



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
03.03.2010 Bulletin 2010/09

(51) Int Cl.:
B27C 5/06 ^(2006.01) **B27M 1/08** ^(2006.01)
B27M 3/18 ^(2006.01)

(21) Application number: **09168683.2**

(22) Date of filing: **26.08.2009**

(84) Designated Contracting States:
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 SE SI SK SM TR
Designated Extension States:
AL BA RS

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(30) Priority: **27.08.2008 IT BO20080527**

(54) **Method and machine for processing components for fixtures made of wood and the like.**

(57) A method and machine for processing components (2) made of wood for fixtures, according to which one component (2) is locked within at least one clamping vice (29), is longitudinally profiled, is marked, and is provided with a glass stop (34) detached from and coupled to the component (2) itself; the steps of profiling, marking, detaching and coupling the glass stop (34) being sequentially carried out during a single working run.

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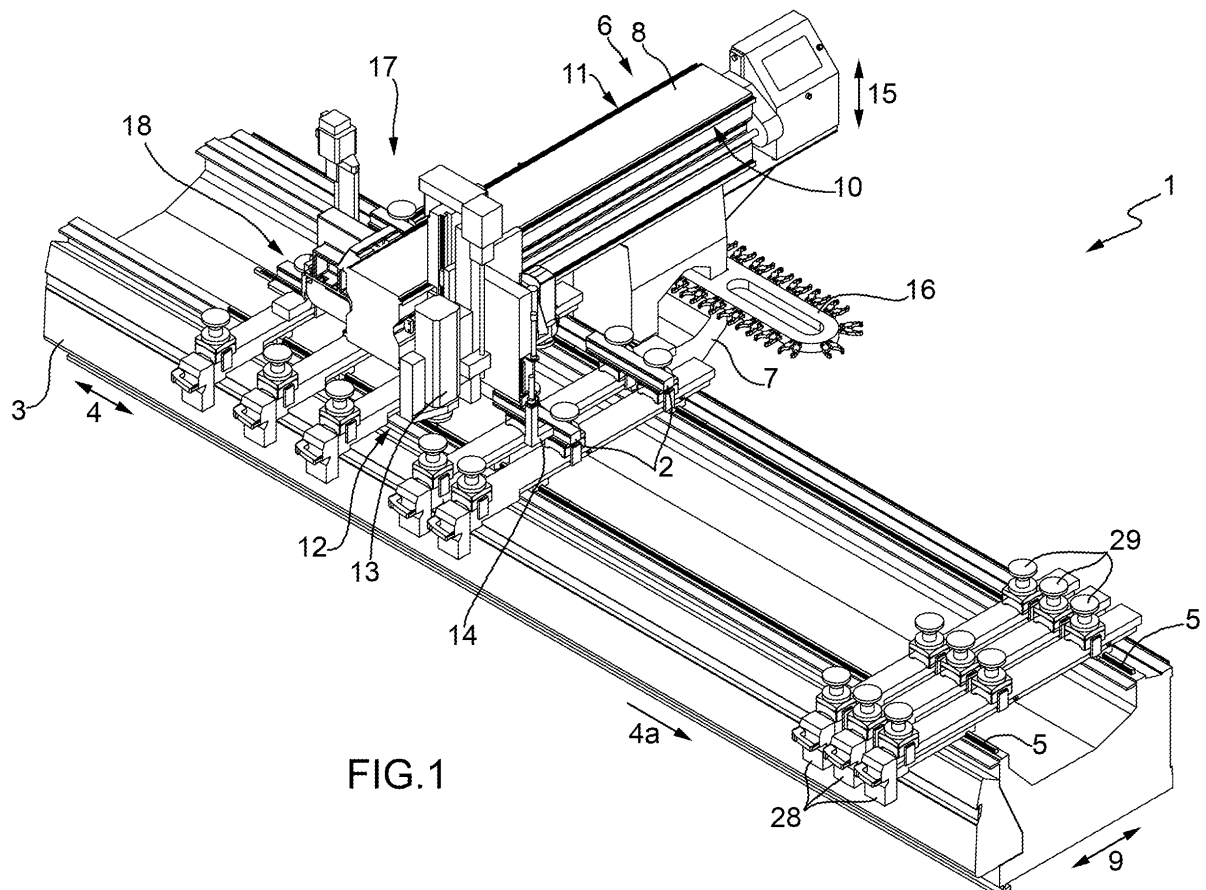


FIG.1

Description

[0001] The present invention relates to a method for processing components made of wood or the like for fixtures.

[0002] Hereinafter, the term "fixtures" will be used to identify doors, windows and furniture doors comprising an annular frame and a closing plate or sheet, e.g. made of glass, mounted within the frame itself.

[0003] In the field of fixture component processing, it is known to provide a machine of the type comprising an elongated base provided with two longitudinal guiding members parallel to a substantially horizontal first direction, a plurality of cross elements mounted between the longitudinal guiding members and movable along the longitudinal guiding members themselves in the first direction, at least one clamping vice mounted to each cross element for locking at least one component, a bridge crane movable along the base in the first direction, and an operating head movable along the bridge crane in a second direction which is substantially horizontal and transversal to the first direction itself.

[0004] The machine further comprises a marking device fixed to the base for marking the component once it has been processed by the operating head.

[0005] The known machines of above-described type have some drawbacks mainly deriving from that the marking of the component involves the presence of a gripping and handling device adapted to transfer the component between the clamping vices and the marking device and a relatively long operating cycle of the machine due to the complete separation of the step of marking from the step of processing performed by the operating head.

[0006] It is an object of the present invention to provide a method for processing components made of wood or the like for fixtures, which is free from the above-described drawbacks and which is simple and cost-effective to be implemented.

[0007] According to the present invention, there is provided a method for processing components made of wood or the like for fixtures as claimed in claims from 1 to 7.

[0008] The present invention further relates to a machine for processing components made of wood or the like for fixtures.

[0009] According to the present invention, there is provided a machine for processing components made of wood or the like for fixtures as claimed in claims from 8 to 14.

[0010] The present invention will now be described with reference to the accompanying drawings, which illustrate a non-limitative embodiment thereof, in which:

figure 1 is a diagrammatic perspective view of a preferred embodiment of the machine of the present invention;

figure 2 is a diagrammatic prospective view of a detail

of the machine in figure 1; and

figure 3 diagrammatically shows the operating principle of the detail in figure 2.

[0011] With reference to figure 1, numeral 1 indicates as a whole a machine for processing components 2 made of wood or the like for fixtures having a substantially elongated parallelepiped shape.

[0012] Machine 1 comprises an elongated base 3, which extends in a horizontal direction 4, is substantially U-shaped, has two longitudinal guiding members 5 parallel to the direction 4 itself, and supports a bridge crane 6 comprising, in turn, a vertical upright 7, which is coupled to the base 3 in a known manner for making rectilinear movements in direction 4 along the base 3 itself under the bias of an actuating device (known and not shown), and carries a cross element 8 connected at a free end thereof, which cross element 8 extends over the base 3 in a horizontal direction 9 transversal to direction 4, and is laterally limited in the direction 4 itself by two faces 11, 13 opposing each other.

[0013] The bridge crane 6 supports a first operating head 12 of known type, which is mounted to face 10, is coupled to the cross element 8 in a known manner for making rectilinear movements in the direction 9 along the cross element 8 itself, and in this case supports an electrospindle 13 and a marking device 14 both coupled to the head 12 in a known manner to move, with respect to head 12, in a vertical direction 15 orthogonal to the directions 4 and 9.

[0014] Tools and/or aggregates may be engaged on the electrospindle 13, which are adapted to carry out at least milling processes of the components 2, and are accommodated in a tool-holder magazine 16 closed as a loop through the upright 7.

[0015] As shown in figures 1 and 2, bridge crane 6 further supports a second operating head 17, which is mounted to face 11, is coupled to the cross element 8 in a known manner for making rectilinear movements in direction 9 along the cross element 8 itself, and supports a cutting and coupling assembly 18 comprising a slide 19 slidably coupled to the head 17 to move, with respect to the head 17 itself, in direction 15.

[0016] Slide 19 supports an electric motor 20 adapted to rotate by means of an interposed belt drive 21 two shafts 22, which are pivotally coupled to the slide 19 to rotate about respective longitudinal axes parallel to direction 9, one carrying a cutter 24 and the other carrying a cutting blade 25 both keyed thereon and sequentially arranged in direction 4.

[0017] Assembly 18 further comprises an insertion device 26 of known type, which is mounted to the slide 19 on the side opposite to the cutter 24 with respect to the cutting blade 25, and is adapted to insert a plurality of coupling clips 27 into the components 2 according to modes shown in greater detail below.

[0018] Furthermore, machine 1 is provided with a plurality of cross elements 28, which will be indicated here-

inafter with the term "work tops", extend between the longitudinal members 5 in direction 9, and are slidingly coupled to the longitudinal members 5 to be moved, either manually or by means of respective actuating devices (known and not shown) along the longitudinal members 5 themselves in direction 4.

[0019] The work tops 28 support a plurality of clamping vices 29, the arrangement of which on the corresponding work tops 28 substantially depends on the size of the components 2 to be processed and on the processes to be carried out on the components 2 themselves, movable between a clamping position and a releasing position of at least one component 2.

[0020] In this case, the vices 29 are movable along the corresponding work tops 28 in direction 9. According to a variant (not shown), the vices 29 are fixed to the corresponding work tops 28 in direction 9.

[0021] The operation of machine 1 will now be described by assuming the processing of one component 2 only and starting from the moment in which the component 2 is deemed as inserted, either manually or by means of an automatic loading device (known and not shown), into the corresponding clamping vices 29 parallelly to direction 4.

[0022] Once component 2 has been locked in the corresponding vices 29, it is longitudinally profiled by the operating head 12 to obtain a cavity 30 (figure 3a), which opens at one face 2a of the component 2, is longitudinally open in direction 4, is limited in direction 15 by two ribs 31, 32 parallel to each other and to the direction 4 itself, is limited in direction 9 by a bottom wall 33 substantially orthogonal to the direction 9 itself, and is adapted to receive and accommodate in use a closing plate or sheet (not shown) of the corresponding fixture (not shown).

[0023] At this point, the bridge crane 6 is moved in a direction 4a parallel to direction 4 to allow the marking device 14 to mark the wall 33 of the cavity 30 (figure 3a), the cutter 24 and the cutting blade 25 to detach the rib 31 from the component 2 in order to obtain a glass stop 34 (figures 3b and 3c) adapted, in use, to lock the mentioned closing plate or sheet (not shown) of the fixture (not shown) against the rib 32, and the insertion device 26 to couple the glass stop 34 to the component 2 by means of a plurality of clips 27 inserted between the glass stop 34 and the rib 32 (figures 3d and 3e).

[0024] As regards the above, it is worth specifying that:

the marking device 14 is arranged in front of the cutting and coupling assembly 18 in direction 4a; and the marking of wall 33, the detachment of glass stop 34 from the component 2, and the coupling of glass stop 34 to the rib 32 are carried out in a single working run of the bridge crane 6.

[0025] According to some variants (not shown):

component 2 is locked inside the corresponding vices 29 parallelly to direction 9, and the marking device

14 and the cutting and coupling assembly 18 are sequentially mounted in direction 9 to synchronously move to each other in the direction 9 itself; marking device 14 is mounted behind the electrospindle 13 and in front of the cutting and coupling assembly 18 in direction 4a to allow the electrospindle 13, the device 14, and the assembly 18 to make the cavity 30, to mark the cavity 30, and to obtain the glass stop 34 during a single working run of the bridge crane 6 in direction 4a; bridge crane 6 is fixed in direction 4 and the marking device 14 is mounted behind the electrospindle 13 and in front of the cutting and coupling assembly 18 in the direction 4a itself to allow the electrospindle 13, the device 14, and the assembly 18 to make the cavity 30, to mark the cavity 30, and to obtain the glass stop 34 during a single working run of the corresponding vices 29 in direction 4a; marking device 14 is mounted to the operating head 17 in front of the cutting and coupling assembly 18 in direction 4a; and marking device 14 and cutting assembly 18 are mounted to the cross element 8 with the device 14 arranged between the electrospindle 13 and the assembly 18 to allow the electrospindle 13, the device 14, and the assembly 18 to make the cavity 30, to mark the cavity 30, and to obtain the glass stop 34 during a single working run of electrospindle 13, device 14, and assembly 18 in direction 9.

Claims

1. A method for processing components (2) made of wood or the like for fixtures in a machine comprising a base (3) extending in a first direction (4), at least two cross elements (28) mounted to the base (3) parallelly to a second direction (9) transversal to the first direction (4), at least one clamping vice (29) mounted to each cross element (28) for locking at least one component (2), and a bridge crane (6), which extends over the base (3) in the second direction (9), and supports at least one operating head (12); the method comprising the steps of:

locking at least one component (2) inside at least one clamping vice (29) parallelly to the first direction (4); and

profiling the component (2) parallelly to the first direction (4) by means of the operating head (12);

and being **characterized in that** it further comprises the steps of:

marking the component (2) by means of a marking device (14) carried by the bridge crane (6); and
detaching the glass stop (34) from the com-

- ponent (2) and coupling the glass stop (34) to the component (2) itself by means of a cutting and coupling assembly (18) carried by the bridge crane (6);
the steps of profiling and marking the component (2) and of detaching and coupling the glass stop (34) being sequentially carried out during a single working run of the bridge crane (6) or the clamping vice (29) in the first direction (4).
2. A method according to claim 1, wherein the steps of marking and profiling the component (2) are sequentially carried out in this order.
 3. A method according to claim 1, wherein the steps of profiling and marking the component (2) are sequentially carried out in this order.
 4. A method for processing components (2) made of wood or the like for fixtures in a machine comprising a base (3) extending in a first direction (4), at least two cross elements (28) mounted to the base (3) parallelly to a second direction (9) transversal to the first direction (4), at least one clamping vice (29) mounted to each cross element (28) for locking at least one component (2), and a bridge crane (6), which extends over the base (3) in the second direction (9), and supports at least one operating head (12); the method comprising the steps of:
 - locking at least one component (2) inside at least one clamping vice (29) parallelly to the section direction (9); and
 - profiling the component (2) parallelly to the second direction (9) by means of the operating head (12);
 - and being **characterized in that** it further comprises the steps of:
 - marking the component (2) by means of a marking device (14) carried by the bridge crane (6); and
 - detaching the glass stop (34) from the component (2) and coupling the glass stop (34) to the component (2) itself by means of a cutting and coupling assembly (18) carried by the bridge crane (6);
 - the steps of profiling and marking the component (2) and of detaching and coupling the glass stop (34) being sequentially carried out either during a single working run of the operating head (12), the marking device (14), and the cutting and coupling assembly (18) in the second direction (9) or during a single working run of the clamping vice (29) in the second direction (9) itself.
 5. A method according to claim 4, wherein the steps of marking and profiling the component (2) are sequentially carried out in this order.
 6. A method according to claim 4, wherein the steps of profiling and marking the component (2) are sequentially carried out in this order.
 7. A method according to any one of the claims from 4 to 6, wherein the marking device (14) and the cutting and coupling assembly (18) are carried by the operating head (17).
 8. A machine for processing components (2) made of wood or the like for fixtures comprising a base (3) extending in a first direction (4); at least two cross elements (28) mounted to the base (3) parallelly to a second direction (9) transversal to the first direction (4); at least one clamping vice (29) mounted to each cross element (28) for locking at least one component (2); a bridge crane (6), which extends over the base (3) in the second direction (9), and is provided with at least one operating head (12) for profiling the component (2) parallelly to the first direction (4); and a marking device (14) for marking the component (2); and **characterized in that** it further comprises a cutting and coupling assembly (18) for detaching a glass stop (34) from the component (2) and coupling the glass stop (34) to the component (2) itself; the operating head (12), the marking device (14), and the cutting and coupling assembly (18) being sequentially mounted to each other and to the bridge crane (6) in the first or second direction (4, 9).

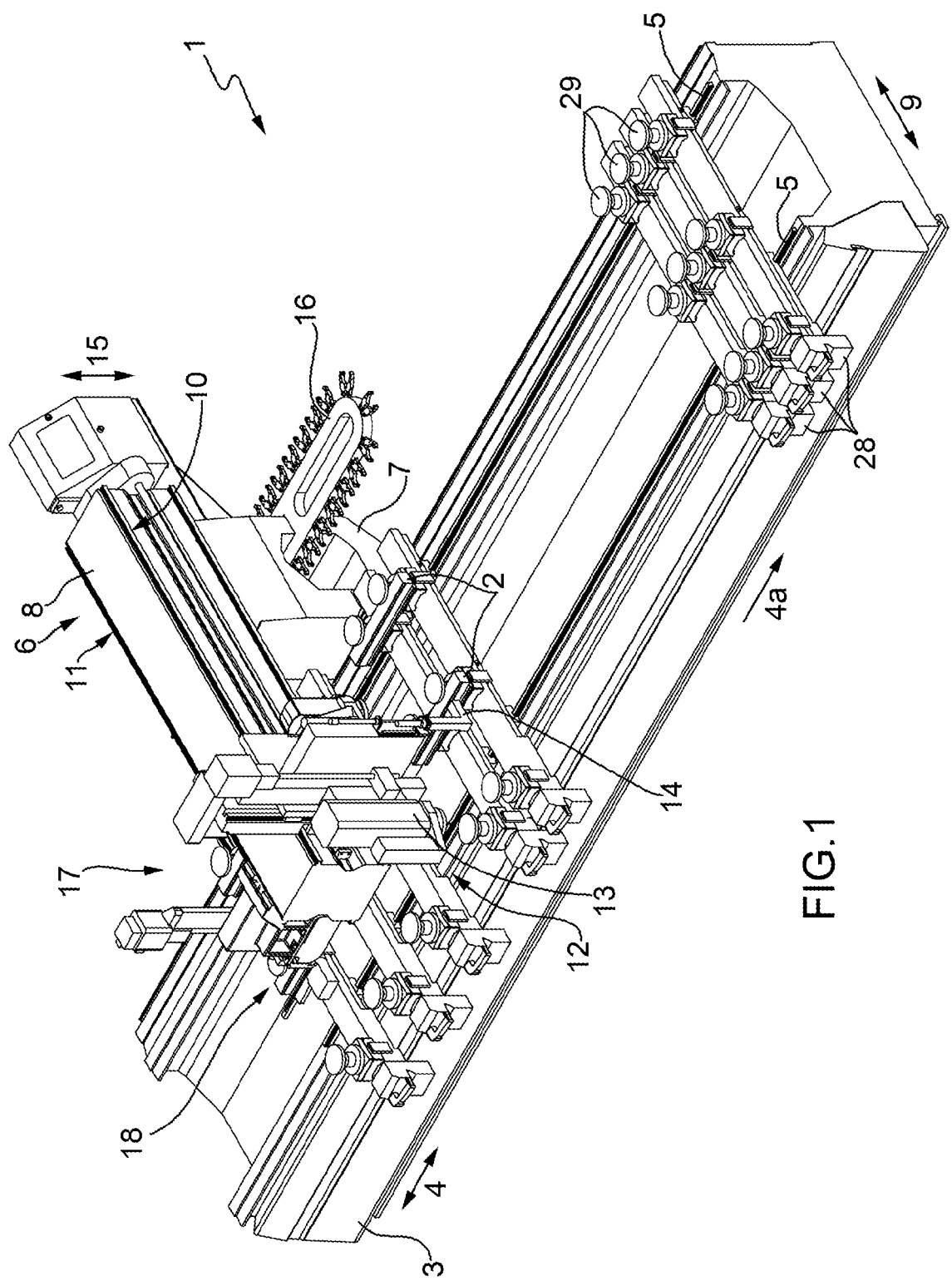
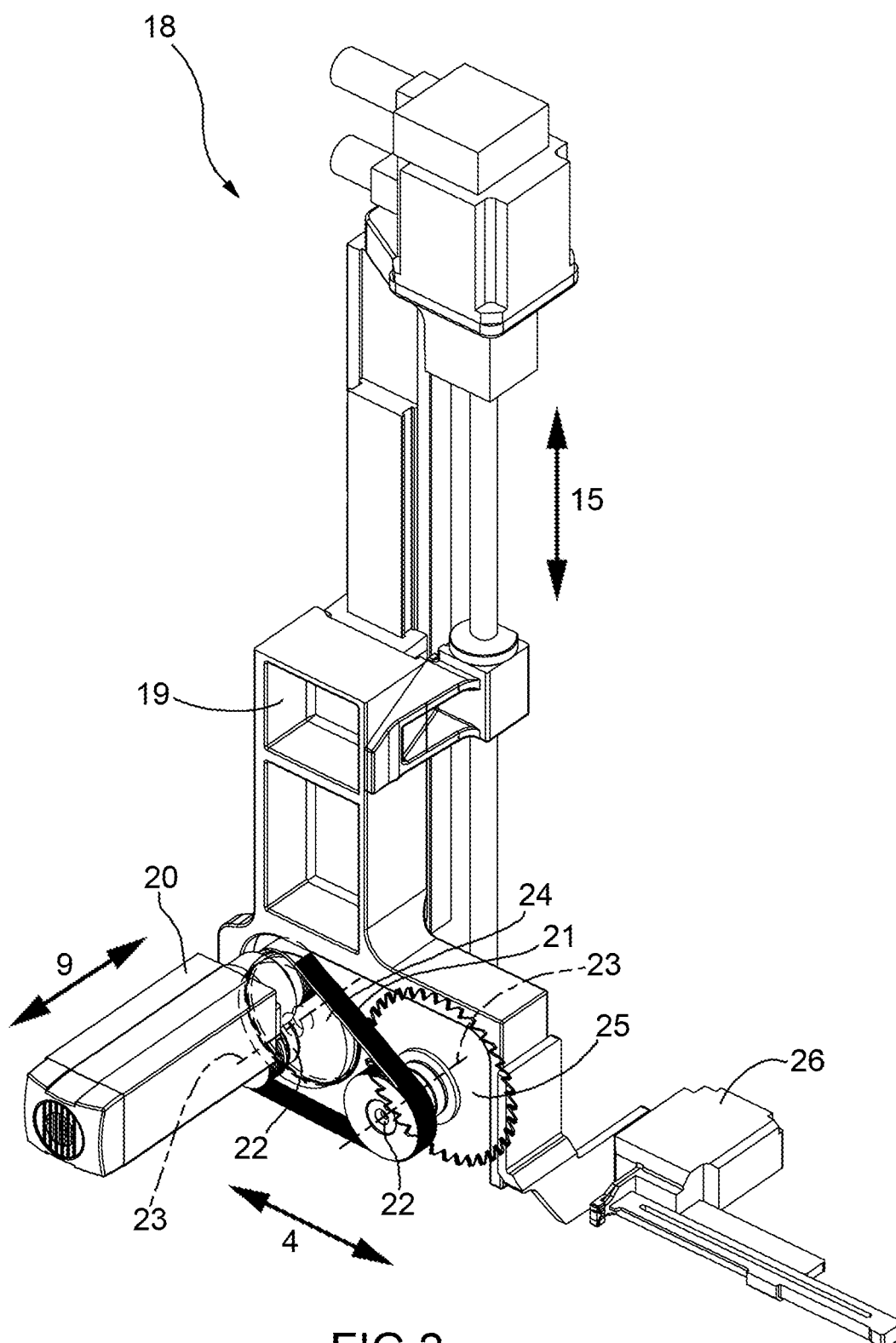


FIG.1



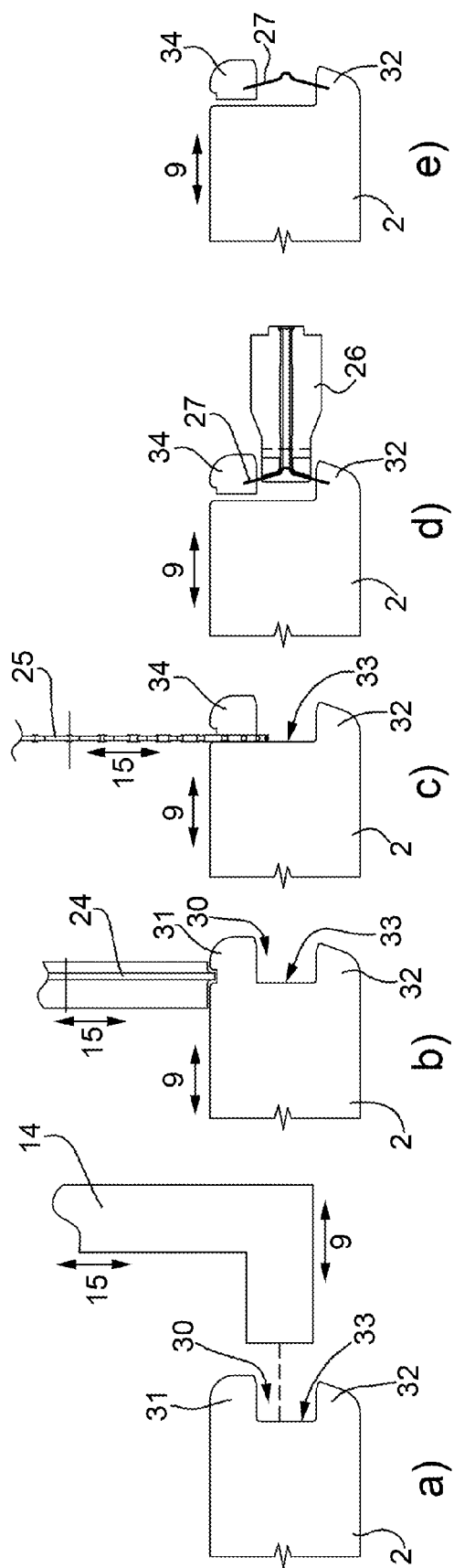


FIG.3