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(54) A bag of a flexible packaging material

(57) A bag is formed of a flexible, heat-sealable packaging material provided with an inner sealing medium (2) layer seen relative to the interior (24) of the bag. The bag includes a pouch portion (3) having a front wall (4) and a back wall (5) being interconnected to form a bottom (21) and sealed together along opposed side edges (10, 11) by means of side seams (12, 13). The pouch portion (3) further has a flap (6) connected to the back wall (5) thereof and extending down onto the outer face (7) of the front wall (4) of the pouch portion (3) in an overlapping manner. Seen relative to the interior of the bag, the packaging material has an outer paper layer (1) and the bag is closed by means of a first peelable seal.

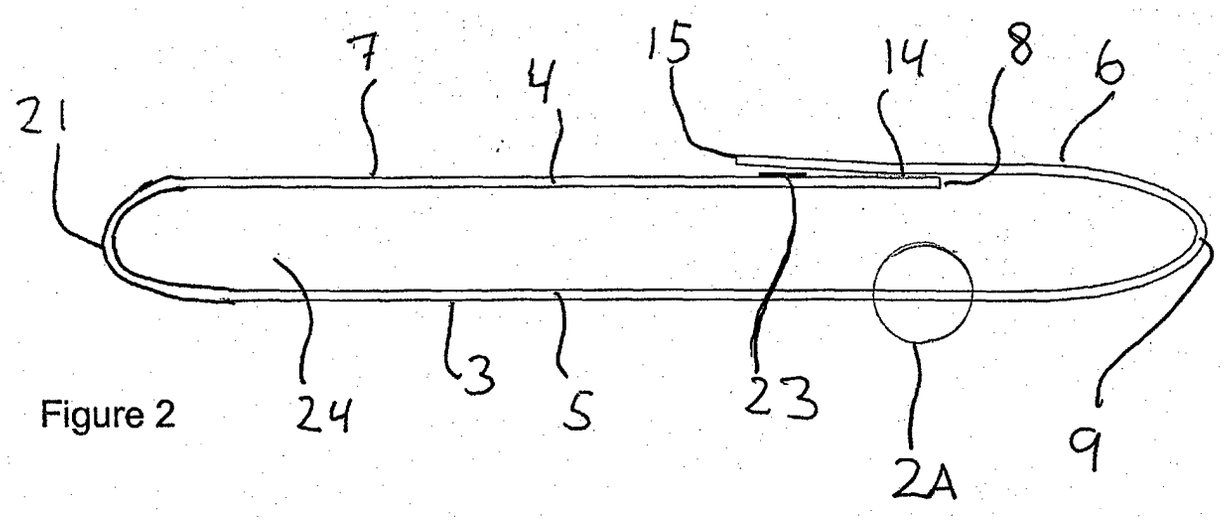

Figure 2

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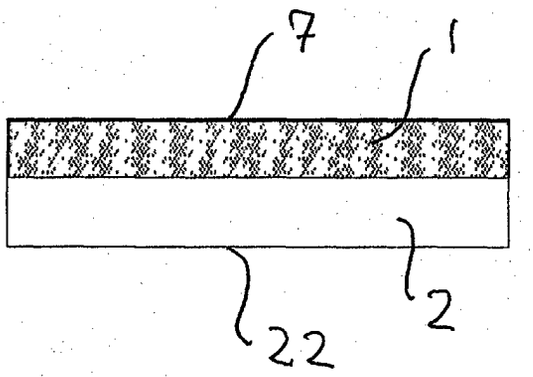

Figure 2A

Description

[0001] The invention relates to a bag of a flexible, heat-sealable packaging material provided with an inner sealing medium layer seen relative to the bag, said bag including:

- a pouch portion having a front wall and back wall being interconnected to form a bottom and sealed together along opposed side edges by means of side seams, and

- a flap connected to the back wall of the pouch portion and extending down onto the outer face of the pouch portion's front wall in an overlapping manner.

[0002] Bags of the above type are commonly known and used for instance for the packing of tobacco. The known bags are, however, not fully satisfactory for every application.

[0003] A demand thus exists for an inexpensive, easily manufactured, readily openable and preferably also reclosable bag, the barrier properties thereof adaptable to the specific requirements.

[0004] The bag according to the invention is characterised in that seen relative to the bag the packaging material has an outer paper layer and is closed by means of a first peelable seal.

[0005] Bags made of paper-based laminates are advantageous compared to known bags made of film-based materials in that paper has a high stiffness, is very cost-effective and possesses excellent dead-fold properties. Additionally paper may provide advantageous visual, touch and textural effects due to the fibres in its surface. Yet another advantage of paper is that it offers protection against contamination (even against bacteria and viruses) while allowing for a controlled gas exchange with the environment. The exchange of gases may be controlled by means of the thickness, composition, density and coating of the paper used and by means of the position and design of the peelable seal. For example a bag made of parchment paper offers relatively high barrier properties. The use of a paper-based laminate thus ensures that the barrier properties of the bag may be adjusted to requirements of the packed product. No or only a low barrier is required in packages for sweets, a controlled low barrier against water vapour and gases is required for soft cheeses and fruits which have to breath, and a medium to high barrier against water vapour and gases is required for hard cheeses and sausages. When high barrier properties are required it may be advantageous to provide one or more barrier layers between the paper layer and the sealing medium layer. Furthermore, depending on the desired properties, the paper layer may be any type of paper or recycled paper (eg coated or uncoated, grease-proof, metallised, etc.), parchment paper or "artificial paper", such as woven or non-woven fleece (eg Tyvec©). Finally the peelable sealing of the bag allows for a consumer-friendly opening thereof.

[0006] According to the invention the first peelable seal may be provided in the overlap area between the inner face of the flap and the outer face of the front wall, the peelable seal including a first transverse sealing seam, which is spaced apart from the free edge of the flap, and side seams at the side edges of the bag. By allowing the paper layer to communicate with the interior of the bag at the upper edge of the front wall, the interior of the bag is allowed to communicate with the environment longitudinally through the paper layer. The barrier properties of the bag are thus at least partially determined by the gas exchange longitudinally through the paper.

[0007] In the above instance the peelable seal may be provided directly between the inner sealing medium layer of the flap and the paper layer of the front wall, whereby a particularly simple embodiment of the invention is obtained.

[0008] Optionally the paper layer of the front wall may be provided with a coating at least in the portion at the peelable seal, said coating sealing peelably to the sealing medium layer. By providing the peelable seal between the sealing medium layer and the peel coating the peelable seal strength may be effectively controlled.

[0009] According to another embodiment of the invention the paper layer is omitted in a transverse portion at the free edge of the front wall, and the peelable seal is provided between an outer face of a packaging material layer subjacent the paper layer and the inner sealing medium layer. The layer subjacent the paper layer may be a peel coating or an actual film layer peelably sealing to the sealing medium layer. Accordingly, the layer may be a first outer layer of a film, eg a coextrudate, whose other outer layer is formed of the inner sealing medium layer, said first outer layer optionally being a peel PE or another sealing medium layer sealing peelably to the inner sealing medium layer.

[0010] By omitting the paper layer in the upper front wall portion, in which the peelable seal is provided, the paper layer is prevented from communicating with the interior of the packaging at the upper free edge of the front wall. As a result an exchange of gases longitudinally through the paper layer is prevented between the interior of the bag and the environment.

[0011] Furthermore according to the invention the front wall may be double-walled in a portion at its upper free edge, an upper flap of the packaging material being folded down onto itself and sealed paper face to paper face along a second transverse seal and the first peelable seal being provided in the double-walled portion of the front wall. The folded-down flap prevents the paper layer from communicating with the interior of the bag, whereby the barrier properties of the bag are substantially determined by the barrier properties of the packaging material.

[0012] In the above embodiment of the invention the

first and the second transverse sealing seams may advantageously be aligned on either side of the upper, folded-down flap of the front wall, whereby the said sealing seams may be provided during the same sealing operation.

[0013] Moreover according to the invention the first peelable seal may be provided between the inner faces of the front and back walls of the pouch portion, said seal being formed of a transverse sealing seam spaced apart from the free edge of the front wall. Preferably the peelable seal is provided by applying a peel coating to the sealing medium layer of either the front wall or the back wall in the portion at the transverse sealing seam. Since the packaging material is sealed inner face to inner face in the pouch portion, the paper layer is prevented from communicating with the interior of the bag, the barrier properties of the bag thus being determined by the barrier properties of the packaging material.

[0014] According to an advantageous variant of the above embodiment the bag further includes a second transverse peelable seal including a second transverse seam between the inner face of the flap and the outer face of the front wall, said second transverse seam being spaced apart from the free edge of the flap, whereby the flap is advantageously secured to the front wall of the bag, until the bag is opened by the consumer.

[0015] The first and the second transverse peelable sealing seams are advantageously aligned on either side of the front wall, whereby the said sealing seams may be provided during the same sealing operation.

[0016] There is a constantly increasing consumer demand for packages having a convenient reclose feature. With a view to meeting this demand, according to a particularly preferred embodiment of the invention a reclose feature is provided in the overlap area between the flap and the front wall, said reclose feature including a transverse pressure-sensitive adhesive strip allowing for reclosure of the bag after the initial opening of the first peelable seal.

[0017] According to the invention the pressure-sensitive strip may be formed of a hot melt strip or a double-sided adhesive tape applied to the outer face of the wall at a distance from the free edge of the flap.

[0018] The pressure-sensitive adhesive tape or strip may contribute to retaining the flap of the bag in engagement with the front wall. According to yet another embodiment of the invention the adhesive strip is, however, covered by a peelable cover strip such that the reclose feature is only provided after the removal of the cover strip, whereby the decision whether to use the reclose feature is left to the consumer.

[0019] The bag according to the invention is preferably made of a web material and manufactured on a vertical or horizontal form, fill, and seal machine. As a result the side seams extend transversely of the longitudinal direction of the web material, said direction also being denoted as the machine direction (MR), the transverse seals of the bag extending in the longitudinal direction or machine direction (MR) of the web material.

[0020] The invention is explained in greater detail below with reference to the accompanying drawings, in which

Figure 1 is a diagrammatic front view of a bag according to the invention, ie seen in the direction towards the front wall of the bag and the flap,

Figure 2 is a diagrammatic view of a first embodiment of a bag according to the invention along the line II-II in Figure 1,

Figure 2A is an enlarged view of the section 2A in Figure 2,

Figure 3 corresponds to Figure 2 and shows a variant of the bag shown in Figure 2,

Figure 3A is an enlarged view of the detail 3A in Figure 3,

Figure 4 shows another embodiment of a bag according to the invention along the line II-II in Figure 1,

Figure 4A is an enlarged cross-sectional view through the packaging material used for the embodiment shown in Figure 4,

Figure 5 shows a third embodiment of a bag according to the invention along the line II-II in Figure 1.

[0021] The embodiment shown in Figures 1 and 2 of the bag according to the invention is formed of a single sheet of packaging material. The bag includes a pouch portion 3 formed of a front wall 4 and a back wall 5 folded down onto the front wall 4 about a bottom fold 21. An extension of the back wall 5 forms a flap 6 being folded down onto the outer face 7 of the front wall 4 of the pouch portion 3 so as to overlap the front wall 4. The upper free edge 8 of the front wall 4 is slightly spaced apart from the folding line 9 between the back wall 5 and the flap 6.

[0022] The front wall 4 is sealed to the back wall 5 inner face to inner face by means of side seams 12, 13 at each side edge 10, 11 of the bag. The flap 6 is furthermore sealed to the portion of the back wall between the upper free edge 8 and the folding line 9 along the side seams 12, 13. As shown in Figure 2A, the said seals are thus provided between the inner faces of the packaging material formed of a sealing medium layer 2. A peelable seal for closure of the bag is provided in the overlap area between the inner face of the flap 6 and the outer face 7 of the front wall 4. As illustrated in Figure 2A the outer face 7 of the packaging material is formed of a paper layer 1. Consequently the peelable seal is provided between the sealing medium layer 2 and the paper layer 1 and includes a first transverse sealing

seam 14 being spaced apart from the free edge 15 of the flap 6. The peelable seal further includes peelable sealing seams 16, 17 at the side edges 10, 11 of the bag, said sealing seams being aligned with the side seams 12, 13. The peelable sealing seams 16, 17 between the inner face of the flap and the outer face of the front wall are depicted by means of cross hatching in Figure 1, while the side seams between the inner faces of the packaging material are depicted by means of single hatching.

[0023] A transverse pressure-sensitive adhesive strip 23 is provided on the outer face of the front wall 4 between the transverse peelable sealing seam 14 and the free edge 15 of the flap 6. The pressure-sensitive adhesive strip 23 is preferably covered by a cover strip (not shown) such that it only exposed after removal of the cover strip. The pressure-sensitive adhesive strip 23 allows for reclosure of the bag after the peelable seal between the flap and the front wall has been peeled.

[0024] The peelable seal in the overlap area between the front wall and the flap may be provided by a direct sealing of the inner sealing medium layer 2 to the outer paper layer 1. The paper may, however, also be provided with a peel coating at the peelable seal for increased control of the strength of the peelable seal.

[0025] In the embodiment according to Figure 2, the paper layer communicates with the interior 24 of the bag at the upper free edge 8 of the front wall and in the portion between the transverse sealing seam 14 and the upper free edge 8. As a result the barrier properties of the bag substantially depend on the barrier properties of the paper used.

[0026] Figure 3 illustrates a variant of the embodiment shown in Figure 2 and where the paper layer 1 does not communicate with the interior 24 of the bag. This feature is obtained by omitting the paper layer 1 in a transverse portion at the free edge 8 of the front wall. The peelable seal, ie the transverse sealing seam 14 and the peelable sealing seams (not shown), is thus provided between the exposed outer face of the sealing medium layer 2 and the inner face thereof.

[0027] The peelable seal may be provided by applying a peel coating to one of the sides of the sealing medium layer. The term peel coating denotes a coating which weakens the sealing strength. Optionally the sealing medium layer may be a first outer layer of a film having a second outer layer sealing peelably to the first outer layer.

[0028] It should further be noted that a bag with improved barrier properties may be obtained by providing a barrier layer between the paper layer 1 and the sealing medium layer 2.

[0029] Referring now to Figure 4 which illustrates an embodiment of the invention, in which the front wall 4a is double-walled in a portion at its upper free edge 8a, an upper flap portion 19 of the packaging material being folded down onto itself and sealed outer face to outer face along a second transverse sealing seam 20. The first peelable seal is provided in the overlap area between the folded-down flap 6a and the flap portion 19. As in the embodiments described above the first peelable seal includes peelable side seams 16, 17 (confer Figure 1) and a transverse peelable sealing seam 14a. The transverse peelable sealing seam 14a is aligned with the second transverse sealing seam 20 such that the two sealing seams may be produced during the same sealing operation. A transverse pressure-sensitive adhesive strip 23 is provided on the front wall 4a between the free edge 15a of the flap 6a and the free edge 18 of the flap portion 19.

[0030] Since all seals for the closure of the bag are sealed inner face to inner face, the paper layer is prevented from communicating with the interior of the bag. The barrier properties of the bag are thus determined substantially only by the barrier properties of the laminate used. As shown in Figure 4A, if high barrier properties are required, the laminate may include one or more barrier layers 25 between the outer paper layer 1 and the inner sealing medium layer 2.

[0031] In the embodiment shown in Figure 5, the first peelable seal is formed of a first transverse peelable sealing seam 14b provided between the inner face of the front wall 4b and the inner face of the back wall 5b and spaced apart from the free edge 8b of the front wall 4b. By means of a second transverse peelable seam 20b the flap 6b is sealed to the outer face of the front wall 4b. The second transverse peelable seam 20b is aligned with the first transverse seam 14b such that the two sealing seams may be produced during the same sealing operation. A transverse pressure-sensitive adhesive strip 23b is provided on the front wall 4b between the second sealing seam 20b and the free edge 15b of the flap 6b. For opening the bag shown in Figure 5 the second peelable seal 20b is initially peeled by pulling the flap 6b towards, whereafter the first peelable seam 14b is peeled by pulling the upper portion of the front wall 4b.

[0032] The bag shown in Figure 5 is suitable, when a high barrier is required, the paper layer being prevented from communicating with the interior of the bag.

[0033] The invention may be modified in many ways without thereby deviating from the scope of thereof. It is thus possible to omit the paper layer in some areas of the bag, eg to provide windows in the paper layer to allow viewing of the packed product through the remaining transparent layers. Windows may be provided on the front, the back and/or the flap of the bag.

[0034] The packaging material may have various structures depending on the desired properties. Basically as mentioned above any type of paper may be used for the paper layer. Preferably the paper layer is the outer layer and provided with one or more inner layers of for instance PE, PP, APET, PETG or another copolyester, OPP, OPP perforated, coatings, (co-)extrusion coatings, co-extruded multi-layers or laminates with a built-in barrier, eg ALU/PE, metallised and par-

tially demetallised OPP or PETP in combination with transparent parchment paper, etc. The paper layer may, however, also be sandwiched between one of the above inner layers and an outer layer of for instance OPP, PETP, a microporous film, a laminate, etc.

[0035] For a bag having a low or controlled barrier, the inner sealing medium layer of the packaging material may be a film or a coating (eg extrusion coating, of a hotmelt type, a solvent-based type or a dispersion) and seal to the paper layer/the outer layer, such as special polyolifines, copolymers, and blends, eg. PP, PE, ionomer, EAA, EVA, EBA, or a hotmelt composition.

[0036] Additionally a peel coating of for instance a hotmelt type, a solvent-based type or as a dispersion may be applied to the inner sealing medium layer in pre-selected areas of the laminate or to the outer face of the laminate either in pre-selected areas thereof or to the entire outer surface thereof. The applied peel coating provides a peel seal between the paper layer/the outer layer and the inner sealing medium layer, eg PE, PP, PET, OPP, OPP perforated, etc. Another option is to apply a print to the paper layer to provide a peel seal to the inner sealing medium layer, eg PVB ink with OPP. Finally the sealing medium layer, eg PE or PEP, may be sealed directly onto a non-printed area of the paper layer.

[0037] For a bag having a high barrier, a laminate structure as mentioned above may be used, said structure including one or more barrier layer(s) between the paper layer and the inner sealing medium layer. The barrier layer(s) may be films or laminates, eg. OPP, OPA, PETP, PET, co-extrusions, PP, EVOH, PVOH, PAN, polyfluorine (co)-polymers such as Aclar, OPP barrier films (Exxon/Mobile types), coated barrier films, eg PETP, OPP, OPA with organic barrier layers, which include for instance acrylic, EVOH, PVOH, PVDC, or hotmelts and paraffin, films coated in a vacuum as substrate, eg. PETP, OPP, OPA, co-extruded films, eg. PETP with PEN or with a barrier coating on the substrate or as a top coating, eg PU, PVOH, EVOH, etc., and a vacuum coating such as aluminium or more typically as oxides, such as SiO_x or mixtures of both organic and inorganic layers typically produced by (PE)CVD processes. Additionally a foil of for instance aluminium may be included in the laminate structure.

Claims

1. A bag of a flexible, heat-sealable packaging material provided with an inner sealing medium layer (2) seen relative to the interior (24) of the bag, said bag including:

   - a pouch portion (3) having a front wall (4) and a back wall (5) being interconnected to form a bottom (21) and sealed together along opposed side edges (10, 11) by means of side seams (12, 13), and
   - a flap (6) connected to the back wall (5) of the pouch portion (3) and extending down onto the outer face (7) of the front wall (4) of the pouch portion (3) in an overlapping manner,

   characterised in that seen relative to the interior of the bag, the packaging material has an outer paper layer (1) and that the bag is closed by means of a first peelable seal.

2. A bag according to claim 1, **characterised in that** the first peelable seal is provided in the overlap area between the inner face of the flap (6) and the outer face (7) of the front wall (4), the peelable seal including a first transverse sealing seam (14), which is spaced apart from the free edge (15) of the flap (6), and side seams (16, 17) at the side edges (10, 11) of the bag.

3. A bag according to claim 2, **characterised in that** the peelable seal is provided between the inner sealing medium layer (2) of the flap (6) and the paper layer (2) of the front wall (4).

4. A bag according to claim 2, **characterised in that** the paper layer (1) is omitted in a transverse portion at the free edge (8) of the front wall, and that the peelable seal is provided between an outer face of a packaging material layer subjacent the paper layer and the inner sealing medium layer (2).

5. A bag according to claim 2, **characterised in that** the front wall (4) is double-walled in a transverse portion at its free edge (8), an upper flap (19) of the packaging material being folded down onto itself and sealed paper face to paper face along a second transverse sealing seam (20) and that the first peelable seal is provided in the double-walled portion of the front wall by sealing of the packaging material inner face to inner face.

6. A bag according to claim 1, **characterised in that** the first peelable seal is provided between the inner faces of the front and back walls (4b, 5b) of the pouch portion, said seal being formed of a first transverse sealing seam (14b) spaced apart from the free edge (8b) of the front wall (4b).

7. A bag according to claim 6, **characterised in that** it includes a second transverse peelable seal including a second peelable seam (20b) between the inner face of the flap (6b) and the outer face of the front wall (4b), said second transverse seam (20b) being spaced apart from the free edge (15b) of the flap (6b).

8. A bag according to one or more of the preceding claims, **characterised in that** a reclose feature is provided in the overlap area between the flap (6) and the front wall (4), said feature including a transverse pressure-sensitive adhesive strip (23) allowing for reclosure of the bag after the initial peeling of the peelable seal.

9. A bag according to claim 8, **characterised in that** the pressure-sensitive adhesive strip (23) is formed of a hot melt strip or a double-sided adhesive tape applied to the outer face (7) of the front wall (4) in a distance from the free edge (15) of the flap (6).

10. A bag according to claim 8 or 9, **characterised in that** the pressure-sensitive adhesive strip (23) is covered by a peelable cover strip.

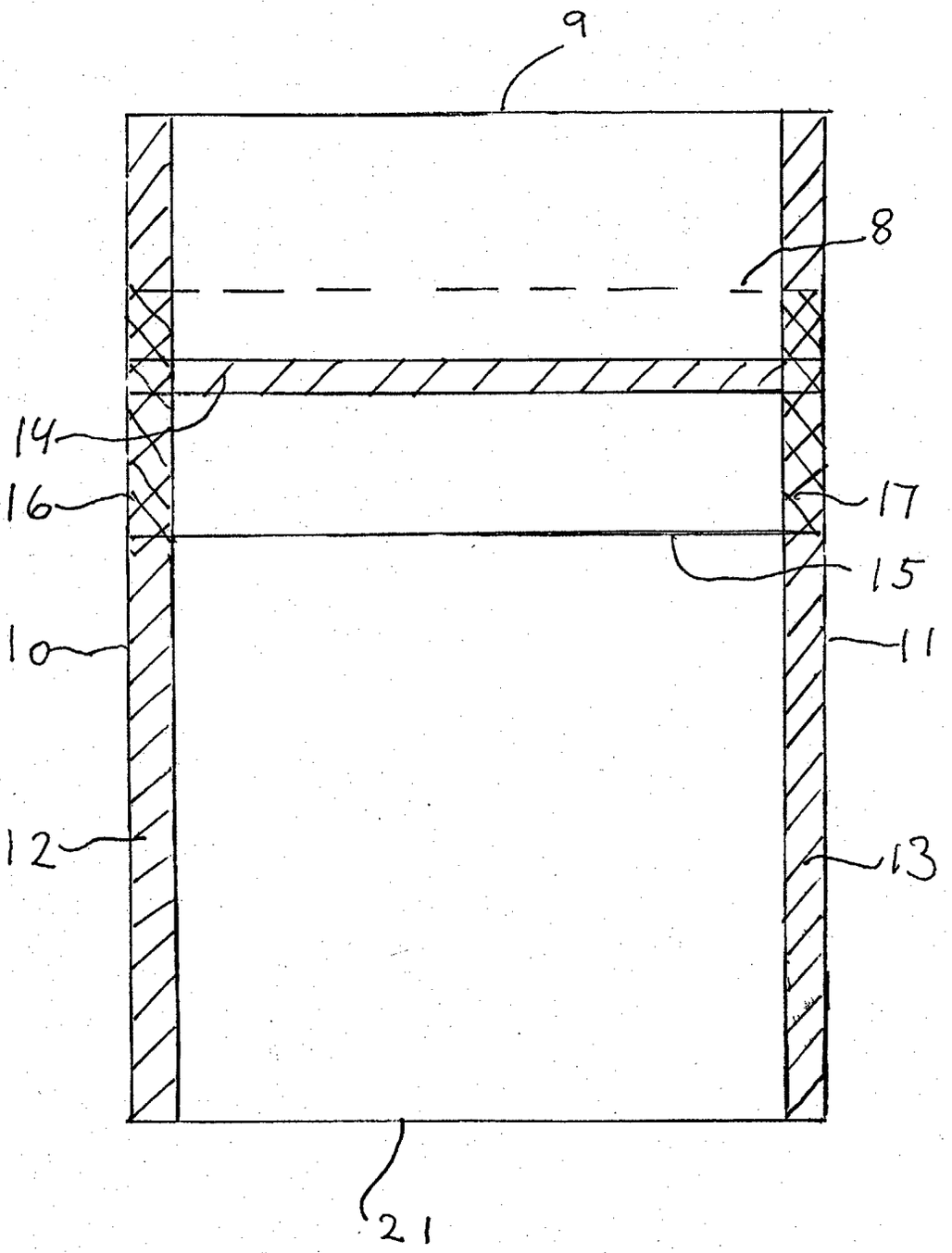

Fig 1

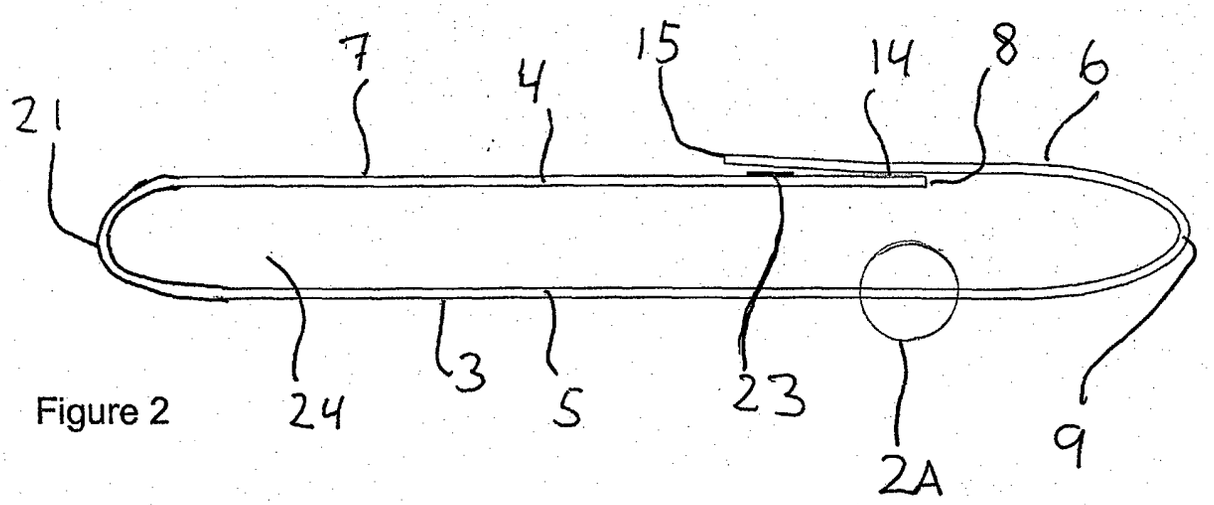

Figure 2

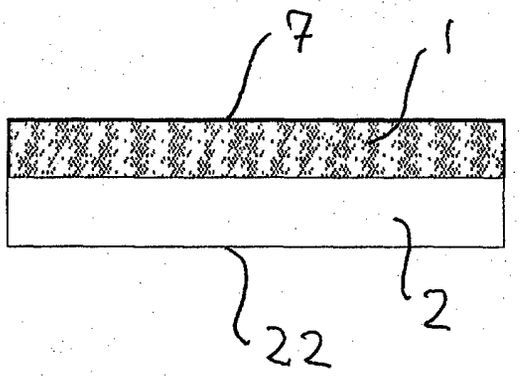

Figure 2A

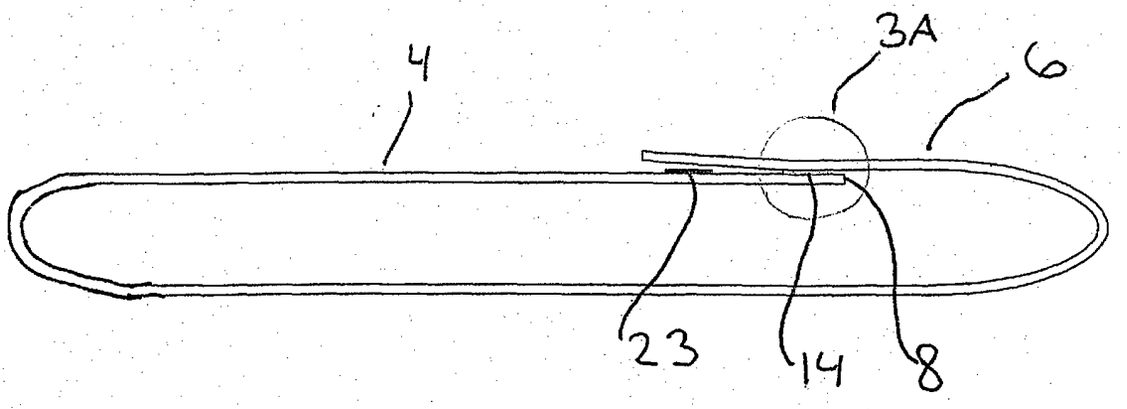

Figure 3

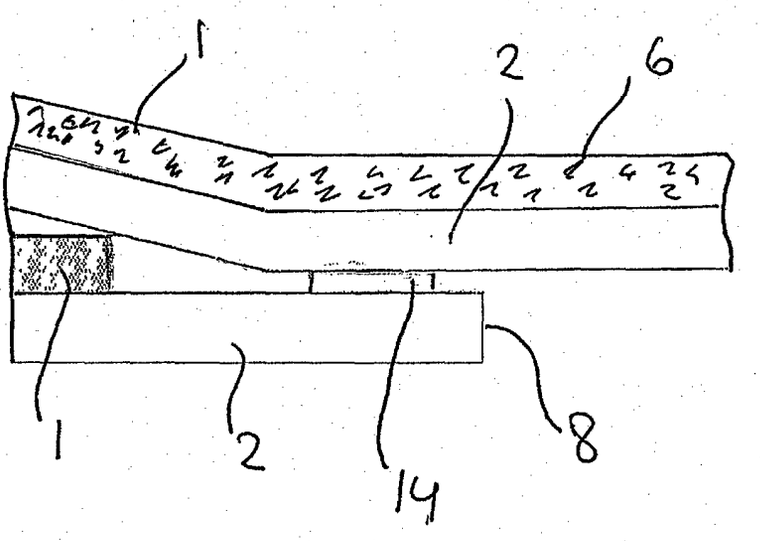

Figure 3A

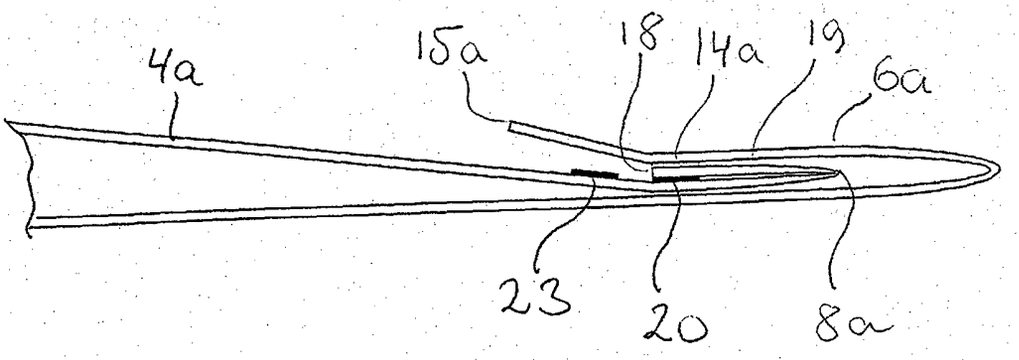

Figure 4

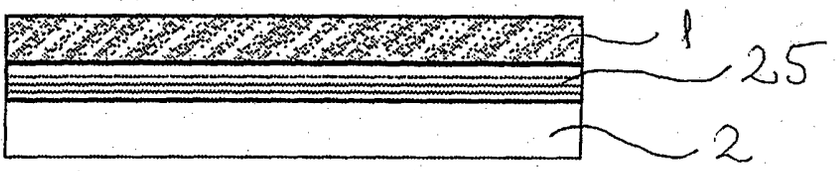

Figure 4A

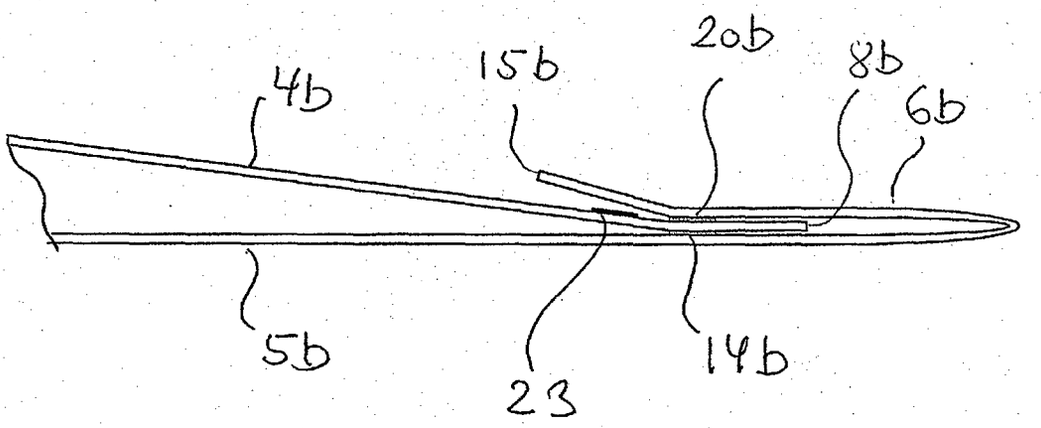

Figure 5

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 02 38 8080

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	4 June 2003	Kamerbeek, M

CATEGORY OF CITED DOCUMENTS

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