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

(11) EP 3 530 865 B1

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
10.03.2021 Bulletin 2021/10

(51) Int Cl.:
E06B 9/266 *(2006.01)*

(21) Application number: **19154093.9**

(22) Date of filing: **29.01.2019**

(54) **ASSEMBLY STATION FOR VENETIAN BLINDS WITH COMPLETE SUPPORT LADDERS**

MONTAGESTATION FÜR JALOUSIEN MIT VOLLSTÄNDIGEN STÜTZLEITERN

STATION DE MONTAGE POUR STORES VÉNITIENS COMPORTANT DES ÉCHELLES DE SUPPORT COMPLÈTES

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

(30) Priority: **27.02.2018 IT 201800003095**

(43) Date of publication of application:
28.08.2019 Bulletin 2019/35

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Description

Scope

[0001] The object of the present invention is an assembly station for Venetian blinds with complete support ladders.

State of the art

[0002] As is well known, Venetian blinds are made up of a plurality of slats, arranged parallel to each other and held in place by means of support structures made of cord.

[0003] A very widespread support structure is called a "complete ladder", i.e. consisting of two parallel ribs (arranged in the direction of the height of the blind) and a plurality of crosspieces that connect them at regular distances. Each crosspiece must be associated with a slat, either in support (if the crosspiece is single) or in insertion (if the crosspiece is multiple).

[0004] The assembly of Venetian blinds on complete ladders is carried out in automated production lines which comprise specific automated assembly stations, wherein the individual slats are associated with the complete ladders and, thus associated, are progressively overlapped one on top of the other to form the Venetian blind.

[0005] In general, as shown in Figure 1, an assembly station A for complete ladders comprises a plurality of stacking units B distributed along a main axis X, along which the slats are progressively arranged. Each stacking unit A supports the support ladders in height and is suitable for connecting thereto the individual slats that are progressively inserted in the assembly station.

[0006] Operatively, once inserted along the aforesaid main axis X of the assembly station A, the individual slat will be engaged simultaneously by all the stacking units B. After being associated with the various complete ladders, the individual slat will be lifted upwards, so as to allow the insertion of a new slat and continue with the construction of the Venetian blind.

[0007] Assembly stations for Venetian blinds with complete support ladders are described, for example, in US5349730A, EP0674092A1, EP3026208B1, EP2886781B1, EP2677108B1 and EP2677107B1.

[0008] As shown in Figure 1, the individual stacking units B are slidably associated with a longitudinal support bar C which extends parallel to the aforesaid main axis X. In this way, when the features of the blinds to be produced vary, it is possible to reposition the stacking units B along such bar C, adapting the position thereof according to the length of the slats (i.e. the length of the blind to be produced) and/or to the pitch that is required between one complete ladder and another.

[0009] The same assembly station A may be used to make venetian blinds of different lengths. The number of stacking units required is determined on the basis of the length of the Venetian blind, and therefore of the length of the slats used to assemble it and of the number of ladders to be applied.

[0010] A critical stage in the assembly is the insertion of the slats into the assembly station. The single slat is launched along the main axis X and must be stopped in the desired position.

[0011] For this purpose, the assembly station is equipped with a stop device D for the slat. Such stop device is removably associated with the longitudinal support bar C.

[0012] Operatively, depending on the length of the blind to be built, the stop device is mounted on the bar in the position wherein the bar is to be stopped, downstream of the last active stacking unit required for assembly and upstream of the first non-active stacking unit. In any case, at least two stacking units, the minimum number of units required for the assembly of a Venetian blind, must be placed upstream of such stop device. If the assembly of the blind requires the use of all the units of the station, such stop device is mounted between the last unit of the station and the final end of the bar.

[0013] Such stop device, while fully performing its function, nevertheless has a significant operative limitation. In effect, depending on the length of the Venetian blind to be assembled and the position of the stacking units, the stop device must be disassembled and reassembled manually.

[0014] This complicates the operation of the assembly station by prolonging downtime.

[0015] In the assembly stations of Venetian blinds with complete support ladders there is therefore the need to adjust the stop position of the slats while still overcoming the operative limitations related to the use of a removable stop.

Presentation of the invention

[0016] Thus, the object of the present invention is to eliminate in full or in part the drawbacks of the aforementioned prior art by providing an assembly station for Venetian blinds with complete support ladders, allowing the stop position of the slats to be adjusted more easily and quickly, without affecting the operation of the assembly station.

[0017] A further object of the present invention is to provide an assembly station for Venetian blinds with complete support ladders that is easier to manage than similar assembly stations of the known type.

[0018] A further object of the present invention is to provide an assembly station for Venetian blinds with complete support ladders which is simple and economical to obtain.

[0019] The technical features of the invention, according to the aforesaid objects, are clearly apparent from the content of the claims provided below.

Brief description of the drawings

[0020] The advantages of the invention will become more apparent in the following detailed description, made with reference to the accompanying drawings, which represent one or more purely illustrative and non-limiting embodiments, wherein:

- Figure 1 shows a collective perspective view of an assembly station for Venetian blinds with complete ladders of the traditional type;
- Figure 2 shows a collective perspective view of an assembly station for Venetian blinds with complete ladders according to an embodiment of the present invention;
- Figure 3 shows a perspective view from above of a detail of the assembly station in Figure 2, relating to the inlet portion of the assembly station, with some parts removed to better highlight others;
- Figure 4 shows a perspective view from the top of the inlet portion in figure 3, illustrated with a slat inserted;
- Figure 5 shows a lateral orthogonal view of a detail in Figure 4 according to the arrow V indicated therein, wherein the assembly station is illustrated with the stacking units complete with slat storage device and wherein two different operating positions of a second end stop device are illustrated; and
- Figure 6 shows the detail in Figure 5 wherein the assembly station is illustrated in a different operating condition, with a view extended to a fourth stacking unit.

Detailed description

[0021] With reference to the attached drawings, an assembly station for Venetian blinds with complete support ladders according to the invention has been collectively indicated at 1.

[0022] Here and in the following description and claims, reference will be made to the assembly station 1 in the condition of use. It is in this sense that any references to a lower or upper position, or to a horizontal or vertical orientation, are therefore to be understood.

[0023] According to a general embodiment of the invention, the assembly station 1 for Venetian blinds with complete support ladders, comprises three or more units 11, 12, 13, 14, 15, 16 for stacking slats on complete support ladders.

[0024] Such stacking units 11, 12, 13, 14, 15, 16 are aligned with each other along an insertion axis X of the slats L inside the assembly station 1 and are slidably associated with a shared support structure 2 extending parallel to said insertion axis X between two opposite ends 1’, 1" of the assembly station 1.

[0025] As shown in Figure 4, in use, the slats L enter the assembly station 1 at the first end 1’ of such two opposite ends.

[0026] The aforesaid stacking units 11, 12, 13, 14, 15, 16 jointly define a sliding lane 9 for the slat L along the insertion axis X inside the assembly station 1.

[0027] Advantageously, each stacking unit is blockable in position along the shared support structure 2 and is slidably associated with such structure independently of the other units.

[0028] In particular, as illustrated in the accompanying Figures, the aforesaid shared support structure 2 consists of a bar extending parallel to the insertion axis X.

[0029] Preferably, the assembly station 1 comprises motorized means (not illustrated in the accompanying figures) for the movement of one or more of the aforesaid stacking units 11, 12, 13, 14, 15, 16 (preferably, independently of each other) along the aforesaid shared support structure 2 parallel to the insertion axis X. In this way, when the features of the blinds to be produced vary, it is possible to reposition the stacking units 11, 12, 13, 14, 15, 16 along such support structure 2, adapting the position thereof according to the length of the slats (i.e. the length of the blind to be produced) and/or the pitch required between one support ladder and another.

[0030] Advantageously, at the inlet, the assembly station 1 may be equipped with means for moving the individual slat along the insertion axis X. In particular, as shown in the accompanying Figures, such means for moving the individual slat are made up of two pairs of opposing feeding rollers 3 and 4.

[0031] The assembly station 1 according to the invention may be suitable for handling complete support ladders of the type with single crosspieces or for handling complete support ladders with double crosspieces. In the latter case, each of the aforesaid stacking units 10 is equipped with divaricator means suitable to widen each pair of crosspieces in order to prepare them for the insertion of the slat. Preferably, in the latter case each of the stacking units 10 is manufactured according to one of the following European patents EP3026208B1, EP2886781B1, EP2677108B1 and EP2677107B1 in the name of the same applicant.

[0032] The assembly station 1 according to the invention may be placed in line with a slat production machine or be placed off line so as not to slow down the faster slat production process.

[0033] In general, the features and functions of the stacking units that may be used in a Venetian blind assembly station with complete support ladders are known to one skilled in the art and will thus not be described in more detail here, unless it is required for a better understanding of the invention.

[0034] According to a first aspect of the present invention, the assembly station 1 comprises a first end stop device 30 that engages the aforesaid sliding lane 9 to stop a slat L in movement along the insertion axis X.

[0035] Similarly to the stacking units, such first end stop device 30 is slidably associated with the shared support structure 2. It is arranged downstream of the aforesaid three or more stacking units (11, 12, 13, 14, 15, 16) relative to the first end 1' of the assembly station 1.

[0036] Advantageously, said first end stop device 30 is blockable in position along the shared support structure 2 independently of the stacking units.

[0037] According to a further aspect of the present invention, each of the stacking units 13, 14, 15, 16 arranged downstream of the first two stacking units 11, 12 relative to said first end 1' of the assembly station 1 is equipped with a second end stop device 20.

[0038] Each second end stop device 20 is movable between an active position, wherein it engages the sliding lane 9 to stop the sliding of a slat (L), and a passive position, wherein it does not engage the sliding lane 9 allowing the sliding of a slat L through the respective stacking unit 13, 14, 15, 16.

[0039] Operatively, according to the operative requirements of the assembly station 1, the stroke of one slat L along the sliding lane 9 may be stopped selectively:

- by the first end stop device 30 (in the event wherein the assembly of the Venetian blind requires the use of all the stacking units of station 1, as shown in Figure 2); or
- by one of the stacking units 13, 14, 15 or 16 arranged downstream of the first two stacking units 11, 12 relative to the first end 1', configured with the second end stop device 20 in the active position (in the event wherein the assembly of the Venetian blind requires the use of only a part of the stacking units of the station 1, as illustrated in Figure 4).

[0040] Due to the invention, the stop function of the slat L is no longer carried out by a single stop/end stop device which must be disassembled and reassembled along the shared support structure, but by a series of end stop devices which may be activated and deactivated independently and which are slidably and stably associated with such shared support structure. This makes it possible to adjust the stop position of the slats quickly and easily, without requiring the assembly and disassembly of any device.

[0041] Moreover, due to the fact that each of the aforesaid second end stop devices 20 is associated with a stacking unit and therefore moves integrally therewith, they are not an obstacle to the normal operation of the assembly station 1.

[0042] All this simplifies the operation of the assembly station, significantly reducing downtime.

[0043] Preferably, as illustrated in particular in figures 3 and 4, the aforesaid second end stop device 20 is placed in a front portion 10' of the respective stacking unit 13, 14, 15, 16 relative to the sliding direction X1 of the slats along the insertion axis X. In this way, the aforesaid second end stop device 20 faces the incoming slat and is not "hidden" by the stacking unit with which it is associated. Due to this, the second end stop device 20 may perform its function more quickly and easily.

[0044] According to the embodiment shown in figures 3 and 4 in particular, the second end stop device 20 extends mainly in a direction parallel to the insertion axis X, protruding from the respective stacking unit 13, 14, 15, 16 in a direction opposite to the sliding direction X1 of the slats along the insertion axis X. Due to such configuration, the second end stop device 20 is the first element that meets the incoming slat L when it is brought into the active position, i.e. when it engages the sliding lane 9.

[0045] Advantageously, as illustrated in particular in figures 3, 4, 5 and 6, the aforesaid second end stop device 20 is aligned with the aforesaid sliding lane 9 and, when in the passive position, is arranged completely below a sliding plane m of the slat defined by said sliding lane 9. In this way, the second end stop device 20 does not obstruct the movements of the slats in any way during the assembly of the Venetian blind.

[0046] When the second end stop device 20 is in the active position, it engages, with at least one portion thereof, the sliding lane 9, passing through the aforesaid sliding plane m of the slat. Due to the aforesaid alignment on the insertion axis, the stresses generated by the impact of the slat L on the second end stop device 20 are more easily absorbed by the same device.

[0047] Advantageously, as illustrated in particular in Figure 5, the aforesaid second end stop device 20 is structured to move between the active and passive positions in a direction orthogonal to the sliding plane m of the slat L. In other words, the movement of the second device 20 between the two operating positions occurs in a simple way by means of simple vertical movements (lifting and lowering).

[0048] Advantageously, as illustrated in particular in figures 3, 4, 5 and 6, the second end stop device 20 comprises means 25 for moving between the active and passive positions.

[0049] Preferably, the aforesaid movement means 25 consist of a pneumatic piston.

[0050] According to a preferred embodiment, illustrated in the accompanying Figures, each stacking unit 11, 12, 13, 14, 15, 16 comprises:

- an insertion seat 10a of the slats L, at which in use one slat L at a time is associated with a complete ladder; and
- a device 10b for positioning a ladder transversely to said insertion axis X at such insertion seat 10a.

[0051] Operatively, each insertion seat 10a also serves as the sliding seat for the slat L in a slat insertion step along the aforesaid insertion axis X within the assembly station 1.

[0052] Preferably, the aforesaid second end stop device 20 is placed in a front portion 10' of the respective stacking unit 13, 14, 15, 16 relative to the sliding direction X1 of the slats along the insertion axis X, upstream from the aforesaid device 10b to position a ladder transversely to the insertion axis X. In this way, the second end stop device 20 may never interfere with the aforesaid ladder positioning device or with the movement of the same ladder.

[0053] According to the preferred embodiment, illustrated in the accompanying Figures, each stacking unit 11, 12, 13, 14, 15, 16 may further comprise means 10c to guide the slat towards the aforesaid insertion seat 10a, arranged upstream of the aforesaid ladder positioning device 10b.

[0054] Preferably, as shown in figures 3, 4, 5 and 6, the slat guiding means 10c comprise a guide chute, located at the inlet of the stacking unit 10. As an alternative or in combination with such guide chute, such guiding means may comprise a guide chamfer, obtained directly at the beginning of the insertion seat 10a.

[0055] Preferably, as illustrated in particular in Figures 5 and 6, when in said passive position, the aforesaid second end stop device 20 is arranged completely below the aforesaid means 10c for guiding the slat. Only in the active position the aforesaid second end stop device 20 is partially arranged above the aforesaid means 10c for guiding the slat, in order to intercept the slat L and stop it.

[0056] According to the preferred embodiment illustrated in the accompanying Figures, the second end stop device 20 consists of a plate with an L-shaped profile, having:

- a first portion 21 extending parallel to the sliding plane m of the slat (defined by the sliding lane 9) and preferably always remaining below such plane, even in the active position; and
- a second portion 22 extending orthogonally to the sliding plane m and engaging the sliding lane 9 by passing through the sliding plane m when the aforesaid second end stop device (20) is in the active position.

[0057] More specifically, the first portion 21 is movably associated with the structure of the respective stacking unit (13, 14, 15, 16) through the aforesaid means 25 for moving between the active and the passive position, preferably consisting of a pneumatic piston.

[0058] The positioning of the stacking units 11, 12, 13, 14, 15, 16 and of the first end stop device 30 may be carried out manually. Preferably, however, such positioning is carried out automatically.

[0059] Preferably, as already said, the assembly station 1 comprises motorized means (not illustrated in the accompanying Figures) for the movement of one or more of the aforesaid stacking units 11, 12, 13, 14, 15, 16 (preferably, independently of each other) along the aforesaid shared support structure 2 parallel to the insertion axis X. In this way, when the features of the blinds to be produced vary, it is possible to reposition the stacking units 11, 12, 13, 14, 15, 16 along such support structure 2 by adapting the position thereof according to the length of the slats (i.e. the length of the blind to be produced) and/or the pitch required between one support ladder and another.

[0060] Advantageously, the assembly station 1 also comprises motorized means (not illustrated in the accompanying Figures) to move the first end stop device 30 along the shared support structure 2 parallel to the insertion axis X.

[0061] The movement means of the stacking units may coincide with or be distinct from the movement means of the first end stop device 30. In any case, the aforesaid movement means are configured to allow independent movements of each stacking unit 11, 12, 13, 14, 15, 16 and of the first end stop device 30.

[0062] According to a preferred embodiment illustrated in particular in Figure 2, it comprises an electronic control unit 100 which is connected to the aforesaid motorized means (for moving the stacking unit and the first end stop device 30) and to the aforesaid means 25 for moving each second end stop device 20.

[0063] This electronic control unit 100 is configured for:

- adjusting, by means of the aforesaid motorized means, the position of each of the stacking units 11, 12, 13, 14, 15, 16 and of said end stop device 30 along said shared support structure 2 parallel to the insertion axis X according to the operating needs of the assembly station 1; and
- activating the second end stop device 20 (moving it from the passive position to the active one) of the first stacking unit 13, 14, 15, 16 which is not engaged by the slats L in the case wherein, depending on the operating needs of the assembly station 1, the intervention of only a part of the stacking units 11, 12, 13, 14, 15, 16 is required in the assembly of the Venetian blind.

[0064] In particular, the electronic control unit 100 is configured to select with which end stop device (first end stop device 30 or one of the second end stop devices 20) and in which position along the axis X is the insertion stroke of the slats L to be stopped. The electronic control unit 100 is equipped with a user interface by means of which an operator may enter data relating to the Venetian blind to be assembled (in particular, slat length and positioning pitch of the ladders) and thus may define the operative requirements of the assembly station 1 according to which the electronic control unit 100 automatically controls the components of the assembly station 1.

[0065] Advantageously, the assembly station 1 comprises means (not illustrated in the accompanying Figures) to detect the position along the shared support structure 2 (parallel to the insertion axis X) of each of the stacking units 11, 12, 13, 14, 15, 16 and of the first end stop device 30. Such detection means (preferably consisting of encoders) are connected to the aforesaid electronic control unit 100.

[0066] The invention allows many advantages already partly described to be obtained.

[0067] The assembly station for Venetian blinds with complete support ladders allows the stop position of the slats to be adjusted more easily and quickly, without affecting the operation of the assembly station.

[0068] The assembly station 1 according to the invention is also easier to manage than similar assembly stations of a known type.

[0069] Finally, the assembly station 1 according to the invention, is simple and economical to obtain.

[0070] The invention thus conceived therefore achieves the foregoing objects.

[0071] Obviously, in its practical implementation, it may also be assumed to take on embodiments and configurations other than those described above without, for this reason, departing from the present scope of protection according to the claims.

Claims

1. Assembly station of Venetian blinds with complete support ladders, comprising three or more stacking units (11, 12, 13, 14, 15, 16) of slats on complete support ladders, wherein said stacking units (11, 12, 13, 14, 15, 16) are aligned with each other along an insertion axis (X) of the slats and are slidably associated to a shared support structure (2) which extends parallel to said insertion axis (X) between two opposite ends (1', 1") of said assembly station (1), in use the slats (L) entering said assembly station (1) at a first (1') of said opposite ends, wherein said stacking units (11, 12, 13, 14, 15, 16) jointly define a sliding lane (9) of the slat (L) along said insertion axis (X) inside the assembly station (1),
characterized in that said assembly station (1) comprises a first end stop device (30) which engages said sliding lane to stop a slat (L) moving along said insertion axis (X) and is slidably associated with said shared support structure (2) downstream of said three or more stacking units (11, 12, 13, 14, 15, 16) with respect to said first end (1'),
and **in that** each of the stacking units (13, 14, 15, 16) arranged downstream of the first two stacking units (11, 12) with respect to said first end (1') is equipped with a second end stop device (20) movable between an active position, in which it engages said sliding lane to stop the sliding of a slat (L), and a passive position, in which it does not engage said sliding lane allowing the sliding of a slat (L) through the respective stacking unit (13, 14, 15, 16),
wherein, according to the operating needs of the assembly station (1), the stroke of a slat (L) along said sliding lane may be stopped selectively by said first end stop device (30) or by one of the stacking units (13, 14, 15, 16) arranged downstream of the first two stacking units (11, 12) with respect to said first end (1'), configured with said second end stop device (20) in the active position.

2. Station according to claim 1, wherein said second end stop device (20) is placed in a front portion (10') of the respective stacking unit (13, 14, 15, 16) with respect to the sliding direction (X1) of the slats along said insertion axis (X) .

3. Station according to claim 2, wherein said second end stop device (20) extends mainly in a direction parallel to said insertion axis (X), protruding with respect to the respective stacking unit (13, 14, 15, 16) in a direction opposite the sliding direction (X1) of the slats along said insertion axis (X).

4. Station according to claim 2 or 3, wherein said second end stop device (20) is aligned with said sliding lane and is entirely arranged under a sliding plane (m) of the slat defined by said sliding lane (9) when said second end stop device (20) is in said passive position.

5. Station according to claim 4, wherein said second end stop device (20) is structured to move between said active position and said passive position in a direction orthogonal to said sliding plane (m) of the slat (L).

6. Station according to one or more of the preceding claims, wherein said second end stop device (20) comprises movement means (25) between said active position and said passive position, preferably said movement means (25) consisting of a pneumatic piston.

7. Station according to one or more of the preceding claims, wherein each stacking unit (11, 12, 13,14,15,16) comprises:

- an insertion seat (10a) of the slats (L), at which in use one slat (L) at a time is associated with a complete ladder;
- a positioning device (10b) for positioning a ladder transversely to said insertion axis (X) at said insertion seat (10a).

8. Station according to claim 7, wherein said second end stop device (20) is placed in a front portion (10') of the respective stacking unit (13, 14, 15, 16) with respect to the sliding direction (X1) of the slats along said insertion axis (X), upstream from said positioning device (10b) for positioning a ladder transversely to said insertion axis (X) at said insertion seat (11).

9. Station according to claim 7 or 8, wherein each stacking unit (11, 12, 13, 14, 15, 16) comprises guiding means (10c) for guiding the slat towards said insertion seat (10a), arranged upstream of said positioning device (10b) of the ladder and wherein said second end stop device (20) is placed entirely below said guiding means (10c) for guiding the slat when it is in said passive position.

10. Station according to one or more of the preceding claims, wherein the shared support structure (2) with which said stacking units (10) are slidably associated consists of a bar extending parallel to said insertion axis (X).

11. Station according to one or more of the preceding claims, comprising motorized means for moving said stacking units (11, 12, 13, 14, 15, 16) independently of each other and said first end stop device (30) along said shared support structure (2) parallel to said insertion axis (X).

12. Station according to claims 6 and 11, comprising an electronic control unit (100) which is connected to said motorized means and to said movement means (25) of each second end stop device (20) and is configured for:

- adjusting by means of said motorized means the position of each of said stacking units (11, 12, 13, 14, 15, 16) and of said end stop device (30) along said shared support structure (2) parallel to said insertion axis (X) according to the operating needs of the assembly station (1); and
- activating the second end stop device (20) of the first stacking unit (13, 14, 15, 16) which is not engaged by the slats (L) in the case in which, depending on the operating needs of the assembly station (1), the intervention of only a part of said stacking units (11, 12, 13, 14, 15, 16) is required in the assembly of the Venetian blind.

13. Station according to claim 12, comprising detection means for detecting the position along said shared support structure (2) parallel to said insertion axis (X) of each of said stacking units (11, 12, 13, 14, 15, 16) and of said first end stop device (30), wherein said detection means are connected to said electronic control unit (100).

Patentansprüche

1. Montagestation für Jalousien mit vollständigen Stützleitern, umfassend drei oder mehr Stapeleinheiten (11, 12, 13, 14, 15, 16) von Lamellen auf vollständigen Stützleitern, wobei die Stapeleinheiten (11, 12, 13, 14, 15, 16) entlang einer Einsetzachse (X) der Lamellen miteinander ausgerichtet sind und verschiebbar mit einer gemeinsamen Stütz- bzw. Trägerstruktur (2) verbunden bzw. dieser zugeordnet sind, die sich parallel zu der Einsetzachse (X) zwischen zwei gegenüberliegenden bzw. entgegengesetzten Enden (1', 1") der Montagestation (1) erstreckt, wobei die Lamellen (L) bei Verwendung in die Montagestation (1) an einem ersten (1') der gegenüberliegend Enden eintreten, wobei die Stapeleinheiten (11, 12, 13, 14, 15, 16) gemeinsam eine Gleitspur (9) der Lamelle (L) entlang der Einsetzachse (X) innerhalb der Montagestation (1) definieren, **dadurch gekennzeichnet, dass** die Montagestation (1) eine erste Endstoppvorrichtung (30) umfasst, die in die Gleitspur eingreift, um eine Lamelle (L) zu stoppen, die sich entlang der Einsetzachse (X) bewegt, und mit der gemeinsamen Stützstruktur (2) stromabwärts der drei oder mehr Stapeleinheiten (11, 12, 13, 14, 15, 16) in Bezug auf das erste Ende (1') verschiebbar verbunden bzw. zugeordnet ist,
und dadurch, dass jede der Stapeleinheiten (13, 14, 15, 16), die stromabwärts der ersten beiden Stapeleinheiten (11, 12) in Bezug auf das erste Ende (1') angeordnet sind, mit einer zweiten Endstoppvorrichtung (20) ausgestattet ist, die zwischen einer aktiven Position, in der sie in die Gleitspur eingreift, um das Gleiten einer Lamelle (L) zu stoppen, und einer passiven Position beweglich ist, in der sie nicht in die Gleitspur eingreift, wodurch das Gleiten einer Lamelle (L) durch die jeweilige Stapeleinheit (13, 14, 15, 16) ermöglicht wird,
wobei gemäß den Betriebsanforderungen der Montagestation (1) der Hub einer Lamelle (L) entlang der Gleitspur selektiv durch die erste Endstoppvorrichtung (30) oder durch eine der Stapeleinheiten (13, 14, 15, 16) gestoppt werden kann, die stromabwärts der ersten beiden Stapeleinheiten (11, 12) in Bezug auf das erste Ende (1') angeordnet sind, und zwar konfiguriert mit der zweiten Endstoppvorrichtung (20) in der aktiven Position.

2. Station nach Anspruch 1, wobei die zweite Endstoppvorrichtung (20) in einem vorderen Abschnitt (10') der jeweiligen Stapeleinheit (13, 14, 15, 16) in Bezug auf die Gleitrichtung (X1) der Lamellen entlang der Einsetzachse (X) angeordnet ist.

3. Station nach Anspruch 2, wobei sich die zweite Endstoppvorrichtung (20) hauptsächlich in einer Richtung parallel zu der Einsetzachse (X) erstreckt, wobei sie in Bezug auf die jeweilige Stapeleinheit (13, 14, 15, 16) in einer Richtung entgegengesetzt zu der Gleitrichtung (X1) der Lamellen entlang der Einsetzachse (X) vorsteht.

4. Station nach Anspruch 2 oder 3, wobei die zweite Endstoppvorrichtung (20) mit der Gleitspur ausgerichtet ist und vollständig unter einer Gleitebene (m) der Lamelle angeordnet ist, die durch die Gleitspur (9) definiert ist, wenn die zweite Endstoppvorrichtung (20) in der passiven Position ist.

5. Station nach Anspruch 4, wobei die zweite Endstoppvorrichtung (20) so strukturiert ist, dass sie sich zwischen der aktiven Position und der passiven Position in einer Richtung orthogonal zu der Gleitebene (m) der Lamelle (L) bewegt.

6. Station nach einem oder mehreren der vorhergehenden Ansprüche, wobei die zweite Endstoppvorrichtung (20) Bewegungsmittel (25) zwischen der aktiven Position und der passiven Position umfasst, wobei vorzugsweise die Bewegungsmittel (25) aus einem pneumatischen Kolben bestehen.

7. Station nach einem oder mehreren der vorhergehenden Ansprüche, wobei jede Stapeleinheit (11, 12, 13, 14, 15, 16) umfasst:

- einen Einsetzsitz (10a) der Lamellen (L), an dem bei Verwendung jeweils eine Lamelle (L) einer vollständigen Leiter zugeordnet bzw. mit dieser verbunden ist;
- eine Positionierungsvorrichtung (10b) zum Positionieren einer Leiter quer zu der Einsetzachse (X) an dem Einsetzsitz (10a).

8. Station nach Anspruch 7, wobei die zweite Endstoppvorrichtung (20) in einem vorderen Abschnitt (10’) der jeweiligen Stapeleinheit (13, 14, 15, 16) in Bezug auf die Gleitrichtung (X1) der Lamellen entlang der Einsetzachse (X) stromaufwärts der Positionierungsvorrichtung (10b) zum Positionieren einer Leiter quer zu der Einsetzachse (X) an dem Einsetzsitz (11) platziert ist.

9. Station nach Anspruch 7 oder 8, wobei jede Stapeleinheit (11, 12, 13, 14, 15, 16) Führungsmittel (10c) zum Führen der Lamelle in Richtung des Einsetzsitzes (10a) umfasst, die stromaufwärts der Positionierungsvorrichtung (10b) der Leiter angeordnet sind, und wobei die zweite Endstoppvorrichtung (20) vollständig unter den Führungsmitteln (10c) zum Führen der Lamelle angeordnet ist, wenn sie in der passiven Position ist.

10. Station nach einem oder mehreren der vorhergehenden Ansprüche, wobei die gemeinsame Stützstruktur (2), mit der die Stapeleinheiten (10) verschiebbar verbunden sind, aus einer Stange besteht, die sich parallel zu der Einsetzachse (X) erstreckt.

11. Station nach einem oder mehreren der vorhergehenden Ansprüche, umfassend motorisierte Mittel zum Bewegen der Stapeleinheiten (11, 12, 13, 14, 15, 16) unabhängig voneinander und der ersten Endstoppvorrichtung (30) entlang der gemeinsamen Stützstruktur (2) parallel zu der Einsetzachse (X).

12. Station nach den Ansprüchen 6 und 11, umfassend eine elektronische Steuer- bzw. Regeleinheit (100), die mit der motorisierten Mitteln und den Bewegungsmitteln (25) jeder zweiten Endstoppvorrichtung (20) verbunden ist und konfiguriert ist zum:

- Einstellen, mittels der motorisierten Mittel, der Position jeder der Stapeleinheiten (11, 12, 13, 14, 15, 16) und der Endstoppvorrichtung (30) entlang der gemeinsamen Stützstruktur (2) parallel zu der Einsetzachse (X) gemäß den Betriebsanforderungen der Montagestation (1); und
- Aktivieren der zweiten Endstoppvorrichtung (20) der ersten Stapeleinheit (13, 14, 15, 16), die nicht von den Lamellen (L) in Eingriff genommen ist, in dem Fall, in dem abhängig von den Betriebsanforderungen der Montagestation (1) die Intervention nur eines Teils der Stapeleinheiten (11, 12, 13, 14, 15, 16) bei der Montage der Jalousie erforderlich ist.

13. Station nach Anspruch 12, umfassend Erfassungsmittel zum Erfassen der Position entlang der gemeinsamen Stützstruktur (2) parallel zu der Einsetzachse (X) jeder der Stapeleinheiten (11, 12, 13, 14, 15, 16) und der ersten Endstoppvorrichtung (30), wobei die Erfassungsmittel mit der elektronischen Steuer- bzw. Regeleinheit (100) verbunden sind.

Revendications

1. Station d’assemblage de stores vénitiens ayant des échelles de support complètes, comprenant trois unités d’empilage ou plus (11, 12, 13, 14, 15, 16) de lattes sur des échelles de support complètes, dans laquelle lesdites unités d’empilage (11, 12, 13, 14, 15, 16) sont alignées les unes avec les autres le long d’un axe d’insertion (X) des lattes et sont associées de manière glissante à une structure de support partagée (2) qui s’étend en parallèle audit axe d’insertion (X) entre deux extrémités opposées (1’,1") de ladite station d’assemblage (1), en utilisation les lattes (L) entrant dans ladite station d’assemblage (1) à une première (1’) desdites extrémités opposées, dans laquelle lesdites unités d’empilage (11, 12, 13, 14, 15, 16) définissent conjointement une voie de glissement (9) de la latte (L) le long dudit axe d’insertion (X) à l’intérieur de la station d’assemblage (1),
caractérisée en ce que ladite station d’assemblage (1) comprend un premier dispositif d’arrêt de fin de course (30) qui vient en prise avec ladite voie de glissement pour arrêter une latte (L) se déplaçant le long dudit axe d’insertion (X) et est associé de manière glissante à ladite structure de support partagée (2) en aval desdites trois unités d’empilage ou plus (11, 12, 13, 14, 15, 16) par rapport à ladite première extrémité (1’), et
en ce que chacune des unités d’empilage (13, 14,

15, 16) agencées en aval des deux premières unités d'empilage (11, 12) par rapport à ladite première extrémité (1') est équipée d'un second dispositif d'arrêt de fin de course (20) mobile entre une position active, dans laquelle il vient en prise avec ladite voie de glissement pour arrêter le glissement d'une latte (L), et une position passive, dans laquelle il ne vient pas en prise avec ladite voie de glissement ce qui permet le glissement d'une latte (L) à travers l'unité d'empilage respective (13, 14, 15, 16),
dans laquelle, selon les besoins opérationnels de la station d'assemblage (1), la course d'une latte (L) le long de ladite voie de glissement peut être arrêtée sélectivement par ledit premier dispositif d'arrêt de fin de course (30) ou par l'une des unités d'empilage (13, 14, 15, 16) agencées en aval des deux premières unités d'empilage (11, 12) par rapport à ladite première extrémité (1'), configurées avec ledit second dispositif d'arrêt de fin de course (20) dans la position active.

2. Station selon la revendication 1, dans laquelle ledit second dispositif d'arrêt de fin de course (20) est placé dans une portion avant (10') de l'unité d'empilage respective (13, 14, 15, 16) par rapport à la direction de glissement (X1) des lattes le long dudit axe d'insertion (X).

3. Station selon la revendication 2, dans laquelle ledit second dispositif d'arrêt de fin de course (20) s'étend principalement dans une direction parallèle audit axe d'insertion (X), faisant saillie par rapport à l'unité d'empilage respective (13, 14, 15, 16) dans une direction opposée à la direction de glissement (X1) des lattes le long dudit axe d'insertion (X).

4. Station selon la revendication 2 ou 3, dans laquelle ledit second dispositif d'arrêt de fin de course (20) est aligné avec ladite voie de glissement et est entièrement agencé au-dessous d'un plan de glissement (m) de la latte, défini par ladite voie de glissement (9) lorsque ledit second dispositif d'arrêt de fin de course (20) est dans ladite position passive.

5. Station selon la revendication 4, dans laquelle ledit second dispositif d'arrêt de fin de course (20) est structuré pour se déplacer entre ladite position active et ladite position passive dans une direction orthogonale audit plan de glissement (m) de la latte (L).

6. Station selon l'une ou plusieurs des revendications précédentes, dans laquelle ledit second dispositif d'arrêt de fin de course (20) comprend des moyens de déplacement (25) entre ladite position active et ladite position passive, de préférence lesdits moyens de déplacement (25) consistant en un piston pneumatique.

7. Station selon l'une ou plusieurs des revendications précédentes, dans laquelle chaque unité d'empilage (11, 12, 13, 14, 15, 16) comprend :

- un siège d'insertion (10a) des lattes (L), au niveau duquel, en utilisation, une latte (L) à la fois est associée à une échelle complète ;
- un dispositif de positionnement (10b) pour positionner une échelle de manière transversale audit axe d'insertion (X) au niveau dudit siège d'insertion (10a).

8. Station selon la revendication 7, dans laquelle ledit second dispositif d'arrêt de fin de course (20) est placé dans une portion avant (10') de l'unité d'empilage respective (13, 14, 15, 16) par rapport à la direction de glissement (X1) des lattes le long dudit axe d'insertion (X), en amont dudit dispositif de positionnement (10b) pour positionner une échelle de manière transversale audit axe d'insertion (X) au niveau dudit siège d'insertion (11).

9. Station selon la revendication 7 ou 8, dans laquelle chaque unité d'empilage (11, 12, 13, 14, 15, 16) comprend des moyens de guidage (10c) pour guider la latte vers ledit siège d'insertion (10a), agencés en amont dudit dispositif de positionnement (10b) de l'échelle et dans laquelle ledit second dispositif d'arrêt de fin de course (20) est placé entièrement audessous desdits moyens de guidage (10c) pour guider la latte lorsqu'il est dans ladite position passive.

10. Station selon l'une ou plusieurs des revendications précédentes, dans laquelle la structure de support partagée (2) avec laquelle lesdites unités d'empilage (10) sont associées de manière glissante consiste en une barre s'étendant en parallèle audit axe d'insertion (X).

11. Station selon l'une ou plusieurs des revendications précédentes, comprenant des moyens motorisés pour déplacer lesdites unités d'empilage (11, 12, 13, 14, 15, 16) de manière indépendante les unes des autres et ledit premier dispositif d'arrêt de fin de course (30) le long de ladite structure de support partagée (2) en parallèle audit axe d'insertion (X).

12. Station selon les revendications 6 et 11, comprenant une unité de commande électronique (100) qui est connectée auxdits moyens motorisés et auxdits moyens de déplacement (25) de chaque second dispositif d'arrêt de fin de course (20) et est configurée pour :

- ajuster, au moyen desdits moyens motorisés, la position de chacune desdites unités d'empilage (11, 12, 13, 14, 15, 16) et dudit dispositif d'arrêt de fin de course (30) le long de ladite struc-

ture de support partagée (2) en parallèle audit axe d'insertion (X) selon les besoins opérationnels de la station d'assemblage (1) ; et
- activer le second dispositif d'arrêt de fin de course (20) de la première unité d'empilage (13, 14, 15, 16) qui n'est pas mis en prise par les lattes (L) dans le cas où, selon les besoins opérationnels de la station d'assemblage (1), l'intervention de seulement une partie desdites unités d'empilage (11, 12, 13, 14, 15, 16) est requise dans l'assemblage du store vénitien.

13. Station selon la revendication 12, comprenant des moyens de détection pour détecter la position le long de ladite structure de support partagée (2), parallèles audit axe d'insertion (X) de chacune desdites unités d'empilage (11, 12, 13, 14, 15, 16) et dudit premier dispositif d'arrêt de fin de course (30), dans laquelle lesdits moyens de détection sont connectés à ladite unité de commande électronique (100).

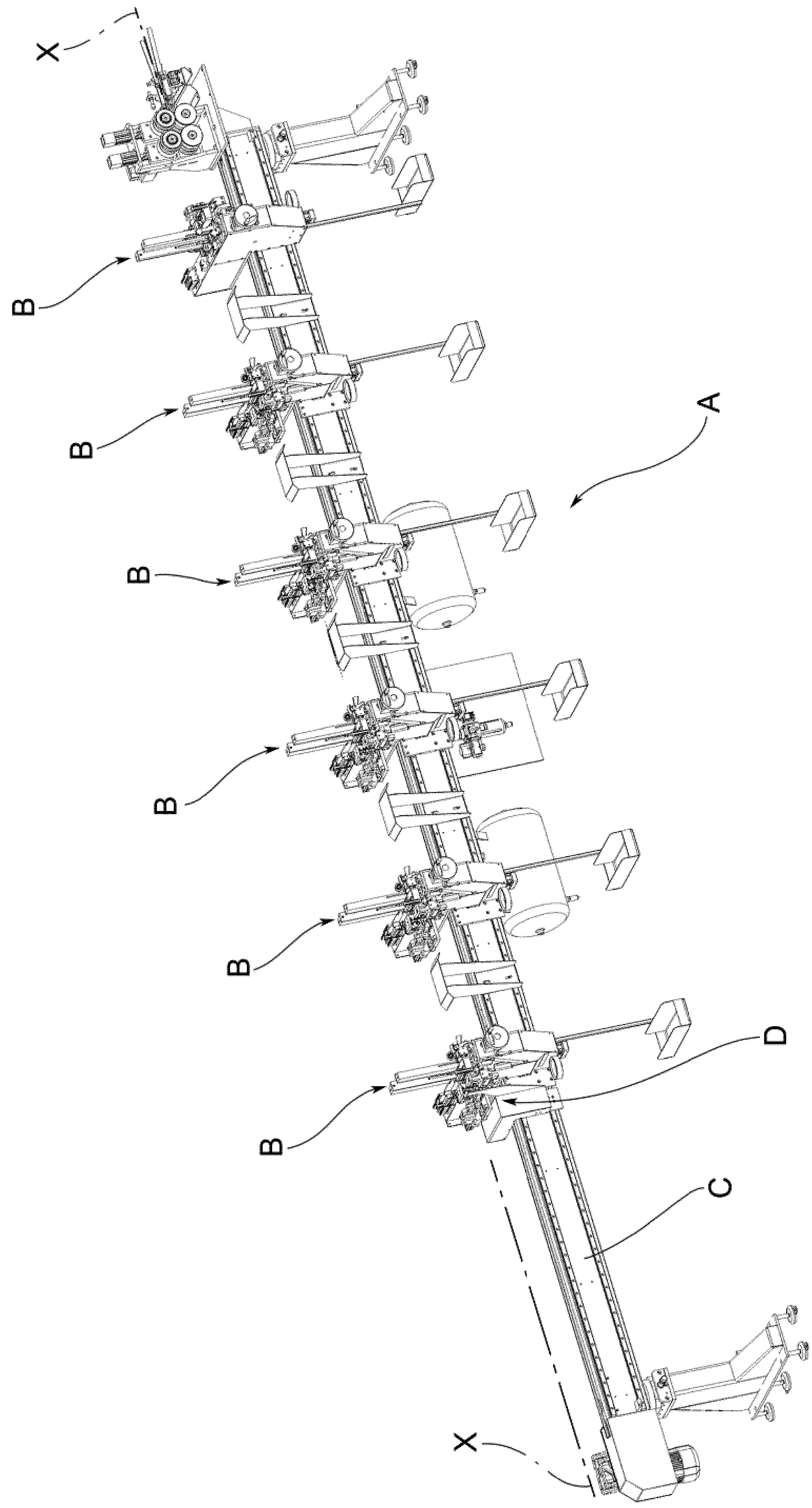

FIG.1

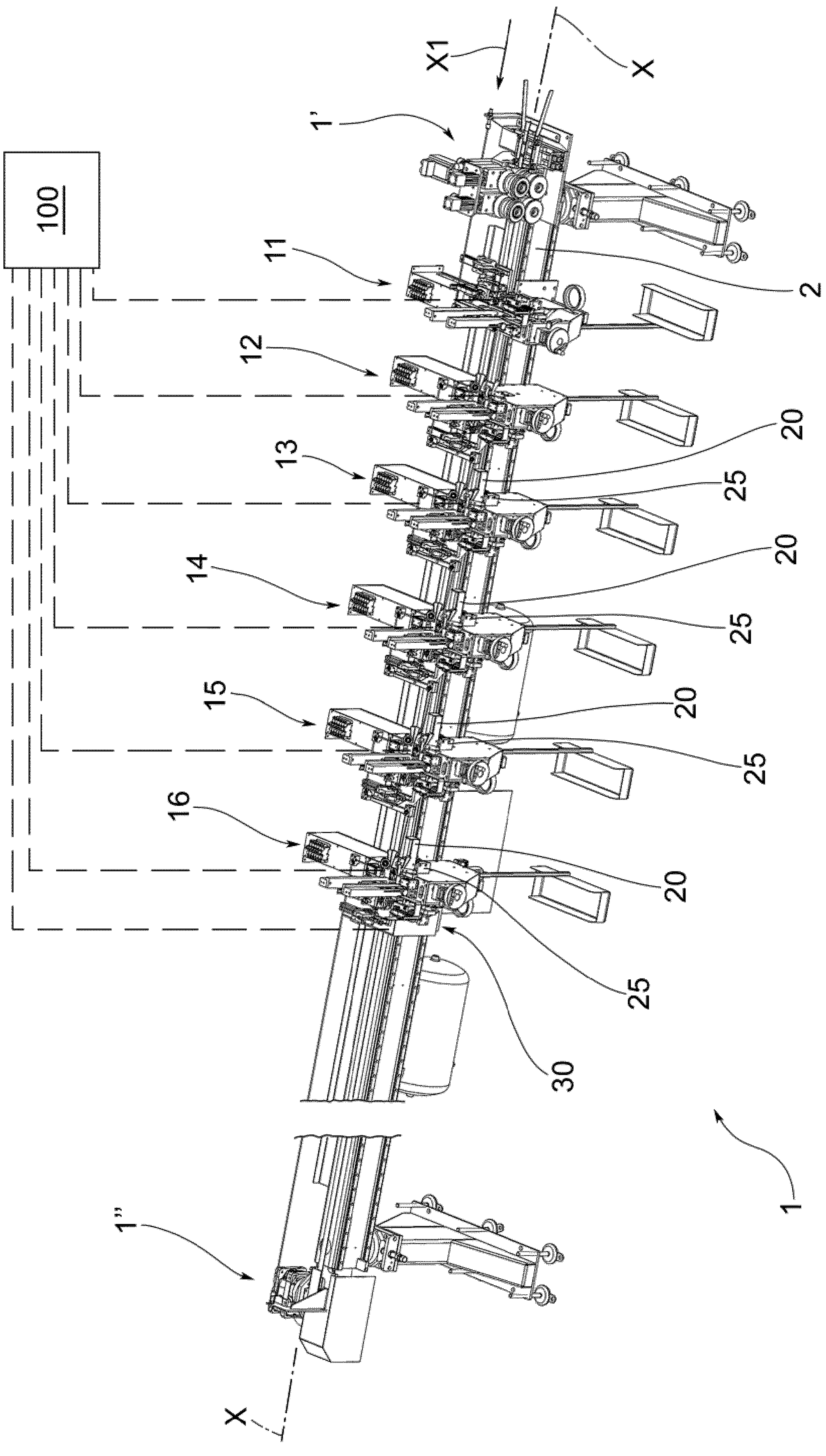

FIG.2

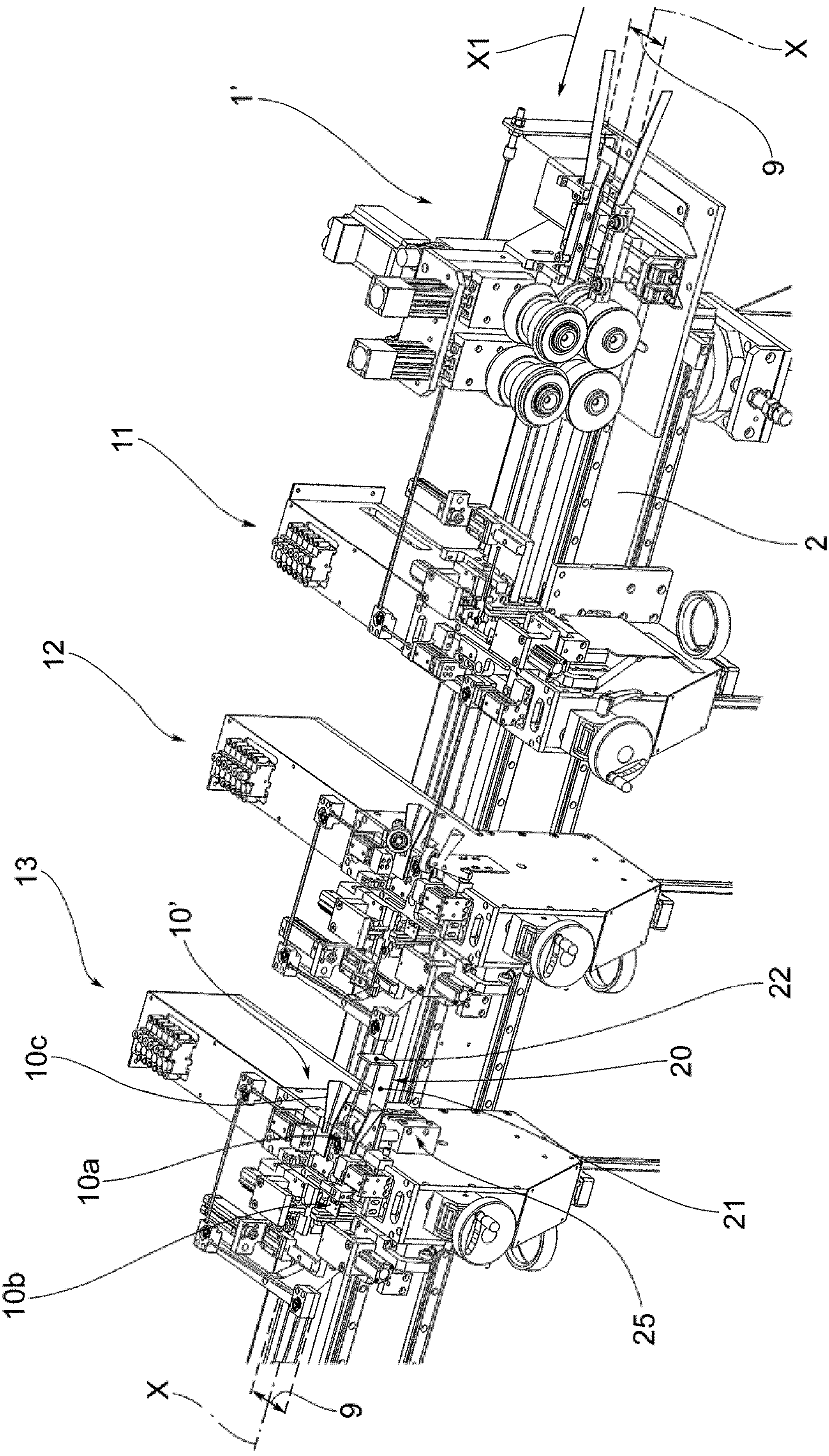

FIG.3

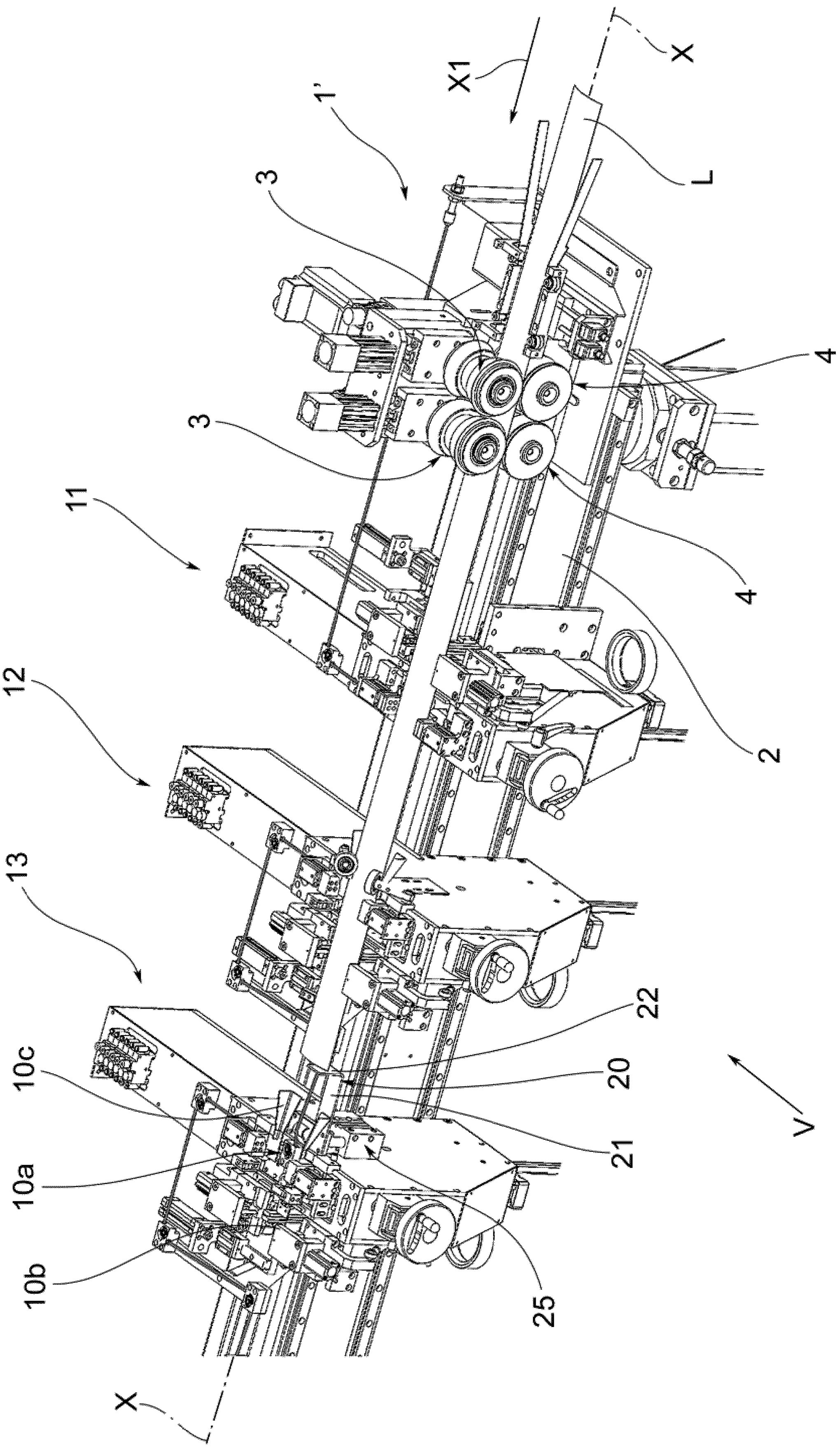

FIG.4

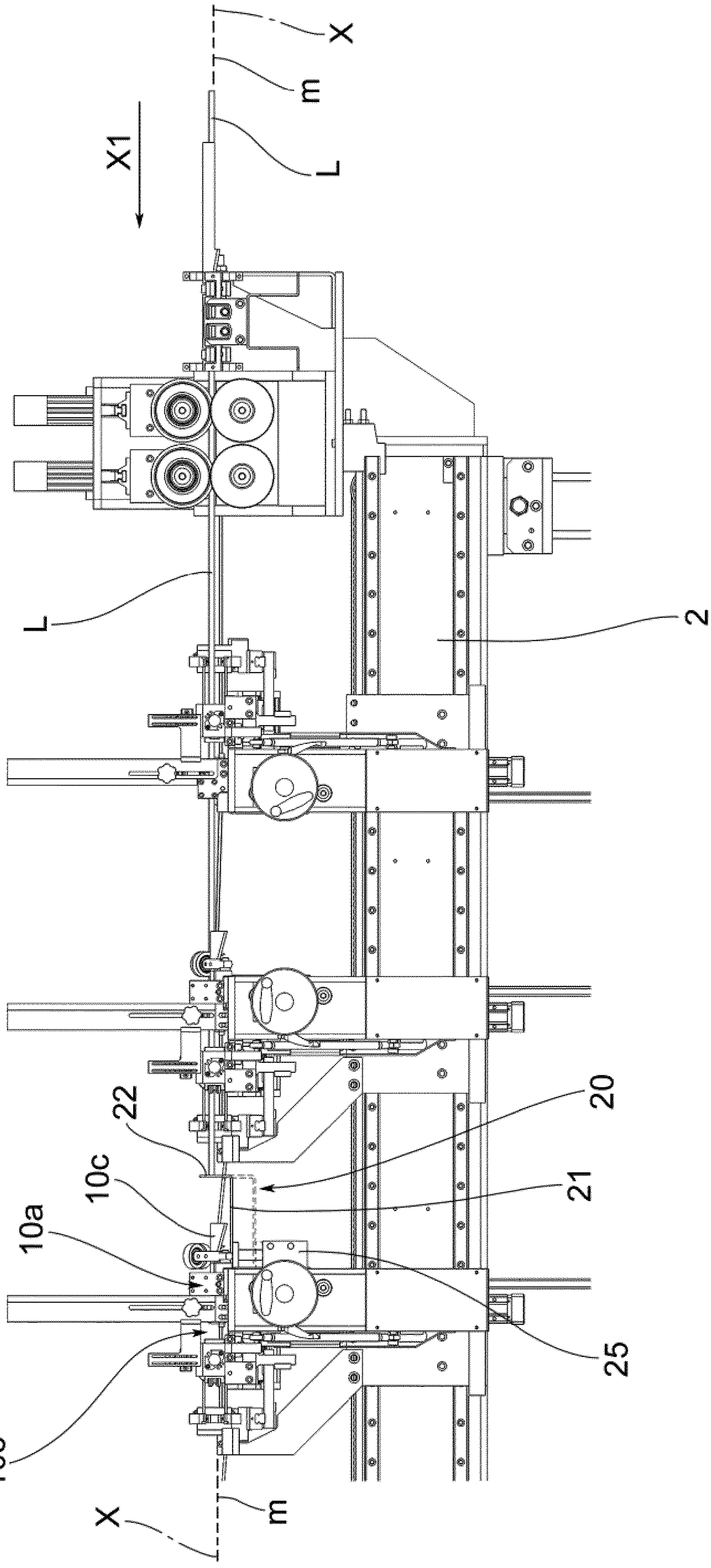

FIG.5

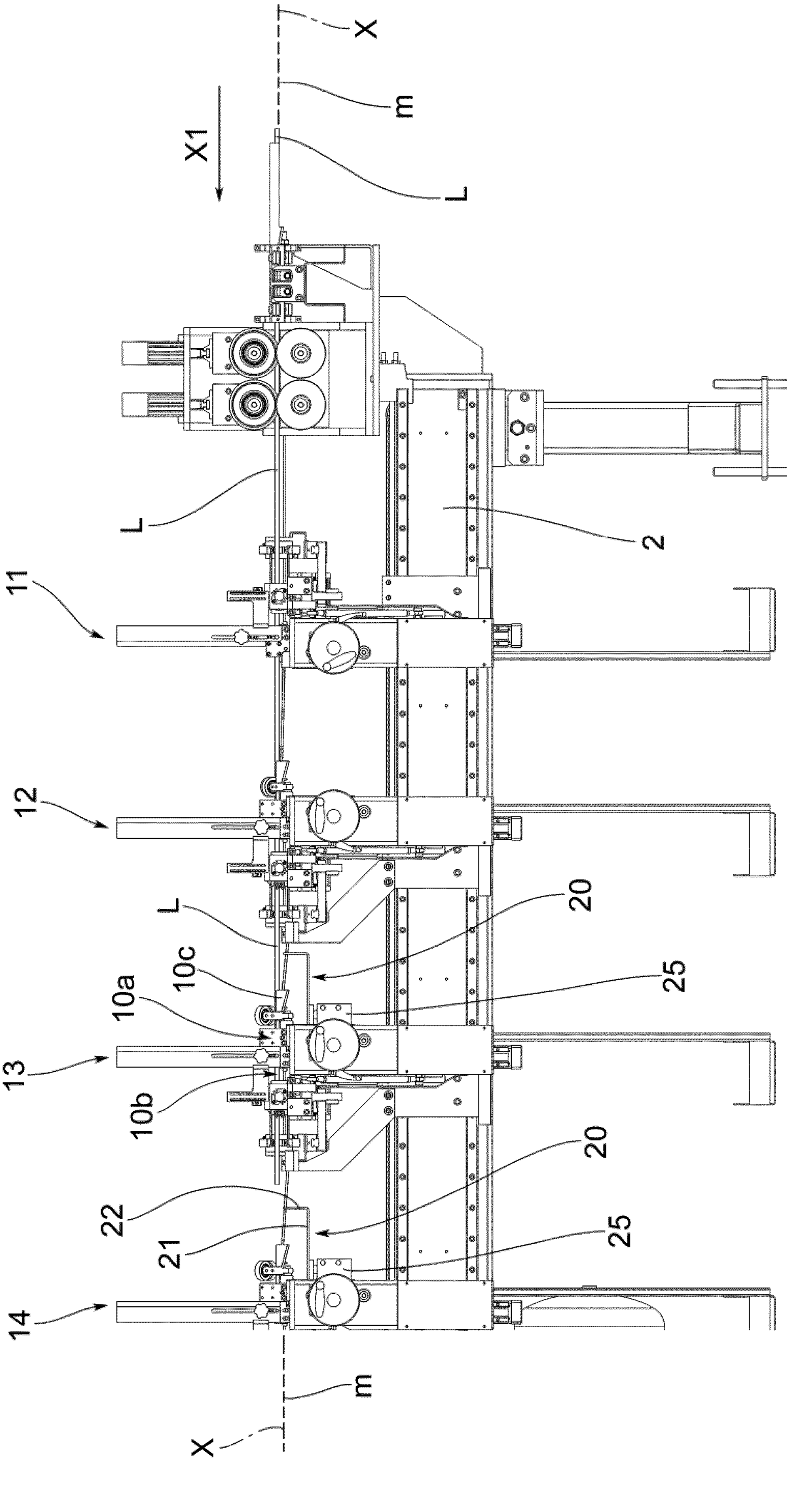

FIG.6

REFERENCES CITED IN THE DESCRIPTION

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