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(54) **APPARATUS FOR SEPARATING ONE OR MORE UNITS OF A DRUG FROM A CONTINUOUS BAND**

VORRICHTUNG ZUR TRENNUNG EINER ODER MEHRERER EINHEITEN EINES ARZNEIMITTELS
AUS EINEM ENDLOS BAND

APPAREIL POUR SÉPARER UNE OU PLUSIEURS UNITÉS D'UN MÉDICAMENT À PARTIR D'UNE
BANDE CONTINUE

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Description

TECHNICAL FIELD OF THE INVENTION

[0001] The present invention refers to an apparatus for separating one or more units of drugs from a continuous band for the automatic composition of the prescriptions specified by medical personnel for each patient.

[0002] The invention allows a more effective performance of day-to-day operations and simplifies the mechanical devices that separate and collect the drugs to be subsequently distributed.

BACKGROUND OF THE INVENTION

[0003] Health facilities, such as hospitals and reception centers for patients who are incapable or only partially self-sufficient must constantly deal with the necessity of administering to the persons in their care the medicines required by their respective therapies.

[0004] In the known art are found some solutions that propose devices for collecting units of medicines to assist the health personnel.

[0005] In particular, devices are known for the automatic distribution of units of product, be they medicines, food articles or objects in general of compact sizes.

[0006] Among these are devices designed to provide units of product packaged and stored individually and others designed to dispense units packaged individually but joined in continuous strips, or bands, that must be separated when they are to be administered.

[0007] The apparatus described in US 3,131,830 can dispense products of various nature. The mechanisms of the apparatus collect a band consisting of individual portions from a container and feed it forward through the action of a driving wheel. The unit to be administered is pushed out of a relative opening and separated from the continuous band by a cutter.

[0008] The distributor described in US 3,131,830 is a first mechanism that dispenses objects, including medicines, packaged in continuous bands but that is unable to manage or connect with a centralized distribution control system.

[0009] US Patent 5,102,008 describes a device for dispensing drugs that have been packaged individually in pockets created on a band.

[0010] A first end of the band is secured to a first powered coil that feeds the band initially wound on a second coil freely rotating on a pin. The band moves through an element capable of expelling the medication from the pocket so that it can be collected by the patient.

[0011] A preferred embodiment of the invention consists of a microprocessor controlled medicine dispenser that makes it easier for the patient to follow the therapy. This preferred embodiment is also provided with connections to the office of the medical center for supervising the administration of the medicines.

[0012] The device described above shares some de-

sign aspects of the invention that will be described below, but it does not achieve the operating capabilities of the latter as it is conceived essentially as a device for household uses or for small health facilities.

[0013] US Patent 7,963,201 describes an apparatus and the methods for administering medicines devised to assist patients in both the quantities of medicine to take and the times they take the medicine of their therapies. The apparatus described therein is provided with a plurality of nuclei to allow it to manage a number of drugs; each nucleus is provided with an actuator connected with a feeding mechanism housed in the unit itself. The devices described therein can be provided with an interface allowing an online connection with a computer unit to manage the stock and supply the drugs to the operators.

[0014] A drawback of the apparatus described in US Patent 7,963,201 is the fact that it makes it possible to manage only a limited number of products, and thus more devices would be required for larger quantities.

[0015] All the equipment and devices described to this point do not achieve the optimal level of safety and quality of service required for the particularly delicate phase of distribution of medicines in health care or hospital facilities, particularly in larger installations.

SUMMARY OF THE INVENTION

[0016] The present invention has the objective of overcoming the limits and drawbacks of the solutions currently available on the market, by improving the speed with which the medicines become available to the operators in ministering the prescriptions and reducing the complexity of the mechanisms necessary for separating and collecting the individual units of medication.

[0017] The object of the present invention is thus an apparatus for separating one or more units of medicines from a continuous band, provided with mechanisms that make it possible to separate single doses or units of medicine in a highly automated manner and to make them available for their subsequent collection and distribution.

[0018] The apparatus can contain a plurality of drugs packaged on a continuous band so that they can be handled by mechanical devices, installed on the same apparatus, that dispense and separate the individual doses of units of each medicine from the packages so that they can be collected by a relative collecting device and made available to the operator, who then administers them to the patients.

[0019] The above task and purposes, and others that will become more evident below, are achieved by an apparatus for separating one or more units of medicine from a continuous band, as defined by claim 1.

BRIEF DESCRIPTION OF THE FIGURES

[0020] Further characteristics and advantages of the present invention will become more evident from the following description of a preferred embodiment, given by

way of a purely indicative example and without limitations, with reference to the attached figures, wherein:

- figure 1 is a front perspective view of an apparatus for separating one or more units of medicines from a continuous band according to the present invention;
- figure 2 shows a detail of the apparatus of fig. 1;
- figure 3 is a close-up perspective view of the rear part of the apparatus;
- figure 4 is a close-up front perspective view of the apparatus of figure 1 in an initial phase of the operating cycle;
- figure 5 is a close-up perspective view of the back part of the apparatus in a second phase of the operating cycle;
- figure 6 is a front perspective view of the apparatus in a third phase of the operating cycle;
- figure 7 is a front perspective view of the apparatus in a fourth phase of the operating cycle;
- figure 8 is a perspective view of the apparatus in a final phase of the operating cycle.

DETAILED DESCRIPTION OF THE INVENTION

[0021] In the perspective view of Fig. 1 is shown a possible embodiment of an apparatus for the separation of one or more units of medicine from a continuous band subject matter of the present invention, which comprises a frame 1 having a vertical extension and a longitudinal extension with respect to a support plane.

[0022] In the following description, the terms "vertical", "vertically", "longitudinal", "longitudinally", "top", "bottom" will refer to the support plane of the frame 1.

[0023] The frame 1 includes one or more storage compartments 2 suitable to receive respective storage means for a band 3 in which are individually packaged a plurality of units 4 of medicine; the storage means can be made up, for example, of at least one coil 5, on which the band 3 is wound, mounted rotatably on a suitable support structure 6 so as to allow the unwinding of the band 3 for the subsequent operations, which will be explained below.

[0024] Advantageously, the uncoiling of the band 3 is guided by relative through means 7, through which the band 3 is fed, associated to the support structure 6.

[0025] Between two adjacent units 4, the band 3 is provided with a hole 14, whose function will be explained in detail below.

[0026] The apparatus according to the present invention also comprises, associated to the frame 1:

- at least one pulling unit 8 adapted to drive the band 3 in an alternating vertical rectilinear motion with respect to the frame 1;
- a cutting unit 9 sliding longitudinally with an alternating rectilinear motion with respect to the frame 1 along relative guide means 10;
- at least one retaining and collecting unit 11 for the

drug units 4 separated from the band 3 moving vertically with an alternative rectilinear motion with respect to the frame 1.

[0027] The operation and the sequence of movements of the above units according to the steps that will be described below are controlled, in a known manner, by suitable actuating means, such as electric motors, and by appropriate control means, such as sensors, microswitches, timers, etc., not shown in the enclosed figures.

[0028] Hereinbelow will be defined with the term "separating workstation" the arrangement of devices consisting of a band coil, a pulling or drag unit and a retaining and collecting unit.

[0029] The apparatus according to the present invention can be implemented with a single separating workstation or, more conveniently, in a modular arrangement by setting in a side-by-side series two or more separating workstations, as exemplified in the embodiment illustrated in the enclosed figures, in which the apparatus comprises three separating workstations, each formed by a coil, a band pulling unit and a retaining and collecting unit for the drug units separated from the band.

[0030] In each case, the apparatus comprises a single cutting unit that intercepts transversely, during its operating travel, all the separating stations.

[0031] Further, the bands of the different separating workstations may contain the same medicine, different medicines or different types of medicines, depending on the specific requirements of the care facility (hospital, nursing home, rest home, etc.).

[0032] Hereinbelow are described in detail the components forming each separating workstations.

[0033] Each pulling unit 8 is associated to a first carriage 12 moved vertically, for example through a rack-and-pinion system, and supporting one or more pulling means 13, depending on the number of separating workstations, disposed facing a corresponding portion of band 3 leaving the through means 7; the pulling means 13 are made up, for example, of a piston that intermittently extends from a cylinder to engage the hole 14 on the portion of band 3 sliding out of the through means 7.

[0034] The movement of the first carriage 12 from the lower position, shown in figure 3, to the upper position, shown in figure 5, causes the band 3 to be pulled upward through the engagement of the piston in the corresponding hole 14 on the band 3. During the travel of the first carriage 12, the continuous band 3 is guided by a track 15 having a central portion open to allow the passage of one or more units 4 of drug projecting from the continuous band 3.

[0035] Each retaining and collecting unit 11 is associated to a second carriage 16 slidable vertically in an alternating rectilinear movement with respect to a first bracket 17 of the frame 1.

[0036] The second carriage 16 supports one or more retaining means 18, comprising one or more arms 19 jointed to respective second brackets 20 integral to the

second carriage 16; the arms 19 can thus rotate about an axis A arranged longitudinally with respect to the frame 1 between a rest position and a retaining position in which the movement is controlled by an actuator such as a jack 25 of pneumatic or hydraulic type.

[0037] The second carriage 16 also supports one or more collecting means 21 for the drug units 4 separated from the band 3. The collecting means 21 may comprise one or more pins slightly inclined so that the drug units are collected by gravity or, as exemplified in the embodiment of the enclosed figures, a helical screw forming a plurality of spiral elements 22; the spiral elements 22 are rotatably supported by respective third brackets 23, integral to the second carriage 16, and are provided with means 24, such as a nut screw, capable of converting a rotary motion into a translatory motion and in which are engaged the spiral elements 22. In this manner, the rotation of the spiral elements 22 with respect to the means 24 also causes the extraction or the retraction of the same spiral elements 22 along an axis B perpendicular to the longitudinal extension of the frame 1, depending on the direction of rotation.

[0038] Both the retaining means 18 and the collecting means 21 are in a number equal to the separating workstations to which they are associated.

[0039] The cutting unit 9 comprises a third carriage 26 provided with a slide 27 suitable to slide longitudinally with an alternating rectilinear motion with respect to the frame 1 along the guide means 10; the third carriage 26 also supports suitable cutting means 28, formed advantageously by a disk blade rotatably associated to the third carriage 26 along a vertical axis, or arranged perpendicularly with respect to the longitudinal sliding direction.

[0040] Advantageously, suitable sensing means 29 can be provided arranged adjacent to the cutting means 28 on the side opposite the slide 27; such sensing means 29 are designed to "read" a code, for example a bar code or a QR-Code, printed on each portion of the band 3 containing one or more drug units 4, before this portion is separated by the cutting means 28 from the remaining part of the band, for the purpose of controlling that the data of the drug in the separating step correspond to the preset specifications.

[0041] The upper surface of the guide means 10, where the cutting means 28 operate, defines a flat surface that hereafter will be called "worktop" 33.

[0042] The apparatus operates as follows, with reference to the preferred embodiment illustrated in the enclosed figures: in an initial step of the operating cycle, illustrated in figures 3 and 4, a first portion 30 of the band 3 sliding out of the through means 7, in which it was previously inserted by an operator at the beginning of the cycle, is engaged by the drag means 13, for example through the insertion of the piston into the hole 14 facing it, and is pulled upward by the translatory movement of the first carriage 12 passing through the guide track 15, with the consequent unwinding of the band 3 from the coil 5 (figure 5).

[0043] The feeding of the first portion 30, equal in length to the travel of the first carriage 12, determines as a consequence an equal forward movement, above the worktop 33, of a second portion 31 of the band 3, which is provided with a free end as it is a head portion resulting from the cutting of a previous band portion already separated and indicated with numeral 32 in figure 3.

[0044] Figures 3 and 4 illustrate, from the rear part and from the front part of the apparatus, respectively, the initial step of the cycle in which the first carriage 12 is in the lower position, and thus the second portion of the continuous band 31 has not yet arrived above the worktop 33, the second carriage 16 is raised with respect to the worktop 33 with the arms 19 raised and the spiral elements 22 in a retracted position and supporting the already separated band portion 32. The cutting unit 9 is in a stationary position at one end of the worktop 33.

[0045] In figure 5, the second band portion 31 has arrived in position above the worktop 33 by effect of the movement of the first carriage 12 up to its upper travel limit; the second carriage 16 is lowered toward the worktop 33 so as to dispose the collecting means 21, such as the spiral elements 22, coaxially to the hole 14 present on each second band portion 31; subsequently, a rotation is applied to the spiral elements 22 with respect to the nut screw 24 so that the spiral elements 22 translate forward toward the second band portion 31 so as to engage the hole 14. In this position, the side edges of the second band portion 31 rest on a pair of shoulders 34 that project vertically from the worktop 33.

[0046] In the next step, shown in figure 6, the arms 19 rotate with respect to the axis A to a lowered position against the upper edge of the second band portion 31, which is thus blocked at the top by the respective arm 19 against the corresponding pairs of shoulders 34 and held by the end spiral of the respective spiral element 22 in engagement with the hole 14.

[0047] At this point, the second band portion 31 is ready to be separated from the remaining first band portion 30 by means of the cutting unit 9.

[0048] Referring again to figure 6, the cutting unit 9 is driven in continuous mode along the guide means 10 from the stop position to the end of the operating travel on the worktop 33, illustrated in figure 7.

[0049] In this step are repeated in succession the following operations at each separating workstation:

- if the sensing means 29 are present, reading of the control code of the drug or drugs packaged in the second band portion 31;
- separation of the second band portion 31 from the remaining part of the continuous band through the cutting means 28, passing through the base of the second portion of band 31 projecting from the worktop 33.

[0050] Naturally, if the control code does not correspond to the predetermined specifications, the cycle can

be interrupted or the cut portion of the band is discarded.

[0051] In a single run of the cutting unit 9 the second band portions 32 are thus separated from the remaining portions of tape present in the different separating workstations.

[0052] In the subsequent step, shown in figure 8, the cutting unit 9 returns to the stationary position and the second carriage 16 is raised with respect to the worktop 33, lifting jointly the arms 19, the spiral elements 22 and the second band portions 31, which now have become separated portions 32, held by the arms 19 that are still in the retaining position and by the spiral elements 22 in extended position.

[0053] A rotation counterclockwise to the rotation of forward movement of the spiral elements 22 determines the retraction of the latter toward the third brackets 23 and the collection of the separated portions 32 on a spiral adjacent to the end spiral, while the arms 19 rotate upward to the stationary position to begin a new cycle, starting from the position shown in figures 3 and 4.

[0054] The repeating rotations for retracting the spiral elements 22 during the following operating cycles cause the separated band portions 32 to gradually translate backward along the spirals, toward the third brackets 23, so as to eventually fill the whole length of the spiral elements 22, which in this manner collect a plurality of separated band portions 32, each of them containing one or more drug units 4.

[0055] Once filling is completed, the spiral elements 22 are collected by suitable collecting and transfer devices (not subject matter of the present invention), which transfer the separated portions 32 from the spiral elements 22 to a storage cabinet.

[0056] From the above description, it is evident how the apparatus for separating one or more drug units from a continuous band as described above is capable of overcoming the limits and drawbacks of the solutions currently available on the market.

[0057] In particular, the apparatus according to the present invention has an extremely compact and completely automated structure, and is capable of rapidly modifying the number of workstations based on the quantity or the type of drugs to separate thanks to the potential modularity of its construction.

[0058] Further, the apparatus has the capability of feeding, separating, collecting and dispensing in an organized form one or more separated drug units, even of different brands and types, in an extremely rapid manner, through a single operating run of the cutting means 9 along all the separating workstations, thus considerably reducing the collecting times and the possible operating errors.

[0059] Naturally, the present invention is amenable to many applications, modifications or variants, without thereby departing from the scope of patent protection, as defined by claim 1.

[0060] Further, the materials and equipment used for implementing the present invention, as well as the

shapes and dimensions of the individual components, can be the most suitable for the specific requirements.

5 Claims

1. Apparatus for separating one or more units of a drug from a continuous band containing a plurality of drug units (4), comprising a frame (1) having a vertical extension and a longitudinal extension with respect to a support plane and including one or more storage compartments (2), each storage compartment (2) being adapted to receive storage means for said continuous band (3), **characterized in that** said frame (1) comprises one or more separating workstations flanked arranged along the longitudinal extension of said frame (1), each of said separating workstations including at least said storage means and a drag unit (8) adapted to move said continuous band (3) along the vertical extension of said frame (1), said apparatus being further provided with a cutting unit (9) adapted to longitudinally run relative to said frame (1) along each separating workstation to separate a band portion (32) containing one or more drug units (4) from each continuous band (3) in a single cutting run.
2. Apparatus as in claim 1, wherein said cutting unit (9) is longitudinally slidable relative to said frame (1) along guide means (10) defining a worktop (33) of said frame (1).
3. Apparatus as in claim 2, wherein each drag unit (8) of said one or more separating workstations is associated to a first carriage (12) vertically movable relative to said frame (1) between a position adjacent said worktop (33) and a position lowered in respect to said worktop (33), said first carriage (12) supporting respective drag means (13) for said one or more separating workstations adapted to engage and drag towards said worktop a first portion (30) of said continuous band (3) coming out from said storage means.
4. Apparatus as in claim 2, wherein each of said one or more separating workstations further comprises a retaining and collecting unit (11) for a plurality of said band portions (32) separated from said continuous band (3), said retaining and collecting unit (11) being adapted to vertically slide relative to said frame (1) between a position proximate said worktop (33) and a position raised in respect to said worktop (33).
5. Apparatus as in claim 4, wherein each retaining and collecting unit (11) is associated to a second carriage (16) slidable between said proximate position and said raised position, said second carriage (16) supporting respective retaining means (18) for said one

or more separating workstations adapted to retain a second portion (31) of said continuous band (3) adjacent said first portion (30), a free end of said second portion (31) protruding from said worktop.

6. Apparatus as in claim 5, wherein said cutting unit (9) comprises a third carriage (26) slidable along said guide means (10), said third carriage (26) supporting suitable cutting means (28) adapted to separate said second portion (31) from said continuous band (3) to obtain said band portion (32) containing one or more drug units (4).
7. Apparatus as in claim 4, wherein retaining and collecting unit (11) comprises collecting means (12) for a plurality of said band portions (32) separated from said continuous band (3).
8. Apparatus as in claim 7, wherein said collecting means (12) comprise a helical screw forming a plurality of spiral elements (22), each spiral element (22) being adapted to collect and support a band portion (32) of said plurality of band portions.
9. Apparatus as in claim 8, wherein said helical screw is rotatably supported on said second carriage (16) by means (24) suitable to transform a rotary motion of said helical screw into a translatory motion of said spiral elements (22) so as to cause extraction and retraction of said spiral elements (22) relative to said second carriage (16) along an axis (B) perpendicular to the longitudinal extension of said frame (1).
10. Apparatus as in claim 1, wherein said storage means consist of at least a coil (5) rotatably mounted on a support structure (6), said continuous band (3) being rolled onto said coil (5).

Patentansprüche

1. Vorrichtung zum Trennen einer oder mehrerer Einheit/en eines Medikaments von einem Endlosband, das eine Vielzahl von Medikamenten-Einheiten (4) enthält, wobei sie einen Rahmen (1) umfasst, der eine vertikale Ausdehnung und eine Längsausdehnung in Bezug auf eine Standebene hat und eine oder mehrere Aufbewahrungskammer/n (2) enthält, wobei jede Aufbewahrungskammer (2) zum Aufnehmen von Aufbewahrungseinrichtungen für das Endlosband (3) eingerichtet ist, **dadurch gekennzeichnet, dass** der Rahmen (1) eine oder mehrere Trenn-Arbeitsstation/en umfasst, die entlang der Längsausdehnung des Rahmens (1) angrenzend angeordnet ist/sind, wobei jede der Trenn-Arbeitsstationen wenigstens die Aufbewahrungseinrichtungen sowie eine Zieh-Einheit (8) enthält, die so eingerichtet ist, dass sie das Endlosband (3) entlang der ver-

tikalen Ausdehnung des Rahmens (1) bewegt, und die Vorrichtung des Weiteren mit einer Schneid-Einheit (9) versehen ist, die so eingerichtet ist, dass sie in Längsrichtung relativ zu dem Rahmen (1) an jeder Trenn-Arbeitsstation entlang läuft, um einen Bandabschnitt (32), der eine oder mehrere Medikamenten-Einheit/en (4) enthält, in einem Schneid-Durchlauf von jedem Endlosband (3) zu trennen.

2. Vorrichtung nach Anspruch 1, wobei die Schneid-Einheit (9) relativ zu dem Rahmen (1) in Längsrichtung an einer Führungseinrichtung (10) entlang verschoben werden kann, die eine Arbeitsfläche (33) des Rahmens (1) bildet.
3. Vorrichtung nach Anspruch 2, wobei jede Zieh-Einheit (8) der einen oder mehreren Trenn-Arbeitsstation/en mit einem ersten Wagen (12) verbunden ist, der relativ zu dem Rahmen (1) vertikal zwischen einer an die Arbeitsfläche (33) angrenzenden Position und einer in Bezug auf die Arbeitsfläche (33) abgesenkten Position bewegt werden kann, und der erste Wagen (12) jeweilige Zieheinrichtungen (13) für die eine oder die mehreren Trenn-Arbeitsstation/en trägt, die so eingerichtet sind, dass sie mit einem ersten Abschnitt (30) des Endlosbandes (3), der aus den Aufbewahrungseinrichtungen austritt, in Eingriff kommen und ihn auf die Arbeitsfläche zu ziehen.
4. Vorrichtung nach Anspruch 2, wobei jede der einen oder mehreren Trenn-Arbeitsstation/en des Weiteren eine Halte-und-Auffang-Einheit (11) für eine Vielzahl der von dem Endlosband (3) getrennten Bandabschnitte (32) umfasst, und die Halte-und-Auffang-Einheit (11) so eingerichtet ist, dass sie relativ zu dem Rahmen (1) vertikal zwischen einer Position nahe an der Arbeitsfläche (33) und einer in Bezug auf die Arbeitsfläche (33) angehobenen Position gleitet.
5. Vorrichtung nach Anspruch 4, wobei jede Halte-und-Auffang-Einheit (11) mit einem zweiten Wagen (16) verbunden ist, der zwischen der nahen Position und der angehobenen Position verschoben werden kann, und der zweite Wagen (16) jeweilige Halteeinrichtungen (18) für die eine oder die mehreren Trenn-Arbeitsstation/en trägt, die so eingerichtet sind, dass sie einen zweiten Abschnitt des Endlosbandes (3) an den ersten Abschnitt (30) angrenzend halten, wobei ein freies Ende des zweiten Abschnitts (31) von der Arbeitsfläche vorsteht.
6. Vorrichtung nach Anspruch 5, wobei die Schneid-Einheit (9) einen dritten Wagen (26) umfasst, der an der Führungseinrichtung (10) entlang verschoben werden kann, und der dritte Wagen (26) geeignete Schneideinrichtungen (28) trägt, die so eingerichtet sind, dass sie den zweiten Abschnitt (31) von dem

Endlosband (3) trennen, um den Bandabschnitt (32) zu erzeugen, der eine oder mehrere Medikamenten-Einheit/en (4) enthält.

7. Vorrichtung nach Anspruch 4, wobei die Halte-und-Auffang-Einheit (11) Auffangeinrichtungen (12) für eine Vielzahl der von dem Endlosband (3) getrennten Bandabschnitte (32) umfasst.
8. Vorrichtung nach Anspruch 7, wobei die Auffangeinrichtungen (12) eine Schraubenspindel umfassen, die eine Vielzahl von Spiralelementen (22) bildet, und jedes Spiralelement (22) so eingerichtet ist, dass es einen Bandabschnitt (32) der Vielzahl von Bandabschnitten auffängt und trägt.
9. Vorrichtung nach Anspruch 8, wobei die Schraubenspindel an dem zweiten Wagen (16) über eine Einrichtung (24) drehbar gelagert ist, die sich dazu eignet, eine Drehbewegung der Schraubenspindel in eine Translationsbewegung der Spiralelemente (22) umzuwandeln, um Ausfahren und Einfahren der Spiralelemente (22) relativ zu dem zweiten Wagen (16) entlang einer Achse (B) senkrecht zu der Längsausdehnung des Rahmens (1) zu bewirken.
10. Vorrichtung nach Anspruch 1, wobei die Aufbewahrungseinrichtungen aus wenigstens einer Spule (5) bestehen, die drehbar an einer Tragestruktur (6) angebracht ist, und das Endlosband (3) auf die Spule (5) gewickelt ist.

Revendications

1. Appareil pour séparer une ou plusieurs unités d'un médicament d'une bande continue contenant une pluralité d'unités de médicament (4), comprenant un châssis (1) ayant une extension verticale et une extension longitudinale par rapport à un plan de support et comprenant un ou plusieurs compartiments de stockage, chaque compartiment de stockage (2) étant adapté pour recevoir des moyens de stockage pour ladite bande continue (3), **caractérisé en ce que** ledit châssis (1) comprend un ou plusieurs postes de travail de séparation flanqués disposés le long de l'extension longitudinale dudit châssis (1), chacun desdits postes de travail de séparation comprenant au moins lesdits moyens de stockage et une unité de traction (8) adaptée pour déplacer ladite bande continue (3) le long de l'extension verticale dudit châssis (1), ledit appareil étant en outre pourvu d'une unité de coupe (9) adaptée pour se déplacer longitudinalement par rapport audit châssis (1) le long de chaque poste de travail de séparation pour séparer une partie de bande (32) contenant une ou plusieurs unités de médicament (4) de chaque bande continue (3) en un seul déplacement de coupe.

2. Appareil selon la revendication 1, dans lequel ladite unité de coupe (9) est coulissante longitudinalement par rapport audit châssis (1) le long de moyens de guidage (10) définissant un plan de travail (33) dudit châssis (1).
3. Appareil selon la revendication 2, dans lequel chaque unité de traction (8) dudit ou desdits postes de travail de séparation est associée à un premier chariot (12) déplaçable verticalement par rapport audit châssis (1) entre une position adjacente audit plan de travail (33) et une position abaissée par rapport audit plan de travail (33), ledit premier chariot (12) supportant des moyens de traction respectifs (13) pour ledit ou lesdits postes de travail de séparation adaptés pour s'engager et tirer vers ledit plan de travail une première partie (30) de ladite bande continue (3) sortant desdits moyens de stockage.
4. Appareil selon la revendication 2, dans lequel chacun dudit poste de travail ou desdits plusieurs postes de travail de séparation comprend en outre une unité de retenue et de collecte (11) pour une pluralité desdites parties de bande (32) séparées de ladite bande continue (3), ladite unité de retenue et de collecte (11) étant adaptée pour coulisser verticalement par rapport audit châssis (1) entre une position proche dudit plan de travail (33) et une position relevée par rapport audit plan de travail (33).
5. Appareil selon la revendication 4, dans lequel chaque unité de retenue et de collecte (11) est associée à un second chariot (16) pouvant coulisser entre ladite position proche et ladite position relevée, ledit second chariot (16) supportant des moyens de retenue (18) respectifs pour ledit poste de travail ou lesdits plusieurs postes de travail de séparation et adaptés pour retenir une seconde partie (31) de ladite bande continue (3) adjacente à ladite première partie (30), une extrémité libre de ladite seconde partie (31) faisant saillie dudit plan de travail.
6. Appareil selon la revendication 5, dans lequel ladite unité de coupe (9) comprend un troisième chariot (26) pouvant coulisser le long desdits moyens de guidage (10), ledit troisième chariot (26) supportant des moyens de coupe appropriés (28) adaptés pour séparer ladite seconde partie (31) de ladite bande continue (3) pour obtenir ladite partie de bande (32) contenant une ou plusieurs unités de médicament (4).
7. Appareil selon la revendication 4, dans lequel l'unité de retenue et de collecte (11) comprend des moyens de collecte (12) pour une pluralité desdites parties de bande (32) séparées de ladite bande continue (3).
8. Appareil selon la revendication 7, dans lequel ledit

moyen de collecte (12) comprend une vis hélicoïdale formant une pluralité d'éléments en spirale (22), chaque élément en spirale (22) étant adapté pour collecter et supporter une partie de bande (32) de ladite pluralité de parties de bande.

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9. Appareil selon la revendication 8, dans lequel ladite vis hélicoïdale est supportée de manière rotative sur ledit second chariot (16) par des moyens (24) aptes à transformer un mouvement de rotation de ladite vis hélicoïdale en un mouvement de translation desdits éléments en spirale (22) de manière à provoquer extraction et rétraction desdits éléments en spirale (22) par rapport audit second chariot (16) le long d'un axe (B) perpendiculaire à l'extension longitudinale dudit châssis (1).

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10. Appareil selon la revendication 1, dans lequel lesdits moyens de stockage consistent en au moins une bobine (5) montée rotativement sur une structure de support (6), ladite bande continue (3) étant enroulée sur ladite bobine (5).

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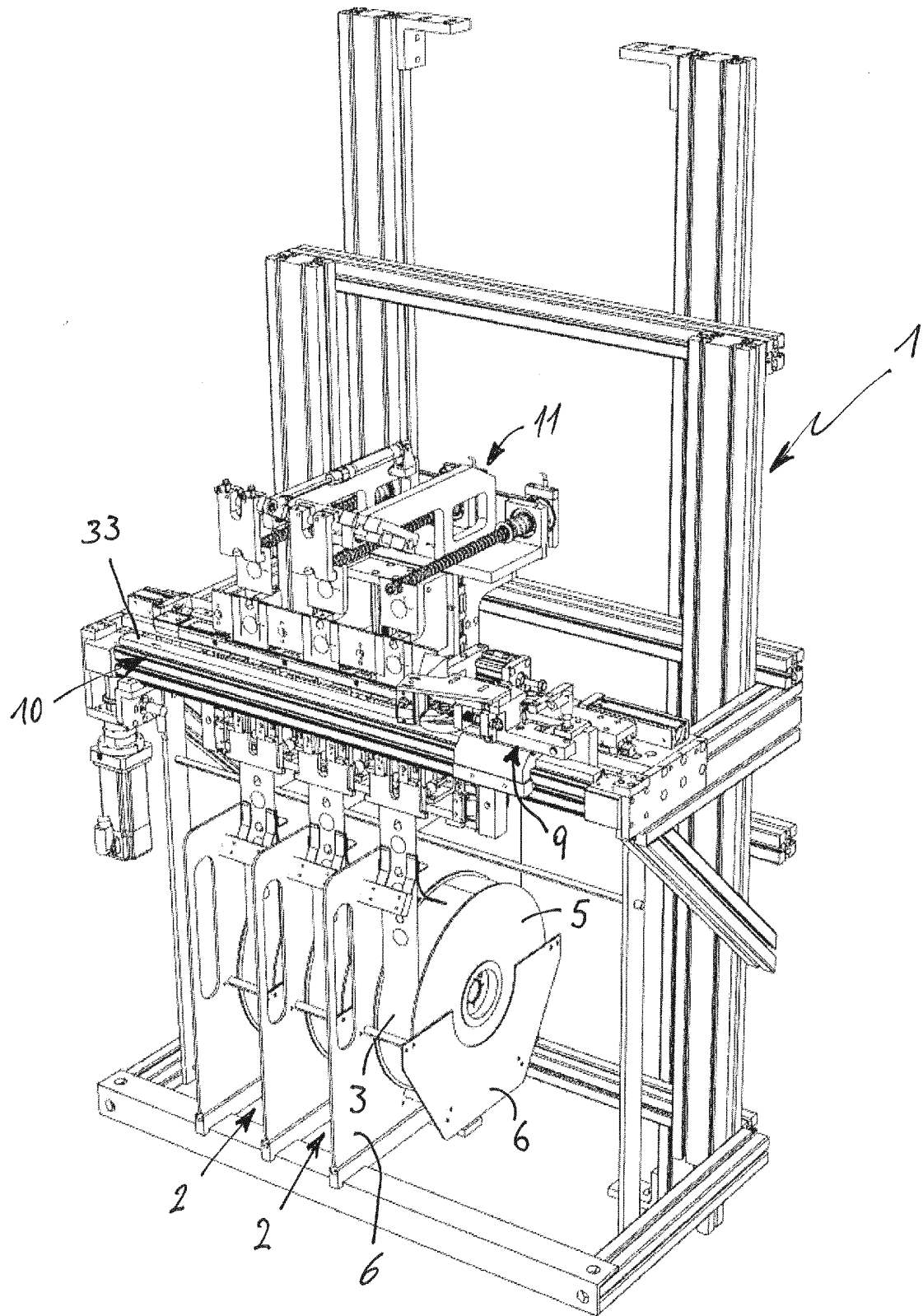


FIG. 1

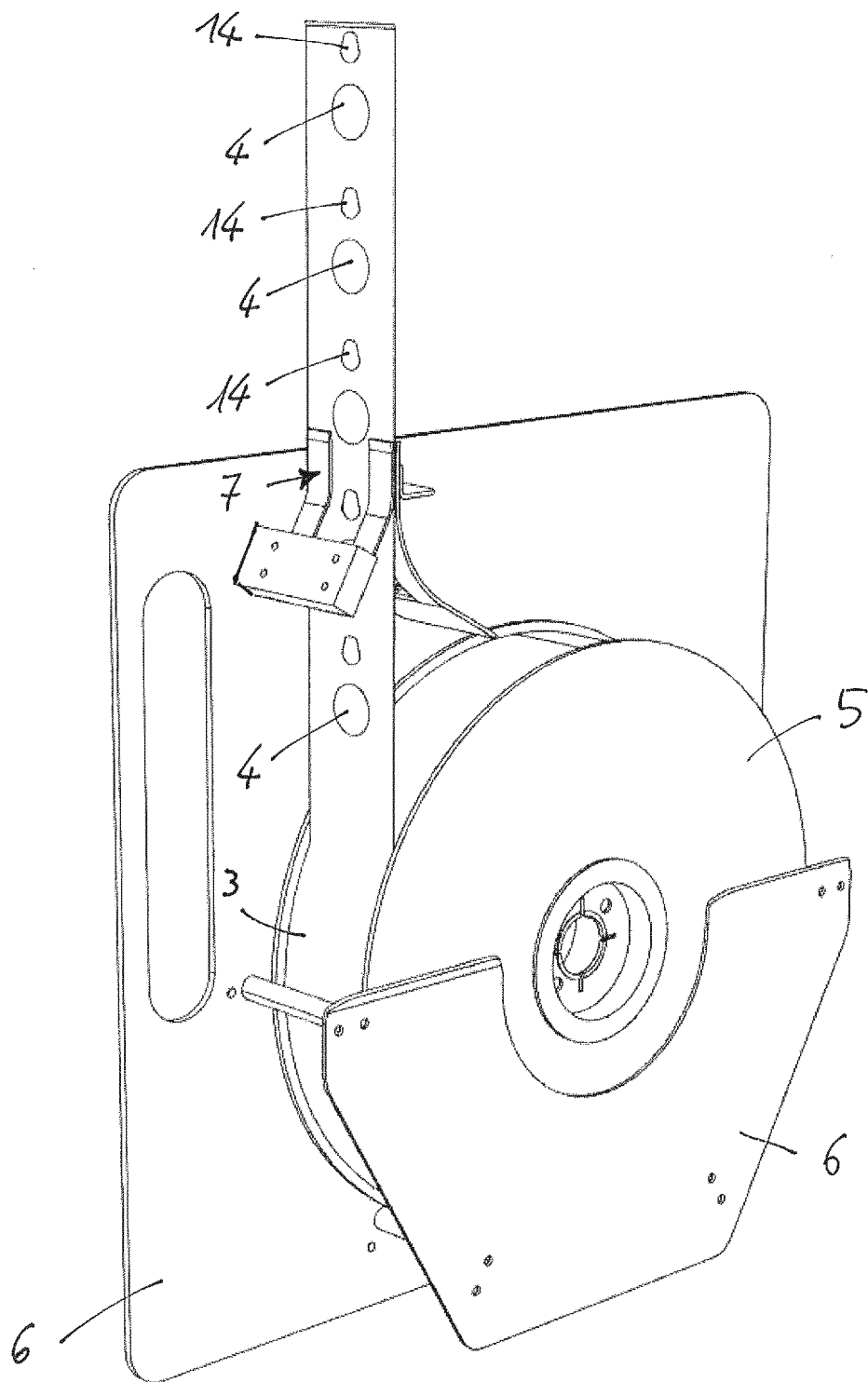


FIG. 2

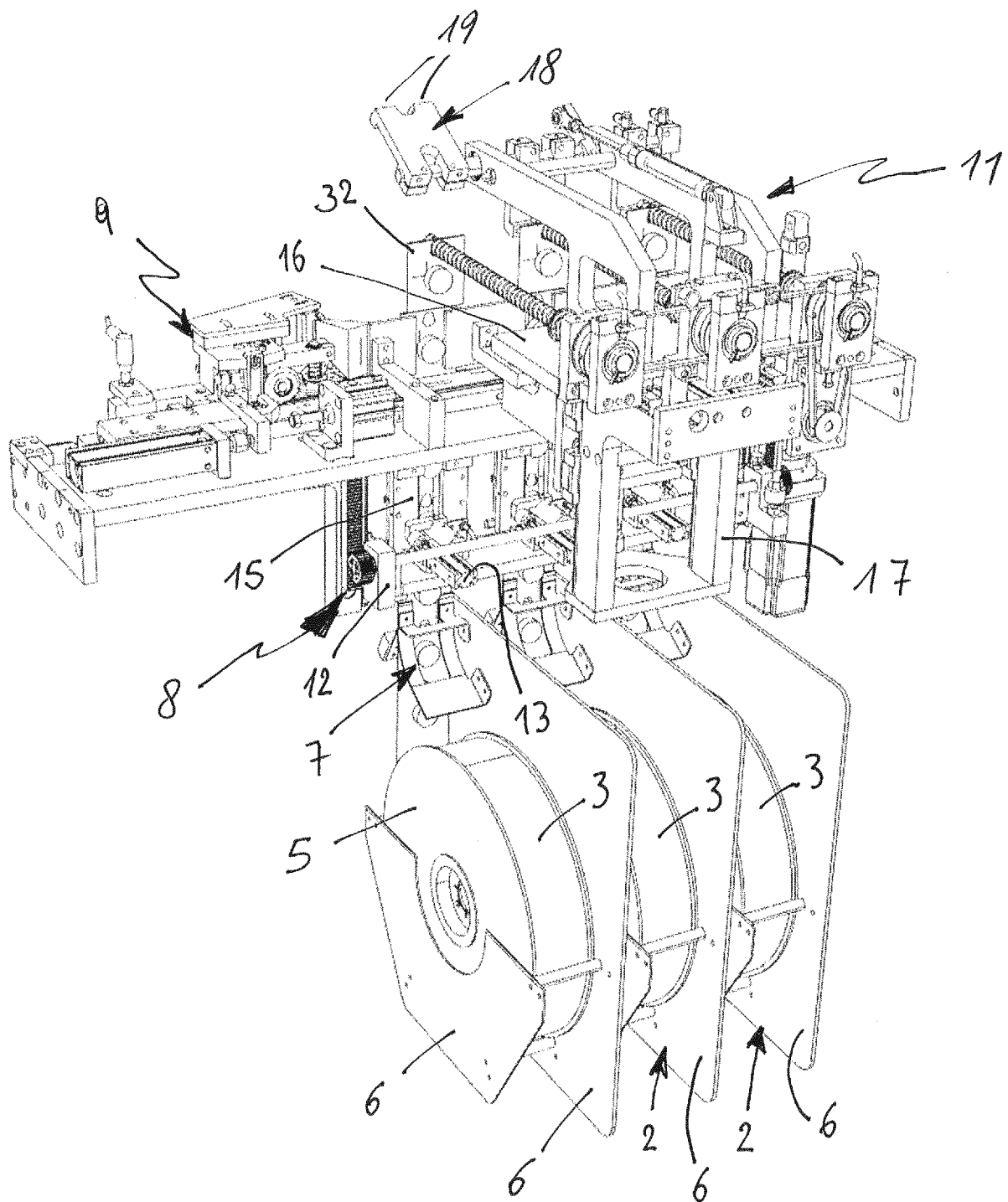


FIG. 3

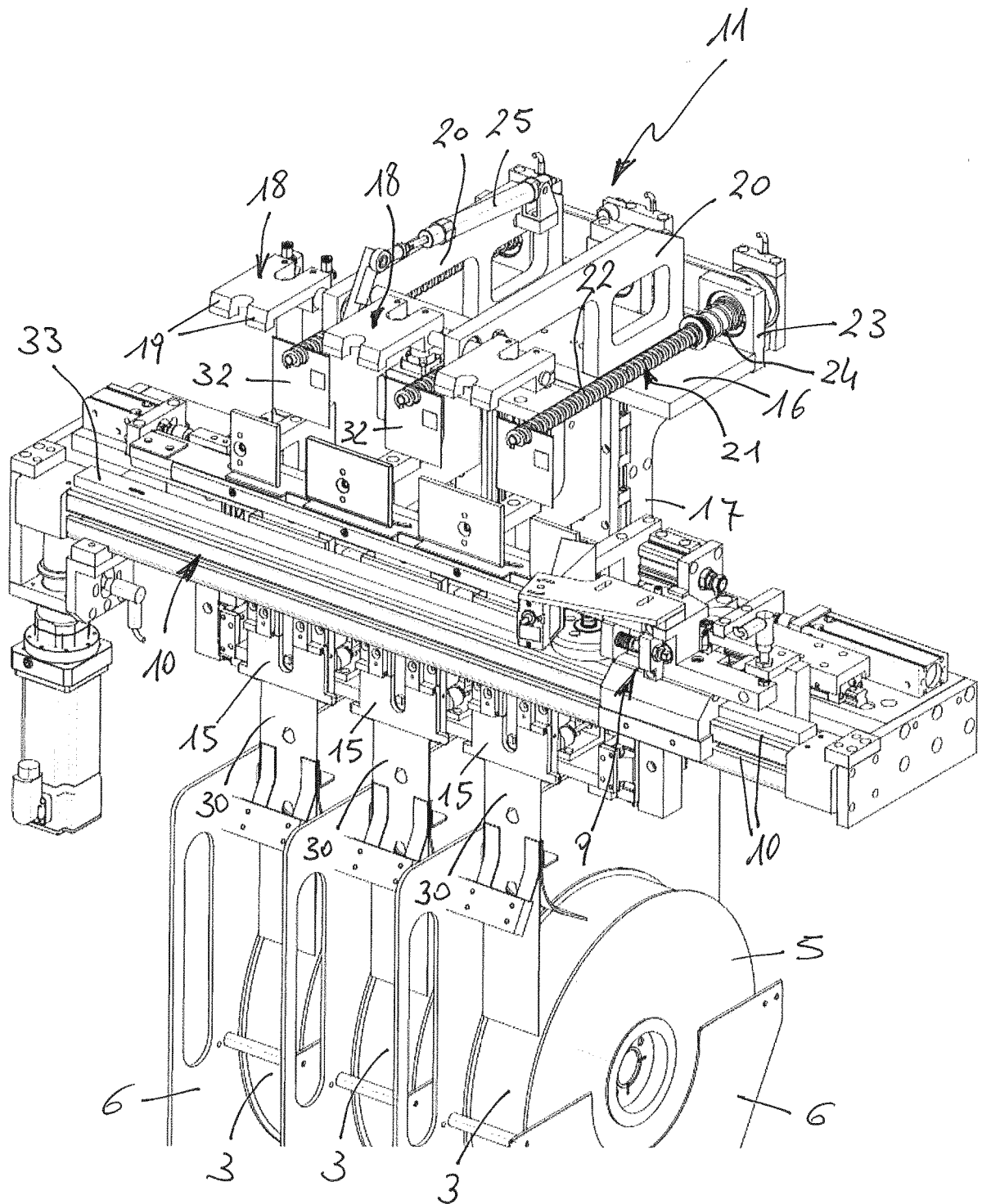


FIG. 4

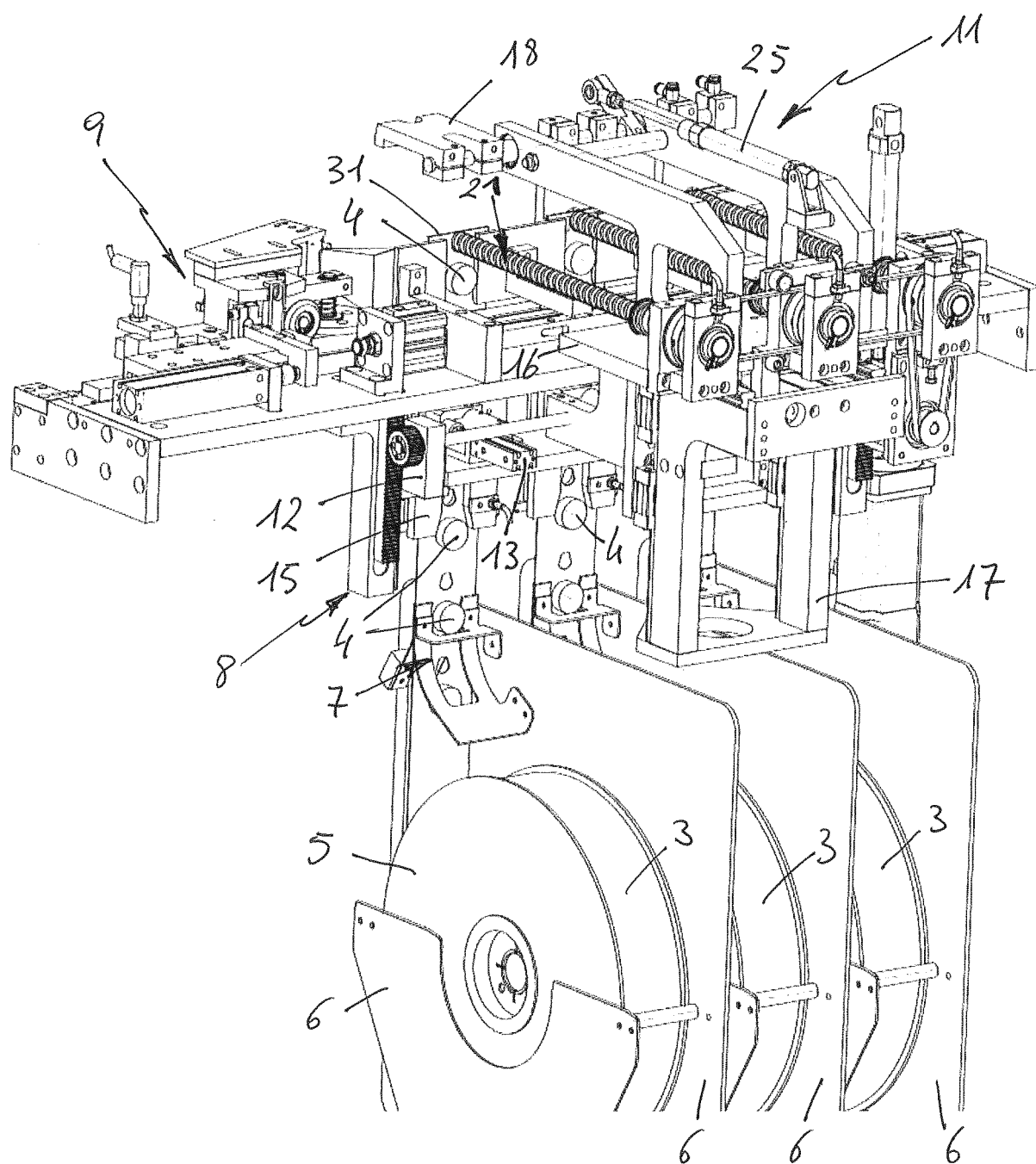


FIG. 5

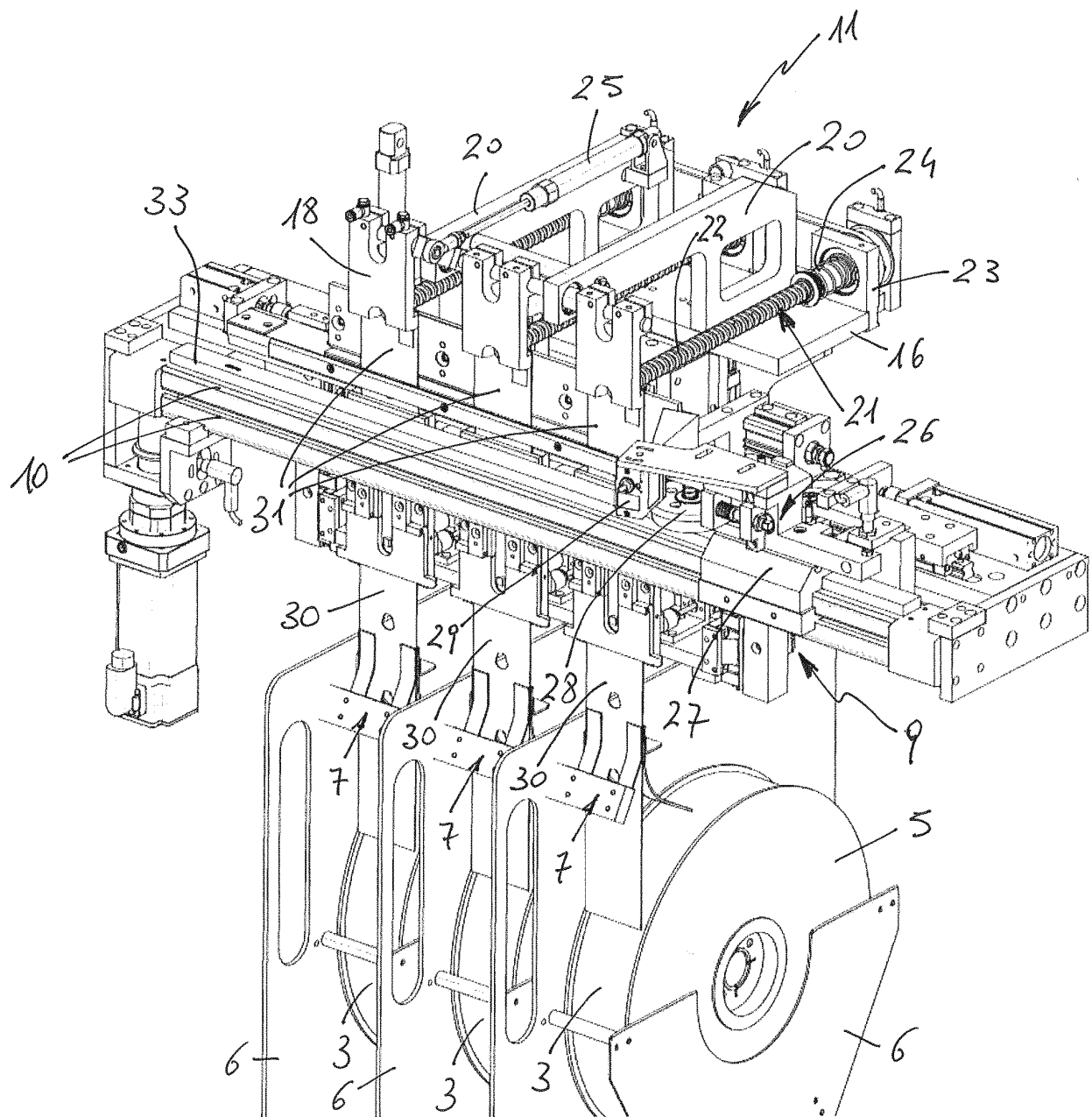


FIG. 6

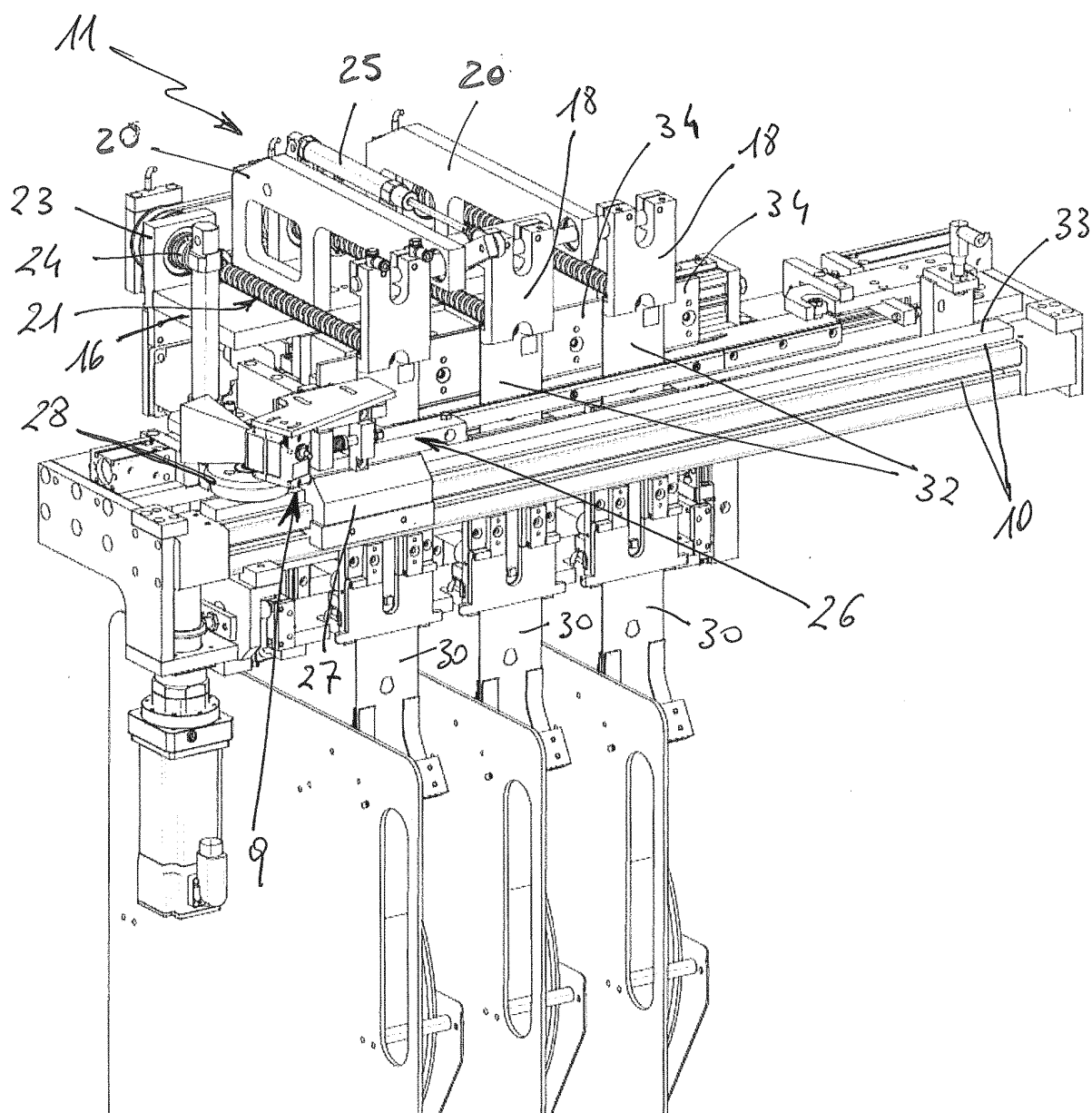


FIG. 7

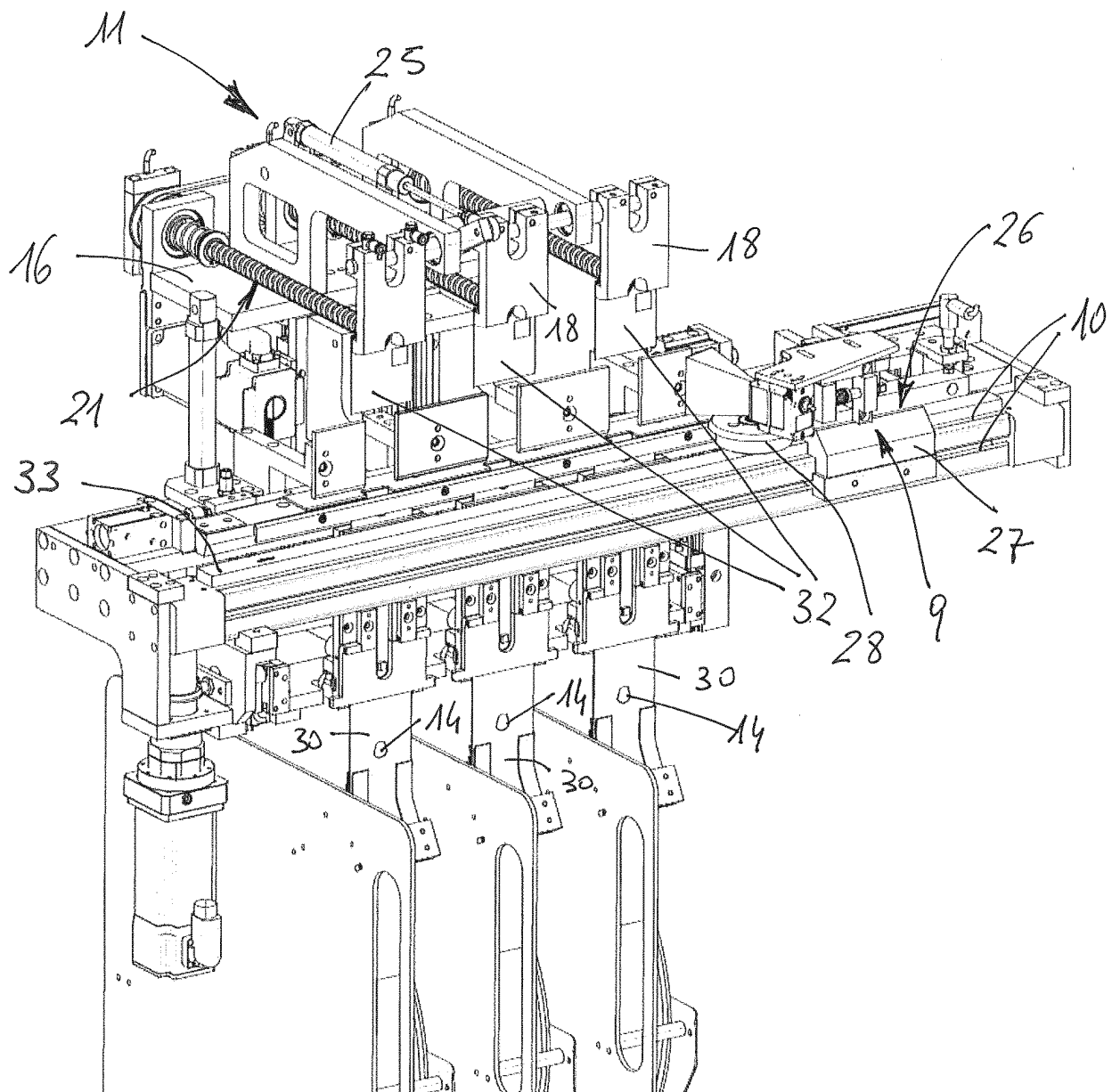


FIG. 8

REFERENCES CITED IN THE DESCRIPTION

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