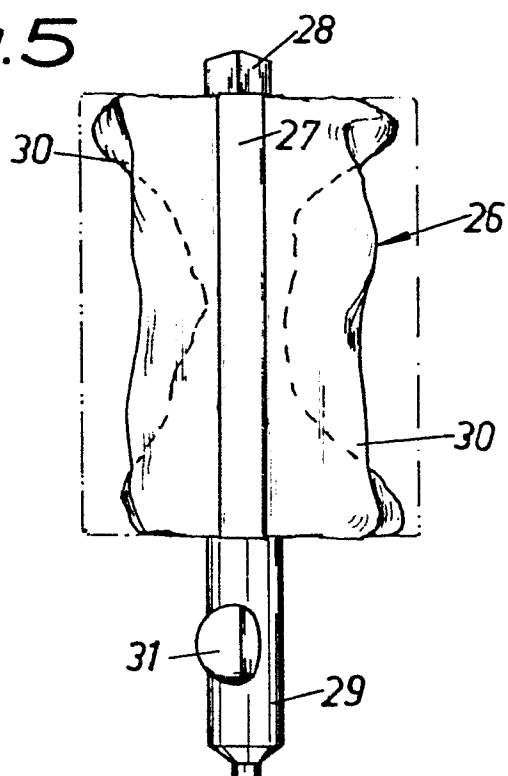
6. A method of manufacturing an expendable container of the kind defined in claim 1 comprising a pump mechanism for dispensing metered quantities of fluids of varying viscosity, c h a r a c t e r i s e d  
5 b y blow-moulding the container to the desired shape from an extruded blank of plastics, and forming said container during said blow-moulding operation with at least one thin-walled portion and with one  
10 shape-resistant dispensing portion.

Fig.1



$\frac{2}{4}$ *Fig.2*



*Fig.4**Fig.5*

0072783



European Patent  
Office

## EUROPEAN SEARCH REPORT

Application number

EP 82 85 0162

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 3)
X	US-A-3 155 281 (STRACEY) *Column 1, lines 9-24; column 1, line 52 to column 2, line 63; column 3, lines 6 to 34, lines 68 to 71; figures 1 to 4*	1,2,3	A 47 K 5/12
X	--- US-A-3 390 821 (MULLAN) *Column 1, lines 16 to 35; column 2, lines 1 to 62; column 4, line 25; figures 1 to 3*	1,2,3	
A	--- US-A-3 125 619 (MILLER) *Column 1, lines 8 to 32; figure 6*	2,6	
A	--- MODERN PACKAGING, vol. 34, no. 8, April 1961, page 254, Bittenheim Publishing Co., New York (USA); "Collapsible polyethylene 5-gal. jug".	2,6	
A	--- GB-A- 457 875 (HARRIS) *Page 2, lines 36 to 42; page 2, line 57 to page 3, line 25; figures 1,2*	1,3	
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The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 22-09-1982	Examiner SCHOLS W.L.H.
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons &amp; : member of the same patent family, corresponding document</p>			