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(54) GLUING MACHINE

(57) A machine (1) for gluing elements made of various sheets of material such as leather or imitation leather, fabric or cardboard or the like (2), comprises a feeding station (1a) of said elements to be glued (2); a gluing station (1b) of said elements; a conveyor belt (3) adapted to bear a number of said elements (2) along a feed direction (T), a dispenser (4) of glue movable on said conveyor belt (3) and adapted to dispense the glue onto a gluing area (4a) as said elements (2) pass through the gluing station (1b). The machine further comprises at least one alignment device (7) of the elements in leather or imitation leather (2) adapted to identify a positioning area (2a) of the elements in leather or imitation leather (2) on the conveyor belt (3) presenting an extension equal to or greater than the gluing area (4a).

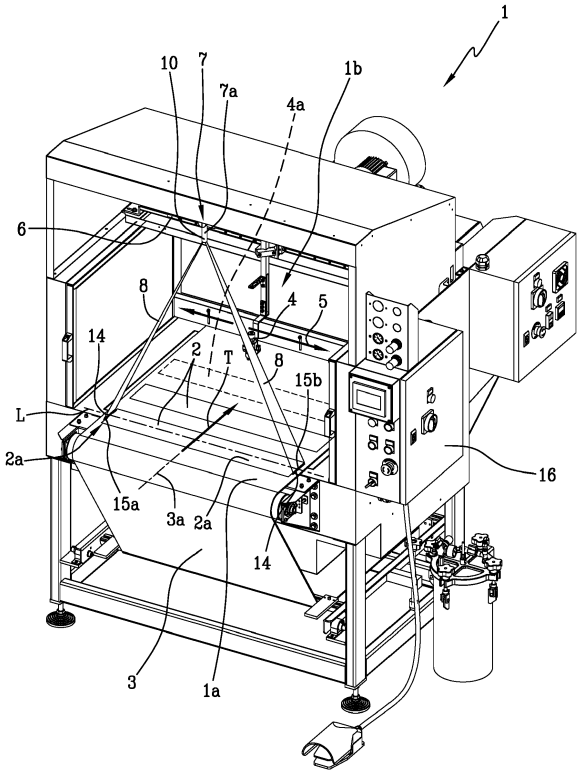

Fig.1

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Description

[0001] The present invention relates to a gluing machine.

[0002] Specifically, the present invention finds particular use in the processing of leather or imitation leather, fabric, cardboard and various materials in sheet form for the production of leather goods and the like.

[0003] Gluing machines are used to cover, with specific glues for the material, the base elements in leather or imitation leather which are then used to make leather goods and the like, such as belts, diaries, bags, wallets, key rings or otherwise. In particular, a gluing machine is used to evenly coat these elements or to coat specific sections.

[0004] Examples of gluing machines or machines for processing leather goods are shown in the documents EP 0678250, WO 90/13671 and EP 1157793. Generally speaking, gluing machines are loaded by an operator, who places the material elements to be glued, generically defined strips of material, on a conveyor belt of a single machine, which brings the strips in succession towards a gluing station where there is a glue dispenser. The glue dispenser, preferably a gun with nozzle, is positioned above the conveyor belt and moves along a path transversal to the feed direction of the elements to be glued, dispensing the amount of glue needed on the surface of the pieces.

[0005] In particular, the conveyor belt has an intermittent progress to allow the coating with glue by the dispenser. Alternatively, in some cases, the conveyor belt moves continuously at a speed sufficient to allow an optimal dispensing of the adhesive on the surface of the pieces.

[0006] One problem that arises with this method is the correct and rapid positioning of the strips on the conveyor belt in order to ensure that the elements to be glued are adequately coated with glue without incurring unnecessary waste of material or areas not adequately covered with glue. Unfortunately, the absence of references can lead to a significant waste of glue.

[0007] Normally, in fact, to ensure the correct and complete coating of glue, the dispenser performs a stroke longer than the length of the elements to be glued, sometimes even equivalent to the width of the conveyor belt. The machine is, in fact, used to glue different types of elements for the production of various leather goods or the like, which may thus be different sizes from each other, without however always being able to set the stroke of the dispenser.

[0008] This leads to an excessive waste of glue. Operators therefore need to be able to align the elements to be glued sufficiently, so that they are all covered in the same way by the glue. Even more specifically operators must place the strips at a sufficient distance to prevent them from sticking together. Operators must also avoid placing the elements to be glued in areas not covered by the stroke of the dispenser.

[0009] To do this, the operator must be properly trained. In particular he/she must know the right distance between the strips, the size of the same, to adjust wherever possible the stroke of the dispenser, and of course he/she must place the strips so that they are perfectly aligned with each other to allow the dispenser to coat them evenly.

[0010] Operator training takes time and resources, and, of course, due to shifts and/or the complexity of the work, more than one operator must be trained.

[0011] Furthermore, in order to place the elements to be glued on the conveyor belt correctly and precisely the processing time increases with a consequent decrease in production per unit of time.

[0012] The purpose of the present invention is to provide a gluing machine which makes it possible to overcome the drawbacks of the prior art. In particular, the purpose of the present invention is to provide a gluing machine that allows even an untrained or not particularly expert operator to place correctly the elements to be glued on the conveyor belt and to configure the machine accordingly.

[0013] The technical task specified and purposes specified can be substantially achieved by a gluing machine having the technical specifications set out in one or more of the appended claims.

[0014] Additional features and advantages of the present invention will be clearer from the indicative and therefore non- limiting description of a preferred but not exclusive embodiment of a gluing machine.

[0015] Such description will be made below with reference to the appended drawings, provided for indicative purposes only and therefore non-limiting, wherein:

- Figure 1 is a schematic representation of a gluing machine in a first embodiment;
- Figure 2 is a detail of the gluing machine according to Figure 1;
- Figure 3 is a schematic representation of a gluing machine in a second embodiment;
- Figure 4 is a schematic representation of a gluing machine in a third embodiment.

[0016] With reference to the appended drawings, reference numeral 1 globally denotes a gluing machine, for simplicity hereinafter referred to as the machine 1. The elements in common to the various embodiments shown in the attached drawings have been indicated with the same reference numeral.

[0017] Figure 1 shows a machine 1 for coating a plurality of elements or strips 2, preferably in leather or imitation leather, with glue.

[0018] The machine 1 comprises a feeding station 1a, at which the elements in leather or imitation leather 2 to be glued are loaded onto a conveyor belt 3, and a gluing station 1 b of the leather or imitation leather elements 2.

[0019] The machine 1 further comprises the aforementioned conveyor belt 3, which is configured to transport

the elements in leather or imitation leather 2 in a feed direction "T", between the feeding station 1a and the gluing station 1 b.

[0020] Preferably, in the embodiment illustrated, the conveyor belt 3 moves along the feed direction "T" with an intermittent movement. However, a continuous movement may be provided.

[0021] The leather or imitation leather elements 2 are aligned with each other on the conveyor belt 3, along a machining line "L", transverse, preferably perpendicular, to the feed direction "T".

[0022] The machine 1 comprises a dispenser 4 of glue placed above the conveyor belt 3 at the gluing station 1 b.

[0023] In particular, the dispenser 4 is configured to move along a stroke 5 transversal, preferably perpendicular, to the feed direction "T" of the conveyor belt 3, to dispense the glue on a top surface 2a of each leather or imitation leather elements.

[0024] Even more specifically, the dispenser 4 is configured to dispense the glue on a gluing area 4a when the leather or imitation leather elements 2 pass through the gluing station 1b. The machine 1 further comprises at least one alignment device 7 of the leather or imitation leather elements 2. Said alignment device 7 is adapted to identify a positioning area 2a of the leather or imitation leather elements 2 on the conveyor belt 3 having an extension equal to the effective gluing area 4a.

[0025] In particular, the alignment device 7 identifies reference points, which will be used later by the operator to arrange and manually align in the correct position on the conveyor belt 3, the leather or imitation leather elements 2 to be glued.

[0026] The alignment device 7 comprises a projector 7a adapted to project a beam of light 8 on the conveyor belt 3 to identify the positioning area 2a.

[0027] The projector 7a is positioned upstream of the dispenser 4, in a raised position with respect to the conveyor belt 3, so as to project the beam of light 8 at said feeding station 1 a.

[0028] Advantageously, a support crossbeam 6 may be provided bearing the projector 7a by means of a projector 7a flange 6a.

[0029] Preferably, as shown in Figure 1, the projector 7a is placed in a central position with respect to the conveyor belt 3.

[0030] As shown in detail in Figure 2, the projector 7a is preferably mobile and can rotate about an axis of rotation X parallel to the feed direction "T" of the conveyor belt 3.

[0031] In particular, the projector 7a performs, about the axis of rotation X, a limited oscillation within an angular stroke preferably of 90°.

[0032] In particular, the axis of rotation "X" is transverse, preferably perpendicular, to a lying plane "P" of the projector 7a.

[0033] The machine 1 comprises then an engine 9, configured to impart a rotary, more precisely oscillatory motion "R" to the projector 7a; engine 9 and projector 7a are connected with a first support flange 11 of the motor 9 and a second support flange 12 of the projector 7a. In particular, the second flange 12 comprises a limiting pin 13.

[0034] The limiting pin 13 is inside the second flange 12 and is configured to limit the oscillatory movement "R" of the projector 7a.

[0035] Preferably, the limiting pin 13 of the projector 7a is configured to limit the oscillatory movement "R" within an angular stroke. Even more preferably the angular stroke is 90°, so that the oscillatory movement "R" is an oscillation angle limited within the angular stroke of 90°.

[0036] Advantageously, the projector 7a is a LASER pointer or a LED pointer 10. According to a first embodiment shown in Figures 1 and 3, the projector 7a is configured to project the beam of light 8 in the form of a line 14.

[0037] In particular, the oscillatory movement "R" is limited to a first 15a and a second 15b extreme. The two extremes 15a, 15b, are within the angular stroke and the oscillatory movement "R" alternates between the first extreme 15a and the second extreme 15b. Even more specifically the two extremes 15a and 15b coincide with the extremes of the strips 2.

[0038] The line 14 is projected alternately onto the conveyor belt 3 at the first 15a and the second 15b extreme.

[0039] In particular, the line 14 is projected onto the conveyor belt 3 when the projector reaches the first 15a or second 15b extreme within the angular stroke. The line 14 is not projected during the oscillatory movement "R" between the first 15a or second 15b extreme.

[0040] In particular the projector 7a projects the beam of light 8 in the form of the line 14 upon reaching the two extremes 15a and 15b, performing the oscillatory movement "R" at a speed fast and continuous enough to give the impression to the human eye that the line 14 is projected simultaneously at the extreme 15a and at the extreme 15b.

[0041] Advantageously this configuration makes it possible to create a reference for the machine operator thanks to the presence of the line 14 in the first extreme 15a and in the second extreme 15b, and to identify a positioning area 2a of said strips 2. The positioning area 2a has an amplitude, measured perpendicular to the feed direction "T" of the belt 3 equal to the gluing area 4a.

[0042] With this configuration the operator, without necessarily being trained, can see the extremes between which can place the leather or imitation leather elements 2. In addition, the reciprocating motion along the feed direction "T" allows the operator to correctly position the strips 2 between the first extreme 15a and the second extreme 15b.

[0043] The machine 1 further comprises a control unit 16, as shown in Figure 1. The control unit 16 controls both the dispenser 4 and the projector 7a. In particular, the control unit 16 is adapted to configure the oscillatory movement "R" of the projector 7a, making it possible to adjust the angular stroke to define the first extreme 15a

and the second extreme 15b and accordingly set the stroke 5 of the dispenser 4.

[0044] Alternatively, it is possible to adjust from the control unit 16 the stroke 5 of the dispenser 4 and accordingly adjust the first extreme 15a and the second extreme 15b of the projector 7a.

[0045] In addition, the control unit 16 enables the adjustment of the feed speed of the conveyor belt 3.

[0046] The embodiment of Figure 3 shows a machine 1 comprising two projectors 7 positioned above the conveyor belt 3. The projectors 7 of this embodiment are placed on opposite sides with respect to the central axis 3a of the conveyor belt 3 oriented along the feed direction "T" and are configured to project the line 14 in the first extreme 15a and in the second extreme 15b.

[0047] In particular, a first projector 7a is configured to project a line 14a in the first extreme 15a and a second projector 7b is configured to project a line 14b in the second extreme 15b.

[0048] Both projectors 7a and 7b have an engine 9 but in this case the oscillatory movement "R" sets out to position the projectors 7 so as to have the extremes 15a and 15b in positions not necessarily symmetrical to each other in relation to the centre of the conveyor belt 3. In particular, the engine 9 does not operate continuously as in the previous embodiment, but only and solely to position the extremes 15a and 15b during the control step with the control unit 16. The control unit 16 enables the adjustment of both projectors 7a and 7b to define the extremes 15a and 15b, then adjusting the stroke 5 of the dispenser 4. Vice versa, it is possible to adjust the stroke 5 of the dispenser 4 to then adjust the position of the first extreme 15a and the second extreme 15b and adjust the feed speed of the conveyor belt 3.

[0049] In the embodiment of the machine 1 in Figure 4, the projector 7a projects a beam of light 8 in the form of profiles 17. In this case also it is placed in a raised position and central to the conveyor belt 3. The projector 7a thus configured projects on the conveyor belt 3 at the positioning area 2a the beam of light 8 in the form of a specific profile corresponding to a particular geometry of the product to be glued in order to define a precise gluing area 4a. The profile 17 that is projected onto the conveyor belt 3 is a solid figure or set of lines configured to reproduce a perimeter of the figure. In particular, the figure, solid or perimetral, which is projected onto the conveyor belt 3 is such as to match the shape of the element 2 to be placed on the conveyor belt 3 on which to apply the glue, also projecting the piece ID. Advantageously, all the embodiments described above identify a visual aid for the operator. In use, the operator uses the control unit 16. Based on the size of the elements 2 to be placed on the conveyor belt 3, the operator uses the control unit 16 to set the extremes within which the projector 7a must act. Therefore, the control unit 16 will set the stroke 5 within which the dispenser 4 must act.

[0050] Conversely, the user may decide to set the stroke 5 of the dispenser 4 thus obtaining the extremes between which to place the strips 2 or positions of the profiles 17 as regards strips 2 of particular shapes.

[0051] At this point, for a batch of the same elements 2, the intermittent motion of the conveyor belt 3 along the feed direction "T" will allow the operator to correctly position the strips 2 while the dispenser 4 coats the strips 2 previously positioned, with glue.

[0052] The machine 1 described above makes it possible to overcome the drawbacks of the prior art. In particular, the machine 1 described above can be used by an inexperienced and untrained operator very easily. It also saves time and resources thanks to the shorter set-up time and the glue saved by a more precise stroke 5 of the dispenser 4.

Claims

1. A machine (1) for gluing elements made of various sheets of material such as leather or imitation leather, fabric or cardboard (2), comprising:

   - a feeding station (1 a) for feeding said elements to be glued (2);
   - a gluing station (1 b) for gluing said elements (2);
   - a conveyor belt (3) adapted to transport a plurality of said elements (2) along an advancement direction (T) between said feeding station (1 a) and said gluing station (1 b),
   - a dispenser (4) of gluing material moveable on said conveyor belt (3) and adapted to dispense the gluing material onto a gluing area (4a) as said elements (2) pass through said gluing station (1 b),
   - at least one alignment device (7) of said elements (2) which identifies a positioning area (2a) and defines reference points for manually aligning said elements (2) on said conveyor belt (3) and having an extension greater than or equal to said gluing area (4a)

   characterised in that
   said alignment device (7) comprises a projector (7a) adapted to project a beam of light (8) onto said conveyor belt (3) for identifying said positioning area (2a); said projector (7a) can rotate about an axis of rotation (X) parallel to the advancement direction (T) of said conveyor belt (3); said machine comprising a control unit (16) of the projector (7a) and the dispenser (4) adapted to control the movement of the projector (7a) to adjust the movement of said dispenser (4) or vice versa.

2. The machine (1) according to the preceding claim, wherein the projector (7a) is positioned upstream of said dispenser (4) in a raised position with respect to said conveyor belt (3), so as to project the beam

of light (8) at said feeding station (1a).

3. The machine (1) according to the preceding claim, wherein said projector (7a) performs, about said axis of rotation (X), a limited oscillation within an angular stroke preferably of 90°.

4. The machine (1) according to the preceding claim, wherein said oscillation is limited between a first extreme (15a) and a second extreme (15b) comprised between said angular stroke and coinciding with the extremes of said elements (2); said oscillation movement alternating between said first extreme (15a) and said second extreme (15b).

5. The machine (1) according to the preceding claim, wherein said projector (7a) projects said beam of light (8) in the form of a line (14);
said line (14) being projected in an alternately onto the conveyor belt (3) at said first (15a) or said second (15b) extreme.

6. The machine (1) according one or more of the claims from 1 to 4, wherein said projector (7a) projects said beam of light (8) in the form of profiles (17).

7. The machine (1) according to the preceding claim, wherein each of said profiles (17), projected onto the conveyor belt (3), is a solid figure or a set of lines configured to reproduce a perimeter of the element (2) on which the gluing material is to be applied.

8. The machine (1) according one or more of the preceding claims, wherein said projector (7a) is a laser pointer (10) or a LED pointer.

9. The machine (1) according to one or more of the preceding claims, comprising two or more projectors (7a, 7b) positioned above said conveyor belt (3).

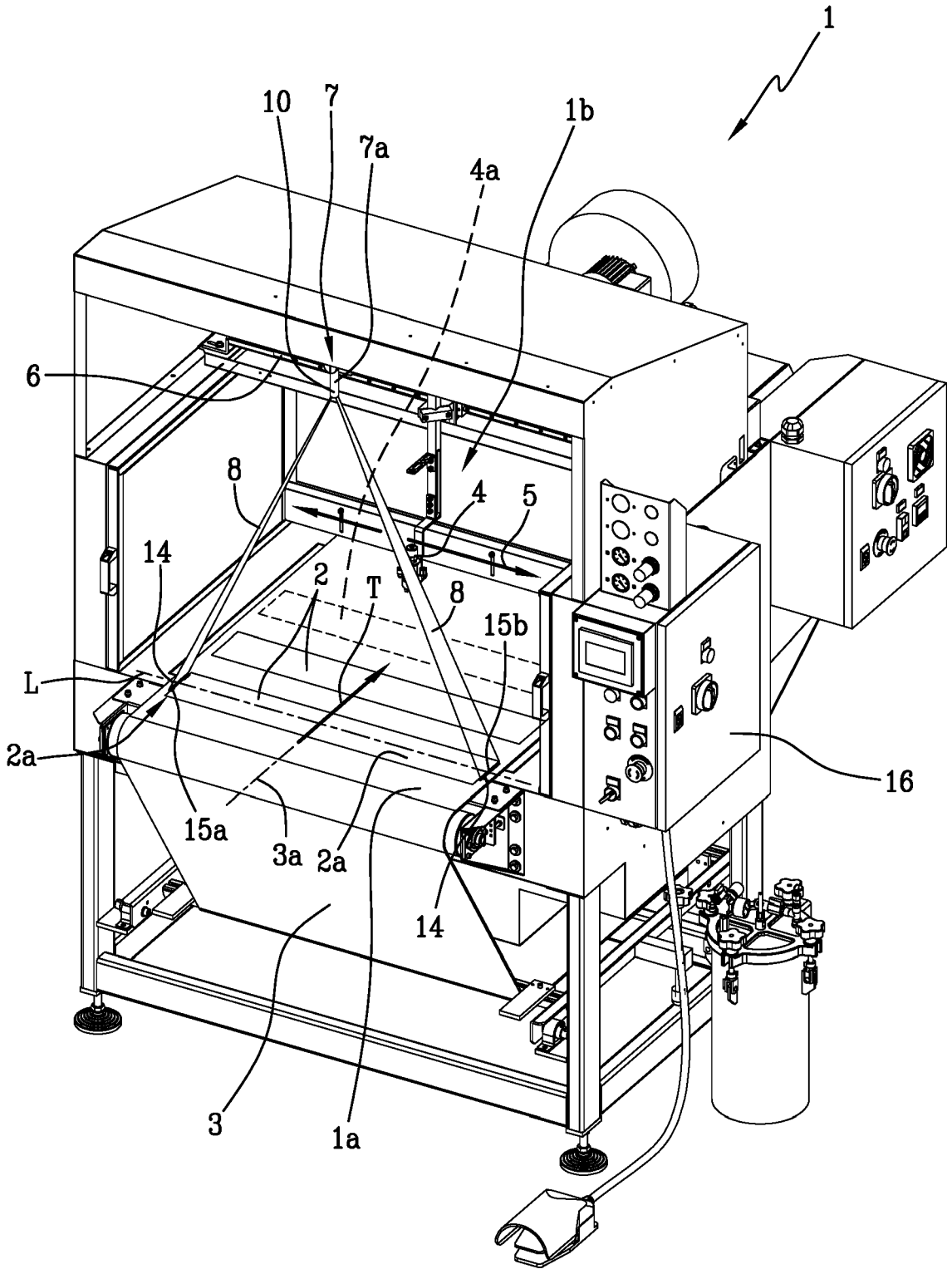

Fig.1

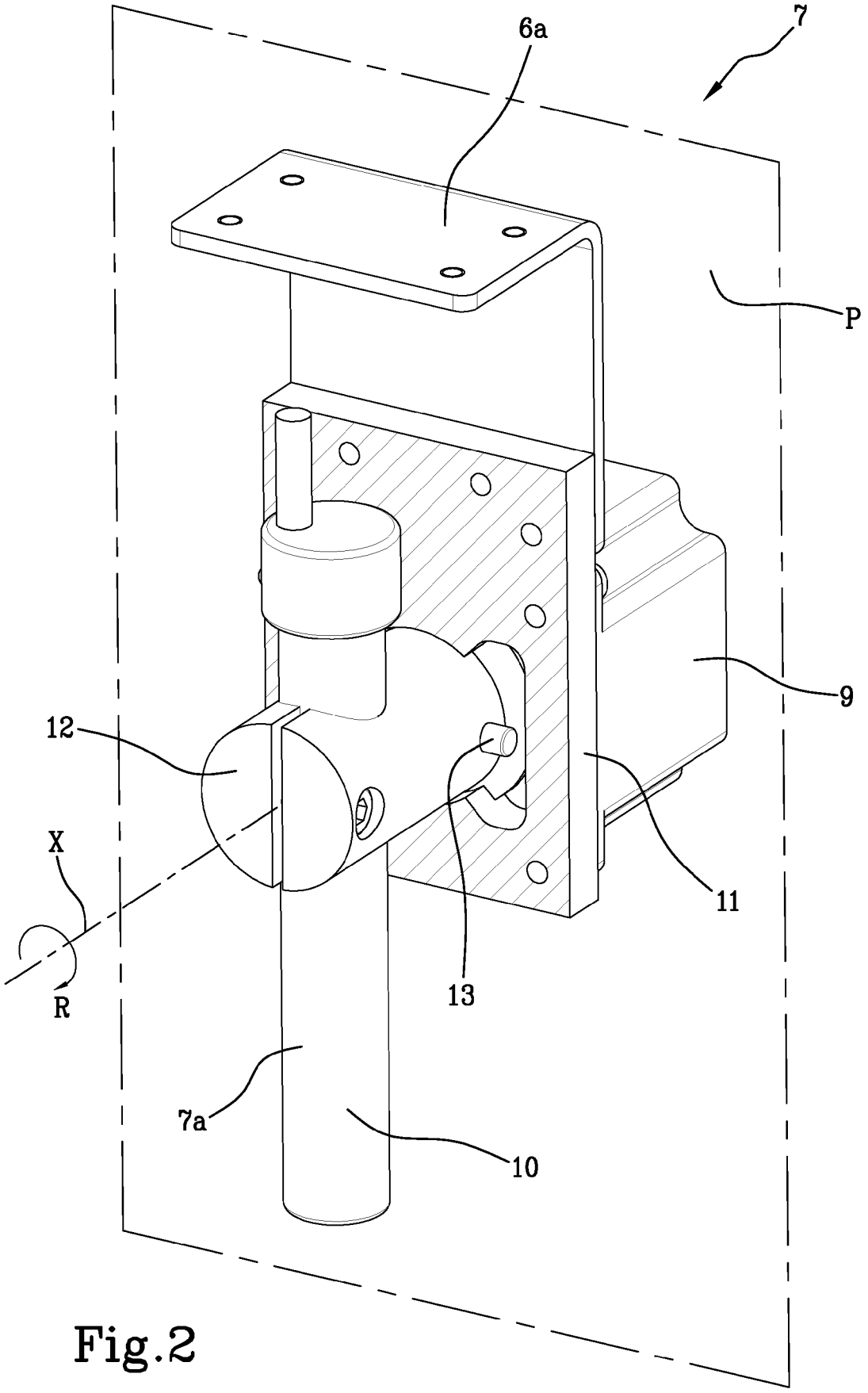

Fig.2

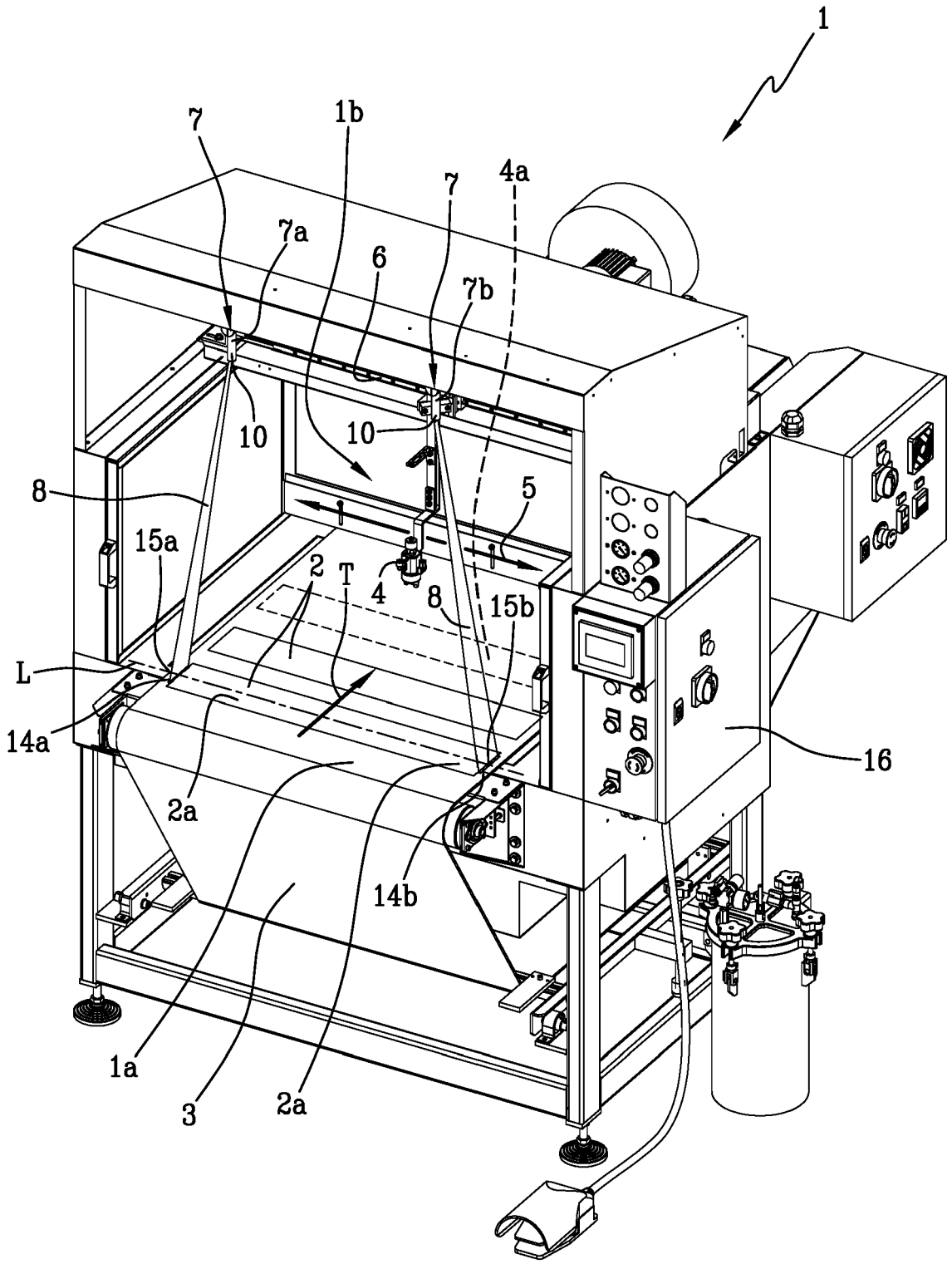

Fig.3

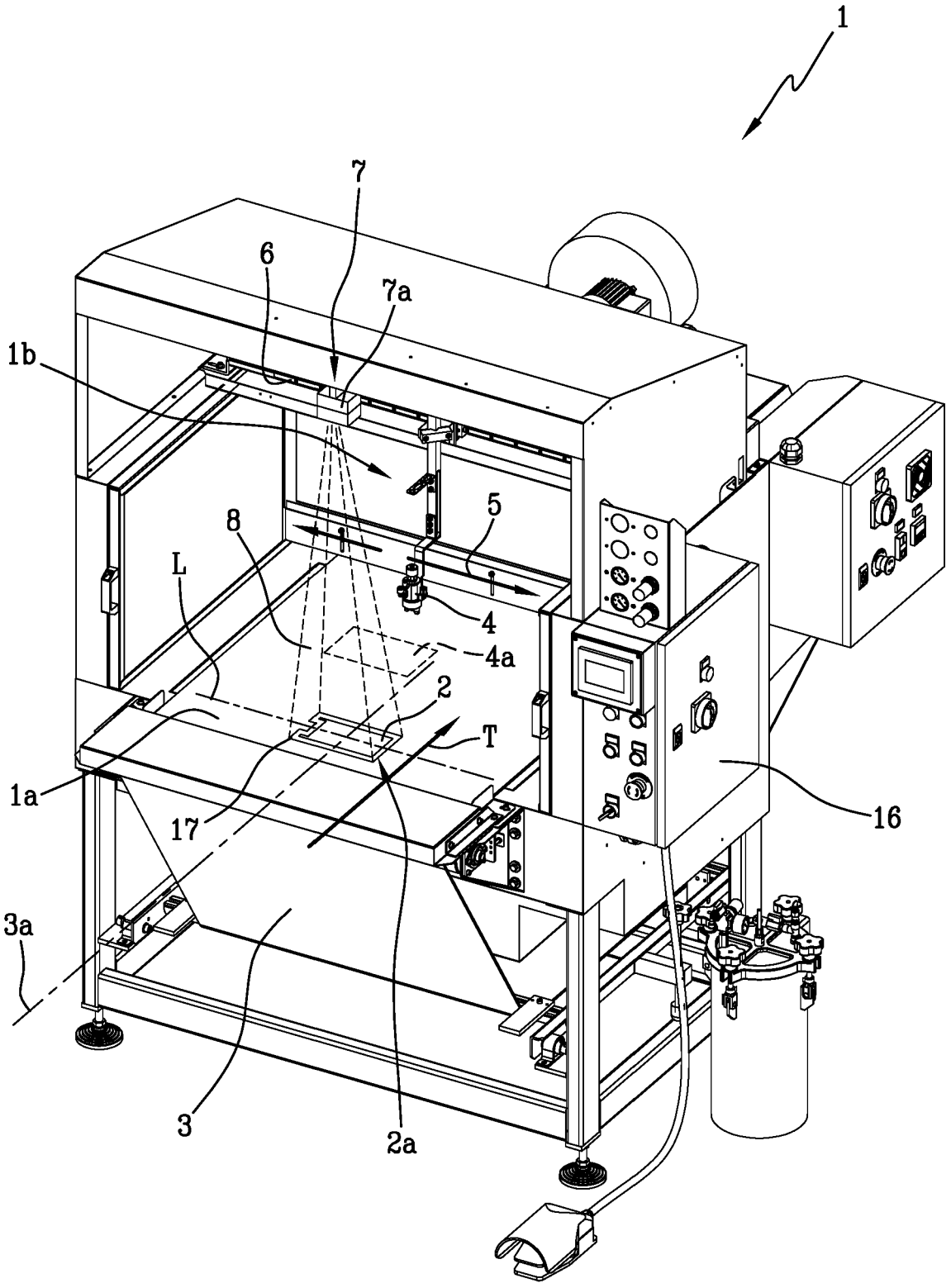

Fig.4

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EUROPEAN SEARCH REPORT

Application Number
EP 17 20 7135

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	EP 0 678 250 A2 (TALAMONTI MACCHINE S N C FLLI [IT]) 25 October 1995 (1995-10-25) * column 1, line 55 - column 2, line 17 * * column 4, line 8 - column 5, line 16; figure 3 *	1-9	INV. C14B7/02 A43D25/18 B05C5/00 C14B17/00
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A	EP 1 157 793 A1 (FELBER THEA [DE]) 28 November 2001 (2001-11-28) * paragraphs [0008], [0012] - [0024], [0037] - [0047], [0054]; figures 1,2 *	1-9	
A	WO 2008/120083 A1 (TESEO SPA [IT]; GALLUCCI GIANNI [IT]) 9 October 2008 (2008-10-09) * page 5, line 1 - page 7, line 8; claim 1; figure 6 *	1-9	

TECHNICAL FIELDS SEARCHED (IPC)

C14B
A43D
B05C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	19 February 2018	Bichi, Marco

CATEGORY OF CITED DOCUMENTS

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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