



(11)

EP 3 374 272 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention
of the grant of the patent:

22.07.2020 Bulletin 2020/30

(21) Application number: **16801586.5**

(22) Date of filing: **07.11.2016**

(51) Int Cl.:

B65B 69/00 (2006.01)	B65B 61/20 (2006.01)
B65G 11/20 (2006.01)	B65G 11/06 (2006.01)
B65H 5/00 (2006.01)	B65H 1/30 (2006.01)
B65B 35/14 (2006.01)	B65B 35/02 (2006.01)
B65B 29/02 (2006.01)	B65H 1/02 (2006.01)

(86) International application number:

PCT/IB2016/056674

(87) International publication number:

WO 2017/081592 (18.05.2017 Gazette 2017/20)

(54) **UNIT AND METHOD FOR FEEDING INFORMATION LEAFLETS TO A PACKAGING MACHINE.**

EINHEIT UND VERFAHREN ZUM ZUFÜHREN VON INFORMATIONSBLÄTTCHEN ZU EINER
VERPACKUNGSMASCHINE.

UNITÉ ET PROCÉDÉ D'ALIMENTATION DE FEUILLETS D'INFORMATION DANS UNE MACHINE
D'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 MK MT NL NO
PL PT RO RS SE SI SK SM TR**

(30) Priority: **09.11.2015 IT UB20155384**

(43) Date of publication of application:

19.09.2018 Bulletin 2018/38

(73) Proprietor: **I.M.A. Industria Macchine Automatiche
S.p.A.**

40064 Ozzano dell'Emilia (BO) (IT)

(72) Inventors:

- **RIVOLA, Sauro**
48025 Riolo Terme (ravenna) (IT)
- **VALERI, Emanuele**
40064 Ozzano Dell'emilia (bologna) (IT)

(74) Representative: **Milli, Simone**

Bugnion S.p.A.
Via di Corticella, 87
40128 Bologna (IT)

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Description

Technical field

[0001] This invention relates to a unit and a method for feeding information leaflets to a packaging machine; more specifically, this invention relates to a unit and a method for feeding information leaflets to a packaging machines designed for packaging products inside packs. Advantageously, this invention may be applied to machines for packaging filter bags containing infusion and/or extraction products for food safe and/or pharmaceutical products in boxes.

Background art

[0002] In the case of filter bags containing infusion and/or extraction products for pharmaceutical use, by law an information leaflet must be provided in the package relative to the product contained in the filter bags.

[0003] For this reason, the machines for packaging filter bags comprise, near a zone for packaging the filter bags in a box, a magazine in which are placed and fed a plurality of information leaflets (pre-folded paper-based sheets) which, individually, are picked up and inserted in the package.

[0004] For ease of handling and transport, the information leaflets are normally supplied in groups or packs comprising a predetermined number of leaflets held by a clip. For this reason, before introducing the leaflets in the magazine an operator must remove the clip and insert the information leaflets, loose, in the magazine.

[0005] Depending on the productivity of the machine, and therefore the number of information leaflets processed by the machine per unit of time, a single operator can operate or more machines, but as the productivity of the machine increases a single operator might not being able to operate more than one machine, so that it is necessary to assign an operator to each machine with a consequent increase in the production costs.

[0006] Documents JP H08 282642 A, JP H04 31230 A, EP 0 395 807 A1 and GB 2 076 355 A disclose the features of the preambles of claims 1 and 11.

Disclosure of the invention

[0007] The aim of this invention is to provide a unit and a method for feeding information leaflets to a packaging machine which overcomes the above-mentioned drawbacks of the prior art.

[0008] More specifically, the aim of this invention is to provide a unit and a method for feeding information leaflets which are able to preparing and guarantee a constant and precise flow of leaflets to the packaging machine irrespective of the productivity per unit of time of the machine. Advantageously, the invention applies to packaging machines designed for packaging filter bags with infusion and/or extraction products into boxes, each box

having to contain an information leaflet.

[0009] These aims are fully achieved by a unit and a method for feeding information leaflets according to claims 1 and 11 respectively.

[0010] According to the invention, the unit for feeding information leaflets comprises a surface for feeding information leaflets in succession, subdivided into groups or packs held by a clip, according to a feed line having a feed direction directed to the packaging machine.

[0011] The unit also comprises a retaining station configured to retain, temporarily, a single pack of leaflets, and positioned in a first position along the feed surface.

[0012] The retaining station is equipped with pushing means movable transversely to the feed line between a non-operating position, wherein the pushing means are spaced away from the pack of leaflets, and an operating position, wherein the pushing means push a first lateral face of the pack for moving at least one information leaflet of the pack transversally to the feed line and define a gap between the at least one information leaflet and a stretch of clip positioned at the first lateral face. Moreover, the unit comprises an extractor configured for extracting the clip of the single pack of leaflets, which is movable, in synchrony with the pushing means, between a non-operating position, wherein the extractor is moved away from the clip, and an operating position, wherein the extractor is positioned at a height above the feed surface to intercept the clip and remove partially the clip from the single pack of leaflets. Thanks to this unit, a plurality of packs of leaflets may be placed along the feed surface without the need to remove the clip, which is automatically removed along the path.

[0013] Preferably, the preparation unit also comprises a magazine of packs of leaflets comprising a track supporting the packs of leaflets. Advantageously, the magazine has a helical extension, descending about a vertical axis Z, so with a reduced overall size in plan.

[0014] In light of this, the track has a lower end connected to the feed surface for feeding the packs of leaflets to the feed surface.

[0015] The addition of a magazine with a vertical extension increases the operating capacity of the unit, through a buffer which is able to keep fed the packaging machine without the need for continuous checks by an operator.

Brief description of the drawings

[0016] These and other features of the invention will become more apparent from the following detailed description of a preferred, non-limiting embodiment of it, with reference to the accompanying drawings, in which:

- Figure 1 shows a schematic side view, with some parts cut away to better illustrate others, of a unit for feeding information leaflets;
- Figures 2 and 3 show a front view and a schematic top plan view, respectively, of a detail P of the unit

- of Figure 1, in a first operating step;
- Figures 4 and 5 show a front view and a schematic top plan view, respectively, of a detail P of the unit of Figure 1, in a second operating step;
- Figures 6 and 7 show a front view and a schematic top plan view, respectively, of a detail P of the unit of Figure 1, in a third operating step;
- Figures 8 and 9 show a front view and a schematic top plan view, respectively, of a detail P of the unit of Figure 1, in a fourth operating step;
- Figures 10 and 11 show a front view and a schematic top plan view, respectively, of a detail P of the unit of Figure 1, in a fifth operating step;
- Figures 12 and 13 show a front view and a schematic top plan view, respectively, of a detail P of the unit of Figure 1, in a sixth operating step;
- Figures 14 and 15 show a front view and a schematic top plan view, respectively, of a detail P of the unit of Figure 1, in a seventh operating step;
- Figures 16 and 17 show schematic front views of a first solution of an element for removing a clip forming part of the unit according to the preceding drawings in two different operating configurations;
- Figures 18 and 19 show a front view and a schematic top plan view, respectively, of a second solution of an element for removing a clip forming part of the preceding drawings from 1 to 15.

Detailed description of preferred embodiments of the invention

[0017] With reference to the accompanying drawings, in particular Figure 1, the feed unit according to this invention, labelled 100 in its entirety, is used for feeding information leaflets 1 to a packaging machine M. Advantageously, this packaging machine M (illustrated in Figure 1 with a block) is designed for packaging filter bags with infusion and/or extraction products in boxes. The filter bags can, for example, contain products for pharmaceutical use. The feed unit 100, in particular, is designed to feed the information leaflets 1 individually to the packaging machine M.

[0018] The feed unit 100 comprises a feed surface 2 for feeding designed to feed the information leaflets 1 in succession, subdivided into groups or packs B (of predetermined number) held by a clip 3, according to a feed line A having a feed direction VA directed to the packaging machine M.

[0019] The feed surface 2 is designed to receive and feed the information leaflets 1 positioned vertically and perpendicular to the feed line A.

[0020] The unit 100 also comprises a retaining station 4 configured to retain, temporarily, a single pack B of leaflets, positioned in a first position of the feed surface 2.

[0021] The retaining station 4 is equipped with pushing means 5 movable transversally relative to the feed line A between a non-operating position, wherein the pushing means 5 are spaced away from the pack B

of leaflets, and an operating position, wherein the pushing means 5 are in contact with a first lateral face B1 of the pack B to obtain a curvature in the profile of the first lateral face B1 of the pack B of leaflets to define a loop between the curvature of the first lateral face B1 and a stretch of the clip, rectilinear, positioned at the first lateral face B1 (see Figures 2 to 7). In other words, the pushing means push the first lateral face B1 of the pack B for moving at least one information leaflet 1 of the pack B transversely to the feed line A and define a gap between the at least one information leaflet 1 and the stretch of clip positioned at the first lateral face B1.

[0022] The unit 100 also comprises an extractor 6 configured for extracting the clip 3 of the single pack B of leaflets, which is movable in synchrony with the pushing means 5 between a non-operating position, wherein the extractor 6 is moved away from the clip 3, and an operating position, wherein the extractor 6 is positioned at a height above the feed surface 2 to intercept the clip 3 and remove partially the clip 3 from the single pack B of leaflets (see Figures 8 to 14).

[0023] The unit 100 comprises a removal element 7 configured to remove the partially moved away clip 3 from the pack B of leaflets. In light of this, the removal element 7 is positioned downstream of the retaining station 4, relative to the feed direction VA.

[0024] Preferably, the unit 100 comprises a magazine 8 of packs B of leaflets comprising a track 9 supporting the packs B of leaflets. Advantageously, the supporting track 9 has a helical extension, descending about a vertical axis Z.

[0025] In light of this, the track 9 has a lower end connected to the feed surface 2 for feeding the packs B of leaflets to the feed surface 2.

[0026] Preferably, the magazine 8 comprises a vibrating unit 25 connected to the frame 26 for supporting the helical track 9 to facilitate a feed movement of the packs B of leaflets towards the feed surface 2.

[0027] It should be noted that the retaining station 4 comprises a contact body 10 positioned laterally to the feed surface 2, which is movable transversally relative to the feed line A between a non-operating position away from the packs B of leaflets (Figures 2 and 3), and an operating position in which it comes into contact with and contacts a single pack B of leaflets at the first lateral face B1 (Figures 4 to 7).

[0028] Preferably the contact body 10 enters into contact with a part of the first lateral face B1 of the pack not affected by the clip 3. Alternatively, the contact member 10 comes into contact only with the clip 3, or both with the first lateral face B1 of the pack B and with the clip 3.

[0029] In light of this, the contact member 10 has a pair of heads 10a, 10b for contact with the pack B of leaflets positioned on both sides relative to the pushing means 5.

[0030] Moreover, the retaining station 4 comprises a contact surface 11, or rear guide, positioned to the side of the feed surface 2 and on the opposite side to the position of the contact body 10.

[0031] In light of this, the contact surface 11 has a profile 11a of contact with a second lateral face B2 of the pack B of leaflets, opposite the first lateral face B1, configured to allow a transversal movement, relative to the feed line A, of a part (at least one) of the leaflets 1 at the operating position of the pushing means 5.

[0032] In other words, the retaining station 4 comprises a series of components which allow a temporary block of the single pack B of leaflets on two lateral faces B1, B2 facing each other in such a way as to allow, subsequently, the pushing means 5 to modify the profile of the first and the second lateral face in order to create a space which can then be used by the extractor to remove the clip.

[0033] Preferably, the contact surface 11 comprises at least one rigid wall equipped with a curved profile to define a loop 11a extending transversally relative to the feed line A, and away from the feed surface 2 in such a way as to generate a space for receiving the leaflets 1 of the pack B translated laterally by the pushing means 5.

[0034] In other words, the contact surface 11 has a contact profile 11a designed to allow a transversal movement, relative to the feed line A, of the at least one information leaflet 1 at the operating position of the pushing means 5.

[0035] Advantageously, the rigid wall of the contact surface 11 is part of the walls for lateral constraint of the packs B and of the leaflets 1 (loose) with which the feed surface 2 is provided.

[0036] It should be noted that the pushing means 5 comprise a pushing head 12, located between the pair of contact heads 10a and 10b with the single pack B of leaflets.

[0037] The pushing head 12 is configured to make contact, in an operating position, with the first lateral face B1 of the pack B of leaflets.

[0038] Preferably, the retaining station 4 also comprises a further retaining head 20, movable above the feed surface 2 between a non-operating position, wherein the retaining head 20 is away from the pack B of leaflets (see Figures 2 to 7), and an operating position, wherein the retaining head 20 is in contact with an upper face B3 of the pack B of leaflets. The further retaining head 20 is in an operating position in order to stabilise the pack B at least when the extractor 6 is in an operating position and the clip 3 is, at least partly, removed from the pack B of leaflets (see Figures 8 to 13).

[0039] Preferably, the extractor 6 comprises an arm 13 having a head 14 shaped like a fork to intercept and remove the stretch of clip 3 at least from the first lateral face (B1). Advantageously, the stretch of the clip 3 is lifted and separated from the first lateral face B1.

[0040] In light of this, the extractor 6 comprises an actuator 15 for moving the arm 13 along a direction perpendicular to the feed surface 2 between the non-operating position, wherein the arm 13 is moved away from the clip 3 and positioned beneath the feed surface 2 (Figures 2 to 9), and an operating position, wherein at least

the head 14 of the arm 13 is positioned at a height greater than an upper face B3 of the pack B of leaflets, after the interception of the stretch of the clip 3 (Figure 10).

[0041] In a first embodiment, the removal element 7 comprises at least one gripper unit 17 positioned above the feed surface 2.

[0042] In light of this, the removal element 7 comprises actuators 18 and 19 designed to move the at least one gripper unit 17 between a first operating position, wherein the gripper unit 17 is positioned away from the clip 3 (Figure 16), and a second operating position, wherein the gripper unit 17 is close to the stretch of the clip 3 partly removed and in such a way as to grip the same stretch of clip 3 and, subsequently, move the clip 3 away from the pack B of leaflets (Figure 17).

[0043] Advantageously, the second operating position is lower than the first operating position.

[0044] In light of this, the gripper unit 17 is equipped with a nozzle 22 located in the proximity of the first operating position which is able to generate a jet of air designed to evacuate the clip 3 which has been picked up by the gripper unit 17.

[0045] In practice, the gripper unit 17, having reached the first operating position with the clip 3 removed, is struck by a jet of air which determines, at the release of the clip 3 by the gripper unit 17, a moving away from the feed surface 2.

[0046] In a second embodiment (see Figures 18 and 19), the removal element 7 comprises a laminar wall 16 positioned above the feed surface 2, parallel to the upper face B3 of the pack B of leaflets, in such a way as to intercept and remove the clip 3, already partly moved away from the pack B of leaflets, at the feeding of the pack B of leaflets.

[0047] The profile of the laminar wall 16 is configured in such a way as to separate the clip 3 from the pack B being fed and, subsequently, to remove the same from the feed surface 2.

[0048] The unit 10 also comprises a sensor 23 (for example, of the optical type) positioned laterally to the feed surface 2.

[0049] The sensor 23 is designed to check for the presence of the clip 3 on the packs B being fed and send a corresponding signal, for detecting the presence or absence of the clip 3, to a control unit 24 designed to control, either activating or blocking, the components of the retaining station 4, the extractor 6 and the element 7 for removing the clip.

[0050] The invention also provides a method for feeding information leaflets 1 to a packaging machine M comprising the following steps:

- feeding to a feed surface 2 a plurality of information leaflets 1 subdivided into groups or packs B held by a clip 3,
- moving the packs B on the feed surface 2 according to a feed direction A having a feed direction VA directed to the packaging machine M;

- stopping a pack B feeding on the feed surface 2;
- creating a gap between a first lateral face B1 of the pack B and a stretch of the clip 3 positioned at the first lateral face B1 of the pack B;
- removing the clip 3 from the pack B.

[0051] The gap is created in a first position along the feed surface 2 and comprises pushing, transversally relative to the feed direction A, at least one information leaflet 1 of the pack B, in such a way that the at least one information leaflet 1 of the pack B translates relative to an adjacent information leaflet 1 of the same pack B.

[0052] In other words, the method according to the invention modifies a profile of the first lateral face B1 of the pack B, moving at least one information leaflet 1 of a pack B. Advantageously, at least one central information leaflet 1 the pack B is moved. On the other hand, the stretch of the clip 3 positioned at the first lateral face B1 remains straight, so as to form a gap between it and the information leaflets 1 which have been moved.

[0053] The step of removing the clip comprises a first sub-step for partial removal of the clip 3 and a second sub-step for complete removal of the clip 3.

[0054] Advantageously, the first sub-step of partial removal is carried out in a second position along the feed surface 2 and the second sub-step of total removal is carried out in a third position along the feed surface 2, the third position being located downstream of the second position relative to the feed direction (VA).

[0055] Advantageously, the first position coincides with the second position.

Claims

1. A unit for feeding information leaflets (1) to a packaging machine (M), comprising:

- a feed surface (2) designed to feed along a feed line (A) having a feed direction (VA) directed to the packaging machine (M) the information leaflets (1) in succession, subdivided into groups, or packs, (B) held by a clip (3);
- a retaining station (4) configured to retain, temporarily, a pack (B), positioned in a first position along the feed surface (2), and equipped with pushing means (5) movable transversely to the feed line (A) between a non-operating position, wherein the pushing means (5) are spaced away from the pack (B), and an operating position, wherein the pushing means (5) push a first lateral face (B1) of the pack (B) for moving at least one information leaflet (1) of the pack (B) transversally to the feed line (A) and define a gap between the at least one information leaflet (1) and a stretch of clip positioned at the first lateral face (B1);
- an extractor (6) configured for extracting the

clip (3) of the pack (B) of leaflets, which is movable, in synchrony with the pushing means (5), between a non-operating position, wherein the extractor (6) is moved away from the clip (3), and an operating position, wherein the extractor (6) intercepts the clip (3) and removes partially the clip (3) from the pack (B);

- a removal element (7) configured to remove completely the partially removed clip (3) from the pack (B); the unit being **characterized in that** the removal element (7) is positioned downstream of the retaining station (4), relative to the feed direction (VA).

2. The unit according to claim 1, comprising a magazine (8) of packs (B) comprising a track (9) for supporting the packs (B) having a helical extension, descending, about a vertical axis (Z); the track (9) having an end connected to the feed surface (2) for feeding the packs (B) to the feed surface (2).
3. The unit according to claim 2, wherein the magazine (8) comprises a frame (26) for supporting the helical track (9) and a vibrating unit (25) connected to the frame (26) for supporting the helical track (9) to facilitate a feed movement of the packs (B) of leaflets towards the feed surface (2).
4. The unit according to any one of the preceding claims, wherein the retaining station (4) comprises at least:

- a contact member (10) positioned laterally to the feed surface (2), which is movable transversally relative to the feed line (A) between a non-operating position away from the packs (B) of leaflets, and an operating position in which it comes into contact with and contacts the pack (B) at the first lateral face (B1); the contact body (10) having a pair of heads (10a, 10b) for contact with the pack (B) positioned on both sides relative to the pushing means (5);

- a contact surface (11) positioned laterally to the feed surface (2) and on the side opposite the contact body (10) with respect to the feed surface (2); the contact surface (11) having a contact profile (11a) designed to allow a transversal movement, relative to the feed line (A), of the at least one information leaflet (1) at the operating position of the pushing means (5).

5. The unit according to claim 4, wherein the pushing means (5) comprise a pushing head (12), positioned between the pair of contact heads (10a, 10b), and configured to make contact, in an operating position, with the first lateral face (B1) of the pack (B), or with the stretch of the clip (3) located at the first lateral face (B1) of the pack (B), or with both of them.

6. The unit according to any one of the preceding claims, wherein the extractor (6) comprises an actuator (15) and an arm (13) having a head (14) shaped like a fork to intercept the stretch of the clip (3) located at the first lateral face (B1) of the pack (B); the actuator (15) being designed to move the arm (13) along a direction perpendicular to the feed surface (2) between the non-operating position, wherein the arm (13) is moved away from the clip (3) and positioned beneath the feed surface (2), and the operating position, wherein at least the head (14) of the arm (13) is positioned at a height greater than an upper face (B3) of the pack (B), the head (14) of the arm (13) intercepting the stretch of clip (3) located at the first lateral face (B1) of the pack (B) passing from the non-operating position to the operating position.
7. The unit according to claims 1 and 6, wherein the removal element (7) comprises a laminar wall (16) positioned above the feed surface (2), parallel to an upper face (B3) of the pack (B), in such a way as to intercept and remove the clip (3), already partly moved away from the pack (B), at the feeding of the pack (B).
8. The unit according to any one of the preceding claims, wherein the removal element (7) comprises at least one gripper unit (17) positioned above the feed surface (2); the gripper unit (17) being moved by actuators (18, 19) between a first operating position, wherein the gripper unit (17) is positioned away from the clip (3), and a second operating position, wherein the gripper unit (17) is close to the stretch of the clip (3) partly removed in such a way as to grip the same stretch of clip (3) and, subsequently, move the clip (3) away from the pack (B) returning to the first operating position.
9. The unit according to claim 6, wherein the retaining station (4) comprises further a retaining head (20) movable above the feed surface (2), between a non-operating position, wherein the retaining head (20) is away from the pack (B), and an operating position, wherein the retaining head (20) is in contact with an upper face (B3) of the pack (B), the further retaining head (20) being in an operating position whilst the extractor (6) passes from the non-operating position to the operating position.
10. The unit according to any one of the preceding claims, wherein the feed surface (2) is designed to feed the information leaflets (1) positioned vertically and perpendicular to the feed line (A);
11. A method for feeding information leaflets (1) to a packaging machine (M) comprising:
- feeding to a feed surface (2) a plurality of information leaflets (1) subdivided into groups, or packs, (B) held by a clip (3),
 - moving the packs (B) on the feed surface (2) according to a feed direction (A) having a feed direction (VA) directed to the packaging machine (M);
 - stopping a pack (B) feeding on the feed surface (2);
 - creating a gap between a first lateral face (B1) of the pack (B) and the clip (3) positioned at the first lateral face (B1) of the pack (B);
 - partially removing the clip (3) from the pack (B);
 - removing completely the partially removed clip (3) from the pack (B) by means of a removal element (7), the method being **characterized in that** the complete removal of the clip (3) is performed in a position downstream to the position where the partial removal is performed.
12. The method according to the preceding claim, wherein the gap is created in a first position along the feed surface (2) and comprises pushing, transversally relative to the feed direction (A), at least one information leaflet (1) of the pack (B), in such a way that the at least one information leaflet (1) of the pack (B) translates relative to an adjacent information leaflet (1) of the same pack (B).
13. The method according to the claim 12, wherein the step of partial removal is carried out in a second position along the feed surface (2) and the step of total removal is carried out in a third position along the feed surface (2), the third position being located downstream of the second position relative to the feed direction (VA).
14. The method according to claim 13, wherein the first position coincides with the second position.

Patentansprüche

1. Einheit zum Zuführen von Informationsbroschüren (1) zu einer Verpackungsmaschine (M), umfassend:
- eine Zuführfläche (2), die so ausgelegt ist, dass sie entlang einer Zuführleitung (A) mit einer auf die Verpackungsmaschine (M) gerichteten Zuführrichtung (VA) die Informationsbroschüren (1), die in Gruppen oder Packungen (B) unterteilt und die von einem Clip (3) gehalten sind, nacheinander zuführt;
 - eine Haltestation (4), die konfiguriert ist, um eine Packung (B) vorübergehend zu halten, die in einer ersten Position entlang der Zuführfläche (2) positioniert ist und mit Druckmitteln (5) ausgestattet ist, die quer zur Zuführleitung (A) zwischen einer Nicht-Betriebsposition, in der die

- Druckmittel (5) von der Packung (B) wegführend beabstandet sind, und einer Betriebsposition beweglich sind, in der die Druckmittel (5) eine erste Seitenfläche (B1) der Packung (B) zum Bewegen von mindestens einer Informationsbroschüre (1) der Packung (B) quer zur Zuführleitung (A) drücken und einen Spalt zwischen der mindestens einen Informationsbroschüre (1) und einem an der ersten Seitenfläche (B1) positionierten Teilstück von Clip definieren;
- einen Extraktor (6), der zum Extrahieren des Clips (3) der Packung (B) von Broschüren konfiguriert ist, der synchron mit den Druckmitteln (5) zwischen einer Nicht-Betriebsposition, in der der Extraktor (6) von dem Clip (3) wegführend bewegt wird, und einer Betriebsposition beweglich ist, in der der Extraktor (6) den Clip (3) abfängt und den Clip (3) von der Packung (B) teilweise entfernt;
- ein Entfernungselement (7), das konfiguriert ist, um den teilweise entfernten Clip (3) von der Packung (B) vollständig zu entfernen; wobei die Einheit **dadurch gekennzeichnet ist, dass** das Entfernungselement (7) stromabwärts der Haltestation (4) relativ zur Zuführrichtung (VA) positioniert ist.
2. Einheit nach Anspruch 1, umfassend ein Magazin (8) von Packungen (B), umfassend eine Schiene (9) zum Tragen der Packungen (B) mit einer spiralförmigen Erstreckung, absteigend, um eine vertikale Achse (Z); wobei die Schiene (9) ein mit der Zuführfläche (2) verbundenes Ende zum Zuführen der Packungen (B) zur Zuführfläche (2) aufweist.
3. Einheit nach Anspruch 2, wobei das Magazin (8) einen Rahmen (26) zum Tragen der spiralförmigen Schiene (9) und eine Vibrationseinheit (25) umfasst, die mit dem Rahmen (26) zum Tragen der spiralförmigen Schiene (9) verbunden ist, um eine Zuführbewegung der Packungen (B) von Broschüren in Richtung der Zuführfläche (2) zu erleichtern.
4. Einheit nach einem der vorhergehenden Ansprüche, wobei die Haltestation (4) mindestens umfasst:
- ein Kontaktelement (10), das seitlich zur Zuführfläche (2) positioniert ist und quer relativ zur Zuführleitung (A) zwischen einer von den Packungen (B) von Broschüren wegführenden Nicht-Betriebsposition und einer Betriebsposition beweglich ist, in der es mit der Packung (B) an der ersten Seitenfläche (B1) in Kontakt kommt und diese berührt; wobei der Kontaktkörper (10) ein Paar von Köpfen (10a, 10b) für den Kontakt mit der Packung (B) aufweist, die auf beiden Seiten relativ zu den Druckmitteln (5) positioniert sind;
- eine Kontaktfläche (11), die seitlich zur Zuführfläche (2) und auf der dem Kontaktkörper (10) gegenüberliegenden Seite in Bezug auf die Zuführfläche (2) positioniert ist; wobei die Kontaktfläche (11) ein Kontaktprofil (11a) aufweist, das so ausgelegt ist, dass es eine Querbewegung relativ zur Zuführleitung (A) der mindestens einen Informationsbroschüre (1) an der Betriebsposition der Druckmittel (5) ermöglicht.
5. Einheit nach Anspruch 4, wobei die Druckmittel (5) einen Druckkopf (12) umfassen, der zwischen dem Paar von Kontaktköpfen (10a, 10b) positioniert ist und konfiguriert ist, um in einer Betriebsposition Kontakt mit der ersten Seitenfläche (B1) der Packung (B) oder mit dem Teilstück des Clips (3), das an der ersten Seitenfläche (B1) der Packung (B) angeordnet ist, oder mit beiden herzustellen.
6. Einheit nach einem der vorhergehenden Ansprüche, wobei der Extraktor (6) einen Aktuator (15) und einen Arm (13) mit einem Kopf (14) umfasst, der wie eine Gabel geformt ist, um das Teilstück des Clips (3) abzufangen, das an der ersten Seitenfläche (B1) der Packung (B) angeordnet ist; wobei der Aktuator (15) so ausgelegt ist, dass er den Arm (13) entlang einer Richtung senkrecht zur Zuführfläche (2) zwischen der Nicht-Betriebsposition, in der der Arm (13) vom Clip (3) wegführend bewegt wird und unter der Zuführfläche (2) positioniert ist und der Betriebsposition bewegt, in der mindestens der Kopf (14) des Arms (13) in einer Höhe positioniert ist, die größer als eine oberseitige Fläche (B3) der Packung (B) ist, wobei der Kopf (14) des Arms (13) das Teilstück von Clip (3) abfängt, das an der ersten Seitenfläche (B1) der Packung (B) angeordnet ist und von der Nicht-Betriebsposition in die Betriebsposition übergeht.
7. Einheit nach den Ansprüchen 1 und 6, wobei das Entfernungselement (7) eine laminare Wand (16) umfasst, die über der Zuführfläche (2) parallel zu einer oberseitigen Fläche (B3) der Packung (B) positioniert ist, um den bereits teilweise von der Packung (B) weg bewegten Clip (3) beim Zuführen der Packung (B) abzufangen und zu entfernen.
8. Einheit nach einem der vorhergehenden Ansprüche, wobei das Entfernungselement (7) mindestens eine Greifereinheit (17) umfasst, die über der Zuführfläche (2) positioniert ist; wobei die Greifereinheit (17) durch Aktuatoren (18, 19) zwischen einer ersten Betriebsposition, in der die Greifereinheit (17) vom Clip (3) wegführend positioniert ist, und einer zweiten Betriebsposition bewegt wird, in der die Greifereinheit (17) sich in der Nähe des Teilstücks des Clips (3) befindet, das teilweise entfernt wurde, so dass sie dasselbe Teilstück des Clips (3) greift, und anschließend den Clip (3) von der Packung (B) wegführend

bewegt und zur ersten Betriebsposition zurückkehrt.

9. Einheit nach Anspruch 6, wobei die Haltestation (4) zudem einen Haltekopf (20) umfasst, der über der Zuführfläche (2) zwischen einer Nicht-Betriebsposition, in der der Haltekopf (20) von der Packung (B) weg entfernt ist und einer Betriebsposition beweglich ist, in der der Haltekopf (20) mit einer oberseitigen Fläche (B3) der Packung (B) in Kontakt steht, wobei sich der weitere Haltekopf (20) in einer Betriebsposition befindet, während der Extraktor (6) von der Nicht-Betriebsposition in die Betriebsposition übergeht.
10. Einheit nach einem der vorhergehenden Ansprüche, wobei die Zuführfläche (2) so ausgelegt ist, dass sie die Informationsbroschüren (1), die vertikal und senkrecht zur Zuführleitung (A) positioniert sind, zuführt.
11. Verfahren zum Zuführen von Informationsbroschüren (1) zu einer Verpackungsmaschine (M), umfassend:
- Zuführen einer Vielzahl an Informationsbroschüren (1), die in Gruppen oder Packungen (B) unterteilt sind, die von einem Clip (3) gehalten werden, zu einer Zuführfläche (2),
 - Bewegen der Packungen (B) auf der Zuführfläche (2) gemäß einer Zuführrichtung (A) mit einer auf die Verpackungsmaschine (M) gerichteten Zuführrichtung (VA);
 - Stoppen einer Packung (B), die auf der Zuführfläche (2) zugeführt wird;
 - Erzeugen eines Spaltes zwischen einer ersten Seitenfläche (B1) der Packung (B) und dem Clip (3), der an der ersten Seitenfläche (B1) der Packung (B) positioniert ist;
 - teilweises Entfernen des Clips (3) von der Packung (B);
 - vollständiges Entfernen des teilweise entfernten Clips (3) von der Packung (B) mittels eines Entfernungselements (7), wobei das Verfahren **dadurch gekennzeichnet ist, dass** die vollständige Entfernung des Clips (3) in einer Position stromabwärts der Position, in der die teilweise Entfernung durchgeführt wird, durchgeführt wird.
12. Verfahren nach dem vorhergehenden Anspruch, wobei der Spalt in einer ersten Position entlang der Zuführfläche (2) erzeugt wird und Drücken quer relativ zu der Zuführrichtung (A) von mindestens einer Informationsbroschüre (1) der Packung (B) umfasst, so dass die mindestens eine Informationsbroschüre (1) der Packung (B) relativ zu einer benachbarten Informationsbroschüre (1) derselben Packung (B) verschoben wird.

13. Verfahren nach Anspruch 12, wobei der Schritt zur teilweisen Entfernung in einer zweiten Position entlang der Zuführfläche (2) durchgeführt wird und der Schritt zur vollständigen Entfernung in einer dritten Position entlang der Zuführfläche (2) durchgeführt wird, wobei sich die dritte Position stromabwärts der zweiten Position relativ zur Zuführrichtung (VA) befindet.

14. Verfahren nach Anspruch 13, wobei die erste Position mit der zweiten Position zusammenfällt.

Revendications

1. Unité d'alimentation de brochures d'information (1) dans une machine d'emballage (M), comprenant :
- une surface d'alimentation (2) conçue pour alimenter le long d'une ligne d'alimentation (A), comportant une direction d'alimentation (VA) orientée vers la machine d'emballage (M), les brochures d'information (1) en succession, subdivisées en groupes ou paquets (B) retenus par un clip (3) ;
 - un poste de retenue (4) configuré pour retenir, temporairement, un paquet (B) positionné dans une première position, le long de la surface d'alimentation (2), et équipé de moyens de poussée (5) mobiles transversalement à la ligne d'alimentation (A) entre une position non fonctionnelle, dans laquelle les moyens de poussée (5) sont espacés du paquet (B), et une position fonctionnelle, dans laquelle les moyens de poussée (5) poussent une première face latérale (B1) du paquet (B) pour déplacer au moins une brochure d'information (1) du paquet (B) transversalement à la ligne d'alimentation (A) et définissent un espacement entre l'au moins une brochure d'information (1) et une portion de clip positionné en correspondance de la première face latérale (B1) ;
 - un extracteur (6) configuré pour extraire le clip (3) du paquet (B) de brochures, étant mobile, en synchronisation avec les moyens de poussée (5), entre une position non fonctionnelle, dans laquelle l'extracteur (6) est éloigné du clip (3), et une position fonctionnelle, dans laquelle l'extracteur (6) intercepte le clip (3) et retire partiellement le clip (3) du paquet (B) ;
 - un élément d'enlèvement (7) configuré pour retirer complètement le clip (3) partiellement retiré du paquet (B) ; l'unité étant **caractérisée en ce que** l'élément d'enlèvement (7) est positionné en aval du poste de retenue (4), par rapport à la direction d'alimentation (VA) .
2. Unité selon la revendication 1, comprenant un ma-

- gasin (8) de paquets (B) comprenant une piste (9) servant à supporter les paquets (B) ayant une extension hélicoïdale, descendante, autour d'un axe vertical (Z) ; la piste (9) comportant une extrémité reliée à la surface d'alimentation (2) pour alimenter les paquets (B) vers la surface d'alimentation (2).
3. Unité selon la revendication 2, dans laquelle le magasin (8) comprend un cadre (26) servant à supporter la piste hélicoïdale (9) et une unité vibrante (25) reliée au cadre (26) pour supporter la piste hélicoïdale (9) afin de faciliter un mouvement d'alimentation des paquets (B) de brochures vers la surface d'alimentation (2) .
4. Unité selon l'une quelconque des revendications précédentes, dans laquelle le poste de retenue (4) comprend au moins :
- un élément de contact (10) positionné latéralement par rapport à la surface d'alimentation (2), étant mobile transversalement par rapport à la ligne d'alimentation (A) entre une position non fonctionnelle éloignée des paquets (B) de brochures, et une position fonctionnelle, dans laquelle il entre en contact et se met en contact avec le paquet (B) en correspondance de la première face latérale (B1) ; le corps de contact (10) comportant une paire de têtes (10a, 10b), pour le contact avec le paquet (B), positionnées des deux côtés par rapport au moyen de poussée (5) ;
 - une surface de contact (11) positionnée latéralement par rapport à la surface d'alimentation (2) et sur le côté opposé du corps de contact (10) par rapport à la surface d'alimentation (2) ; la surface de contact (11) ayant un profil de contact (11a) conçu pour permettre un mouvement transversal, par rapport à la ligne d'alimentation (A), de l'au moins une brochure d'information (1) en position de fonctionnement du moyen de poussée (5).
5. Unité selon la revendication 4, dans laquelle les moyens de poussée (5) comprennent une tête de poussée (12), positionnée entre la paire de têtes de contact (10a, 10b), et configurée pour se mettre en contact, dans une position de fonctionnement, avec la première face latérale (B1) du paquet (B) ou avec la portion de clip (3) située en correspondance de la première face latérale (B1) du paquet (B), ou avec les deux.
6. Unité selon l'une quelconque des revendications précédentes, dans lequel l'extracteur (6) comprend un actionneur (15) et un bras (13) comportant une tête (14) en forme de fourche pour intercepter la portion de clip (3) située en correspondance de la première face latérale (B1) du paquet (B) ; l'actionneur (15) étant conçu pour déplacer le bras (13) le long d'une direction perpendiculaire à la surface d'alimentation (2) entre la position non fonctionnelle, dans laquelle le bras (13) est éloigné du clip (3) et positionné sous la surface d'alimentation (2), et la position fonctionnelle, dans laquelle au moins la tête (14) du bras (13) est positionnée à une hauteur supérieure à une face supérieure (B3) du paquet (B), la tête (14) du bras (13) interceptant la portion de clip (3) située en correspondance de la première face latérale (B1) du paquet (B) passant de la position non fonctionnelle à la position fonctionnelle.
7. Unité selon les revendications 1 et 6, dans laquelle l'élément d'enlèvement (7) comprend une paroi latérale (16) positionnée au-dessus de la surface d'alimentation (2), parallèle à une face supérieure (B3) du paquet (B), de manière à intercepter et retirer le clip (3), déjà partiellement éloignée du paquet (B), en correspondance de l'alimentation du paquet (B).
8. Unité selon l'une quelconque des revendications précédentes, dans laquelle l'élément d'enlèvement (7) comprend au moins une unité de préhension (17) positionnée au-dessus de la surface d'alimentation (2) ; l'unité de préhension (17) étant déplacée par des actionneurs (18, 19) entre une première position de fonctionnement, dans laquelle l'unité de préhension (17) est positionnée en étant éloignée du clip (3), et une seconde position de fonctionnement, dans laquelle l'unité de préhension (17) est proche de la portion de clip (3) partiellement retirée de manière à saisir la même portion de clip (3) et, ensuite, à éloigner le clip (3) du paquet (B) en revenant à la première position de fonctionnement.
9. Unité selon la revendication 6, dans laquelle le poste de retenue (4) comprend de plus une tête de retenue (20) mobile au-dessus de la surface d'alimentation (2), entre une position non fonctionnelle, dans laquelle la tête de retenue (20) est éloignée du paquet (B), et une position fonctionnelle, dans laquelle la tête de retenue (20) est en contact avec une face supérieure (B3) du paquet (B), la tête de retenue (20) supplémentaire étant dans une position fonctionnelle tandis que l'extracteur (6) passe de la position non fonctionnelle à la position fonctionnelle.
10. Unité selon l'une quelconque des revendications précédentes, dans laquelle la surface d'alimentation (2) est conçue pour alimenter les brochures d'information (1) positionnées verticalement et perpendiculairement par rapport à la ligne d'alimentation (A).
11. Procédé d'alimentation de brochures d'information (1) dans une machine d'emballage (M), comprenant :

- alimenter vers une surface d'alimentation (2)
une pluralité de brochures d'information (1) subdivisées en groupes ou paquets (B) retenus par un clip (3),
 - déplacer les paquets (B) sur la surface d'alimentation (2) selon une direction d'alimentation (A) ayant une direction d'alimentation (VA) orientée vers la machine d'emballage (M) ; 5
 - arrêter un paquet (B) alimenté sur la surface d'alimentation (2) ; 10
 - créer un espacement entre une première face latérale (B1) du paquet (B) et le clip (3) positionné sur la première face latérale (B1) du paquet (B) ;
 - retirer partiellement le clip (3) du paquet (B) ; 15
 - retirer complètement le clip (3) partiellement retiré du paquet (B) au moyen d'un élément d'enlèvement (7), le procédé étant **caractérisé en ce que** l'enlèvement complet du clip (3) est effectué dans une position en aval de la position où l'enlèvement partiel est effectué. 20
12. Procédé selon la revendication précédente, dans lequel l'espacement est créé dans une première position le long de la surface d'alimentation (2) et comprend la poussée, transversalement par rapport à la direction d'alimentation (A), d'au moins une brochure d'information (1) du paquet (B), de telle sorte que l'au moins une brochure d'information (1) du paquet (B) translate par rapport à une brochure d'information adjacente (1) du même paquet (B). 25 30
13. Procédé selon la revendication 12, dans lequel l'étape d'enlèvement partiel est effectuée dans une deuxième position le long de la surface d'alimentation (2) et l'étape d'enlèvement total est effectuée dans une troisième position le long de la surface d'alimentation (2), la troisième position étant située en aval de la deuxième position par rapport à la direction d'alimentation (VA). 35 40
14. Procédé selon la revendication 13, dans lequel la première position coïncide avec la deuxième position. 45

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Fig.1

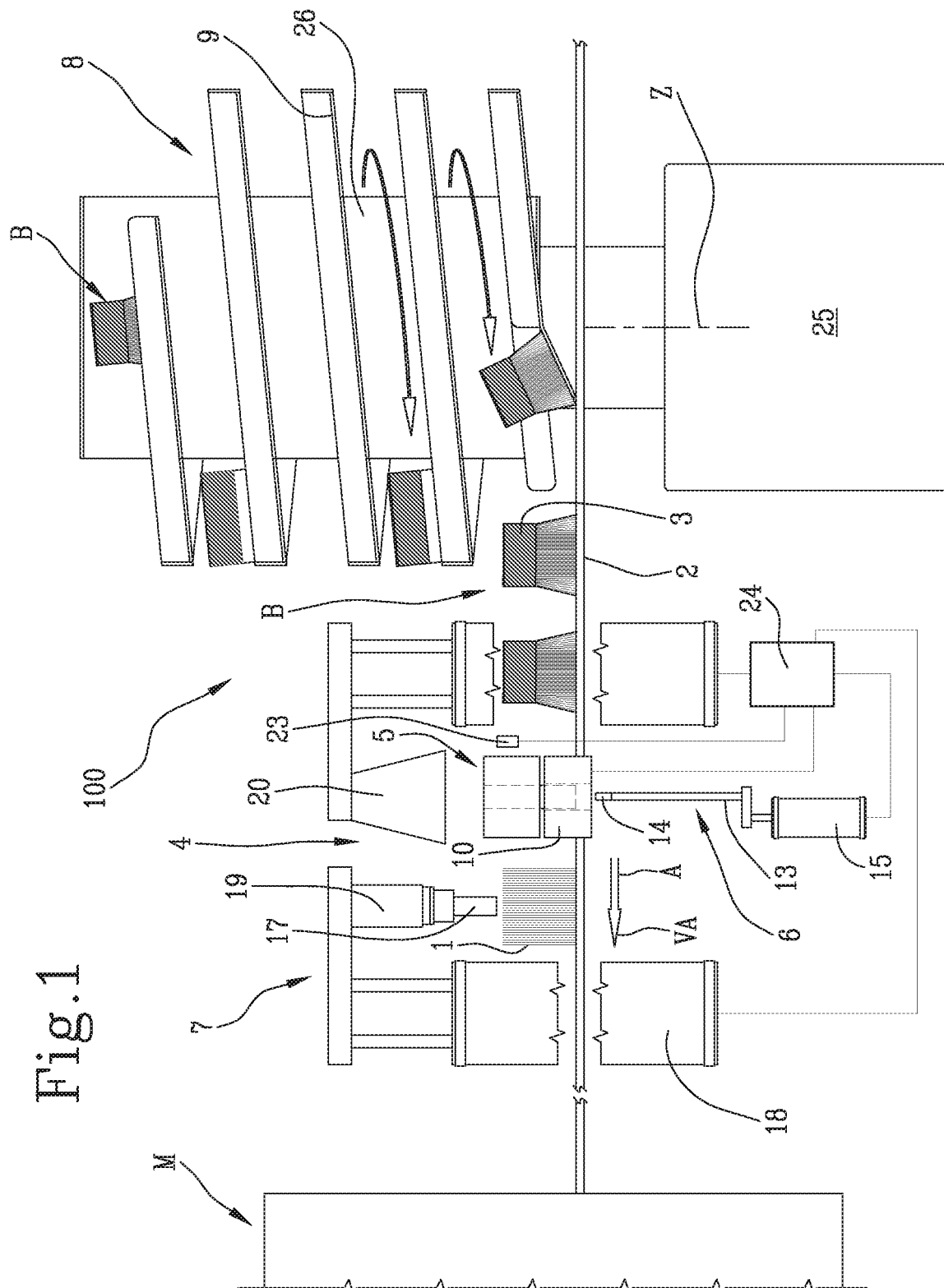


Fig. 2

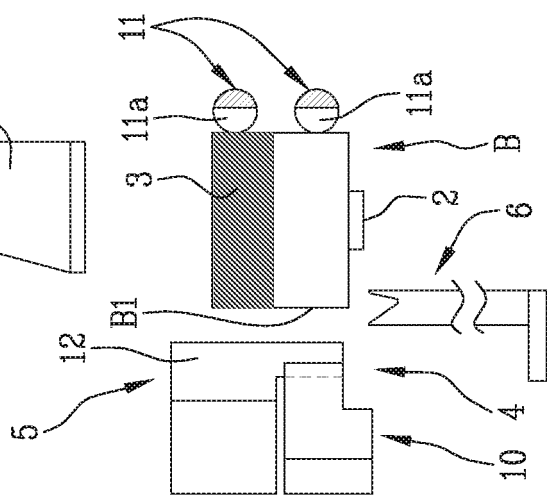


Fig. 4

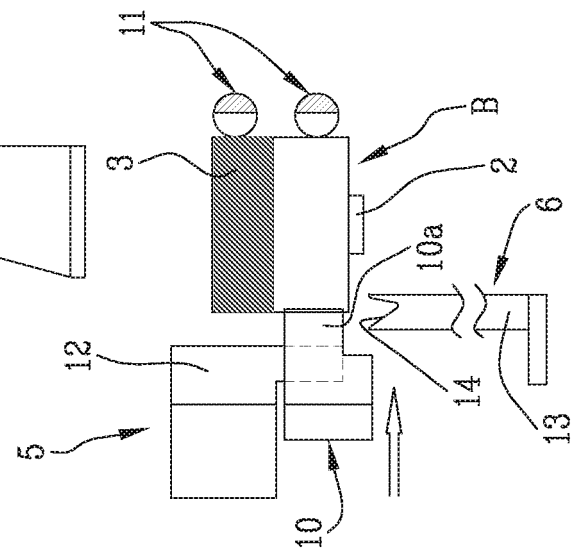


Fig. 6

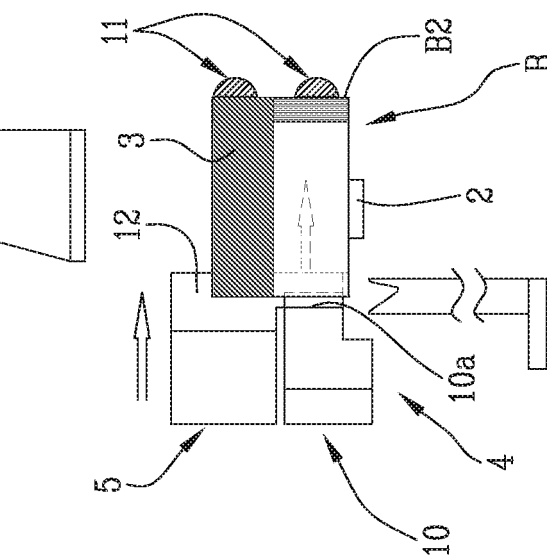


Fig. 3

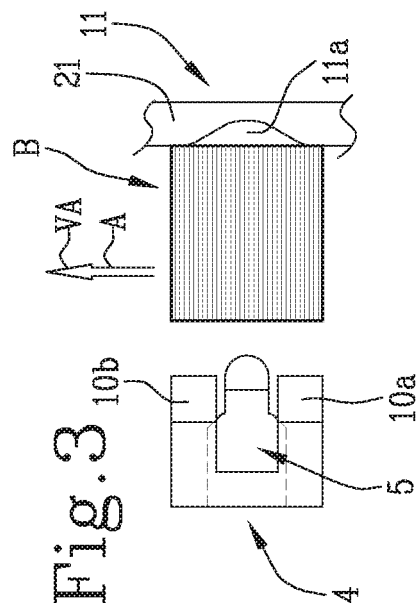


Fig. 5

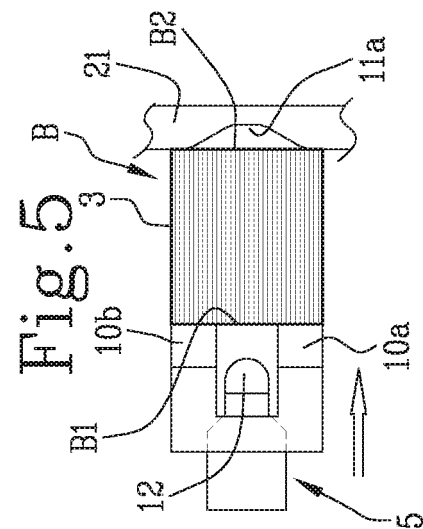
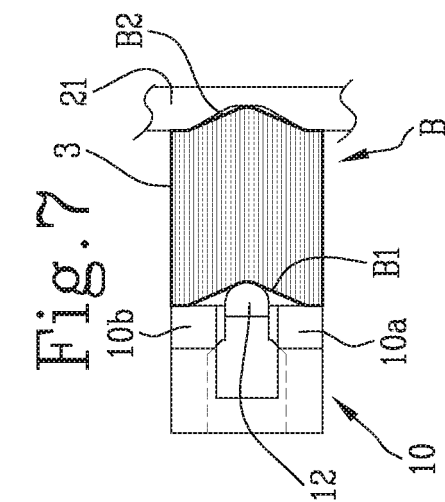
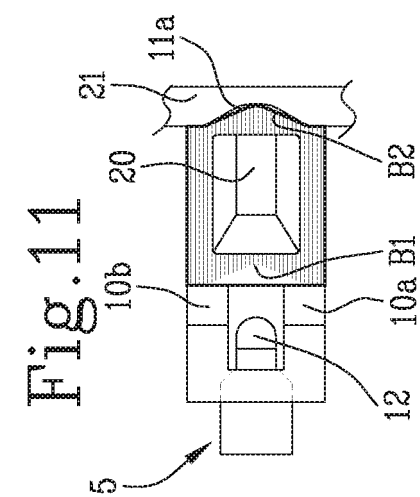
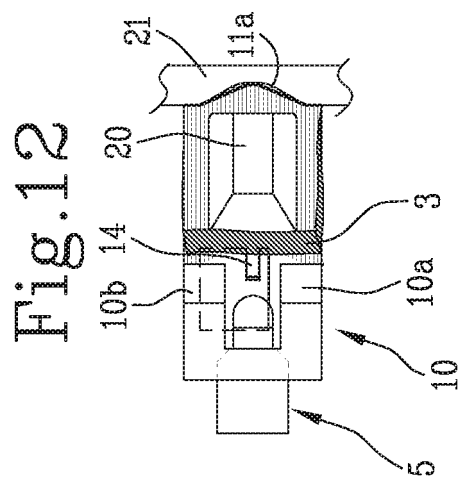
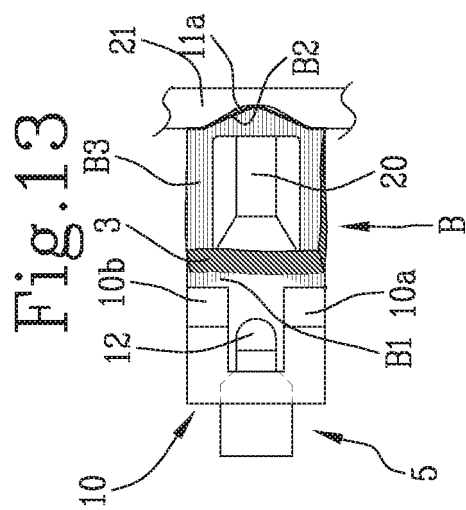
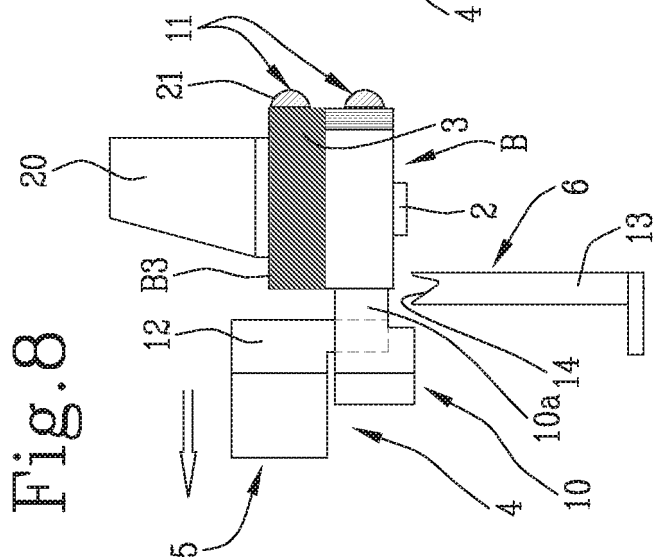
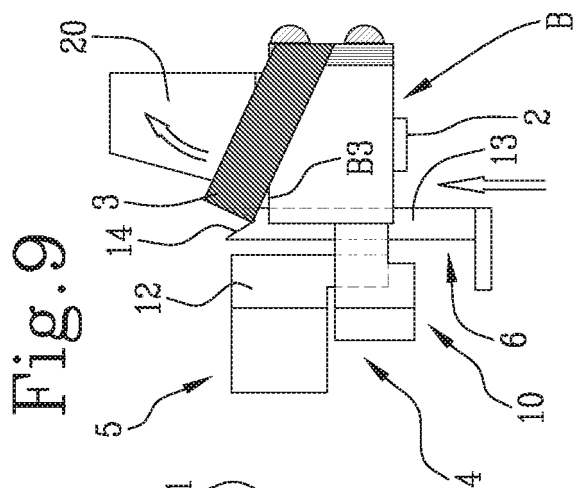
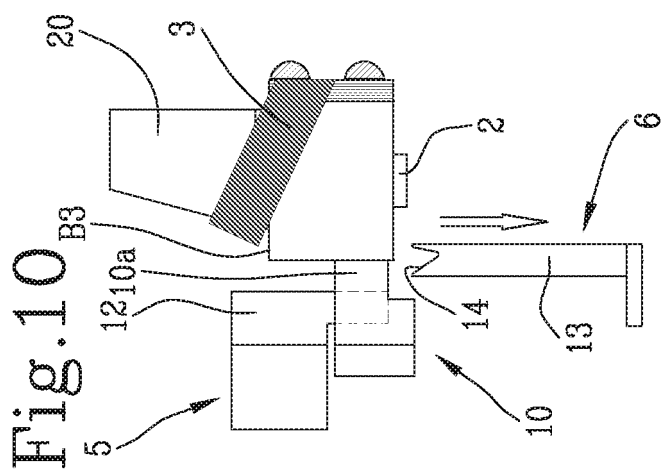


Fig. 7





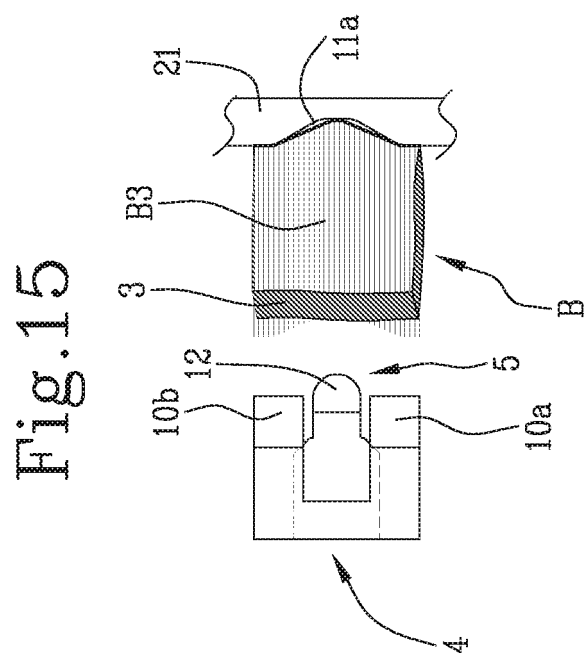
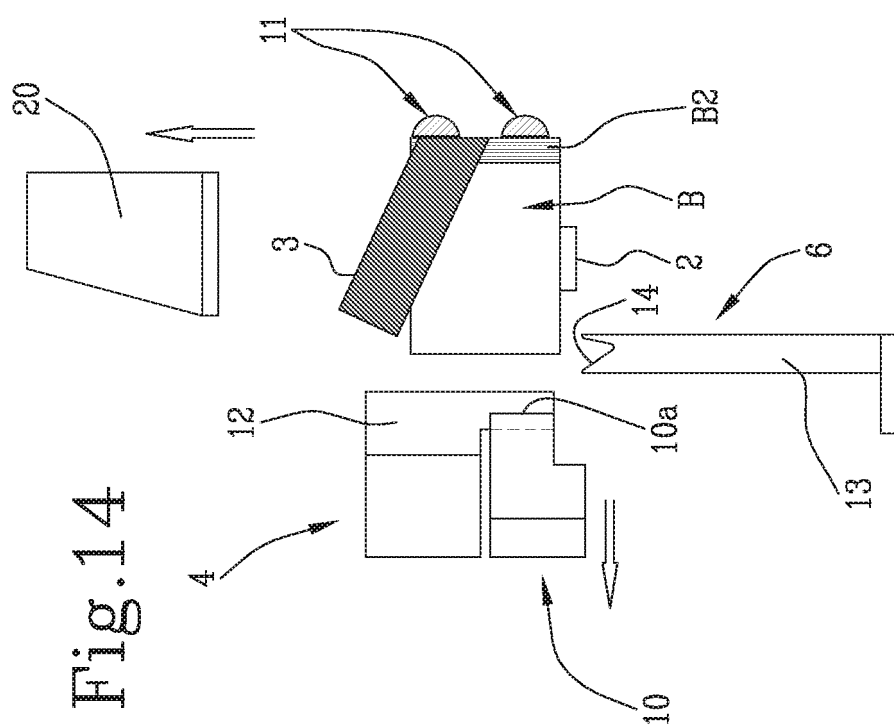


Fig.16

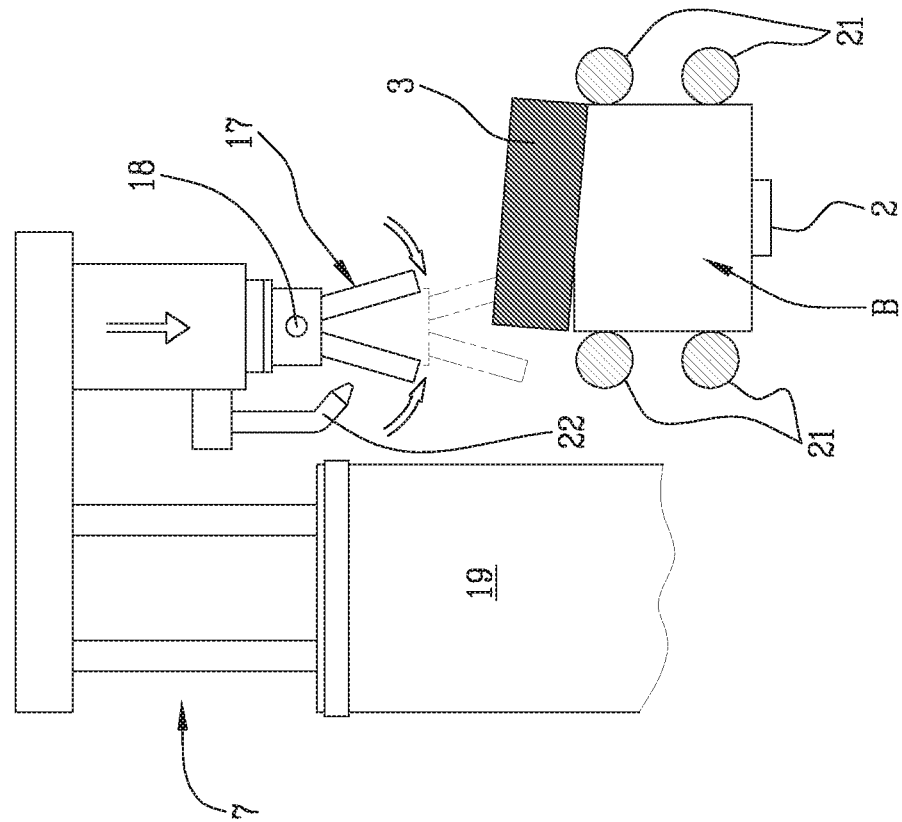


Fig.17

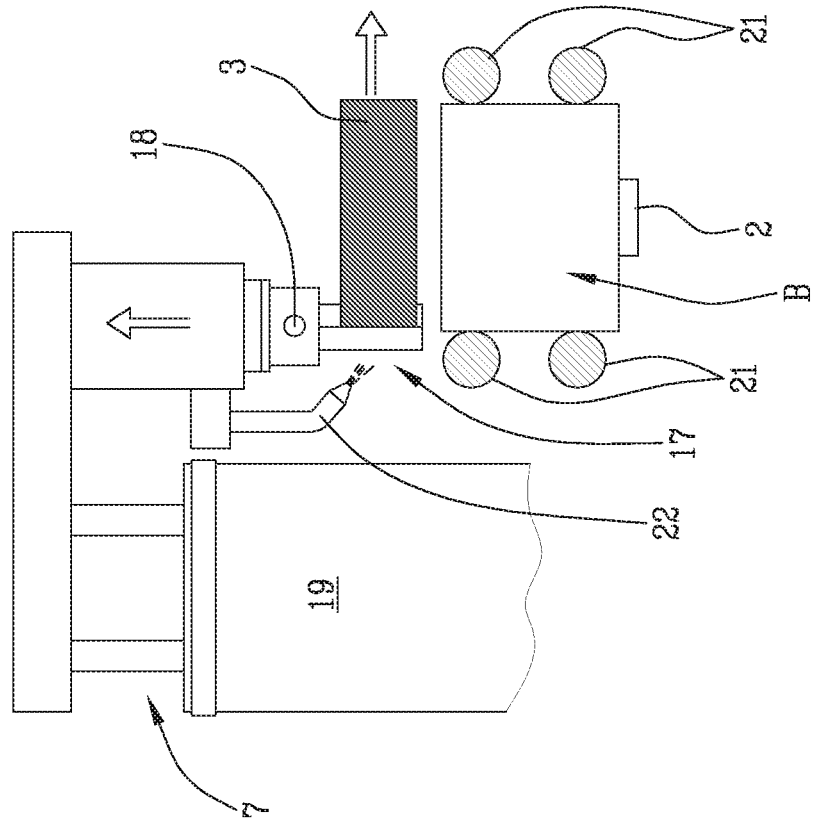


Fig.18

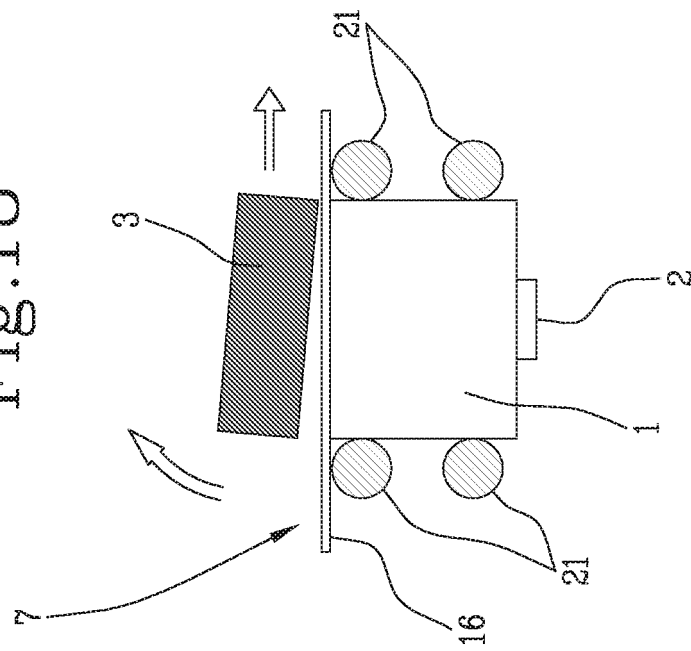
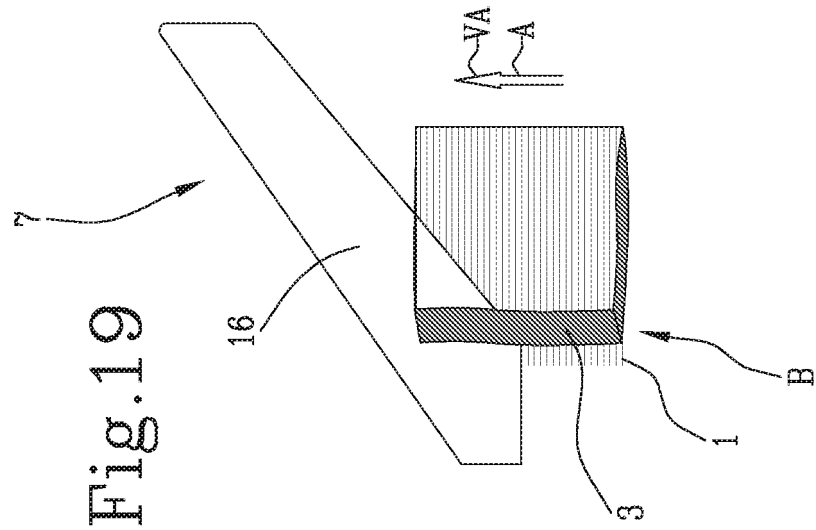


Fig.19



REFERENCES CITED IN THE DESCRIPTION

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