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(54) **SANDING MACHINE PROVIDED WITH A VARIABILE HARDNESS ROLLER**

(57) The present invention relates to a processing unit 100; 100 'and a sanding machine M for sanding at least one panel P. The sanding machine M comprises an inlet station 1 for the inlet of a panel P to be machined and a station output 2 for the output of the processed panel P; a work table 3, for transporting the panel P to be processed, and at least one processing unit 100 of the panel P comprising an operator roller 60, 60 'rotatable around a rotation axis AA, capable of smoothing the panel P in machining, and a support frame 70 configured to support the operator roller 60; 60 ', in particular above the work surface 3.

The support frame 70 comprises a first 71 upright element and a second 72 upright element capable of contain a translation of the operating roller 60; 60 'along the axis of rotation AA, in which at least one of the upright elements can be opened and configured to assume both a closed position facing the operating roller 60; 60' to contain a translation of the roller operator 60; 60 'along the rotation axis AA, is an opening position, spaced from the operating roller 60; 60', to allow translation of at least a portion of the operating roller 60; 60 'along the rotation axis AA .

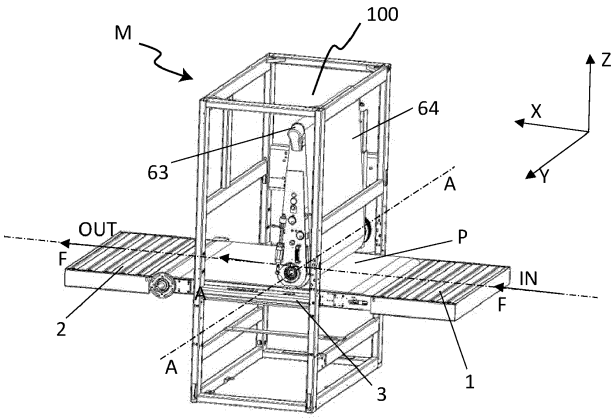

Fig. 1

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Description

Technical field of the invention

[0001] The present invention relates to a sanding machine for sanding a panel.

[0002] More in detail, the invention concerns a passing machine for working panels, comprising a working unit with a variable hardness roller, or an interchangeable one, used to perform operations for abrasion and/or for surface finishing of the panels.

State of the art

[0003] Traditional sanding machines for treating panels comprise one or more conveyor belts for conveying the panels to be worked and one or more working units arranged above said conveyor belts to sand the upper face of the panels.

[0004] Each working unit comprises at least one lower operator roller and one upper idle roller, connected together in such a way as to define a tension value of an abrasive belt installed between the operator roller and the idle roller.

[0005] In these machines, the rotation direction of the rollers is discordant with the advancement direction of the panel being worked.

[0006] The operator rollers currently in use comprise a metal core and a rubberized coating having a defined hardness value. The hardness of the roller to be installed on the sanding machine, to be intended as the hardness of the relative rubberized coating, is selected according to the material of the panel to be worked and/or according to the grain of the abrasive belt necessary for a specific working.

[0007] Therefore, to pass from one machining to another, or to obtain a more or less sanding gross of the panel being worked, it is necessary to replace the operator roller.

[0008] In the prior art, for each sanding machine, a certain number of operator rollers must be provided to be used according to the specific machining to be performed, for example depending on the removal required, or according to the specific material of the panel to be worked.

[0009] This type of machining process has therefore, among the disadvantages, the need to provide a plurality of supplied rollers to the machine, which - in addition to the considerable encumbrance in terms of management of the working spaces - also involves an expenditure in terms of costs.

[0010] The replacement of an operator roller also involves the movement of a body that weighs about 300 kg, causing possible overstresses both for the operator, who has to intervene in the roller change steps, and for the frame of the machine itself, in particular in correspondence with the supports of the operator roller.

[0011] In addition, a further disadvantage is that the long machine downtimes, necessary to allow the roller replacement operations, have a negative impact on the operating efficiency of the sanding machines of the prior art.

Summary of the invention

[0012] Therefore, the technical problem, provided and solved by the present invention, is that of providing a sanding machine for sanding at least one panel to be worked that allows overcoming the aforementioned drawbacks of to the prior art.

[0013] A scope of the invention is also to provide a working unit to be installed on passing working machines that is easy to use and can be easily installed on existing machines, capable of carrying out removal or sanding operations on the panels to be worked.

[0014] This technical problem is solved by a sanding machine according to claim 1 and, according to the same inventive principle, by a working unit according to claim 16.

[0015] Preferred features of the present invention are described in the claims dependent on the two cited claims.

[0016] The present invention provides some relevant advantages.

[0017] In particular, the feature of being able to easily access the operator roller and being able to replace a single portion of the roller itself involves the possibility of considerably reducing the downtime necessary to allow the operations to replace the operating roller and/or of a single portion of the roller itself.

[0018] This advantageous feature also allows reducing the mechanical stresses, during the replacement operations, both on the operator and on the machine frame, said stresses being linked to the weight of the component to be replaced.

[0019] A further advantage is also connected to the reduced size on the machine and the recovery of operating spaces around the sanding machine itself.

[0020] Furthermore, the possibility of reducing to a minimum the components to be removed or replaced during a hardness variation operation of the operator roller also allows optimizing the setting step of the roller itself during the machine operation restart.

[0021] Other advantages, features, and methods of use of the present invention will become evident from the following detailed description of some embodiments, presented by way of non-limiting example.

Brief description of the figures

[0022] The present invention will be now described, for illustrative but not limitative purposes, according to its preferred embodiments, with particular reference to the figures of the enclosed drawings, wherein:

figure 1 illustrates a perspective view of an embod-

iment of the machine for working a panel, according to the present invention;
figure 2 illustrates an enlarged perspective view of a detail, i.e. of a working unit, of the machine shown in figure 1;
figure 3 illustrates a perspective view of the working unit of figure 2 in a first frame opening configuration;
figure 4 illustrates a perspective view of the working unit of figure 3 in a second frame opening configuration;
figure 5 illustrates a perspective view of the working unit of figure 4 in a configuration of partial extraction of an interchangeable portion of the operator roller;
figure 6 illustrates a perspective view of a detail of the working unit shown in figure 3;
figure 7 illustrates a further perspective view of the detail shown in figure 6 in a raised configuration of the roller;
figure 8 illustrates the detail shown in figure 7 in a lowered configuration of the roller;
figure 9 illustrates a partially sectioned front view of the working unit of figure 2;
figure 10 illustrates a side view, on the operator side, of the working unit of figure 9;
figure 11 illustrates an alternative embodiment of an operator roller of the sanding machine according to the invention;
figure 12 illustrates an enlargement of a first and a second end portion of the operator roller of the working unit shown in figure 9;
figures 13a and 13b illustrate, respectively, a perspective view of a first and a second eccentric bushing of an adjustment system of the roller of figure 12.

[0023] In the various figures the similar parts will be indicated with the same numerical references.

Detailed description of preferred embodiments

[0024] The description below will be directed to the working of wooden panels P, but it is clear that it should not be considered limited to this specific use, since the machine here proposed can also be used for the working of metal or other material panels.

[0025] In the following, similar parts of the embodiments described will be indicated with the same numerical references.

[0026] With reference to figure 1, the sanding machine M, object of the present invention, comprises an inlet station 1, where the panels P to be worked are inserted according to an advancement direction F, parallel to the X-axis of the Cartesian reference system XYZ, an outlet station 2, from which the worked panels P come out, according to the same direction F, a working surface 3 for supporting and transporting the panel to be worked according to an advancement direction F, from the inlet station 1 toward the outlet station 2, at least one working unit 100 for performing a machining, in particular a sanding or calibration, on the panel P.

[0027] The machine M allows, in particular, to automatically realize a finishing effect similar to that of a manual sanding.

[0028] In particular, the working surface 3 comprises a belt wound on pulleys, movable along the advancement direction F, parallel to the X-axis of the Cartesian reference system XYZ, on which the panel P is placed during a machining operating step.

[0029] The machine M, according to the invention, also provides at least one working unit 100 comprising an operator roller 60 for sanding the panel P arranged on the working surface 3.

[0030] The operator roller 60 is rotatable around a rotation axis A-A, an axis substantially transverse with respect to the X-axis, discordant with the aforementioned advancement direction F, and is arranged above the working surface 3, between the inlet 1 and the outlet 2.

[0031] Advantageously, the operator roller 60, according to the present invention, comprises a metal core 61, for example substantially cylindrical, and a coating 62, shaped as an interchangeable sleeve, for example substantially cylindrical.

[0032] In particular, the rotation of the roller 60 along the rotation axis A-A is managed by the connection between one end of the metal core 61 to a driven pulley 90 activated by a motor, not shown in the drawings.

[0033] The coating, shaped for example as a cylindrical interchangeable sleeve 62, can be removed from the metal core and/or inserted on the substantially cylindrical metal core 61 of the operator roller 60.

[0034] In a further embodiment of the working unit identified with 100', not shown in the figures, the coating is shaped as a substantially conical interchangeable sleeve 62' and can be removed from, and/or inserted onto, a substantially conical shaped metal core 61' of the operator roller 60' shown in figure 11.

[0035] Preferably, the transmission of the torque between the coating 62, 62' and the metal core 61, 61' during the rotation of the roller 60, 60' is ensured by an interference between the parts or by an anti-rotation mechanical stop.

[0036] In the embodiments of the solution according to the invention described here, the working unit 100, 100' comprises an idle tensioning roller 63, positioned above the operator roller 60, 60', and an abrasive belt 64, wound or configured to be wound around the aforesaid tensioning roller 63 and operator roller 60, 60'. Therefore, the operator roller 60, 60' acts as a stop for the abrasive belt 64 during a sanding operation of the panel P.

[0037] In an alternative embodiment, a positioning of the working unit could be provided under the working surface, for example to allow a working of a lower face of the panel.

[0038] The working unit 100, 100' comprises a supporting frame 70 configured to support the operator roller 60, 60' and the tensioning roller 63, in particular above

the working surface 3.

[0039] As shown in figure 2, the supporting frame 70 comprises a first 71 upright element and a second 72 upright element configured to contain a translation of the operator roller 60, 60' along the rotation axis A-A.

[0040] Advantageously, at least one of the aforesaid first upright element 71 and second upright element 72 can be opened and configured to assume both a closed position, facing a terminal end of the operator roller 60, 60' to contain a translation of the operator roller 60, 60' along the rotation axis A-A, and an opening position, spaced from the operator roller 60, 60', to allow a translation of at least a portion of the operator roller 60, 60' along the rotation axis A-A.

[0041] In particular, as shown in the figures, in the examples here described the first upright element 71 can be opened.

[0042] As shown in figure 3, the supporting frame 70 comprises a reference crosspiece 73 positioned between the first upright element 71 and the second upright element 72, in particular above the working surface 3.

[0043] The supporting frame 70 comprises also a transverse supporting element 75, positioned above the reference crosspiece 73, configured to support a free rotation of the tensioning roller 63.

[0044] The supporting frame comprises also a belt tensioning piston 74, positioned between the reference crosspiece 73, and the transverse supporting element 75, in order to allow the tensioning of the abrasive belt 64, to maintain the tension of the belt during the operation of the machine, and, at the at the same time, to guarantee the possibility of de-tensioning in the operations of replacing the abrasive belt.

[0045] Advantageously, the belt tensioning piston 74 is configured to allow a translation along the Z-axis of the tensioning roller 63 with respect to the reference crosspiece 73.

[0046] To ensure the maintenance of a gripping contact between the operator roller 60, 60' and the abrasive belt 64, during the rotation of the operator roller 60, 60', the coating 62 of the metal core 61 is preferably made of rubber or composite material.

[0047] In particular, the hardness of the rubber, or of the composite material, used for making the interchangeable sleeve 62, defines the working pressure value of the abrasive belt 64 on the panel P, thus impacting on the quality of the performed machining.

[0048] As shown in figure 5, advantageously, the interchangeable sleeve 62 can be removed with respect to the metal core 61 by sliding the sleeve itself on the external surface of the metal core 61 along the axis A-A.

[0049] In the alternative embodiment, shown in figure 11, for facilitating the operations of inserting and removing the interchangeable sleeve 62' with respect to the metal core 61', the conformation of the interchangeable sleeve 62' and of the metal core 61' is substantially conical.

[0050] Furthermore, the aforementioned operations can be facilitated by a compressed air system, which provides the realization of a plurality of ducts in the metal core 61', from a central axis of the metal core 61' to an external surface of the metal core 61' itself, to allow the introduction of compressed air during the step of removing the interchangeable sleeve 62'.

[0051] In particular, in the alternative embodiment described here, the transmission of the torque between the coating 62' and the metal core 61' during the rotation of the roller 60, 60' is ensured, in addition, or alternatively to the presence of an anti-rotation mechanical stop, by interference between the coating 62' and the metal core 61'.

[0052] Advantageously, the frame 70 comprises sliding connection means between the first openable upright element 71 and the reference crosspiece 73.

[0053] As shown in figures 3 to 5, in fact, the first upright element 71 is slidingly connected to the reference crosspiece 73 and it is movable toward and/or away to and/or from the reference crosspiece 73 to assume - respectively - the aforementioned closing and/or opening positions.

[0054] In particular, the sliding connecting means comprise a guide-slider coupling. As shown in figure 9, a guide element 53 is provided on a surface of the reference crosspiece 73 and a slider element 51 is connected to the first upright element 71. Alternatively, it can be provided an embodiment in which the guide element 53 is connected to the first upright element 71 and the slider element 51 is provided on a surface of the reference crosspiece 73.

[0055] Advantageously, as shown in the figures, the first upright element 71 is connected to the slider element 51 by means of a spacer element 54.

[0056] Furthermore, as shown in figure 4, a hinge element 52 is provided, positioned between the slider element 51 and the spacer element 54, configured to allow a rotation of the spacer element 54 with respect to the slider element 51, preferably around an axis that is substantially perpendicular to said axis A-A.

[0057] In this way, the bulk along the axis A-A due to the sliding of the first upright element 71 towards the opening position, spaced from the operator roller 60, 60', is advantageously reduced.

[0058] Furthermore, as shown for example in figure 5, a rotation of the spacer element 54 with respect to the slider element 51 allows the first upright element 71 to move away from the axis A-A, thus ensuring the possibility of free sliding along the same axis A-A, of the extractable sleeve 62, 62' with respect to the metal core 61,61' of the operator roller 60, 60'.

[0059] To optimize the volumetric dimensions of the frame 70, the reference crosspiece 73 is shaped like a tubular element, and the guide element 53 is provided on an internal surface of the crosspiece 73, in such a way as to allow a slidable coupling between the guide 53 and slider 51 inside the crosspiece itself.

[0060] Advantageously, in a closed position of the first

upright element 71, the spacer element 54 is also inserted inside the crosspiece 73.

[0061] As shown in particular in figures 6 to 8, the working unit 100, 100' comprises an adjustment system 80 configured to adjust the positioning of the operator roller 60, 60' with respect to the working surface 3 and in particular with respect to the panel P to be worked.

[0062] The adjustment system 80 allows to move the rotation axis A-A of the operator roller 60, 60' from a resting position (OFF), shown in figure 7, spaced from the working surface to an operating position (ON), shown in figure 8, close to the working surface, wherein, during machining, the operator roller 60, 60' keeps the abrasive belt 64 under pressure with respect to the panel P to be sanded.

[0063] In particular, the adjustment system 80 allows a movement of the operator roller 60, 60' along an axis parallel to the Z-axis of the Cartesian reference system XYZ, to vary the abrasion depth on the surface of the panel P and to allow more accurate positioning of the roller 60, 60' with respect to the panel P during the most delicate machining.

[0064] Advantageously, the rotation axis A-A of the operator roller 60, 60' carries out a rotary movement induced by an eccentric driven in rotation by a connecting rod-rocker arm mechanism, or the like.

[0065] The adjustment system 80 comprises a first 88 and a second 89 eccentric bushing, respectively positioned at a respective receiving portion provided on each first and second upright element. Each receiving portion of said first and second upright element is, in particular, shaped to receive, respectively, a first and a second terminal end of the operator roller 60, 60'.

[0066] In particular, the adjustment of the positioning along the Z-axis of the roller 60, 60', is operated by means of actuating means positioned on the first upright element 71, on the operator side, configured to actuate a rotary movement of said first 88 and second 89 supporting bushing of the axis A-A for the rotation of the operator roller 60, 60'.

[0067] Preferably, as shown in figure 10, the actuating means comprise a linear actuating element, for example, a pneumatic cylinder 860, which can be electronically activated. In addition, the actuating means comprise a threaded adjusting element 850, for example, which can be manually or electrically activated. Manual adjustment takes place before the working, while electronic adjustment can also take place while the operator roller 60, 60' is being worked, i.e. during a smoothing step of the panel P.

[0068] The adjustment system 80 comprises also a first rocker element 83 rotatably integrally coupled with the first eccentric bushing 88 and a second rocker element 85 integrally coupled in rotation with the second eccentric bushing 89.

[0069] Advantageously, the first rocker element 83 and the second rocker element 85 are connected by means of a synchronism mechanism of the bushings, which provides, in particular, a transmission shaft 81.

[0070] As shown in figure 6, the transmission shaft 81 is connected at a first and a second terminal end, by means of a first connecting rod element 82 and a second connecting rod element 86 respectively to the first rocker element 83 and to the second rocker element 85.

[0071] In particular, as shown in figures 4 to 8, the transmission shaft 81 is connected, by means of own end rockers, to the first 82 and second 86 connecting rod element.

[0072] Furthermore, to transmit the adjustment motion of the operator roller 60, 60', the adjustment system 80 comprises an operating lever 84 integral with the rocker 83, positioned on the outside of the first upright element 71, on the operator side, and coupled with the pneumatic cylinder 860.

[0073] In particular, the operating lever 84, as well as the rocker 83, is integrally coupled in rotation with the first eccentric bushing 88, and the linear motion of the pneumatic cylinder 860 is transformed into a rotary motion of the eccentric bushing 88, and finally in a circular motion of the rotation axis A-A of the roller 60, 60', having a component along the Z-axis.

[0074] As shown in figure 2, in a closed position of the first upright element 71, or in an operating condition of the operator roller 60, 60', the operating lever 84 is coupled with the first eccentric bushing 88.

[0075] As anticipated above, the present invention also relates to a working unit 100, 100' of a panel P, which can be inserted in a sanding machine, equipped with an inlet station 1 for the input of a panel P to be worked and an outlet station 2 for the exit of the worked panel P, with a working surface 3 for transporting the panel P to be worked, according to an advancement direction F, from the inlet station 1 to the outlet station 2; and able to synchronize with the operation of the sanding machine, said working unit 100; 100' being positioned or placeable facing the working surface 3. The working unit 100, 100' comprises an operator roller 60; 60' rotatable around a rotation axis A-A, substantially transverse with respect to said advancement direction F, a tensioning roller 63 rotatable around an axis substantially parallel to said axis (A-A), an abrasive belt 64 stretched and circulating between the operator roller 60; 60' and the tensioning roller 63, said abrasive belt 64 being dragged and pressed against said panel P, by the operator roller 60; 60', and a supporting frame 70 configured to support the operator roller 60; 60' and the tensioning roller 63, said supporting frame 70 comprising a first 71 upright element and a second 72 upright element capable of containing a translation of the operator roller 60; 60' along the rotation axis (A-A).

[0076] Advantageously, the working unit 100; 100' is characterized by the fact that at least one of the aforementioned first 71 upright element and second 72 upright element can be opened and configured to assume both a closed position, facing the operator roller 60; 60' to contain a translation of said operator roller 60; 60' along

the rotation axis A-A, and an opening position, spaced from the operator roller 60; 60', to allow at least a portion of the operator roller 60; 60' to be extracted from supporting frame 70, by means of a translation along the rotation axis A-A.

[0077] To change the coating sleeve of the roller 60, 60', the operator moves the first upright element 71 along the axis A-A, for example by means of a handle 10 positioned on the first upright element 71, so as to allow disengagement of the first eccentric bushing 88 from the first terminal end of the roller 60, 60'.

[0078] After having rotated the first upright element 71 with respect to the slider 51, as shown in figure 4, it is possible to remove and replace the coating sleeve 62, as shown in figure 5.

[0079] Advantageously, in the opening position of the first upright element 71, as shown in figure 4, the operating lever 84, as well as the first eccentric bushing 88 and the first rocker 83 remain in a mutual coupling configuration constrained to the surface of the first upright 71. Furthermore, to reduce the bulk or constraint to the translation of the coating sleeve 62 along the axis A-A, also the first connecting rod element 82 and the respective end rocker 83 remain constrained to the surface of the first upright 71.

[0080] Advantageously, therefore, the sanding machine and the working unit according to the invention allow to facilitate and to speed up the hardness change operations of the roller and, at the same time, increase the safety and care of the operator involved in the coating replacing operations of the operator roller.

[0081] The present invention has been described for illustrative but not limitative purposes, according to its preferred embodiments, but it is to be understood that modifications and/or changes can be introduced by those skilled in the art without departing from the relevant scope as defined in the enclosed claims.

Claims

1. Sanding machine (M) for sanding at least one panel (P), comprising:

   - an inlet station (1) for the entry of a panel (P) to be worked and an outlet station (2) for the exit of the worked panel (P);
   - a working surface (3) for transporting the panel (P) to be worked, according to an advancement direction (F), from said inlet station (1) to said outlet station (2);
   - at least one working unit (100;100') of the panel (P), arranged facing said working surface (3), to work one face of said panel (P), said working unit (100;100') being able to sand the panel (P) during the passage of the panel (P) from said inlet station (1) to said outlet station (2) and comprising

   an operator roller (60; 60') rotatable around a rotation axis (A-A), substantially transverse to said advancement direction (F),
   a tensioning roller (63) rotatable around an axis substantially parallel to said axis (A-A),
   an abrasive belt (64) stretched and circulating between said operator roller (60; 60') and said tensioning roller (63), said abrasive belt (64) being dragged and pressed against said panel (P), by said operator roller (60; 60'),
   and
   a supporting frame (70) configured to support said operator roller (60; 60') and said tensioning roller (63) said supporting frame (70) comprising a first (71) upright element and a second (72) upright element apt to contain a translation of said operator roller (60;60') along said rotation axis (A-A);
   said sanding machine (M) being **characterized in that** at least one of said first (71) upright element and second (72) upright element can be opened and configured to assume both a closed position, facing said operator roller (60;60') to contain a translation of said operator roller (60;60') along said rotation axis (A-A), and an opening position, spaced from said operator roller (60;60'), to allow extraction of at least one portion of said operator roller (60;60') from said supporting frame (70), by means of a translation along said rotation axis (A-A).

2. Sanding machine (M) according to the preceding claim, wherein said operator roller (60;60') has a metal core (61;61') and a coating (62;62') shaped like an interchangeable sleeve.

3. Sanding machine (M) according to the preceding claim, wherein said coating (62; 62'), shaped as an interchangeable sleeve of said operator roller (60; 60'), is made of rubber.

4. Sanding machine (M) according to any one of the preceding claims, wherein said supporting frame (70) comprises a reference crosspiece (73) positioned between said first upright element (71) and said second upright element (72).

5. Sanding machine (M) according to any one of the preceding claims, wherein said supporting frame (70) comprises a transverse supporting element (75), configured to support free rotation of said tensioning roller (63).

6. Sanding machine (M) according to the preceding claim, wherein said supporting frame (70) further comprises a belt tensioning piston (74) positioned between said reference crosspiece (73) and said transverse supporting element (75).

7. Sanding machine (M) according to any one of claims 4 to 6, wherein said frame (70) comprising sliding connecting means (51,53,54) between said first (71) openable upright element and said reference crosspiece (73), said first (71) upright element being slidingly connected to said reference crosspiece (73) and being movable towards/away from said reference crosspiece (73) to assume said closing/opening position.

8. Sanding machine (M) according to the preceding claim, wherein said sliding connection means comprises a guide-slider coupling, a guide element (53) being provided on said reference crosspiece (73) and a slider element (51) being connected to said first upright element (71), or vice versa.

9. Sanding machine (M) according to the preceding claim, wherein said sliding connection means comprises a spacer element (54) positioned between said slider element (51) and said first upright element (71).

10. Sanding machine (M) according to the preceding claim, wherein a hinge element (52) is provided between said slider element (51) and said spacer element (54), said hinge element (52) being configured to allow a rotation of said spacer element (54) with respect to said slider element (51), around an axis substantially perpendicular to said axis (A-A).

11. Sanding machine (M) according to one of the preceding claims, wherein said working unit (100;100') comprises an adjustment system (80) configured to adjust the positioning of said operator roller (60,60') with respect to said working surface (3).

12. Sanding machine (M) according to the preceding claim, wherein said adjustment system (80) comprises a first (88) eccentric bushing and a second (89) eccentric bushing positioned to receive, respectively, a first and a second terminal end of said operator roller (60;60').

13. Sanding machine (M) according to the preceding claim, wherein said adjustment system (80) comprises a transmission shaft (81) connected by means of a connecting rod-rocker arm mechanism (82,83; 86,85) to said first (88) eccentric bushing and second (89) eccentric bushing.

14. Sanding machine (M) according to the previous claim, wherein said adjustment system (80) comprises actuating means configured to actuate a movement of said rotation axis (A-A) of said roller (60,60').

15. Sanding machine (M) according to the preceding claim, wherein said actuating means comprises at least one linear actuator element (860), optionally a pneumatic cylinder, and an operating lever (84).

16. Working unit (100;100') of a panel (P), which can be inserted in a sanding machine, equipped with an inlet station (1) for the entry of a panel (P) to be worked and a outlet (2) for the exit of the worked panel (P), a working surface (3) for transporting the panel (P) to be worked, according to an advancement direction (F), from said inlet station (1) to said outlet station (2); and apt to be synchronized with the operation of said sanding machine, said working unit (100;100') being positioned or positionable facing said working surface (3) and comprising

an operator roller (60;60') rotatable around a rotation axis (A-A), substantially transverse to said advancement direction (F),
a tensioning roller (63) rotatable around an axis substantially parallel to said axis (A-A),
an abrasive belt (64) stretched and circulating between said operator roller (60;60') and said tensioning roller (63), said abrasive belt (64) being dragged and pressed against said panel (P), by said operator roller (60;60'), and
a supporting frame (70) configured to support said operator roller (60;60') and said tensioning roller (63) said supporting frame (70) comprising a first (71) upright element and a second (72) upright element apt to contain a translation of said operator roller (60;60') along said rotation axis (A-A);
said working unit (100;100') being **characterized in that** at least one of said first (71) upright element and second (72) upright element can be opened and configured to assume both a closed position, facing said operator roller (60;60') to contain a translation of said operator roller (60;60') along said rotation axis (A-A), and an opening position, spaced from said operator roller (60;60'), to allow extraction of at least a portion of said operator roller (60;60') from said supporting frame (70), by means of a translation along said rotation axis (A-A).

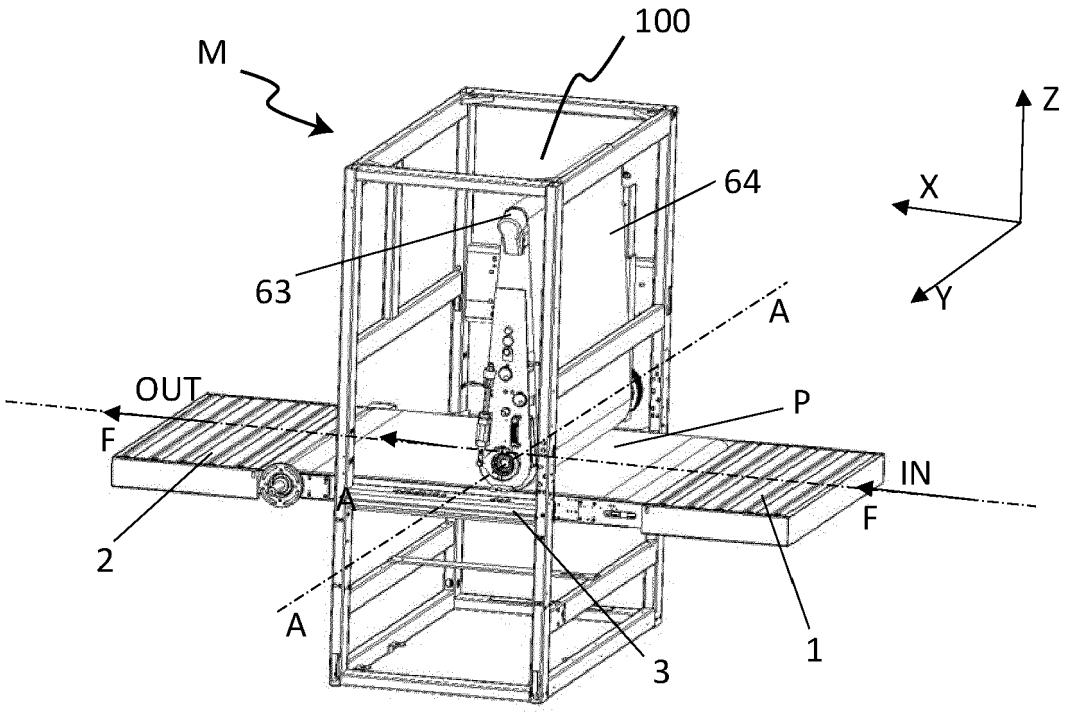
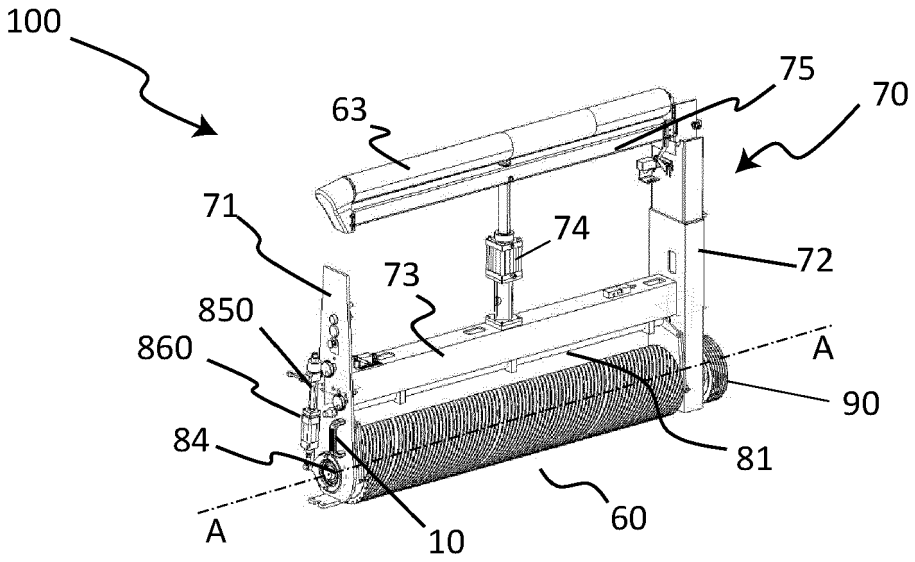

M
100
Z
X
Y
64
63
A
OUT
F
P
IN
F
A
2
A
3
1

Fig. 1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70
63
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74
72
73
850
860
A
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84
81
A
10
60

Fig. 2

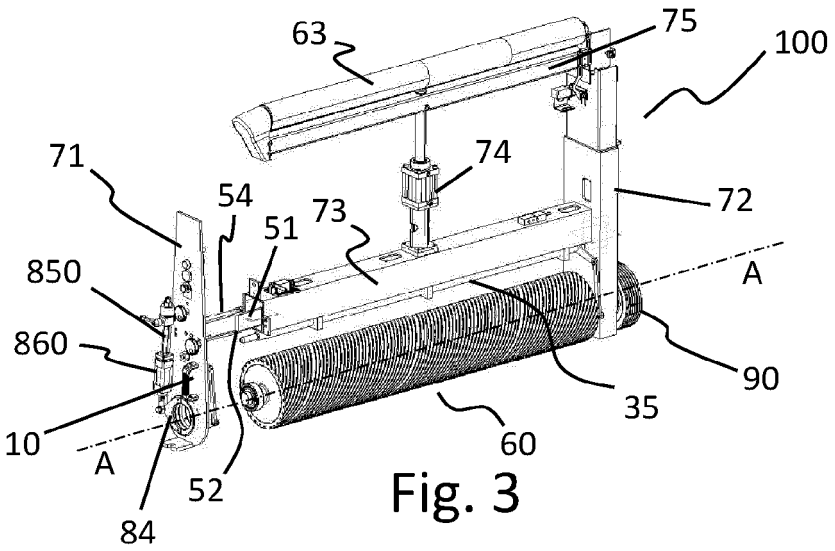

Fig. 3

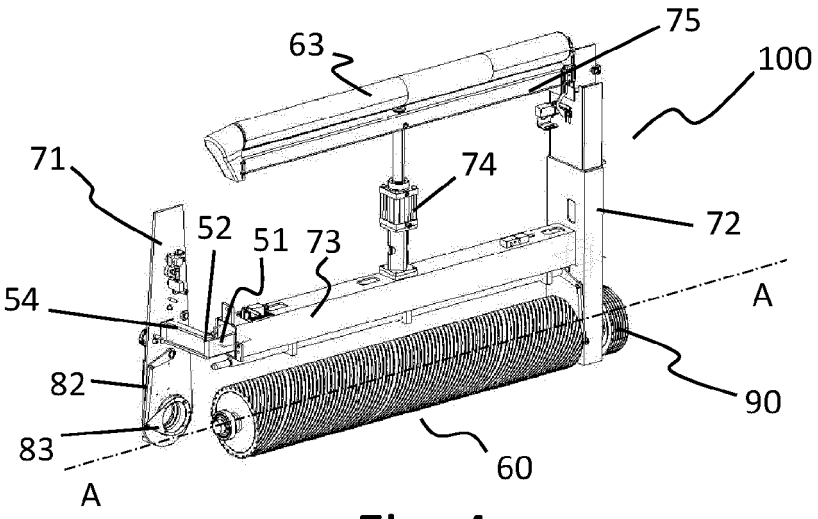

Fig. 4

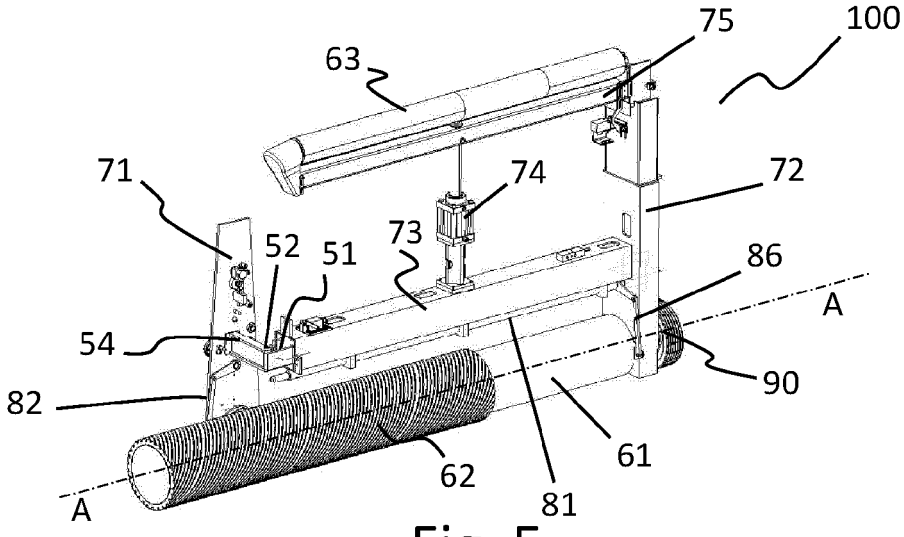

Fig. 5

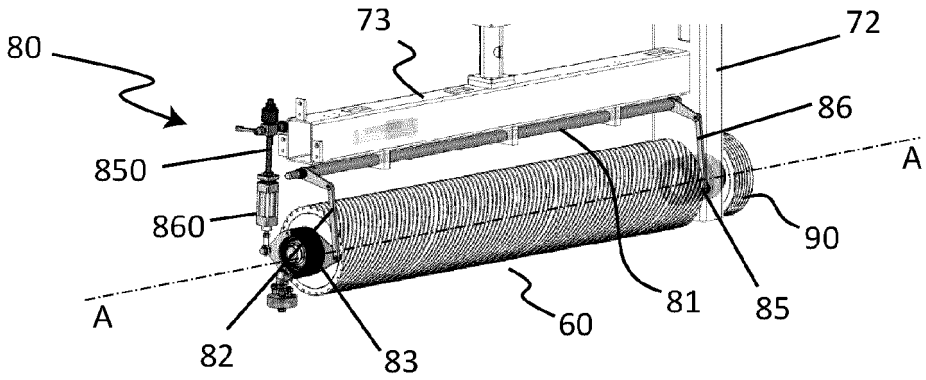

Fig. 6

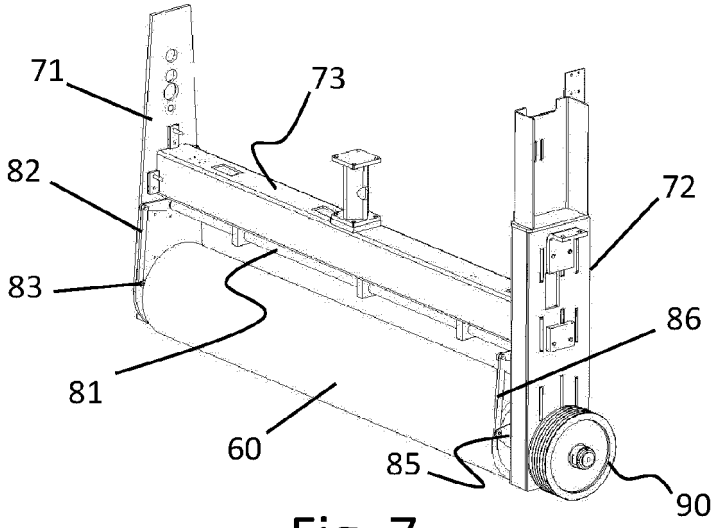

Fig. 7

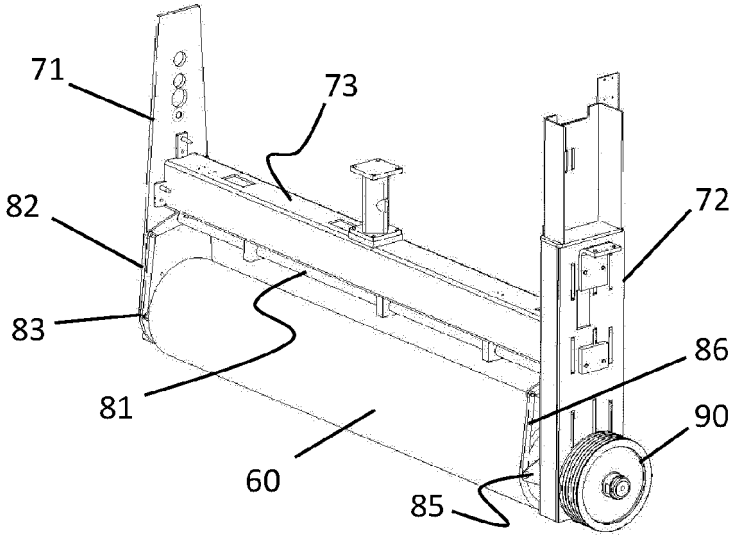

Fig. 8

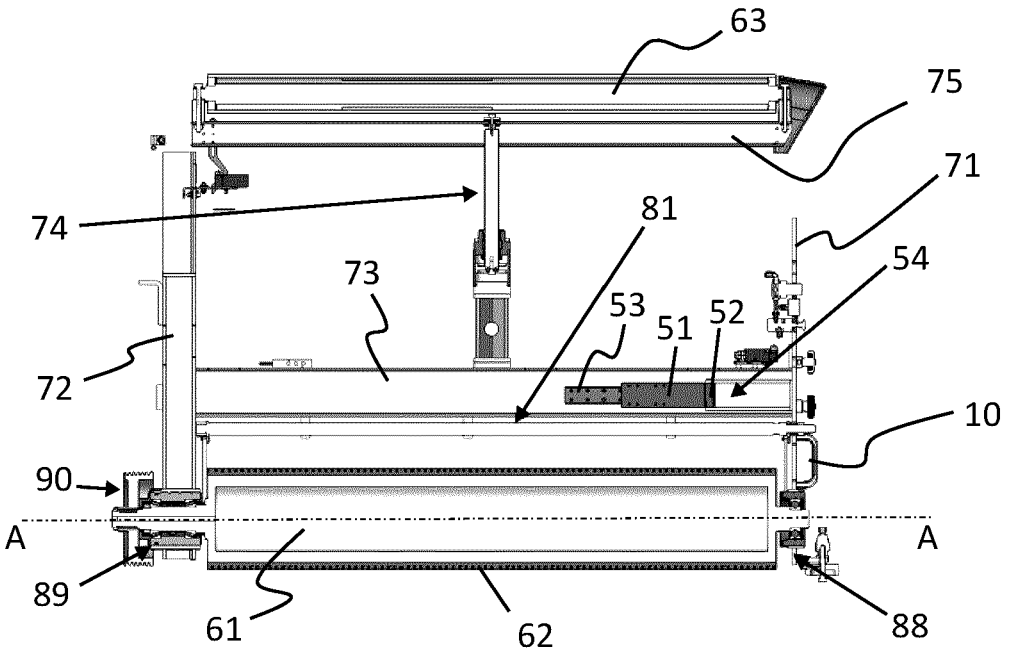
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Fig. 9

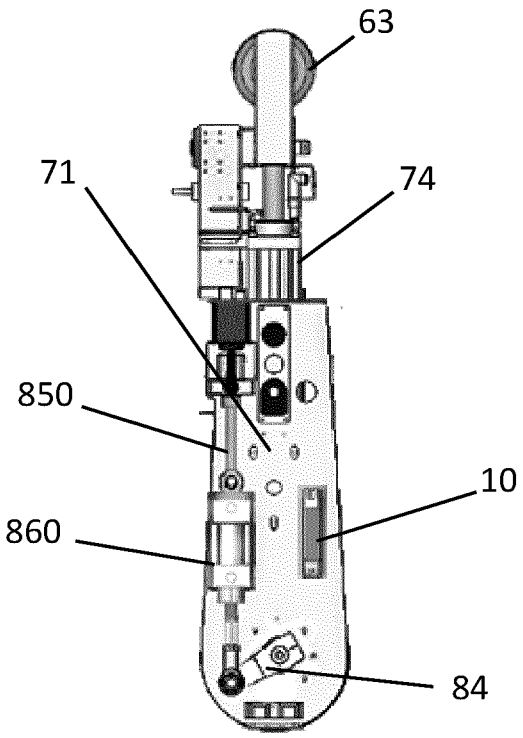
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Fig. 10

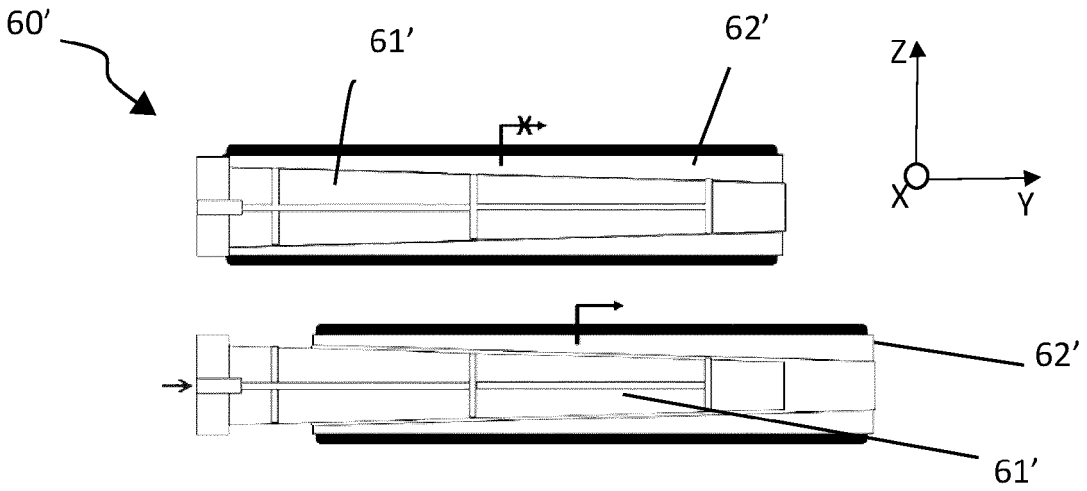

Fig. 11

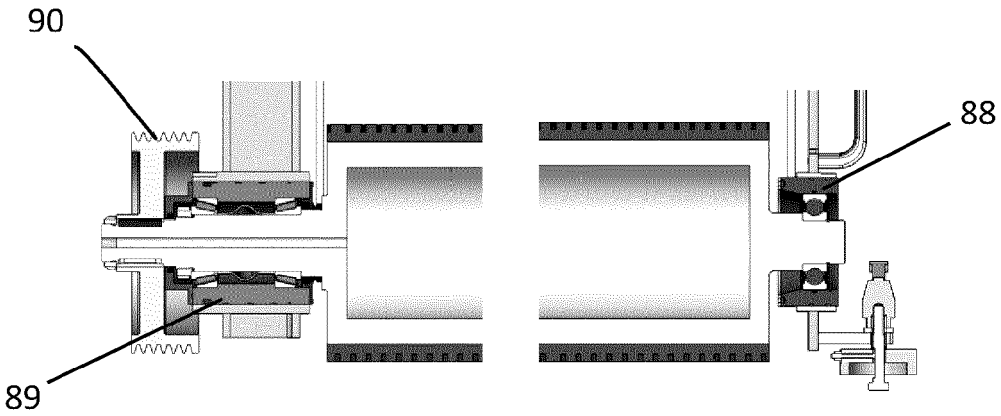

Fig. 12

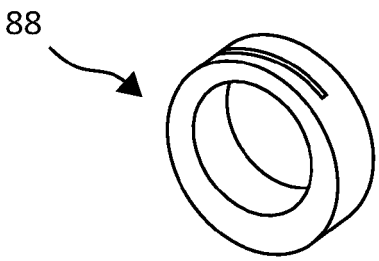

Fig. 13a

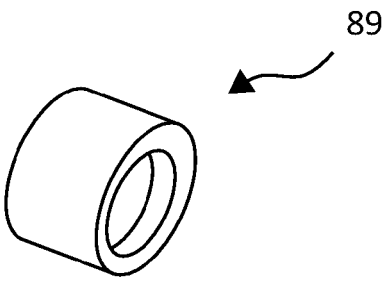

Fig. 13b