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[Continued on next page]

(54) Title: WATER SOLUBLE SHEET DISPENSER

Fig.3.

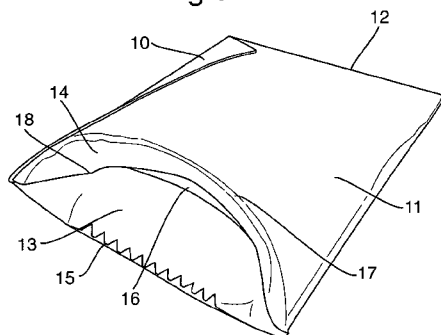
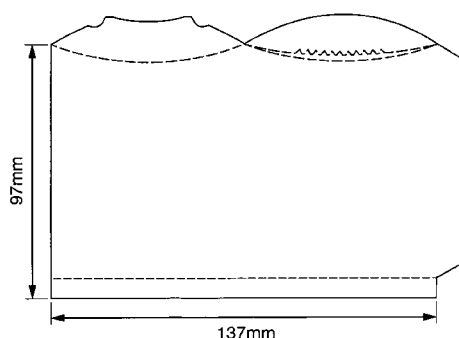


Fig.4.



(57) Abstract: An assembly comprising a hand holdable dispensing container formed from resilient sheet material and contained therein a flexible tearable elongate strip of water soluble thin sheet material, the dispensing container (10) comprising a two-sided biconvex closed body (11, 12) and a communicating opening at one end of the body, the opening being formed by re-entrant folds (13, 14) of the projections of the sides of the body, the sides each having a convex radius of curvature greater than half the width of the body, the container body (10) having a width of from 2 to 3 times the width of the strip and the container body having a length of from 0.05 to 0.5 times the length of the strip and the strip being arranged such that a portion of it may be pulled by hand through the communicating opening and then torn off for use, any remainder of the strip simultaneously being retained within the container by means of the re-entrant folds.



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WATER SOLUBLE SHEET DISPENSERTechnical Field

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This invention relates to an assembly comprising a hand holdable dispensing container and contained therein a flexible tearable elongate thin sheet of water soluble material.

10

Background

Cleaning products taking the form of a soluble thin dry unit dose of soap or detergent that will break up and dissolve when rubbed onto wet skin or hair are known. For example, US2004029762A discloses a soap formulation, which comprises a dry, solid, thin, non-elastic frangible sheet, comprised of at least one water miscible material. The sheet is preferably, but not necessarily, sized to fit in the palm area of the hand of an individual. The soap formulation can be in packages containing a stack of the formulation or can be in packages containing only a single soap formulation. The packaging can comprise plastic bags, paper containers, plastic containers, elastic bands, or any other desired packaging materials.

An alternative type of soluble sheet used for laundry applications is known from US2002013251A. Here the sheet is made from water-soluble films, non-woven or woven fabrics made of water-soluble polymer fibres and laminate sheets comprising of water-soluble films with non-woven or woven fabrics made of water-soluble polymer fibres. These water-soluble sheets are made of water-soluble polymers, which are exemplified, by polyvinyl alcohol, polyvinylpyrrolidone, pullulan, polyacrylamide, polyacrylic acid, polymethacrylic acid, polyitaconic acid,

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polyethylene oxide, polyvinylmethyle ether, xanthan gum, cyamopsis gum, collagen, carboxymethylcellulose, hydroxypropylcellulose and hydroxyethylcellulose. It is preferable to use polyvinyl alcohol optionally modified with maleic acid or itaconic acid.

5

The advantage of a sheet cleaning product is that it is very compact due to the lack of significant liquid content and yet it is both convenient and hygienic.

10

For some applications, it has been proposed to mount the cleaning composition on insoluble material. In DE20315155U, a small amount of liquid soap is applied to a sheet of tissue and left to dry. A multitude of tissues can be joined in order to be supplied on a roll analogously to a toilet roll. The sheet can be removed for individual use by tearing along a perforated line. The soap can be easily pulled of the tissue sheet, which may be recycled. However, this need to dispose of the support is clearly a disadvantage.

15

The most common usage of soap sheets is as a separate sheet for each cleansing operation, usually supplied as a stack of sheets in some form of dispensing container. Much effort has been applied to the design of these dispensing containers; they can have rather complicated designs involving springs and other moving parts, which make them expensive and generally unsuitable for consumer product packaging.

20

Examples of soap sheet dispensers for dispensing a single soap sheet from a stack are found in US4913311B, US6182860B, US4286731B and US4240564A, the latter is a hand held system.

25

All systems involving pre-cut sheets of soap suffer from the disadvantages of inflexibility when different users, or uses, require different amounts of soap. Furthermore, either the dispenser must be refilled from new sheets supplied in a

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disposable pack or the dispenser itself must be disposed of or recycled. Moulded plastics packaging as shown in Fig 1 is expensive compared to its sheet contents and it must either be recycled or reused to make the proposition sustainable. Furthermore, if the contents get wet, a large number of soap sheets are rendered
5 useless.

It has been proposed in one embodiment of US2007241121A to dispense soap sheets, one at a time, by way of a roll, which is contained in a housing. A multiple of soap sheets are contained in the housing and dispensed just by pulling on the
10 outermost sheet and tearing it away from the rest of the sheets by way of a perforated line. The housing may be placed on a counter in a rest room or it may be mounted on a wall in a public or domestic rest-or bath room. Such "soap on a roll" is available as "32G" from STC bath and body care factory, China. It consists of nearly 20 meters of scented vegetable based soap strip on a roll which looks
15 like a tape dispenser with a flip top clear lid, wall mounting hole and a ragged edge to tear soap off for use. It measures approx. 950 mm by 1015 mm and weighs approx. 50 g. It is illustrated in figure 2. According to the supplier instructions to use one tears off a 30 to 40 mm strip, washes ones hands under running water whilst the vegetable based soap dissolves, leaving the hands clean
20 and fresh.

A hanging disposable dispenser for paper towel, tissue and film-product sheets or rolls of material is described in US2006214048A. A box shaped container is provided, made from paper, cardboard, plastic, metal or plastic wrap. The
25 container has an aperture or hole, possibly but not limited to an oblong oval shape but possibly circular or even square or rectangular. Any shape aperture that allows for the removal of paper products, tissues or other thin, flexible could be used. The aperture is located in the bottom or the front of the container. The aperture may be large and covering portions of two sides of the container,
30 possibly but not limited to the bottom and the front of the container, allowing for easier access to and removal of the tissue/paper towel/film product, if this is

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necessary. It may be advantageous to position the aperture (said aperture possibly consisting of a long narrow slit running the width of the container) on the front side of the container, with serrated teeth along the bottom of the aperture. This configuration would allow the product to be drawn forward to unroll the
5 product, and then pulled sharply down along the serrated edge to sever the wanted quantity of product.

It is known to manufacture cartons with arcuate closure flaps. In GB796271, a tubular carton has two convex sides joined directly to each other and arcuate
10 closure flaps foldable about curved lines to close the ends, the consequent deformation of the flaps causing them to remain in their closed position. The innermost flaps have apertures to assist opening. The longitudinal seam may be along either an edge or midway of a side.

15 The carton includes a pair of opposed side walls joined directly one to the other along opposite edges so as to be capable of being flexed away from each other to form a hollow tubular body, and an end flap of arcuate shape extending outwardly from each side wall at one and the same end of the container and foldable about an inwardly curved fold line extending across the said one end of the wall,
20 whereby the flap when folded inwardly towards the other side wall remains in the folded position substantially normal to the side wall, one of the thus folded flaps engaging the opposed side wall to space the walls apart and form thereby a tubular body having opposed laterally outwardly bowed walls and the other flap when folded engaging over the said one flap to form a closure for the said one
25 end of the container, the folded flaps this forming a longitudinally inwardly curved closed end to the container.

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Summary of the Invention

According to the present invention there is provided an assembly comprising a hand holdable dispensing container formed from resilient sheet material and
5 contained therein a flexible tearable elongate strip of water soluble thin sheet material,

the dispensing container comprising a two sided biconvex closed body and a communicating opening at one end of the body, the opening being formed by re-
10 entrant folds of the projections of the sides of the body, the sides each having a convex radius of curvature greater than half the width of the body,

the container body having a width of from 2 to 3 times the width of the strip and the container body having a length of from 0.05 to 0.5 times the length of the strip
15 and the strip being arranged such that a portion of it may be pulled by hand through the communicating opening and then torn off for use, any remainder of the strip simultaneously being retained within the container by means of the re-entrant folds.

20 Resilient sheet material

The container body is made from resilient sheet material. Preferably, it is made from card. The card is desirably of the recycled type, but any type may be used. For example: cartonboard. Card is preferred, from a sustainability angle, because
25 it is easy cut out, fold and to glue together using a suitable card adhesive.

Nevertheless, the container may be made out of material other than cardboard, e.g. low-grade recycled plastic. In principle, it can be made from any resilient sheet material. The skilled worker would understand how to adapt the production

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processes for the resilient sheet material selected; e.g. vibration welds instead of glue for plastic materials.

5 The thickness of the resilient sheet material needs to be sufficient to provide the required protection of the water soluble thin sheet material making up the contents and to provide repeated resilience, in use. For instance, it must not just fold up and fail to spring back into position.

Blank shape

10

Advantageously each container is formed from a single piece of the resilient sheet material cut into the desired shape or blank. The two sides then being formed by folding the material along a fold line. Multiple blanks may efficiently be cut from a single large piece of stock resilient material such as card or cartonboard. The
15 generally rectangular outline of the blank needed for each container leading to easy nesting and low amounts of waste material.

The optional serrated edge is formed into the top side of the blank and, if present, is desirably not quite co-incident with the fold line.

20

To allow the resilient material to be glued into shape one or two tabs are included. The tab width is fixed to be large enough to allow locally available glue to be used with success.

25 Container shape

There is an automatic feature built into the container by virtue of the ratio of length to width of the sides. The sealed flat end remote from the opening provides a rigid base about which the flexing occurs. By keeping the length to width ratio of each

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side in the range 3:1 to 1:3 the container is effectively a self-protecting system under conditions of normal use.

Re-entrant folds

5

A problem with multidose strip dispensers is the ease with which a single dose may be torn off and yet leave another dose ready for the next use. The re-entrant folds and the geometry that makes the mouth of the container “sprung-loaded” solves the problem of retaining material in the container until it is pulled through the mouth. It has been found to be essential that the container in the unsprung position is at least twice the width of the strip of water soluble thin sheet material so that when the container mouth narrows during the dispensing operation it does not affect the free running of the strip from the mouth.

10

The shape of the re-entrant folds is designed to hold back the rest of the strip inside the container during dispensing.

15

Serrations

The container advantageously has a serrated portion formed on its outside surface and positioned so that the strip may be torn on the serrations to leave a portion of strip outside the container. This enables the next portion of strip to be gripped easily between finger and thumb while the container is sprung into the open position using the other hand. By leaving a small portion of the strip outside the container after tear-off it is easier to get hold of it to pull another portion out. A serrated edge, incorporated in the fold, allows tear-off of the required dose of the strip and prevents the remaining strip material withdrawing inside the container.

20

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Alternative embodiments may be provided, that have serrations on single inner, single outer and double edges. The single outer edge serration is preferred from an ease of use versus cost of manufacture balance.

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Container manufacture

The blanks may be cut by hand using a Kraft knife. Thus, the entire production
5 process can be done using very simple raw materials and equipment.

Alternatively, blanks could be die-cut. The container can then be produced economically using conventional production equipment. Any suitable adhesive may be used to hold the container together when folded, for example, polyvinyl alcohol based adhesives or gum based adhesives.

Flexible tearable elongate strip of water soluble thin sheet material

Any material that can be formed into a tearable flexible strip that will not have a deleterious interaction with the communicating atmosphere or the material from
15 which the container is fabricated may in principle be dispensed from the container. The strip may comprise a home and personal care composition. For example: bodywash, hair shampoo, hand soap, breath freshening, and even foods compositions may be dispensed using this assembly. The flexible tearable elongate strip of water soluble thin sheet material is desirably a composition that
20 will form a cleansing product when dissolved or dispersed in water. Preferably, it comprises an elongate soap sheet. The thickness of the strip is preferably in the range 50 to 200 microns. The strip must be tearable but also foldable to fit within the container. Typically, it is 20 to 60 mm wide. The length can be anywhere from twice to 50 times the length of the container but about 5 times is preferred,
25 say 3 to 7 times, as this gives a low cost assembly that is nevertheless much more sustainable than a single use sachet.

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Filling the container

The soluble film product may be either rolled or folded inside the container. It is possible to refill the container, if desired. However, the aim is for the container to be inexpensive relative to its contents and to have a lower capital cost of contents than would be the case for a 100 plus use roll, as in the prior art embodiments, such as the dispenser shown in figure 2. The simple construction, inexpensive construction material and relatively low loading of the strip sheet make this article suitable for Developing and emerging markets where a low unit price and lack of complexity of manufacturing and recycling is critical for supply chain and consumer acceptance.

It is easy to assemble the container and load it with the water soluble strip, especially soap sheet, either using an automated process, or by hand. There are three options for filling the container with a strip:

1. Position a folded or rolled strip over the unfolded unglued blank of resilient material, apply adhesive to tabs on side and bottom edges, fold and stick to create the filled container.

2. Create a container open at both ends by gluing only the side tab then fill from the eventual sealed end and apply adhesive to that end to complete the container and seal it.

3. Create container fully, fill it from the open end, then fold back the re-entrant flaps.

The strip is preferably in a folded configuration inside the container; however, it could alternatively be rolled up. Special strips may be made by making periodic cuts across part of the width to improve fold flexibility and/or to include periodic

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lines of weakness, such as perforations to make it easier to tear off lengths of the strip. This is particularly desirable if the serrations are not provided on the container. Avoiding provision of the serrations makes the manufacture of the container easier if the cutting is done by hand.

5

Labelling

Where suitable resilient sheet material is used, printing may be applied to it either before cutting or to the unfolded blanks. Alternatively, if it is not desired to print
10 directly onto the sheet material then printed labels may be fixed to the sheet either before or after cutting or even after container formation. The latter would mean that different strip fills could conveniently be accommodated. As an alternative to a label, or in addition to it, film could be applied for additional container integrity and for sealing purposes,

15

Distribution and Sale

The filled containers will pack flat for efficient transportation until the re-entrant flaps are folded back. This can be done either at point of sale or by the eventual
20 consumer before first use.

The container body may be provided with hanging means, to hang it, preferably in association with other like containers for display purposes. The hanging means also being suitable to hang the container open side downwards for use; e.g. by a
25 wash basin, or even in a shower. The hanging means is preferably a loop of string, or similar material, passed through a hole in the container body, for example, by punching a hole in card.

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Use

In use, the container is opened by squeezing the sides. Making the container to strip width ratio as large as 3 to 1, enables the container easily to be sprung open
5 wide enough for the fingers of the user to find the end of the strip to pull it out again.

Detailed Description of the Invention

10

The invention will now be further described, by way of example only and with references to the drawings, of which:

Figure 1 is a depiction of a prior art dispensing container with multiple soap
15 sheets.

Figure 2 is a depiction of a prior art dispenser with an elongate tear off strip of soap sheet.

Figure 3 is a depiction of a soap sheet dispenser and web sheet assembly according to the invention.

20 Figure 4 is a plan view of a blank from which the dispensing container according to the invention is capable of being fabricated.

Figures 5, 6 and 7 show how the device is used to dispense a length of soap sheet.

25 Figure 1 shows a prior art soap sheet storage container 1 fabricated of plastics material and comprising a hinged lid 2 which is released from the closed position by a resilient clasp 3. The container may hold a stack of up to 50 sheets of soap, 4. To remove a single sheet for use, 5, it is typically necessary to remove the stack from the container and then separate off one sheet using both hands. The
30 stack is then replaced into the container. This dispensing process is clumsy and can lead to wastage of sheets. The plastic container is expensive and can only be

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justified if the number of soap sheets is high. This puts such containers beyond the reach of many consumers in D&E markets where hand hygiene is a major issue.

- 5 Figure 2 shows an alternative variant of the prior art wherein a strip of soap sheet is arranged to be dispensed on a tape dispensing mechanism. Like the embodiment shown in figure 1 the cost of the dispensing mechanism makes it necessary to load a large amount of soap onto the roll and this makes the product too expensive for many D&E customers. The use of continuous tape does mean
10 that the user can select how much soap to use which overcomes the disadvantage that a fixed amount of soap is delivered per sheet in the figure 1 type of prior art.

- Figure 3 shows the soap sheet dispenser of the invention. It is typically loaded
15 with 5 to 7 "doses" of soap. The width of the sheet is selected such that the shape of a single dose is less like a tape and more like the sheets of the figure 1 prior art. This means that the width of the web of soap should be in the range 30-80mm. The corresponding width of the container will then be 60, or even 90 to 160 or even 240mm.

- 20 Referring to figure 3 there is a cardboard container 10 comprising resilient arcuate sides 11 and a sealed base 12. Distal from the sealed base 12 is an open end with re-entrant folds 13 and 14. Fold 13 supports a serrated edge 15. Between the folds, there is an opening 16. The assembly is held in the open position by the
25 configuration of curved fold 17 and the interface between the re-entrant folds 18. In use, the assembly is capable of resiliently flexing so that the mouth 16 opens further when the extremities of the container are squeezed towards one another towards the end of the opening. The sealed base 12 provides rigidity to prevent the container collapsing and damaging the content film as it is squeezed in use.

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Figure 4 shows the unfolded card blank from which the carton or container is fabricated by scoring, cutting and folding along the lines. Serrated edge 40 has to be cut. Only the two tabs 41 and 42 require any gluing. The lugs 43 cooperate with flap 44 to lock the two re-entrant folds together once they are bent back into the container. This maintains that end of the container in a resiliently deformable open position.

Figures 5, 6 and 7 show how a portion of soap sheet is dispensed from the container. In figure 5, one hand 50 holds the container 51 by the two folded edges or extremities 52, 53. The other hand 54 is used to grip the exposed end of the soap sheet 55. Figure 6 shows the container ready to dispense. The hand holding the container is squeezing the edges towards each other, which in turn causes the sides to flex away from each other and the mouth of the container to become wider perpendicular to the sheet and narrower in the plane of the sheet. The sheet cannot take up the full width of the sprung container due to the cooperation of the re-entrant folds up to the point of the lugs effectively blocking off the two side portions of the opening. Care must be taken not to squeeze the container so much that the card folds. There is an automatic feature built into the container by virtue of the ratio of length to width as the sealed end remote from the opening provides a rigid base about which the flexing occurs. By keeping the length to width ratio in the range 3:1 to 1:3 the container is effectively a self-protecting system under conditions of normal use. Once enough sheet material has been dispensed, it can have dose marks printed on it, it is torn off by using the serrations as shown in Fig 7. This leaves a short length of sheet exposed ready for the next use.

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Claims

1. An assembly comprising a hand holdable dispensing container formed from resilient sheet material and contained therein a flexible tearable elongate strip of water soluble thin sheet material,

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the dispensing container comprising a two-sided biconvex closed body and a communicating opening at one end of the body, the opening being formed by re-entrant folds of the projections of the sides of the body, the sides each having a convex radius of curvature greater than half the width of the body,

10

the container body having a width of from 2 to 3 times the width of the strip and the container body having a length of from 0.05 to 0.5 times the length of the strip and the strip being arranged such that a portion of it may be pulled by hand through the communicating opening and then torn off for use, any remainder of the strip simultaneously being retained within the container by means of the re-entrant folds.

15

2. An assembly according to claim 1 wherein the container has a serrated portion formed on its outside surface and positioned so that the strip can be torn on the serrations to leave a portion of strip outside the container.

20

3. An assembly according to any preceding claim wherein the strip is a composition that will form a cleansing product when dissolved or dispersed in water.

25

4. An assembly according to claim 1 wherein the body is made from card.

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5. An assembly according to claim 1 or claim 4 wherein the container body is provided with means to hang it, preferably in association with other like assemblies for display purposes.
- 5 6. An assembly according to claim 5 wherein the hanging means is a loop of string or equivalent material passed through a hole adjacent the closed end of the container.
7. An assembly according to any preceding claim in which the container side
10 has a length to width ration of from 3:1 to 1:3.
8. An assembly according to any preceding claim in which the strip comprises a cleansing composition.

1/4

Fig.1.

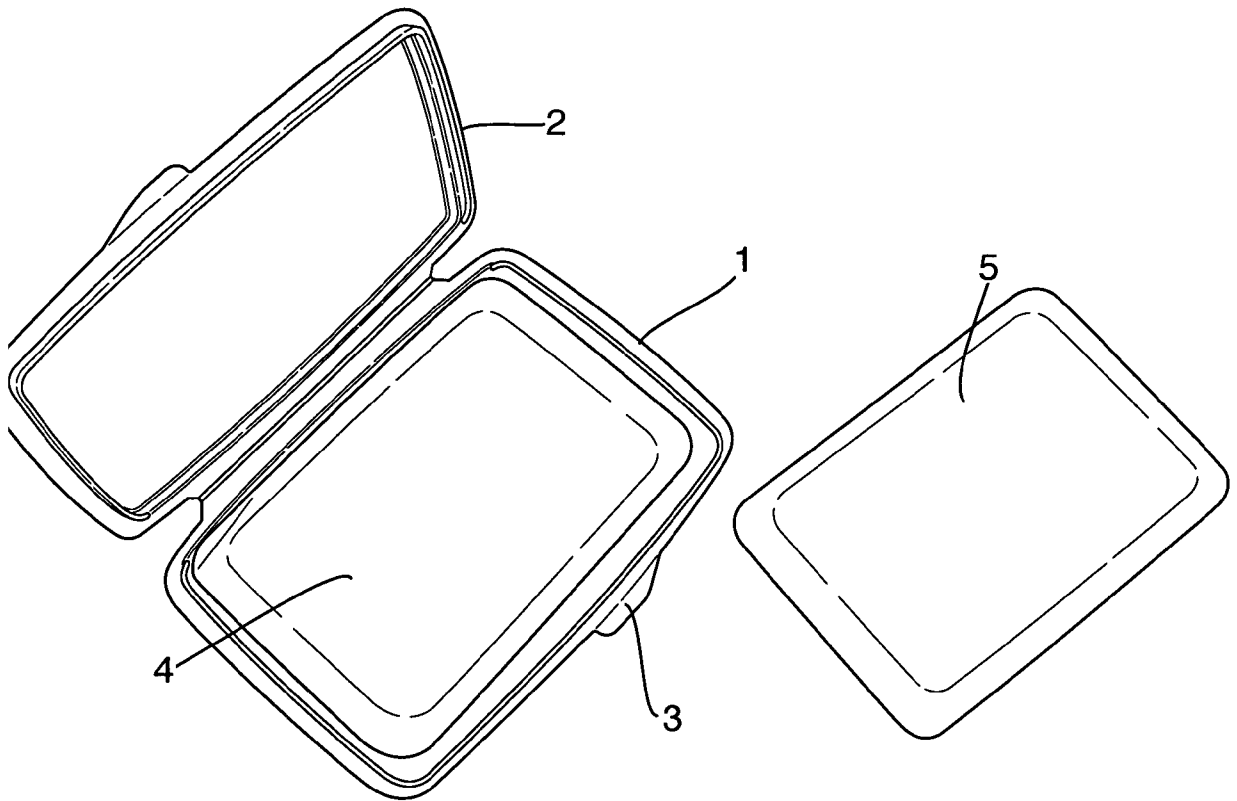


Fig.2.

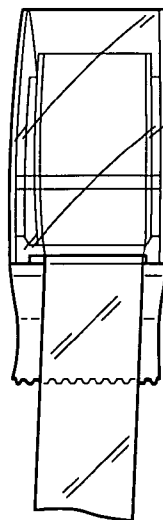


Fig.3.

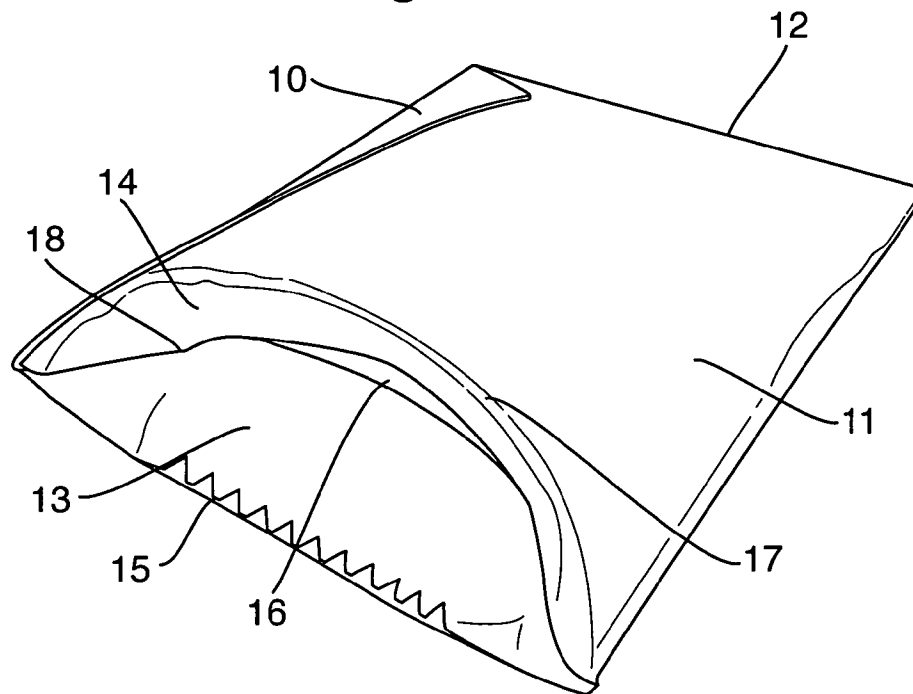


Fig.4.

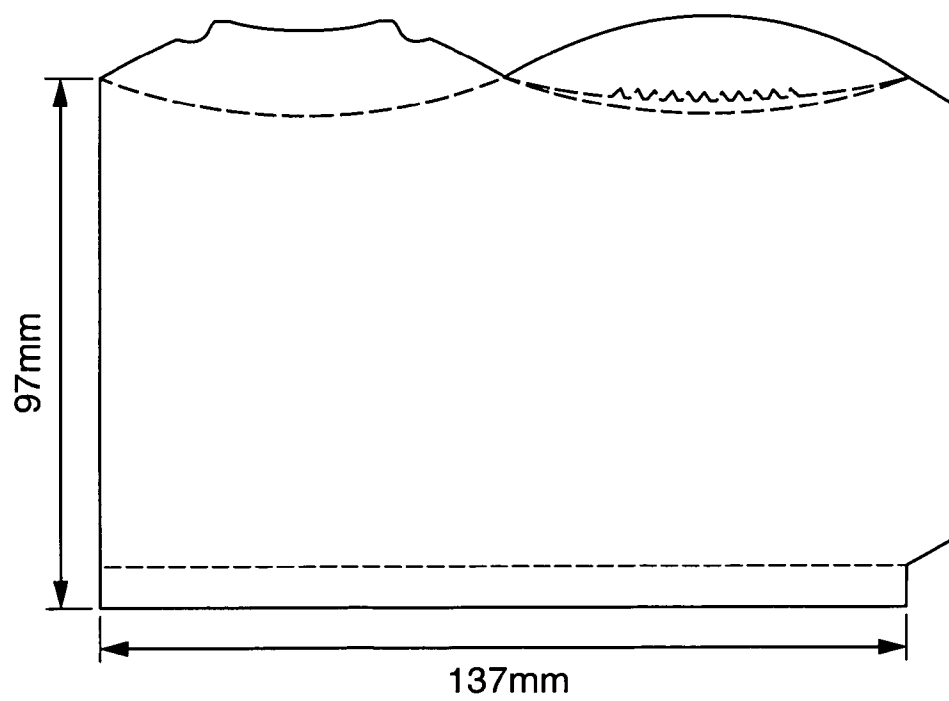


Fig.5.

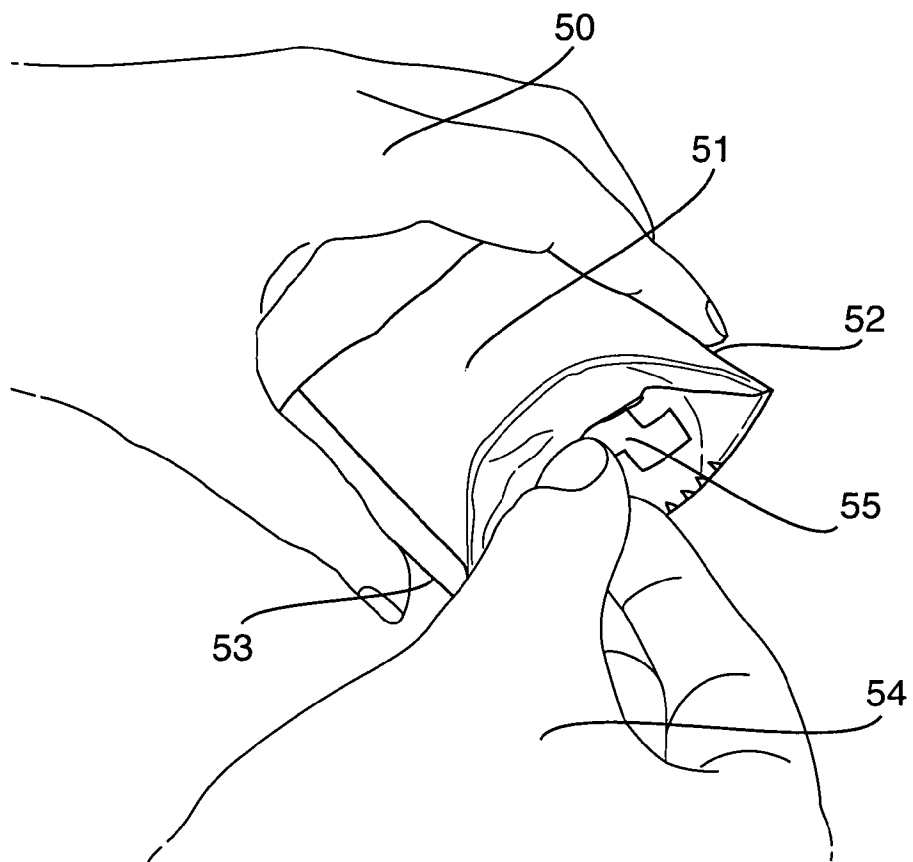


Fig.6.

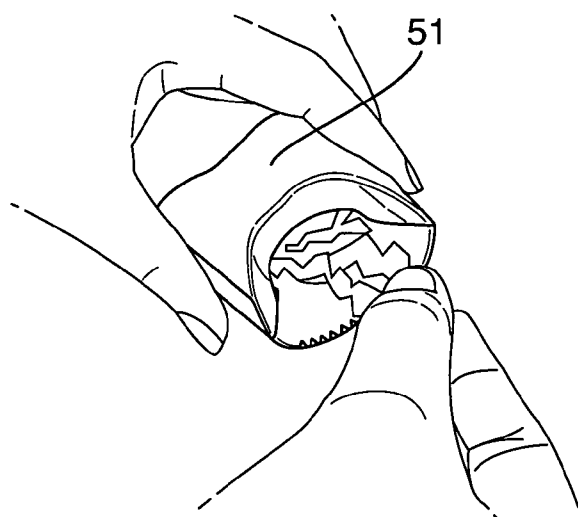
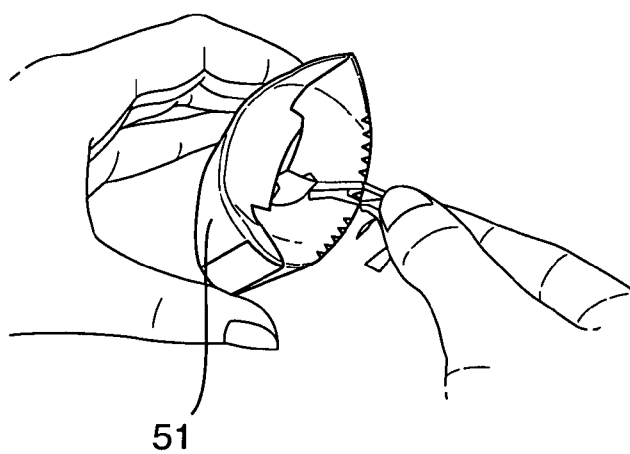


Fig.7.



INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2011/054472

A. CLASSIFICATION OF SUBJECT MATTER
INV. A47K10/24 B65D5/02
ADD.

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)
A47K B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2002/013251 A1 (HAYASHI HIROMITSU [JP] ET AL) 31 January 2002 (2002-01-31) cited in the application paragraph [0015]	1-8
Y	GB 796 271 A (HUGH STEVENSON & SONS LTD; WILLIAM BROADBENT) 11 June 1958 (1958-06-11) the whole document	1-8



Further documents are listed in the continuation of Box C.



See patent family annex.

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Date of mailing of the international search report

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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