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(54) **Method for manufacturing a sealed package of cigarette rolling papers**

(57) The invention relates to a method for manufacturing a sealed package (1) of cigarette rolling papers (9) from a flat paper pack (2) with top flap (4) hinged and open; the method comprises the steps of forwarding the pack (2) along a feeding direction (A) orthogonal to the hinging side (11, 12) of the flap (4), overlapping to the flap (4) a plastic coating film (20) projecting on every side with respect to the pack (2), forwarding the unit (22) consisting of the pack (2) and the film (20) through a seat

(23) arranged on top thereto so as to obtain the U folding of the film (20) around the pack (2) with opposite end edges (29, 30) projecting beyond the bottom of the pack (2) itself and opposite side edges projecting from it, bending and sealing the side edges (29, 30) on a base wall (5) of pack (2), and bending and sealing the side edges on the respective sides of the pack (2).

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Description

[0001] The present invention relates to a method for manufacturing a sealed package of cigarette rolling papers.

[0002] As is known, cigarette rolling papers are normally available on the market in flat packs made out of a paper material and having a particularly thin parallelepipedal configuration, i.e. in which the thickness or height of such packs is more than 25 times less with respect to the length and more than 10 times less with respect to the width.

[0003] The known packs are usually constituted by a receptacle portion, containing cigarette rolling papers stacked one upon the other, and by a top flap normally kept in the open position with respect to the receptacle portion to allow the withdrawal of the papers.

[0004] More specifically, the receptacle portion comprises a rectangular base wall, from the peripheral edge of which orthogonally extend sides of reduced height, and a top wall, rectangular as well, joined to the base wall by the aforesaid sides and provided with an elongated central opening, extending along the entire length of the receptacle portion, from which protrudes one paper at a time to be withdrawn by the user.

[0005] The top flap has a rectangular profile identical to those of the base wall and top wall and is joined to the longer side of the base wall itself by way of a strip of material defining a hinged connection.

[0006] Due to this type of connection, the top flap always keeps an open position angled with respect to the top wall of the receptacle portion.

[0007] The sale of cigarette rolling papers in permanent open packs poses a number of problems. Above all, it is not possible to guarantee the cleanliness of the product, since the papers are easily contaminable by the surrounding environment. In addition, there is no guarantee that the packs sold contain the programmed number of papers, as these are freely available and may be withdrawn prior to sale to the final user. Ultimately, the papers are always subject to environmental conditions of the location where they are marketed, for example, a particularly damp environment could activate the adhesive substance on one edge of the papers so as to make them adhere at least partially with each other, creating difficulties for their withdrawal and use.

[0008] The aim of the present invention is therefore to provide a method for manufacturing a sealed package of cigarette rolling paper, allowing to solve, in a simple and inexpensive way the aforementioned problems.

[0009] The aforesaid aim is achieved by the present invention, as it relates to a method for manufacturing a sealed package of cigarette rolling papers, as defined in claim 1.

[0010] For a better understanding of the present invention, a preferred embodiment thereof is described in the following, purely by way of example and without limitation with reference to the accompanying drawings in which:

- Figures 1A through 1H show in perspective view a package of cigarette rolling papers during the various steps of the method according to the invention;
- Figures 2 and 3 schematically show, respectively in perspective and side view, a series of packages of cigarette rolling papers during a first step of the method according to the invention;
- Figures 4 through 8 show in section a folding group to carry out, upon a plurality of packages of cigarette rolling papers, a series of intermediate folding steps of the method according to the invention, and
- Figure 9 show in perspective view two packages of cigarette rolling papers during the terminal steps of the method according to the invention.

[0011] In Figure 1H is indicated in its entirety with 1 a sealed package of cigarette rolling papers 9 (one of which can be seen in Figure 2) obtained with the method object of the present invention from a flat paper pack 2 (Figures 1A and 2).

[0012] Package 2 is formed by an open receptacle portion 3 having a thin parallelepipedal configuration, in which said cigarette rolling papers 9 are contained stacked one upon the other as known, and by a top opening/closing flap 4, which is free to move with respect to said receptacle portion 3.

[0013] In particular, the receptacle portion 3 comprises:

- a rectangular base wall 5, from the peripheral edge of which two pairs of sides 6, 7 of reduced height, parallel two by two, extend orthogonally; and,
- a top wall 8, rectangular as well, joined to the base wall 5 by the sides 6, 7 and provided with a central opening, from which protrudes one paper at a time to be withdrawn by the user.

[0014] In the case illustrated, the base wall 5 and top wall 8 have a length of at least 4 times greater than the width and at least 25 times greater than the thickness or height of the receptacle portion 3; the opening 10 extends over the entire length of the top wall 8 along a central band thereof.

[0015] The sides 6 extend between the respective longer sides of the base wall 5 and top wall 8, while the sides 7 connect the other two sides of the abovementioned walls 5, 8.

[0016] The flap 4 has a rectangular profile identical to those of the base wall 5 and the upper wall 8 and is joined with one longer side of the base wall 5 itself by a strip of material 11 defining a hinging connection 12; in this way, the flap 4 can be pressed by the user into a closed position on the receptacle portion 3 and is normally free to move to assume a plurality of open positions (some of which are illustrated in Figures 2 and 3) rotated from the closed position.

[0017] In order to manufacture the package 1, the pack 2 is forwarded along a feeding direction A, orthogonal to

the hinging side of the flap 4 and opposite to the opening side of the latter (Figures 2 and 3); practically, during the forwarding process along the direction A, the pack 2 displays the hinging side of the flap 4 in the downstream direction.

[0018] In this step, the pack 2 is set with its base wall 5 onto a conveying plane 13 disposing its slidably cooperative flap 4 in succession to a pair of rollers 14, 15 and a top guide element 16; both the rollers 14, 15 and the guide element 16 have the function of rotating the flap 4 into the closed position and keeping it in this position upon the start of the next step.

[0019] In particular, to the pack 2 with the flap 4 in the closed position a plastic coating film 20, such as polyethylene, is superimposed, projecting from all sides with respect to the pack 2 itself (Figures 1A and 4).

[0020] As can be seen from Figure 1A, the film 20 is preferably of a transparent type and has a rectangular shape.

[0021] In the example illustrated, the film 20 further comprises an opening strip 21 extending parallel to the sides of lesser extension of the film itself and in proximity of one of them. As can be seen from Figure 1A, in the overlaying position over the pack 2, the film 20 comprises the opening strip 21 arranged orthogonally to the hinge side of flap 4 and in proximity of one of the two sides 7, to which it is obviously parallel.

[0022] At this point (Figures 1B, 4 and 5) the unit, denoted with 22, consisting of the pack 2 and the film 20 is forwarded through a seat 23 upwardly arranged for obtaining the U folding of the film 20 itself around the pack 2; practically, the unit 22 is moved through the seat 23 along a direction B, orthogonal to the direction A.

[0023] The seat 23 is defined by opposing walls 24, 25 and arranged parallel to each other at a distance roughly equal to the shorter side of the base wall 5 and the top wall 8 of the pack 2 and also to the flap 4, so to allow the sliding of the pack 2 itself within said seat 23 without being deformed. As can be seen in figures 4 and 5, the wall 25 is arranged further downstream to the wall 24 with reference to the direction A.

[0024] In the example shown (Figures 4 and 5), the forwarding of the unit 22 through the seat 23 is obtained by lifting along the direction B of a movable member 26 cooperating with the base wall 5 of the pack 2 and by way of the action of a counteracting member 27 acting upon the unit 22 itself from the opposite side of the movable member 26.

[0025] In particular, the movable member 26 has a thrusting face 28 acting upon the whole base wall 5 of pack 2, while the counteracting member 27 is elastically loaded onto an intermediate portion of the flap 4 of the pack 2 itself, covered by the film 20.

[0026] In this way, the moving of the unit 22 is assured without relative shifting and without flexional deformation, due to the limited thickness of the unit 22 itself.

[0027] More specifically, the counteracting member 27 comprises a frontally concave support body 27a, an op-

erating head 27b carried by the support body 27a sliding parallel to the direction B, and elastic means 27c interposed between the support body 27a and the operating head 27b and elastically loading it towards the film 20.

[0028] In more detail, the operating head 27b comprises a cylindrical stem 51 and a contact portion 52 cooperating in use with the unit 22 and projecting radially from the stem 51 itself.

[0029] The elastic means 53 are preferably defined by a cylindrical helical spring 53, winding around the stem 51 and axially loaded between the contact portion 52 and the front edge of the support body 27a.

[0030] At the end of this step, the film 20 will present opposing end edges 29, 30 projecting from the bottom wall 5 of the pack 2 and opposing side edges 31 projecting from the respective sides 7 of the pack 2 itself.

[0031] As shown in Figure 5, the end edge 29 slides adjacently to the wall 24, while the end edge 30 is arranged adjacently to the wall 25.

[0032] Once the sliding of the unit 22 through the seat 23 is completed, the end edge 29, arranged at the opposite side from the hinging side of the flap 4, is folded (Figures 1C and 6) on the base wall 5 of pack 2 by way of the forwarding of a top closing element 32 of the seat 23 along a direction C parallel to the direction A and below the pack 2 thereof.

[0033] In particular, the forwarding of the closing element 32 is carried out during the return of the movable member 26 to its initial position (Figures 6 and 7); in this way, the closing element 32 defines the support for the unit 22 in place of the movable member 26.

[0034] At this point, also the end edge 30 is folded on the end edge 29 and on the base wall 5 of the pack 2 by sliding the unit 22 on a conveying plane 33 coplanar to the closing element 32.

[0035] In more detail, as shown in Figure 8, the folding of the end edge 30 is facilitated by a mobile flap 35 projecting within the seat 23 during the forwarding of the unit 22 on the conveying plane 33.

[0036] The mobile flap 35 has a curved convex shape towards the unit 22 and is displaceable between a withdrawn configuration, in which it is contained in a corresponding recess 36 obtained partially in the conveying plane 33 and partially in the wall 25, and a projecting configuration, which extends into the seat 23 from the wall 25 itself, arranged at an angle with respect to the directions A and C and has an increasing distance from the base wall 5 of the pack 2 proceeding towards the free end thereof.

[0037] During the subsequent sliding of the unit 22 along the conveying plane 33, the latter is heated so as to determine the sealing of the overlapped end edges 29 and 30 and obtain the configuration of Figure 1D; practically, in this configuration, the film 20 assumes an approximately tubular configuration having respective side edges 31 projecting from the pack 2 in the direction orthogonal to the directions B and C.

[0038] The next step (Figures 1E-1H and 9) consists

in the folding of the side edges 31 by essentially sliding the unit 22 along the direction C, and then parallel to the direction A, on opposite guide means 37.

[0039] In particular, the guiding means 37 comprise two guide flanks 38 positioned on opposite sides of the conveying plane 33 and parallel to the direction C and adapted for slidingly cooperating with their respective side edges 31.

[0040] The unit 22, positioned with the hinging side of flap 4 orthogonal to the direction C is pushed between the guide flanks 38 so that their front ends 39 cooperate in abutment against the respective side edges 31.

[0041] More precisely, the front end 39 of each guide flank 38 cooperates in abutment against a front portion 40 of the relative side edge 31, arranged orthogonal to the direction C and downstream with reference to it. A similar action is performed on the back portions 41 of the side edges 31 by the respective thrusting portions 42 of a pressure member 43 moving along the direction C.

[0042] The combined action of the pressure member 43 and the front ends 39 of the guide flanks 38 produce the folding of the front portions 40 and back portions 41 of the back side edges 31 on the respective sides 7 of the pack 2.

[0043] As can be seen from Figure 8, the pressure member 43 pushes the unit 22 onto the conveying plane 33 and simultaneously produces the folding of back portions 41 of the side edges 31 on the respective sides 7 of the pack 2; the action of the front ends 39 of the guide flanks 38 is successive to the action of the pressure member 43.

[0044] Each flank 38 is also provided with two guide grooves 45, 46 in which respective top portion 47, and bottom portion 48, of the relative side edge 31 are rotated towards the corresponding side 7 of pack 2. In particular, with reference to each flank 38, the guide groove 45 has a curved shape sloping downward towards the conveying plane 33 with reference to the direction C, so as to fold the top portion 47 of the relative side edge 31 towards the corresponding side 7 of pack 2; otherwise, the guide groove 46 has a curved shape sloping upward from the conveying plane 33 with reference to the direction C, so as to fold the lower portion 48 of the relative side edge 31 towards the corresponding side 7 of pack 2.

[0045] At the end of said folding actions, the unit 22 is forwarded between two heating devices 50 which carry out the sealing of the previously folded side edges 31.

[0046] By examining the characteristics of the method object of the present invention the advantages deriving from it become evident.

[0047] In particular, this method allows, in a simple and inexpensive way to manufacture sealed packages 1 of cigarette rolling papers 9 that cannot be altered in any way before reaching the final user.

[0048] It is important to emphasize how the method allows the wrapping with a protective film 20, of the pack 2 supplied with the flap 4 in the open position, without causing any damage and/or deformation of the package

2 itself, which, due to its reduced thickness, can be easily subject to undesired folding effects.

[0049] In particular, the combined action of the movable member 26 and the counteracting member 27, elastically loaded towards the unit 22, allows, on one hand to keep the pack 2 and the film 20 in the desired positions while being forwarded through the seat 23, and on the other, to control the interaction of the members 26, 27 with the pack 2. In fact, thanks to the presence of elastic means 27c, the contact between the counteracting member 27 and the unit 22 is cushioned thus avoiding to "mark" or deform the pack 2 when it is compressed between the movable member 26 and the counteracting member 27.

[0050] Furthermore, in a completely equivalent way, again thanks to the presence of elastic means 27c, it is not necessary to have restricted moving tolerances of the members 26 and 27 for avoiding undesired deformations of the pack 2.

[0051] It is finally clear that to the method described and illustrated modifications and variants may be added without altering the scope of protection defined by the claims.

Claims

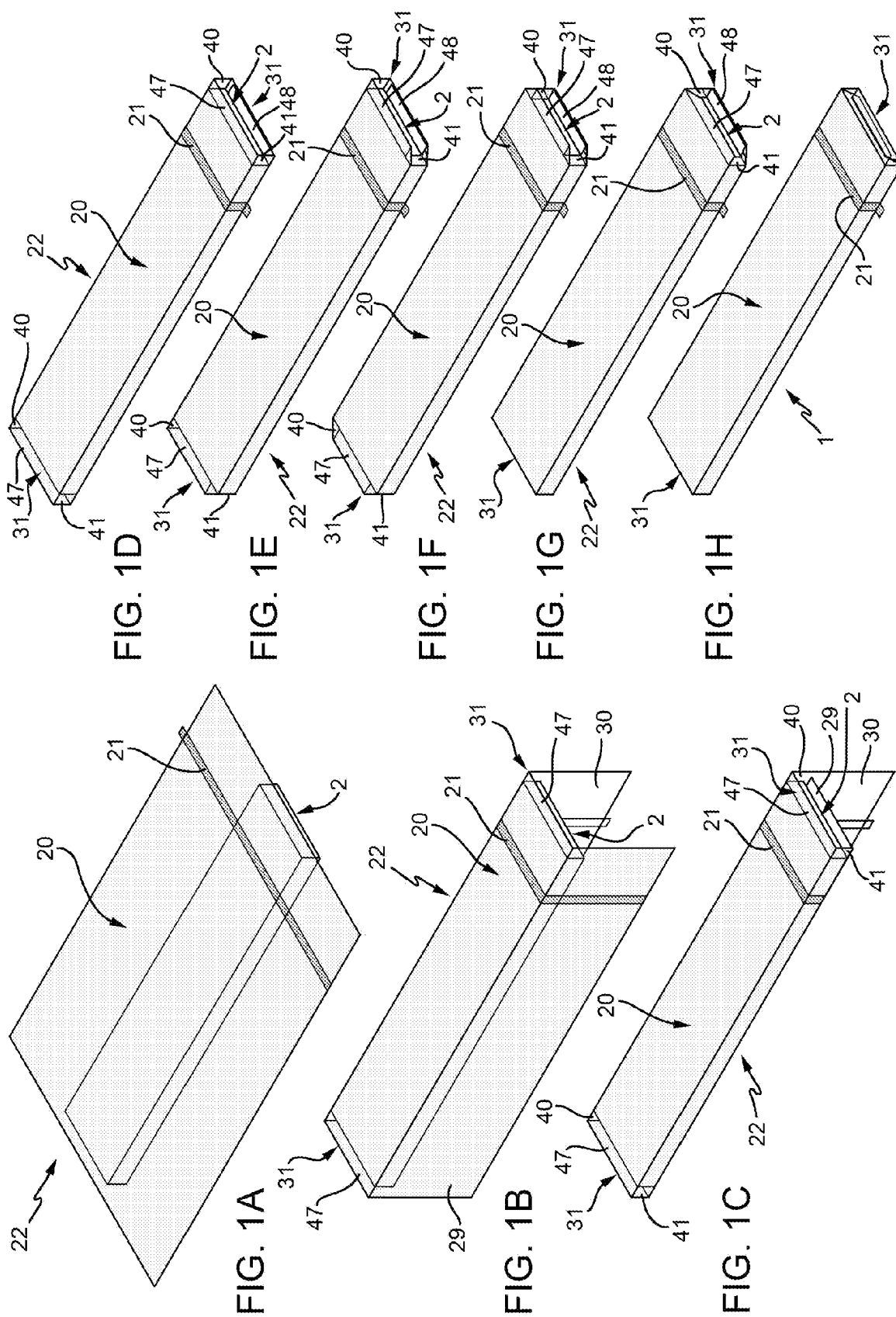
1. A method for manufacturing a sealed package (1) of cigarette rolling papers (9) from a flat paper pack (2) formed by a open receptacle portion (3) having a thin parallelepipedal configuration, in which said cigarette rolling papers (9) are contained, and by a top opening/closing flap (4), which is free to move with respect to the receptacle portion (3); said receptacle portion (3) comprising a rectangular top wall (8) having a larger size than the thickness of said pack (2) and displaying an opening (10) for withdrawing said papers (9), and said top flap (4) also having a rectangular profile and being hinged along a side (11, 12) thereof to a corresponding peripheral edge of said receptacle portion (3) so as to freely be accommodated in a closed position on the receptacle portion (3) and in a plurality of opening positions rotated from said closed position; said method comprising the steps of

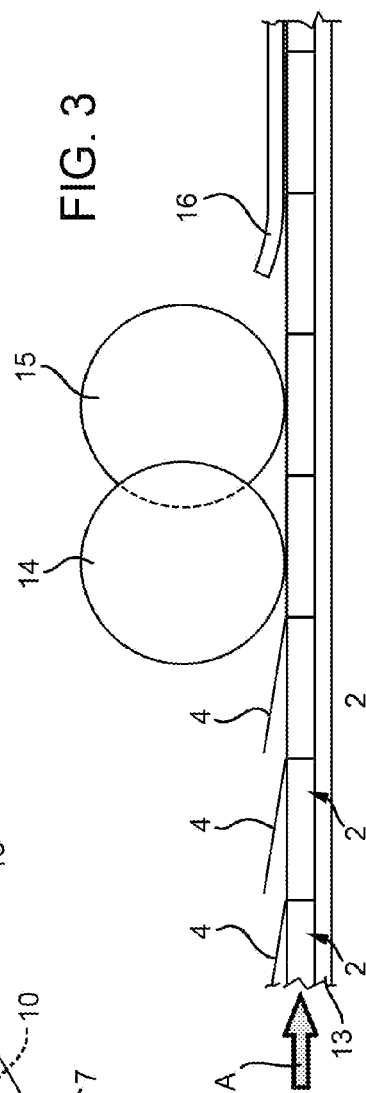
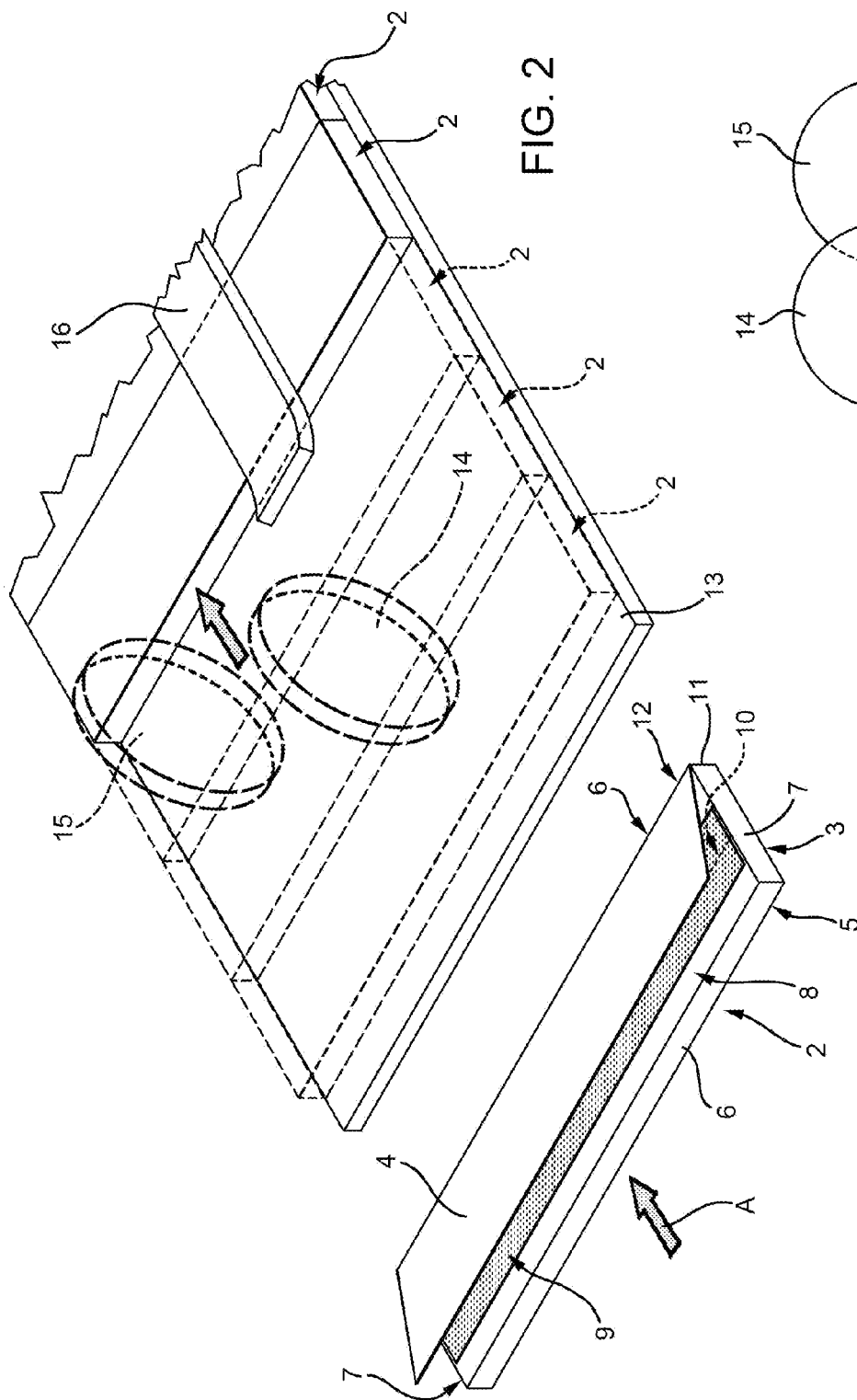
- forwarding said pack (2) along a feeding direction (A) orthogonal to said hinging side (11, 12) of said top flap (4) and opposite to the opening side of the top flap (4);
- overlapping to said top flap (4) a plastic coating film (20) projecting on every side with respect to said pack (2);
- forwarding the unit (22) consisting of said pack (2) and said film (20) through a seat (23) arranged on top thereto and along a lifting direction (B) orthogonal to said feeding direction (A), so as to obtain the U folding of said film (20) around

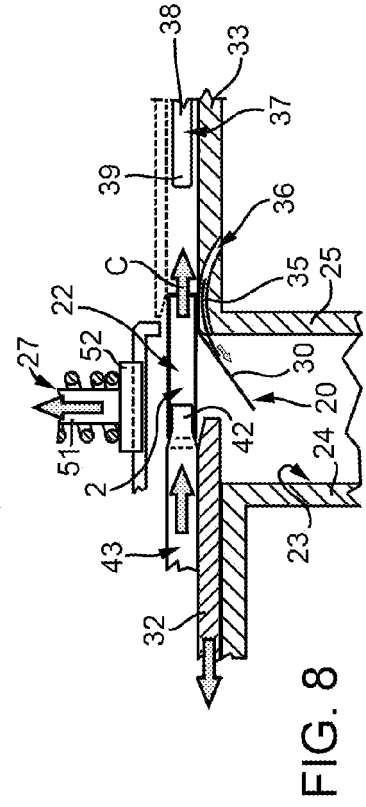
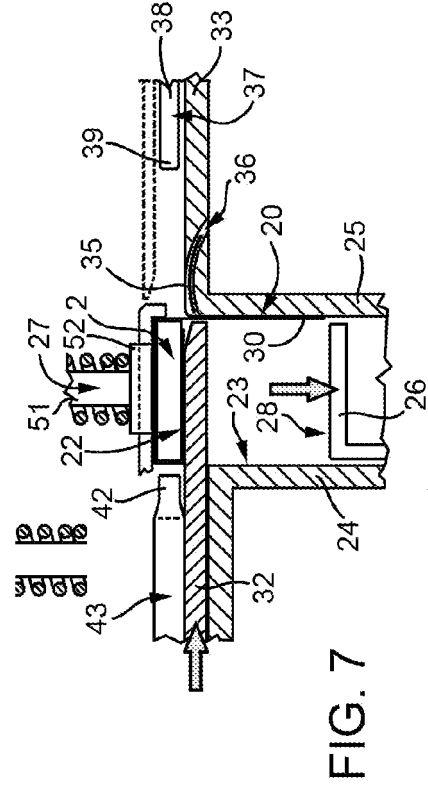
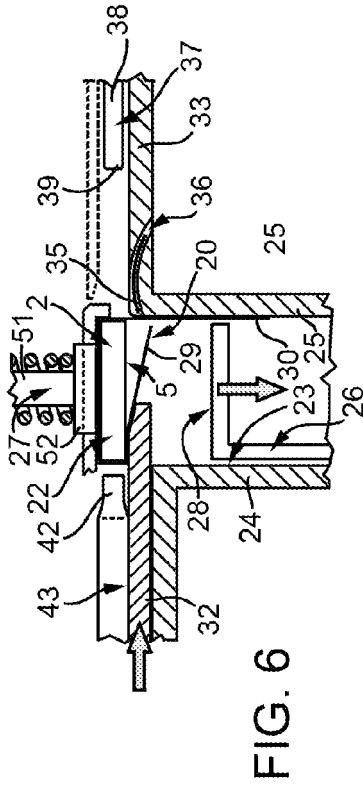
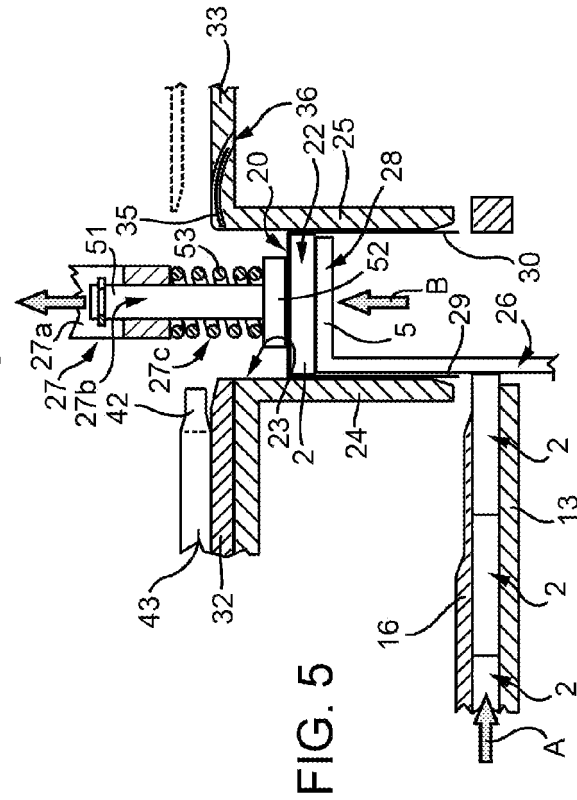
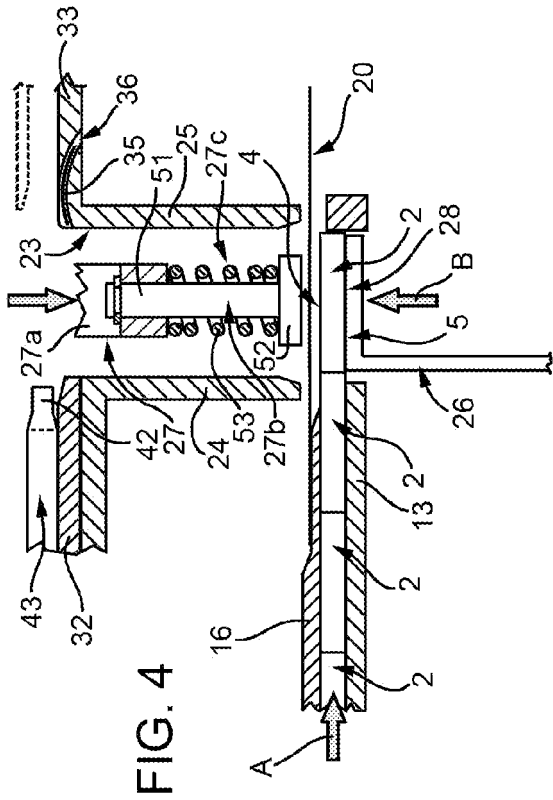
- said pack (2) with opposite end edges (29, 30) projecting beyond the bottom of the pack (2);
 - folding the first (29) of said end edges (29, 30) opposite to the hinging side (11, 12) of said top flap (4) on a base wall (5) of said pack (2) by forwarding a top closing element (32) of said seat (23) in a direction (C) parallel to said feeding direction (A) and below the pack (2);
 - folding the second (30) of said end edges (29, 30) on said first end edge (29) by sliding said unit (22) on a conveying plane (33) coplanar to said closing element (32) and along a forwarding direction (C) parallel to said feeding direction (A);
 - sealing said overlapped end edges (29, 30) so that said film (20) takes a tubular configuration having respective side edges (31) projecting with respect to said pack (2) in a direction orthogonal to said lifting (B) and forwarding (C) direction;
 - folding each of said side edges (31) by sliding said unit (22) on respective guide means (37) parallel to said forwarding direction (C); and sealing said folded side edges (31) to one another;
 said step of forwarding said unit (22) being carried out by lifting a movable member (26) cooperating with the base wall (5) of said pack (2);
characterized in that said step of forwarding said unit (22) is carried out also by actuating a counteracting member (27) acting on said unit (22) on the side opposite to said movable member (26) and comprising a support body (27a) and an operating head (27b) carried by said support body (27a) and elastically loaded onto said unit (22).
2. The method according to claim 1, wherein said movable member (26) has a thrusting face (28) acting on the whole base wall (5) of said pack (2).
 3. The method according to claim 1 or 2, wherein said counteracting member (27) acts on an intermediate portion of said top flap (4) of said pack (2) covered by said film (20).
 4. The method according to any of the preceding claims, wherein the forwarding of said closing element (32) is carried out during the return of said movable member (26) in the starting position.
 5. The method according to any of the preceding claims, wherein the folding of said second end edge (30) is aided by a mobile flap (35) projecting within said seat (23) during the forwarding of said unit (22) on said conveying plane (33).
 6. The method according to claim 5, wherein said mo-

bile flap (35) may be displaced between a withdrawn configuration, in which it does not project within said seat (23) to allow the passage of said unit (22), and a projecting configuration, in which it extends within said seat (23) from a downstream defining wall (25) of the seat (23); said mobile flap (35) is arranged at an angle with respect to said forwarding direction (C) and has an increasing distance with respect to the base wall (5) of said pack (2) towards the free end thereof.

7. The method according to any of the preceding claims, wherein said step of folding each of said side edges (31) comprises the step of folding, with reference to said forwarding direction (C), a front portion (40) and a back portion (41) of said side edge (31) on a corresponding side (7) of said pack (2) by respective pressure actions exerted in the forwarding direction (C) and in the direction opposite thereto.
8. The method according to any of the preceding claims, wherein said step of folding each of said side edges (31) comprises the step of engaging a top portion (47) and a bottom portion (48) of said side edge (31) within respective guide grooves (45, 46) of said guiding means (37) so as to rotate the top and bottom portions towards said side (7) of said pack (2).







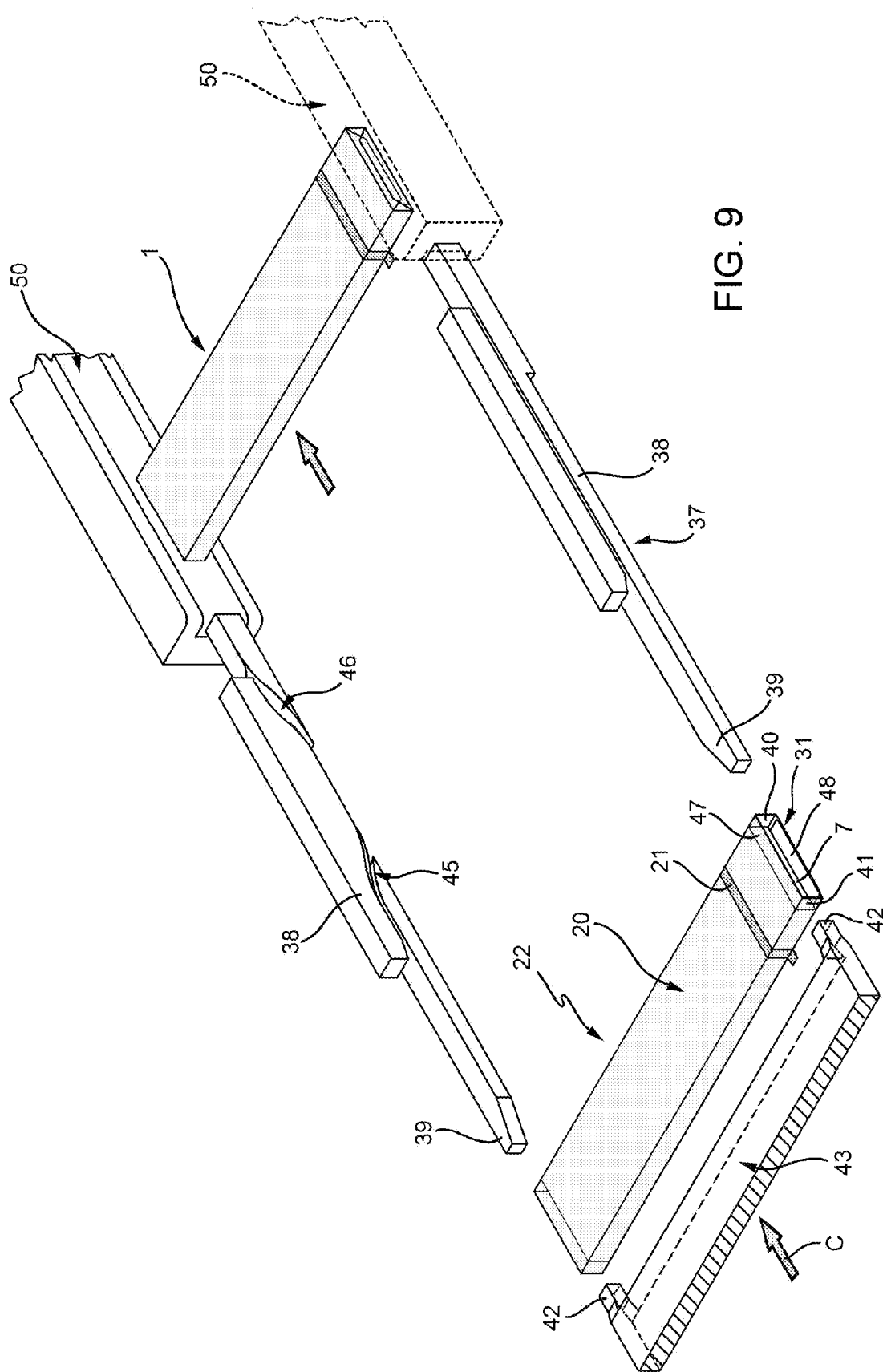


FIG. 9



EUROPEAN SEARCH REPORT

Application Number
EP 11 16 0097

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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A	DE 10 2007 013384 B3 (GIZEH RAUCHERBEDARF GMBH [DE]) 2 October 2008 (2008-10-02) * abstract; figure 1 *	1-8	
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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 1 July 2011	Examiner Garlati, Timea
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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EPO FORM 1503 03.82 (P04C01)

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

EP 11 16 0097

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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01-07-2011

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