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Amended claims in accordance with Rule 86 (2) EPC.

(54) Package forming at least one pocket

(57) The package (10) forming at least one pocket delimited by at least one flexible film (12) having two principal faces (14, 16) which are connected to one another along at least two opposing transverse connecting lines (18, 20) which delimit the said pocket between them, characterised in that a first face (14) has a length measured between the two opposing connecting lines which is less than the length measured between the two opposing connecting lines of the second face (16), and in that the first face has a weakened line (40) between the two opposing connecting lines (18, 20).

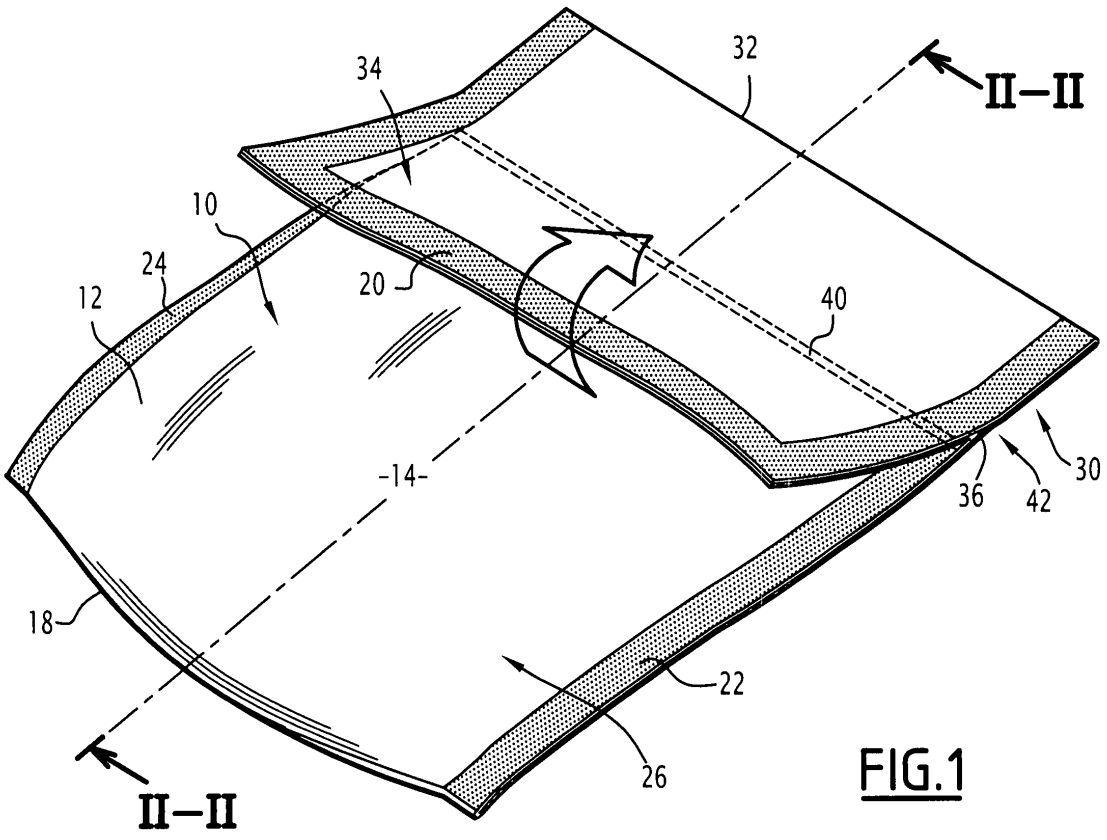

FIG.1

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Description

[0001] The present invention relates to a package forming at least one pocket delimited by at least one flexible film having two principal faces which are connected to one another along at least two opposing transverse connecting lines which delimit the said pocket between them.

[0002] Nowadays numerous products, particularly food products, are wrapped in packaging delimited by one or more welded flexible polymer films.

[0003] In certain forms of packaging, each principal face has a weakened line which allows the upper end of the package to be removed entirely by tearing it simultaneously along the two weakened lines.

[0004] For this purpose the two weakened lines are disposed at the same level along the length of the package and meet along the welded longitudinal edges of the package.

[0005] In practice it has been found that it is a very delicate operation during manufacture to align the two weakened lines correctly, with the result that opening of the package can be very awkward as tearing of one of the faces takes place at random.

[0006] Furthermore, in order to facilitate opening of the package it is known to provide a notch on a lateral edge of the package in an extension of the two weakened lines. The positioning of this notch relative to these two weakened lines is likewise a very delicate operation, with the result that it is often found that the two weakened lines and the notch are not correctly positioned.

[0007] For opening of other packages, it is known during manufacture of the film forming the package to provide one single weakened line on one single principal face in order to facilitate the initiation of the tearing of the film in a predetermined zone. In order to initiate this tearing, the user is required to grip the film to be torn between two fingers after positioning each of his hands on either side of the region where the tearing is to be initiated. By moving the hands apart from one another, he creates a tension on the film which causes the film to rupture along the weakened line or lines.

[0008] Such a method of opening is relatively inconvenient for the user because it is necessary to grip the film on either side of the opening region in order to have a hold on the film and to exert a force on it.

[0009] The object of the invention is to propose a package in which opening is made easier.

[0010] To this end the invention relates to a package as defined in Claim 1.

[0011] Particular embodiments of the invention are the subjects of the dependent claims.

[0012] The invention will be better understood upon reading of the following description which is given solely by way of example and with reference to the drawings, in which:

- Figure 1 shows a perspective view of a closed package according to the invention;
- Figure 2 shows a sectional view of the package of Figure 1 along the central longitudinal section line II-II, the package being closed;
- Figures 3 and 4 show views identical to that of Figure 2 during successive phases of opening; and
- Figure 5 shows a perspective view of the package of Figure 1 during the final phase of opening.

[0013] The package illustrated in Figures 1 and 2 in its closed state is intended for example to contain food products P. It is formed from one single flexible film 12 made from polymers. The film 12 is folded back on itself at a lower end of the package in order to form a front face 14 and a rear face 16 which are connected to one another by a transverse connecting line 18 formed by a fold of the film on itself. According to particular embodiment, the fold 18 is welded on itself in order to be flattened.

[0014] The faces 14 and 16 are welded to one another at their end opposite the connecting line 18 by another transverse connecting line 20. The connecting lines 18 and 20 extend substantially parallel to one another.

[0015] The length of the front face 14 measured between the transverse connecting lines 18, 20 is less than the length of the rear face 16 measured between these same lines.

[0016] Furthermore, the front face 14 and the rear face 16 are connected to one another by longitudinal welds 22, 24 extending parallel to one another and connecting the two transverse connecting lines 18 and 20 in order to form an initially closed package.

[0017] Above the lower connecting line 18, the film 12 delimits between the two longitudinal welds 22, 24 a package body 26 in which the products P to be packaged are contained.

[0018] The rear face 16 of greater length has a fold 30 which is more easily visible in Figure 3 and of which the length corresponds to double the difference in length between the front and rear faces. The fold 30 is formed from a folding line 32 formed at the top of the fold. Beyond the fold 30, the two front and rear faces 14 and 16 form a flap 34 where they extend strictly parallel to one another. The flap 34 is capable of being received on the outer surface of the front face 14. For the formation of the flap, a folding line 36 is formed transversely on the front face 14.

[0019] As a variant, the faces 14 and 16 are connected by a weld formed at their ends at the location of the connecting line 18. If the package is formed from one single sheet, the connecting line 20 is then formed solely from one fold which if necessary can be flattened by a weld.

[0020] As a variant likewise, the connection between the two ends of the film forming the faces 14, 16 is effected along the connecting line 32, and folds, which may be finished off by welds, are only formed at the level of the lines 18 and 20.

[0021] According to yet another embodiment, the two ends of the film are welded to one another in the current

part of the face 14 or in the current part of the face 16.

[0022] According to a last embodiment, the package is formed from a plurality of films welded to one another. For example, one film is used to form the face 16 and the upper surface of the flap 34 whilst another film constitutes the face 14 and the outer surface of the flap 34.

[0023] The front face 14 has an area 40 of more or less substantial width designated by a transverse weakened line which extends over all or part of the width of the face from a longitudinal weld 22 to the opposing longitudinal weld 24. Ideally, this weakened line extends to the immediate vicinity of the folding line 36 in a region of the front face 14 covered by the flap 34.

[0024] Advantageously the weakened line 40 is provided facing the fold 30 and therefore along the folding line 36 or in the vicinity thereof. Figure 2 shows an advantageous position of the line 40 whilst Figure 3 shows the ideal position. In effect, if the folding line 40 is too far from the folding line 36, opening of the package can be achieved in the central part of the package but is difficult or impossible in the vicinity of the longitudinal welds 22 and 24.

[0025] This weakened line 40 is formed by treatment of the film 12. Advantageously the treatment is applied before the shaping of the package whilst the film is in the course of manufacture, during the operation of winding onto a reel. However, this weakening could equally be made during, before or after the different steps intended to obtain the finished product with the product P packaged.

[0026] According to a first embodiment, the weakened line 40 is produced by application of high-energy radiation, such as a laser, applying a high-energy beam along the course of the line which is to be weakened. This high-energy treatment is carried out on one or several layers of the film when the film comprises more than one layer.

[0027] According to another embodiment, the weakened line 40 is formed by a mechanical weakening of the film which extends along the course of the weakened line. This mechanical treatment is carried out along one or several of the layers of the film when the film comprises more than one layer.

[0028] According to a first example of mechanical treatment, microporous weakening is carried out in order to form the weakened line. Such microporous treatment is carried out for example by passing the film, or a layer of the film when the film comprises several layers, between two rollers, one of the rollers having a surface which has been rendered abrasive in the zone which is to be applied to the line to be weakened. Such treatment is described for example in the document FR-2 717 449.

[0029] According to a second example, the mechanical weakening is obtained by cutting or stamping partially or completely the thickness of one or several layers of the film when the film comprises more than one layer. These cuts or stampings are formed by applying a die with cutting blades along the weakened line. During the treatment, the film is pressed between the die and a support, as is known *per se.* Thus the part which is cut or partially cut is formed of perforations.

[0030] According to yet another example, the weakened line 40 is formed by a microperforated region which does not pass completely through the film but reduces the resistance to rupture of the film in the treated zone. These microperforations can penetrate only through one of the layers of the film when the film comprises several layers.

[0031] Furthermore, a combination of the weakening treatments described above can be carried out on one and the same film, either on one and the same layer of the film or on different layers of the film if the film comprises more than one layer.

[0032] In a particularly advantageous embodiment, the film comprises a plurality of laminated or coextruded polymer layers. In particular it has a support layer associated with a sealing layer, a connecting layer being disposed between these two layers in order to connect them over their entire surface.

[0033] The sealing layer forms the inner layer of the package.

[0034] In the envisaged embodiment, the support layer has a weakened area made by high-energy radiation and in particular a laser beam. It is equally possible to use mechanical cutting (rotary cutter / blades / etc...) of the support layer before it is joined to the sealing layer.

[0035] According to a first embodiment, the welding layer does not receive any weakening treatment.

[0036] According to another advantageous embodiment, a weakening treatment is provided along the course of the weakened line 40 in the welding layer.

[0037] This treatment preferably consists of rendering the welding layer fragile along the course of the weakened line 40, particularly by passing the welding layer between two rollers, one of which is abrasive, in order to roughen one of the surfaces of the welding layer. This surface is advantageously disposed on the side of the connecting layer.

[0038] The force of rupture on tearing of the film 12 along the weakened line 40 is preferably between 3 N/15 mm and 50 N/15 mm, that is to say that it is appropriate to apply a force of 3 N to 50 N transversely with respect to a weakened line 40 having a length of 15 mm in order to obtain rupture of the membrane along the weakened line. It is preferably between 4 N/15 mm and 40 N/15 mm.

[0039] The composition of the film and the treatments carried out can adjust the rupture as a function of the tearing force chosen.

[0040] The longitudinal welds 22 and 24 extend along the package body 26, the fold 30 and the flap 34 between the inner surfaces of the film, in such a way that the welds 22 and 24 comprise three welded sections converging at one and the same point denoted 42 in Figure 1 and disposed in the region of articulation between the package body 26, the fold 30 and the flap 34.

[0041] All the welds 20, 22, 24 carried out are of the skin/skin type, that is to say that only areas of one and

the same surface of the film 12 are welded to one another. Thus the welds are only produced between areas of the inner surface of the package, and no weld is produced from an area of the outer surface of the package.

[0042] To this end the film 12 is preferably formed from a material comprising a plurality of layers, the layer forming the inner surface of the package constituting a sealing layer capable of being welded to itself, whilst the layer forming the outer surface of the package is a non-sealing layer, that is to say a layer of which the welding temperature is higher than the welding temperature of the layer forming the inner surface.

[0043] For example, the film 14 is made from oriented polyamide or polyester for the outer layer and polyethylene for the inner layer.

[0044] For opening of the package, and as illustrated in Figure 1, the flap 34 is tilted and brought substantially into an extension of the body of the pocket at the location initially occupied by the fold 30. In this position then the package is in the configuration illustrated in Figure 3. By gripping the package, on the one hand, from the lower end of the body in the vicinity of the connection line 18 using one hand and, on the other hand, gripping it by the end of the flap 34 with the other hand, the operator exerts traction in opposite directions. Taking into account the difference in length between the front face 14 and the rear face 16, the force exerted by the operator is exerted solely on the front face 14. By virtue of the presence of the weakened line 40, the film breaks at a point on this line 40 and the break spreads progressively along the length of this line until the two longitudinal welds 22, 24 are reached, as illustrated in Figures 4 and 5 or simultaneously along the entire weakened line.

[0045] Thus the user can gain access to the interior of the pocket through the aperture 50 visible in Figures 4 and 5 which is formed by the front face 14 and widens due to the fold 30 which unfolds.

[0046] Moreover, it may be noted that after initial opening, when the package is left free the flap 34 returns by itself to the position where it lies flat on the front face 14 due to the spring effect conferred by the lateral welds 22, 24. Thus the flap 34 comes to cover the aperture 50, the weakened line 40 being initially below the flap 34.

[0047] It may be imagined that with such a package opening can be effected easily because it is sufficient for the user to grip the ends of the body of the package and of the flap and then to exert traction by moving the hands apart from one another without the need to grip the film in order to hold it.

Claims

1. Package (10) forming at least one pocket delimited by at least one flexible film (12) having two principal faces (14, 16) which are connected to one another along at least two opposing transverse connecting lines (18, 20) which delimit the said pocket between them, **characterised in that** a first face (14) has a length measured between the two opposing connecting lines which is less than the length measured between the two opposing connecting lines of the second face (16), and **in that** the first face has a weakened line (40) between the two opposing connecting lines (18, 20).

2. Package as claimed in Claim 1, **characterised in that** the first and second faces (14, 16) are connected to one another laterally by longitudinal connecting lines (22, 24), and **in that** the second face (16) has an intermediate fold (30) extending between the transverse connecting lines (14, 16) from one longitudinal connecting line (22, 24) to the other.

3. Package as claimed in Claim 2, **characterised in that** the first and second faces (14, 16) are initially partially folded back on the first face (14) in order to form a flap (34) extending from a transverse connecting line (20) to the intermediate fold (30).

4. Package as claimed in Claim 3, **characterised in that** the weakened line (40) is provided on a region of the first face (14) covered by the said flap (34).

5. Package as claimed in any one of Claims 2 to 4, **characterised in that** the weakened line (40) provided on the first face (14) and the intermediate fold (30) formed on the second face (16) are disposed substantially facing one another.

6. Package as claimed in any one of the preceding claims, **characterised in that** it is formed from one single film (12) which is folded back and welded on itself solely by welds (20, 22, 24) of the skin/skin type.

7. Package as claimed in any one of the preceding claims, **characterised in that** the flexible film (12) has, along the weakened line (40), at least one weakening mechanical treatment on at least one layer of the film.

8. Package as claimed in Claim 7, **characterised in that** the said weakening mechanical treatment comprises microporous weakening.

9. Package as claimed in either Claim 7 or Claim 8, **characterised in that** the weakening mechanical treatment comprises cutting or partial stamping of at least one layer of the film with the aid of a die with blades along the weakening line (40).

10. Package as claimed in any one of the preceding claims, **characterised in that** the film (12) has, along the weakened line (40), a weakening treatment by high-energy radiation along at least one layer of the film (12).

11. Package as claimed in any one of the preceding claims, **characterised in that** the film (12) comprises at least two layers, the first layer (52) having undergone a weakening treatment by high-energy radiation along the weakened line and the second layer having undergone a weakening mechanical treatment along the weakened line (40).

Amended claims in accordance with Rule 86(2) EPC.

1. Package (10) forming at least one pocket delimited by at least one flexible film (12) having two principal faces (14, 16) which are connected to one another along at least two opposing transverse connecting lines (18, 20) which delimit the said pocket between them, **characterised in that** a first face (14) has a length measured between the two opposing connecting lines which is less than the length measured between the two opposing connecting lines of the second face (16), and **in that** the first face has a weakened line (40) between the two opposing connecting lines (18, 20).

2. Package as claimed in Claim 1, **characterised in that** the first and second faces (14, 16) are connected to one another laterally by longitudinal connecting lines (22, 24), and **in that** the second face (16) has an intermediate fold (30) extending between the transverse connecting lines (14, 16) from one longitudinal connecting line (22, 24) to the other.

3. Package as claimed in Claim 2, **characterised in that** the first and second faces (14, 16) are initially partially folded back on the first face (14) in order to form a flap (34) extending from a transverse connecting line (20) to the intermediate fold (30).

4. Package as claimed in claim 3, **characterised in that** both the fold (30) and the flap (34) are formed by the first and second faces (14, 16) that are applied one on the other.

5. Package as claimed in Claim 3 or 4, **characterised in that** the weakened line (40) is provided on a region of the first face (14) covered by the said flap (34).

6. Package as claimed in any one of Claims 2 to 5, **characterised in that** the weakened line (40) provided on the first face (14) and the intermediate fold (30) formed on the second face (16) are disposed substantially facing one another.

7. Package as claimed in any one of the preceding claims, **characterised in that** it is formed from one single film (12) which is folded back and welded on itself solely by welds (20, 22, 24) of the skin/skin type.

8. Package as claimed in any one of the preceding claims, **characterised in that** the flexible film (12) has, along the weakened line (40), at least one weakening mechanical treatment on at least one layer of the film.

9. Package as claimed in Claim 8, **characterised in that** the said weakening mechanical treatment comprises microporous weakening.

10. Package as claimed in either Claim 6 or Claim 7, **characterised in that** the weakening mechanical treatment comprises cutting or partial stamping of at least one layer of the film with the aid of a die with blades along the weakening line (40).

11. Package as claimed in any one of the preceding claims, **characterised in that** the film (12) has, along the weakened line (40), a weakening treatment by high-energy radiation along at least one layer of the film (12).

12. Package as claimed in any one of the preceding claims, **characterised in that** the film (12) comprises at least two layers, the first layer (52) having undergone a weakening treatment by high-energy radiation along the weakened line and the second layer having undergone a weakening mechanical treatment along the weakened line (40).

13. Package as claimed in anyone of the preceding claims, **characterised in that** the first and second faces (14, 16) are connected to one another laterally by longitudinal connecting lines (22, 24) that extend on the entire length of said first and second faces (14, 16).

14. Package as claimed in claim 13, **characterised in that** said longitudinal connecting lines (22, 24) are made by welding.

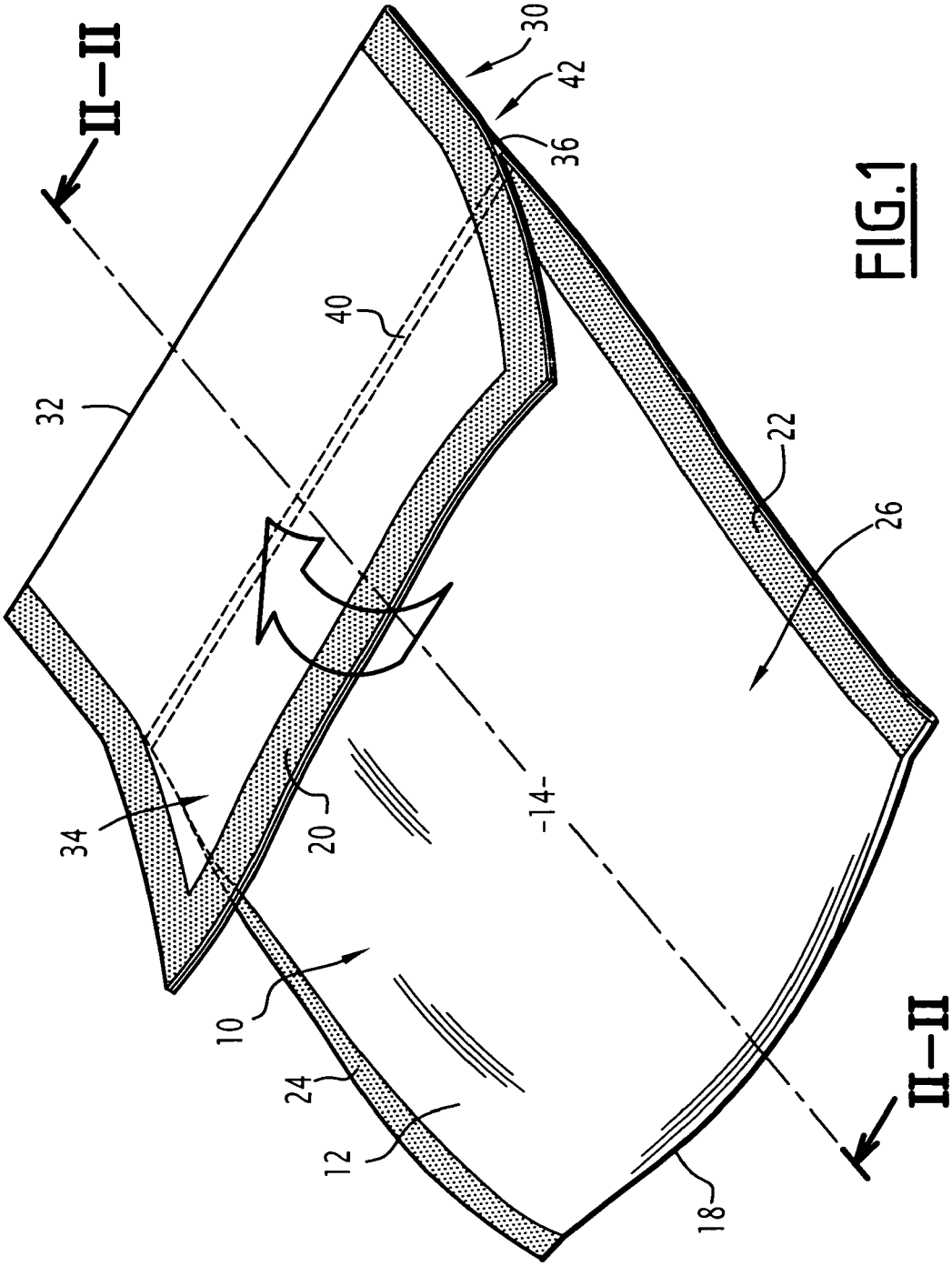

FIG.1

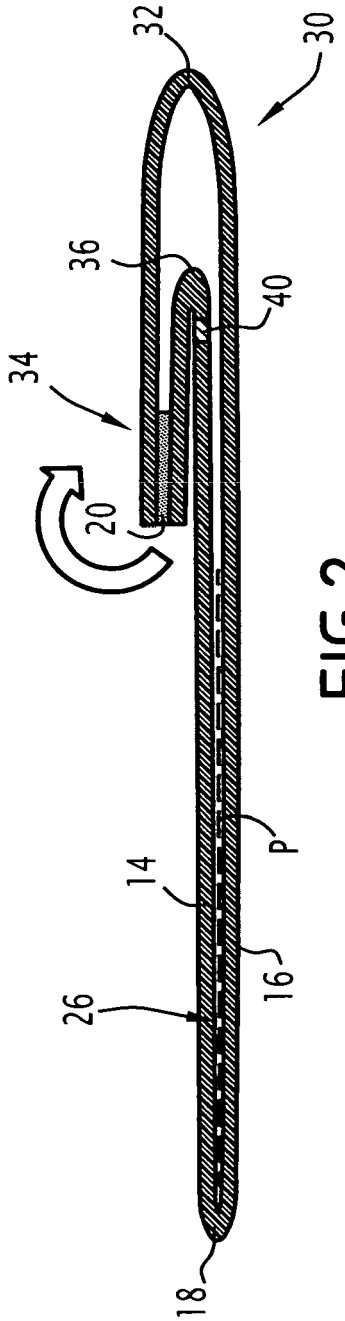

FIG.2

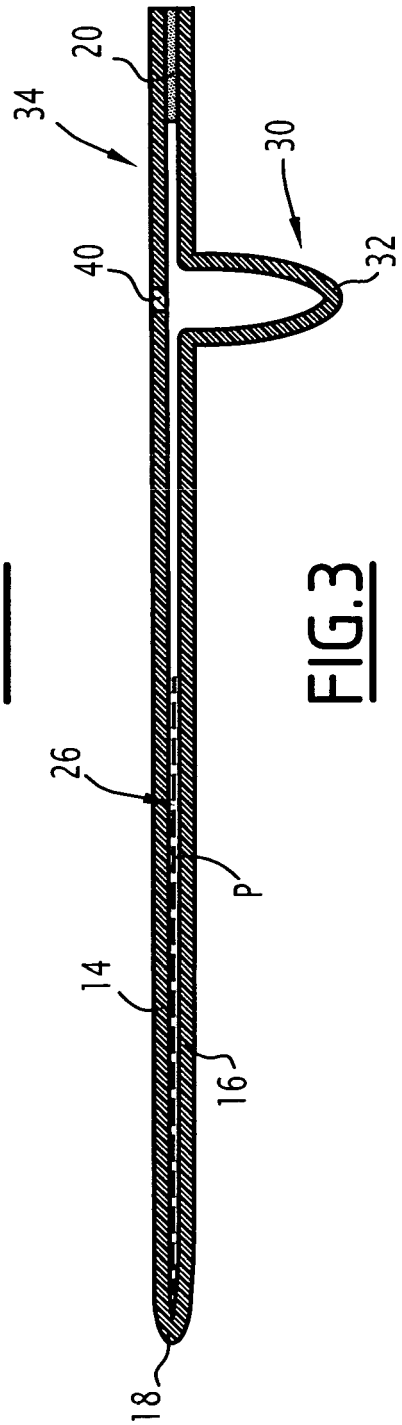

FIG.3

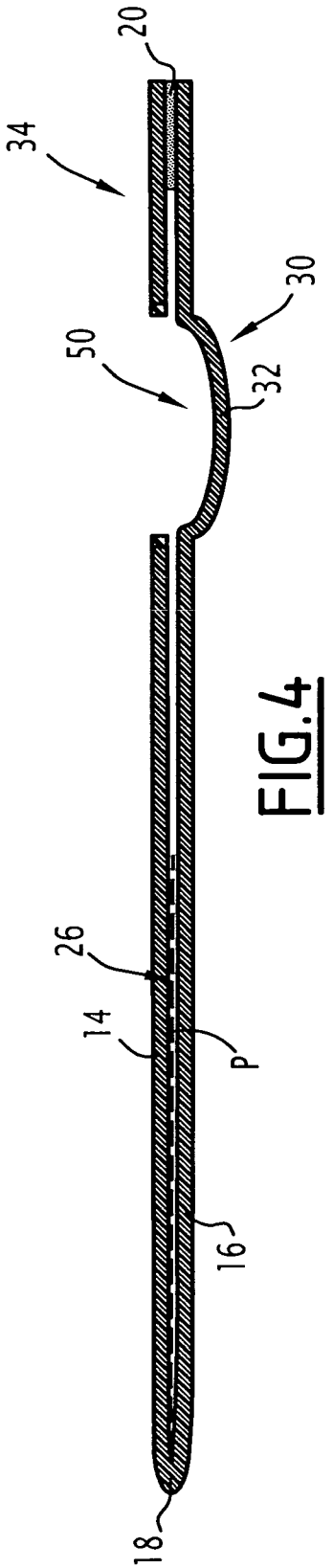

FIG.4

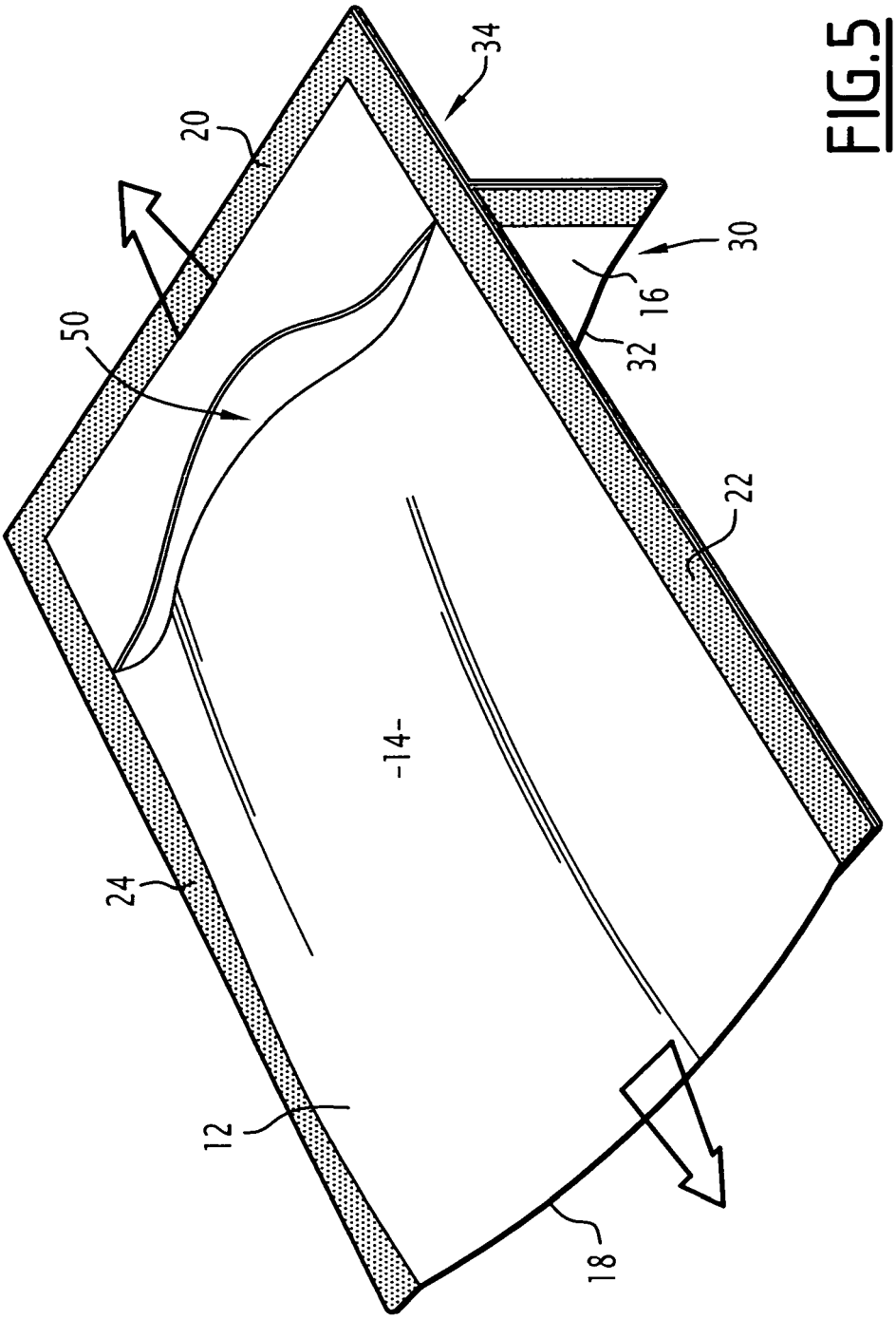

FIG.5

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EUROPEAN SEARCH REPORT

Application Number
EP 05 29 0696

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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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
Munich	5 December 2005	Balz, O

CATEGORY OF CITED DOCUMENTS

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REFERENCES CITED IN THE DESCRIPTION

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