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(54) **Installation and method for packaging a product in film material**

Vorrichtung und Verfahren zum Verpacken eines Produktes in Folienmaterial

Machine et procédé pour emballer un produit dans un matériau en film

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Description

[0001] The invention is related to an installation for packing a product, such as one or more slices of a cheese product or a meat product, in film material, as defined in the preamble of claim 1. Such an installation is disclosed in US-A-3.016.673.

[0002] Said known type of film packing machines makes use of one roll of film. The packing principle is based on the movement of closing a book: the film is folded around the product. The product is first manually placed on the film. The machine then closes by one flap moving upwards and folding the film around the product. As soon as the flap has been completely closed, the pack is sealed on three sides by two fixed V-shaped elements, one of which is heated, pressing onto one another. The fourth side is closed by the fold. At the same point in time the film is also cut and transferred to the clamping device. The flap then opens again and the product can be removed.

[0003] A disadvantage of this form is that this type of machines cannot be incorporated in a production line. In addition it is a disadvantage that it is more difficult to make such a system suitable for various sizes of pack. Packing machines that can be used in a packing line have the characteristic that the product is fed into the machine via a conveyor belt. It is not possible in this way to pack foodstuffs in film only, without using a product carrier such as, for example, a plastic dish.

[0004] When packing products in film, with automatic throughout of the product, in general use is made of two rolls of film, the one roll being used for the bottom layer, whilst the other roll is used for the top layer. The consequence of this is that fusing the two layers of film together (known as sealing) has to be carried out on four sides of the product.

[0005] After packing, the film is then cut off the roll. Sealing on four sides has the consequence that at least 2 cm more film is required than when folding round the product.

[0006] In order to be able to process various sizes of the material to be packed, use can be made of a number of methods, such as the use of fixed, but interchangeable sealing bars or cutting between the two front edges and the side edges during sealing by means of sealing rollers.

[0007] Another problem with such machines is the interchanging of two rolls, as a result of which the risk of malfunctions becomes greater. Usually at least one of these rolls is not readily accessible.

[0008] The aim of the present invention is to provide an installation and a method for packing products in film which is not dependent on the way in which the product to be packed is fed (with or without product carrier) and is also able to process single item packs without additional film waste being generated as a result. Furthermore, the thickness of the material to be packed must not act as an impediment to the packaging itself.

[0009] Said aim is achieved by the features of the characterising portion of claim 1.

[0010] According to the present invention the film is used as transport medium and is transported such that the film is first pulled through and then pulled back over the product, so that the machine repeatedly returns to the starting position. This is in contrast to the method that is employed according to the state of the art of conventional flow packers. Compared with film packing machines which seal on 4 sides, this method will save at least 2 cm film per pack because one sealed seam (5 - 8 mm sealed seam plus 5 mm margin) is dispensed with because the seal at the front of the product is provided by a fold.

[0011] As a result of this method only one film roll has to be used for feeding material, as a result of which a saving in film can be achieved compared with a system with two rolls, where the rolls do not contain identical lengths of film. In addition, changing the stock roll will take less time.

[0012] The gripper means are fixed to a carriage which is movably accommodated on an auxiliary frame having a guide for the carriage, which auxiliary frame is attached to the base frame such that it can pivot about a horizontal pivot axis, which pivot axis is located at that end of the conveyor remote from the preparation surface, which auxiliary frame can be moved between a position in which the guide is parallel to the conveyor and a position in which the guide runs obliquely upwards.

[0013] Preferably, the lower sealing bar of the sealing installation is fixed with respect to the base frame and the upper sealing bar is accommodated on a tilting arm, the tilt shaft of which is located close to or coincident with the pivot axis of the auxiliary frame.

[0014] For the purpose of forming the quantity of film material required for one pack, with two pieces which can be sealed together, there is a carrier element between the preparation surface and the conveyor, which carrier element enables movement of the strip of film material transversely to the preparation surface, such that when a strip of film material is gripped in the gripper device this film material can be pulled into the form of a loop. The carrier element comprises a guide positioned transversely to the preparation surface, as well as a carriage that can be moved along said guide and which carries a horizontal roller positioned transversely to the conveyor.

[0015] By means of this carrier element, a first piece of film material can be drawn aside which subsequently can be positioned on top of the adjoining second piece of film material with the product thereon.

[0016] The invention also relates to a method for operating the installation described above, comprising the following steps:

- gripping a strip of film material by means of the gripper means,
- moving the strip of film material transversely to the

preparation surface by means of the carrier element, forming a loop, such that the length of the film material in the loop is equal to a first piece of film material,
- placing a product on the second piece of film material located on the preparation surface,
- moving the gripper means while moving back the carrier element and then moving the second piece of film material, with product, located on the preparation surface to the sealing station,
- pivoting the auxiliary frame upwards,
- moving the gripper means in a direction opposed to the previous direction of movement and bringing the first piece of film material above the second piece of film material, with product,
- moving the gripper means downwards, thus forming a fold line between the first and the second piece of film material,
- moving the sealing bars towards one another and forming a sealed seam along the three pairs of edges of the pieces of film material lying on top of one another so as to form a pack ,
- detaching the pack from the strip of film material.

[0017] The known folding method mentioned in the preamble has the disadvantage that it is not possible to place a new product ready when the pack is being sealed. In the preferred embodiment of the invention the installation is suitable for placing the film ready and transporting it while the pack is being sealed closed. This transport can also be used to move the product in small steps in the case of a combination with an automatic slicing machine, so that the cut slices can be put down stepwise. The layout of the film path has been so chosen that the machine can be positioned next to a fully automatic slicing machine in such a way that the film surface can be used as ejection surface.

[0018] The invention will be discussed in more detail below with reference to the drawings, in which:

Figure 1 shows a spatial overview of one embodiment of the present invention inside a packing machine with the various components; and
Figures 2 to 12 show, diagrammatically, a number of cross-sections of one embodiment of the present invention, each individual drawing showing one situation in the course of the process.

[0019] Figure 1 shows the following components in a packing machine such as is constructed in an arbitrary embodiment:

1. Film stock roll
2. Drive roller (not visible, arrow indicates position)
3. Feed opening
4. Sensor roller for film tension
5. Film guide roller
6. Supporting surface
7. Film guide roller
8. Film reversing system
9. Bar transport system (pivots about tilt shaft 15)
10. Film transport bar
11. Height-adjustable discharge belt
12. Sealing U (heated element)
12a. Bottom U to provide support during sealing
13. Operating flap of sealing mechanism (pivots about tilt shaft 15)
14. Height adjustment control
15. Central tilt shaft
16. Cutting mechanism

[0020] A description of the mode of operation of the principle is now given below with reference to Figures 2 to 12.

[0021] Figure 2 shows the situation after manually inserting the film. Manual insertion of the film is facilitated in that the film can be guided through the feed opening (3) from the sides. After the film has been fed through the opening (3) it is guided around the rollers (4, 5, 7) to the supporting surface (6).

[0022] Figure 3 shows the situation immediately after starting the initialisation cycle. The operating flap of the sealing mechanism (13) has been pivoted downwards until it is just in contact with the bar transport system (9).

[0023] Figure 4 shows the situation where the film is clamped between the top and bottom sections. The operating flap of the sealing mechanism (13) has been pivoted downwards until the sealing U (12) is in contact with the bottom U (12a). The bar transport system (9) is carried along by the movement of this flap (13). After the top and bottom sections have been brought together a movement by the cutting mechanism (16) ensures that the film is cut off and is clamped in the film transport bar (10). At this point in time the machine has been initialised and the machine will continue with the operations in a normal cycle.

[0024] Figure 5 shows the situation where the film has been brought to the correct length by the film reversing system (8), so that the product to be packed can be placed on the table with the supporting surface (6).

[0025] Figure 6 shows that the operating flap of the sealing mechanism (13) with the sealing U (12) has been moved upwards, whilst the bar transport system (9) has remained in the lowest position. In this position, the packed product will be removed via the height-adjustable conveyor belt (11).

[0026] Figure 7 shows how the film is pulled through by the film transport bar (10) whilst, at the same time, the film reversing system (8) moves back so that the film on the supporting surface (6) does not move. By applying a difference in speed between the transport bar (10) and the film reversing system (8), it is nevertheless possible to make a suitable controlled movement when this is needed for positioning of the product to be packed. As soon as the film reversing system (8) has returned to the starting position, the system will wait until there is

a product ready to be packed. In the interim the transport bar (10) can be used to move the product if the machine is coupled to, for example, an automatic slicing machine.

[0027] In Figure 8 the situation has been reached where the film has been pulled through to such an extent that the product is located above the discharge belt (11).

[0028] In Figure 9 the bar transport system (9) has been pivoted back into the starting position.

[0029] In Figure 10 the film transport bar has been transported back to the original position and the film has been pulled back with it over the product to be packed. This position corresponds to the situation in Figure 2 except that there is now a product ready to be sealed.

[0030] In Figure 11 the operating flap of the sealing mechanism (13) has been pivoted downwards until it is just in contact with the bar transport system (9). This situation is comparable to the situation in Figure 3.

[0031] In Figure 12 the product is sealed and at the same time is separated, by means of the cutting mechanism (16), from the roll of film and the film at the other side of the cut is again clamped in the film transport bar (10). At this point in time the machine has returned to the initialisation position and the machine will continue with the operations from Figure 6.

Claims

1. Installation for packing a product, such as one or more slices of a cheese product or a meat product, in film material, comprising a base frame with:

- a station for a roll (1) of film material,
- a preparation station (6) for placing a product on a strip of film material,
- gripper means for gripping the strip of film material, and folding it around the product,
- a sealing station (12, 13) for sealing the two pieces of film material, positioned on top of one another, with respect to one another, which sealing station has upper (12) and lower (12a) sealing bars,
- which upper (12) and lower (12a) sealing bars of the sealing station (12 - 13) can be moved towards one another in order to seal the pieces of film material to one another at the three edges other than the edge where the fold line is located, forming a pack,
- which sealing bars (12, 12a) can be moved away from one another,
- guide means (4, 5, 7) for guiding the strip of film material from the roll (1) to the preparation station (6),
- means (16) for detaching the pack from the strip of film material.

characterized by

- a conveyor (11) adjoining the preparation surface (6) for transporting the finished pack away from the preparation surface (6), and on which the strip of film material can be transported between the sealing bars (12,12a),
- wherein the gripper means (10) are fixed to a carriage which is movably accommodated on an auxiliary frame (9) having a guide for the carriage, which auxiliary frame (9) is attached to the base frame such that it can pivot about a horizontal pivot axis (15), which pivot axis (15) is located at that end of the conveyor (11) remote from the preparation surface (6), which auxiliary frame (9) can be moved between a position in which the guide is parallel to the conveyor and a position in which the guide runs obliquely upwards, so that the gripper means (10) can be moved along a first path for feeding a length of the strip equal to the sum of the lengths of the two pieces through the sealing station, a first piece of film material being moved beyond said sealing station (12 - 13) and the second piece of film material coming to lie between the sealing bars (12, 12a) in the sealing station (12 - 13),
- so that the gripper means (10) can be moved along a second path located above the first path, and in a direction opposed to that in the first path, for feeding the first piece of film material back to above the second piece of film material,
- and so that the gripper means (10) can be moved downwards to bring the first piece of film material onto the second piece of film material, thus forming a fold line between these pieces of film material,
- a carrier element (8) between the preparation surface (6) and the conveyor (11), which carrier element (8) enables movement of the strip of film material transversely to and below the level of the preparation surface (6), such that when a strip of film material is gripped in the gripper device (10) this film material can be pulled into the form of a loop, the length of the film material in the loop being equal to the first piece of film material.

2. Installation according to Claim 1, wherein the lower sealing bar (12a) of the sealing installation (12 - 13) is fixed with respect to the base frame and the upper sealing bar (12) is accommodated on a tilting arm (13), the tilt shaft (15) of which is located close to or coincident with the pivot axis of the auxiliary frame (9). 3

3. Installation according to one of the preceding claims, wherein the conveyor (11) is a belt.

4. Installation according to any of the preceding claims, wherein the carrier element (8) comprises a guide positioned transversely to the preparation surface, as well as a carriage that can be moved along said guide and which carries a horizontal roll positioned transversely to the conveyor.

5. Method for operating an installation according to Claim 1, comprising the following steps:

- gripping a strip of film material by means of the gripper means (10),
- moving the strip of film material transversely to the preparation surface by means of the carrier element (8), forming a loop, such that the length of the film material in the loop is equal to a first piece of film material,
- placing a product on the second piece of film material located on the preparation surface (6),
- moving the gripper means (10) while moving back the carrier element (8) and then moving the second piece of film material, with product, located on the preparation surface (6) to the sealing station (12 - 13),
- pivoting the auxiliary frame (9) upwards,
- moving the gripper means (10) in a direction opposed to the previous direction of movement and bringing the first piece of film material above the second piece of film material, with product,
- moving the gripper means (10) downwards, thus forming a fold line between the first and the second piece of film material,
- moving the sealing bars (12, 12a) towards one another and forming a sealed seam along the three pairs of edges of the pieces of film material lying on top of one another so as to obtain a pack,
- detaching the pack from the strip of film material.

6. Method according to Claim 5, comprising the stepwise movement of the strip of film material transversely to the preparation surface (6) and the deposition of, in each case, one slice of the product on the second piece of film material, located on the preparation surface, and/or on a slice deposited beforehand, after each movement step of the film material, with the formation of a quantity of slices stacked stepwise.

Patentansprüche

1. Vorrichtung zum Verpacken eines Produktes wie etwa einer oder mehrerer Scheiben eines Käseproduktes oder eines Fleischproduktes in Folienmaterial umfassend einen Basisrahmen mit

- einer Station für eine Rolle (1) des Folienmaterials,
- einer Anfertigungsstation (6), um ein Produkt auf einem Streifen des Folienmaterials anzuordnen,
- einem Greifermittel, um den Streifen des Folienmaterials zu ergreifen und ihn um das Produkt zu falten,
- einer Versiegelungsstation (12, 13), um die beiden Stücke des Folienmaterials, die aufeinander angeordnet sind, in Bezug zueinander zu versiegeln, wobei die Versiegelungsstation einen oberen (12) und einen unteren (12a) Versiegelungsbalken aufweist,
- wobei der obere (12) und der untere (12a) Versiegelungsbalken des Versiegelungsstations (12, 13) zueinander bewegt werden können, um die Stücke des Folienmaterials an den drei Rändern, die von jedem Rand, an dem die Faltlinie gelegen ist, verschieden sind, aneindander zu siegeln, wodurch eine Packung gebildet wird,
- wobei die Versiegelungsbalken (12, 12a) voneinander wegbewegt werden können,
- Führungsmitteln (4, 5, 7), um den Streifen des Folienmaterials von der Rolle (1) zur Anfertigungsstation (6) zu führen,
- einem Mittel (16), um die Packung vom Streifen des Folienmaterials abzunehmen,

gekennzeichnet durch

- eine an die Anfertigungsfläche (6) angrenzende Transportvorrichtung (11), um die fertige Packung von der Anfertigungsfläche (6) wegzutransportieren, und auf der der Streifen des Folienmaterials zwischen die Versiegelungsbalken (12, 12a) transportiert werden kann,
- wobei das Greifermittel (10) an einem Schlitten fixiert ist, der beweglich an einem Hilfsrahmen (9) eingerichtet ist, welcher eine Führung für den Schlitten aufweist, wobei der Hilfsrahmen (9) in einer solchen Weise am Basisrahmen angebracht ist, dass er um eine waagerechte Schwenkachse (15) schwenken kann, wobei die Schwenkachse (15) an dem Ende der Transportvorrichtung (11) gelegen ist, das sich von der Anfertigungsfläche (6) entfernt befindet, wobei der Hilfsrahmen (9) zwischen einer Stellung, in der die Führung parallel zur Trans-

portvorrichtung verläuft, und einer Stellung, in der die Führung schräg aufwärts verläuft, bewegt werden kann,

- so dass das Greifermittel (10) entlang eines ersten Wegs bewegt werden kann, um eine Länge des Streifens, die der Summe der Längen der beiden Stücke gleich ist, **durch** die Versiegelungsstation zu führen, wobei ein erstes Stück des Folienmaterials über die Versiegelungsstation (12 - 13) hinaus bewegt wird und das zweite Stück des Folienmaterials zwischen den Versiegelungsbalken (12, 12a) in der Versiegelungsstation (12 - 13) zu liegen kommt,

- so dass das Greifermittel (10) entlang eines zweiten Wegs, der über dem ersten Weg gelegen ist, und in einer zur Richtung des ersten Wegs entgegen gesetzten Richtung bewegt werden kann, um das erste Stück des Folienmaterials über dem zweiten Stück des Folienmaterials zurückzuführen,

- und so dass das Greifermittel (10) abwärts bewegt werden kann, um das erste Stück des Folienmaterials auf das zweite Stück des Folienmaterials zu bringen, wodurch zwischen diesen Stücken des Folienmaterials eine Faltlinie gebildet wird,

- ein Trägerelement (8) zwischen der Anfertigungsfläche (6) und der Transportvorrichtung (11), wobei das Trägerelement (8) eine Bewegung des Streifens des Folienmaterials quer zur und unter der Ebene der Anfertigungsfläche (6) ermöglicht, so dass das Folienmaterial dann, wenn ein Streifen des Folienmaterials in der Greifervorrichtung (10) ergriffen ist, in die Form einer Schleife gezogen werden kann, wobei die Länge des Folienmaterials in der Schleife dem ersten Stück des Folienmaterials gleich ist.

2. Vorrichtung nach Anspruch 1, wobei der untere Versiegelungsbalken (12a) der Versiegelungsvorrichtung (12 - 13) in Bezug auf den Basisrahmen fixiert ist und der obere Versiegelungsbalken (12) an einem Kipparm (13) eingerichtet ist, dessen Kippwelle (15) dicht an der Schwenkachse des Hilfsrahmens (9) gelegen ist oder damit übereinstimmt.

3. Vorrichtung nach einem der vorhergehenden Ansprüche, wobei die Transportvorrichtung (11) ein Band ist.

4. Vorrichtung nach einem der vorhergehenden Ansprüche, wobei das Trägerelement (8) eine Führung umfasst, die quer zur Anfertigungsfläche angeordnet ist, und auch einen Schlitten umfasst, der entlang der Führung bewegt werden kann und eine waagerechte Rolle trägt, die quer zur Transportvorrichtung angeordnet ist.

5. Verfahren zum Betreiben einer Vorrichtung nach Anspruch 1, umfassend die folgenden Schritte:

- Ergreifen eines Streifens eines Folienmaterials durch das Greifermittel (10),

- Bewegen des Streifens des Folienmaterials durch das Trägermittel (8) quer zur Anfertigungsfläche und Bilden einer solchen Schleife, dass die Länge des Folienmaterials in der Schleife einem ersten Stück des Folienmaterials gleich ist,

- Anordnen eines Produktes auf dem zweiten Stück des Folienmaterials, das auf der Anfertigungsfläche (6) gelegen ist,

- Bewegen des Greifermittels (10), während das Trägerelement (8) zurückbewegt wird, und dann Bewegen des zweiten Stücks des Folienmaterials samt Produkt, das auf der Anfertigungsfläche (6) gelegen ist, zur Versiegelungsstation (12 - 13),

- Schwenken des Hilfsrahmens (9) nach oben,

- Bewegen des Greifermittels (10) in eine Richtung, die zur vorherigen Bewegungsrichtung entgegengesetzt ist, und Bringen des ersten Stücks des Folienmaterials über das zweite Stück des Folienmaterials samt Produkt,

- Bewegen des Greifermittels (10) nach unten, und somit Bilden einer Faltlinie zwischen dem ersten und dem zweiten Stück des Folienmaterials,

- Bewegen der Versiegelungsbalken (12, 12a) zueinander und Bilden einer versiegelten Naht entlang der drei Paare von Rändern der Stücke des Folienmaterials, die aufeinander liegen, um eine Packung zu erhalten,

- Abnehmen der Packung vom Streifen des Folienmaterials.

6. Verfahren nach Anspruch 5, umfassend die schrittweise Bewegung des Streifens des Folienmaterials quer zur Anfertigungsfläche (6) und, nach jedem Bewegungsschritt des Folienmaterials, die Anordnung von, in jedem Fall, einer Scheibe des Produktes auf dem zweiten Stück des Folienmaterials, das auf der Anfertigungsfläche gelegen ist, und/oder

auf einer davor angeordneten Scheibe, wodurch eine Menge von schrittweise gestapelten Scheiben gebildet wird.

Revendications

1. Machine pour emballer un produit, comme une ou plusieurs tranches de fromage ou de produit carné, dans un matériau en film, comprenant un châssis de base avec :

- une station pour un rouleau (1) de matériau en film,
- une station de préparation (6) pour placer un produit sur une bande de matériau en film,
- des moyens de saisie pour saisir la bande de matériau en film et la plier autour du produit,
- une station de scellement (12, 13) pour sceller l'un à l'autre les deux morceaux de matériau en film positionnés l'un sur l'autre, laquelle station de scellement a des barres des scellement supérieure (12) et inférieure (12a),
- lesquelles barres de scellement supérieure (12) et inférieure (12a) de la station de scellement (12 - 13) peuvent être déplacées l'une vers l'autre afin de sceller les morceaux de matériau en film l'un à l'autre aux trois coins autres que le coin où se situe la ligne de pliage, en formant un paquet,
- lesquelles barres de scellement (12, 12a) peuvent être éloignées l'une de l'autre,
- des moyens de guidage (4, 5, 7) pour guider la bande de matériau en film depuis le rouleau

  (1) vers la station de préparation (6),

- des moyens (16) pour détacher le paquet de la bande de matériau en film,

caractérisée par

- un convoyeur (11) adjacent à la surface de préparation (6) pour transporter le paquet fini depuis la surface de préparation (6) et sur lequel la bande de matériau en film peut être transportée entre les barres de scellement (12, 12a),
- les moyens de saisie (10) étant fixés sur un chariot qui est installé de manière mobile sur un châssis auxiliaire (9) comportant un guide pour le chariot, lequel châssis auxiliaire (9) est fixé au châssis de base de manière à pouvoir pivoter autour d'un axe de pivot horizontal (15), lequel axe de pivot (15) est placé à cette extrémité du convoyeur (11) loin de la surface de préparation (6), lequel châssis auxiliaire (9) peut être déplacé entre une position dans laquelle le guide est parallèle au convoyeur et une position dans laquelle le guide est orienté à l'oblique vers le haut,
- de sorte que les moyens de saisie (10) peuvent être déplacés le long d'une première voie pour faire passer une longueur de la bande égale à la somme des longueurs des deux morceaux à travers la station de scellement, un premier morceau de film étant déplacé au delà de ladite station de scellement (12 - 13) et le second morceau de matériau en film venant s'étendre entre les barres de scellement (12, 12a) dans la station de scellement (12 - 13),
- de sorte que les moyens de saisie (10) peuvent être déplacés le long d'une seconde voie située au dessus de la première voie et dans une direction opposée à celle de la première voie, pour faire repasser le premier morceau de matériau en film au dessus du second morceau de matériau en film,
- et de sorte que les moyens de saisie (10) peuvent être déplacés vers le bas pour amener le premier morceau de matériau en film sur le second morceau de matériau en film, formant ainsi une ligne de pliage entre ces morceaux de matériau en film,
- un élément porteur (8) entre la surface de préparation (6) et le convoyeur (11), lequel élément porteur (8) permet le mouvement de la bande de matériau en film transversalement par rapport à et en dessous du niveau de la surface de préparation (6), de sorte que, lorsqu'une bande de matériau en film est saisie dans le dispositif de saisie (10), ce matériau en film peut être tiré pour former une boucle, la longueur du matériau en film dans la boucle étant égale au premier morceau de matériau en film.

2. Machine selon la revendication 1, dans laquelle la barre de scellement inférieure (12a) de la machine de scellement (12 - 13) est fixe par rapport au châssis de base et la barre de scellement supérieure (12) est installée sur un bras oscillant (13), dont l'arbre d'oscillation (15) est placé à proximité ou en coïncidence avec l'axe de pivotement du châssis auxiliaire (9).

3. Machine selon l'une quelconque des revendica-

tions précédentes, **caractérisée en ce que** le convoyeur (11) est une courroie.

4. Machine selon l'une quelconque des revendications précédentes, **caractérisée en ce que** l'élément porteur (8) comprend un guide positionné transversalement par rapport à la surface de préparation, ainsi qu'un chariot qui peut être déplacé le long du dit guide et qui transporte un rouleau horizontal positionné transversalement par rapport au convoyeur.

5. Procédé d'utilisation d'une machine selon la revendication 1, comprenant les étapes suivantes :

- saisie d'une bande de matériau en film au moyen des moyens de saisie (10),
- déplacement de la bande de matériau en film transversalement par rapport à la surface de préparation au moyen de l'élément porteur (8), en formant une boucle, de sorte que la longueur du matériau en film dans la boucle est égale à un premier morceau de matériau en film,
- placement d'un produit sur le deuxième morceau de matériau en film se trouvant sur la surface de préparation (6),
- déplacement des moyens de saisie (10) tout en ramenant l'élément porteur (8) et ensuite déplacement du second morceau de matériau en film avec le produit se trouvant sur la surface de préparation (6) vers la station de scellement (12 - 13),
- pivotement vers le haut du châssis auxiliaire (9),
- déplacement des moyens de saisie (10) dans une direction opposée à la direction de mouvement précédente et acheminement du premier morceau de matériau en film au dessus du second morceau de matériau en film, avec le produit,
- déplacement des moyens de saisie (10) vers le bas, formant ainsi une ligne de pliage entre le premier et le second morceau de matériau en film,
- déplacement des barres de scellement (12, 12a) l'un vers l'autre et formation d'un cordon de scellement le long des trois paires de coins des morceaux de matériau en film étendus l'un sur l'autre afin d'obtenir un paquet,
- détachement du paquet de la bande de matériau en film.

6. Procédé selon la revendication 5, comprenant le mouvement par étapes de la bande de matériau en film transversalement par rapport à la surface de préparation (6) et le dépôt, dans chaque cas, d'une tranche de produit sur le second morceau de matériau en film se trouvant sur la surface de préparation et/ou sur une tranche déposée auparavant, après chaque étape de mouvement du matériau en film, avec la formation d'une quantité de tranches empilées par étapes.

Fig 1

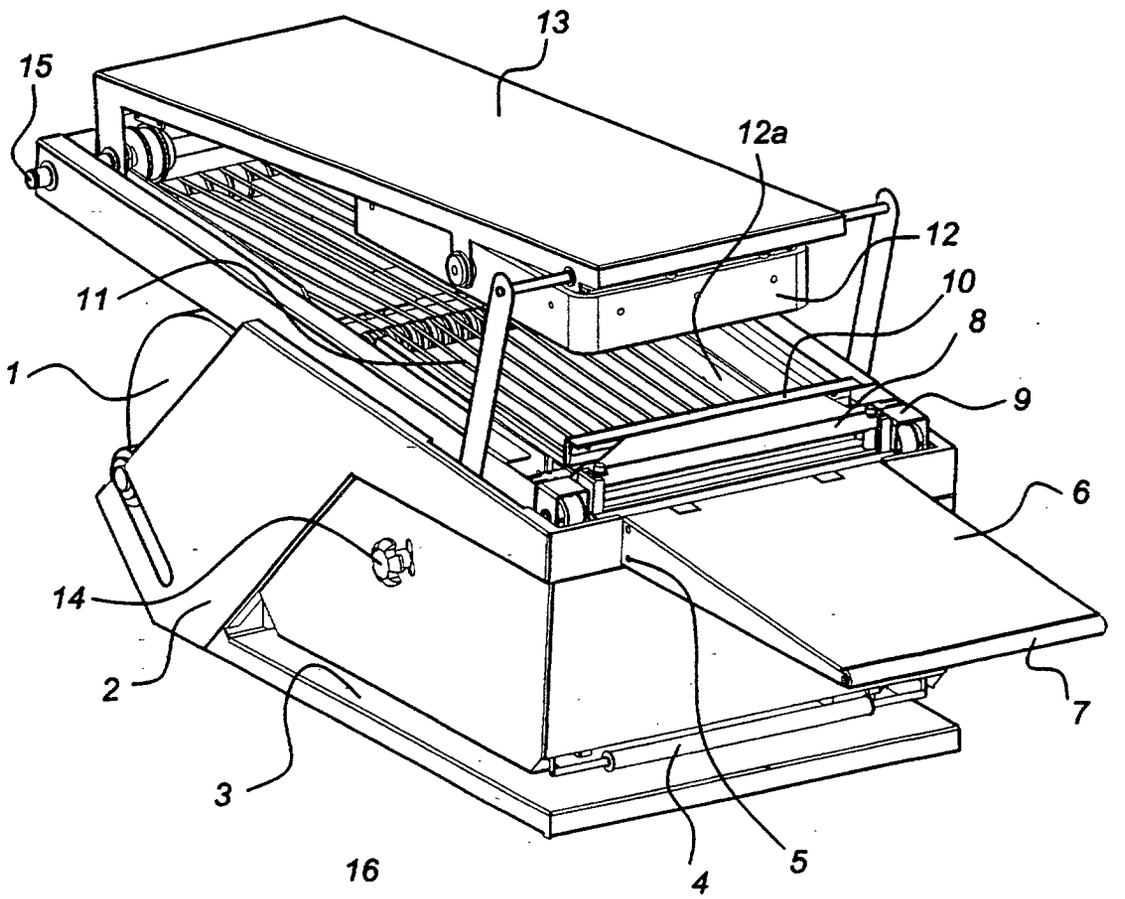


Fig 2

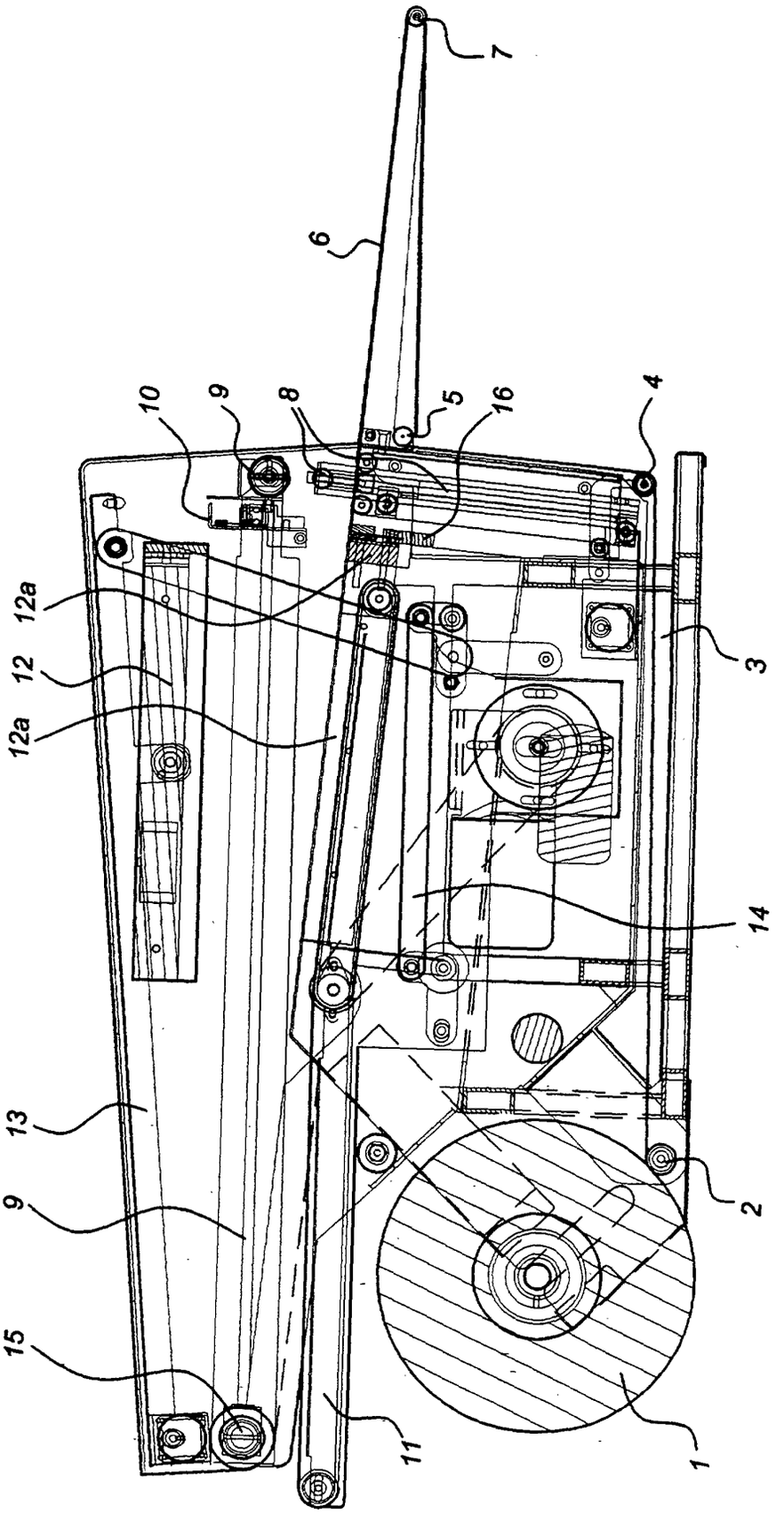
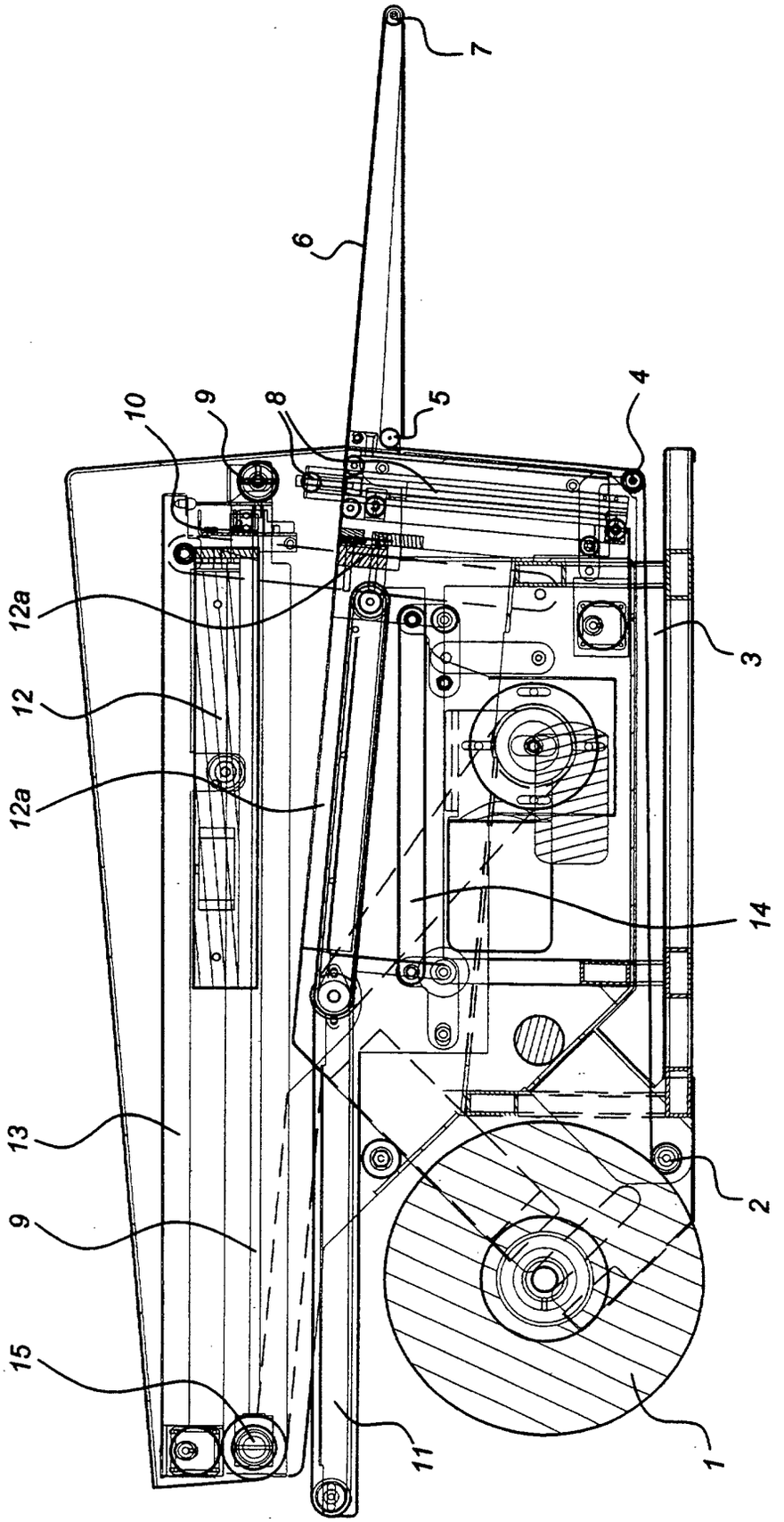


Fig 3



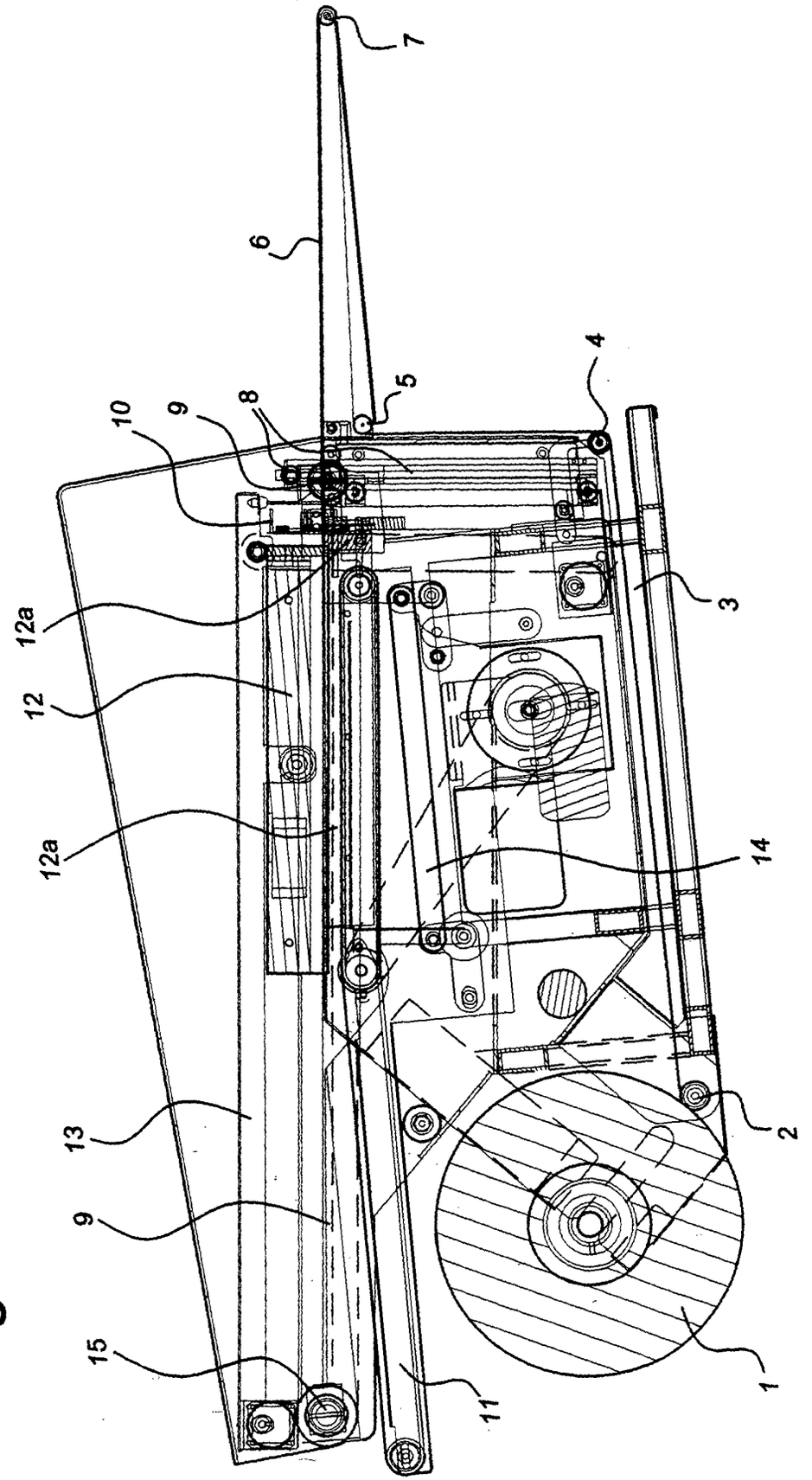


Fig 4

Fig 5

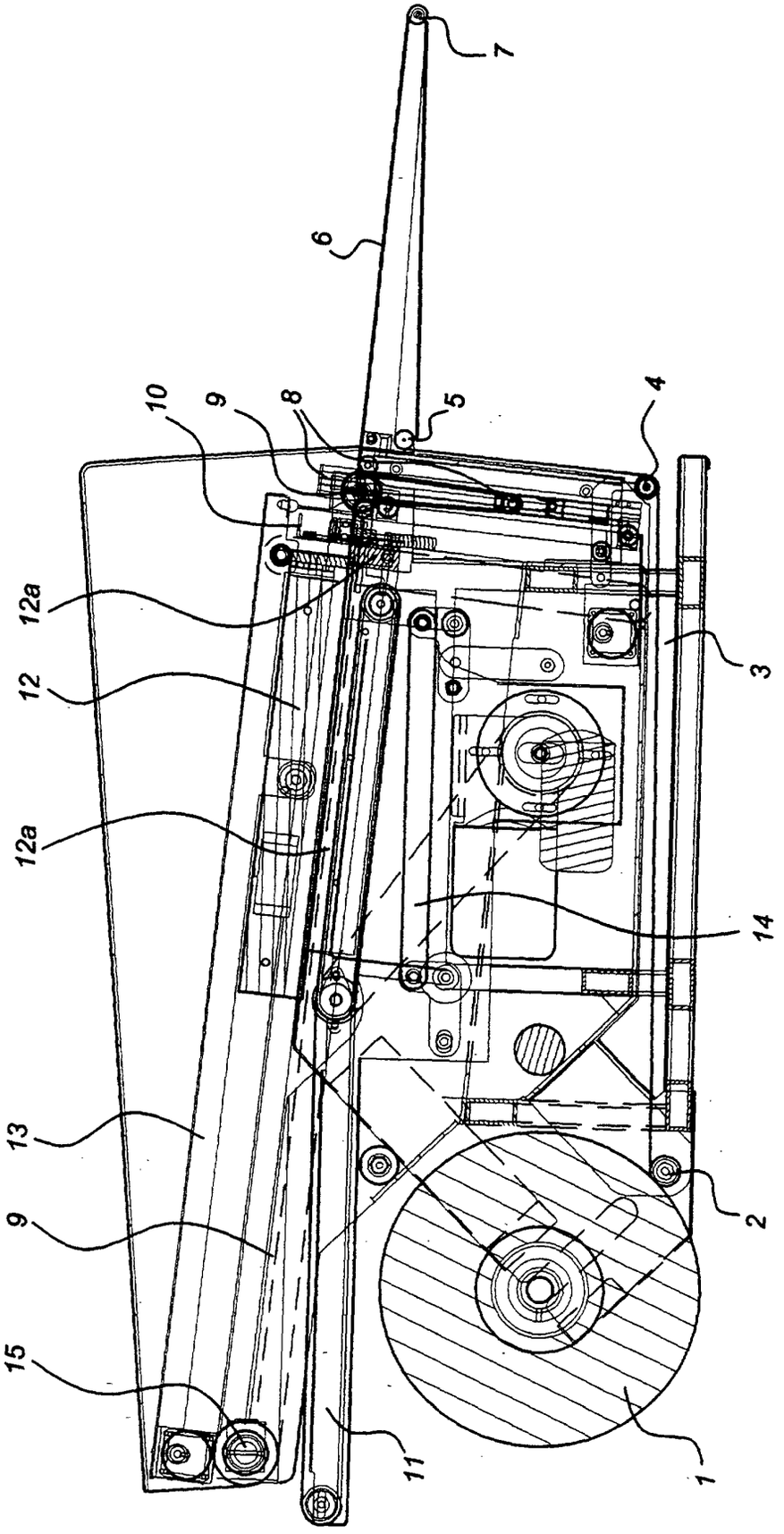


Fig 6

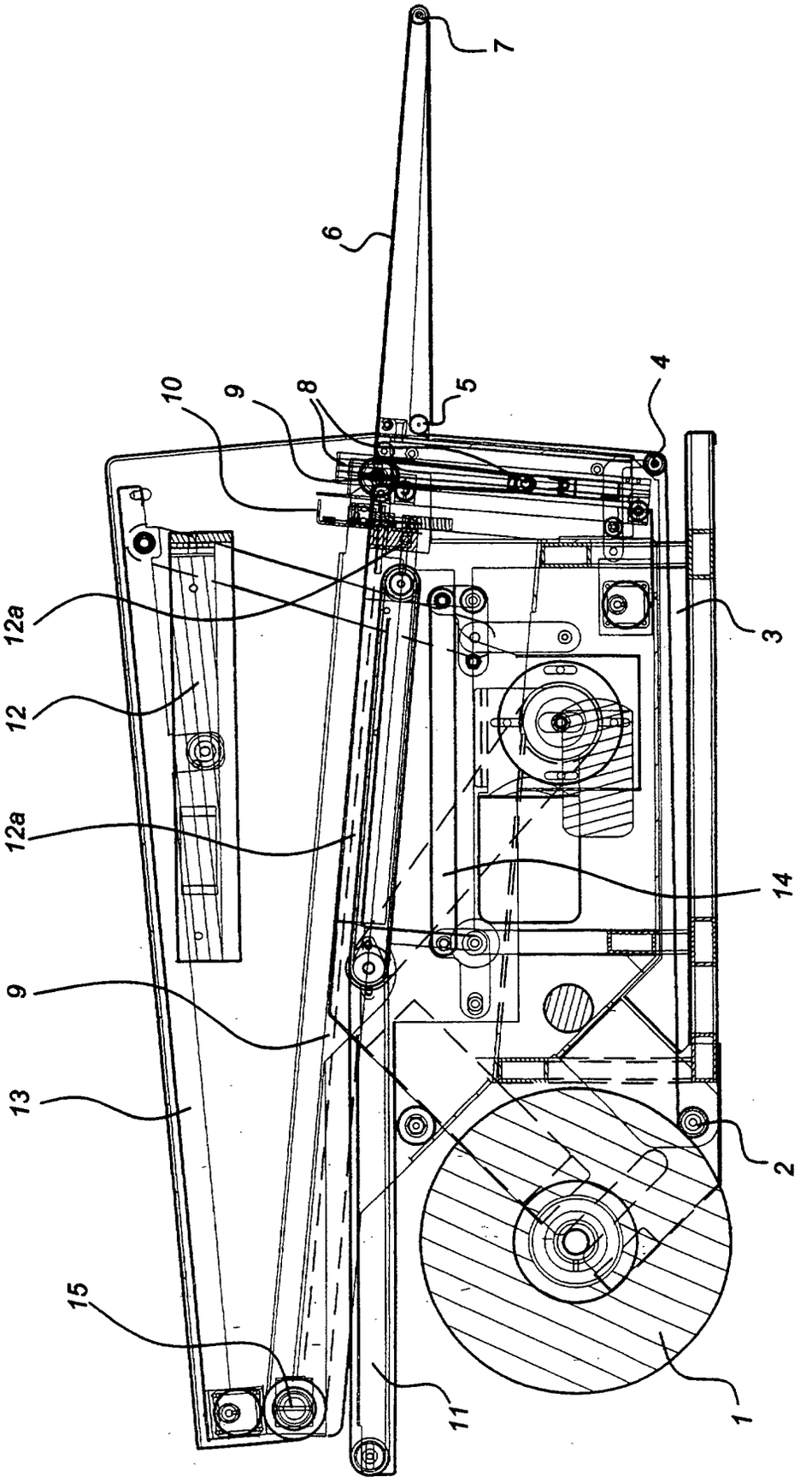


Fig 7

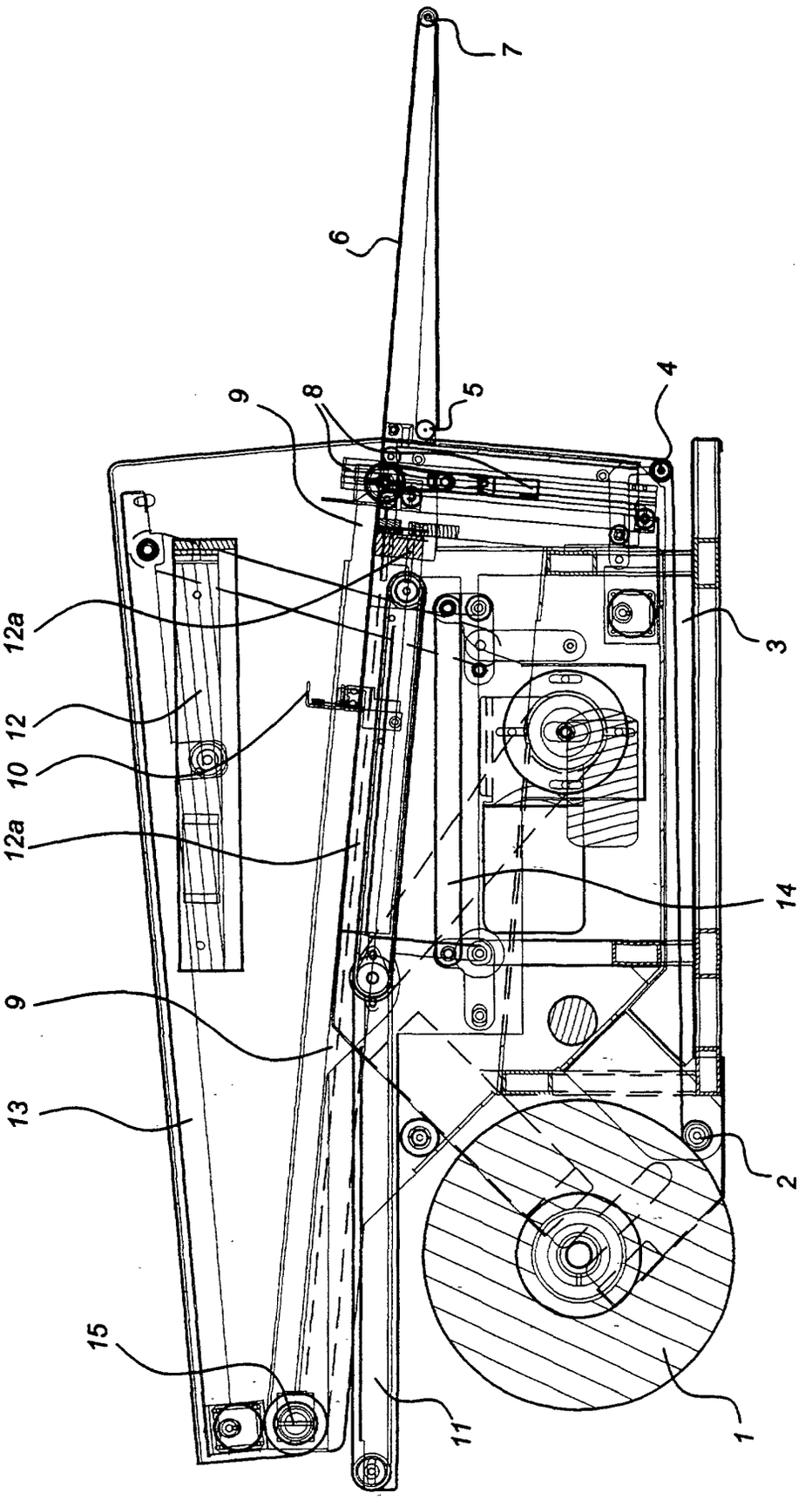


Fig 8

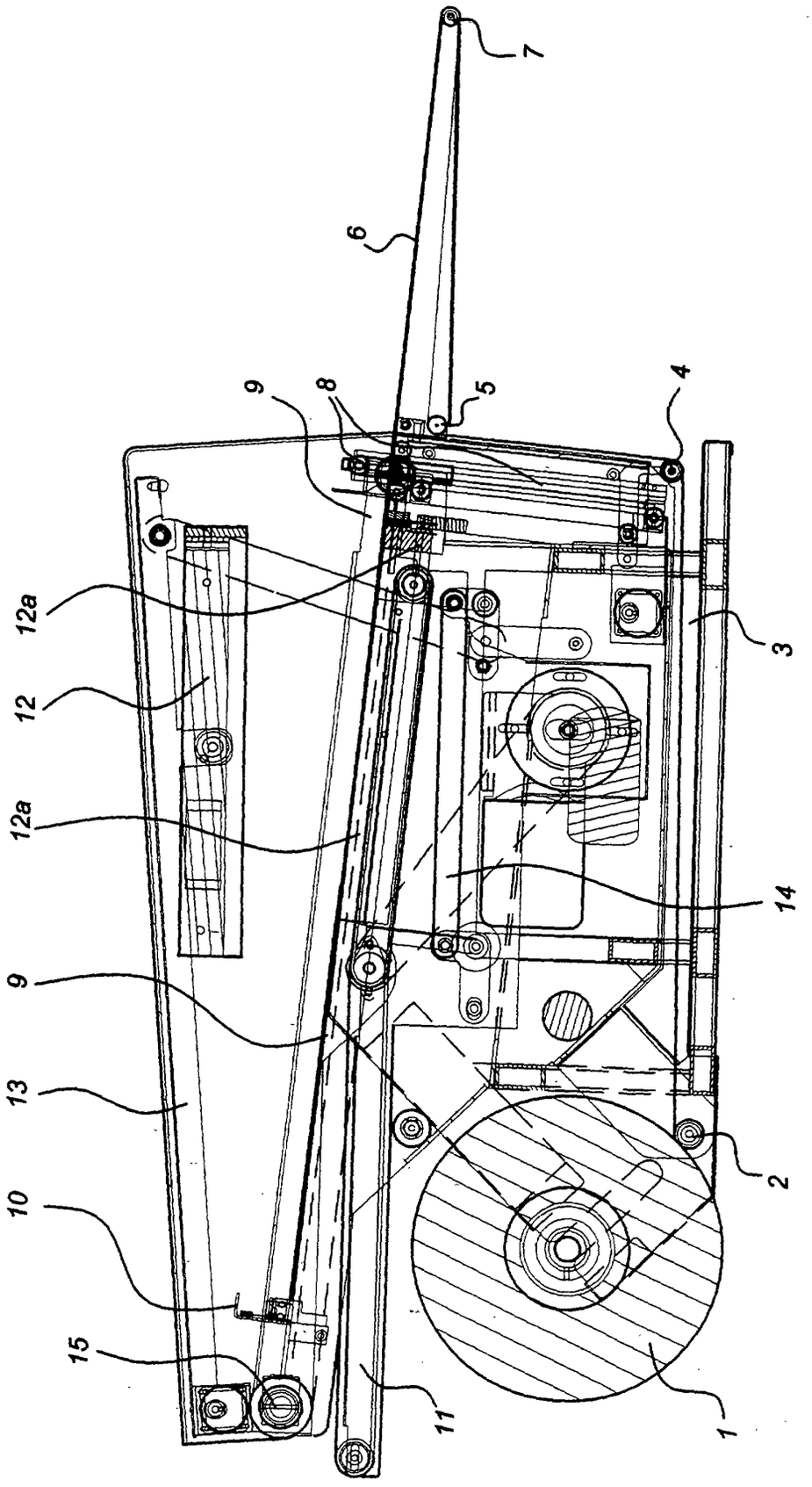


Fig 9

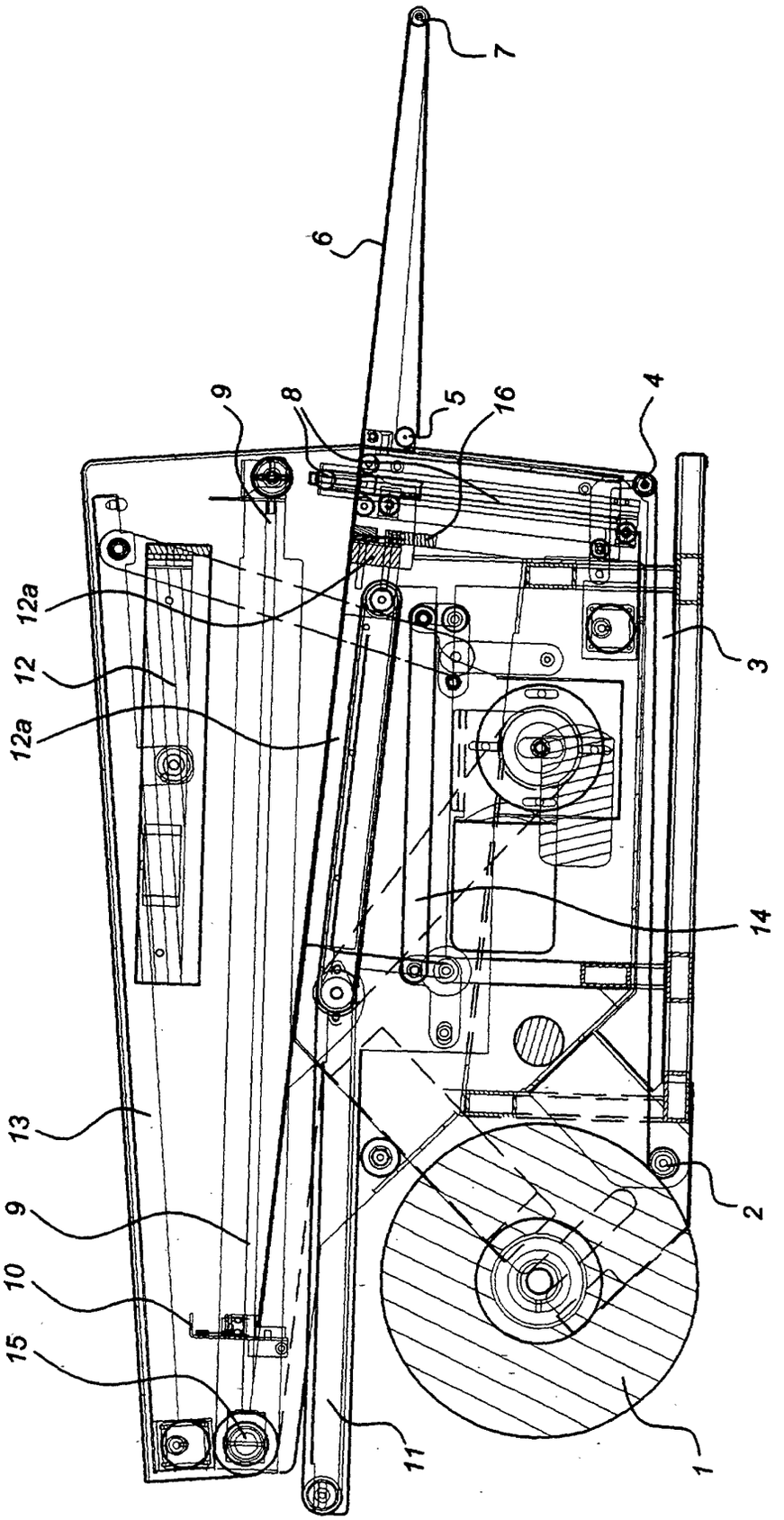


Fig 10

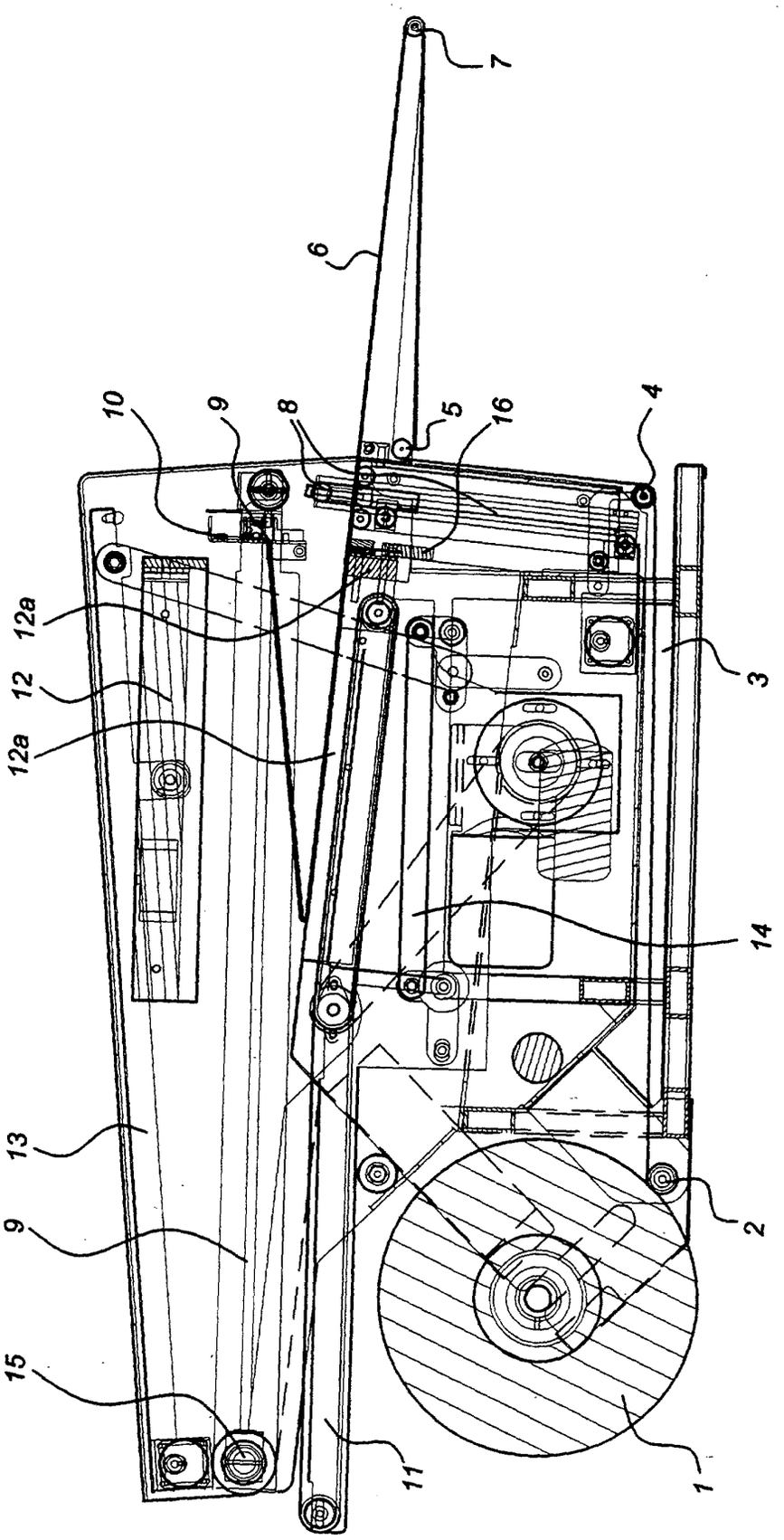


Fig 11

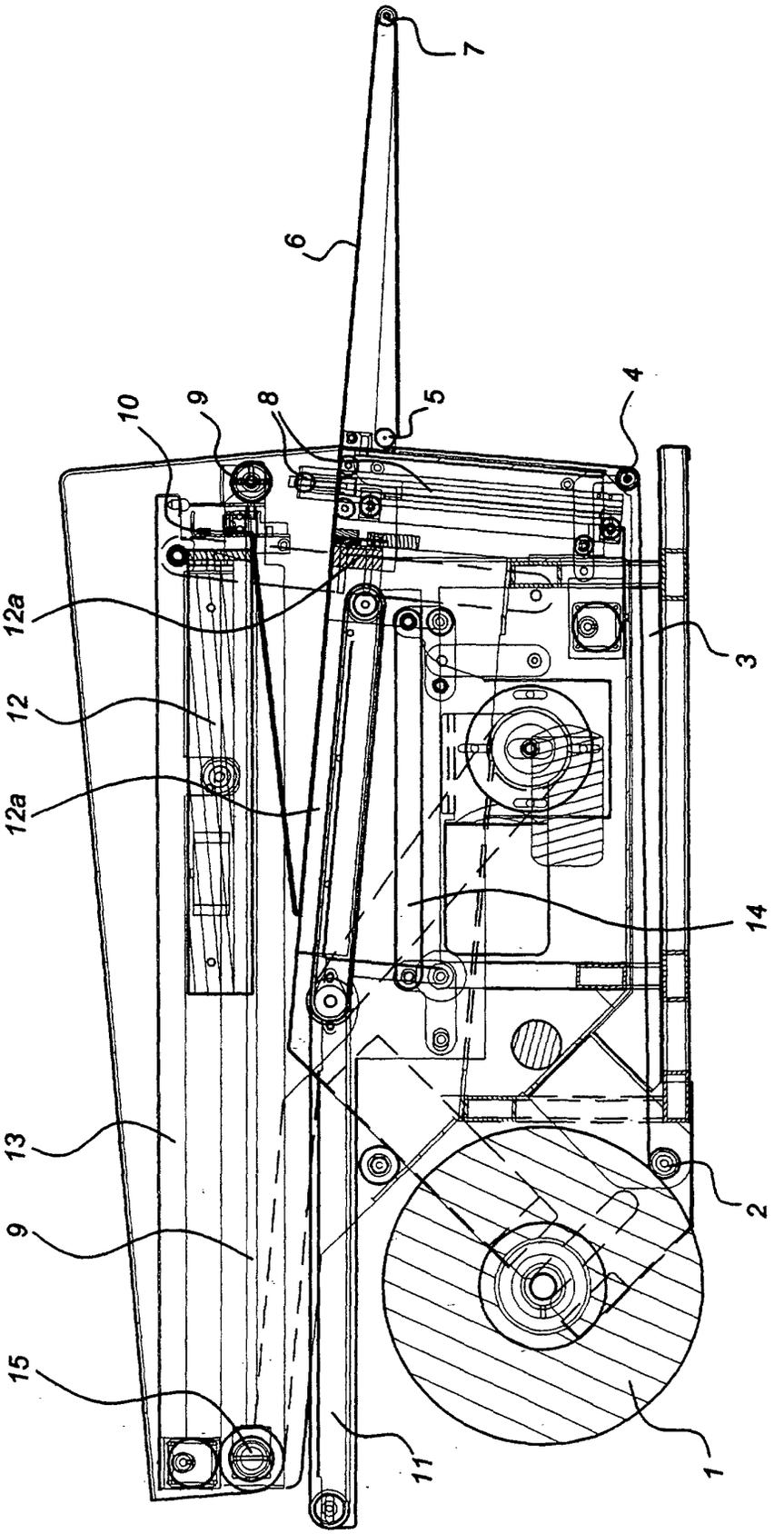


Fig 12