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(72) Inventors:  
• **Trovenzi, Giuseppe**  
**24060 Carobbio Degli Angeli BG (IT)**  
• **Wegher, Marco**  
**24068 Seriate BG (IT)**

(74) Representative: **Modiano, Micaela Nadia**  
**Modiano & Partners (IT)**  
**Via Meravigli, 16**  
**20123 Milano (IT)**

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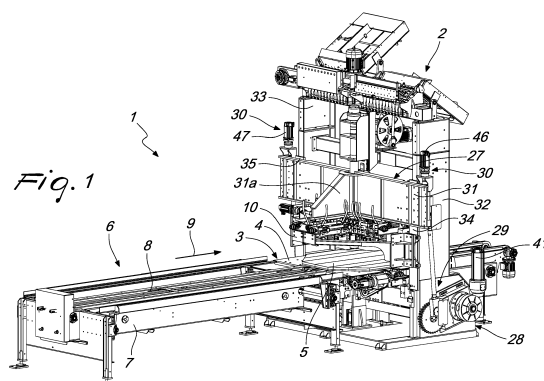
(71) Applicant: **CORALI S.p.A.**  
**24060 Carobbio degli Angeli BG (IT)**

(54) **NAILING MACHINE FOR NAILING AT LEAST TWO SUPERIMPOSED LAYERS OF STRIPS**

(57) A nailing machine for nailing at least two superimposed layers of strips comprising:

- a nailing station (2);
- supporting means (3) that define a substantially horizontal resting surface (4) for the strips (5) to be nailed at the nailing station (2);
- a plurality of nailing clamps (11) which face upward the resting surface (4) and are provided with strikers (14) that can be actuated in order to expel in each instance a nail toward the resting surface (4) in order to nail the strips (5) arranged on the resting surface (4);
- a supporting structure (10) of the nailing clamps (11) which is arranged in the nailing station (2) and can move along a vertical direction in order to engage the nailing clamps (11) with the strips (5) or disengage the nailing clamps (11) from the strips (5) arranged on the resting surface (4);
- an actuation structure or hammer (27), arranged above the supporting structure (10) of the nailing clamps (11) and supported so that it can slide along a vertical direction by a fixed supporting structure (28);
- means (29) for moving the actuation structure (27) along a vertical direction with respect to the fixed supporting structure (28), with an actuation stroke starting from an initial position, downwardly in order to actuate the nailing clamps (11) and then upwardly to return it to the initial position; the supporting structure (10) of the nailing clamps (11) hangs below the actuation structure (27) and the actuation structure (27) is movable, for part of its actuation stroke, with respect to the supporting structure (10) of the nailing clamps (11), downwardly in order to

actuate the strikers (14) of the nailing clamps (11) and upwardly in order to allow the rearming of the strikers (14), the machine further comprises means (30) for adjusting the vertical position of the actuation structure (27) with respect to the fixed supporting structure (28) independently with respect to the actuation stroke of the actuation structure (27).



## Description

**[0001]** The present invention relates to a nailing machine for nailing at least two superimposed layers of strips.

**[0002]** Nailing machines for assembling, by nailing, at least two layers of strips, usually made of wood, which are mutually superimposed are known. Machines of this type are used, for example, to provide pallets or to provide wood crates for carrying various products or to provide flanges of wooden spools for winding cables, et cetera.

**[0003]** These machines usually comprise a loading station, in which the two or more layers of strips to be assembled are placed manually or mechanically in an already superimposed condition, and a nailing station, at which there are supporting means that define a substantially horizontal resting surface for the strips to be nailed. Above this resting surface there is a plurality of nailing clamps, which are provided with corresponding strikers that can be actuated to expel, in each instance, a nail toward the resting surface in order to drive it into the strips arranged on said resting surface, nailing them.

**[0004]** These machines are provided usually with advancement means that can engage the strips arranged in the loading station to move them to the nailing station, as well as to move away the strips from the nailing station after their assembly.

**[0005]** These advancement means are usually constituted by pulling units, usually of the chain type, which can move on command along an advancement direction in order to cause the advancement of the strips from the loading station to the nailing station and then to an unloading station located downstream of the nailing station according to such advancement direction.

**[0006]** In these machines, the nailing clamps are mounted on a supporting structure that is arranged above the resting surface and can move along a vertical direction in order to engage the nailing clamps with the strips or in order to disengage the nailing clamps from the strips arranged on the resting surface. Above the supporting structure of the nailing clamps there is an actuation structure or hammer, which can move on command along a vertical direction, with an actuation stroke, downwardly in order to actuate the strikers of nailing clamps or upwardly in order to allow rearming of the strikers.

**[0007]** In these machines there is the problem of varying the position of the clamp supporting surface as a function of the overall thickness of the layers of superimposed strips to be assembled in order to be able to use a same machine to nail layers of superimposed strips having a different overall thickness.

**[0008]** In some kinds of machine, this problem is solved by making the resting surface adjustable along a vertical direction. However, this solution is complicated to provide because it also involves the advancement means of the strips and of other elements of the machine.

**[0009]** In other types of machine, an entire part of the supporting structure that supports the clamp supporting

structure and the actuation structure is movable and adjustable in height. This solution has proved to be even more complicated, since it requires oversizing the supporting structure in order to utilize the mobility of a part thereof.

**[0010]** In still other types of machine there is a hydraulically actuated system for moving the nailing clamp supporting structure, which allows to move the nailing clamps into contact with the strips independently of the vertical movement of the actuation structure. This solution slows significantly the operation of the machine, extending the nailing times, and suffers the typical drawbacks of hydraulic actuation systems, such as for example the fact that operation depends on the temperature and characteristics of the liquid used in the hydraulic circuit.

**[0011]** The aim of the present invention is to solve the problems described above, by providing a nailing machine for nailing at least two superimposed layers of strips in which it is possible to vary simply and rapidly the height position of the nailing clamps as a function of the total thickness of the layers of strips to be nailed.

**[0012]** Within this aim, an object of the invention is to provide a machine in which the possibility to vary the height position of the nailing clamps does not require substantial oversizings of the supporting structure of the machine.

**[0013]** Another object of the invention is to provide a machine in which the variation of the height position of the nailing clamps as a function of the total thickness of the layers of strips to be nailed can be performed in an automated manner.

**[0014]** A further object of the invention is to provide a machine that can be manufactured at competitive costs.

**[0015]** Another object of the invention is to provide a machine that ensures high safety and reliability in operation.

**[0016]** This aim and these and other objects which will become better apparent hereinafter are achieved by a nailing machine for nailing at least two superimposed layers of strips, comprising:

- a nailing station;
- supporting means that define a substantially horizontal resting surface for the strips to be nailed at said nailing station;
- a plurality of nailing clamps which face upward said resting surface and are provided with strikers that can be actuated in order to expel in each instance a nail toward said resting surface in order to nail the strips arranged on said resting surface;
- a supporting structure of said nailing clamps which is arranged in said nailing station and can move along a vertical direction in order to engage said nailing clamps with the strips or disengage said nailing clamps from the strips arranged on said resting surface;
- an actuation structure or hammer, arranged above said supporting structure of the nailing clamps and

supported so that it can slide, along a vertical direction, by a fixed supporting structure;

- means for moving said actuation structure along a vertical direction with respect to said fixed supporting structure, with an actuation stroke starting from an initial position, downwardly in order to actuate said nailing clamps and then upwardly to return it to said initial position;

said supporting structure of the nailing clamps hanging below said actuation structure and said actuation structure being movable, for part of its actuation stroke, with respect to said supporting structure of the nailing clamps, downwardly in order to actuate said strikers of said nailing clamps and upwardly in order to allow the rearming of said strikers, characterized in that it comprises means for adjusting the vertical position of said actuation structure with respect to said fixed supporting structure independently with respect to said actuation stroke of the actuation structure.

**[0017]** Further characteristics and advantages of the invention will become better apparent from the description of a preferred but not exclusive embodiment of the machine according to the invention, illustrated by way of non-limiting example in the accompanying drawings, wherein:

Figure 1 is a schematic perspective view of a machine according to the invention, with some components omitted for the sake of simplicity and for greater clarity and with the strips to be nailed arranged at the nailing station;

Figure 2 is a schematic perspective view of the nailing clamps of the machine according to the invention and of the corresponding supporting surface;

Figure 3 is a schematic perspective view of a part of the machine related to the nailing clamps and to the actuation structure, with the strips to be nailed arranged in the nailing station;

Figure 4 is a schematic perspective view of another part of the machine according to the invention related to the actuation structure and to the corresponding movement means;

Figure 5 is a rear elevation view of the machine related to the actuation structure, to the movement means and to the adjustment means;

Figure 6 is a sectional view of Figure 5, taken along the line VI-VI;

Figure 7 is a perspective view of a detail of Figure 5, taken along the line XIII-XIII shown in Figure 5.

**[0018]** With reference to the figures, the nailing machine according to the invention, generally designated by the reference numeral 1, comprises a nailing station 2 at which there are supporting means 3 that define a substantially horizontal resting surface 4 for the strips 5 to be nailed.

**[0019]** Conveniently, the nailing machine can also

comprise, in a per se known manner, a loading station 6, also provided with corresponding supporting means 7 that define a substantially horizontal loading surface 8 on which it is possible to arrange, manually or in an automated manner, the superimposed layers of strips 5 to be nailed. The nailing machine may further be provided with advancement means, such as for example chain-based pulling units of a known type, not shown, which can engage the strips 5 arranged in the loading station 6 and can be actuated to cause the advancement of the strips 5 to be nailed, along an advancement direction indicated by the arrow 9, from the loading station 6 to the nailing structure 2 and optionally to move the strips 5 away from the nailing station 2 after the nailing operation.

**[0020]** Above the resting surface 4, at the nailing station 2, there is a supporting structure 10, on which a plurality of nailing clamps 11 is mounted.

**[0021]** The nailing clamps 11 can be constituted by nailing clamps 11 of a known type, with a body 12 to which a nail feeding channel 13 is connected and with a striker 14 that protrudes from the upper side of the body 12 of the corresponding nailing clamp 11 and can be actuated downwardly to actuate, in each instance, the expulsion of a nail, from the lower side of the corresponding nailing clamp 11.

**[0022]** In the illustrated embodiment, the nailing clamps 11 are arranged along two pairs of rows, respectively a first pair of rows 15, 16, which are oriented parallel to the advancement direction 9, and a second pair of rows 17, 18, which are oriented transversely to the advancement direction 9. For this reason, the supporting structure 10 of the nailing clamps 11 has a shape with a plan substantially like a diamond with cropped corners, i.e., an octagonal shape, but the arrangement of the nailing clamps 11 can be different according to the requirements and accordingly the shape of the supporting structure 10 also can be different. In particular, if there is, as in nailing machines of the traditional type, a single row or a single pair of rows of nailing clamps 11 that is or are oriented at right angles to the advancement direction 9, the supporting structure 10 can have correspondingly a rectangular plan shape, arranged with its longer sides at right angles to the advancement direction 9.

**[0023]** In the illustrated embodiment, the nailing clamps 11 of each row 15, 16, 17, 18 are mounted on a corresponding threaded shaft 19, 20, 21, 22, which is arranged horizontally and engages a female thread arranged inside the body 12 of each nailing clamp 11 and can be actuated, with a rotary motion about the corresponding axis, by means of a corresponding motor 23, 24 or by means of a chain transmission 25, 26 that connects it to the motor 23, 24 so as to allow to vary the position of the nailing clamps 11 along the corresponding row 15, 16, 17, 18.

**[0024]** The supporting structure 10 of the nailing clamps 11 can move along a vertical direction in order to engage the nailing clamps 11 with the strips 5 or to disengage the nailing clamps 11 from the strips 5 ar-

ranged on the resting surface 4.

**[0025]** In the nailing station 2, above the supporting structure 10 of the nailing clamps 11, there is an actuation structure or hammer 27, which is supported, so that it can slide along the vertical direction, by a fixed supporting structure 28.

**[0026]** The nailing machine according to the invention also comprises means 29 for moving the actuation structure 27 along a vertical direction with respect to the fixed supporting structure 28, with an actuation stroke starting from an initial position downwardly to actuate the nailing clamps 11 and then upwardly to return the actuation structure 27 to the initial position.

**[0027]** The supporting structure 10 of the nailing clamps 11 hangs below the actuation structure 27 and the actuation structure 27 is movable, for part of its actuation stroke, with respect to the supporting structure 10 of the nailing clamps 11, downwardly in order to actuate the strikers 14 of the nailing clamps and upwardly in order to allow the rearming of the strikers 14.

**[0028]** According to the invention, the nailing machine comprises means 30 for adjusting the vertical position of the actuation structure 27 with respect to the fixed supporting structure 28 independently with respect to the actuation stroke of the actuation structure.

**[0029]** More particularly, the actuation structure 27 preferably comprises a beam 31 that is oriented transversely to the advancement direction 9 and is supported so that it can slide, proximate to its longitudinal ends, along the vertical direction, by two shoulders 32, 33 of the fixed supporting structure 28 which are arranged laterally, on mutually opposite sides, with respect to the resting surface 4.

**[0030]** In the illustrated embodiment, the beam 21 has, on its front face and on its rear face, which are perpendicular to the advancement direction 9, two wings 31a, 21b, which are oriented at right angles to the remaining part of the body of the beam 31, i.e., parallel to the advancement direction 9 and which in this manner give the actuation structure 27 a substantially cross-like shape. This cross-like shape derives from the cross-like arrangement of the nailing clamps 11. Obviously, if the nailing clamps 11 are arranged along a row or a pair of rows at right angles to the advancement direction 9, the wings 31a, 31b can be omitted.

**[0031]** The supporting structure 10 of the nailing clamps 11 is guided, in its vertical movement, by a sliding coupling of the supporting structure 10 with vertical guides 34, 35 applied to the two shoulders 32, 33.

**[0032]** The supporting structure 10 of the nailing clamps 11 hangs from the overlying actuation structure 27 by means of two tension members 36, 37. The connection between the supporting structure 10 of the nailing clamps 11 and the actuation structure 27 by means of the two tension members 36, 37 is performed so that the actuation structure 27, when the nailing clamps 11 are rested against the upper face of the strips 5 arranged on the resting surface 4, the actuation structure 27 can de-

scend further with respect to the supporting structure 10 of the nailing clamps 11, so as to act on the upper end of the strikers 14 and push them downwardly, so that they drive the nails into the strips 5 and so that when the actuation structure 27 is raised beyond a first extent required to allow the rearming of the strikers 14 it drags upwardly also the supporting structure 10 of the nailing clamps 11, so as to space it above the strips 5 arranged on the resting surface 4.

**[0033]** The actuation structure 27 also is guided, in its vertical movement, by a sliding coupling between the beam 31 and the vertical guides 34, 35 applied to the two shoulders 32, 33.

**[0034]** The means 29 for moving the actuation structure 27 along the vertical direction with respect to the fixed supporting structure 28 comprise a main actuation shaft 38 that is oriented so that its axis is horizontal and parallel to the longitudinal extension of the beam 31, i.e., at right angles to the advancement direction 9.

**[0035]** The main actuation shaft 38 is connected, by means of its axial ends, to the actuation structure 27 by way of two transmissions with a rod 40 and a crank 39 and can be actuated with a rotary motion about its own axis by means of a gearmotor 41 which is connected, by means of its output shaft, to the main actuation shaft 38 through a chain linkage of which only the pinions 42 have been shown.

**[0036]** More particularly, the main actuation shaft 38 is arranged below the resting surface 4 and is supported, so that it can rotate about its own axis, by the two shoulders 32, 33 proximate to its axial ends.

**[0037]** Conveniently, in each transmission with rod 40 and crank 39 that connects a corresponding axial end of the main actuation shaft 38 to the actuation structure 27 the end of the corresponding rod 40 that lies opposite the corresponding crank 39 is pivoted to a corresponding block 43, which is supported, so that it can slide along the vertical direction, by the actuation structure 27.

**[0038]** The adjustment means 30 comprise, for each block 43, a threaded shaft 44 that is supported so that it can rotate about its own axis, which is oriented vertically, by the actuation structure 27 and engages a female thread 45 defined in the block 43. The threaded shafts 44 can be actuated with a rotary motion about their own axes with respect to the actuation structure 27 to cause the movement of the actuation surface 27 with respect to the blocks 43 and therefore in order to vary the height position of the actuation structure 27 and consequently of the supporting structure 10 of the nailing clamps 11.

**[0039]** Actuation with a rotary motion about the corresponding axes of the threaded shafts 44, in order to adjust the height position of the actuation structure 27, can be performed, as shown, by providing two gearmotors 46, 47, one for each one of the threaded shafts 44. Each one of the gearmotors 46, 47 is connected, by means of its output shaft, to the threaded shaft 44 that engages the corresponding female thread 45 of the corresponding block 43. The two gearmotors 46, 47 are mounted on the

actuation structure 27 and are actuatable, in a mutually synchronized manner, to cause the movement of the actuation structure 27 with respect to the blocks 43.

**[0040]** As an alternative, actuation with rotary motion about the corresponding axes of the threaded shafts 44, in order to adjust the height position of the actuation structure 27, can be performed by providing a single gearmotor, which is mounted on the actuation structure 27 and is connected, by means of its output shaft, by means of a mechanical transmission, to both threaded shafts 44 that engage the female threads 45 of the blocks 43 so that the actuation of said gearmotor causes simultaneously actuation with a rotary motion of the threaded shafts 44 and consequently the vertical movement of the actuation structure 27.

**[0041]** Operation of the nailing machine according to the invention is as follows.

**[0042]** When the actuation structure 27 is in the raised position, i.e., in the initial position, the supporting structure 10 of the nailing clamps 11, which hangs below it, if the machine is adjusted correctly as a function of the total thickness of the layers of strips 5 to be nailed, is in such a position that the lower end of the nailing clamps 11 is spaced in an upward region from the resting surface 4 by an extent that is greater than the total thickness of the layers of strips 5 to be nailed, so that the strips 5 can be arranged on the resting surface 4 below the nailing clamps 11.

**[0043]** The actuation of the gearmotor 41 causes the lowering of the actuation structure 27 along the shoulders 32, 33 with an actuation stroke that derives from the sizing of the transmission with rod 40 and crank 39. In a first lowering extent, the actuation structure 27 descends integrally with the supporting structure 10 of the nailing clamps 11 until the lower end of the nailing clamps 11 rests against the upper face of the layers of strips 5 arranged on the resting surface 4. After this first lowering extent, the lowering of the actuation structure 27 continues while the lowering of the supporting structure 10 is indeed prevented by the resting of the nailing clamps 11 against the strips 5. In this manner, the actuation structure 27 moves downwardly with respect to the supporting structure 10 of the nailing clamps 11, causing the actuation of the strikers 14, which expel the nails, driving them into the strips 5 and thus nailing them.

**[0044]** The actuation structure 27 is then raised and for a first extent this lifting has no effect on the supporting structure 10 of the nailing clamps 11 so that the spacing of the actuation structure 27 above the nailing clamps 11 allows the rearming of the strikers 14. In the subsequent lifting extent, the actuation structure 27 entrains with itself also the supporting structure 10 of the nailing clamps 11, disengaging the nailing clamps 11 from the upper face of the nailed strips 5 and returning to the initial position.

**[0045]** When a variation of the height position of the nailing clamps 11 with respect to the resting surface 4 is required in order to adapt the height position of the nailing clamps 11 to the total thickness of the layers of strips 5

to be nailed, the gearmotors 46, 47 or the single gearmotor are actuated and, by causing the rotation of the threaded shafts 44 that engage the female thread 45 of the blocks 43 cause the lifting or lowering of the actuation structure 27 to the initial position and consequently cause the lifting or lowering of the supporting structure 10 of the nailing clamps 11, which hangs below the actuation structure 27.

**[0046]** In practice it has been found that the nailing machine according to the invention achieves fully the intended aim, since it allows to vary rapidly and simply the height position of the nailing clamps as a function of the total thickness of the layers of strips to be nailed.

**[0047]** Another advantage of the nailing machine according to the invention is that it offers the possibility to vary the height position of the nailing clamps without excessive constructive and/or management complications.

**[0048]** The nailing machine thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims; all the details may further be replaced with other technically equivalent elements.

**[0049]** In practice, the materials used, as well as the dimensions, may be any according to requirements and to the state of the art.

**[0050]** The disclosures in Italian Patent Application No. MI2014A001026 from which this application claims priority are incorporated herein by reference.

**[0051]** Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

## Claims

1. A nailing machine for nailing at least two superimposed layers of strips, comprising:

- a nailing station (2);
- supporting means (3) that define a substantially horizontal resting surface (4) for the strips (5) to be nailed at said nailing station (2);
- a plurality of nailing clamps (11) which face upward said resting surface (4) and are provided with strikers (14) that can be actuated in order to expel in each instance a nail toward said resting surface (4) in order to nail the strips (5) arranged on said resting surface (4);
- a supporting structure (10) of said nailing clamps (11) which is arranged in said nailing station (2) and can move along a vertical direction in order to engage said nailing clamps (11) with the strips (5) or disengage said nailing clamps (11) from the strips (5) arranged on said resting

surface (4);

- an actuation structure or hammer (27), arranged above said supporting structure (10) of the nailing clamps (11) and supported so that it can slide along a vertical direction by a fixed supporting structure (28);

- means (29) for moving said actuation structure (27) along a vertical direction with respect to said fixed supporting structure (28), with an actuation stroke starting from an initial position, downwardly in order to actuate said nailing clamps (11) and then upwardly to return it to said initial position;

said supporting structure (10) of the nailing clamps (11) hanging below said actuation structure (27) and said actuation structure (27) being movable, for part of its actuation stroke, with respect to said supporting structure (10) of the nailing clamps (11), downwardly in order to actuate said strikers (14) of said nailing clamps (11) and upwardly in order to allow the re-arming of said strikers (14), **characterized in that** it comprises means (30) for adjusting the vertical position of said actuation structure (27) with respect to said fixed supporting structure (28) independently with respect to said actuation stroke of the actuation structure (27).

2. The machine according to claim 1, **characterized in that** said actuation structure (27) comprises a beam (31) that is supported so that it can slide, proximate to its longitudinal ends, along said vertical direction, by two shoulders (32, 33) of said fixed supporting structure (28) which are arranged laterally, on mutually opposite sides, with respect to said resting surface (4).

3. The machine according to claims 1 and 2, **characterized in that** said movement means (29) comprise a main actuation shaft (38) that is arranged so that its axis is horizontal and oriented parallel to the longitudinal extension of said beam (31); said main actuation shaft (38) being connected, by means of its axial ends, to said actuation structure (27) by way of two transmissions with a rod (40) and a crank (39).

4. The machine according to one or more of the preceding claims, **characterized in that** said main actuation shaft (38) is arranged below said resting surface (4) and is supported, so that it can rotate about its own axis, by said two shoulders (32, 33).

5. The machine according to one or more of the preceding claims, **characterized in that** in each rod (40) and crank (39) transmission that connects a corresponding axial end of said main actuation shaft (38) to said actuation structure (27), the end of the corresponding rod (40) that is opposite with respect to

the corresponding crank (39) is pivoted to a corresponding block (43) which is supported, so that it can slide along a vertical direction, by said actuation structure (27); said adjustment means (30) comprising, for each block (43), a threaded shaft (44) that is supported so that it can rotate about its own axis, which is oriented vertically, by said actuation structure (27) and engages a female thread (45) defined in said block (43); the threaded shafts (44) being actuable with a rotary motion about their own axes with respect to said actuation structure (27) for the movement of said actuation structure (27) with respect to the blocks (43).

6. The machine according to one or more of the preceding claims, **characterized in that** it comprises two gearmotors (46, 47), one for each one of said blocks (43); each one of said gearmotors (46, 47) being connected, by means of its output shaft, to the threaded shaft (44) that engages the corresponding female thread (45) of the corresponding block (43); said two gearmotors (46, 47) being mounted on said actuation structure (27) and being actuable, in a mutually synchronized manner, for the movement of said actuation structure (27) with respect to said blocks (43).

7. The machine according to one or more of the preceding claims, **characterized in that** it comprises a single gearmotor, which is mounted on said actuation structure (27) and is connected, by means of its output shaft, by means of a mechanical transmission, to both threaded shafts (44) that engage the female threads (45) of said blocks (43), said gearmotor being actuable to actuate the movement of said actuation structure (27) with respect to said blocks (43).

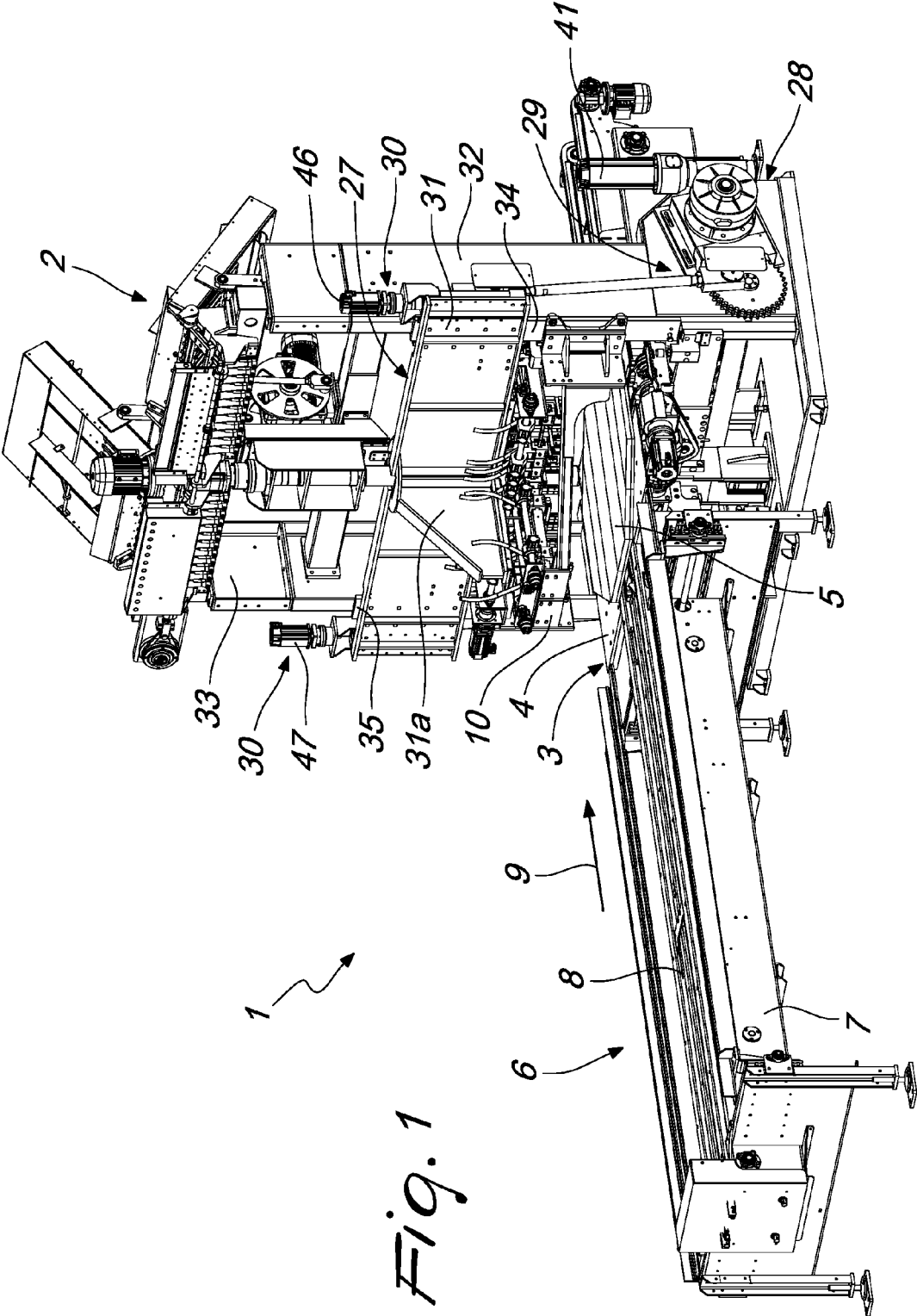
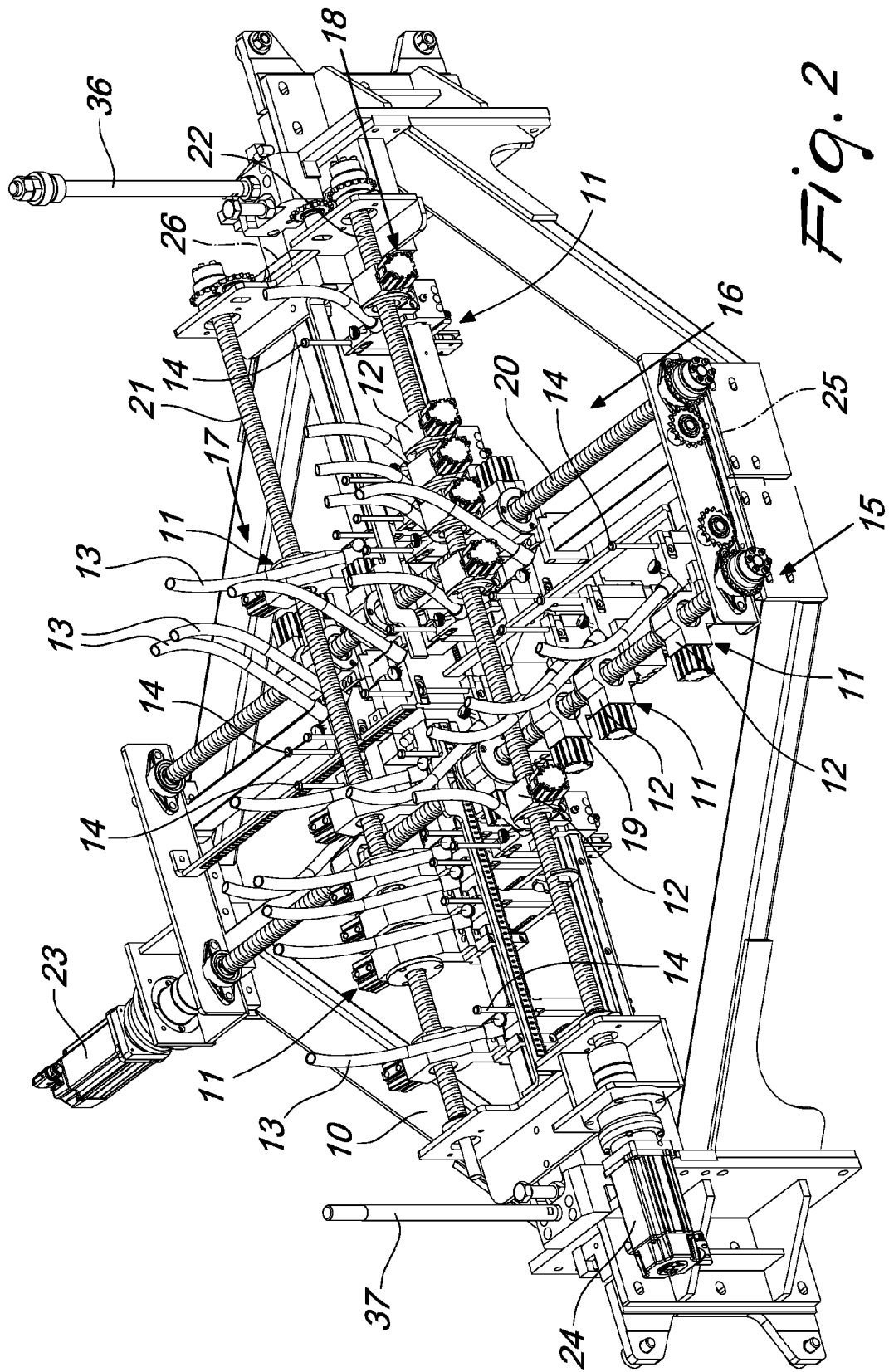
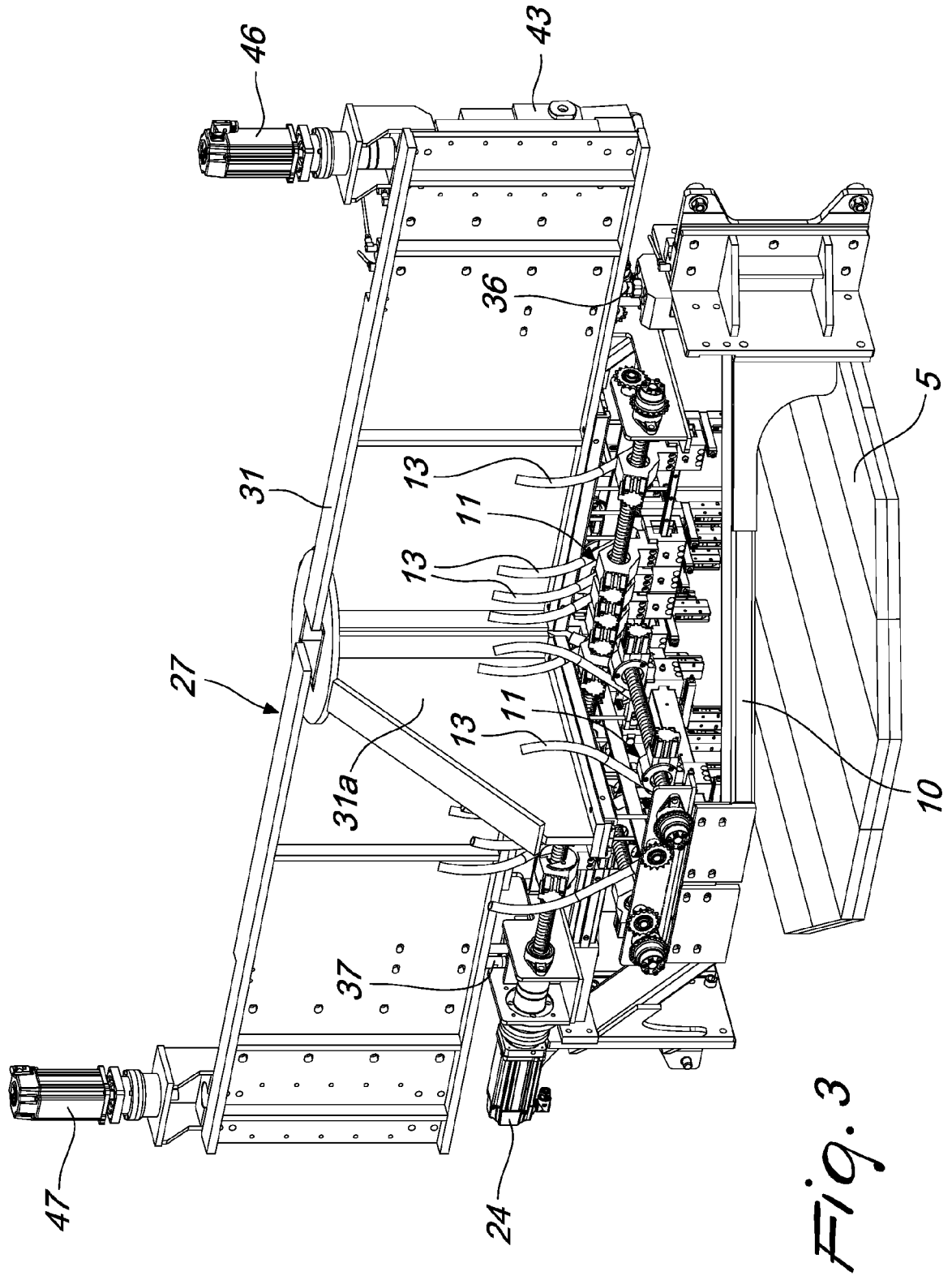
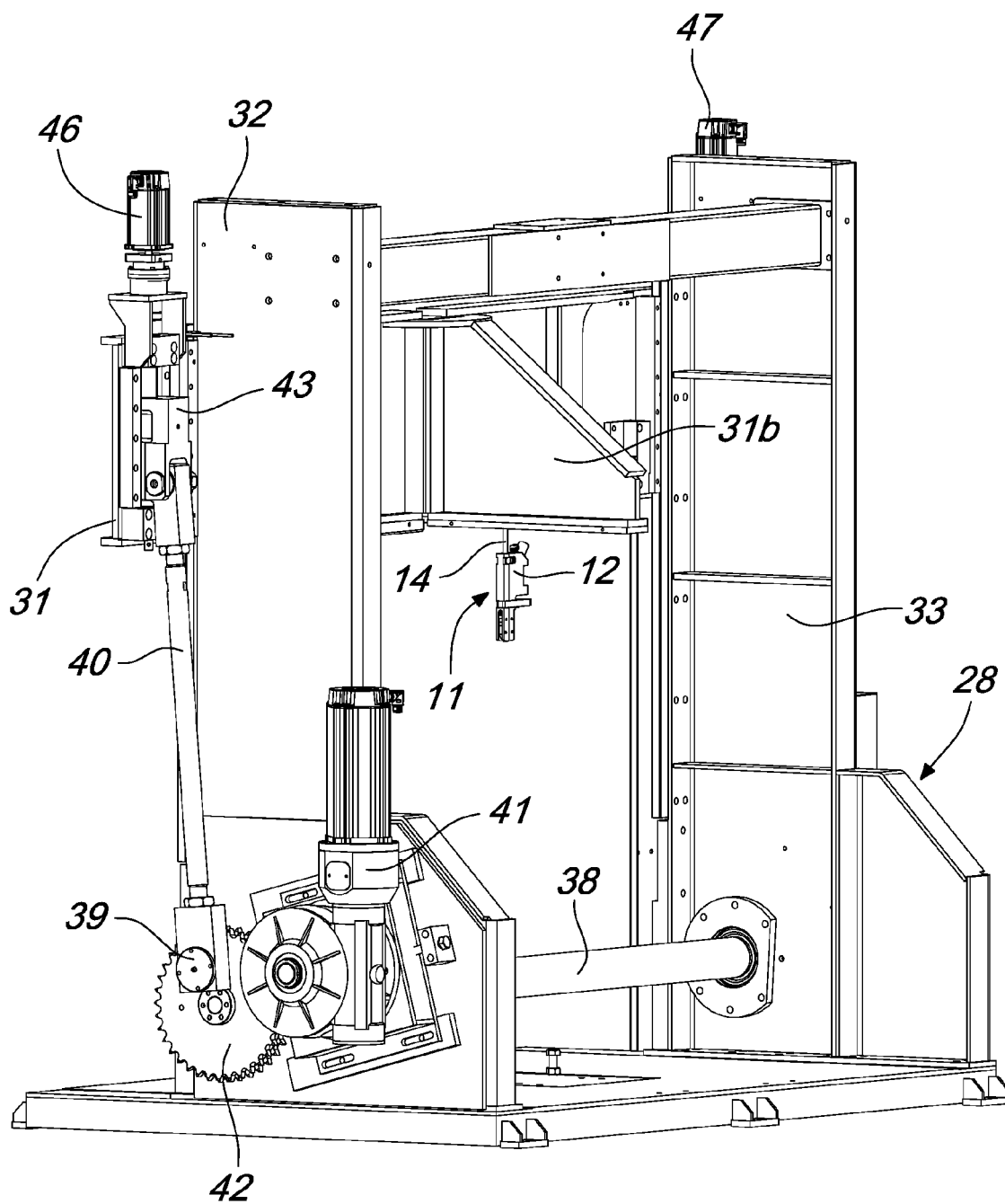


Fig. 1

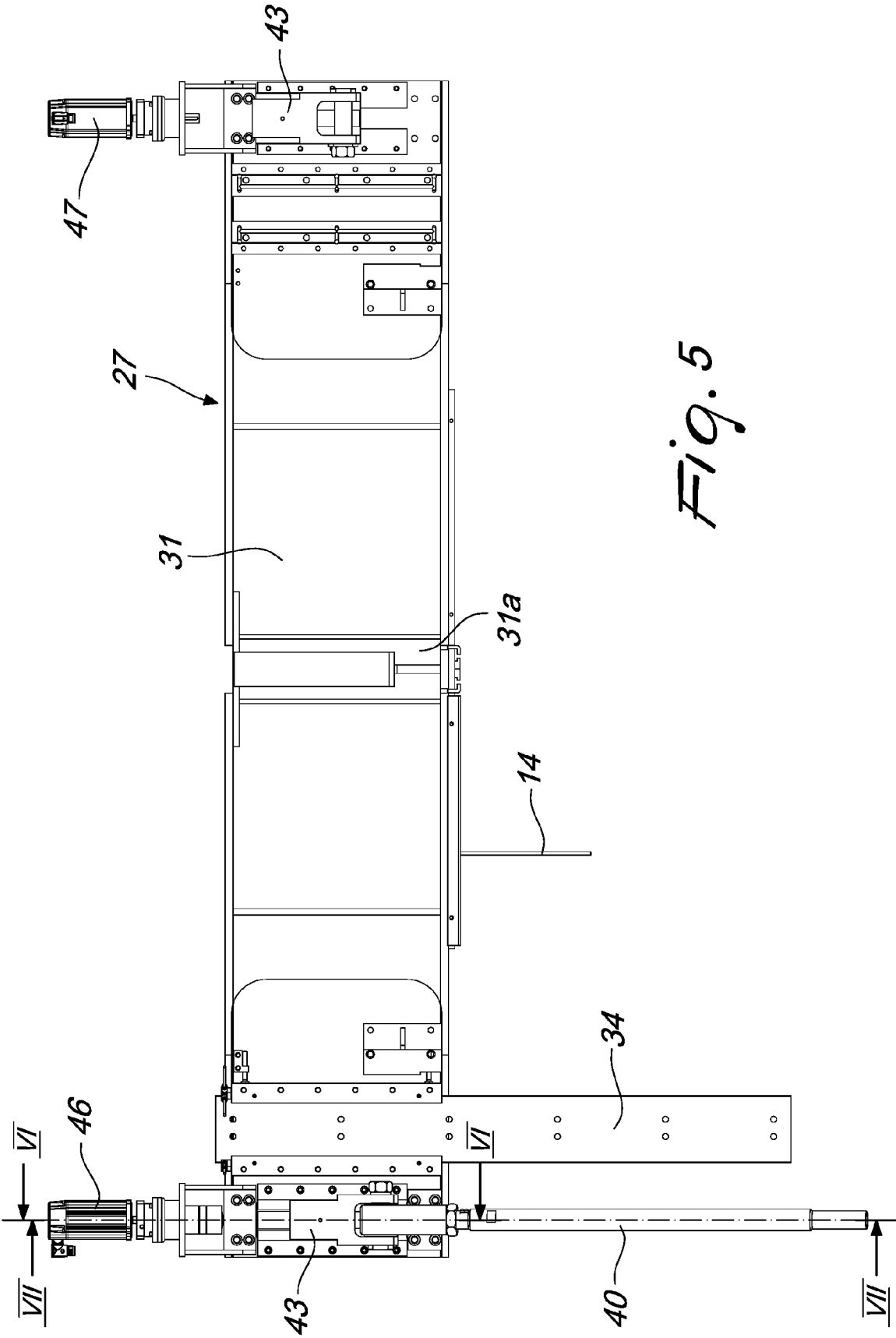


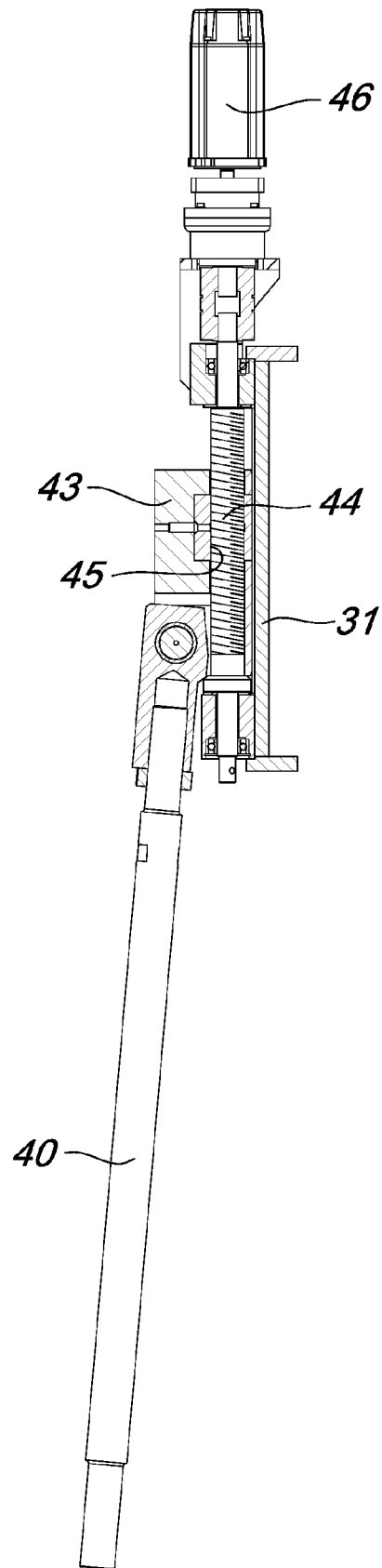




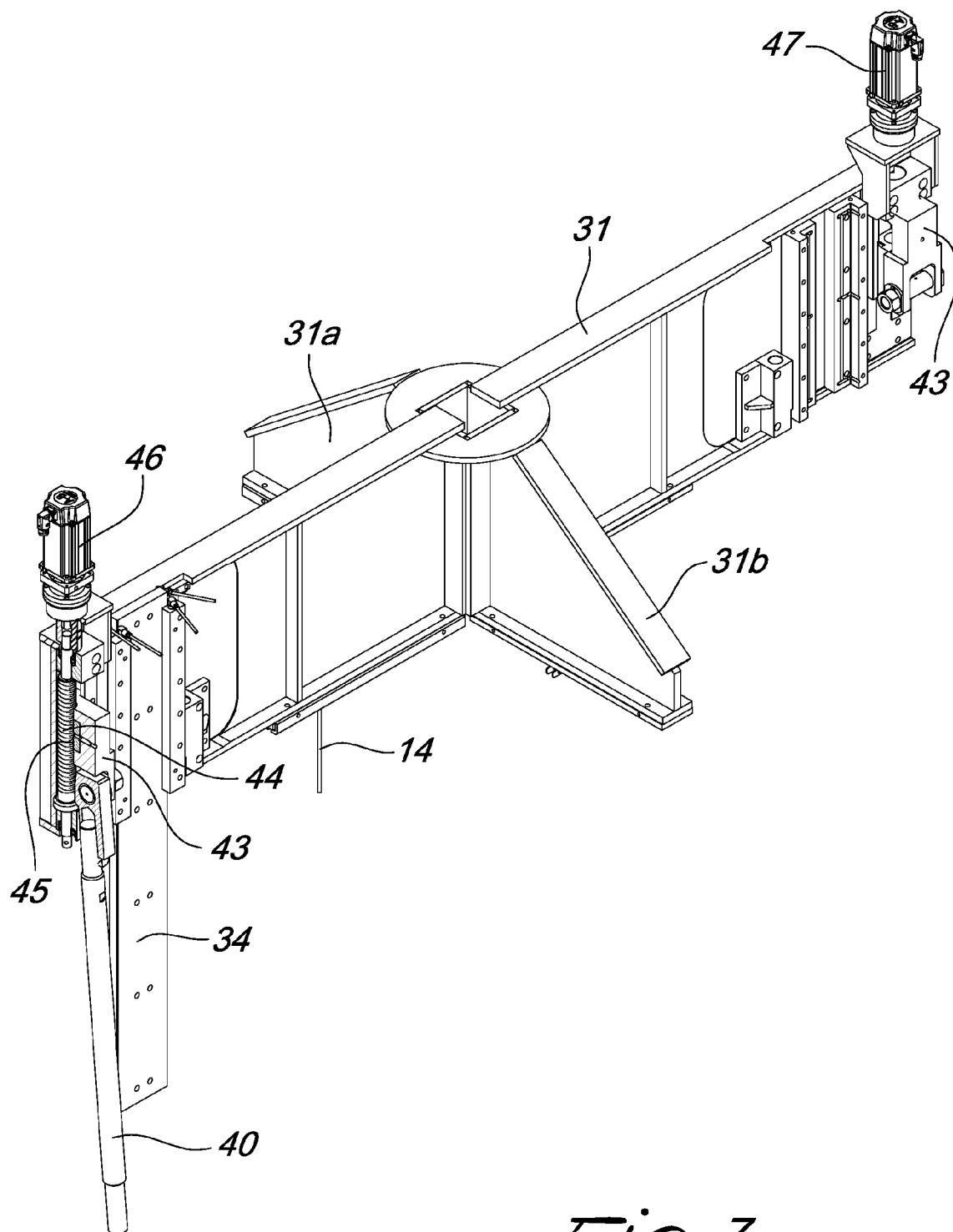


*Fig. 4*





*Fig. 6*



*Fig. 7*



## EUROPEAN SEARCH REPORT

Application Number  
EP 15 17 0449

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| DOCUMENTS CONSIDERED TO BE RELEVANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                         |                                                       |                                           |
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| Category                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Citation of document with indication, where appropriate, of relevant passages                                                                           | Relevant to claim                                     | CLASSIFICATION OF THE APPLICATION (IPC)   |
| X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | US 2 008 831 A (HERMANN KRUSE)<br>23 July 1935 (1935-07-23)<br>* page 3, line 62 - page 4, line 20;<br>figures 1,4,16 *<br>* page 1, line 1 - line 20 * | 1-7                                                   | INV.<br>B27M3/00<br>B65H75/50<br>B27F7/02 |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | EP 1 716 996 A1 (CORALI SPA [IT])<br>2 November 2006 (2006-11-02)<br>* abstract *                                                                       | 1                                                     |                                           |
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