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(54) **DEVICE AND METHOD FOR THE TREATMENT OF A WEB-SHAPED MATERIAL**

VORRICHTUNG UND VERFAHREN ZUR BEHANDLUNG EINES BAHNFÖRMIGEN MATERIALS  
DISPOSITIF ET PROCEDE POUR TRAITER UNE BANDE DE MATIERE

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**CH-A5- 660 719**                      **US-B1- 6 230 596**

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**Description**

## TECHNICAL FIELD

**[0001]** The present invention relates to a device and a method for cutting and forward-feeding a web-shaped material, to a subsequent treatment step. The invention has been developed mainly with the objective of being used within the sewing field, in connection with automatic and continuous seaming of bed sheets from a web-shaped material on a supply reel e.g., but may also be used for cutting and forward-feeding of other web-shaped materials, as for example paper or paperboard materials.

## PRIOR ART AND PROBLEMS

**[0002]** It is common in the handling of a web-shaped material that is to be fed forward a given distance, cut to a piece of material of a given length and thereafter to be fed on for a subsequent treatment, that the cutting and feeding-forward constitutes a process bottleneck when the subsequent treatment step is very fast. This is especially the case when the pieces of material are to be fed forward in a direction that differs from the direction in which the web-shaped material is fed forward for the cutting. This is the case e.g. when the material is a fabric, in which case seams/hems are to be continuously performed in the subsequent treatment step, along the cut edges of the pieces of material. In a conventional cutting station, a first, cut piece of material must in this case be fed out from the cutting station in a direction towards the subsequent treatment step, before new, web-shaped material can be pulled out and cut to a second piece of material in the cutting station. Thereby, spaces will occur between the individual pieces of material as they reach the subsequent treatment step, which lowers the capacity of the entire plant.

**[0003]** US 5,133,273 has presented a solution for a similar problem. A first piece of fabric is cut in a cutting station. It is thereafter fed out fast, its front part being led into a seaming machine at a slower pace, while its rear part is accumulated, i.e. falls down into an underlying space, an accumulation station. In this way, there is no need to wait for the entire first piece to slowly be fed into the seaming machine, but the cutting of a second piece of fabric can continue swiftly. In US 5,476,053 too, the same principle is employed. The disadvantage of such a method is that the grip of and thereby the control over the longitudinal, cut edges is lost as the pieces of fabric are accumulated while waiting to be led into the seaming machine. This may lead to serious mistakes in the seaming. The solution moreover requires that the seaming machine operates more slowly than the cutting and feeding-forward machine.

**[0004]** CH-A-660 719 discloses an apparatus for conveying pieces of web from a cutting machine.

## BRIEF ACCOUNT OF THE INVENTION

**[0005]** A main objective of the present invention is to provide a device that enables a second piece of material to be pulled out for cutting, at the same time as a first cut piece of material is fed forward from the cutting station towards a subsequent treatment step, i.e. without having to wait for the first piece to be fed completely out of the way. It is also an objective that this should be able to be performed continuously at constantly retained control over the cut edges of the pieces of material. It is furthermore an objective that the cut pieces of material should be fed forward to the subsequent treatment step at a high pace and essentially without any spaces between, so that continuous seaming e.g. may take place in the subsequent treatment step, when the material is a fabric.

**[0006]** These and other objectives are attained by the device according to the invention, such as it is presented in Claim 1, and the method according to the invention, such as it is presented in Claim 11.

**[0007]** Accordingly, the solution to the present problems is based on the device, i.e. the cutting station, exhibiting two "storeys", whereby a second piece of material is pulled out in a first direction in the second storey (a second vertical level) for cutting, at the same time as a first piece of fabric is fed forward in a second direction from the first storey (a first vertical level), and so on. There is also arranged a means for, alternately from the two vertical levels, feeding the cut pieces of material forward in a third vertical level, suitably between the first and the second vertical level (i.e. between the two "storeys"), to the subsequent treatment step, which feeding normally takes place in the second direction. According to a preferred embodiment, this means may be constituted by a tiltable feeder that ensures that the pieces of material end up in the same vertical level on the feeding path, towards the subsequent treatment step. Of course, it is also conceivable that the third vertical level coincides with either the first or the second vertical level.

## DETAILED ACCOUNT OF THE INVENTION

**[0008]** In the following, the invention will be described in greater detail with reference to a preferred example that is constituted by a bed sheet machine and that is illustrated in the drawings, of which:

- Fig. 1 is showing a plant for the cutting and seaming of bed sheets, in which plant the device according to the invention is a part,
- Fig. 2 is showing a magnification of the device according to the invention in Fig. 1, in which a tiltable feeder is in a lowermost receiving position,
- Fig. 3 is showing a magnification of the device according to the invention in Fig. 1, in which a tiltable feeder is in an uppermost receiving position,
- Fig. 4 is showing a holder clamp and a cutting device for the device according to the invention in Fig.

1- 3, as seen in perspective view.

**[0009]** A bed sheet machine is illustrated in Fig. 1, i.e. a machine for the cutting of a web-shaped material in the form of bed sheet fabric 1 from a supply reel 2, forward-feeding and subsequent treatment in the form of a seaming machine 3. The machine comprises a device according to the invention, i.e. a cutting and feeding forward station, that is arranged in the upper left corner of Fig. 1, generally denoted 10 and shown in greater detail in Fig. 2 and 3.

**[0010]** The device 10 comprises at least one puller 12 arranged to pull out the fabric material 1 in a first direction A, from the supply reel 2. A cutting device 26 (shown in greater detail in Fig. 4 and indicated in Fig. 3) is arranged to cut the web-shaped material 1 into individual pieces of material 16.

**[0011]** The device further comprises two pairs of forward-feeding means 18a, 18b; 20a, 20b, arranged to feed forward the cut pieces of material 16 in a second direction B. These two pairs of forward-feeding means 18a, 18b and 20a, 20b, respectively, are arranged at a first and a second vertical level, respectively, i.e. in two different "storeys". In the shown, preferred embodiment, the forward-feeding means are constituted by endless belts, each pair of forward-feeding means 18a, 18b and 20a, 20b, respectively comprising two endless belts in a first horizontal position (at 18a and 20a) and two endless belts in a second horizontal position (at 18b and 20b), as seen in said first direction A. These endless belts are arranged above of each other in the respective vertical and horizontal positions and are arranged to be vertically separated from each other for passage them between by the puller 12, and to be vertically brought together for clamping of the edge of the material 1. As one of the cut edges of a first piece of material 16 is clamped in the first vertical level e.g., between the two endless belts in the one part 18a of one of the pairs of forward-feeding means and the other cut edge of the same piece of material 16 is clamped between the two endless belts in the other part 18b of the same pair of forward-feeding means, the piece of material 16 can be fed on in the first vertical level in the second direction B by the endless belts being driven on rolls. According to the invention, this may take place in the first vertical level at the same time as the two endless belts in the one part, 20a e.g., of the second one of the pairs of forward-feeding means in the second vertical level are vertically separated from each other so that the puller 12 can be led in them between to fetch a new free edge of the web-shaped piece of fabric 16, in order then to pull the fabric out a certain given distance to the two endless belts in the second part 20b of the same pair of forward-feeding means, which endless belts also are separated vertically from each other so that the puller 12 may be led in them between to deliver the fabric edge for clamping of the same. When this has been done, the web-shaped material is cut in the first horizontal position, at 20a, to form a second piece of material. The device

further comprises controlling means 4 that brings the device to operate so that the first piece of material 16 just has left the first pair of forward-feeding means 18a, 18b when the second piece of material just has been cut off from the web-shaped material 1. Accordingly, the second piece of material can be fed on in the second vertical level in the direction B, by the endless belts in the forward-feeding means 20a, 20b, in the same way as took place with the first piece of material in the forward-feeding means 18a, 18b, at the same time as a pulling-out and cutting cycle is commenced anew in the first vertical level. When the device operates alternately without pauses, in this way, new pieces of material will be pulled out from the supply reel, cut off and fed on in the second direction B at such a pace that essentially no horizontal spaces occur between the individual pieces of material, as they are fed on in the second direction B.

**[0012]** According to a first aspect of the invention, said first direction A and said second direction B are perpendicular to each other in the horizontal plane.

**[0013]** The device preferably comprises two pullers 12, i.e. one for each vertical level, only one puller however being showed. The device suitably also comprises a holder clamp 28, which comprises an upper holder ledge 28a and a lower holder ledge 28b, that together are arranged to grip the web-shaped material 1 and that both preferably have a dented front edge, which also the pullers 12 have (not shown), in such a way that the dented edge of the respective puller 12 may engage with the dented edge of the holder clamp in order to ensure transferring of a free, cut edge of the web-shaped material 1. The holder clamp 28 also comprises means 30, preferably in the form of hydraulic or pneumatic cylinders, in order to alternately position the free, cut edge of the web-shaped material 1 in the first vertical position at 18a and at the second vertical position at 20a, respectively. The cutting device 26 is preferably arranged to operate between the holder clamp 28 and said endless belt in this first horizontal position, at 18a and 20a. Thereby, the web-shaped material is held in place by the holder clamp and the endless belts, with a small space them between, so that the cutting device 26, in the form of a cutting blade e.g., may operate in this space. When the cutting has been completed, the holder clamp 28 transfers the material to the next vertical level, by aid of the means 30. When the puller 12 is to pull out a new piece of material, the holder clamp lets go of its grip of the material, in order then to grip it again when the cutting is to take place.

**[0014]** According to another aspect of the invention, the forward-feeding means 18b, 20b in the second horizontal position are arranged to be displaceable in horizontal direction in the first direction A, in order to achieve a variable setting of the width of the pieces of material that are to be cut off. In continuous operation, they are however in the same horizontal position all the time, as long as the pieces of material are only manufactured in one single width. It is however also conceivable, in another embodiment of the invention, that these forward-

feeding means 18b, 20b also have the function of the puller, in which case they run forward and back in the first direction A during continuous operation of the device.

**[0015]** In order to transfer the individual pieces of material to the subsequent treatment step, here exemplified by a seaming machine 3, in one and the same vertical level, the device also comprises means 22 to alternately from the first and the second vertical level feed forward the cut pieces of material in the second direction B in a third vertical level, to this subsequent treatment step. According to a preferred embodiment, this means 22 for alternating feeding comprises a pair of tiltable feeders 22a, 22b, that are arranged to alternately receive pieces of material in said first and second vertical level, respectively, and to feed them forward in the third vertical level, to the subsequent treatment step 3. Fig. 2 shows the tiltable feeders 22a, 22b, when they are in a lowermost receiving position, i.e. when they fetch a first piece of material 16 from the lowermost pair of forward-feeding means 18a, 18b. Fig. 3 shows the tiltable feeders 22a, 22b, when they are in an uppermost receiving position, i.e. when they fetch a second piece of material (which is however not shown) from the uppermost pair of forward-feeding means 20a, 20b. The tiltable feeders 22a, 22b preferably comprise two endless belts that are arranged to grip the cut edges of the pieces of material. The same is done by a subsequent feeder 24, arranged to feed on the pieces of material in the third vertical level, to the treatment step 3.

**[0016]** The invention is not limited by the embodiment described, but may be varied within the scope of the Claims. It is to be realised e.g. that the device may comprise more than two different vertical "storeys". It is also to be realised that a double web-shaped material may be pulled out, suitably from two different supply reels, for cutting and feeding forward of fabric pieces for the seaming of quilt cover bags e.g.

## Claims

1. Device (10) for cutting and forward-feeding a web-shaped material (1) to a subsequent treatment step (3), **characterised in that** the device comprises at least one puller (12), arranged to alternately pull the material in a first and a second vertical level, respectively, and in a first direction (A), preferably from a supply reel (2); a cutting device (26) for cutting the web-shaped material (1) into individual pieces of material (16); two pairs of forward-feeding means (18a, 18b; 20a, 20b), arranged to feed cut pieces of material (16) forward in a second direction (B), which pairs of forward-feeding means (18a, 18b; 20a, 20b) are arranged in said first and second vertical level, respectively, and means (22a, 22b) for alternately feeding the cut pieces of material (16) from the two vertical levels and onwards in a third vertical level to said subsequent treatment step (3).
2. Device according to claim 1, **characterised in two** pullers (12), one for each vertical level.
3. Device according to claim 1 or 2, **characterised in that** said forward-feeding means (18a, 18b; 20a, 20b) comprise endless belts, each pair of forward-feeding means preferably comprising two endless belts (18a, 20a) arranged above each other in a first horizontal position and two endless belts (18b, 20b) arranged above each other in a second horizontal position, as seen in said first direction (A), the endless belts arranged above each other being arranged to be vertically separated from each other for passage of the puller (12) them between, and to be vertically brought together for clamping of the material (1, 16).
4. Device according to claim 3, **characterised in that** said forward-feeding means (18a, 20a) in said first horizontal position are arranged in connection with the cutting device (26), while said forward-feeding means (18b, 20b) in said second horizontal position are displaceable in the first direction (A), for a variable adjustment of a width of the pieces of material (16).
5. Device according to claim 4, **characterised in a** holder clamp (28), which comprises means (30) to alternately position a cut edge of the web-shaped material (1) in said first and second vertical level, respectively, said cutting device preferably being arranged between the holder clamp (28) and said forward-feeding means (18a, 20a) in said first horizontal position.
6. Device according to any one of the preceding claims, **characterised in that** said first direction (A) and said second direction (B) are perpendicular to each other.
7. Device according to any one of the preceding claims, **characterised in that** said at least one puller (12) is arranged to pull out a second piece of material (16) for cutting, already before a first, cut piece of material (16) has left the forward-feeding means (18a, 18b; 20a, 20b).
8. Device according to any one of the preceding claims, **characterised in that** said means (22a, 22b) for feeding the cut pieces of material (16) alternately from the two vertical levels and onwards in a third vertical level, comprises a tiltable feeder.
9. Device according to any one of the preceding claims, **characterised in that** said forward-feeding means (18a, 18b; 20a, 20b) are arranged, together with said means (22a, 22b) for feeding alternately from the two vertical levels and onwards in the third vertical level, to maintain a grip of the longitudinal edges of

the cut pieces of material (16), as seen in the second direction (B), all the time during continuous operation of the device (10).

10. Device according to any one of the preceding claims, **characterised in that** said forward-feeding means (18a, 18b; 20a, 20b) are arranged, together with said means (22a, 22b) for feeding alternately from the two vertical levels and onwards in the third vertical level, to feed forward the cut pieces of material (16) so that essentially none or just a small space exist them between as they enter said subsequent treatment step (3).
11. Method for cutting and forward-feeding a web-shaped material (1), to a subsequent treatment step (3), **characterised in that** the material (1) is pulled out alternately in a first and a second vertical level, respectively, and in a first direction (A), preferably from a supply reel (2); that the web-shaped material (1) is cut into individual pieces of material (16); that the cut pieces of material (16) are fed forward (18a, 18b; 20a, 20b) from said first and second vertical level, respectively and in a second direction (B), and that the cut pieces of material (16) are fed onwards (22a, 22b), alternately from the two vertical levels, in a third vertical level to said subsequent treatment step (3).
12. Method according to claim 11, **characterised in that** a second piece of material is pulled out and cut off already before a first, cut piece of material (16) has been entirely fed onwards to said third vertical level.
13. Method according to claim 11 or 12, **characterised in that** a grip of the longitudinal edges of the cut pieces of material (16), as seen in the second direction (B), are maintained all the time during continuous performance of the method.
14. Method according to any one of claims 11 - 13, **characterised in that** the cut pieces of material (16) are fed onwards in the second direction (B), so that essentially none or just a small space exist them between as they enter said subsequent treatment step (3).

#### Patentansprüche

1. Vorrichtung (10) zum Schneiden und Vorwärtsbefördern eines gewebeformigen Materials (1) zu einem anschließenden Behandlungsschritt (3), **dadurch gekennzeichnet, dass** die Vorrichtung mindestens ein Ziehelement (12), das derart angeordnet ist, dass das Material vorzugsweise aus einer Zufuhrhaspel (2) abwechselnd in eine erste bzw. eine zweite vertikale Ebene und in einer ersten Richtung (A) gezo-

gen wird; eine Schneidevorrichtung (26) zum Schneiden des gewebeformigen Materials (1) in einzelne Materialstücke (16); zwei Paare an Mitteln zum Vorwärtsbefördern (18a, 18b; 20a, 20b), die derart angeordnet sind, dass geschnittene Materialstücke (16) vorwärts in eine zweite Richtung (B) befördert werden, wobei die Paare an Mitteln zum Vorwärtsbefördern (18a, 18b; 20a, 20b) in der ersten bzw. zweiten Ebene angeordnet sind, und Mittel (22a, 22b) zum abwechselnden Befördern der geschnittenen Materialstücke (16) aus den zwei vertikalen Ebenen und weiter in eine dritte vertikale Ebene zum anschließenden Behandlungsschritt (3) umfasst.

2. Vorrichtung nach Anspruch 1, **gekennzeichnet durch** zwei Ziehelemente (12), eines für jede vertikale Ebene.
3. Vorrichtung nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** die Mittel zum Vorwärtsbefördern (18a, 18b; 20a, 20b) Endlosbänder umfassen, wobei jedes Paar an Mitteln zum Vorwärtsbefördern vorzugsweise zwei Endlosbänder (18a, 20a), die in einer ersten horizontalen Position übereinander angeordnet sind, und zwei Endlosbänder (18b, 20b), die mit Blick in die erste Richtung (A) in einer zweiten horizontalen Position übereinander angeordnet sind, umfasst, wobei die übereinander angeordneten Endlosbänder derart angeordnet sind, dass sie vertikal voneinander getrennt sind, damit das Ziehelement dazwischen durchläuft, und sie zum Einklemmen des Materials (1, 16) vertikal zusammen gebracht werden.
4. Vorrichtung nach Anspruch 3, **dadurch gekennzeichnet, dass** die Mittel zum Vorwärtsbefördern (18a, 20a) in der ersten horizontalen Position in Verbindung mit der Schneidevorrichtung (26) angeordnet sind, während die Mittel zum Vorwärtsbefördern (18b, 20b) in der zweiten horizontalen Richtung zur ersten Richtung (A) für eine variable Einstellung einer Breite der Materialstücke (16) verschiebbar sind.
5. Vorrichtung nach Anspruch 4, **gekennzeichnet durch** eine Halteklammer (28), die Mittel (30) zum abwechselnden Positionieren einer geschnittenen Kante des gewebeformigen Materials (1) in eine erste bzw. zweite Ebene umfasst, wobei die Schneidevorrichtung vorzugsweise zwischen der Halteklammer (28) und den Mitteln zum Vorwärtsbefördern (18a, 20a) in die erste horizontale Position angeordnet ist.
6. Vorrichtung nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** die erste Richtung (A) und die zweite Richtung (B) rechtwinklig zueinander liegen.

7. Vorrichtung nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** das mindestens eine Ziehelement (12) derart angeordnet ist, dass es bereits ein zweites Materialstück (16) zum Schneiden herauszieht, bevor ein erstes geschnittenes Materialstück (16) die Mittel zum Vorwärtsbefördern (18a, 18b; 20a, 20b) verlassen hat.
8. Vorrichtung nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** die Mittel (22a, 22b) zum Befördern der geschnittenen Materialstücke (16) abwechselnd aus den zwei vertikalen Ebenen und nach vorn in einer dritten vertikalen Ebene einen schwenkbaren Beförderungsapparat umfasst.
9. Vorrichtung nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** die Mittel zum Vorwärtsbefördern (18a, 18b; 20a, 20b) zusammen mit den Mitteln (22a, 22b) zum abwechselnden Befördern aus den zwei vertikalen Ebenen und nach vorn in der dritten Ebene angeordnet sind, um einen Griff der Längskanten der geschnittenen Materialstücke (16) mit Blick in die zweite Richtung (B) während des kontinuierlichen Betriebs der Vorrichtung (10) ständig beizubehalten.
10. Vorrichtung nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** die Mittel zum Vorwärtsbefördern (18a, 18b; 20a, 20b) zusammen mit den Mitteln (22a, 22b) zum abwechselnden Befördern aus den zwei vertikalen Ebenen und nach vorn in der dritten Ebene derart angeordnet sind, dass die geschnittenen Materialstücke (16) derart vorwärts befördert werden, dass im Wesentlichen kein oder nur ein kleiner Spalt dazwischen vorliegt, während sie in den anschließenden Behandlungsschritt (3) eintreten.
11. Verfahren zum Schneiden und Vorwärtsbefördern eines gewebeförmigen Materials (1) zu einem anschließenden Behandlungsschritt (3), **dadurch gekennzeichnet, dass** das Material (1) vorzugsweise von einer Zufuhrspindel (2) abwechselnd aus einer ersten bzw. zweiten Ebene und in einer ersten Richtung (A) herausgezogen wird; dass das gewebeförmige Material (1) in einzelne Materialstücke (16) geschnitten wird; dass die geschnittenen Materialstücke (16) aus der ersten bzw. zweiten vertikalen Ebene und in einer zweiten Richtung (B) vorwärts (18a, 18b; 20a, 20b) befördert werden, und dass die geschnittenen Materialstücke (16) abwechselnd aus den zwei vertikalen Ebenen in einer dritten vertikalen Ebene zum anschließenden Behandlungsschritt (3) nach vorn befördert (22a, 22b) werden.
12. Verfahren nach Anspruch 11, **dadurch gekennzeichnet, dass** ein zweites Materialstück bereits

herausgezogen und abgeschnitten wird, bevor ein erstes Materialstück (16) vollständig zur dritten vertikalen Ebene befördert wurde.

- 5 13. Verfahren nach Anspruch 11 oder 12, **dadurch gekennzeichnet, dass** ein Griff der Längskanten der geschnittenen Materialstücke (16) mit Blick in die zweite Richtung (B) während der kontinuierlichen Durchführung des Verfahrens ständig beibehalten wird.
- 10 14. Verfahren nach einem der Ansprüche 11-13, **dadurch gekennzeichnet, dass** die geschnittenen Materialstücke (16) nach vorn in der zweiten Richtung (B) befördert werden, sodass im Wesentlichen kein oder nur ein kleiner Raum dazwischen besteht, wenn sie in den anschließenden Behandlungsschritt (3) eintreten.
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### Revendications

1. Dispositif (10) de coupe et d'avancement ou d'alimentation vers l'avant d'un matériau en forme de bande (1) vers une étape de traitement suivante ou consécutive (3), **caractérisé en ce que** le dispositif comprend au moins un dispositif de tirage (12), agencé pour tirer de manière alternée le matériau dans un premier et un deuxième niveau vertical, respectivement, et dans une première direction (A), de préférence depuis une bobine d'approvisionnement (2) ; un dispositif de coupe (26) destiné à couper le matériau en forme de bande (1) en pièces de matériau individuelles (16) ; deux paires de moyens d'avancement ou d'alimentation vers l'avant (18a, 18b ; 20a, 20b), agencées pour alimenter les pièces de matériau coupées (16) vers l'avant dans une seconde direction (B), lesquelles paires de moyens d'avancement ou d'alimentation vers l'avant (18a, 18b ; 20a, 20b) sont agencées dans lesdits premier et deuxième niveaux verticaux, respectivement, et des moyens (22a, 22b) pour alimenter de manière alternée les pièces de matériau coupées (16) depuis les deux niveaux verticaux et vers l'avant dans un troisième niveau vertical vers ladite étape de traitement suivante (3).
2. Dispositif selon la revendication 1, **caractérisé par** deux dispositif de tirage (12), un pour chaque niveau vertical.
3. Dispositif selon la revendication 1 ou 2, **caractérisé en ce que** lesdits moyens d'avancement ou d'alimentation vers l'avant (18a, 18b ; 20a, 20b) comprennent des courroies sans fin, chaque paire de moyens d'alimentation vers l'avant comprenant de préférence deux courroies sans fin (18a, 20a) agencées l'une au dessus de l'autre dans une première

- position horizontale et deux courroies sans fin (18b, 20b) agencées l'une au dessus de l'autre dans une seconde position horizontale, vu dans ladite première direction (A), les courroies sans fin agencées l'une au dessus de l'autre étant agencées pour être séparées verticalement l'une de l'autre pour le passage du dispositif de tirage (12) entre elles, et pour être assemblées verticalement pour pincer le matériau (1, 16).
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4. Dispositif selon la revendication 3, **caractérisé en ce que** lesdits moyens d'avancement ou d'alimentation vers l'avant (18a, 20a) dans ladite première position horizontale sont agencés en relation avec le dispositif de coupe (26), alors que lesdits moyens d'avancement ou d'alimentation vers l'avant (18b, 20b) dans ladite seconde position horizontale peuvent être déplacés dans la première direction (A), pour un réglage variable d'une largeur des pièces de matériau (16).
- 10
5. Dispositif selon la revendication 4, **caractérisé par** une pince de support (28) qui comprend des moyens (30) pour positionner de manière alternée un bord coupé du matériau en forme de bande (1) dans lesdits premier et deuxième niveaux verticaux, respectivement, ledit dispositif de coupe étant de préférence agencé entre la pince de support (28) et lesdits moyens d'alimentation vers l'avant (18a, 20a) dans ladite première position horizontale.
- 15
6. Dispositif selon l'une quelconque des revendications précédentes, **caractérisé en ce que** ladite première direction (A) et ladite seconde direction (B) sont perpendiculaires l'une par rapport à l'autre.
- 20
7. Dispositif selon l'une quelconque des revendications précédentes, **caractérisé en ce que** ledit au moins un dispositif de tirage (12) est agencé pour tirer une seconde pièce de matériau (16) destinée à la coupe, déjà avant qu'une première pièce de matériau coupée (16) ait quitté les moyens d'avancement ou d'alimentation vers l'avant (18a, 18b ; 20a, 20b).
- 25
8. Dispositif selon l'une quelconque des revendications précédentes, **caractérisé en ce que** lesdits moyens (22a, 22b) pour alimenter les pièces de matériau coupées (16) de manière alternée depuis les deux niveaux verticaux et vers l'avant dans un troisième niveau vertical, comprennent un dispositif d'alimentation orientable.
- 30
9. Dispositif selon l'une quelconque des revendications précédentes, **caractérisé en ce que** lesdits moyens d'alimentation vers l'avant (18a, 18b ; 20a, 20b) sont agencés, conjointement avec lesdits moyens (22a, 22b) d'alimentation alternée depuis les deux niveaux verticaux et vers l'avant dans le troisième niveau,
- 35
- de façon à maintenir une prise des bords longitudinaux des pièces de matériaux coupées (16), comme montré dans la seconde direction (B), pendant toute la durée du fonctionnement continu du dispositif (10).
- 40
10. Dispositif selon l'une quelconque des revendications précédentes, **caractérisé en ce que** lesdits moyens d'alimentation vers l'avant (18a, 18b ; 20a, 20b) sont agencés, conjointement avec lesdits moyens (22a, 22b) d'alimentation alternée depuis les deux niveaux verticaux et vers l'avant dans le troisième niveau vertical, de façon à alimenter vers l'avant les pièces de matériau coupées (16) de sorte que sensiblement aucun ou uniquement un petit espace existe entre elles lorsqu'elles abordent ladite étape de traitement suivante (3).
- 45
11. Procédé de coupe et d'avancement ou d'alimentation vers l'avant d'un matériau en forme de bande (1), vers une étape de traitement suivante (3), **caractérisé en ce que** le matériau (1) est tiré de manière alternée dans un premier et un deuxième niveau vertical, respectivement, et dans une première direction (A), de préférence depuis une bobine d'approvisionnement (2) ; **en ce que** le matériau en forme de bande (1) est découpé en pièces de matériau individuelles (16), **en ce que** les pièces de matériau coupées (16) sont avancées ou alimentées vers l'avant (18a, 18b ; 20a, 20b) depuis lesdits premier et deuxième niveaux verticaux, respectivement et dans une seconde direction (B) et **en ce que** les pièces de matériau coupées (16) sont avancées ou alimentées vers l'avant (22a, 22b), de manière alternée depuis les deux niveaux verticaux, dans un troisième niveau vertical vers ladite étape de traitement suivante ou consécutive (3).
- 50
12. Procédé selon la revendication 11, **caractérisé en ce qu'**une seconde pièce de matériau est tirée et coupée déjà avant qu'une première pièce de matériau coupée (16) ait été entièrement alimentée vers l'avant vers ledit troisième niveau vertical.
- 55
13. Procédé selon la revendication 11 ou 12, **caractérisé en ce qu'**une prise des bords longitudinaux des pièces de matériau coupées (16), comme montré dans la seconde direction (B), est maintenue pendant toute la durée du fonctionnement continu du procédé.
14. Procédé selon l'une quelconque des revendications 11-13, **caractérisé en ce que** les pièces de matériau coupées (16) sont alimentées vers l'avant dans la seconde direction (B), de sorte que sensiblement aucun ou juste un petit espace existe entre elles lorsqu'elle abordent ladite étape de traitement suivante (3).

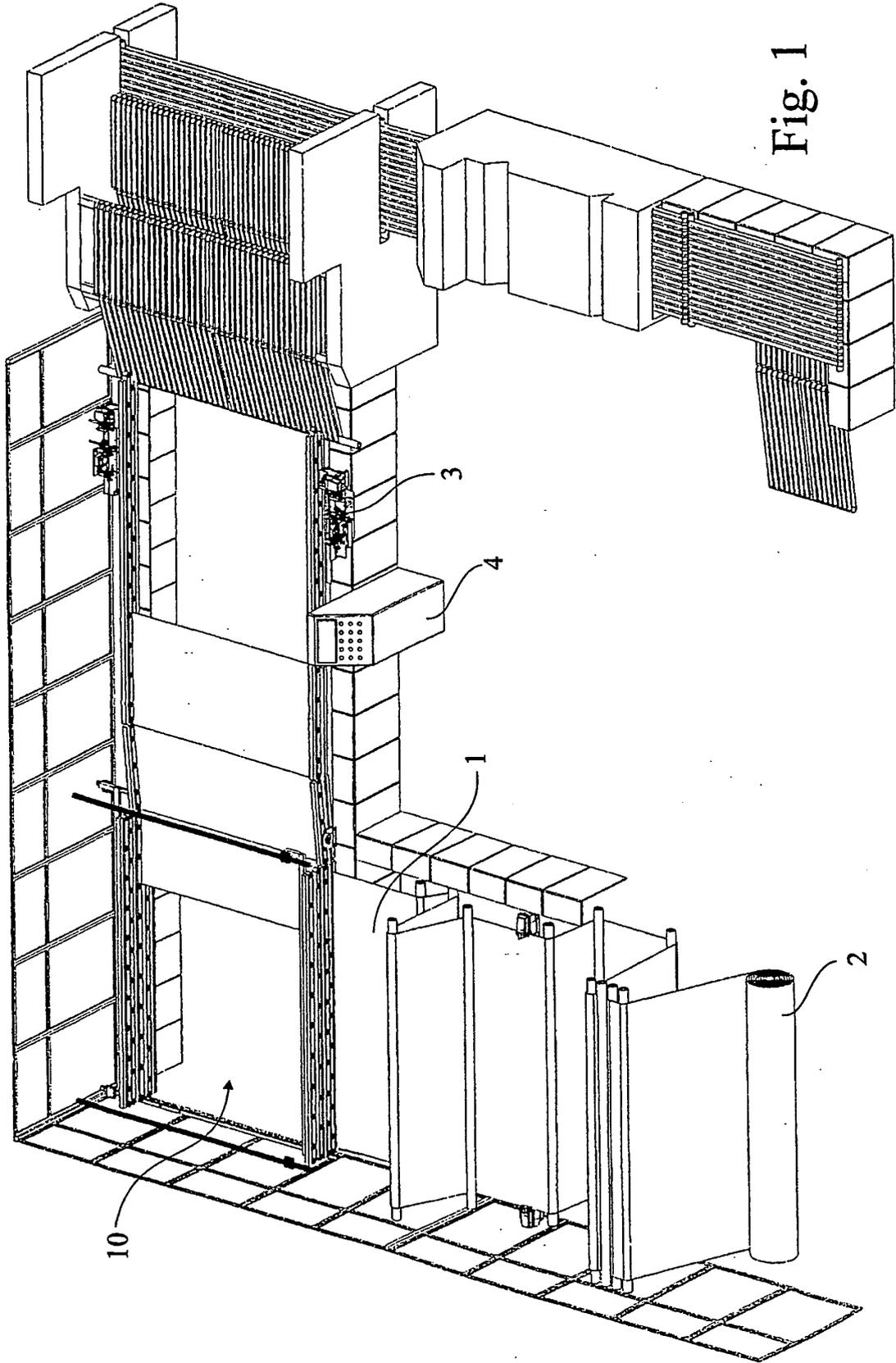
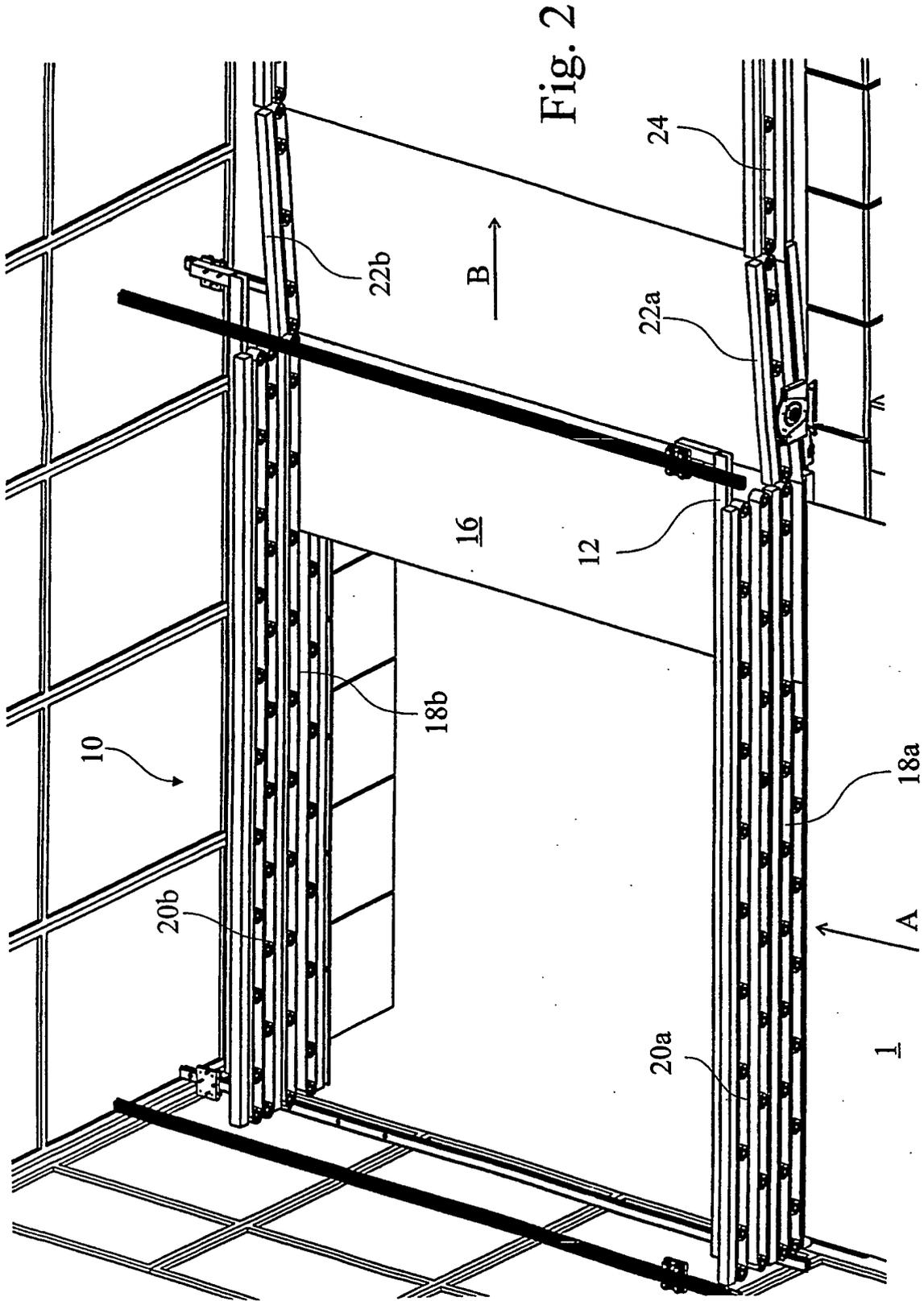
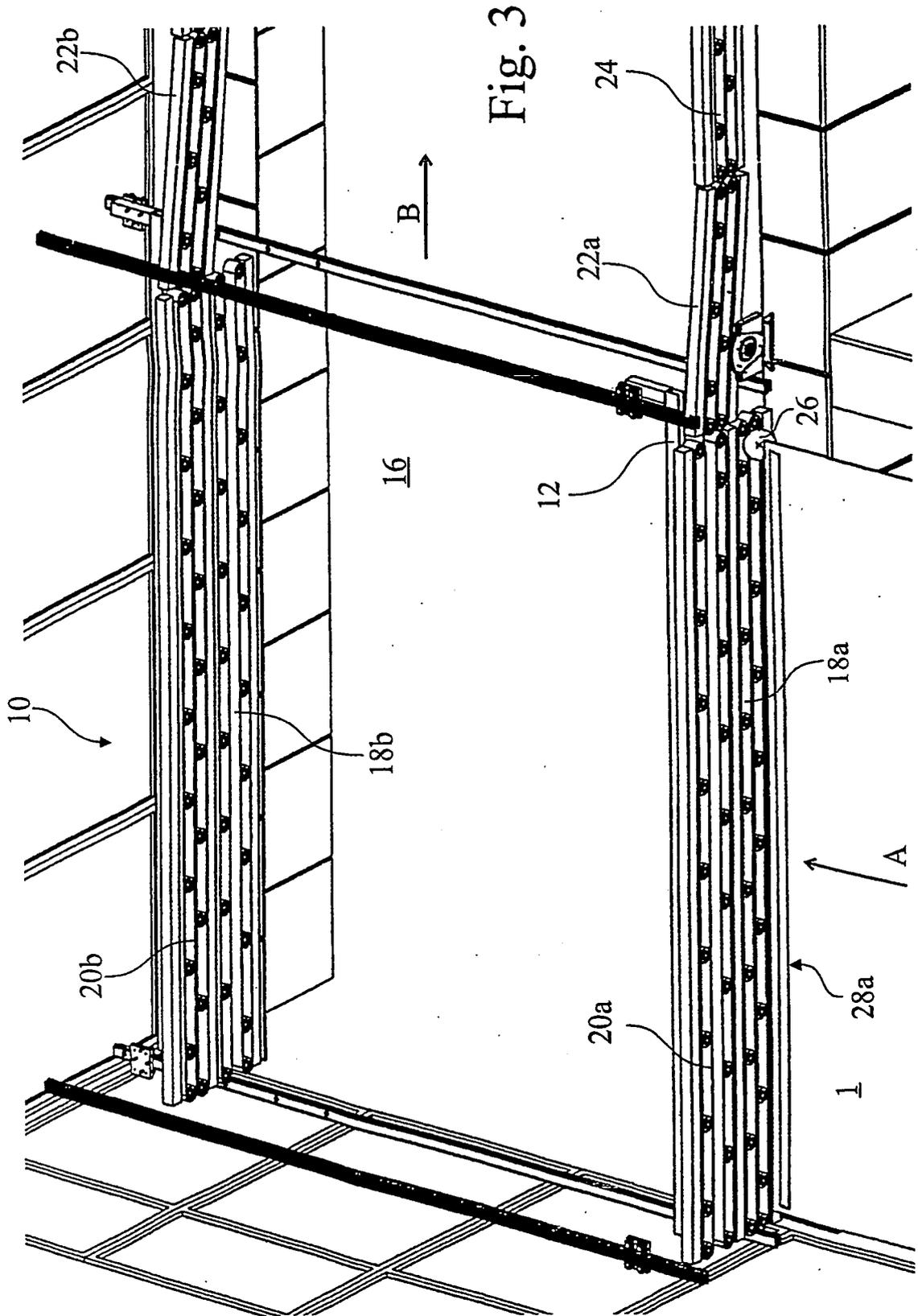


Fig. 1





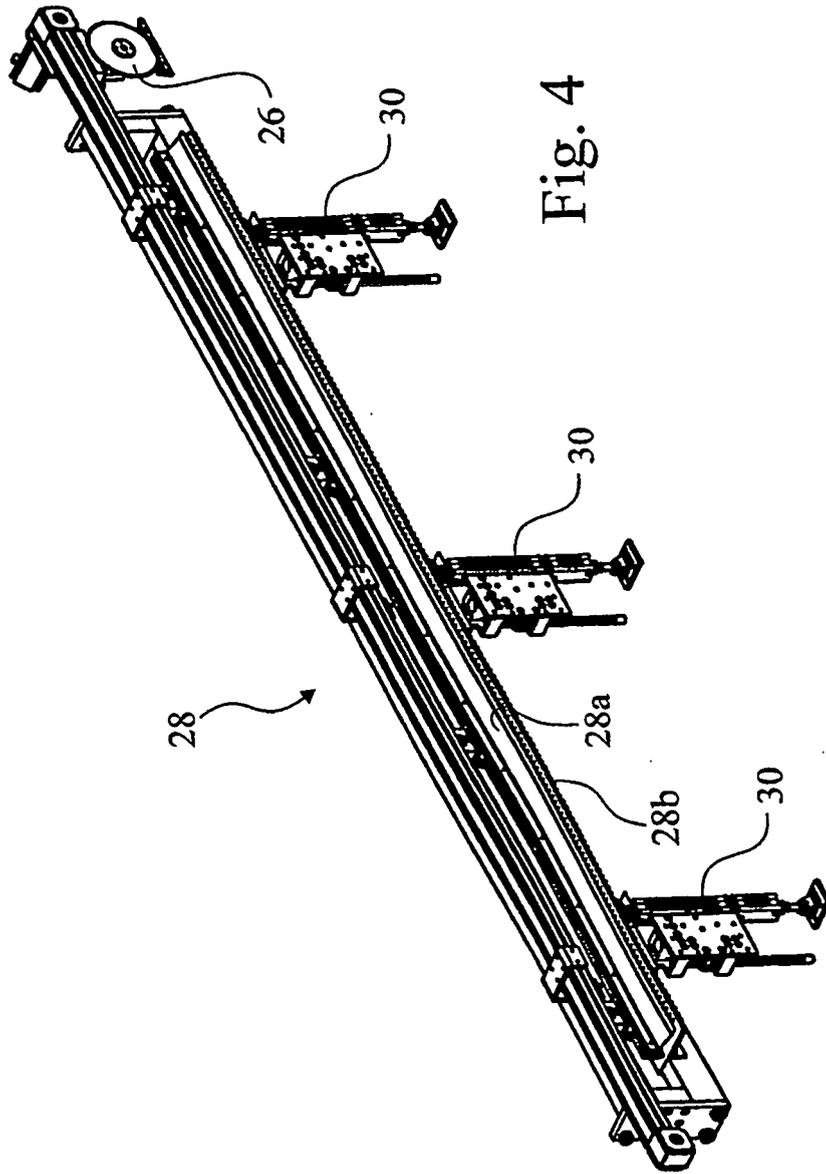


Fig. 4