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A request for correction of claim 1 has been filed pursuant to Rule 88 EPC. A decision on the request will be taken during the proceedings before the Examining Division.

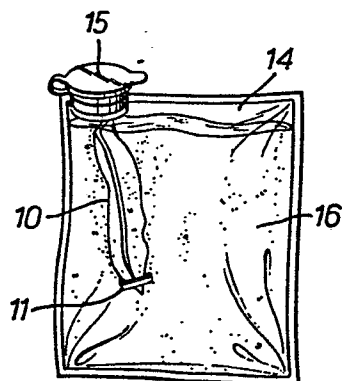
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(54) Improvements in and relating to systems and apparatus for mixing products.

(57) A method for mixing and dispensing materials safely and cleanly comprising the steps of enclosing materials to be mixed in separate closed flexible sachets introducing the material from a first one of the sachets into the other or second sachet by manipulation without allowing the materials to contact the manipulator, mixing the materials inside the second sachet and then dispensing the mixture as required e.g. through an opening provided for the purpose in the first sachet or by cutting off a corner of the first sachet.

Fig. 7.



IMPROVEMENTS IN AND RELATING TO SYSTEMS AND APPARATUS
FOR MIXING AND DISPENSING PRODUCTS.

This invention is concerned with the provision of a method
and an apparatus for mixing and dispensing materials or products,
e.g. liquid to liquid, powder to powder, or liquid to powder.

One object of the invention is to limit the exposure of
5 a user to the products during mixing. Protection of the
user is becoming more important due to the fact that some
products emit fumes during the mixing and therefore protection
is important from the point of view of health and safety.

Examples of products with which care in mixing is important
10 are moulding compounds, two part epoxy resins and so on.

An important feature of the invention is to provide apparatus
so adapted that once the products have been mixed, it
is easier to dispense the mixture as compared with normal
known systems using tins for storing, mixing and pouring.

15 In accordance with this invention we provide two sachets,
each sachet containing a product to be mixed. We then
insert the product from one sachet into the other sachet
substantially without allowing fumes to escape and so
we mix the products in the said other sachet from which
20 the mixture can be dispensed as required.

In order that the invention may be more clearly understood
reference is now directed to two specific embodiments
given by way of example. The first embodiment is described
in connection with Figs 1 to 4 of which:-

Fig. 1 shows two separate sachets,
Fig 2 shows the two sachets connected ready for mixing,
Fig. 3 shows the two sachet after mixing, and
Fig. 4 is a detail view showing one form of connecting
5 means.

Referring to the above drawings, it will be noted that
we provide two sachets 1 and 2. The sachets each contain
a required amount of a product e.g. sachet 1 contains
product 3 and sachet 2 contains product 4. Each sachet
10 is sealed at the top, sides and bottom and each sachet
has an opening 5, preferably at the top. The opening
5 in each sachet is sealed in any suitable manner e.g.
by the provision of a closure 6. Means is preferably
provided to facilitate pouring of the contents of one
15 sachet into the other for mixing purposes and for this
purpose one sachet e.g. 2 may be provided with a male
connector 7 and the other sachet e.g. 1 may be provided
with a female connector 8, see particularly Figure 4.
In operation the sachets 1 and 2 form two separate packs
20 which are filled either through the opening 5 or through
a part of the sachet e.g. an open top that is sealed after
filling. The two filled packs are shown in Fig. 1. To
mix the contents of packs 1 and 2 the closures 6 are removed
and the connectors 7 and 8 are joined together as shown
25 in Fig 2. The contents of one sachet can then be poured
through the connectors 7 and 8 into the other sachet and

the contents can be mixed e.g. by squeezing the relatively empty sachet, see Fig 3. The closure can then be replaced over the opening of the sachet holding the mixture, after disconnection of the connectors 7 and 8.

5 An important feature of this invention see Figs 1 to 4 and Figs 5 to 9, to be described hereinafter, is that once the products have been mixed it is easy to dispense the mixture, e.g. by extrusion, as compared with the difficulty of using tins to mix and pour. Extrusion can be undertaken,
10 e.g. either by cutting off the corner of the pack or by a special nozzle on the closure 6.

Turning now to the embodiment described in Figs 5 to 9, it will be noted that-

Fig 5 shows a single sachet, preferably of slim shape,
15 Fig 6 shows the contents of the sachet shown in Fig 5 being poured into another sachet or being inserted as a whole into another sachet,
Fig 7. shows the sachet of Fig 5 inside another sachet,
Fig 8 shows views of a sachet clamp, and
20 Fig 9 is a view similar to Fig 5 with the sachet turned through about 90°.

Referring in more detail to Figs 5 to 9, Fig 5 shows a sachet or pack 10 the top of which is clipped by the application of a clip 11 prior to cutting along the line C which is
25 done just before use. The pack 10 contains a product

12 which it is desired to mix with a product 13 in a sachet 14 shown in Fig 6. Preferably the cut sachet 10 is inserted through an opening in sachet 14 until it is fully inside the sachet 14, see Fig. 7. The pack or sachet can then
5 be reclosed by application of closure 15 and the cut sachet 10 is squeezed inside the pack 14 so that the clip 11 will spring off, allowing the contents 12 of sachet 10 to mix with contents 13 of pack 14 to form a mixture 16, the two materials being mixed totally enclosed within
10 pack 14.

The preferred form of clip is illustrated in Fig 8 which shows that the clip has bifurcated arms 17, 18, which can grip the sachet, see e.g. Fig 9, and an adhesive pad 19 for attachment to the outer surface of the sachet,
15 the pad 19 being attached to the base of the arms 17, 18 by a connector 20. The packs or sachets may be made of any suitable flexible material e.g. a plastics material or a foil and any suitable form of clip may be used.

We have therefore provided a system for mixing materials
20 safely and cleanly comprising the steps of enclosing materials to be mixed in separate sachets or packs, introducing material from one of the packs into the other pack which should be made of flexible foil without the user having to come into contact with either of the materials, mixing
25 the materials inside the said other pack, e.g. by manual manipulation and then dispensing the mixture as required, e.g. through an opening provided for the purpose or cutting off one corner of the pack.

Another modification or embodiment of the invention is shown in Figs 10 to 16 in which:-

Figs 10 and 11 show respectively a small sachet and a large sachet, Fig 12 is a detail view of a part
5 of the large sachet, and Figs 13 to 16 show sequential steps in the use of the sachets shown in Figs 10 and 11.

Figs. 10 to 16 show sachets designed particularly though not exclusively for the preparation of car
10 body filler. Figs 10 and 11 show by way of example a small sachet 21 containing a hardener compound 22 and a large sachet 23 containing powdered filler 24. Fig 12 shows one form of opening for the large sachet 23. The opening is formed by a hollow short tubular
15 body 25 attached suitably to the flexible envelope of the sachet. The opening is closed by a cap 26 shaped as shown in Figs 11 and 12, an annular seal being provided at 27 between the cap 26 and the body 25. It will be understood that the sachets 21, 23
20 are made of relatively flexible material while the body 25 and the cap 26 are made of relatively rigid material. The two sachets are preferably joined together in an easily disconnectable manner by flaps 28, 29 provided eg. with VELCRO (Trade Mark) type connectors
25 30, 31.

In operation the cap 26 is removed from the body 25 to open the large sachet 23, the small sachet 21 is disconnected from the large sachet 23 and the small

sachet 21 is opened e.g. by cutting of a corner of the sachet as shown in Fig. 13. The small sachet 21 is then inserted, cut end first, through the opening provided by the body 25 in the large sachet 23 until

5 the small sachet 21 is completely inside the large sachet 23. If desired the small sachet may be secured in position by replacing the cap 26 in such a way that the end of the small sachet is trapped between the cap 26 and the body 25 so that the small sachet

10 21 is suspended inside the large sachet 23 as shown in Fig 14. The walls of the large sachet 23 can then be manipulated or massaged to expel the compound from the small sachet 21 and to mix the compound 22 with the powder 24 in the large sachet 23, see Fig. 15.

15 The contents of the large sachet having been mixed can then be expelled either by cutting off a corner of the large sachet and extruding the mixture into position ready for smoothing or by removing the cap and extruding the mixture through the body 25.

CLAIMS

1. A method for mixing and dispensing materials safely and cleanly comprising the steps of enclosing materials to be mixed in separate closed flexible sachets introducing the material from a first one of the sachets into the other or second sachet by manipulation
5 without allowing the materials to contact the manipulator, mixing the materials inside the second sachet and then dispensing the mixture as required e.g. through an opening provided for the purpose in the first sachet or by cutting off a corner of the first sachet.
- 10 2. A method according to claim 1 wherein each sachet is provided with an opening closable by means of a removable closure and wherein one sachet is provided with a male connector and the other sachet is provided with a female connector whereby to mix the materials the connectors are joined together and the contents
15 of one sachet is poured through the connectors into the other sachet.
3. A method according to claim 1 wherein a clip is applied to the top of the first sachet prior to removing the top of the sachet just before use e.g. by cutting after which the first
20 sachet is inserted into a second sachet through an opening until the first sachet is fully inside the second sachet, after which the second sachet is reclosed and the contents of the first sachet is mixed with the contents of the second sachet by manipulation.
4. Apparatus for carrying out the method of claim 2 comprising
25 a first filled flexible sachet provided with an opening having a female connector closed by a removable closure and a second filled flexible sachet provided with an opening having a male connector closed by a removable closure, the two connectors being

shaped for interconnection so that the contents of one sachet can be introduced into the other sachet through the connectors after which the empty sachet can be discarded and the mixture can be dispensed through the relevant connector.

- 5 5. Apparatus for carrying out the method of claim 3 comprising two filled flexible sachets, a first one of which when in use has an opening through which the other or second filled sachet can be inserted until the said second sachet is fully inside the first sachet and a bifurcated clip adapted to close the second
- 10 sachet before insertion into the first sachet.

- 9 -

6. A method according to claim 1 wherein the materials are enclosed respectively in a small sealed sachet and a large sachet with an opening closed by a removable cap and wherein the small sachet, after removal of
5 a part of the sachet casing, eg. by cutting at one end is inserted into the large sachet through the opening, for mixing.

7. A method according to claim 6 wherein the small sachet is secured in position inside the large sachet
10 by replacing the cap in such a way that the small sachet is trapped by the cap at the end remote from the cut end of the small sachet.

8. Apparatus for carrying out the method according to claim 6 or 7 comprising a small flexible sealed
15 sachet and a large flexible sachet with an opening formed by a relatively rigid body provided with a cap to close the opening.

9. Apparatus according to claim 8 wherein the sachets are provided with flaps by means of which the two
20 sachets can be connected together in such a way as to be easily disconnectable

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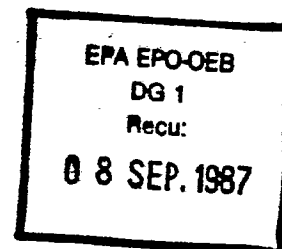
Dear Sirs,

European Patent Application No. 87304374.9 Johnsen & Jorgensen Jaypak Limited

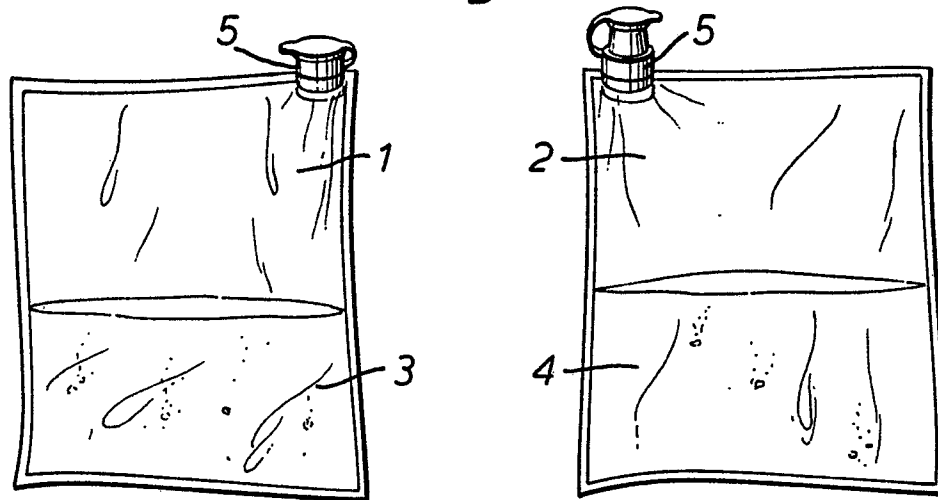
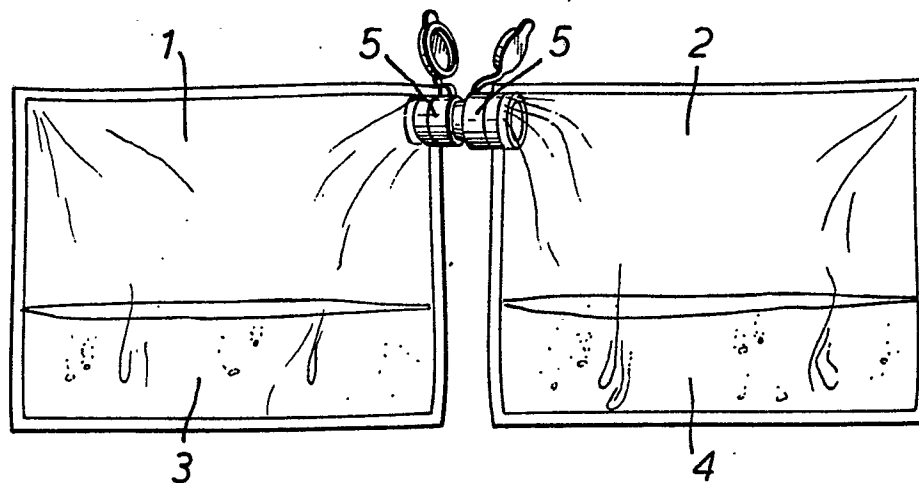
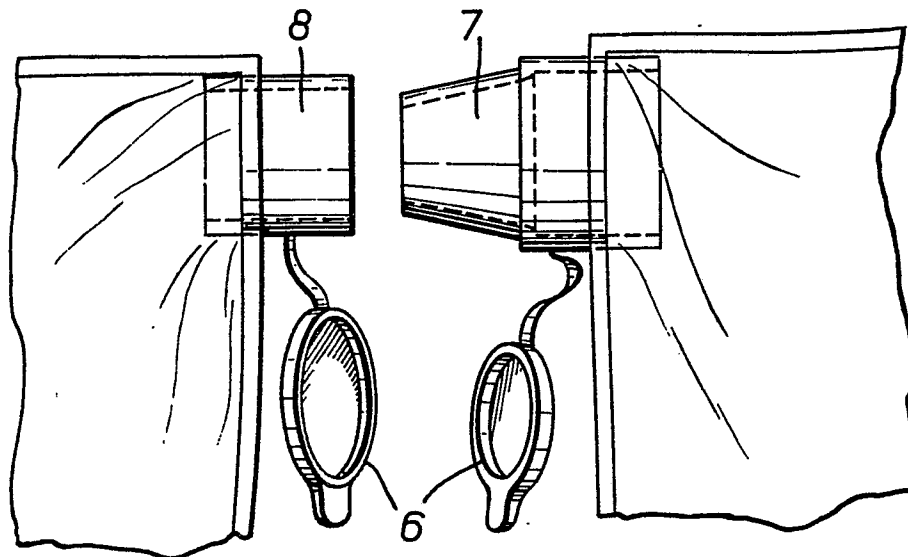
I have noted an obvious clerical error in claim 1 of the above application. Clearly as the materials are mixed inside the second sachet the mixed materials must be dispensed from the second sachet and not from the first sachet which by that time is empty. The words 'first sachet' in lines 8 and 9 of claim 1 should therefore read 'second sachet'. I enclose a new page in triplicate and I should be obliged if the Examiner would replace the original page with the new page.

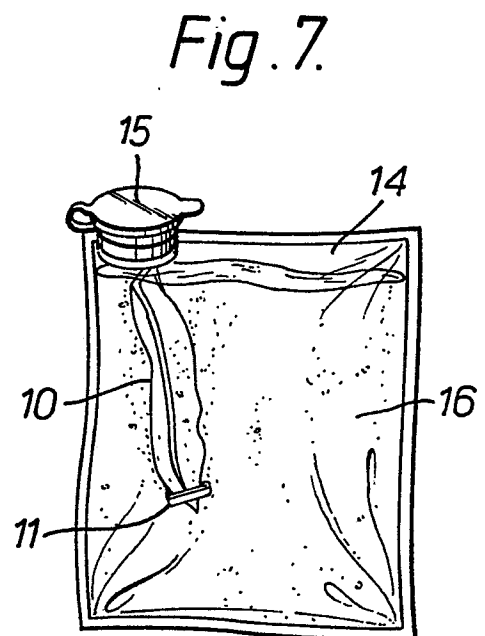
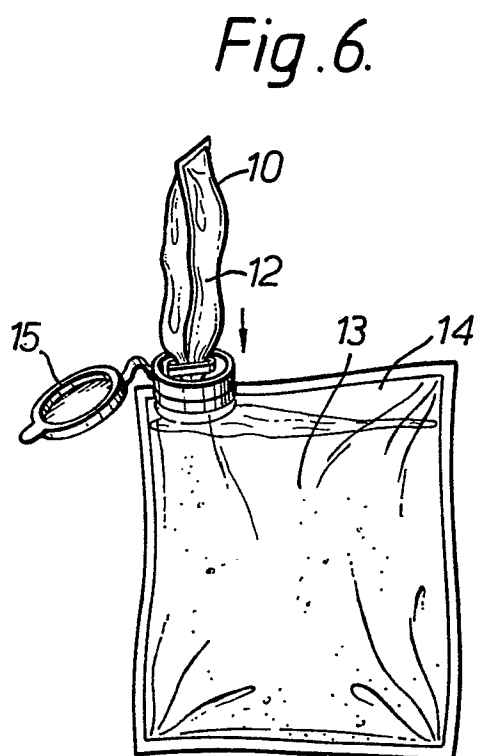
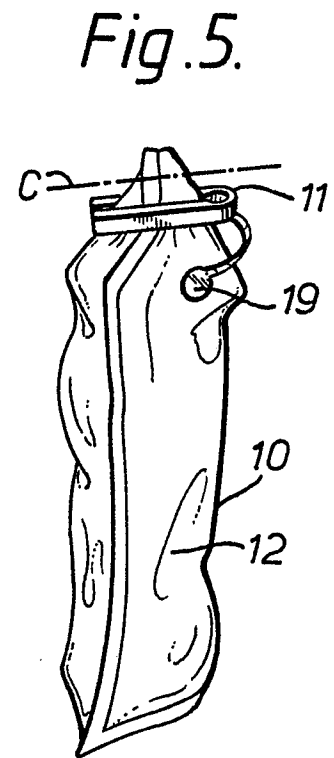
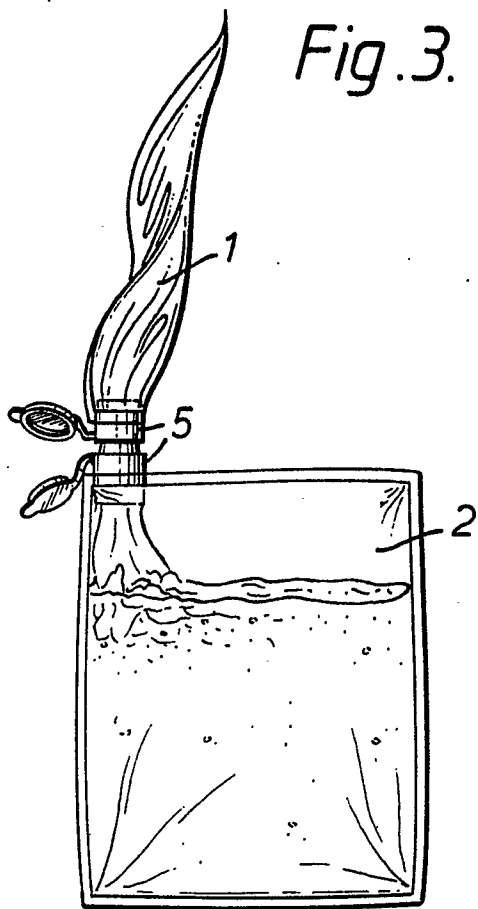
Yours faithfully,
WITHERS & ROGERS

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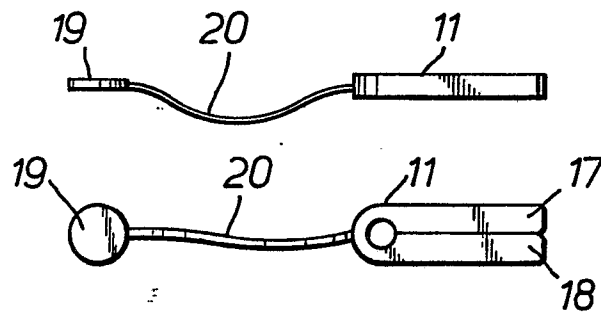
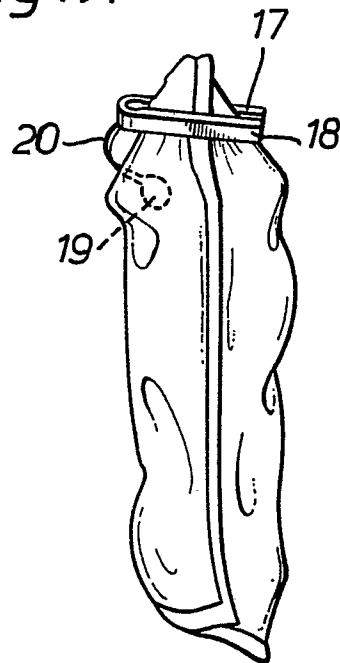


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Fig. 1.*Fig. 2.**Fig. 4.*



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Fig. 8.*Fig. 9.*

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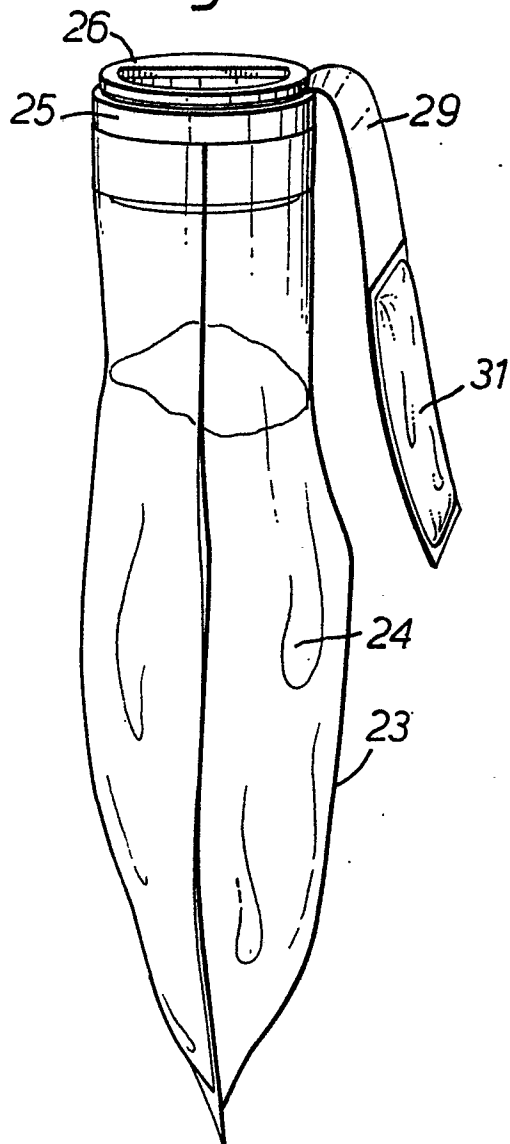
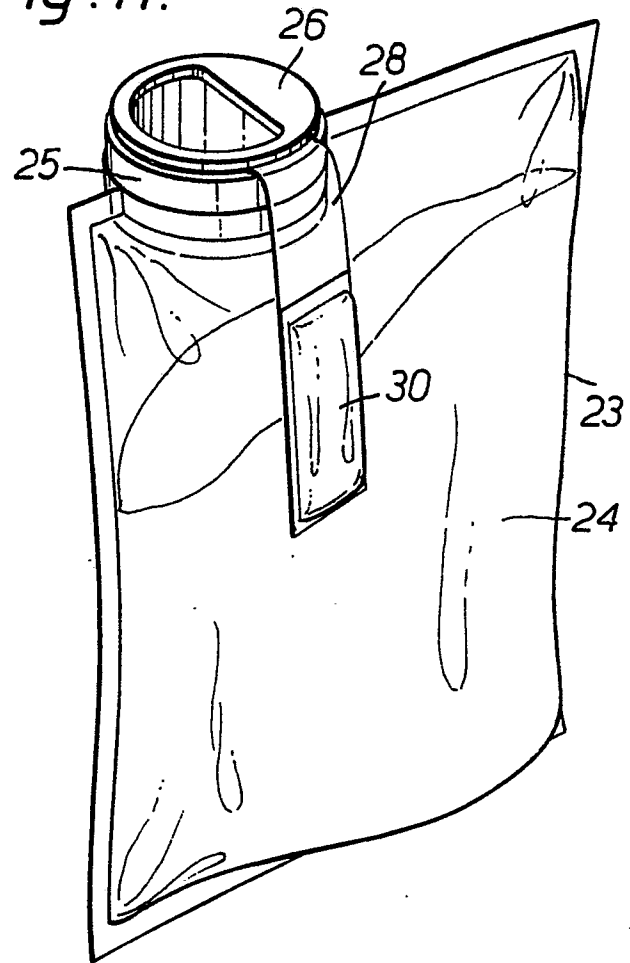
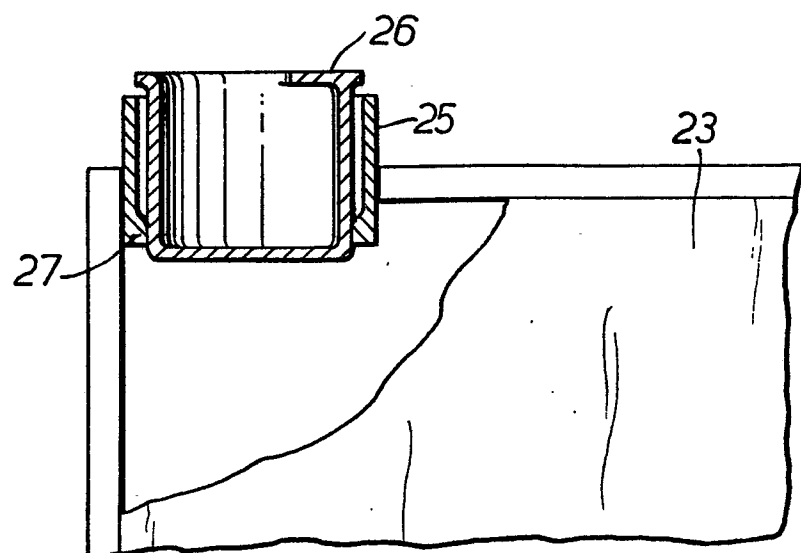
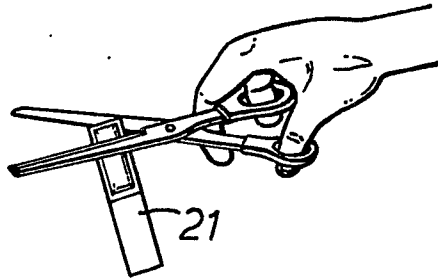
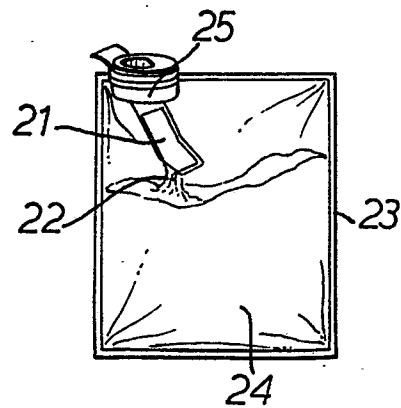
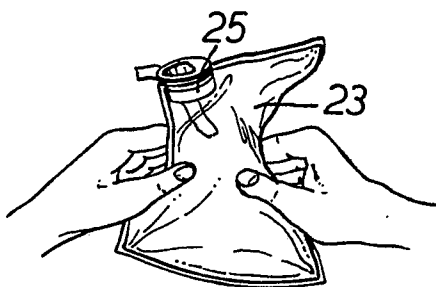
Fig. 10.*Fig. 11.**Fig. 12.*

Fig. 13.*Fig. 14.**Fig. 15.**Fig. 16.*