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(54) **MACHINE FOR THE TREATMENT OF A SUPPORT TAPE OF A CHEMICAL SUBSTANCE TO BE APPLIED TO A LEATHER.**

(57) Machine (1) for the treatment of a laminar support (2) on which at least one chemical substance intended to be applied to a leather (4) is spread, configured to be inserted in a treatment line (100) of leather (4) and comprising:

- a first reel (3) formed by said laminar support (2) intended to receive said chemical substance which must then be applied to said leather (4),
 - a second reel (36) formed by said laminar support (2) after said chemical substance has been applied to said leather (4),
 - an apparatus (42) for removing from said laminar support (2), before its winding on said second reel (36), of the residues of said chemical substance that has not been applied to said leather (4),
- characterized in that during use:
- said second reel (36) is in a position substantially below the footprint of said apparatus (42) in the direction of development of said treatment line (100).

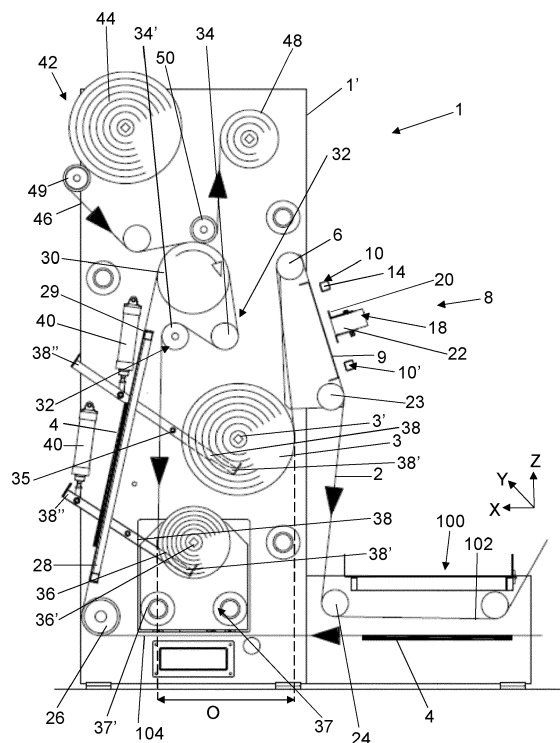


FIG. 2

Description

[0001] The present invention relates to a machine for the treatment of a support tape of a chemical substance to be applied to a leather and in particular for the treatment of a release paper tape.

[0002] It is known in the technical field of leather processing to apply a surface coating layer known as an "ennobling layer" to the leather in order to improve its aesthetic and/or tactile characteristics. In the step of applying the ennobling layer to the leather, which is made up of a material with a liquid or viscous consistency and therefore unsuitable for handling other than by spreading, it is generally associated with a sheet or a support tape. The support tape is generally made of suitably treated paper, which in the tanning industry is defined as "release paper" and this term will also be indicated in the present description, regardless of whether it consists of paper or other material suitable for the purpose.

[0003] The release paper tape, wound on a reel, is installed in a production line, where it is unwound to receive the chemical substance which will then be transferred to the leather and will form the ennobling layer.

[0004] In particular, a leather processing line A according to the state of the art (see fig. 1) can comprise:

- an accumulator B of release paper, which contains release paper, which are used in sequence within the production line, so as not to interrupt the operation of the production line itself,
- a table C for cutting and joining the release paper where, if it is necessary to replace the release paper tape before its end, for example because it is necessary to use a tape with different characteristics, the tape itself can be cut, and its rear end is spliced with one end of a new release paper tape, in order to continue production,
- an unwinder D, where the new reels of release paper are placed to be unwound, in order to allow the sliding of the release paper tape,
- a rewinder E, where the used paper tape is rewound in reel in order to be removed from the production line and subsequently reused,
- a cleaning group F of the release paper, where the residues of chemical substance remaining attached to the release paper are removed,
- a detachment table G of the leather from the release paper tape.

[0005] As can be seen in figure 1, the elements described here are generally positioned one after the other along the processing line A, and therefore have a horizontal footprint, in particular the X axis. This footprint is undesirable since it requires to have available large buildings, capable of housing leather processing lines.

[0006] Document CN 209 099 037 discloses a leather processing line, in which the device that separates the leather from the release paper (indicated with the number

20 is located upstream of the reel on which the release paper is wound (indicated with the number 25). This solution is not fully satisfactory as it requires, as mentioned, buildings capable of housing machine of considerable horizontal dimensions.

[0007] The purpose of the invention is to propose a machine for the treatment of a support tape for a chemical substance to be apply to a leather, which allows to overcome the drawbacks of the known solutions.

[0008] Another purpose of the invention is to propose a compact and space-saving machine.

[0009] Another object of the invention is to propose a machine that can be easily integrated into a production line.

[0010] Another purpose of the invention is to propose a machine which allows to reduce the length of a production line for leather.

[0011] Another purpose of the invention is to propose a machine that takes up little horizontal space.

[0012] Another purpose of the invention is to propose a machine which allows to replace a release paper tape in a simple and rapid way.

[0013] Another purpose of the invention is to propose a machine which allows to maintain a high productivity in a leather production line.

[0014] Another purpose of the invention is to propose a machine which allows the interruptions of the production line to be reduced to a minimum when it is necessary to replace the reels of release paper.

[0015] Another purpose of the invention is to propose a machine which allows to clean the release paper from processing residues.

[0016] Another purpose of the invention is to propose a machine which is highly automated.

[0017] Another purpose of the invention is to propose a machine which allows to rewind the release paper in a quick and orderly manner.

[0018] Another purpose of the invention is to propose a machine which allows to vary the processing, and in particular the nature of the ennobling layer deposited on the leather, in a quick and simple way.

[0019] Another object of the invention is to propose a machine which is comfortable and simple to use.

[0020] Another purpose of the invention is to propose a machine that can be used in a production line in which processing tests are performed.

[0021] Another purpose of the invention is to propose a machine which can be manufactured quickly and easily and with low costs.

[0022] Another purpose of the invention is to propose a machine which is alternative and/or improved with respect to the known solutions.

[0023] All these purposes, both individually and in any combination thereof, and others which will result from the following description, are achieved, according to the invention, with a machine having the characteristics indicated in claim 1 and with a production line having the characteristics indicated in claim 15.

[0024] The present invention is further clarified hereinafter in a preferred embodiment thereof, given purely by way of non-limiting example with reference to the attached drawings, in which:

- Figure 1 shows a side view of a line leather processing according to the state of art,
- Figure 2 shows the machine according to the invention in a first embodiment, in lateral section
- Figure 3a shows the machine according to the invention in a second embodiment in side section realization during a first phase of the replacement procedure of the second reel,
- Figure 3b shows it in the second embodiment in a second phase of the procedure for replacing the second reel,
- Figure 4 shows a side view of a leather processing line comprising the machine according to the invention in said second embodiment.

[0025] Hereinafter, the term "footprint" means the size of the projection of a certain device/machine/object on a certain axis, i.e. the "footprint along the X axis" corresponds to the size of the projection of a device/machine/object on the X axis, the "footprint along the Y axis" corresponds to the size of the projection of a device/machine/object on the Y axis, the "footprint along the Z axis" corresponds to the size of the projection of a device/machine/object on the Z axis.

[0026] As is clear from the figures, the present invention concerns a machine, indicated as a whole with the number 1, for the treatment of a laminar support 2, on which a chemical substance is spread to be applied to a leather 4. In particular, the invention relates to a machine for treating a release paper tape 2.

[0027] Since release paper is the most widely used type of laminar support, the patent will refer to this application hereinafter, without limiting the scope of protection of the patent itself.

[0028] In particular, with "release paper" tape 2 here we mean an element configured to be associated with and support a chemical substance and/or a material, which must be deposited on the surface of a leather, in order to modify its surface characteristics. For example, said chemical substance can be a paint, or a glue, or a chemical substance suitable for making a coating on said leather 4, such as a resin, preferably polymeric, or a polyurethane-based substance. In particular, the chemical substance can have a liquid and/or viscous consistency, which makes it difficult to use within a production line, and for this reason it is deposited and/or associated with the release paper.

[0029] Release paper 2, in particular, can have a series of reliefs and/or engravings on the surface intended to come into contact with the chemical substance - i.e. be of the "embossed" type - or it can be substantially smooth.

[0030] The release paper 2 is generally presented in the form of a tape wound in reel 3, which is here defined

as the first reel 3. For example, each first reel 3 can contain about 1000m of release paper, or even up to 2000m. Conveniently, the reels are wound around axes having the ends 3' protruding laterally, and in particular with respect to the Y axis, from the overall dimensions of the reel and configured to couple with corresponding supports present in the machine 1, and more particularly in the casing 1', in order to substantially keep the reels in position.

[0031] The machine 1 according to the invention can preferably be positioned at one end of a leather processing line 100 and in particular it can be positioned at the opposite end with respect to that of introduction of the leather 4.

[0032] In the following, the X axis means the axis parallel to the advancement line of the leather 4 and of the release paper 2 along the production line 100. In particular, the positive direction of the X axis is the direction of the advancement of the leather 4, while the negative direction of the advancement of the release paper 2 not yet coupled to the leather, as will become clear later.

[0033] With the Y axis we mean the horizontal axis substantially perpendicular to the X axis and with the Z axis we mean substantially the vertical. It therefore appears that the Z axis is substantially perpendicular to the X axis and the Y axis.

[0034] It is known in the technical field considered here to move the release paper 2 along a advancement line 102 of the release paper in the opposite direction to that of the advancement line 104 of the leather, which defines the positive direction of the X axis. In particular, the two advancement lines 102, 104 can run parallel to each other at different heights, as shown in figure 4.

[0035] In this case it is therefore possible to position the machine 1 according to the invention at one end of the production line 100, and in particular at the opposite end with respect to that in which the leather 4 are introduced.

[0036] As can clearly be seen from the figures, the machine 1 comprises a casing and/or external frame 1' configured to contain, at least partially, the different components of the machine itself.

[0037] In a first embodiment illustrated in Figure 2, the first reel 3 can be positioned at a height higher than the height at which the advancement line 104 of the leather and/or the advancement line 102 of the release paper are placed, at least at the reel itself.

[0038] Advantageously, the first reel 3 can be configured to rotate around its own axis in an idle way or, alternatively, it can be motorized.

[0039] From the first reel 3 the release paper 2 can be unwound and sent to a first return roller 6, which diverts the release paper 2 towards a cutting and jointing device 8 configured to cut and join the release paper 2. Advantageously the first deviating roller 6 can be positioned so that the release paper tape 2, in the path between the first reel 3 and the first deviating roller itself, is substantially vertical.

[0040] The cutting and jointing device 8 preferably comprises a cutting and jointing plane 9, configured to act as a support for the release paper tape 2 during the cutting and jointing operations. Preferably the cutting and jointing plane 9 can be substantially vertical or inclined with respect to the vertical.

[0041] In a preferred embodiment, the cutting and jointing device 8 can protrude horizontally with respect to the casing 1' of the machine 1, and substantially project over the processing line 100 of the leather 4, to which the machine 1 is associated. In this way it is easier for a user to move to the cutting and jointing plane 9 in order to cut the release paper tape 2. Conveniently, the cutting and jointing device 9 can therefore be displaced downstream with respect to the overall dimensions along the X axis of the first reel 3.

[0042] In particular, the cutting and jointing device 8 comprises an upstream stop 10 and a downstream stop 10' configured to stop in a stable and reversible way the advancement of the release paper tape 2. For example the upstream stop 10 can comprise a stop element 14 configured to move in correspondence with the cutting and jointing plane 9, in order to cooperate with the latter in blocking the advancement of the release paper tape 2, and a handling element (not shown) configured to move said stop element between an active condition and an inactive condition. In particular, the movement element can comprise a pneumatic or hydraulic cylinder.

[0043] The downstream stop 10' can preferably be substantially similar to the upstream stop 10, and therefore comprise a second movement element. Preferably the movement of the two stop elements 14 is independent.

[0044] The cutting and jointing device 8 can further comprise a cutting element (not shown) positioned between the two stops 10, 10' and configured to cut transversely the release paper tape 2 at a predefined position and/or selected by the user. The cutting element can comprise a blade, for example positioned in correspondence with a slot obtained in the cutting and jointing plane 9. Alternatively, the cutting element can be replaced by a user who manually cuts the release paper tape 2. Advantageously, in the embodiment in which the cutting element is present, the cutting and jointing device 9 can be completely contained inside the casing 1'. Alternatively, in the embodiment in which the cutting element is not present, the cutting and jointing device can be only partially contained inside the casing 1', or it can be completely external with respect to the casing 1'.

[0045] Furthermore, the cutting and jointing device 8 can comprise a jointing element 18 configured to associate in a substantially stable manner two ends of the same release paper tape 2 or of two different release paper webs. For example, the jointing element 18 can be configured to associate the final end of a first release paper tape 2, for example the end of a finished and/or to be replaced tape and/or an end that has previously been cut by the cutting element, with the initial end of a second

tape 2, for example of a tape to be started and/or of a tape that is substituted for the first. In particular, the jointing element 18 can comprise an adhesive tape 20 which can be suitably moved by a third movement element 22 between a first position, in which it is substantially in contact with the ends of the release paper tapes 2, and a second position in which it is substantially separated or in any case not in contact with the release paper tapes 2.

[0046] The cutting and jointing plane 9 can end downstream with a second deflection roller 23, configured to direct the release paper tape 2 towards the subsequent components of the machine 1.

[0047] Downstream of the cutting and jointing device 8 there is a third deflection roller 24, which substantially defines the start of the transport line 102 for the release paper. Advantageously, the third deflection roller 24 can be positioned so that the release paper tape 2 runs between the second deflection roller 23 and the third deflection roller 24 substantially vertically, or in the direction substantially inclined with respect to the vertical, and preferably inclined in the negative direction of the X axis.

[0048] Subsequently, the release paper tape 2 leaves the machine 1 according to the invention and is transported by the advancement line 102 of the release paper through a plurality of further stations processing, better described below, up to station 106 where it is coupled with the leather 4.

[0049] Subsequently, the release paper tape 2 advances integrally with the leather 4 along their advancement line 104, until it re-enters the machine 1 according to the invention and, in particular, up to a fourth return roller 26, which directs it towards a detachment plane 28, where the leather 4 are separated from the release paper tape. Advantageously, the separation can be carried out manually by an operator or in a mechanical and/or automated manner.

[0050] The detachment plane 28 is preferably oriented substantially vertically, or inclined with respect to the vertical.

[0051] Advantageously, the detachment plane 28 can be hinged to a pin 29 positioned at one of its ends, preferably at its upper end.

[0052] Preferably the detachment plane 28 can be made of aluminum, or sheet metal, or in any case it can be made in such a way as to have a limited weight, in order to be handled manually by an operator. In a possible embodiment, the detachment plane 28 can be moved by suitable mechanical and/or automatic movement means, such as a pneumatic or hydraulic cylinder, or a motor, preferably electric. Conveniently, the detachment plane 28 can be contained at least partially, and preferably completely, inside the casing 1'.

[0053] Subsequently, the release paper tape 2 freed from the leather 4 is passed over a support cylinder 30, the function of which will become clear later, and subsequently through a straightening device 32, for example composed of a pair of rollers 34, 34' positioned so as to come into contact with the two opposite faces of the re-

lease paper tape 2, and configured to homogenize the tensions present on the two faces of the tape itself. In one embodiment, the support cylinder 30 can be located above the first reel 3, while the straightening device 32 can preferably be located substantially below the support cylinder 30 and in particular below the footprint along the axis X of the support cylinder 30. In particular, therefore, the support cylinder 30 can be contained, preferably completely, inside the casing 1'. In particular, therefore, the straightening device 32 can be contained, preferably completely, inside the casing 1'.

[0054] Subsequently the tape is wound around a rotating axis supported at the ends by supports, similarly to the rotating axis of the first reel 3 and thus forms a second reel 36. Preferably the portion of the rotation axis, on which the reel 36 is wound, is only a part of the entire rotation axis, and in order to ensure correct winding of the reel itself, this can be of the self-centered type. In particular, for this purpose the second reel 36 can be mounted on a suitable centering device 37, configured to allow the release paper to be wound in a regular and orderly manner to form the reel. For this purpose, said centering device 37 can comprise at least one element for recognizing the position of the release paper tape 2, for example a photocell coupled to a corresponding light source, or, more advantageously, at least two photocells (not shown) which can be positioned in correspondence of the two side edges of the release paper tape 2 and can be coupled to a same or to two light sources, configured to detect the position of the strip of release paper 2, and in particular its position along the Y axis.

[0055] Suitably the centering device 37 also comprises suitable handling means 37' configured to move the second reel 36 and/or the corresponding supports along the Y axis.

[0056] Advantageously, the second reel 36 can be completely included inside the casing 1'.

[0057] Advantageously, the centering device 37 can be completely included inside the casing 1'.

[0058] Advantageously, the second reel 36 can be positioned at a lower level than the first reel 3 and preferably in a lower staggered position with respect to the first reel 3. Furthermore, the second reel 36 can be advantageously positioned at a lower level than the support cylinder 30.

[0059] In a preferred embodiment, the machine 1 can comprise at least one pair of movable arms 38, and preferably two pairs of movable arms 38, each configured to move a corresponding reel 3, 36. These movable arms 38 are configured to rotate around respective pins of articulation 35 between a first condition in which they are substantially horizontal, and a second condition in which they have an extremal portion 38' which is positioned at and/or near the ends 3', 36' of the shafts of the reels 3, 36, and a second extremal portion 38'' which is positioned substantially higher - i.e. each movable arm 38 is in a substantially oblique position. Preferably, the movement of each pair of movable arms 38 is independent of the

other, but at the same time is synchronized with that of the other movable arm 38 of the same pair. In particular, each movable arm 38 can be moved by means of a suitable movement device 40, for example by means of a pneumatic or hydraulic cylinder, which causes its rotation between said first and said second condition around the respective pin 35.

[0060] Conveniently therefore, when the movable arms 38 are in said first condition and can only be partially contained inside the casing 1', and, in particular, the first extremal portion 38' can be substantially contained inside the casing 1', while the second extremal portion 38'' can be external to casing 1'. Conveniently, however, when the movable arms 38 are in said second condition, both extremal portions 38', 38'' can be contained inside the casing 1'.

[0061] In particular, in order to replace the reels 3, 36 it is necessary to cut the release paper tape 2 in correspondence with the detachment plane 28, in order to allow movement of the detachment plane itself which allows access to the inside of the casing 1' through an appropriate opening. Conveniently, this operation can be carried out manually or substantially automated, in a manner substantially similar to what occurs on the cutting and joining plane 8. Subsequently, the movable arms 38 are moved to pass from said second condition to said first condition - i.e. they are brought into substantially horizontal position - to remove the ends 3', 36' of the shafts of the reels 3, 36 from the corresponding supports. In this way it is easy for the user to slide the reels 3, 36 (and more particularly the respective shafts) along the respective arms 38 to take them outside the casing 1. On the contrary, if it is necessary to insert new reels, it is possible to make them slide along the movable arms 38 (which are in said second condition), until they reach their first extremal portion 38'. Subsequently, the movement means 40 can be operated to bring the movable arms 38 into said second condition, in order to engage the reels 3, 36, and in particular the ends 3', 36' of the corresponding shafts, in the corresponding supports.

[0062] The support cylinder 30 is configured to provide feedback to the release paper tape 2 when this is in correspondence with an apparatus 42 configured to carry out the removal of chemical product residues from the release paper tape itself. The apparatus 42 in particular comprises at least one suitable first support 44 for a first material 46 configured to remove the first chemical substance from the release paper tape. For example, it can comprise a third reel 44 around which an adhesive tape 46 is rolled. Advantageously, the third reel 44 can be associated with suitable braking devices (not shown) configured to reduce its rotation speed. Furthermore, the apparatus 42 in particular comprises at least one suitable second support 48 for collecting the first material 46 once this has removed the first chemical substance from the release paper tape.

[0063] Advantageously, the apparatus 42 can be positioned in a position substantially above the support cyl-

inder 30, and therefore in a position above the first reel 3. Preferably, the apparatus 42 can be positioned in a higher position than the second reel 36. In particular the first 3 and/or the second reel 36 and/or the support cylinder 30 can be positioned below the horizontal footprint, and in particular along the X axis, of the apparatus 42. Therefore, suitably, the apparatus 42 can be contained within inside of the casing 1'.

[0064] The adhesive tape 46 can be unwound from the third reel 44 through a return roller 49 to pass over a suitable cylinder and/or abutment plane 50. The abutment cylinder 50 is positioned so that the adhesive tape 46, while passing in correspondence of its surface, substantially comes into contact with the release paper tape 2, which comes from the detachment plane 28. Advantageously, the abutment cylinder 50 can be moved by suitable handling means (not shown), for example a pneumatic or hydraulic cylinder configured to maintain a predefined and/or user-set pressure between the adhesive tape 46 and the release paper tape 2 in order to allow the chemical to be removed from the release paper tape 2 by the adhesive tape 46. Subsequently the adhesive tape 46 is recovered from the second support 48, for example it is wound on the second reel 48. Preferably the cylinder and/or abutment plane can be rubberized.

[0065] The machine 1 according to the invention comprises a command and control unit (not shown) which controls at least one of the following:

- handling of the first and second handling element,
- the movement of the means for moving the detachment plane 28 if these are automated,
- the movement of the means for moving the cylinder and/or countertop 50,
- the rotation of one or more of the cylinders that make up the machine 1, in particular at least one of the reels 3, 36, and the supports 30 and 48,
- the centering device 37, and in particular the movement of the handling means 37', preferably on the basis of the information detected by the elements for recognizing the position of the release paper tape 2,
- the movement of the movable arms 38.

[0066] In a preferred embodiment the command and control unit of the operation of the machine 1 according to the invention can coincide with the command and control unit of the operation of the leather production line 100 in which the machine 1 according to the invention is inserted.

[0067] In a second embodiment illustrated in Figures 3a and 3b the machine 1 according to the invention can provide the first reel 3 and the cutting and jointing device 8 in an external position with respect to the casing 1', and preferably in an upstream position - i.e. in a position with lower X values - with respect to the casing 1'. Advantageously, in this embodiment the second reel 3 can be positioned outside, that is, it does not have a cover casing. This makes it easier to replace the reel itself when

necessary. Advantageously, the first reel 3 can be separated from the casing 1' by a suitable platform 54 which allows the transit of an operator, in order to pick up the first reel when it is necessary to replace it. Advantageously, said platform 54 can pass above the transport line 104 of the leather. Furthermore, in the embodiment shown there, the movable arms 38, which support the second reel 36 can be configured to protrude from the casing 1', at least when they are in said second configuration, towards the upstream side - i.e. in the direction of the negative X. In this way it is possible to remove the second reel 36, when this becomes necessary, without having to rotate the detachment plane 28. The rotation of the detachment plane 28 in fact requires cutting the release paper tape 2 in correspondence with the plane itself, at the in order to allow access to the second reel 36, and this is undesirable as it requires a considerable amount of release paper 2 to be wasted. In this second embodiment, on the other hand, the user has direct access to the second reel 36, for example by means of a suitable opening obtained in the casing 1'.

[0068] From what has been said it is clear that the machine can have a horizontal footprint, and in particular along the X axis, at ground level of less than about 3.5 m, and preferably less than 1 m. In particular, in the embodiment illustrated in figure 2 it can have a maximum horizontal dimension, and in particular along the X axis, lower than 1.5 m and more preferably lower than 1 m, while in the embodiment illustrated in figures 3a and 3b it can have a footprint, in particular along the X axis, of less than 3 m, more preferably less than 2.5 m.

[0069] Advantageously, the casing 1' can comprise at least partially, and preferably completely, inside at least the following components of the machine 1:

- said detachment plan 28,
- said support cylinder 30,
- said straightening device 32,
- said second reel 36,
- said centering device 37,
- said apparatus 42 for carrying out the removal of residues chemical product from the release paper tape itself.

[0070] In the embodiment represented in figure 2 the casing 1' can also contain said first reel 3 and/or said cutting and jointing device 8, while in the embodiment represented in figures 3 and 4 the first reel 3 and/or said first return roller 6, and/or said cutting and jointing device 8, can be external with respect to the casing 1'.

[0071] In a preferred embodiment, the production line 100 which comprises the machine 1 according to the invention may comprise, preferably in order according to the direction ascending of the X axis:

- a leather making available station where the leather are made available to the production line 100,
- a station for applying an adhesive substance 101 to

the leather 4,

- optionally a first drying station 105, for the glue substance which has previously been associated with the leather dried 4,
- the coupling station 106 of the leather 4 to the release paper 2,
- a second drying station 108 in which the chemical substance applied to the release paper 2 is at least partially dried,
- a station for applying the chemical substance 110 to the release paper tape 2,
- the machine 1 according to the invention.

[0072] In a preferred embodiment, the leather production line consists only of the stations listed here, preferably positioned in the order described here.

[0073] Advantageously, the line production 100 which comprises the machine 1 according to the invention may not comprise a traditional release paper accumulator. Advantageously, the machine 1 according to the invention can be positioned downstream - i.e. at a higher value of X - with respect to the coating station.

[0074] From what has been said it is clear that the machine and the production line according to the invention are particularly advantageous, indeed optimal, with respect to known solutions, and in particular to that described in document CN 209 099 037 in that:

- they have a horizontal footprint, and in particular along the X axis particularly small, and therefore can be installed in small rooms,
- allow quick and easy replacement of release paper tape,
- they allow to remove from the release paper tape residues of chemical product that has not been applied to the leathers.

Claims

1. Machine (1) for the treatment of a laminar support (2) on which at least one chemical substance intended to be applied to a leather (4) is spread, configured to be inserted in a treatment line (100) of leather (4) and comprising:
 - a first reel (3) formed by said laminar support (2) intended to receive said chemical substance which must then be applied to said leather (4),
 - a second reel (36) formed by said laminar support (2) after said chemical substance has been applied to said leather (4),
 - an apparatus (42) for removing from said laminar support (2), before its winding on said second reel (36), of the residues of said chemical substance that has not been applied to said leather (4),

characterized in that during use:

- said second reel (36) is in a position substantially below the footprint of said apparatus (42) in the direction of development of said treatment line (100).

2. Machine according to claim 1 **characterized by** the fact that also said first reel (3), in conditions of use, is found in a position substantially below the overall dimensions of said apparatus (42) in the direction of development of said treatment line (100).
3. Machine according to claim 1 **characterized in that** said second reel (36) and said removal apparatus (42) are located, at least partially, inside a casing (1'), while said first reel (3) is located externally upstream of said casing (1') with reference to the direction of advancement of the leather (4) in said treatment line (100).
4. Machine according to one or more of the preceding claims **characterized in that** said second reel (36) is associated with a centering device (37) of the reel itself configured to allow the laminar support (2) to be wound on the reel (36) in a regular and orderly manner.
5. Machine according to one or more of the preceding claims **characterized in that** said apparatus (42) comprises:
 - a first support (44) for a first material (46) configured to remove said chemical substance from said laminar support (2),
 - a second support (48) for collecting said first material (46) once this has removed said chemical substance from said laminar support (2),
 - a coupling member (30,50) configured to put and/or keep in contact said first material (46) with said laminar support (2).
6. Machine according to one or more of the preceding claims **characterized in that** said coupling member comprises a support roller (30) on which said laminar support (2) passes, and that said support roller (30) is positioned in an elevated position with respect to said first reel (3).
7. Machine according to one or more of the preceding claims **characterized in that** at least one of said first (3) and said second (36) reel is located inside said casing (1') and is extracted therefrom by means of movable arms (38) configured to remove the ends (3', 36') of the rotation axis of said at least one reel from corresponding supports provided in said casing and allow the rolling of said at least one reel (3, 36) in the direction of at least one opening which puts

the inside of said casing (1') in communication with the outside.

8. Machine according to one or more of the preceding claims **characterized in that** both said first (3) and said second (36) reel are engaged by said movable arms (38). 5
9. Machine according to one or more of the preceding claims **characterized in that** said at least one opening is positioned downstream according to the direction of advancement of said leather treatment line (100), with respect to said at least one reel (3, 36), and, when the machine is in operating conditions, it is covered by a detachment plane (28) where the leathers (4) are separated from the laminar support tape (2). 10
10. Machine according to one or more of claims 1-6 **characterized in that** said at least one opening is positioned upstream of said at least one reel (3, 36), with reference to the direction of advancement of the leather (4) treatment line (100), and is never covered by said detachment plane (28). 15
11. Machine according to one or more of the preceding claims, **characterized in that** said movable arms (38) have a first extremal portion (38'), preferably internal to said casing (1'), and a second extremal portion (38''), opposite to the first extremal portion (38') and preferably external to said casing (1'), and are movable between a first condition, in which the first extremal portion (38') and the second extremal portion (38'') are substantially at the same height, and a second condition, in which the first extremal portion (38') is in a lower position than the second extremal portion (38''). 20
12. Machine according to one or more of the preceding claims **characterized in that** it comprises a cutting and jointing device (8) configured to cut and join said laminar support (2) and comprises a cutting and jointing plane (9) in correspondence with of which a release paper tape (2) is cut and its joint with a further release paper tape, a stop upstream (10) and a stop downstream (10') of said cutting and jointing plane (9) configured to stop in a stable and reversible manner the advancement of said laminar support (2), and that said cutting and jointing device (8) protrudes from the footprint along the direction of development of said treatment line (100) of said casing (1') and overhangs said treatment line (100) of the leather (4). 25
13. Machine according to one or more of the preceding claims **characterized in that** it comprises a straightening device (32) configured to homogenize the tensions present on the two faces of said laminar support (2), and comprising a pair of rollers (34, 34') 30

positioned in so as to come into contact with the two opposite faces of said laminar support (2), and positioned above said first reel (3) inside said casing (1') and below said support cylinder (30) and within the footprint along the direction of development of said treatment line (100) of said support cylinder (30). 35

14. Machine according to one or more of the preceding claims **characterized in that** said casing (1') comprises at least partially, and preferably completely, internally the following components of the machine (1): 40
 - said detachment plane (28),
 - said support cylinder (30),
 - called straightening device (32),
 - said second reel (36),
 - said centering device (37),
 - said apparatus (42) for carrying out the removal of residues of chemical product from the release paper tape itself.
15. Line (100) for treating leather (4) **characterized in that** it comprises a machine (1) according to one or more of the preceding claims. 45

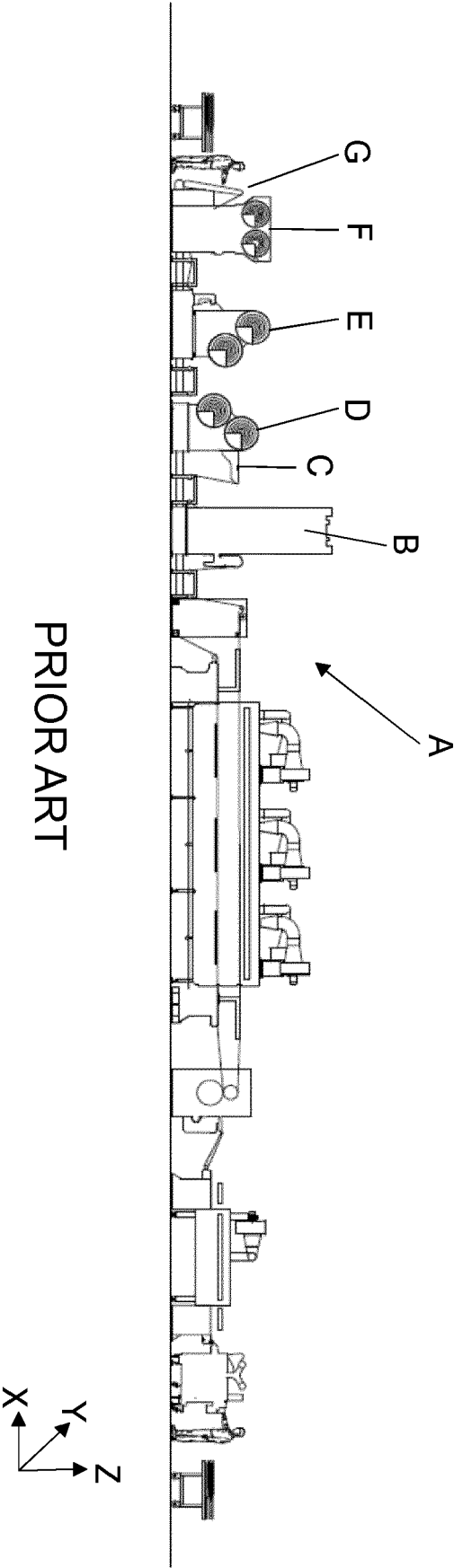


FIG. 1

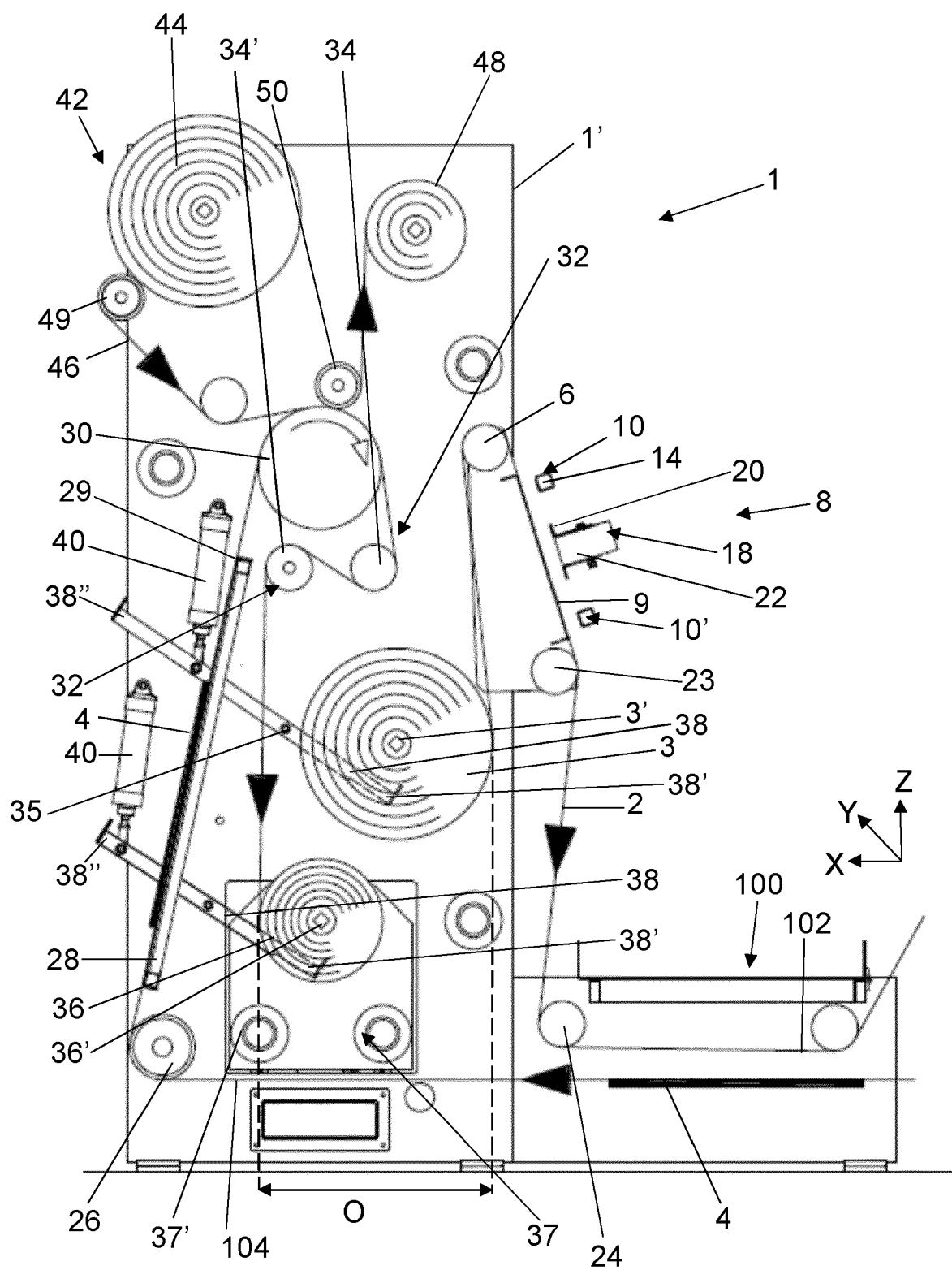


FIG. 2

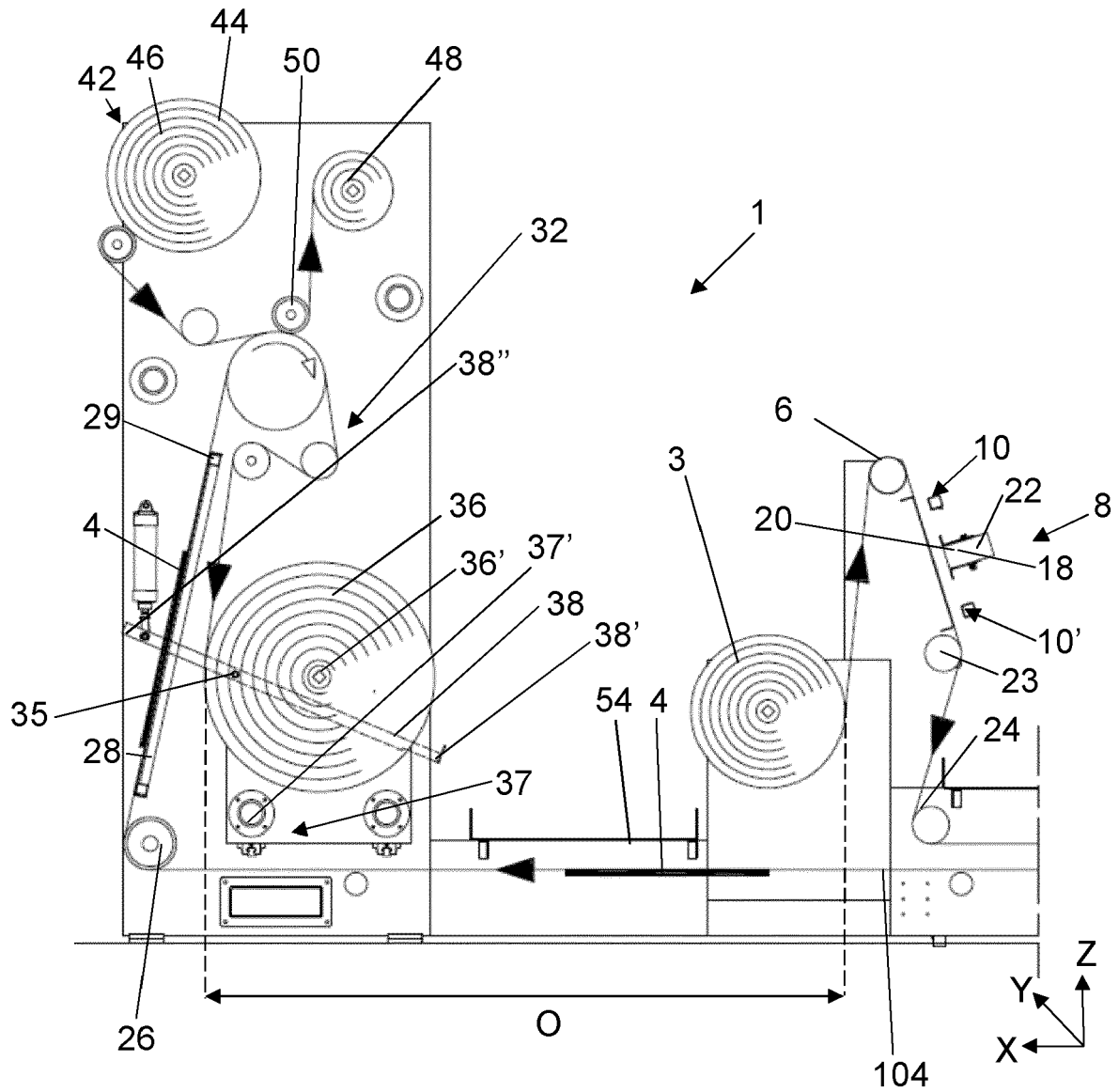
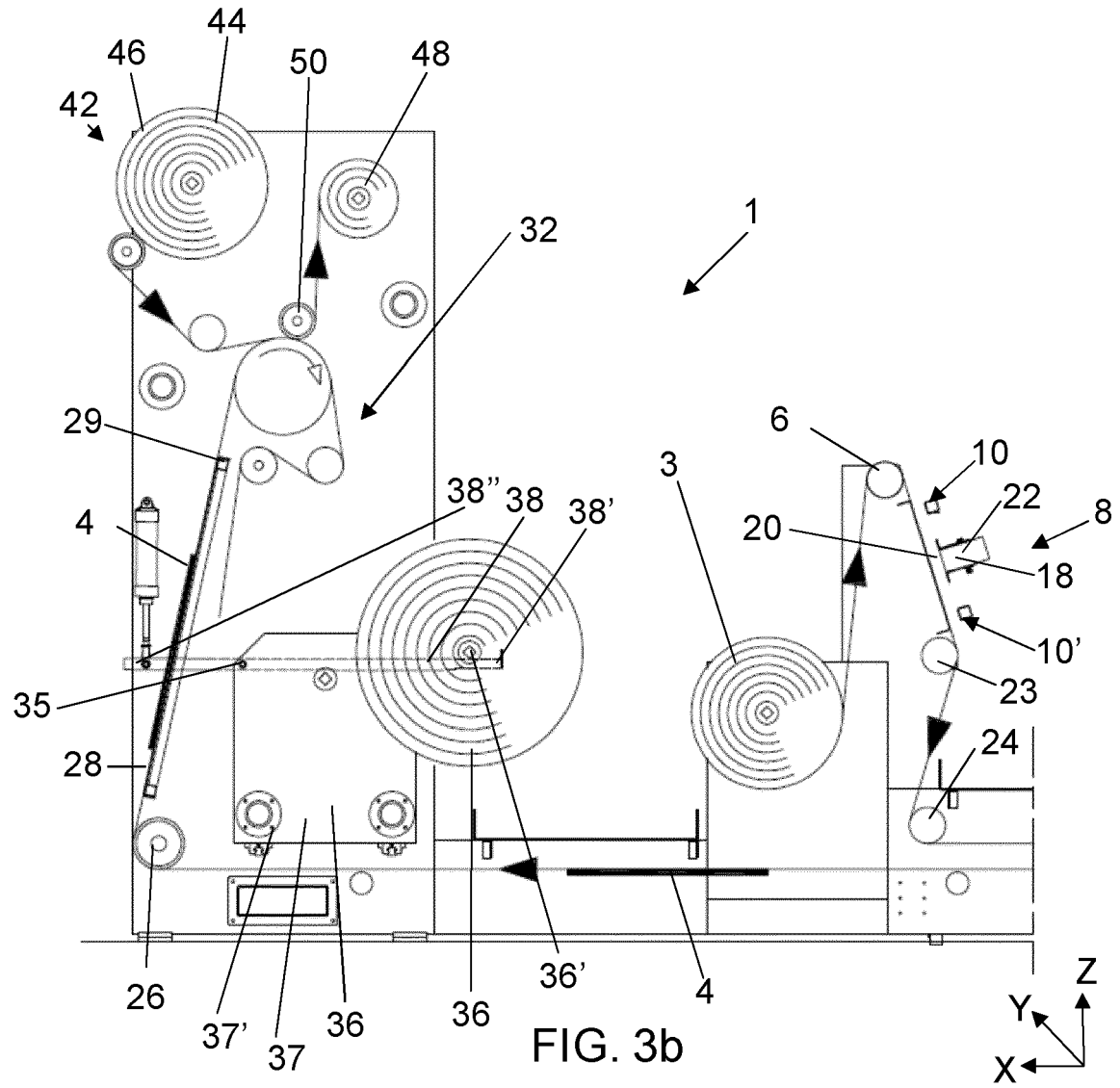
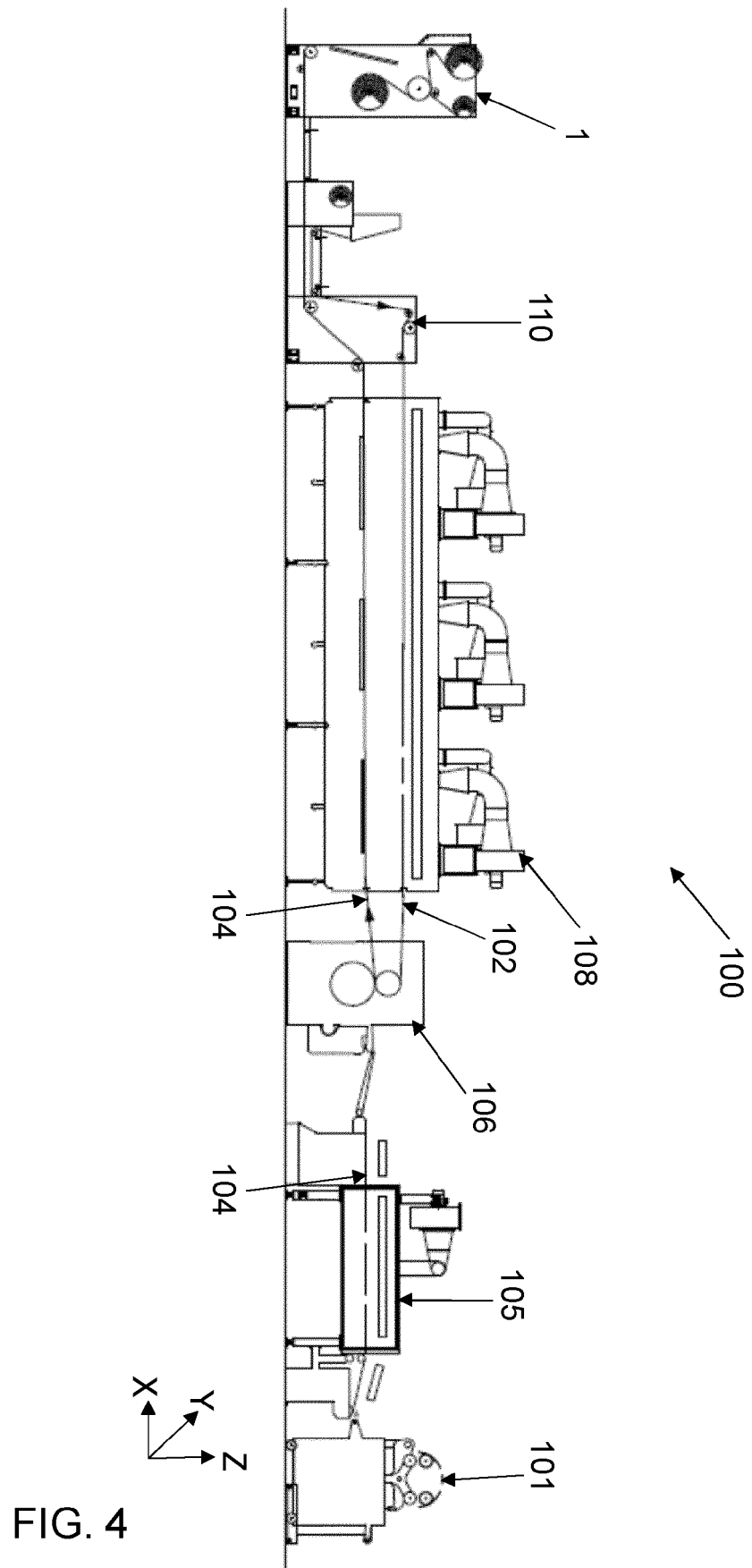


FIG. 3a







EUROPEAN SEARCH REPORT

Application Number

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The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		13 June 2022	Barré, Vincent
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