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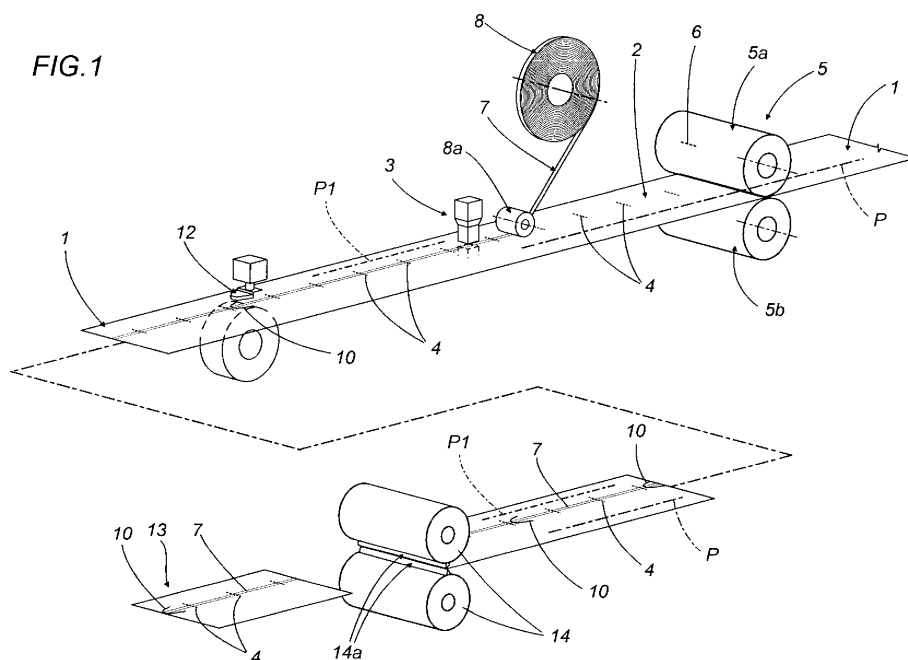
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(54) **A method of producing overwrap material, and a pack furnished with the material produced**

(57) Transparent outer wrappers for cigarette packets are prepared by advancing a continuous strip of overwrap material (1) along a given feed path (P) in a given direction (A), piercing a predetermined area (2) of the strip with a series of slits (4) spaced apart one from another and extending nominally transverse to the feed direction (A), and bonding a narrow ribbon (7) to the strip (1) along the predetermined area (2), aligned on at least one portion (4a) of the slits (4); the strip then passes under a blade (12) shaped so as to cut a series of "U"

notches (10) spaced apart one from the next, each creating a pull tab (11) at the end of the ribbon (7), before being divided ultimately into leaves (13) by a pair of contrarotating cutter rollers (14) equipped with respective blades (14a). Each single leaf (13) serves as a wrapper (16) for a relative pack, fashioned so that when torn open by pulling the ribbon (7), the ribbon encounters the slit (4) and initiates two break lines (17) extending away from the ribbon (7) on either side to facilitate the removal of the wrapper (16) in its entirety.

FIG. 1



Description

[0001] The present invention relates to a method of producing overwrap material, and to a pack covered with the material obtainable by such a method.

[0002] In particular, the present invention relates to packs for tobacco products, typically cigarette packets, and indeed reference is made to products of this type in the following specification, albeit implying no limitation in scope.

[0003] Conventionally, packets of cigarettes are provided with a protective outer wrapper of transparent heat-shrinkable material, referred to generally as overwrap material.

[0004] Dedicated packaging machines first envelop each successive pack in the overwrap material and then apply heat to the selfsame material, causing it to tighten against the outer faces of the pack.

[0005] The outer wrapper also incorporates a so-called tear tape or tear-off ribbon, of small transverse dimensions, by means of which the outer wrapper can be broken simply and swiftly when the moment comes to open up the pack.

[0006] To prepare the aforementioned wrapper, the ribbon is decoiled continuously from a roll and applied, by welding or gluing, to a strip of overwrap material moving continuously along a predetermined feed direction.

[0007] A succession of U-shaped notches can then be fashioned in the overwrap material, placed along the line of the ribbon. Each notch serves to free one end of the ribbon, thereby creating a tab that can be gripped and pulled to break open the pack neatly and easily.

[0008] Thereafter, the strip of wrapping material with its bonded ribbon is cut into discrete leaves, each providing one protective wrapper, and fed to the packaging machine.

[0009] With the wrapper in place around the finished pack, the ribbon will be positioned on the inside of the overwrap material, peripherally adjacent to one end face on all sides, in such a way that the material can be torn in a direction transverse to its longitudinal dimension.

[0010] In the case of cigarette packets, more exactly, the ribbon is located near the top end face, so that when pulled along the tear line, the wrapper will divide into two portions: a smaller portion enveloping the end face, and a larger portion enveloping the main body of the packet.

[0011] In this situation, after the tear has been made with the ribbon, the two portions of the wrapper must often be jerked away forcibly in order to remove them completely. In effect, because the overwrap material is pulled so tightly against the outer faces of the pack, by heat-shrinking, it is difficult to dislodge.

[0012] Accordingly, additional tears or cuts are made by hand to enable the removal of the larger portion, resulting in damage to the pack.

[0013] The object of the present invention is to provide a method of producing overwrap material, also a pack furnished with an easily removable material obtained by

such a method.

[0014] The stated object is realized in a method of producing overwrap material as characterized in any one or more of claims 1 to 13.

5 **[0015]** The stated object is realized similarly in a pack comprising a protective wrapper, as characterized in any one or more of claims 14 to 26.

10 **[0016]** The invention will now be described in detail, by way of example, with the aid of the accompanying drawings, in which:

- figure 1 is a perspective illustration showing the preparation of an overwrap material in accordance with the present invention;
- 15 - figures 2 to 6 show different solutions for the embodiment of a detail in the illustration of figure 1, viewed in plan from above;
- figure 7 is a perspective illustration showing a packet of cigarettes furnished with the overwrap material;
- 20 - figure 8 is a perspective illustration showing a packet of cigarettes furnished with the overwrap material, in which the material is partially torn.

25 **[0017]** With reference to figure 1, the invention relates to a method of producing overwrap material 1.

[0018] In a first step of the method, a continuous strip of preferably transparent and heat-shrinkable overwrap material 1 is caused to advance along a predetermined feed path "P" in a predetermined direction "A".

30 **[0019]** In a further step, a predetermined area 2 of the advancing strip 1 is provided with at least one slit or incision 4 having a geometrical component transverse to the aforementioned direction "A".

35 **[0020]** Advantageously, the step in question involves creating a succession of such slits 4 through the agency of suitable cutting or punching means 5 composed of a main roller 5a carrying a blade 6, and a matching anvil roller 5b. The two rollers 5a and 5b are set in contrarotation about respective axes extending transversely to the aforementioned feed direction "A".

40 **[0021]** The blade 6 presents a profile selected according to the shape of the slit 4 and strikes against the anvil roller 5b with each rotation of the main roller 5a, producing a slit 4 at each stroke.

45 **[0022]** Thereafter, a ribbon 7 of small transverse dimensions is applied to the strip of overwrap material 1; the ribbon 7 is decoiled from a roll 8, directed continuously downstream of a diverting roller 8a along a path "P1" parallel to the feed path "P", and applied to the aforementioned area 2 of the strip in parallel alignment with the feed direction "A".

[0023] To advantage, and by way of example, the ribbon 7 is bonded utilizing an ultrasonic welding unit 3 of familiar type, not described in detail.

50 **[0024]** It will be seen that the slits 4 are cut before applying the ribbon 7, so that the ribbon can be positioned relative to the selfsame slits.

[0025] In figures 1 to 3, the ribbon 7 is shown placed

over a central portion 4a of the slit 4, so that the two respective ends 4b of the slit will be located on opposite sides of the ribbon 7.

[0026] Alternatively, the ribbon 7 can be placed over one end 4b of the slit 4, as illustrated clearly in figure 4 where the slits are shown staggered one from the next, or in a part of the area 2 adjacent to but not effectively coinciding with the slits 4.

[0027] In the example of figure 1, the slits 4 are cut parallel one with another and appear substantially rectilinear, extending at right angles to the feed direction "A" and to the longitudinal dimension of the ribbon 7.

[0028] In the examples of figures 2 and 3, the slits 4 are cut parallel with one another and angled obliquely, relative to the longitudinal dimension of the ribbon 7.

[0029] Alternatively, as in the example of figure 4, the slits 4 can be staggered one from another on opposite sides of the ribbon 7.

[0030] Figures 5 and 6 illustrate a further example in which the slits 4 are generated as chevrons, each presenting a vertex 9 that coincides with the line of the ribbon 7.

[0031] The chevron slits 4 can be disposed, as in the example of figure 5, with the vertex 9 oriented along a tear direction "B" of the narrow ribbon. Alternatively, the selfsame slits 4 can be disposed with the vertex 9 oriented in a direction opposite to the tear direction "B" of the ribbon 7, as in figure 6.

[0032] The step of applying the ribbon 7 to the strip of overwrap material 1 is followed by a step of forming a U-shaped notch 10 in the aforementioned area 2 of the strip.

[0033] The U-shaped notch 10 is positioned between two successive slits 4 of the type cut previously, and serves to create a pull tab 11 at one end of the ribbon 7, as will be described in due course. To advantage, a succession of the U-shaped notches 10 will be generated through the agency of a further blade 12 of conventional type (not illustrated), by which the ribbon 7 is cut transversely.

[0034] After the U-shaped notches 10 have been cut, as illustrated in figure 1, the strip of overwrap material 1 is divided up into discrete lengths, or leaves 13, which are then fed into an overwrapping unit not illustrated in the accompanying drawings, being of conventional type and only incidental to the present invention.

[0035] To advantage, the step of dividing the strip of overwrap material 1 into leaves is effected by a pair of contrarotating cutter rollers 14 equipped with respective blades 14a. Each leaf 13 cut by the rollers 14 presents a succession of slits 4 and one U-shaped notch 10.

[0036] Alternatively, after the U-shaped notches 10 have been cut, the strip of overwrap material 1 might be wound onto a reel (not illustrated) for use by the overwrapping unit.

[0037] The overwrap material 1 obtained by the method thus described is utilized for packs 15 of the type illustrated in figures 7 and 8.

[0038] In particular, and with no limitation in scope im-

plied, the pack 15 of figures 7 and 8 consists in a packet of cigarettes, around which the overwrap material 1 provides a protective outer wrapper 16.

[0039] The wrapper 16 appears with the aforementioned ribbon 7 extending peripherally around one end face of the pack 15. In addition, the ribbon 7 is disposed with the tear direction "B" extending parallel to its own longitudinal dimension, and occupying a plane transverse to the longitudinal dimension of the pack 15.

[0040] As illustrated in figure 8, the wrapper 16 is opened by hand, gripping the tab 11 of the ribbon 7 and pulling. This causes the ribbon 7 to break the overwrap material 1 along the aforementioned tear direction "B" until the slit 4 is encountered. The slit 4, shown perpendicular to the ribbon 7 in figure 7, will at this point initiate two new break lines 17 departing and diverging from the line of the ribbon 7 on either side.

[0041] When the ribbon 7 is pulled, accordingly, the break lines 17 will cause the entire wrapper 16 to tear readily in a direction transverse to the main tear direction "B", and facilitate the removal of the overwrap material 1 completely.

[0042] In the case of the chevron slit 4 shown in figures 5 and 6, two break lines 17 are initiated, generating appendages 18 on opposite sides of the ribbon, from which the wrapper 16 can be torn toward the ends of the pack 15 and peripherally around the end faces.

[0043] Whilst the wrapper 16 shown in figures 7 and 8 presents just one slit 4, any given number of such slits 4 could be provided in order to facilitate the removal of the material 1, depending on the size of the pack 15.

[0044] Self-evidently, the pack 15 does not need to be extracted from the wrapper 16 once a tear has been made with the ribbon 7. In practice, the action of pulling the ribbon 7 serves also to initiate the break lines 17 and allow the wrapper 16 to be torn off completely, without the material sticking fast to the outer faces of the pack 15. Accordingly, the pack 15 is spared any damage that might be caused in the attempt to remove portions of the overwrap material 1 that continue to cling to the outer surfaces.

Claims

1. A method of producing overwrap material, **characterized in that** it includes the steps of:

- causing a continuous strip of overwrap material (1) to advance along a predetermined feed path (P) in a predetermined feed direction (A);
- processing a predetermined area (2) of the strip of overwrap material (1) in such a way as to make at least one slit or incision (4) having a geometrical component transverse to the feed direction (A);
- applying a ribbon (7) of small transverse di-

- mensions to the strip (1), along the predetermined area (2).
2. A method as in claim 1, wherein the step of making at least one slit (4) is effected prior to the step of applying the ribbon (7) of small transverse dimensions. 5
 3. A method as in claim 1 or 2, including the step of making at least one U-shaped notch (10) in the predetermined area (2) of the strip (1), effected after the step of applying the ribbon (7). 10
 4. A method as in claims 1 to 3, wherein the step of applying the ribbon (7) of small transverse dimensions involves placing the selfsame ribbon (7) so as to coincide with at least one portion (4a) of the at least one slit (4). 15
 5. A method as in claims 1 to 3, wherein the step of applying the ribbon (7) of small transverse dimensions involves placing the selfsame ribbon (7) alongside the at least one slit (4). 20
 6. A method as in claims 1 to 3, wherein the step of making the at least one slit (4) involves placing the slit (4) at right angles to the longitudinal dimension of the ribbon (7) of small transverse dimensions. 25
 7. A method as in claims 1 to 5, wherein the step of making the at least one slit (4) involves placing the slit (4) at an oblique angle to the longitudinal dimension of the ribbon (7) of small transverse dimensions. 30
 8. A method as in claims 1 to 5, wherein the step of making the at least one slit (4) involves creating a slit (4) of chevron shape presenting a vertex (9) over which the ribbon (7) is applied. 35
 9. A method as in claim 8, wherein the at least one slit (4) of chevron shape is disposed with the vertex (9) oriented in a direction coinciding with the tear direction (B) of the ribbon (7) of small transverse dimensions. 40
 10. A method as in claim 8, wherein the at least one slit (4) of chevron shape is disposed with the vertex (9) oriented in a direction opposite to the tear direction (B) of the ribbon (7) of small transverse dimensions. 45
 11. A method as in claims 1 to 10, including a step of making a succession of slits (4) along the predetermined area (2) of the strip. 50
 12. A method as in claims 3 to 11, including the further steps, effected following the step of making the at least one U-shaped notch (10), of dividing the strip (1) into discrete leaves (13) and feeding the leaves (13) to an overwrapping unit. 55
 13. A method as in claims 2 to 11, including a step, effected following the step of applying the ribbon (7) of small transverse dimensions, of winding the strip (1) onto a reel for use by an overwrapping unit.
 14. A pack furnished with a protective wrapper (16), consisting in a leaf of overwrap material (1) and a ribbon (7) of small transverse dimensions bonded to a predetermined area (2) of the material (1), **characterized**
 - **in that** the wrapper (16) presents at least one slit (4) made in the predetermined area (2) of the overwrap material (1) and having a geometrical component transverse to the longitudinal dimension of the ribbon (7) of small transverse dimensions.
 15. A pack as in claim 14, wherein the at least one slit (4) appears substantially rectilinear.
 16. A pack as in claim 15, wherein the ribbon (7) is placed over a central portion (4a) of the at least one slit (4) lying between two respective ends (4b) of the selfsame slit (4).
 17. A pack as in claim 15, wherein the ribbon (7) is placed over one end (4b) of the at least one slit (4) .
 18. A pack as in claim 15, wherein the slit (4) is located alongside the ribbon (7).
 19. A pack as in claims 14 to 18, wherein the at least one slit (4) extends at right angles to the longitudinal dimension of the ribbon (7).
 20. A pack as in claims 14 to 18, wherein the at least one slit (4) extends at an oblique angle to the longitudinal dimension of the ribbon (7).
 21. A pack as in claim 14, wherein the at least one slit (4) is of chevron-like shape, presenting a vertex (9) over which the ribbon (7) of small transverse dimensions is placed.
 22. A pack as in claim 21, wherein the vertex (9) of the at least one slit (4) is oriented in a direction coinciding with a tear direction (B) of the ribbon (7).
 23. A pack as in claim 21, wherein the vertex (9) of the at least one slit (4) is oriented in a direction opposite to a tear direction (B) of the ribbon (7).
 24. A pack as in claims 14 to 23, wherein the outer wrapper (16) presents a notch (10) of "U" shape made in the predetermined area (2) of the overwrap material

(1) and creating a tab (11) at one end of the ribbon (7) such as can be gripped and pulled to tear the wrapper (16).

25. A pack as in claims 14 to 24, wherein the wrapper (16) comprises a succession of slits (4) made in the predetermined area (2) of the strip and spaced apart one from the next. 5

26. A packet of cigarettes, **characterized in that** it comprises a pack (15) as in any of claims 14 to 25. 10

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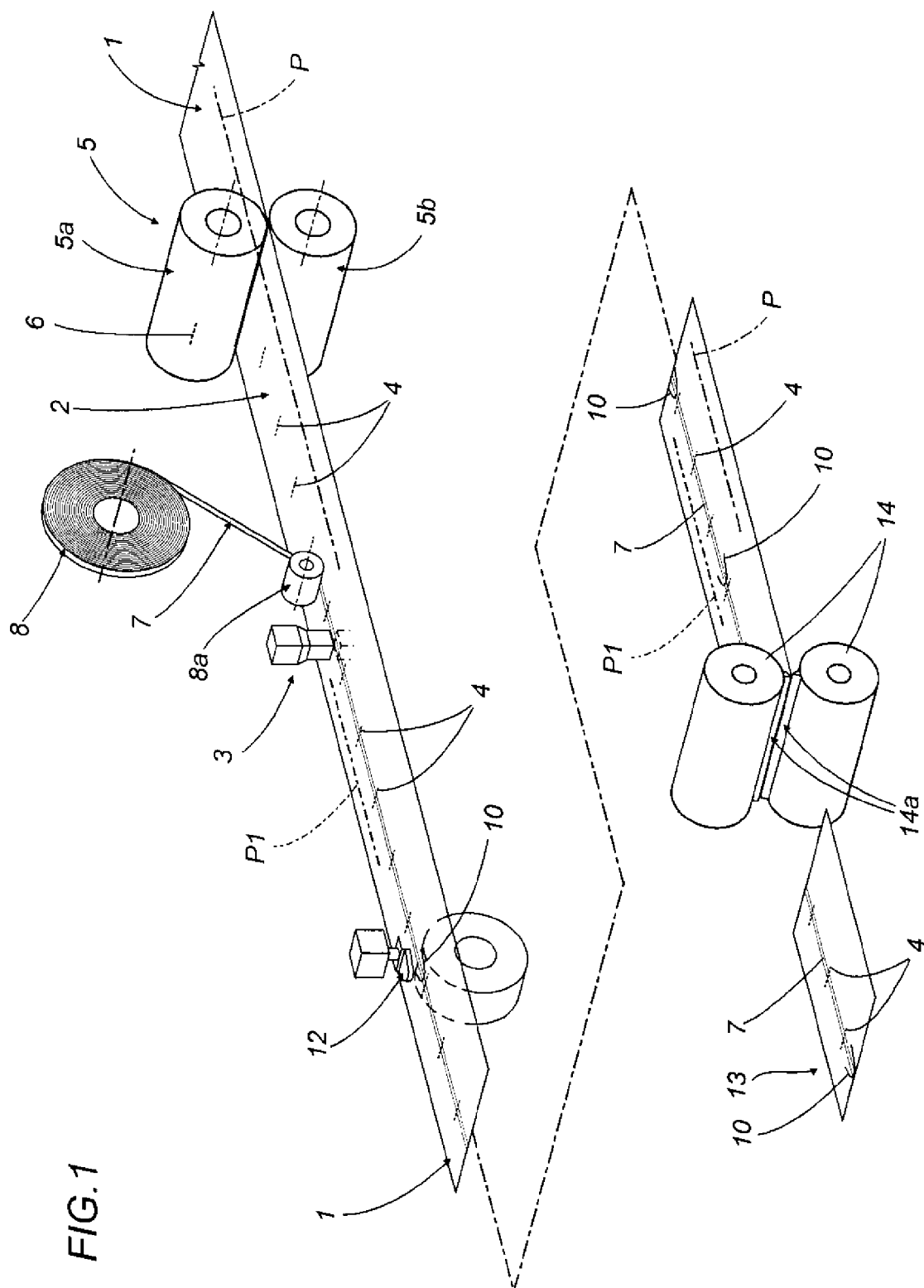


FIG.2

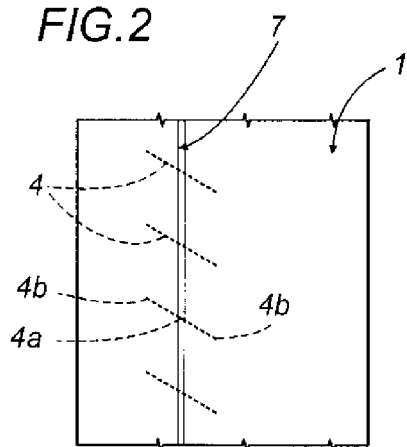


FIG.3

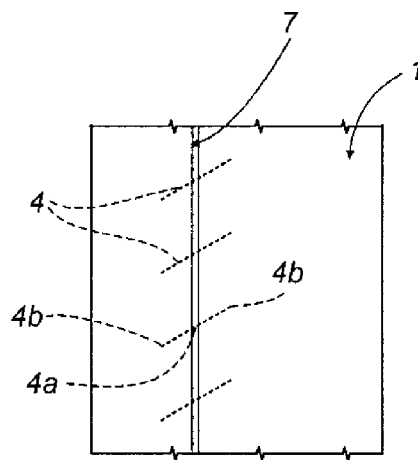


FIG.4

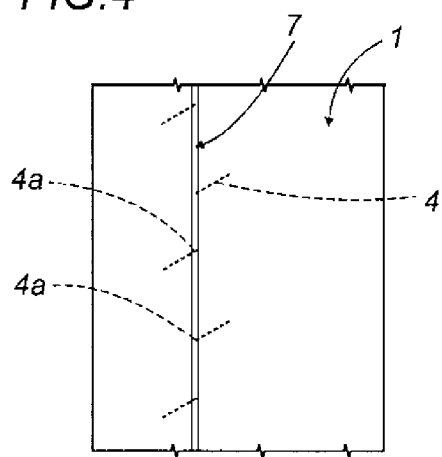


FIG.5

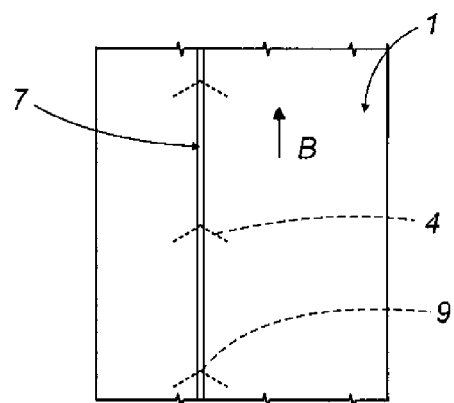


FIG.6

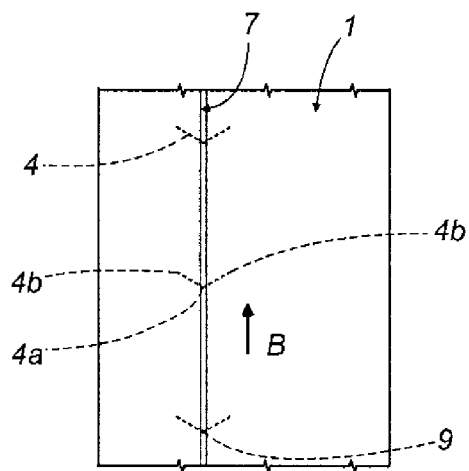


FIG.7

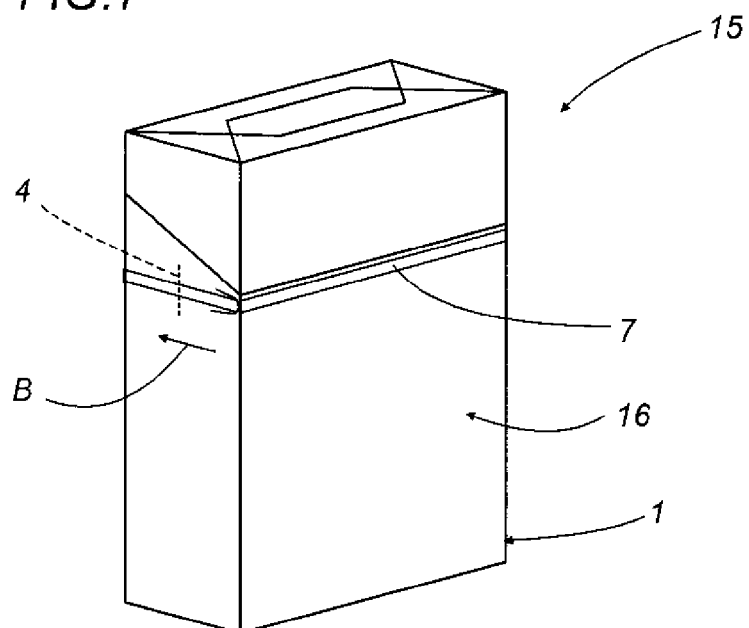
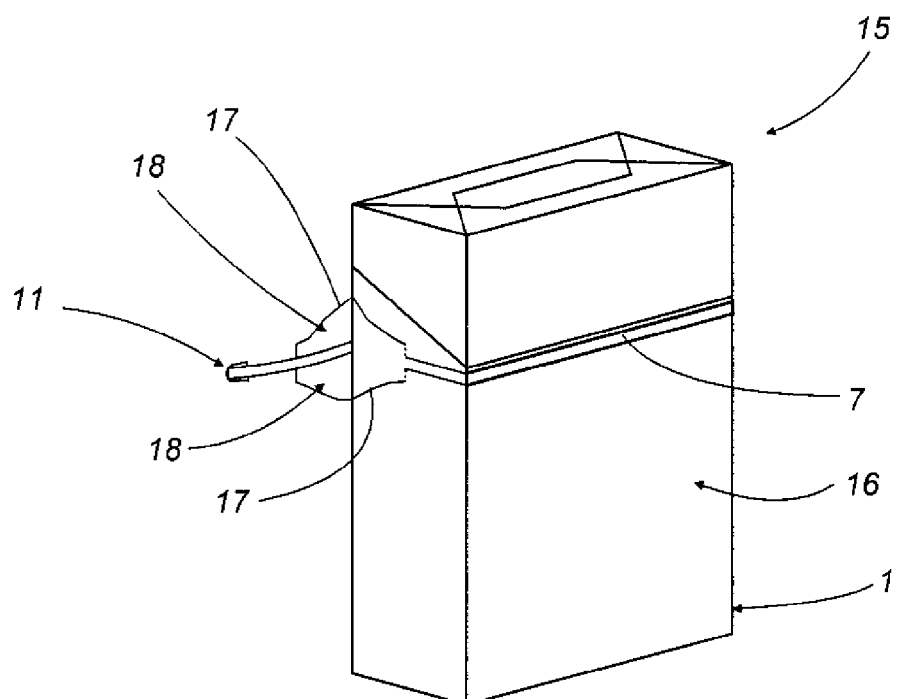


FIG.8





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 07 10 4905

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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 14 May 2007	Examiner Schelle, Joseph
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 07 10 4905

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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14-05-2007

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82