(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 4 440 938 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
07.05.2025 Bulletin 2025/19

(21) Application number: **22829841.0**

(22) Date of filing: **22.11.2022**

(51) International Patent Classification (IPC):
B65B 19/20 *(2006.01)* ***B26D 1/14*** *(2006.01)*
B26D 1/143 *(2006.01)* ***B26D 7/18*** *(2006.01)*
B65B 19/22 *(2006.01)* ***B65B 61/00*** *(2006.01)*
B65B 61/08 *(2006.01)* ***B65D 5/54*** *(2006.01)*
B65D 85/10 *(2006.01)*

(52) Cooperative Patent Classification (CPC):
B65B 19/22; B26D 7/1863; B26D 7/27; B65B 19/20; B65B 61/005; B65B 61/08; B65D 85/1045; B65D 85/1063; B26D 1/141; B26D 11/00

(86) International application number:
PCT/IB2022/061252

(87) International publication number:
WO 2023/100028 (08.06.2023 Gazette 2023/23)

(54) METHOD AND UNIT TO CUT A WALL OF A PACK

VERFAHREN UND VORRICHTUNG ZUM SCHNEIDEN EINER PACKUNGSWAND

MÉTHODE ET UNITÉ POUR COUPER UNE PAROI D'UN EMBALLAGE

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR

(30) Priority: **30.11.2021 IT 202100030179**

(43) Date of publication of application:
09.10.2024 Bulletin 2024/41

(73) Proprietor: **G.D SOCIETA' PER AZIONI**
40133 Bologna (IT)

(72) Inventors:
- **FERRARI, Michele**
  40133 BOLOGNA (IT)
- **GAMBERINI, Giuliano**
  40133 BOLOGNA (IT)
- **ROMAGNOLI, Stefano**
  40133 BOLOGNA (IT)

(74) Representative: **Studio Torta S.p.A.**
Via Viotti, 9
10121 Torino (IT)

(56) References cited:
WO-A1-2008/012489 **US-B1- 6 941 728**
US-B2- 7 415 812

EP 4 440 938 B1

Description

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This Patent Application claims priority from Italian Patent Application No. 102021000030179 filed on November 30, 2021.

TECHNICAL FIELD

[0002] The present invention relates to a method and unit to cut a wall of a pack, in particular of smoking articles.

[0003] The present invention finds advantageous application in a packing machine (for example a cellophane wrapping machine) for manufacturing a pack of cigarettes known as *"book-pack,* to which the following disclosure will make explicit reference without thereby losing generality.

PRIOR ART

[0004] A *"book-pack"* pack of cigarettes comprises (at least) two containers, which house respective wrapped groups of cigarettes, have respective open upper ends, and are hinged to one another so as to rotate between a closed configuration, in which the two containers are overlapping one another, and an open configuration, in which the two containers are separate; furthermore, a lid is provided which is hinged to a rear container and, when in a closed position, embraces the upper part of both containers.

[0005] The production of a *"book-pack"* pack of cigarettes provides for the forming of the two containers by using two corresponding blanks which are folded around the respective wrapped groups of cigarettes, coupling (overlapping) the two containers, and then folding around the two coupled (overlapped) containers a third blank that joins the two containers and forms the common lid.

[0006] After folding the third blank, it is necessary to make a cut in the bottom wall of the *"book-pack"* pack of cigarettes to allow the separation of the two containers (namely to allow the two containers to rotate relative to one another); normally a double cut is made (that is, two close and parallel cuts) to remove a flap (strap) from the bottom wall so as to obtain a clear separation between the two containers. For said purpose a cutting unit is used that is provided with two parallel and adjacent rotary blades, which are partially housed in a collecting chamber subject to suction, which should capture and remove the strap as soon as the strap has been separated from the rest of the bottom wall. However, it is not infrequent that even after the cut made by the two rotary blades, the strap remains stuck in the bottom wall and therefore is not removed by the suction; consequently, downstream of the cutting unit some *"book-pack"* packs of cigarettes still have the strap on the bottom which may be more or less in the original position. This can generate various problems such as the loss of the strap in the machine before applying the transparent plastic overwrap or the wrapping (with the transparent plastic overwrap) of the strap together with the pack in completely random positions giving the final user the impression of a low-quality pack of cigarettes.

[0007] US7415812B2 describes a packing machine for manufacturing a pack of cigarettes and comprising: a first wrapping unit for forming a first wrap containing a group of cigarettes, a second wrapping unit for forming a second wrap containing another group of cigarettes, and a third wrapping unit for joining the two wraps by means of an outer blank provided with a hinge which allows the two wraps to rotate relative to one another.

DESCRIPTION OF THE INVENTION

[0008] The object of the present invention is to provide a method and a unit to cut a wall of a pack, in particular of smoking articles that allow to make the cut without undesirable consequences, in particular that allow to ensure the removal of the strap after the cut, and, at the same time, are easy and inexpensive to implement.

[0009] According to the present invention, a method and a unit to cut a wall of a pack, in particular of smoking articles, are provided, according to what is claimed in the attached claims.

[0010] The claims describe embodiments of the present invention forming an integral part of the present description.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] The present invention will now be described with reference to the attached drawings, which illustrate a non-limiting embodiment thereof, wherein:

- Figure 1 is a perspective view of a *"book-pack"* pack of cigarettes in a closed configuration;
- Figure 2 is a perspective view of the pack of cigarettes of Figure 1 in an open configuration;
- Figure 3 is a view of a blank used to manufacture the pack of cigarettes of Figure 1;
- Figure 4 is a schematic plan view of a cutting unit to make a cut in a bottom wall of the pack of cigarettes of Figure 1;
- Figures 5-8 schematically illustrate a sequence of operations carried out in the cutting unit of Figure 4; and
- Figure 9 is a perspective view from below of the pack of cigarettes of Figure 1 in the closed configuration and highlighting a strap being removed from the bottom wall.

PREFERRED EMBODIMENTS OF THE INVENTION

[0012] In Figures 1 and 2, number 1 denotes as a whole a *"book-pack"* pack of cigarettes comprising two containers 2 and 3, which house respective wrapped groups of cigarettes, which have respective open upper ends, and are hinged to one another so as to rotate between a closed configuration (illustrated in Figure 1), in which the two containers 2 and 3 overlap one another, and an open configuration (illustrated in Figure 2), in which the two containers 2 and 3 are separated; moreover, a lid 4 is provided which is hinged to a rear container 2 and, when in a closed position, embraces the upper part of both containers 2 and 3.

[0013] According to a preferred embodiment illustrated in the attached figures, the rear container 2 is larger and houses a larger group of wrapped cigarettes (for example formed by two layers of seven cigarettes each), whereas the front container 3 is smaller and houses a smaller wrapped group of cigarettes (e.g., formed by a single layer of six cigarettes); according to a different embodiment not illustrated, the two containers 2 and 3 have the same size.

[0014] The production of the pack 1 of cigarettes provides for the forming of the two containers 2 and 3 by using two corresponding blanks (not illustrated) which are folded around the respective wrapped groups of cigarettes, coupling (overlapping) the two containers 2 and 3, and then folding a third blank 5 (illustrated in Figure 3) around the two coupled (overlapped) containers 2 and 3 which joins the two containers 2 and 3 and forms the common lid 4.

[0015] The pack 1 of cigarettes comprises a bottom wall 6 (illustrated for example in Figure 3) which is arranged on the outside, is part of the blank 5, and embraces both containers 2 and 3; namely, the bottom walls of the two containers 2 and 3 rest against the bottom wall 6 which covers the same.

[0016] As illustrated in Figure 5, when the pack 1 of cigarettes is manufactured, the bottom wall 6 is glued only to the rear container 2 by means of a glue 7 and therefore the bottom wall 6 has no link (constraint) with the front container 3. In other words, initially the bottom wall 6 of the pack 1 of cigarettes is glued only to the rear container 2 by means of the glue 7 applied only on one side and is not glued to the front container 3.

[0017] After folding the blank 7 it is necessary to make a cut 8 (schematically illustrated in Figure 3) in the bottom wall 6 of the pack 1 of cigarettes to allow the separation of the two containers 2 and 3 (namely, to allow the two containers 2 and 3 to rotate relative to one another). In other words, initially the bottom wall 6 is completely intact and therefore free from any division and consequently does not allow any movement between the two containers 2 and 3; it is therefore necessary to make the cut 8 to divide the bottom wall 6 into two parts 9 and 10 which can be moved away from one another to allow movement between the two containers 2 and 3.

[0018] In Figure 4, number 11 denotes as a whole a cutting unit which, in order to make a clear separation between the two containers 2 and 3, makes the cut 8 in the bottom wall 6 of the pack 1 of cigarettes which is fed along a straight path P. Preferably, the cutting unit 11 performs a double cut 8 in the bottom wall 6 of the pack 1 of cigarettes, namely the cut 8 is made along two parallel cutting lines spaced apart from one another and leads to the elimination, from the bottom wall 6, of a strap B or strip (illustrated in Figures 6 and 9) between the two cutting lines (the strap B has a width of about 1 mm) ; according to an alternative embodiment, the cutting unit 11 can perform a single cut 8 in the bottom wall 6 of the pack 1 of cigarettes (namely, the cut 8 is made along a single cutting line).

[0019] The cutting unit 11 comprises a belt conveyor 12 which feeds each pack 1 of cigarettes along a straight path P; according to an alternative embodiment not illustrated, the conveyor 12 rotates and feeds each pack 1 of cigarettes along a circular path P.

[0020] The cutting unit 11 comprises a cutting station S1 which is arranged along the path P and is provided with a cutting device 13 which makes the cut 8 in the bottom wall 6 of each pack 1 of cigarettes so as to divide the bottom wall 6 in the rear part 9, which is arranged in the area of the rear container 2 (and that is therefore glued to the rear container 2 by way of the glue 7) and in the front part 10, which is arranged in the area of the front container 3 (and therefore it has no connection with the front container 3 since the glue 7 is applied only in the area of the rear container 2 and therefore only between the rear container 2 and the rear part 9). The cutting device 13 comprises two coaxial rotary blades at a given distance from one another which are mounted so as to rotate around the same rotation axis in order to form two parallel and separate cutting lines in the bottom wall 6 of the pack 1 of cigarettes to delimit the strap B which must subsequently be discarded.

[0021] The cutting station S1 is also provided with a sucking device 14 which is configured to suck (namely remove by means of aspiration) the strap B that is separated by the cutting device 13 by means of the double cut 8 (namely along two parallel and separate cutting lines). The sucking device 14 comprises a sucking duct (namely, connected to a suction source) designed to suck up the strap B which is separated by the cutting device 13; the function of the sucking duct 14 is to convey by suction the strap B which has been separated from the bottom wall 6 so as to convey the strap B into a suitable collecting area (not illustrated). By way of example, the suction in the sucking duct of the sucking device 14 can be made by using an impeller or a flow accelerator. According to a possible embodiment, an initial end of the sucking duct of the sucking device 14 has a conical shape having the minimum dimension in the area of the cutting device 13 (namely, having a dimension which progressively widens moving away from the cutting device 13 so as to have the maximum vacuum near the cutting device 13).

[0022] As the cutting device 13 makes the cut 8 of the bottom wall 6 of the pack 1 of cigarettes, the rear part 9 of the bottom wall 6 remains in its initial position as it is stably glued to the rear container 2 by way of the glue 7; whereas, as the cutting device 13 makes the cut 8 of the bottom wall 6 of the pack 1 of cigarettes, the front part 10 of the bottom wall 6 tends to rise by elastic return with respect to the front container 3 to which it is not in any way constrained (as previously mentioned, no glue is initially applied between the front part 10 and the front container 3) and this lifting of the front part 10 substantially helps the removal of the strap B as it prevents the strap B from being stuck between the two parts 9 and 10.

[0023] The sucking action generated by the sucking device 14 obviously also has an effect on the front part 10 of the bottom wall 6 and contributes in lifting the front part 10 from the front container 3; namely, also the front part 10 of the bottom wall 6 is affected by the suction applied by the sucking device 14 and said suction (pulling the front part 10 of the bottom wall 6 into the sucking device 14) contributes in lifting the front part 10 from the front container 3. The sucking action generated by the sucking device 14 obviously also affects the rear part 9 of the bottom wall 6, but the rear part 9 is glued to the rear container 2 and therefore does not move.

[0024] According to a possible embodiment, the cutting station S1 can also comprise a blower device 15 which directs a compressed jet of air towards the front part 10 of the bottom wall 6 which forces the front part 10 to lift (namely, forces the front part 10 to move away from the front container 3 and from the rest of the bottom wall 6); the function of the blower device 15 is to help the lifting of the front part 10 of the bottom wall 6 after having made the double cut 8 so as to increase the effect of the natural elastic return of the front part 10.

[0025] It is important to observe that the blank 5 (illustrated in Figure 3) is originally completely flat and is subsequently folded around the two containers 2 and 3; therefore, in the absence of an outer constraint, namely, if left free, the various portions of the blank 5 (including the front part 10 of the bottom wall 6) tend to move naturally towards the original flat configuration by elastic return. Consequently, after making the double cut 8, the front part 10 of the bottom wall 6 is free from mechanical constraints and therefore by elastic return it tends spontaneously to move away from the front container 3 and therefore from the rest of the bottom wall 6 (namely from the rear part 9 of the bottom wall 6). The blower device 15 can be provided to accentuate by means of a compressed jet of air (and in addition to the action of the sucking device 14) the spontaneous tendency of the front part 10 of the bottom wall 6 to move away from the front container 3.

[0026] The moving away of the front part 10 of the bottom wall 6 from the front container 3 and therefore from the rest of the bottom wall 6 (namely, from the rear part 9 of the bottom wall 6) is essential to *"leave-free"* the strap B generated by the double cut 8 as it prevents the strap B from getting stuck between the two parts 9 and 10 of the bottom wall 6; once the strap B is no longer held between the two parts 9 and 10 of the bottom wall 6, its removal by means of suction is very simple and reliable.

[0027] The cutting unit 11 comprises a separation station S2 which is arranged along the path P downstream of the cutting station S1 and is provided with a folding device 16 which folds the front part 10 of the bottom wall 6 of each pack 1 of cigarettes so as to move the front part 10 away from the rest of the bottom wall 6 (namely, from the rear part 9). Typically, the folding device 16 folds the front part 10 of the bottom wall 6 of each pack of cigarettes 1 by about 90° to arrange the front part 10 approximately perpendicular to the rear part 9 (as illustrated in Fig. 7). The folding device 16 exploits the natural elastic return of the front part 10 of the bottom wall 6 which tends to spontaneously move the front part 10 away from the rest of the bottom wall 6 (namely, from the rear part 9) and comprises a fixed folding helix which pushes the front part 10 of the bottom wall 6 away from the rest of the bottom wall 6. The folding device 16 can also comprise a blower which pushes the front part 10 of the bottom wall 6 away from the rest of the bottom wall 6 by means of a compressed jet of air.

[0028] The cutting unit 11 comprises a gluing station S3 which is arranged along the path P downstream of the separation station S2 and is provided with a gluing device 17 which applies glue 18 on the front part 10 of the bottom wall 6 of each pack 1 of cigarettes (as also illustrated in Figure 7); the glue 18 can be applied in the form of separate glue dots or in the form of one or more continuous glue strips. The glue 18 can be hot (therefore fast-setting), cold (therefore vinyl-based with slower setting) or a combination of hot glue and cold glue. In the preferred embodiment illustrated in the attached figures, the glue 18 is applied to the front part 10 of the bottom wall 6; according to a different embodiment, the glue 18 is applied to the bottom wall of the front container 3 (the important thing is that, ultimately, the glue 18 is interposed between the front part 10 of the bottom wall 6 and the bottom wall of the front container 3).

[0029] The cutting unit 11 comprises a folding station S4 which is arranged along the path P downstream of the gluing station S3 and is provided with a folding device 19 which folds the front part 10 of the bottom wall 6 of each pack 1 of cigarettes against the front container 3 causing the front part 10 of the bottom wall 6 to return to the initial position (as illustrated in Figure 8) it had before the cutting station S1 and above all before the separating station S2. In the folding station S4 the front part 10 of the bottom wall 6 of each pack 1 of cigarettes rests and is therefore glued, by way of the glue 18, to the front container 3 completing (concluding) the manufacturing of the pack 1 of cigarettes. The folding device 19 can comprise a fixed folding helix which pushes the front part 10 of the bottom wall 6 against the rest of the pack of cigarettes 1 (namely against the front container 3).

[0030] According to a possible embodiment, the cut-

ting unit 11 comprises, furthermore, a control station which could be arranged along the path P downstream of the folding station S4 (but could also be arranged in any other position between the cutting station S1 and the folding station S4) and is provided with a viewing device which, by acquiring and analysing one or more images of the pack 1 of cigarettes, is able to establish whether the strap B produced by the double cut 8 has been correctly eliminated. Obviously, any packs 1 of cigarettes that do not conform to the desired specifications (namely, in which the strap B produced by the double cut 8 has not been correctly eliminated) would be discarded in a discard station arranged downstream of the control station (even outside the cutting unit 11).

[0031] The embodiments described herein can be combined with one another without departing from the scope of the present claims.

[0032] The cutting unit 11 described above has numerous advantages.

[0033] In the first place, the cutting unit 11 described above allows to ensure the removal of the strap B after the double cut 8 avoiding that the strap B (or a piece of the strap B) can remain in contact with the bottom wall 6 of the pack 1 of cigarettes; this result is obtained due to the fact that after the double cut 8 the front part 10 of the bottom wall 6 moves away from the rear part 9 of the bottom wall 6, thus freeing the strap B (namely, preventing the strap B from remaining *"trapped"* between the two walls 9 and 10 of the bottom wall 6). Namely, by separating the front part 10 of the bottom wall 6 from the rear part 9 of the bottom wall 6, the strap B produced by the double cut 8 is surely moved away from the bottom wall 6 and therefore easily removed and consequently the correct removal of the strap B produced by the double cut 8 is ensured, thus avoiding that the strap B (or a piece of the strap B) can remain in contact with the bottom wall 6 of the pack 1 of cigarettes.

[0034] Furthermore, the cutting unit 11 described above is simple and inexpensive to implement since, compared to a similar known cutting unit, it requires modifications that are quick to make using commercial pieces or pieces that can be easily obtained with standard machining.

[0035] The cutting unit 11 described above allows the cut 8 of the bottom wall 6 to be made in a very precise and accurate way, always ensuring optimal functionality of the pack 1 of cigarettes.

[0036] Finally, the cutting unit 11 described above also allows the cut 8 to be made singularly, since the subsequent *"opening"* of the front part 10 of the bottom wall 6 always ensures a complete separation between the two parts 9 and 10 of the bottom wall.

LIST OF REFERENCE NUMBERS OF THE FIGURES

[0037]

1	pack of cigarettes
2	rear container
3	front container
4	lid
5	blank
6	bottom wall
7	glue
8	cut
9	back part
10	front part
11	cutting unit
12	conveyor
13	cutting device
14	sucking device
15	blower device
16	folding device
17	gluing device
18	glue
19	folding device
B	strap
P	path
S1	cutting station
S2	separation station
S3	gluing station
S4	folding station

Claims

1. A cutting method to cut a wall (6) of a pack (1), in particular of smoking articles; the cutting method comprises the steps of: making, in the wall (6) of the pack (1), a cut (8), which divides the wall (6) into a first part (9) and a second part (10); and applying, before making the cut (8), a first glue (7) between the first part (9) of the wall (6) and a first content of the pack (1) in order to glue the first part (9) to the first content;
the cutting method is **characterized in that** it comprises the further steps of:

not applying, before making the cut (8), glue between the second part (10) of the wall (6) and a second content of the pack (1); and
applying, only after having made the cut (8), a second glue (18) between the second part (10) of the wall (6) and the second content of the pack (1) in order to glue the second part (10) to the second content.

2. The cutting method according to claim 1 and comprising the further steps of:

folding, after having made the cut (8) and before applying the second glue (18), the second part (10) in order to move the second part (10) away from the second content;
applying the second glue (18) while the second part (10) is separate from the second content; and

folding, after having applied the second glue (18), the second part (10) against the second content.

3. The cutting method according to claim 1 or 2, wherein the cut (8) is a double cut, namely is made along two parallel cutting lines spaced apart from one another and leads to the elimination of a strap (B) comprised between the two cutting lines.

4. The cutting method according to claim 3 and comprising the further step of applying suction, which is configured to remove the strap (B) produced by the double cut (8).

5. The cutting method according to claim 4, wherein the suction is applied simultaneously with the execution of the double cut (8).

6. The cutting method according to claim 4 or 5 and comprising the further step of applying a compressed jet of air, which causes the second part (10) to move away from the first part (9) simultaneously with the application of the suction.

7. The cutting method according to one of the claims from 1 to 6, wherein the pack comprises a first container (2), which constitutes the first content, and a second container (3), which constitutes the second content.

8. The cutting method according to claim 7, wherein the two containers (2, 3) are hinged to one another and the cut (8) of the wall (6) allows the two containers (2, 3) to rotate relative to one another.

9. The cutting method according to one of the claims from 1 to 8 and comprising the further step of feeding the pack (1) along a path (P) and through:

a cutting station (S1), which is provided with a cutting device (13), which makes the cut (8) in the wall (6) of the pack (1); a separation station (S2), which is arranged along the path (P) downstream of the cutting station (S1) and is provided with a first folding device (16), which folds the second part (10) so as to move the second part (10) away from the rest of the wall (6);
a gluing station (S3), which is arranged along the path (P) downstream of the separation station (S2) and is provided with a gluing device (17), which applies the second glue (18) onto the second part (10) of the wall (6); and
a folding station (S4), which is arranged along the path (P) downstream of the gluing station (S3) and is provided with a second folding device (19), which folds the second part (10) of the wall (6) against the second content to which it becomes glued.

10. The cutting method according to claim 9, wherein the cutting station (S1) is provided with a sucking device (14), which is configured to suck a strap (B), which is separated by the cutting device (13) by means of a double cut (8).

11. The cutting method according to claim 10, wherein the cutting station (S1) is provided with a blower device (15), which aims a compressed jet of air at the second part (10), said compressed jet of air causing the second part (10) to lift, thus moving away from the first part (9).

12. A cutting unit (11) to cut a wall (6) of a pack (1), in particular of smoking articles; the cutting unit (11) comprises a cutting device (13), which is configured to make, in the wall (6) of the pack (1), a cut (8), which divides the wall (6) into a first part (9), which was previously glued to a first content of the pack (1) by means of a first glue (7), and into a second part (10); the cutting unit (11) is **characterized in that** it comprises a gluing device (17), which is configured to apply, only after having made the cut (8), a second glue (18) between the second part (10) of the wall (6) and a second content of the pack (1) in order to glue the second part (10) to the second content.

Patentansprüche

1. Schneidverfahren, um eine Wand (6) einer Packung (1) insbesondere von Rauchwaren zu schneiden; wobei das Schneidverfahren die Schritte umfasst:

Bilden in der Wand (6) der Packung (1) eines Schnitts (8), der die Wand (6) in einen ersten Abschnitt (9) und einen zweiten Abschnitt (10) teilt; und
Aufbringen vor Bilden des Schnitts (8) eines ersten Klebstoffs (7) zwischen dem ersten Abschnitt (9) der Wand (6) und einem ersten Inhalt der Packung (1), um den ersten Abschnitt (9) an den ersten Inhalt zu kleben; wobei
das Schneidverfahren **dadurch gekennzeichnet ist, dass** es die weiteren Schritte umfasst:

Nicht-Aufbringen vor Bilden des Schnitts (8) von Klebstoff zwischen dem zweiten Abschnitt (10) der Wand (6) und einem zweiten Inhalt der Packung (1) und
Aufbringen, lediglich nachdem der Schnitt (8) gebildet worden ist, eines zweiten Klebstoffs (18) zwischen dem zweiten Abschnitt (10) der Wand (6) und dem zweiten Inhalt der Packung (1), um den zweiten Abschnitt (10) an den zweiten Inhalt zu kleben.

2. Schneidverfahren nach Anspruch 1 und umfassend die folgenden weiteren Schritte:

Falten, nachdem der Schnitt (8) gebildet worden ist und vor dem Aufbringen des zweiten Klebstoffs (18), des zweiten Abschnitts (10), um den zweiten Abschnitt (10) von dem zweiten Inhalt wegzubewegen;
Aufbringen des zweiten Klebstoffs (18), während der zweite Abschnitt (10) von dem zweiten Inhalt getrennt ist; und
Falten, nachdem der zweite Klebstoff (18) aufgebracht worden ist, des zweiten Abschnitts (10) gegen den zweiten Inhalt.

3. Schneidverfahren nach Anspruch 1 oder 2, wobei der Schnitt (8) ein Doppelschnitt ist, das heißt entlang zweier paralleler Schnittlinien gebildet wird, die voneinander beabstandet sind, und zu der Entfernung eines Streifens (B) führt, der zwischen den zwei Schnittlinien enthalten ist.

4. Schneidverfahren nach Anspruch 3 und umfassend den weiteren Schritt des Ausübens von Saugkraft, der konfiguriert ist, den Streifen (B), der durch den Doppelschnitt (8) erzeugt wird, zu entfernen.

5. Schneidverfahren nach Anspruch 4, wobei die Saugkraft gleichzeitig mit der Ausführung des Doppelschnitts (8) ausgeübt wird.

6. Schneidverfahren nach Anspruch 4 oder 5 und umfassend den weiteren Schritt des Aufbringens eines Druckluftstrahls, der verursacht, dass sich der zweite Abschnitt (10) von dem ersten Abschnitt (9) wegbewegt, gleichzeitig mit der Ausübung der Saugkraft.

7. Schneidverfahren nach einem der Ansprüche 1 bis 6, wobei die Packung einen ersten Behälter (2), der den ersten Inhalt bildet, und einen zweiten Behälter (3), der den zweiten Inhalt bildet, umfasst.

8. Schneidverfahren nach Anspruch 7, wobei die zwei Behälter (2, 3) aneinander angelenkt sind und der Schnitt (8) der Wand (6) ermöglicht, dass sich die zwei Behälter (2, 3) in Bezug zueinander drehen.

9. Schneidverfahren nach einem der Ansprüche 1 bis 8 und umfassend den weiteren Schritt des Zuführens der Packung (1) entlang eines Pfads (P) und durch:

eine Schneidstation (S1), die mit einer Schneidvorrichtung (13) versehen ist, die den Schnitt (8) in der Wand (6) der Packung (1) bildet;
eine Trennstation (S2), die in dem Pfad (P) stromabwärts der Schneidstation (S1) angeordnet ist und mit einer ersten Faltvorrichtung (16) versehen ist, die den zweiten Abschnitt (10) faltet, um den zweiten Abschnitt (10) von dem Rest der Wand (6) wegzubewegen;
eine Klebestation (S3), die entlang des Pfads (P) stromabwärts der Trennstation (S2) angeordnet ist und mit einer Klebevorrichtung (17) versehen ist, die den zweiten Klebstoff (18) auf den zweiten Abschnitt (10) der Wand (6) aufbringt; und
eine Faltstation (S4), die entlang des Pfads (P) stromabwärts der Klebestation (S3) angeordnet ist und mit einer zweiten Faltvorrichtung (19) versehen ist, die den zweiten Abschnitt (10) der Wand (6) gegen den zweiten Inhalt faltet, an den er geklebt wird.

10. Schneidverfahren nach Anspruch 9, wobei die Schneidstation (S1) mit einer Saugvorrichtung (14) versehen ist, die konfiguriert ist, einen Streifen (B) anzusaugen, der durch die Schneidvorrichtung (13) mittels eines Doppelschnitts (8) getrennt wird.

11. Schneidverfahren nach Anspruch 10, wobei die Schneidstation (S1) mit einer Gebläsevorrichtung (15) versehen ist, die einen Druckluftstrahl auf den zweiten Abschnitt (10) richtet, wobei der Druckluftstrahl verursacht, dass der zweite Abschnitt (10) angehoben wird und sich somit vom ersten Abschnitt (9) wegbewegt.

12. Schneideinheit (11), um eine Wand (6) einer Packung (1) insbesondere von Rauchwaren zu schneiden; wobei die Schneideinheit (11) eine Schneidvorrichtung (13) umfasst, die konfiguriert ist, in der Wand (6) der Packung (1) einen Schnitt (8) zu bilden, der die Wand (6) in einen ersten Abschnitt (9), der zuvor mittels eines ersten Klebstoffs (7) an einen ersten Inhalt der Packung (1) geklebt wurde, und in einen zweiten Abschnitt (10) teilt;
wobei die Schneideinheit (11) **dadurch gekennzeichnet ist, dass** sie eine Klebevorrichtung (17) umfasst, die konfiguriert ist, erst nachdem der Schnitt (8) gebildet worden ist, zwischen dem zweiten Abschnitt (10) der Wand (6) und einem zweiten Inhalt der Packung (1) einen zweiten Klebstoff (18) aufzubringen, um den zweiten Abschnitt (10) an den zweiten Inhalt zu kleben.

Revendications

1. Méthode de découpe pour découper une paroi (6) d'un paquet (1), en particulier d'articles à fumer ; la méthode de découpe comprend les étapes consistant à : réaliser, dans la paroi (6) du paquet (1), une découpe (8), qui divise la paroi (6) en une première partie (9) et une deuxième partie (10) ; et appliquer, avant de réaliser la découpe (8), une première colle

(7) entre la première partie (9) de la paroi (6) et un premier contenu du paquet (1) afin de coller la première partie (9) au premier contenu ;
la méthode de découpe est **caractérisée en ce qu'**elle comprend les étapes supplémentaires consistant à :

ne pas appliquer, avant de réaliser la découpe (8), de colle entre la deuxième partie (10) de la paroi (6) et un deuxième contenu du paquet (1) ; et
appliquer, uniquement après avoir réalisé la découpe (8), une deuxième colle (18) entre la deuxième partie (10) de la paroi (6) et le deuxième contenu du paquet (1) afin de coller la deuxième partie (10) au deuxième contenu.

2. Méthode de découpe selon la revendication 1 et comprenant les étapes supplémentaires consistant à :

plier, après avoir réalisé la découpe (8) et avant d'appliquer la deuxième colle (18), la deuxième partie (10) afin d'éloigner la deuxième partie (10) du deuxième contenu ;
appliquer la deuxième colle (18) pendant que la deuxième partie (10) est séparée du deuxième contenu ; et
plier, après avoir appliqué la deuxième colle (18), la deuxième partie (10) contre le deuxième contenu.

3. Méthode de découpe selon la revendication 1 ou 2, dans laquelle la découpe (8) est une double découpe, c'est-à-dire qu'elle est réalisée le long de deux lignes de coupe parallèles espacées l'une de l'autre et conduit à l'élimination d'une bande (B) comprise entre les deux lignes de coupe.

4. Méthode de découpe selon la revendication 3 et comprenant l'étape supplémentaire consistant à appliquer une aspiration, qui est configurée pour retirer la bande (B) produite par la double découpe (8).

5. Méthode de découpe selon la revendication 4, dans laquelle l'aspiration est appliquée simultanément avec l'exécution de la double découpe (8).

6. Méthode de découpe selon la revendication 4 ou 5 et comprenant l'étape supplémentaire consistant à appliquer un jet d'air comprimé, qui amène la deuxième partie (10) à s'éloigner de la première partie (9) simultanément avec l'application de l'aspiration.

7. Méthode de découpe selon l'une des revendications 1 à 6, dans laquelle le paquet comprend un premier récipient (2), qui constitue le premier contenu, et un deuxième récipient (3), qui constitue le deuxième contenu.

8. Méthode de découpe selon la revendication 7, dans laquelle les deux récipients (2, 3) sont articulés l'un à l'autre et la découpe (8) de la paroi (6) permet aux deux récipients (2, 3) de tourner l'un par rapport à l'autre.

9. Méthode de découpe selon l'une des revendications 1 à 8 et comprenant l'étape supplémentaire consistant à amener le paquet (1) le long d'un trajet (P) et à travers :

un poste de découpe (S1), qui est doté d'un dispositif de découpe (13), qui réalise la découpe (8) dans la paroi (6) du paquet (1) ; un poste de séparation (S2), qui est agencé le long du trajet (P) en aval du poste de découpe (S1) et qui est doté d'un premier dispositif de pliage (16), qui plie la deuxième partie (10) de façon à éloigner la deuxième partie (10) du reste de la paroi (6) ;
un poste de collage (S3), qui est agencé le long du trajet (P) en aval du poste de séparation (S2) et est doté d'un dispositif de collage (17), qui applique la deuxième colle (18) sur la deuxième partie (10) de la paroi (6) ; et
un poste de pliage (S4), qui est agencé le long du trajet (P) en aval du poste de collage (S3) et est doté d'un deuxième dispositif de pliage (19), qui plie la deuxième partie (10) de la paroi (6) contre le deuxième contenu auquel elle est alors collée.

10. Méthode de découpe selon la revendication 9, dans laquelle le poste de découpe (S1) est doté d'un dispositif d'aspiration (14), qui est configuré pour aspirer une bande (B), qui est séparée par le dispositif de découpe (13) au moyen d'une double découpe (8).

11. Méthode de découpe selon la revendication 10, dans laquelle le poste de découpe (S1) est doté d'un dispositif de soufflage (15), qui dirige un jet d'air comprimé vers la deuxième partie (10), ledit jet d'air comprimé provoquant le levage de la deuxième partie (10), celle-ci s'éloignant ainsi de la première partie (9).

12. Unité de découpe (11) pour découper une paroi (6) d'un paquet (1), en particulier d'articles à fumer ; l'unité de découpe (11) comprend un dispositif de découpe (13), qui est configuré pour réaliser, dans la paroi (6) du paquet (1), une découpe (8), qui divise la paroi (6) en une première partie (9), qui a été préalablement collée à un premier contenu du paquet (1) au moyen d'une première colle (7), et en une deuxième partie (10) ;

l'unité de découpe (11) est **caractérisée en ce qu'**elle comprend un dispositif de collage (17), qui est configuré pour appliquer, uniquement après avoir réalisé la découpe (8), une deuxième colle (18) entre la deuxième partie (10) de la paroi (6) et un deuxième contenu du paquet (1) afin de coller la deuxième partie (10) au deuxième contenu.

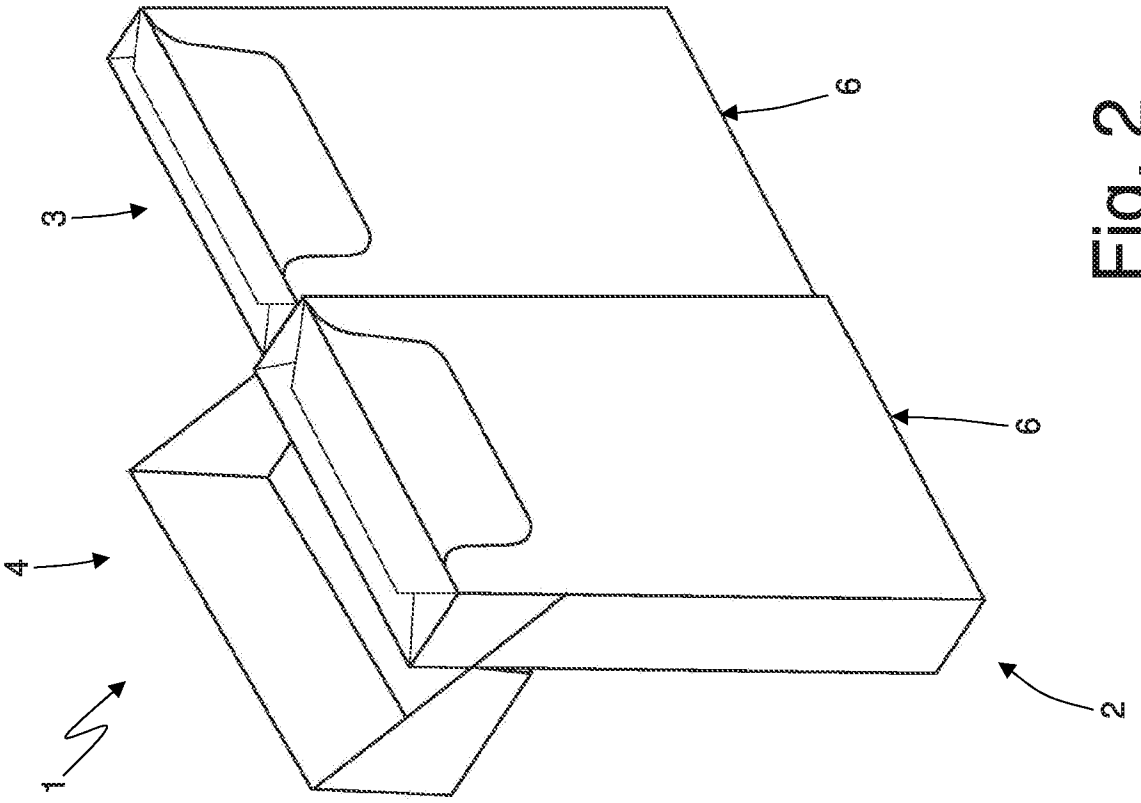


Fig. 2

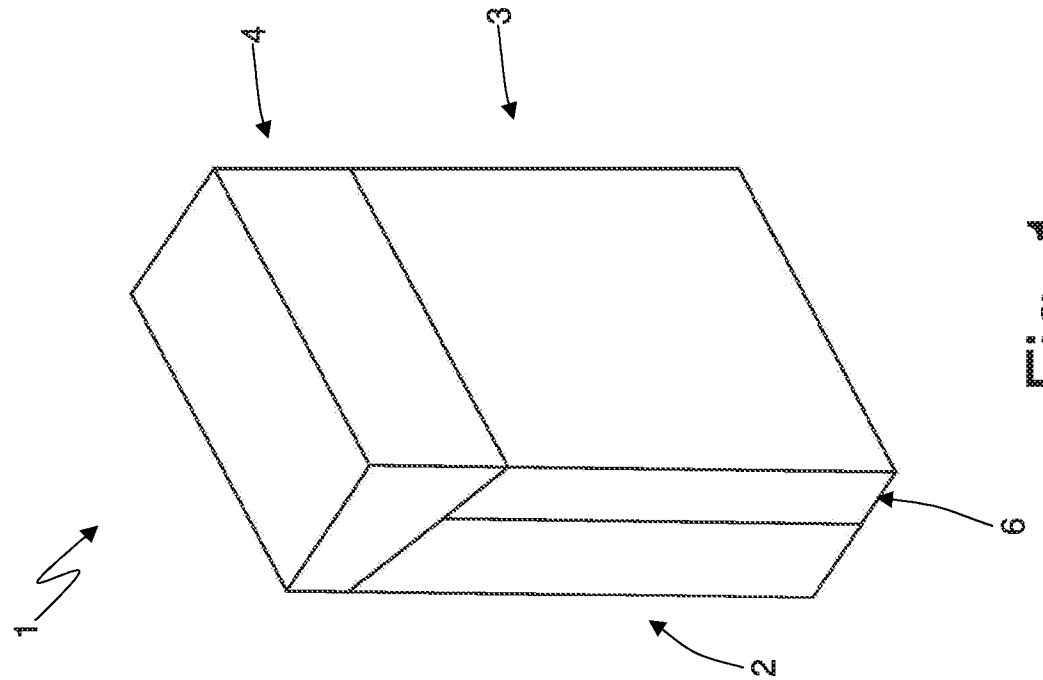


Fig. 1

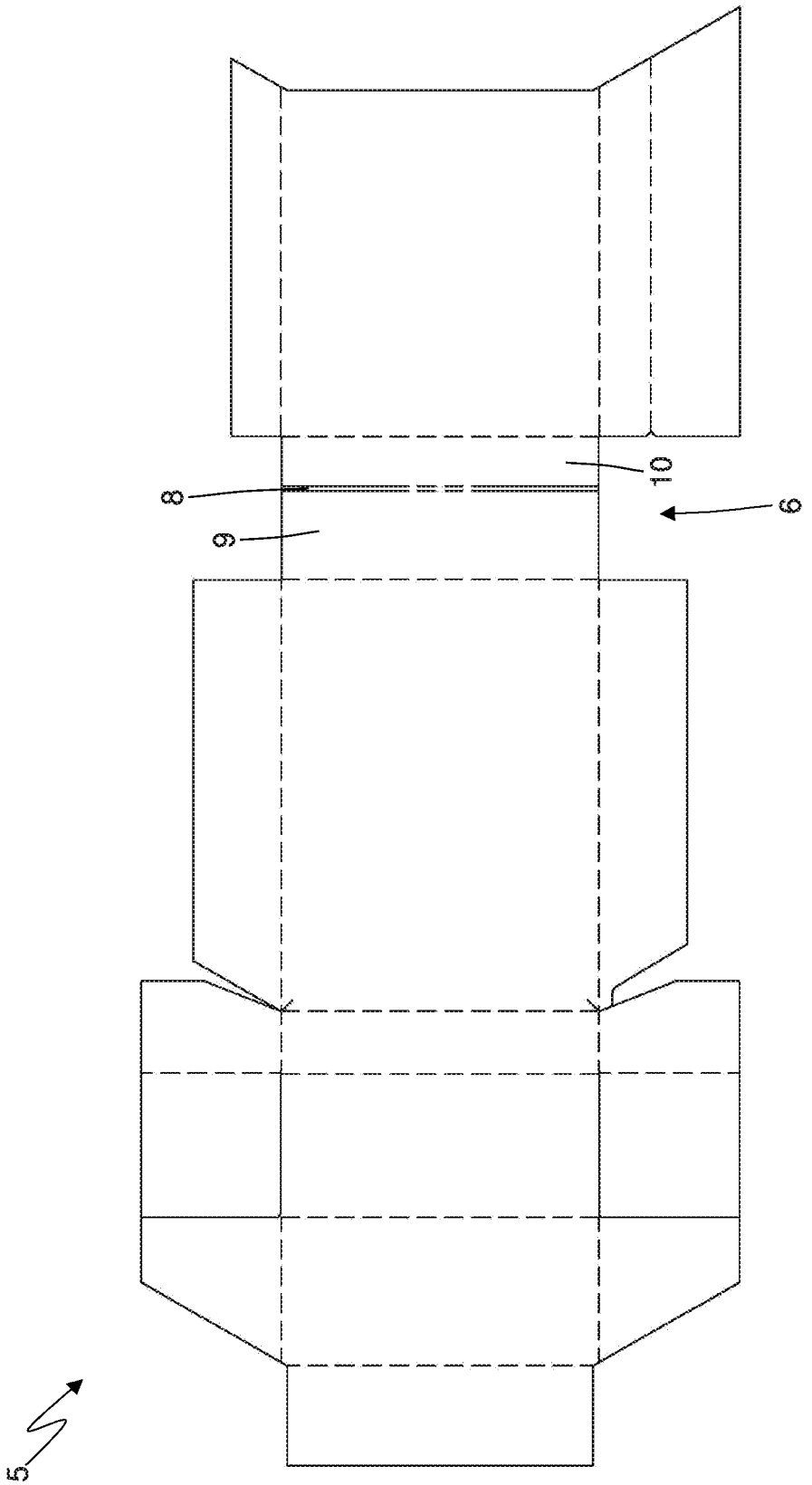
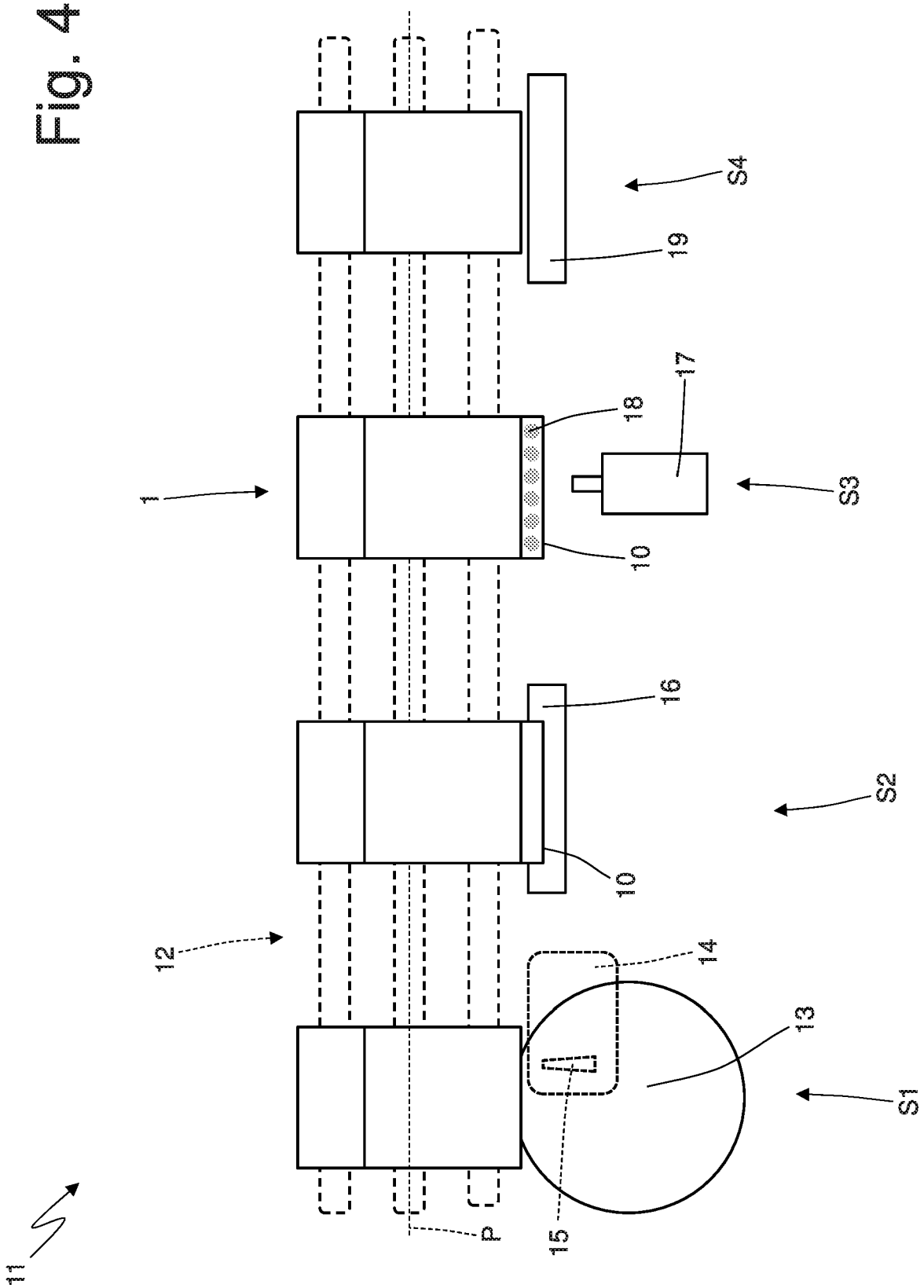


Fig. 3

Fig. 4



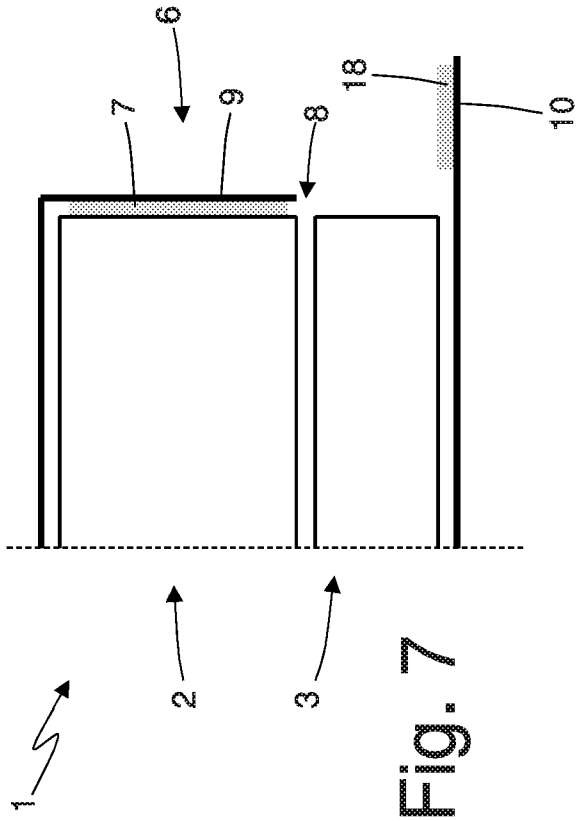


Fig. 7

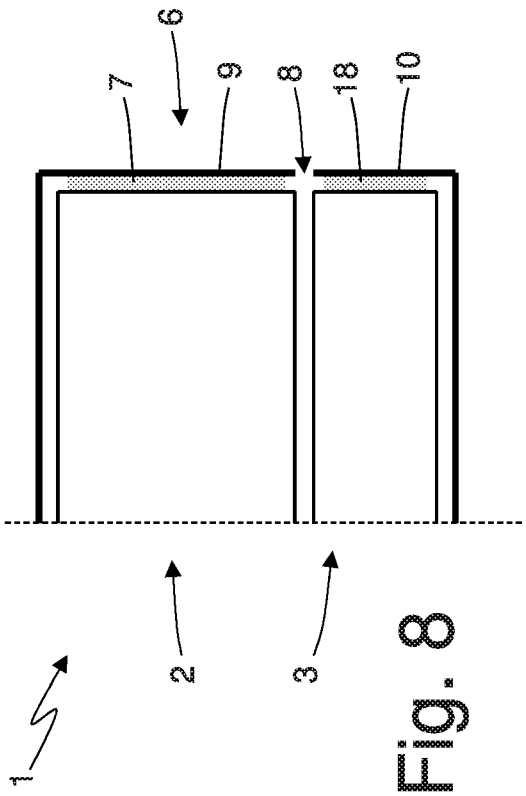


Fig. 8

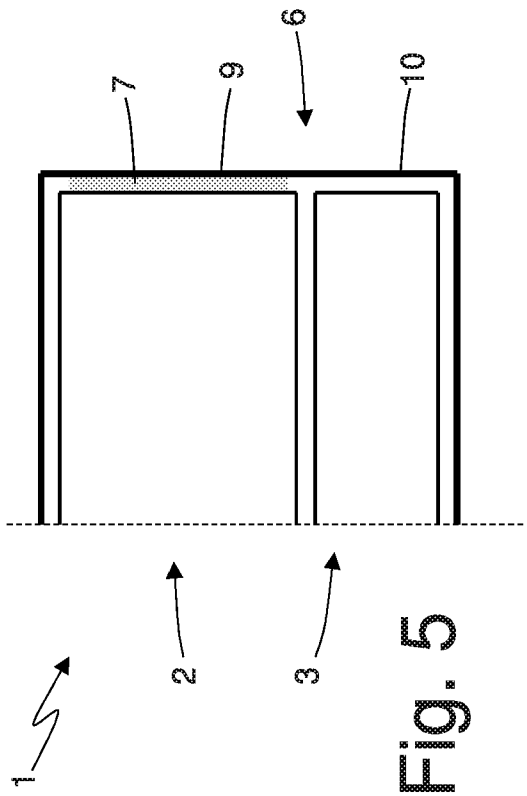


Fig. 5

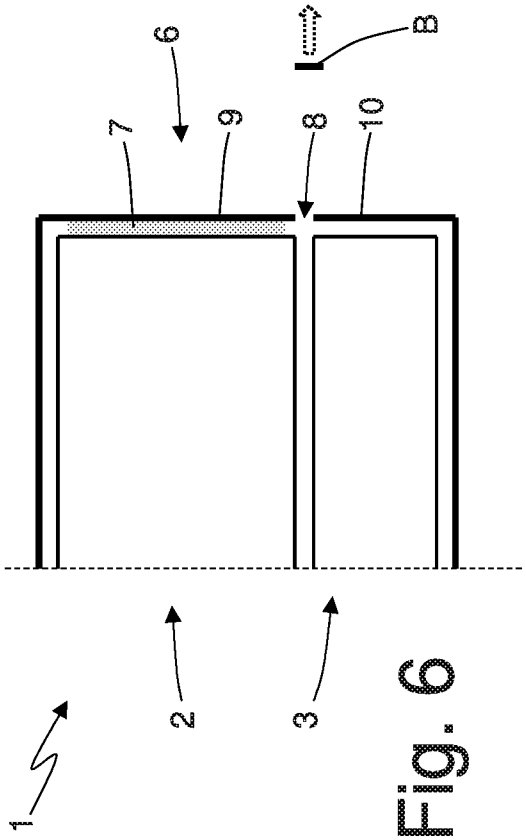


Fig. 6

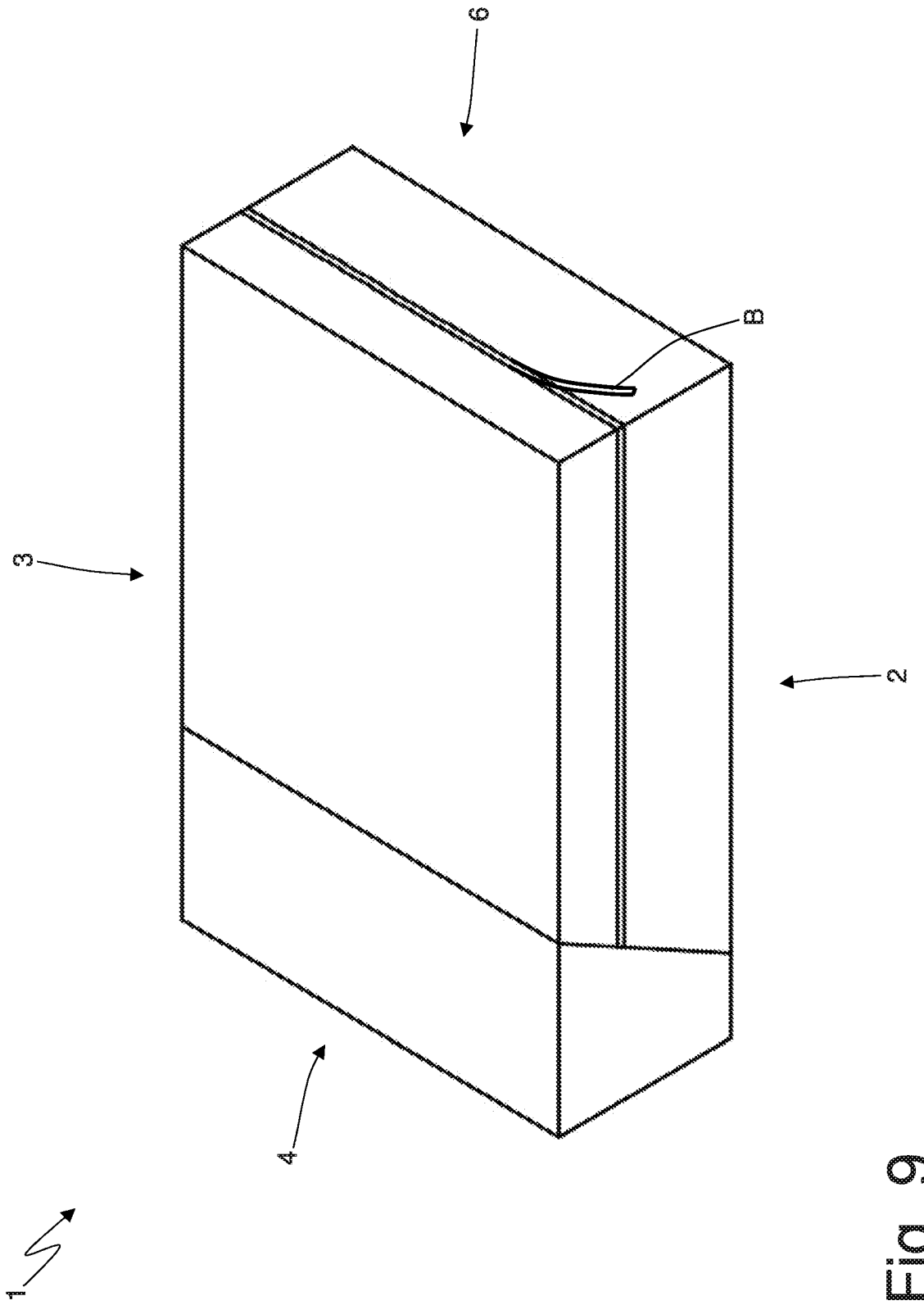


Fig. 9

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- IT 102021000030179 **[0001]**
- US 7415812 B2 **[0007]**