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(54) **METHOD AND MACHINE FOR THE PACKAGING OF TOBACCO PRODUCTS**

VERFAHREN UND MASCHINE ZUR VERPACKUNG VON TABAKPRODUKTEN

PROCÉDÉ ET MACHINE D'EMBALLAGE DE PRODUITS DU TABAC

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Description

Technical Field

[0001] The present invention relates to a method of packaging a bundle of tobacco industry products wrapped in a flexible barrier material in a sheet of board material and to a packaging machine for packaging a bundle of tobacco industry products wrapped in a flexible barrier material in a sheet of board material.

Background

[0002] Tobacco industry products, such as smoking articles, including cigarettes, are contained in packs. Packs typically have an outer carton made from board, such as cardboard, which is folded to form a base and a hinged-lid. An inner frame may be attached to the base so that it protrudes from the base so that it is received in the lid when closed.

[0003] The bundle of tobacco industry products may comprise a group of tobacco industry products wrapped in a flexible barrier material that has a section that is separable from the remainder of the barrier material to form an extraction opening. A flexible label is attached to the section and to the lid so that, when the lid is rotated into its open position, the section is lifted together with the flexible label to open the extraction opening through which the tobacco industry products may be removed.

[0004] US 2017/0203910 discloses a cigarette pack with an outer hinged-lid pack and a sealed inner pack. The inner pack comprises an opening tab and a closure label, the closure label being fixed to the inner side of a lid front wall by an actuating tab and being movable with the lid (30) to the opening position.

[0005] WO 2007/093288 discloses a process for production and/or packaging of cigarette packs. The packages are treated with a plasma jet generated by a plasma generator.

[0006] DE 102015013734 discloses a plasma device for the pre-treatment of laminated cardboard blanks for the production of cigarette boxes.

[0007] US 5934461 discloses chemical treatment of an aluminium cigarette pack.

Summary of the Invention

[0008] In accordance with the embodiments described herein, there is provided a method of packaging a bundle of tobacco industry products wrapped in a flexible barrier material in a sheet of board material, and in which a packaging machine folds the sheet of board material to form a base to contain a bundle, and a lid rotatable relative to the base between open and closed positions, the lid having a front wall and a lid front wall flap having a rear face that lies against an inner surface of the lid front wall to enable a flexible label that extends over and is attached to a section of the flexible barrier material that defines an

extraction opening, to be adhered to a front face of the lid front wall flap with adhesive so that the section is lifted to open the extraction opening upon rotation of the lid towards its open position, the board material comprises a surface layer or coating which is on said front face of the lid front wall flap

wherein the method includes:

folding the lid front wall flap so that its rear face is against the inner surface of the lid front wall; adhering the lid front wall flap to the inner surface of the lid front wall; and non-mechanically treating the front face of the lid front wall flap which has been folded and adhered to the inner surface of the lid front wall to increase the receptivity of the lid front wall flap to the adhesive used to adhere the label to the front face of the lid front wall flap by removing at least a portion of the surface of the surface coating.

[0009] Preferably, the method comprises non-mechanically treating the front face of the lid front wall flap using a laser.

[0010] The rated power of the laser may be 100 Watts, and the method may comprise operating the laser at between 50% to 100% of its rated power.

[0011] The method may include moving the laser relative to the front face of the lid front wall flap during treatment.

[0012] The method may comprise treating the front face of the lid front wall flap using a plurality of lasers.

[0013] The method may comprise non-mechanically treating the front face of the lid front wall flap with a chemical or plasma in addition to, or separately from, treatment using a laser.

[0014] According to another aspect of the invention, there is provided a packaging machine for packaging a bundle of tobacco industry products wrapped in a flexible barrier material a sheet of board material, the packaging machine comprising:

a folding unit for folding a sheet of board material about the bundle to form a base and a lid, the lid being attached to the base and being rotatable between open and closed positions, the lid also having a lid front wall and a lid front wall flap with a front and a rear face, the folding unit being configured to fold the lid front wall flap so that the rear face lies against an inner surface of the lid front wall, and to adhere the folded lid front wall flap to the inner surface of the lid front wall, the board material comprises a surface layer or coating which is on said front face of the lid front wall flap,

a treatment unit to non-mechanically treat the front face of the lid front wall flap after the folded lid front wall flap has been adhered to the inner surface of the lid front wall to remove at least a portion of the surface layer or coating, and

an adhering unit for adhering a flexible label to the treated front face of the lid front wall flap, the flexible label extending over and being attached to a section of the flexible barrier material that defines an extraction opening, to be adhered with adhesive so that the section is lifted to open the extraction opening upon rotation of the lid towards its open position.

[0015] The treatment unit may comprise a laser. The rated power of the laser may be 100 Watts. The laser may be controlled at between 50% to 100% of its rated power. The packaging machine may comprise a drive unit to move the laser relative to the lid front wall flap during treatment. The treatment unit may comprise a plurality of lasers.

[0016] The treatment unit may be configured to treat the lid front wall flap chemically or using plasma.

Brief Description of the Drawings

[0017] Embodiments of the invention will now be described, by way of example only, with reference to the accompanying drawings, in which:

Figure 1 shows a perspective view of a pack with the lid open, and in which a lower edge or a tab region of a label is attached to the front face of a lid front wall flap;

Figure 2 shows a cross-sectional side elevation of an upper portion of the pack according to Figure 1; Figure 3 shows a top plan view of part of a sheet of board material that is foldable to form a container in which a bundle of tobacco industry products is received; and

Figure 4 illustrates how the lid front wall flap may be treated using a laser or other non-mechanical treatment device.

Detailed Description

[0018] Figure 1 shows an example rigid pack 1, made from a board material such as paperboard or cardboard, with a hinged lid 2 and a base 3 containing a group of cigarettes 4 wrapped in a flexible barrier material 5 to form a bundle 6. An extraction opening 7 is formed in the barrier material 5. The extraction opening 7 is formed when a separable section 8 of the barrier material 5 is lifted to allow access to the cigarettes 4. The barrier material 5 may be made of metallized plastics or of a plastics/metal foil laminate material.

[0019] A flexible extends over and is attached to the section 8 and has, on its undersurface facing the barrier material 5, a pressure sensitive re-stick adhesive which is of sufficient strength to ensure that the label 9 remains adhered to the section 8. As an alternative to re-stick adhesive, a permanent bonding adhesive may be applied to the portion of the undersurface of the label 9 which overlies the removable section 8. However, where the

label 9 extends beyond the removable section 8, its undersurface is provided with re-stick adhesive.

[0020] To ensure good adhesion, an inner frame (not shown) may be provided within the bundle 6 so that it extends partially around the cigarettes 4 beneath the barrier material 5. The inner frame provides a reaction surface underneath the barrier material 5 against the resealing pressure exerted by the label 9 around the periphery of the extraction opening 7.

[0021] A region 10 (see Figure 2) of a lower front wall edge of the label 9, which may include a tab, is attached to the front wall 11 of the lid 2 so that the label 9 is peeled back to reveal the extraction opening 7 at the same time the lid 2 is opened. In particular, with the lid 2 in an open position, as shown in Figure 1 and 2, section 8 of the barrier material 5 is drawn back to reveal the extraction opening 7 and to enable a consumer to readily extract a cigarette 4 from the bundle 6. Although section 8 may be removable, it will be appreciated that it may remain at least partially attached to the remainder of the barrier material 5 when the extraction opening 7 is revealed.

[0022] A portion of the outer surface 12 of the label 9 is attached to the lid 2 using permanent adhesive so that it folds back relative to the remainder of the label 9 when the lid 2 is rotated into an open position (as most clearly seen in Figure 2).

[0023] When the lid 2 is pivoted about hinge 13 into its open position, the label 9 is peeled back or rolled away from the barrier material 5 together with the removable section 8. If the pack 1 is being opened for the first time, the removable region 8 may also separate from the remainder of the barrier material 5 along a line of weakening that separates the removable region 8 from the remainder of the barrier material 5, as the lid 2 is opened.

[0024] It will be appreciated that, when the lid 2 is rotated about the hinge 13 back into its closed position, the label 9 will roll back across the barrier material 5 and the removable region 8 of the barrier material 5 will re-position itself within the extraction opening 7. The peelable adhesive coating a peripheral region 14 of the label 9 will readhere to the barrier material 4 surrounding the extraction opening 6 to reseal the pack 1.

[0025] The lid 2 comprises a front wall 14 and a lid front wall flap 15 which is folded relative to the front wall 14 substantially 180 degrees about a fold line 'F' between the lid front wall 14 and the lid front wall flap 15 so that a rear face 16 of the lid front wall flap 15 lies against an inner face 17 of the lid front wall 14, leaving a front face 18 of the lid front wall flap 15 exposed.

[0026] The rear face 16 of the lid front wall flap 15 may be permanently adhered to the inner surface 17 of the lid front wall 14. By folding the lid front wall flap 15 about fold line F, print may be applied to an outer surface 19 of the lid front wall 14 and around the fold line F onto the front face 18 of the lid front wall flap 15. The outer surface of the label 9 is adhered to the front face 18 of the lid front wall flap 15.

[0027] The sheet of board material from which the lid

and base are formed has a metallised, or otherwise coated, external surface layer. This surface is the external surface visible to a consumer. For example, the board material may be Transmet board, which is a film-free metallic laminate for paperboard that provides a print receptive coating to the base material in a bright metallic finish. Transmet laminate is manufactured by the API Group. Alternatively, the board material may be Metpol, which has a layer of metallisation coated with a polymer layer.

[0028] It will be understood that, as a result of folding the lid front wall flap 15 about the fold line 'F', the front face 18 of the lid front wall flap 15 to which the label 9 is adhered has the metallised, or otherwise coated, surface. This surface or coating has a low affinity or receptivity to adhesive, as the adhesive is unable to penetrate the material, or penetrate it sufficiently, to form a good bond. Both Transmet and Metpol boards suffer from this problem, as the external surface layer is non-porous and so does not readily absorb adhesive.

[0029] According to embodiments of the invention, the front face 18 of the lid front wall flap 15 is non-mechanically treated to increase its receptivity or affinity to adhesive thereby improving the bond between the lid front wall flap 15 and the label 9.

[0030] The non-mechanical treatment of the lid front wall flap 15 removes all, or some, of the surface layer or coating, to thereby expose the underlying board which has a much greater affinity for adhesive. The label 9 is therefore adhered to treated surface. It will be appreciated that the non-mechanical treatment may be carried out on all of the front face of the lid front wall flap. Alternatively it may be carried out on portions of it.

[0031] Treatment may be carried out using a laser, such as a CO₂ laser. The laser 20 may have a power rating of 100Watts and be operated within a range of 50% to 90% of its power to remove the surface layer or coating whilst causing little or no damage to the underlying board. The use of a laser is shown in Figure 4, in which a laser treatment unit 20 is shown, that emits a laser beam 'L' towards the front face 18 of the lid front wall flap 15. If required, the laser may move. For example, the laser 20 may move as indicated by arrows marked 'X' and 'Y' in Figure 4. Otherwise, the laser treatment unit 20 may remain stationary and the lid front wall flap 15 may pass beneath it. The laser treatment unit 20 may be active for a short period of time sufficient to treat the lid front wall flap 15. For example, the laser treatment unit 20 may be operational for a period of time in the region of 0.5 seconds.

[0032] In alternative embodiments, the lid front wall flap 15 may be treated to remove a portion of the surface using a chemical or by using plasma.

[0033] From Figure 4, it will be appreciated that treatment occurs after the lid front wall flap 15 has been folded against the inner surface 17 of the lid front wall 14 by a folding unit 21, and prior to the application of adhesive in an adhering unit 22 that applies adhesive to the treated front face 18 of the lid front wall flap 15 and sticks the

label 9 to the front face 18. However, it will be appreciated that the treatment may occur at any time or stage in the manufacturing or packaging process. For example, the non-mechanical treatment may be carried out prior to folding the lid front wall flap 15.

[0034] It will also be appreciated that only part of the lid front wall flap 15 may be treated, or the whole of the flap may be treated. The part of the lid front wall flap 15 which is treated may be treated such that all or only part of a surface layer or coating is removed.

[0035] In a preferred embodiment, treatment occurs in a packaging machine, during assembly of the pack after the folding unit 21 has folded the lid front wall flap 15 against the inner surface 17 of the lid front wall 14 but prior to any further folding of the sheet. Folding of the lid front wall flap 15 against the inner surface 17 of the lid front wall 14 is illustrated in Figure 3, and shows the lid front wall flap 15 being rotated, about the fold line F extending along a lower edge of the lid front wall 14, in the direction of arrow 'A'.

[0036] The label 9, which has a portion attached to the front face 18 of the lid front wall flap 15, may be a separate element that is applied to the wrapped bundle 6. However, in an alternative embodiment, the barrier material 5 may be a laminate material. In this case, the label 9 may be integrally formed from the barrier material 5 and comprise one or more layers of the laminate.

[0037] As used herein, the term "tobacco industry product" is to be understood as including smoking articles comprising combustible smoking articles such as cigarettes, cigarillos, cigars, tobacco for pipes or for roll-your-own cigarettes, (whether based on tobacco, tobacco derivatives, expanded tobacco, reconstituted tobacco, tobacco substitutes or other smokable material), electronic smoking articles such as e-cigarettes, heating devices that release compounds from substrate materials without burning such as tobacco heating products; and hybrid systems to generate aerosol from a combination of substrate materials, for example hybrid systems containing a liquid or gel or solid substrate.

[0038] In one embodiment, the tobacco industry product is a smoking article for combustion selected from the group consisting of a cigarette, a cigarillo and a cigar.

[0039] In one embodiment, the tobacco industry product is a non-combustible smoking article.

[0040] In one embodiment the tobacco industry product is a heating device which releases compounds by heating, but not burning, a substrate material. The material may be for example tobacco or other non-tobacco products, which may or may not contain nicotine. In one embodiment the heating device is a tobacco heating device.

[0041] In another embodiment the tobacco industry product is a hybrid system to generate aerosol by heating, but not burning, a combination of substrate materials. The substrate materials may comprise for example solid, liquid or gel which may or may not contain nicotine. In one embodiment, the hybrid system comprises a liquid

or gel substrate and a solid substrate. The solid substrate may be for example tobacco or other non-tobacco products, which may or may not contain nicotine. In one embodiment the hybrid system comprises a liquid or gel substrate and tobacco.

[0042] Embodiments of the invention are described with reference to tobacco industry products, for example cigarettes. However, it will be appreciated that methods and packs of the invention may alternatively be used for non-tobacco industry related products.

[0043] In order to address various issues and advance the art, the entirety of this disclosure shows by way of illustration various embodiments in which the claimed invention(s) may be practiced and provide a superior method of packaging a bundle of tobacco industry products wrapped in a flexible barrier material, and to a packaging machine for packaging bundle of tobacco industry products wrapped in a flexible barrier material. The advantages and features of the disclosure are of a representative sample of embodiments only, and are not exhaustive and/or exclusive. They are presented only to assist in understanding and teach the claimed features.

Claims

1. A method of packaging a bundle of tobacco industry products wrapped in a flexible barrier material in a sheet of board material, and in which a packaging machine folds the sheet of board material to form a base (3) to contain a bundle (6), and a lid (2) rotatable relative to the base (3) between open and closed positions, the lid (2) having a front wall (14) and a lid front wall flap (15) having a rear face (16) that lies against an inner surface (17) of the lid front wall (14) to enable a flexible label (9), that extends over and is attached to a section (8) of the flexible barrier material (5) that defines an extraction opening (7), to be adhered to a front face (18) of the lid front wall flap (15) with adhesive so that the section (8) is lifted to open the extraction opening (7) upon rotation of the lid (2) towards its open position, the board material comprises a surface layer or coating which is on said front face (18) of the lid front wall flap (15), wherein the method includes:

folding the lid front wall flap (15) so that its rear face (16) is against the inner surface (17) of the lid front wall (14);

adhering the lid front wall flap (15) to the inner surface (17) of the lid front wall (14); and

characterised in that the method comprises non-mechanically treating the front face (18) of the lid front wall flap (15) which has been folded and adhered to the inner surface (17) of the lid front wall (14) to increase the receptivity of the lid front wall flap (15) to the adhesive used to adhere the flexible label (9) to the front face (18)

of the lid front wall flap (15) by removing at least a portion of the surface layer or coating.

2. A method according to claim 1, comprising non-mechanically treating the front face (18) of the lid front wall flap (15) using a laser.
3. A method according to claim 2, wherein the rated power of the laser is 100 Watts, and the method comprises operating the laser at between 50% to 100% of its rated power.
4. A method according to claims 2 or 3, comprising moving the laser relative to the front face (18) of the lid front wall flap (15) during treatment.
5. A method according to any of claims 2 to 4, comprising treating the front face (18) of the lid front wall flap (15) using a plurality of lasers.
6. A method according to claim 1, comprising non-mechanically treating the front face (18) of the lid front wall flap (15) with a chemical.
7. A method according to claim 1, comprising non-mechanically treating the front face (18) of the lid front wall flap (15) using plasma.
8. A packaging machine for packaging a bundle of tobacco industry products wrapped in a flexible barrier material in a sheet of board material, the packaging machine comprising:
 - a folding unit (21) for folding a sheet of board material about the bundle (6) to form a base (3) and a lid (2), the lid (2) being attached to the base (3) and being rotatable between open and closed positions, the lid (2) also having a lid front wall (14) and a lid front wall flap (15) with a front and a rear face (18, 16), the folding unit being configured to fold the lid front wall flap (15) so that the rear face (16) lies against an inner surface (17) of the lid front wall (14), and to adhere the folded lid front wall flap (15) to the inner surface (17) of the lid front wall (14), the board material comprises a surface layer or coating which is on said front face (18) of the lid front wall flap (15),
 - a treatment unit (20) to non-mechanically treat the front face (18) of the lid front wall flap (15) after the folded lid front wall flap (15) has been adhered to the inner surface (17) of the lid front wall (14) to remove at least a portion of the surface layer or coating, and
 - an adhering unit (22) for adhering a flexible label (9) to the treated front face (18) of the lid front wall flap (15), the flexible label (9) extending over and being attached to a section (8) of the flexible

barrier material (5) that defines an extraction opening (7), to be adhered with adhesive so that the section (8) is lifted to open the extraction opening (7) upon rotation of the lid (2) towards its open position.

9. A packaging machine according to claim 8, wherein the treatment unit (20) comprises a laser.
10. A packaging machine according to claim 9, wherein the rated power of the laser is 100 Watts.
11. A packaging machine according to claim 10, comprising a controller operable to drive the laser at between 50% to 100% of its rated power.
12. A packaging machine according to any of claims 9 to 11, comprising a drive unit to move the laser relative to the lid front wall flap (15) during treatment.
13. A packaging machine according to any of claims 9 to 12, wherein the treatment unit (20) comprises a plurality of lasers.
14. A packaging machine according to claim 8, wherein the treatment unit (20) is configured to treat the lid front wall flap (15) chemically.
15. A packaging machine according to claim 8, wherein the treatment unit (20) is configured to treat the lid front wall flap (15) using plasma.

Patentansprüche

1. Verfahren zum Verpacken eines Bündels von Tabakindustrieprodukten, das in ein flexibles Barrierematerial eingewickelt ist, in einer Lage aus Pappmaterial, bei dem eine Verpackungsmaschine die Lage aus Pappmaterial faltet, um eine Basis (3) zum Aufnehmen eines Bündels (6) und einen Deckel (2), der relativ zu der Basis (3) zwischen einer offenen und einer geschlossenen Position drehbar ist, zu bilden, wobei der Deckel (2) eine Vorderwand (14) und eine Deckelvorderwandlasche (15) aufweist, die eine Rückseite (16) aufweist, die an einer Innenfläche (17) der Deckelvorderwand (14) anliegt, um ein flexibles Etikett (9) zu ermöglichen, das sich über einen Abschnitt (8) des flexiblen Barrierematerials (5) erstreckt und daran befestigt ist, der eine Entnahmeöffnung (7) definiert und mittels eines Klebstoffes derart an eine Vorderseite (18) der Deckelvorderwandlasche (15) anzukleben ist, dass der Abschnitt (8) angehoben wird, um die Entnahmeöffnung (7) zu öffnen, wenn der Deckel (2) in Richtung seiner offenen Position gedreht wird, wobei das Pappmaterial eine Oberflächenschicht oder Beschichtung auf der Vorderseite (18) der Deckelvorderwandlasche (15)

umfasst,
wobei das Verfahren Folgendes beinhaltet:

Falten der Deckelvorderwandlasche (15) derart, dass ihre Rückseite (16) an der Innenfläche (17) der Deckelvorderwand (14) anliegt;
Ankleben der Deckelvorderwandlasche (15) an die Innenfläche (17) der Deckelvorderwand (14); und
dadurch gekennzeichnet, dass das Verfahren ein nichtmechanisches Behandeln der Vorderseite (18) der Deckelvorderwandlasche (15) umfasst, die gefaltet und an die Innenfläche (17) der Deckelvorderwand (14) angeklebt wurde, um die Aufnahmefähigkeit der Deckelvorderwandlasche (15) für den Klebstoff zu erhöhen, der zum Ankleben des flexiblen Etiketts (9) an die Vorderseite (18) der Deckelvorderwandlasche (15) verwendet wird, durch Entfernen zumindest eines Teils der Oberflächenschicht oder Beschichtung.

2. Verfahren nach Anspruch 1, das ein nichtmechanisches Behandeln der Vorderseite (18) der Deckelvorderwandlasche (15) unter Verwendung eines Lasers umfasst.
3. Verfahren nach Anspruch 2, wobei die Nennleistung des Lasers 100 Watt beträgt und das Verfahren ein Betreiben des Lasers mit zwischen 50 % und 100 % seiner Nennleistung umfasst.
4. Verfahren nach Anspruch 2 oder 3, das ein Bewegen des Lasers relativ zu der Vorderseite (18) der Deckelvorderwandlasche (15) während der Behandlung umfasst.
5. Verfahren nach einem der Ansprüche 2 bis 4, das ein Behandeln der Vorderseite (18) der Deckelvorderwandlasche (15) unter Verwendung einer Vielzahl von Lasern umfasst.
6. Verfahren nach Anspruch 1, das ein nichtmechanisches Behandeln der Vorderseite (18) der Deckelvorderwandlasche (15) mit einer Chemikalie umfasst.
7. Verfahren nach Anspruch 1, das ein nichtmechanisches Behandeln der Vorderseite (18) der Deckelvorderwandlasche (15) unter Verwendung von Plasma umfasst.
8. Verpackungsmaschine zum Verpacken eines Bündels von Tabakindustrieprodukten, das in ein flexibles Barrierematerial eingewickelt ist, in einer Lage aus Pappmaterial, wobei die Verpackungsmaschine Folgendes umfasst:

- eine Falteinheit (21) zum Falten einer Lage aus Pappmaterial um das Bündel (6) zum Bilden einer Basis (3) und eines Deckels (2), wobei der Deckel (2) an der Basis (3) befestigt und zwischen einer offenen und einer geschlossenen Position drehbar ist, wobei der Deckel (2) zudem eine Deckelvorderwand (14) und eine Deckelvorderwandlasche (15) mit einer Vorder- und einer Rückseite (18, 16) aufweist, wobei die Falteinheit dazu konfiguriert ist, die Deckelvorderwandlasche (15) derart zu falten, dass die Rückseite (16) an einer Innenfläche (17) der Deckelvorderwand (14) anliegt, und die gefaltete Deckelvorderwandlasche (15) an die Innenfläche (17) der Deckelvorderwand (14) anzukleben, wobei das Pappmaterial eine Oberflächenschicht oder Beschichtung auf der Vorderseite (18) der Deckelvorderwandlasche (15) umfasst, eine Behandlungseinheit (20) zum nichtmechanischen Behandeln der Vorderseite (18) der Deckelvorderwandlasche (15), nachdem die gefaltete Deckelvorderwandlasche (15) an die Innenfläche (17) der Deckelvorderwand (14) angeklebt wurde, um zumindest einen Teil der Oberflächenschicht oder Beschichtung zu entfernen, und eine Klebeeinheit (22) zum Ankleben eines flexiblen Etiketts (9) an die behandelte Vorderseite (18) der Deckelvorderwandlasche (15), wobei sich das flexible Etikett (9) über einen Abschnitt (8) des flexiblen Barrierematerials (5) erstreckt und daran befestigt ist, der eine Entnahmeöffnung (7) definiert und mittels eines Klebstoffs derart angeklebt wird, dass der Abschnitt (8) angehoben wird, um die Entnahmeöffnung (7) zu öffnen, wenn der Deckel (2) in Richtung seiner offenen Position gedreht wird.
9. Verpackungsmaschine nach Anspruch 8, wobei die Behandlungseinheit (20) einen Laser umfasst.
10. Verpackungsmaschine nach Anspruch 9, wobei die Nennleistung des Lasers 100 Watt beträgt.
11. Verpackungsmaschine nach Anspruch 10, die eine Steuerung umfasst, die betrieben werden kann, um den Laser mit zwischen 50 % und 100 % seiner Nennleistung anzutreiben.
12. Verpackungsmaschine nach einem der Ansprüche 9 bis 11, die eine Antriebseinheit zum Bewegen des Lasers relativ zu der Deckelvorderwandlasche (15) während der Behandlung umfasst.
13. Verpackungsmaschine nach einem der Ansprüche 9 bis 12, wobei die Behandlungseinheit (20) eine Vielzahl von Lasern umfasst.

14. Verpackungsmaschine nach Anspruch 8, wobei die Behandlungseinheit (20) dazu konfiguriert ist, die Deckelvorderwandlasche (15) chemisch zu behandeln.

15. Verpackungsmaschine nach Anspruch 8, wobei die Behandlungseinheit (20) dazu konfiguriert ist, die Deckelvorderwandlasche (15) unter Verwendung von Plasma zu behandeln.

Revendications

1. Procédé d'emballage d'un paquet de produits de l'industrie du tabac enveloppé dans un matériau barrière flexible dans une feuille de matériau en carton, et dans lequel une machine d'emballage plie la feuille de matériau en carton pour former une base (3) pour contenir un paquet (6), et un couvercle (2) pouvant tourner par rapport à la base (3) entre des positions ouverte et fermée, le couvercle (2) ayant une paroi avant (14) et un rabat de paroi avant de couvercle (15) ayant une face arrière (16) qui repose contre une surface interne (17) de la paroi avant de couvercle (14) pour permettre à une étiquette flexible (9), qui s'étend sur et est fixée à une section (8) du matériau barrière flexible (5) qui définit une ouverture d'extraction (7), d'être collée sur une face avant (18) du rabat de paroi avant de couvercle (15) avec un adhésif de sorte que la section (8) est soulevée pour ouvrir l'ouverture d'extraction (7) lors de la rotation du couvercle (2) vers sa position ouverte, le matériau en carton comprend une couche ou un revêtement de surface qui se trouve sur ladite face avant (18) du rabat de paroi avant de couvercle (15), dans lequel le procédé comporte :

le pliage du rabat de paroi avant de couvercle (15) de sorte que sa face arrière (16) est contre la surface interne (17) de la paroi avant de couvercle (14) ;

le collage du rabat de paroi avant de couvercle (15) sur la surface interne (17) de la paroi avant de couvercle (14) ; et

caractérisé en ce que le procédé comprend le traitement non mécanique de la face avant (18) du rabat de paroi avant de couvercle (15) qui a été pliée et collée sur la surface interne (17) de la paroi avant de couvercle (14) pour augmenter la réceptivité du rabat de paroi avant de couvercle (15) à l'adhésif utilisé pour coller l'étiquette flexible (9) sur la face avant (18) du rabat de paroi avant de couvercle (15) en retirant au moins une partie de la couche ou du revêtement de surface.

2. Procédé selon la revendication 1, comprenant le traitement non mécanique de la face avant (18) du rabat

de paroi avant de couvercle (15) à l'aide d'un laser.

3. Procédé selon la revendication 2, dans lequel la puissance nominale du laser est de 100 watts, et le procédé comprend le fonctionnement du laser entre 50 % et 100 % de sa puissance nominale. 5
4. Procédé selon les revendications 2 ou 3, comprenant le déplacement du laser par rapport à la face avant (18) du rabat de paroi avant de couvercle (15) lors du traitement. 10
5. Procédé selon l'une quelconque des revendications 2 à 4, comprenant le traitement de la face avant (18) du rabat de paroi avant de couvercle (15) à l'aide d'une pluralité de lasers. 15
6. Procédé selon la revendication 1, comprenant le traitement non mécanique de la face avant (18) du rabat de paroi avant de couvercle (15) à l'aide d'un produit chimique. 20
7. Procédé selon la revendication 1, comprenant le traitement non mécanique de la face avant (18) du rabat de paroi avant de couvercle (15) à l'aide d'un plasma. 25
8. Machine d'emballage pour emballer un paquet de produits de l'industrie du tabac enveloppé dans un matériau barrière flexible dans une feuille de matériau en carton, la machine d'emballage comprenant : 30
 - une unité de pliage (21) pour plier une feuille de matériau en carton autour du paquet (6) pour former une base (3) et un couvercle (2), le couvercle (2) étant fixé à la base (3) et pouvant tourner entre des positions ouverte et fermée, le couvercle (2) ayant également une paroi avant de couvercle (14) et un rabat de paroi avant de couvercle (15) avec une face avant et une face arrière (18, 16), l'unité de pliage étant configurée pour plier le rabat de paroi avant de couvercle (15) de sorte que la face arrière (16) repose contre une surface interne (17) de la paroi avant de couvercle (14), et pour coller le rabat de paroi avant de couvercle (15) plié sur la surface interne (17) de la paroi avant de couvercle (14), le matériau en carton comprend une couche ou un revêtement de surface qui se trouve sur ladite face avant (18) du rabat de paroi avant de couvercle (15), 35
 - une unité de traitement (20) pour traiter de manière non mécanique la face avant (18) du rabat de paroi avant de couvercle (15) après que le rabat de paroi avant de couvercle (15) plié a été collé sur la surface interne (17) de la paroi avant de couvercle (14) pour retirer au moins une partie de la couche ou du revêtement de surface, et une unité de collage (22) pour coller une étiquet- 40

te flexible (9) sur la face avant (18) traitée du rabat de paroi avant de couvercle (15), l'étiquette flexible (9) s'étendant sur et étant fixée à une section (8) du matériau barrière flexible (5) qui définit une ouverture d'extraction (7), devant être collée avec un adhésif de sorte que la section (8) est soulevée pour ouvrir l'ouverture d'extraction (7) lors de la rotation du couvercle (2) vers sa position ouverte. 45

9. Machine d'emballage selon la revendication 8, dans laquelle l'unité de traitement (20) comprend un laser. 50
10. Machine d'emballage selon la revendication 9, dans laquelle la puissance nominale du laser est de 100 watts. 55
11. Machine d'emballage selon la revendication 10, comprenant un dispositif de commande pouvant être utilisé pour commander le laser entre 50 % et 100 % de sa puissance nominale.
12. Machine d'emballage selon l'une quelconque des revendications 9 à 11, comprenant une unité d'entraînement pour déplacer le laser par rapport au rabat de paroi avant de couvercle (15) lors du traitement.
13. Machine d'emballage selon l'une quelconque des revendications 9 à 12, dans laquelle l'unité de traitement (20) comprend une pluralité de lasers.
14. Machine d'emballage selon la revendication 8, dans laquelle l'unité de traitement (20) est configurée pour traiter chimiquement le rabat de paroi avant de couvercle (15).
15. Machine d'emballage selon la revendication 8, dans laquelle l'unité de traitement (20) est configurée pour traiter le rabat de paroi avant de couvercle (15) à l'aide d'un plasma.

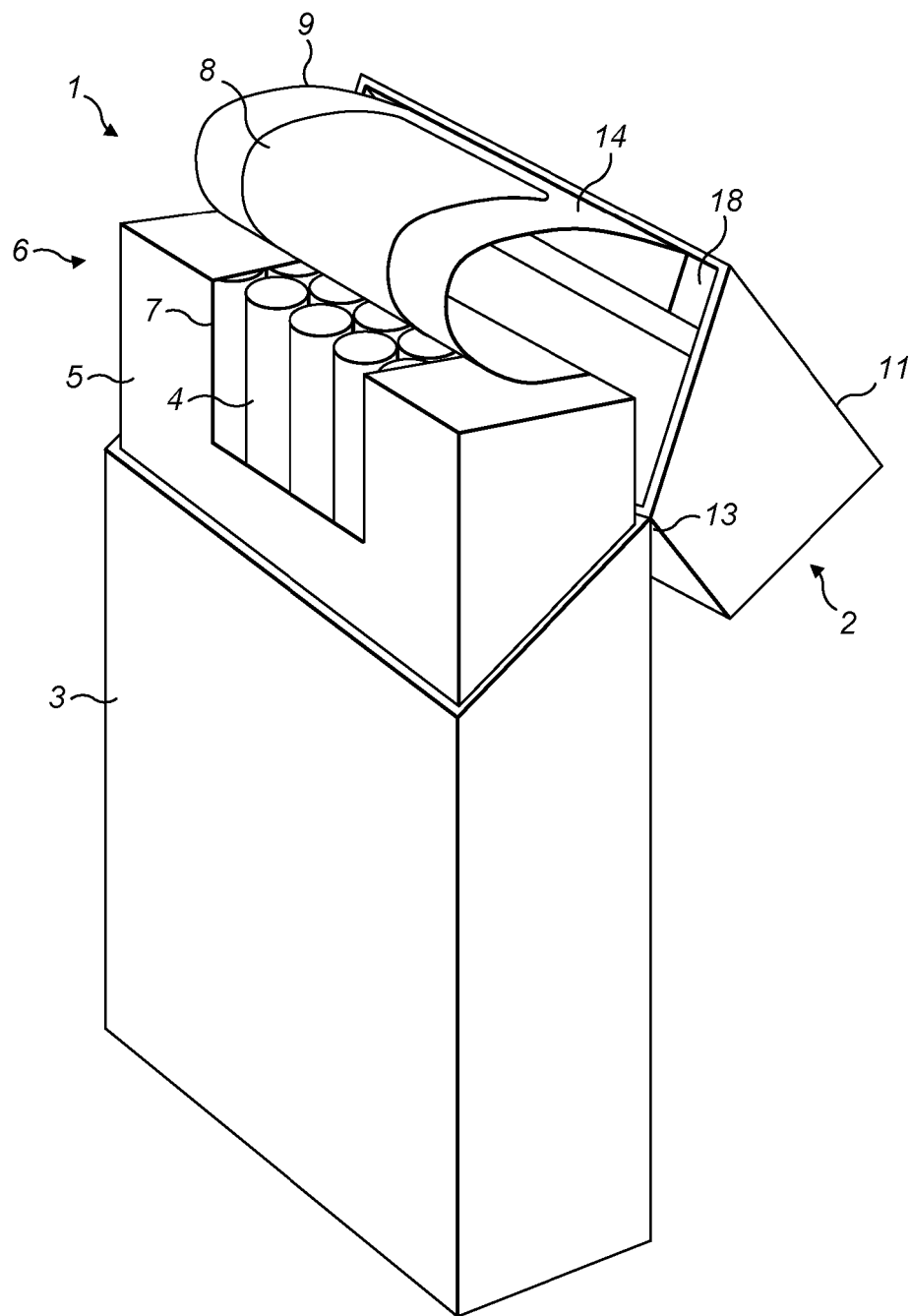


FIG. 1

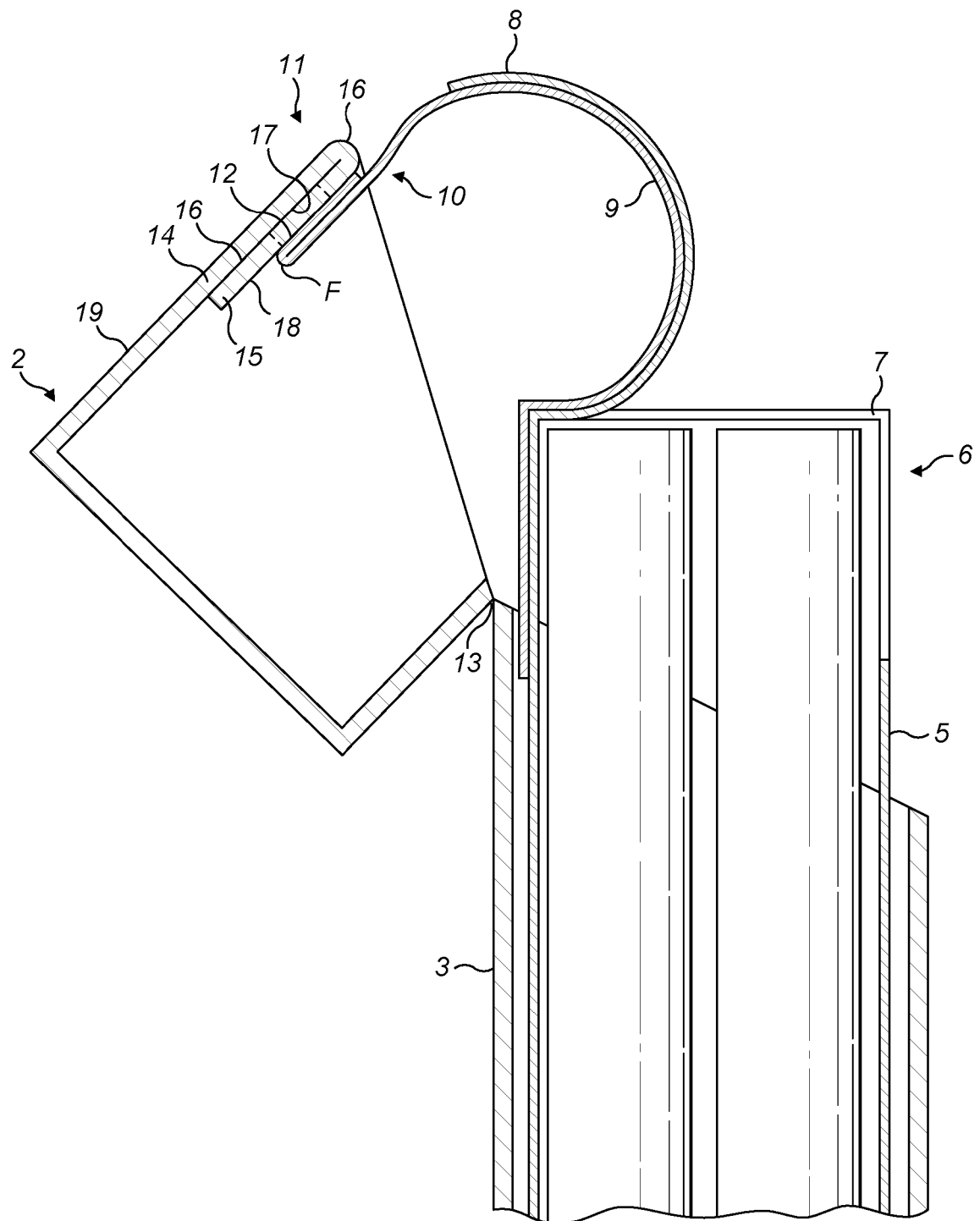


FIG. 2

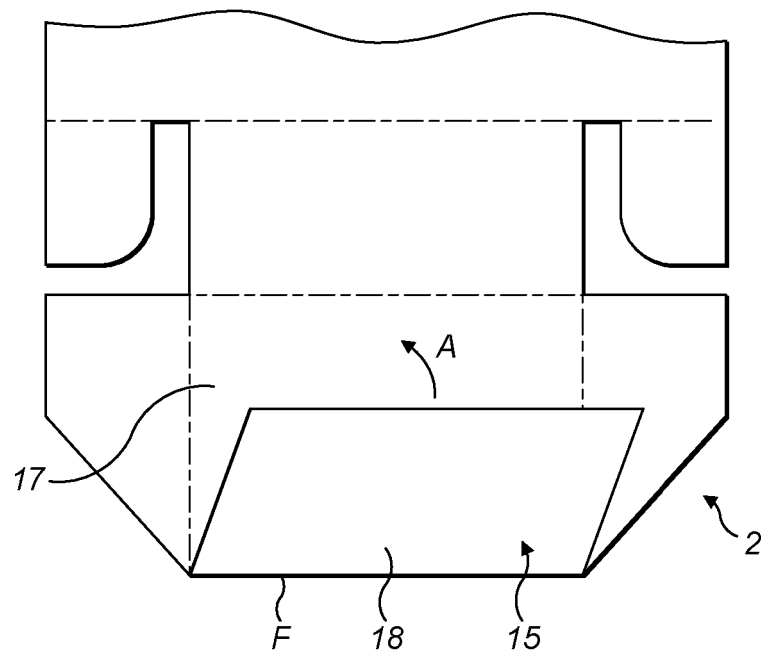


FIG. 3

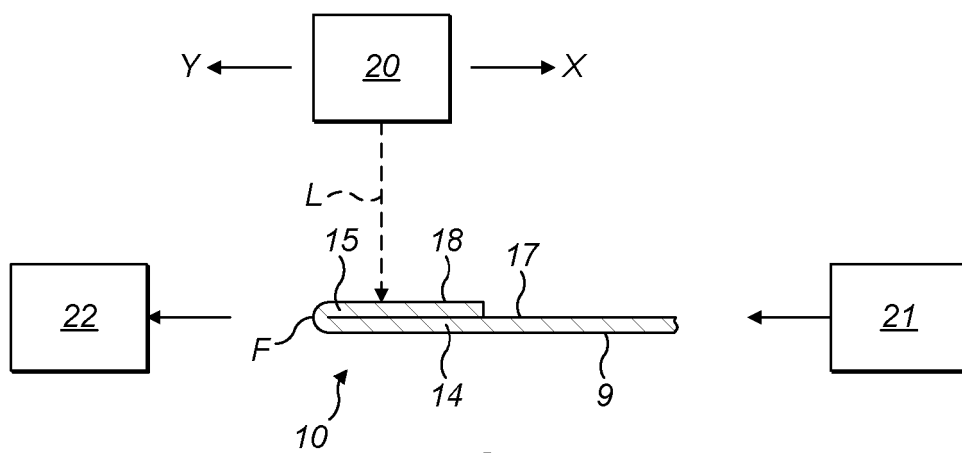


FIG. 4

REFERENCES CITED IN THE DESCRIPTION

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