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(54) **CUTTING MACHINE FOR CUTTING PANELS OF WOOD OR THE LIKE**

(57) A cutting machine for cutting panels (2) of wood or the like has a main pusher (21) for feeding a first panel (2) through a cutting station (15), a secondary pusher (22) and a pushing member (35), which co-operate with one another for feeding a second panel (2) through the cutting station (15), and two actuating devices (27, 32) for driving selectively the secondary pusher (22) and the pushing member (35) with respective laws of motion that are identical to one another or with respective laws of motion that are different from one another.

EP 3 061 582 A1

Description

[0001] The present invention relates to a cutting machine for cutting panels of wood or the like.

[0002] In the sector of machining of wooden panels, it is known to provide a cutting machine comprising: a base defining a substantially horizontal resting surface for at least one panel of wood or the like; a cutting station; a main pusher for feeding at least one first panel in a first direction through the cutting station; a secondary pusher for feeding at least one second panel in the first direction through the cutting station; and a cutting device mounted in the cutting station so as to displace in a second direction perpendicular to the first direction and carry out cutting of the panels.

[0003] The machine further comprises a first actuating device for driving the main pusher in the first direction, and a second actuating device for driving the secondary pusher in the same first direction.

[0004] Generally, the main pusher has a plurality of first clamp members, whereas the secondary pusher has a relatively small number of second clamp members, for example even just one second clamp member.

[0005] Consequently, the secondary pusher is provided with a pushing member, which, normally, is set in a resting position external to a path of feed of the second panel, and, when the second panel has a relatively large width, is displaced into an operating position, where the pushing member co-operates with the second clamp members for proper feeding of the second panel in the first direction.

[0006] Known cutting machines of the type described above present some drawbacks principally resulting from the fact that, on account of the reduced spaces available for the secondary pusher, the pushing member may hinder, even when it is set in its resting position, proper operation of the main pusher and of the secondary pusher.

[0007] The aim of the present invention is to provide a cutting machine for cutting panels of wood or the like that will be free from the drawbacks described above and will be simple and inexpensive to implement.

[0008] According to the present invention a cutting machine for cutting panels of wood or the like is provided as specified in the annexed claims.

[0009] The present invention will now be described with reference to the annexed drawings, which illustrate a non-limiting example of embodiment thereof and in which:

Figure 1 is a schematic top plan view, with parts removed for reasons of clarity, of a preferred embodiment of the cutting machine of the present invention;

Figures 2 and 3 are two schematic perspective views, with parts removed for reasons of clarity, of a detail of the cutting machine of Figure 1 represented in two different operative positions;

Figure 4 is a schematic perspective view of a detail of Figures 2 and 3; and

Figures 5 and 6 are two schematic top plan views, with parts removed for reasons of clarity, of two variants of the cutting machine of Figure 1.

[0010] With reference to Figure 1, designated, as a whole, by 1 is a cutting machine for cutting plane panels 2 of wood or the like having a substantially rectangular shape.

[0011] The machine 1 comprises a portal frame 3, which has substantially the shape of a parallelepiped with rectangular base, extends in a horizontal direction 4, and is provided with four vertical edges each defined by a respective upright 5 parallel to a vertical direction 6 transverse to the direction 4 itself.

[0012] Each upright 5 is aligned to a corresponding upright 5 in the direction 4 and to a corresponding upright 5 in a horizontal direction 7 orthogonal to the directions 4 and 6.

[0013] The frame 3 further comprises two longitudinal guide members 8, 9 parallel to one another, each of which extends in the direction 4 and connects together two corresponding uprights 5.

[0014] In the case in point, the longitudinal member 8 has substantially the same width as the corresponding uprights 5 in the direction 7, whereas the longitudinal member 9 has a width greater than the width of the corresponding uprights 5 in the direction 7, and projects towards the longitudinal member 8 in the direction 7 itself.

[0015] The frame 3 further comprises: a cross member 10, which extends in the direction 7, and connects together two of the four uprights 5; and two supporting devices 11, which are set on opposite sides of the cross member 10 in the direction 4, and define, together with the top face of the cross member 10, a substantially horizontal resting surface P for the panels 2.

[0016] One of the devices 11 comprises a plurality of roller bars 12 parallel to one another and to the direction 4 and the other four output boards 13 parallel to one another and to the direction 4 itself.

[0017] The bars 12 extend between the cross member 10 and a station 14 for loading the panels 2 onto the surface P provided within the frame 3 at the other two uprights 5.

[0018] The machine 1 further comprises a cutting station 15, which is provided in an area corresponding to the cross member 10 and to the corresponding uprights 5, and is equipped with a cutting unit 15 coupled in a known way to the cross member 10 in order to perform, with respect to the frame 3 and under the thrust of an actuating device (which is known and not illustrated), rectilinear displacements in the direction 7.

[0019] The cutting unit 16 has a blade 17 and a scoring tool 18 mounted so as to turn about respective longitudinal axes 19 parallel to one another and to the direction 4 and so as to perform rectilinear displacements in the direction 6 between corresponding lowered resting positions, in which the blade 17 and the scoring tool 18 are

set underneath the surface P in order to enable feed of the panels 2 along the surface P, and corresponding raised operative positions, in which the blade 17 and the scoring tool 18 project through the cross member 10 above the surface P itself, to carry out cutting of the panels 2.

[0020] The blade 17 and the scoring tool 18 are, moreover, displaced by the unit 16 in the direction 7 with a reciprocating rectilinear motion comprising a forward travel, in which the scoring tool 18, set in front of the blade 17 in the direction 7 of feed of the unit 16, carries out scoring of the panel 2 set on the surface P and the blade 18 cuts the panels 2, and a return travel.

[0021] The unit 16 co-operates with a pressing device 20 of a known type, which extends above the surface P in the direction 7, and is mobile, with respect to the frame 3, in the direction 6 between a raised resting position and a lowered operating position, in which the panels 2 are blocked on the surface P so as to be cut by the unit 16 parallel to the direction 7.

[0022] The machine 1 further comprises a main pusher 21 and a secondary pusher 22, which are configured for feeding the panels 2 along the surface P and through the station 15 in both senses of the direction 4.

[0023] The main pusher 21 comprises a motor-driven carriage 23, which is mounted on the bars 12, extends between the two longitudinal members 8, 9 in the direction 7, and is mobile along the longitudinal members 8, 9 in the direction 4 under the thrust of an actuating device 24.

[0024] The carriage 23 supports a plurality of clamp members 25, which are distributed along the carriage 23 in the direction 7, and are mobile along the carriage 23 in the direction 7 itself.

[0025] Each member 25 is moreover mobile between a raised resting position and a lowered operating position, and has the shape of a clamp comprising a bottom jaw and a top jaw, which are mobile with respect to one another between a position of clamping of at least one panel 2 and a position of release thereof.

[0026] The secondary pusher 22 comprises a motor-driven carriage 26, which extends underneath the longitudinal member 9 and is mobile along the longitudinal member 9 in the direction 4 under the thrust of an actuating device 27.

[0027] The carriage 26 supports a clamp member 28, which is mounted underneath the longitudinal member 9, and is altogether similar to the members 25.

[0028] The machine further comprises a further clamp member 29, which is altogether similar to the members 25, 28, is mounted underneath the longitudinal member 9 between the members 25 and the member 28, and can be selectively engaged to the pushers 21, 22 so as to displace along the longitudinal member 9 in the direction 4.

[0029] According to what is illustrated in Figures 1, 2, 3, and 4, the members 28 and 29 co-operate with a pusher device 30 comprising a motor-driven horizontal slide 31, which is mounted underneath the longitudinal member 9, and is mobile along the longitudinal member 9 in the direction 4 under the thrust of an actuating device 32 independent of the actuating device 27 of the secondary pusher 22.

[0030] The slide 31 supports a vertical slide 33, slidably coupled to the slide 31 so as to perform, with respect to the slide 31, rectilinear displacements in the direction 6 under the thrust of an actuator cylinder 34 set between the two slides 31, 33. The slide 33 is provided with a pushing member 35, which is substantially L-shaped and extends in a containment plane parallel to the surface P.

[0031] The member 35 comprises a coupling portion 36, which extends in the direction 7 and is slidably coupled to the slide 33 so as to perform, with respect to the slide 33, rectilinear displacements in the direction 7 under the thrust of an actuator cylinder 37 set between the slide 33 and the member 35.

[0032] The member 35 moreover has a pusher portion 38 projecting from a free end of the portion 36 parallel to the direction 4.

[0033] The member 35 is displaced by the cylinder 34 in the direction 6 between a raised resting position (Figure 2) and a lowered operating position (Figure 3) and by the cylinder 37 in the direction 7 between a retracted resting position (Figure 2) and an extracted operating position (Figure 3).

[0034] When the member 35 is displaced into its resting positions, it is set on the outside of a path of feed of the panels 2 withheld by the members 28, 29; when the member 35 is displaced into its operative positions, it extends underneath the carriage 26 and around the members 28, 29, engages the panel 2, and co-operates with the members 28, 29 themselves for feeding the panel 2 properly in the direction 4.

[0035] The machine 1 further comprises an electronic control unit 39, which is connected to the actuating devices 24, 27, 32 and is configured for controlling selectively operation of the actuating devices 27, 32 so as to drive the secondary pusher 22 and the pushing member 35 with respective laws of motion that are identical to one another or with respective laws of motion that are different from one another.

[0036] The variant illustrated in Figure 5 differs from the one illustrated in Figure 1 only in so far as here the member 29 is eliminated.

[0037] The variant illustrated in Figure 6 differs from the one illustrated in Figure 1 only in so far as here:

- the member 29 is eliminated;
- the longitudinal member 9 has, like the longitudinal member 8, the same width as that of the corresponding uprights 5 in the direction 7; and
- the member 28 is mounted on the outside of the longitudinal member 9.

[0038] Complete independence of the pusher device 30 of the secondary pusher 22 guarantees a high degree

of flexibility of the cutting machine 1 and enables the device 30 to be moved away, when it is not in use, from the pushers 21, 22 (as shown, for example, in Figure 5) so as to prevent any interference between the device 30 and the pushers 21, 22 themselves.

Claims

1. A cutting machine for cutting panels (2) of wood or the like, the machine comprising: a cutting station (15); a main pusher (21) for displacing at least one first panel (2) through the cutting station (15) in a first direction (4); a first actuating device (24) for displacing the main pusher (21) in the first direction (4); a secondary pusher (22) for displacing at least one second panel (2) through the cutting station (15) in the first direction (4); a second actuating device (27) for displacing the secondary pusher (22) in the first direction (4); a cutting device (16) mounted in the cutting station (15) and mobile in a second direction (7) substantially perpendicular to the first direction (4) for carrying out cutting of the panels (2); and a pushing member (35), which co-operates with the secondary pusher (22) for feeding the second panel (2) in the first direction (4), and is mobile between an operating position, where the pushing member (35) sets itself within a path of feed of the second panel (2), and a resting position, where the pushing member (35) is set outside the path of feed of the second panel (2); and being **characterized in that** it further comprises a third actuating device (32), independent of the second actuating device (27), for displacing the pushing member (35) in the first direction (4).

2. The cutting machine according to Claim 1 and further comprising an electronic control unit (39) configured for controlling selectively said second and third actuating devices (27, 32) so as to feed the secondary pusher (22) and the pushing member (35) at the same time or independently of one another.

3. The cutting machine according to Claim 1 or 2, wherein the pushing member (35) is mounted so as to displace between its operating position and its resting position in the second direction (7) and/or in a third direction (6) orthogonal to said first and second directions (4, 7).

4. The cutting machine according to any one of the preceding claims, wherein the main pusher (21) and the secondary pusher (22) comprise, respectively, at least one first clamp member (25) for withholding the first panel (2) and at least one second clamp member (28) for withholding the second panel (2).

5. The cutting machine according to any one of the preceding claims, wherein the pushing member (35) has an elongated shape and extends in the first direction (4).

6. The cutting machine according to any one of the preceding claims and further comprising two longitudinal guide members (8, 9) parallel to the first direction (4); the main pusher (21) extending between the two longitudinal guide members (8, 9) and being slidably coupled to the two longitudinal guide members (8, 9).

7. The cutting machine according to Claim 6, wherein the secondary pusher (22) projects from one of the longitudinal members (8, 9) in the second direction (7).

8. The cutting machine according to Claim 6, wherein the secondary pusher (22) is mounted underneath one of the longitudinal guide members (8, 9).

9. The cutting machine according to any one of the preceding claims and further comprising at least one third clamp member (29) that can be selectively engaged to the main pusher (21) and to the secondary pusher (22) so as to displace in the first direction (4).

10. The cutting machine according to Claim 9 when depending upon Claim 6, wherein the third clamp member (29) is mounted underneath one of the longitudinal guide members (8, 9).

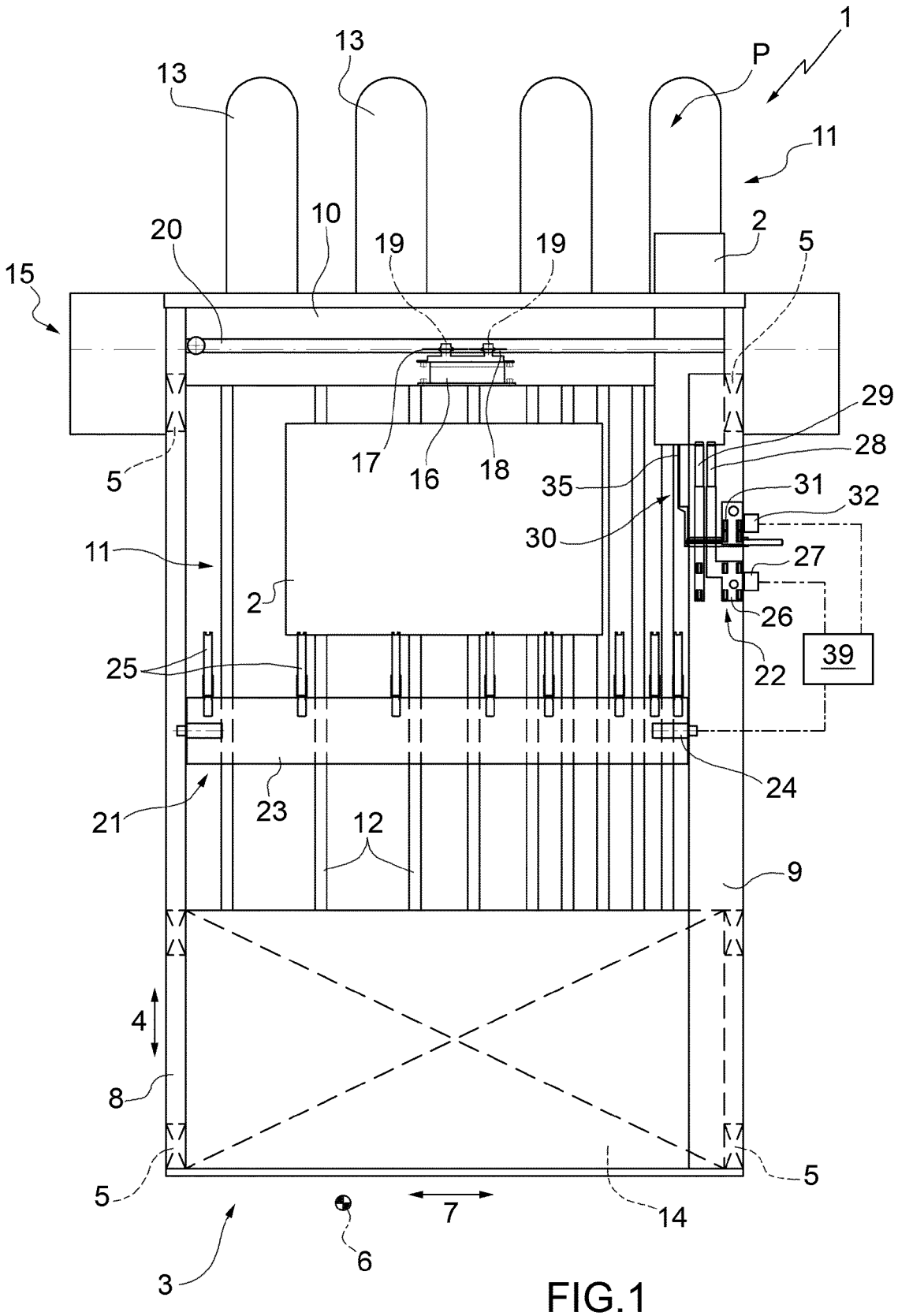
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FIG.1

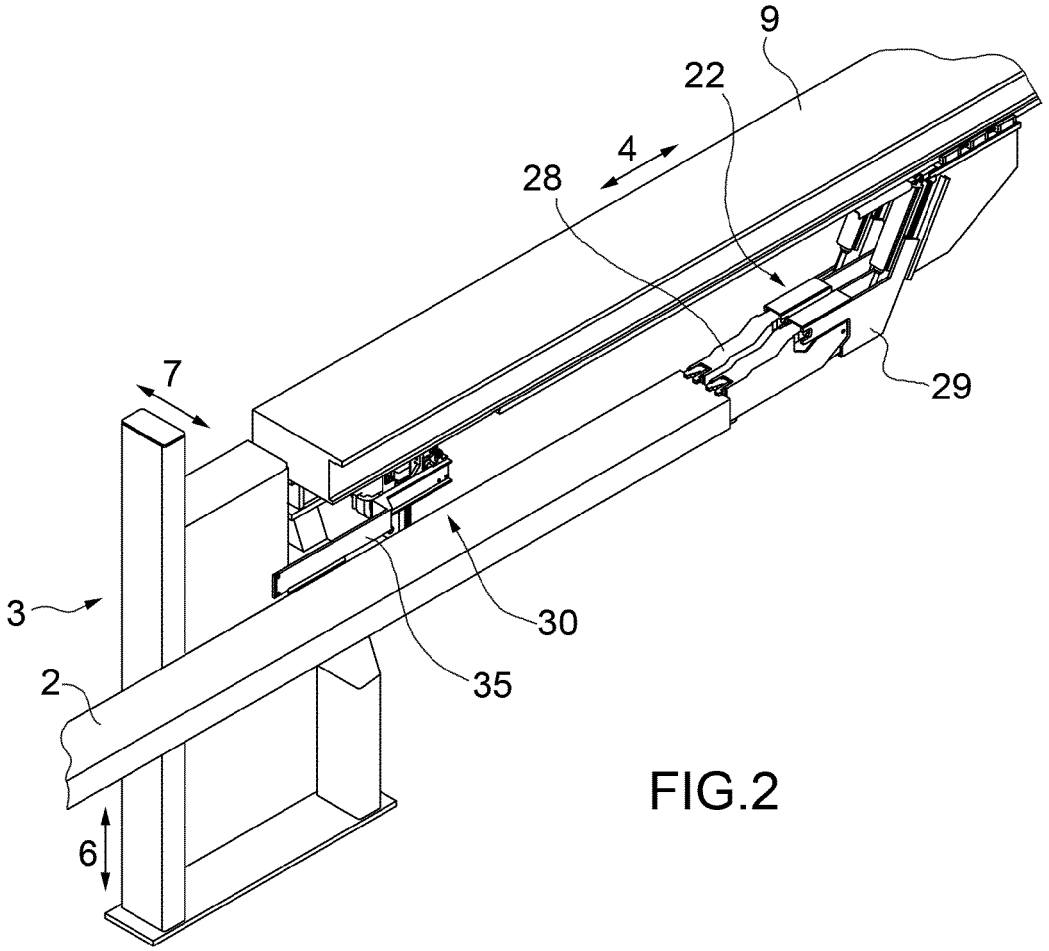

FIG.2

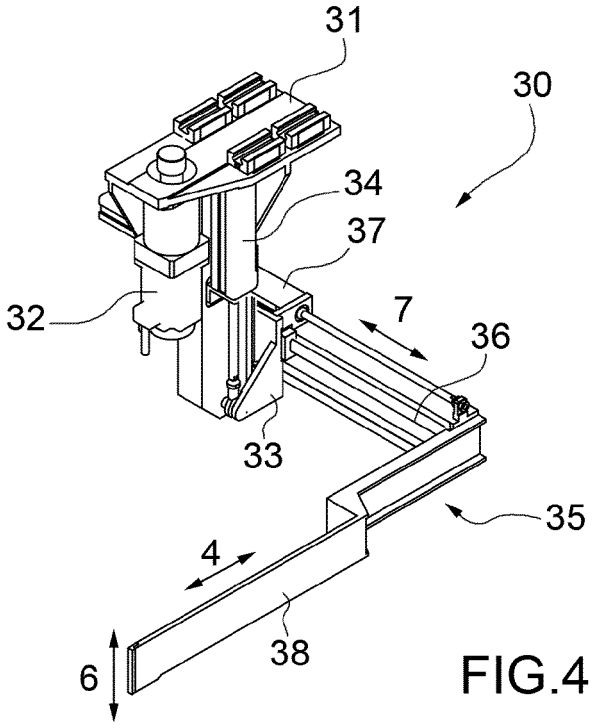

FIG.4

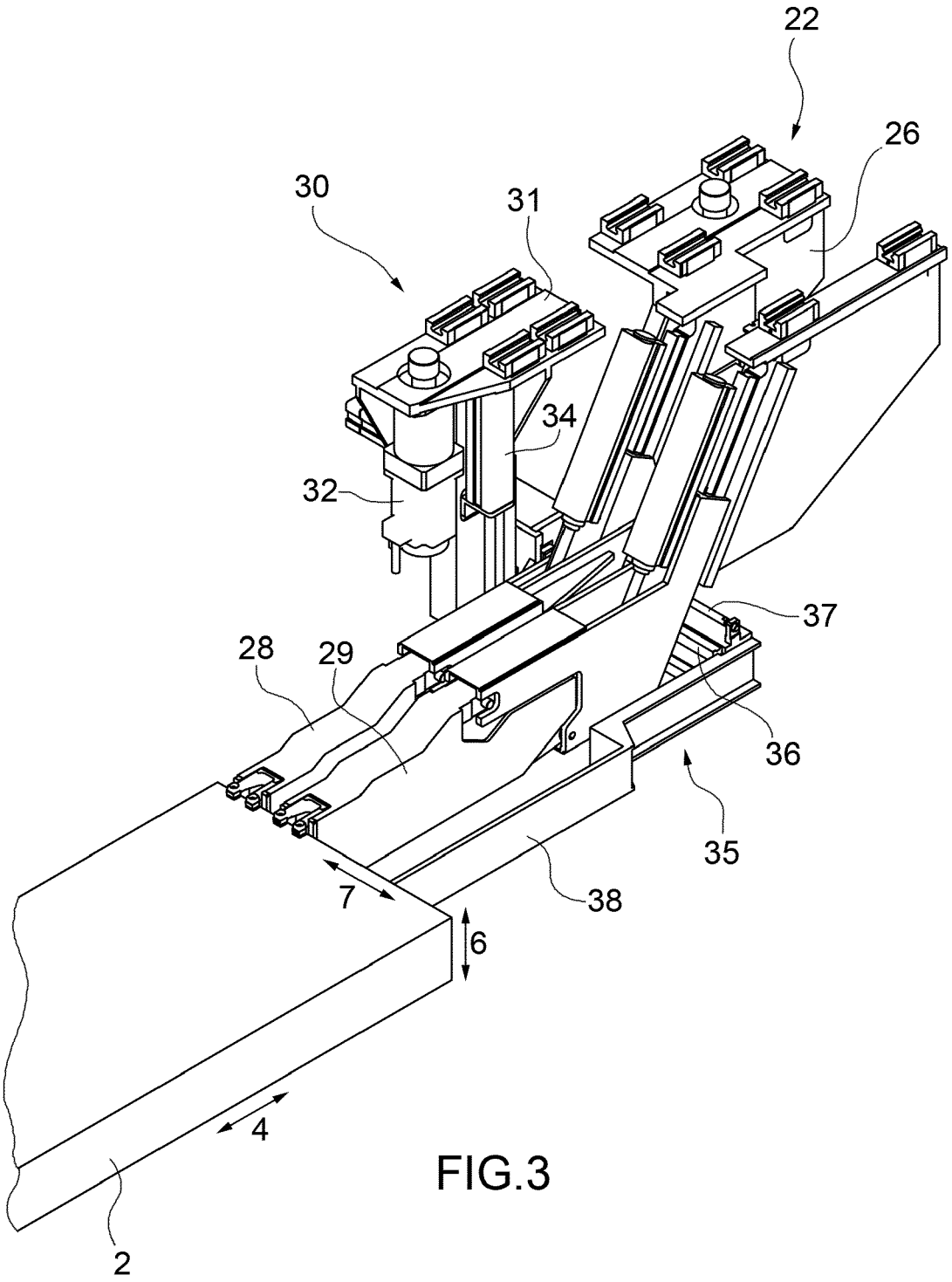

FIG.3

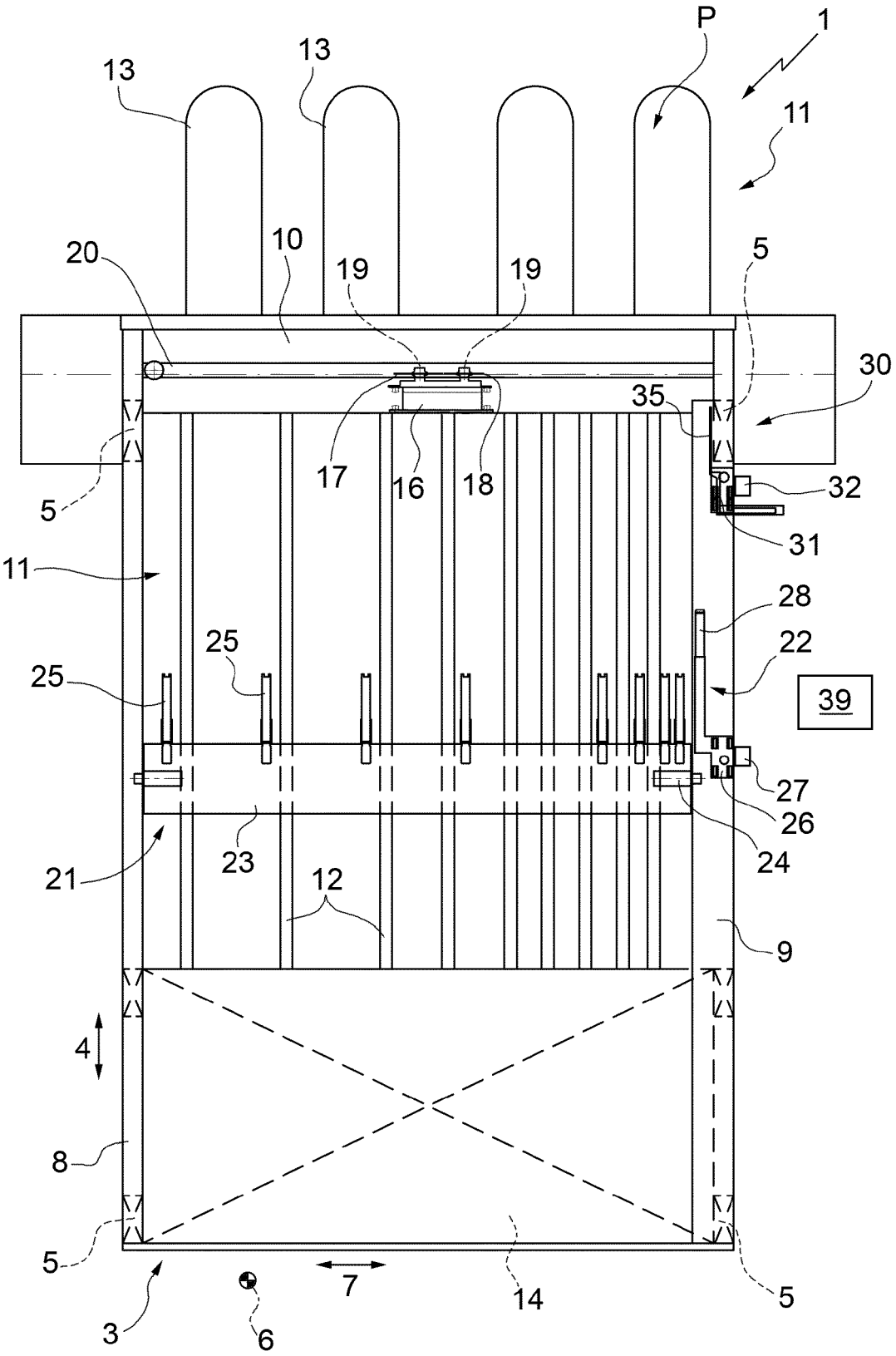
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FIG.5

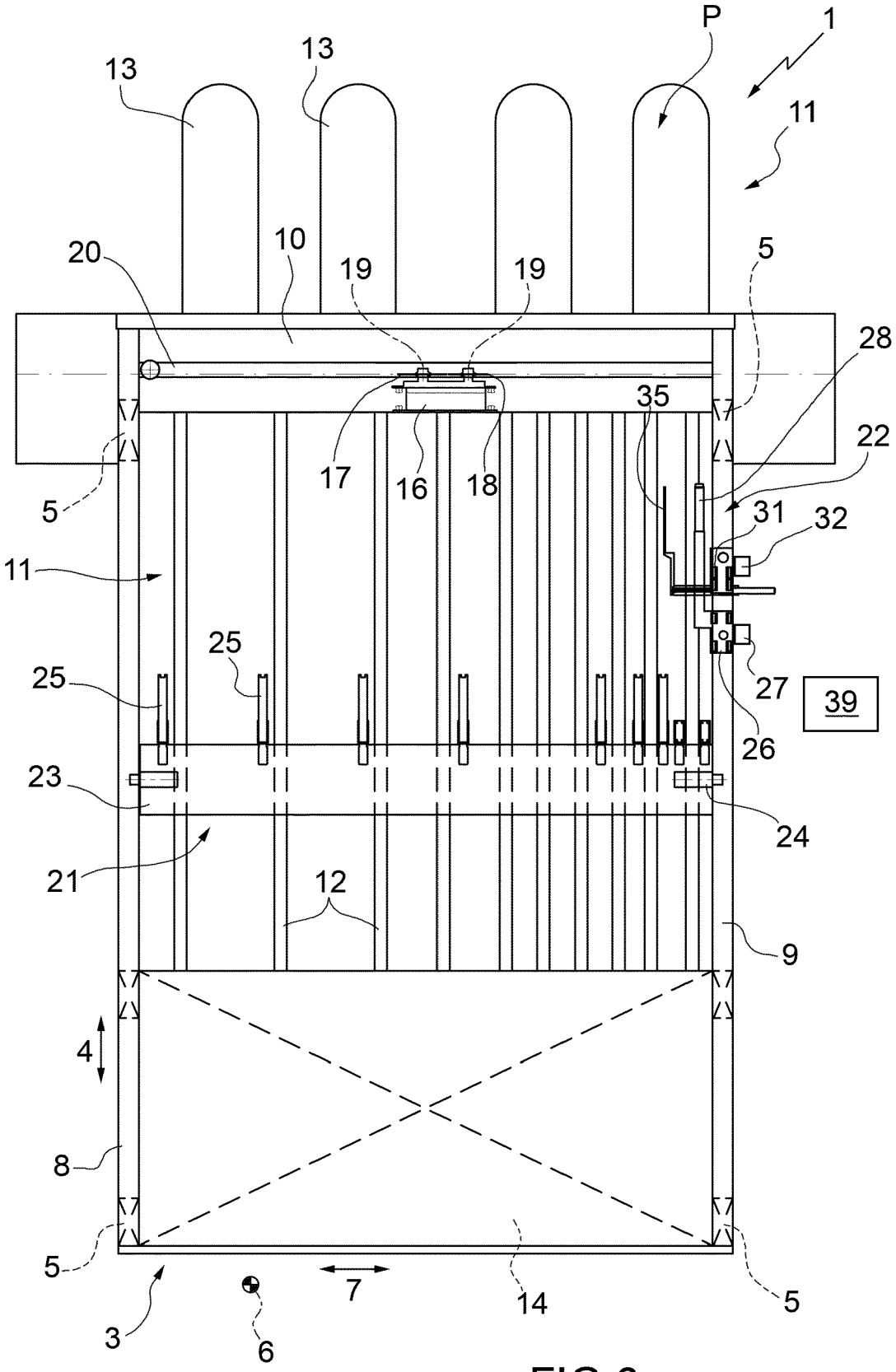
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FIG.6

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EUROPEAN SEARCH REPORT

Application Number
EP 16 15 7476

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	EP 0 922 547 A2 (IMA MASCHINENFABRIKEN KLESSMANN GMBH [DE]) 16 June 1999 (1999-06-16) * abstract * * paragraphs [0012], [0014], [0015], [0018] * * figures * -----	1-10	INV. B27M1/08 B23Q7/06 B27B31/00

TECHNICAL FIELDS SEARCHED (IPC)

B27M
B23Q
B27B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	17 June 2016	Hamel, Pascal

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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17-06-2016

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		EP 0922547 A2	16-06-1999
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