



(12) **EUROPEAN PATENT APPLICATION**
published in accordance with Art. 153(4) EPC

(43) Date of publication:
13.04.2022 Bulletin 2022/15

(21) Application number: **20818896.1**

(22) Date of filing: **02.06.2020**

(51) International Patent Classification (IPC):
D06F 11/00 (2006.01) **D06F 17/00** (2006.01)
D06F 18/00 (2006.01) **D06F 31/00** (2006.01)
D06B 3/32 (2006.01) **D06B 23/00** (2006.01)

(52) Cooperative Patent Classification (CPC):
D06B 3/14; D06B 3/32; D06B 23/00; D06F 11/00;
D06F 17/00; D06F 18/00; D06F 31/00

(86) International application number:
PCT/ES2020/070367

(87) International publication number:
WO 2020/245484 (10.12.2020 Gazette 2020/50)

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO
PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

(30) Priority: **05.06.2019 ES 201930940 U**

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(54) **MACHINE FOR THE WASHING OF FABRICS**

(57) A machine for washing fabrics, which comprises:
- a first module for collecting and supplying fabric with a first motorised cylinder for winding fabric,
- a second washing module which comprises a first and a second vat for holding a bath for treating the fabric,
- a third module for collecting and supplying fabric with a second motorised cylinder for winding the fabric, and

means for feeding and guiding the fabric configured so that the fabric travels from the first module to the third module passing through the first and the second vat of the washing module, and vice versa characterised in that it comprises a first and a second fabric dryer arranged between the first motorised cylinder and the first vat and between the second vat and the second motorised cylinder, respectively.

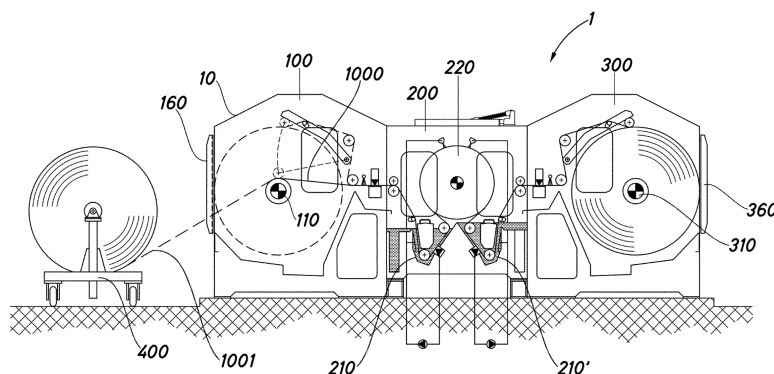


Fig.1

Description

[0001] The present invention relates to a machine for treating and washing fabrics. More specifically, the present invention relates to a machine for treating and washing fabrics in industry.

[0002] In the textile industry, it is necessary to wash fabrics during the production thereof. Washing can take place in various phases or steps of the production of the fabric, which is normally stored in reel form. Fabrics are usually washed in continuous washing machines or in discontinuous washing machines.

[0003] Continuous washing machines normally offer high productivity, but take up a large amount of space since the fabric normally travels through multiple washing tubs arranged in a line, forming what is normally referred to as a washing system.

[0004] In contrast with continuous washing machines, discontinuous washing machines are known in which the fabric that is unwound from a first cylinder passes through a vat that comprises a bath for treating the fabric and is wound onto a second cylinder. When the fabric is wound onto the second cylinder, the same operation is performed in the opposite direction, i.e. the fabric is unwound from the second fabric, passed through said treatment bath, and then wound back onto the first cylinder, and this alternating process is repeated until completing the desired treatment. Machines of this type are also known as "jigger" machines.

[0005] Discontinuous machines normally offer lower productivity than continuous machines. Nevertheless, they also have advantages since they take up less space and are normally more economical than continuous machines.

[0006] One subject of the present invention is that of disclosing a discontinuous machine for treating and/or washing fabrics that has greater productivity than known discontinuous machines and offers greater compactness than known continuous machines. Said greater productivity makes it possible to considerably reduce the operating time of the machine that is the subject of the present invention. Additionally, the machine for treating and/or washing fabrics that is the subject of the present invention reduces the consumption of energy and chemical products necessary for performing a given treatment. Therefore, the present invention discloses a machine for washing fabrics, which comprises:

- a first module for collecting and supplying fabric with a first motorised cylinder for winding fabric,
- a second washing module which comprises a first and a second vat for holding a bath for treating the fabric,
- a third module for collecting and supplying fabric with a second motorised cylinder for winding the fabric, and means for feeding and guiding the fabric configured so that the fabric travels from the first module to the third module, passing through the first and the

second vat of the washing module, and vice versa, which comprises a first and a second fabric dryer arranged between the first motorised cylinder and the first vat and between the second vat and the second motorised cylinder, respectively.

[0007] In a preferred embodiment, each vat comprises a particular submerged suction device configured to circulate the bath in a way substantially perpendicular to the fabric.

[0008] The submerged suction devices comprised in the vats of the washing module, as well as the dryers arranged between the vats and the cylinders of the modules for collecting and supplying fabric, make it possible to speed up the penetration of the bath into the fabric to be treated. This makes for a more efficient process since by making the bath pass through the fabric to be treated, the washing agents and/or other types of auxiliary products (for example dyes) can penetrate into the fabric more rapidly, thus reducing the process time and reducing the amount of bath required for a given treatment since it is used in a more efficient manner.

[0009] Although the penetration of the bath into the fabric is maximised with a machine that comprises a pair of fabric dryers and a submerged suction device, said penetration is also increased with respect to the known prior art in embodiments of the machine that are the subject of the present invention that comprise a submerged suction device and/or a fabric dryer.

[0010] The foregoing makes it possible to solve the needs of the most demanding companies that seek to improve a better solution (higher speed), at a better price (reduction of process times, use of chemical products and energy), while also allowing them to offer products with greater value added, produced using the most environmentally friendly processes (reduced use of chemical products and energy).

[0011] In one embodiment, the machine that is the subject of the present invention comprises reversible means for controlling the level of the bath in the vats configured for counter-current fabric treatment. In a preferred embodiment, each vat comprises means for controlling the level of the bath, configured so that the level of the bath is lower in the fabric intake vat, and which comprise a drain and a bath fluid inlet in each vat. Preferably, the machine that is the subject of the present invention comprises automatic means for opening and closing said drains. Advantageously, the machine that is the subject of the present invention comprises a fluid connection between vats which rises above said drains.

[0012] In one embodiment, the washing module additionally comprises between the first and the second vat a motorised drum configured to guide and convey the fabric from the first vat to the second vat and to minimise the tensions of the fabric. In a preferred embodiment, said drum comprises a plurality of perforations distributed around its entire perimeter.

[0013] Advantageously, the machine that is the subject

of the present invention comprises at least one sprinkler for each vat, each of which is configured to sprinkle the fabric that passes around the drum. Preferably, each sprinkler is configured to sprinkle the fabric with the bath of its particular vat.

[0014] In one embodiment, the machine that is the subject of the present invention comprises a fabric dryer between the first and the second vat. Preferably, the above-mentioned dryers are configured to dry the fabric by suction or vacuum. Alternatively, the above-mentioned dryers are configured to dry the fabric by blowing, mechanical systems (padders etc.), etc.

[0015] Advantageously, said winding cylinders are horizontally offset with respect to the vats, i.e. said winding cylinders are not located above the vats.

[0016] In one advantageous embodiment, the machine that is the subject of the present invention comprises a spreader device for each winding cylinder configured to remove any wrinkles from the fabric before it is wound onto the corresponding cylinder.

[0017] Preferably, each module for collecting and supplying fabric comprises means for wetting the fabric. Advantageously, said means for wetting the fabric are located between the spreader device and the dryer of each cylinder. Preferably, said means for wetting the fabric comprise a sprinkler.

[0018] Preferably, the machine that is the subject of the present invention additionally comprises an auxiliary reel holder configured to load and/or unload the fabric from the machine. Said auxiliary reel holder can be complemented with a winding arm. Said winding arm can also replace said auxiliary reel holder.

[0019] Advantageously, each vat is provided with a plurality of rollers configured to guide the fabric that circulates through the inside thereof.

[0020] Preferably, each vat is provided with a device for stirring the bath contained therein.

[0021] Advantageously, the machine that is the subject of the present invention comprises means for heating the bath contained in each vat.

[0022] In one embodiment, the machine that is the subject of the present invention comprises a casing configured to house inside of same the components of the above-mentioned device. In a preferred embodiment, said casing is covered, at least partially, with an insulation.

[0023] Although the machine that is the subject of the present invention is preferably configured to wash fabric, said machine can also be configured to dye fabric. When the machine is configured to wash fabric, the vats contain, inter alia, detergents, whereas when it is configured to dye fabric, the vats contain, inter alia, dye. In addition to containing detergents or dyes, the vats can also contain other types of products for treating fabric.

[0024] In this document the directions horizontal, vertical, up, down, etc. are understood according to the normal working position of the machine for washing fabrics that is the subject of the present invention.

[0025] A series of drawings showing one embodiment of a baler according to the present invention are appended to ensure better understanding through explanatory but non-exhaustive examples.

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- Figure 1 schematically shows a front view of an embodiment of a machine for washing fabrics according to the present invention.

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- Figure 2 schematically shows a front view of the first module of the embodiment shown in figure 1.

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- Figure 3 schematically shows a front view of the second module of the embodiment shown in figure 1.

- Figure 4 schematically shows a front view of the third module of the embodiment shown in figure 1.

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[0026] In the figures, features that are the same or equivalent have been identified with the same numbers.

[0027] Figures 1 show in a front view and schematically an embodiment of a machine for washing fabrics according to the present invention. In the shown embodiment, the machine 1 comprises three modules 100, 200, 300. To allow easier appreciation of details which, due to the scale used in figure 1, may be difficult to appreciate, figures 2 to 4 respectively show the modules 100, 200 and 300 separately.

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[0028] The embodiment of the machine 1 shown in the figures comprises a first module 100 for collecting and supplying fabric, a second module 200 for washing and a third module 300 for collecting and supplying fabric, the second module 200 being located between the first module 100 and the third module 300.

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[0029] Optionally, the machine 1 can be provided with an auxiliary reel holder 400 configured to load and unload the fabric 1000 from the machine 1, and specifically to load and unload the fabric from the first motorised cylinder 110 and/or from the second motorised cylinder 310.

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The above-mentioned auxiliary reel holder 400 may be complemented by or replaced with a winding arm (not shown). Said loading and unloading of the fabric 1000 can be carried out through the doors 160, 360 located on the first and the third module 100, 300, respectively. Preferably, said doors 160, 360 are located on the side of the casing 10 of their respective modules, although they may also be placed on the front and/or rear of same.

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A discontinuous line and reference number 1001 are used to depict the fabric being loaded into or unloaded from the machine 1 with the help of the auxiliary reel holder 400. The above-mentioned process for loading and unloading the fabric 1001 is only carried out at the start of the process (loading the fabric 1001) and after the end of same (unloading the fabric 1001). When in operation, the fabric 1000 travels from the first module 100 to the third module 300, and vice versa, with no intervention from the above-mentioned auxiliary reel holder 400 or from the winding arm, in the case that the ma-

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chine 1 is provided with same.

[0030] The casing 10 of the machine can be entirely or partially covered with insulation so as to minimise the heat losses of the machine and thus to improve its efficiency. Additionally, said insulation also serves to protect the operators from possible burns in the event of touching the casing. Said insulation is preferably located on the inside of the casing 10.

[0031] As can be seen, in this embodiment the motorised cylinders 110, 310 for winding fabric are arranged facing one another at opposite ends of the machine. Both cylinders 110, 310 can be located at the same height with respect to the ground or base of the machine 1, although they can also be placed at uneven heights.

[0032] The machine for washing and/or treating fabrics that is the subject of the present invention has discontinuous operation, in which the fabric is unwound from a first motorised cylinder and is wound onto a second motorised cylinder after passing through a bath for treating said fabric, and vice versa, i.e. once the fabric has been wound onto the second motorised cylinder, the process is reversed and the fabric is unwound from the second cylinder and after passing through the treatment bath is wound onto the first cylinder, repeating this alternating process until completing the desired treatment of the fabric. Machines of this type are known in the textile industry as "jigger" machines.

[0033] As can be seen, in the shown embodiment, the two modules 100, 300 for collecting and supplying fabric comprise the same components distributed symmetrically with respect to the washing module 200.

[0034] Figure 2 schematically shows a front view of the first module 100 of the embodiment of a machine 1 for washing fabrics shown in figure 1. This figure depicts the fabric 1000 by a continuous line in the position in which said fabric is unwound from the first motorised cylinder 110. A discontinuous line depicts the position occupied by the fabric 1000 and the spreader device 130 when the fabric 1000 is completely wound onto the first motorised cylinder 110. Said spreader device 130 can be formed by rocker-type curved bars and is configured to remove any wrinkles from the fabric 1000 before it passes onto the cylinder 110. Although it has obvious advantages, the use of the spreader device 130 in the machine 1 of the present invention is optional.

[0035] After passing through the vat 210 (see figure 3) the fabric 1000 passes through a fabric dryer 120. In the shown embodiment, said fabric dryer 120 is a vacuum tube and serves to extract the moisture from the fabric 1000, and specifically the moisture not fixed to the fibre that is located between the gaps between the weft and the warp. Although the dryer 120 is preferably a vacuum tube, it can also be in the form of squeezing rollers (padders), air-blowing systems, etc.

[0036] The first module 100 of the shown embodiment also comprises means for wetting the fabric 1000, and specifically comprises a sprinkler 140, between the dryer 120 and the spreader device 130. In other embodiments,

said sprinkler 140 can have a different location within the first module 100. The purpose of the sprinkler 140 is to wet the fabric 1000 when it is unwound from the cylinder 110. Although its use is advantageous and recommendable, said sprinkler 140 is an optional feature of the machine 1. Generally the working liquid of the sprinkler 140 is water, although it can also operate with other liquids, for example chemical products for treating the fabric.

[0037] This figure also shows the means 150 for feeding and guiding the fabric 1000 of the first module 100, which in the shown embodiment are rollers.

[0038] Figure 3 schematically shows a front view of the second module 200 of the embodiment of a machine 1 for washing fabrics shown in figure 1. Said second module 200 is the module for washing or treating the fabric 1000. Said washing module 200 comprises two vats 210, 210' which contain a bath 212, 212' for treating or washing the fabric 1000.

[0039] Although the machine 1 that is the subject of the present invention preferably has two vats, it is possible for other embodiments to have more than two vats or simply one. The fact of having two vats 210, 210' makes it possible to perform counter-current washing of the fabric 1000, counter-current washing being understood to be the fact that, for example, when the fabric travels towards the second cylinder 310, i.e. it is unwound from the first cylinder 110 and is wound onto the second cylinder 310, the bath of the first vat 210 is dirtier than that of the second vat 210'. As can be seen, in the shown embodiment the bath 212, 212' of each vat 210, 210' is at a different level. For this purpose, the second module 200 comprises means for controlling the level of the bath 212, 212' in each vat 210, 210'. Said means for controlling the level of the bath 212, 212' comprise, in this embodiment, a drain 260, 260' and a bath fluid inlet (not shown) in each vat 210, 210'. The machine 1 can comprise automatic means for opening and closing said drains 260, 260', which in the shown embodiment are gates 261, 261', although they can also be valves, etc. The shown embodiment additionally comprises a fluid connection between vats that rises above the drains 260, 260'. In this embodiment, said fluid connection comprises a projection 270 with a triangular section, although it may adopt other shapes.

[0040] The above-mentioned means for controlling the level of the bath 212, 212' are configured so that the level of the bath 212, 212' is lower in the vat 210, 210' that intakes the fabric 1000. Since the operating cycles of the machine are alternating (the fabric 1000 is unwound from the cylinder 110 and, after passing through the bath 212, 212', is wound onto the cylinder 310, and vice versa), said control means can be reversible in order to allow the fabric 1000 to undergo counter-current treatment independently of the cylinder 110, 310 onto which it is being wound/unwound.

[0041] In the case of figures 1 and 3, they show the end of a work cycle of the machine in which the fabric has been unwound from the motorised cylinder 110, has

entered the bath 212 of the vat 210, so that, after passing over the perforated drum 220, it is inserted into the bath 212' of the vat 210' and then wound onto the motorised cylinder 310. Therefore, in said figures the level of the bath 212' is higher than that of the bath 212. This is because the gate 261' of the drain 260' is closed and the bath fluid supply means are supplying fluid to the vat 210' (not shown). When the level of the bath 212' reaches the upper end of the projection 270, the bath 212' overflows into the vat 210, from where it is directed towards the drain 260 since the gate 261 is open. When the operating cycle of the machine is reversed, i.e. the fabric is unwound from the motorised cylinder 310 and wound onto the motorised cylinder 110, the means for controlling the level of the bath also reverse their operation, and the level of the bath 212 becomes higher than that of the bath 212'.

[0042] To maximise the effect of the bath 212, 212' each vat 210, 210' comprises a submerged suction device 211, 211'. Each submerged suction device 211, 211' is configured to force the circulation of the bath 212, 212' through the fabric 1000, thus increasing the effect of said bath 212, 212'. Said circulation of the bath 212, 212' through the fabric 1000 is carried out, preferably, in a substantially perpendicular manner. Said submerged suction devices 211, 211' can be used to sprinkle the fabric 1000 that passes over the drum 220, thus maximising the use of the bath 212, 212' and increasing the efficiency of the machine 1. For this purpose, the bath 212, 212' collected by the submerged suction devices 211, 211' is fed by means of a particular pump 240, 240' towards sprinklers 221, 221' that can be located above the drum 220. Said drum 220 can be perforated in order to maximise its mechanical washing effect. Said mechanical washing effect of the drum 220 can be increased with the use of the sprinklers 221, 221'. In addition to increasing the washing of the fabric 1000, the drum 220 can also be configured to reduce the tensions of the fabric 1000 while it passes from one vat to another. Although its use has numerous advantages, it is possible to replace the drum 220 with a drying device similar to those present in the first module 100 and the third module 300. In the embodiments that are provided with same, said drying device is located between the vats 210, 210'. Certain embodiments of machines for washing fabric according to the present invention may also lack a drum 220 and a drying device replacing same.

[0043] Although they are not shown in figure 3, the vats 210, 210' can comprise stirring means and means for heating the bath 212, 212' contained therein, to promote the penetration of the bath 212, 212' into the fabric 1000.

[0044] In an equivalent manner to the first module 100, the second module 200 or washing module can comprise means 250, 250' for feeding and guiding the fabric 1000. Said feeding and guiding means 250, 250' of the second module 200 can be complemented with submerged means 213, 213' for feeding and guiding the fabric 1000 in each vat 210, 210'. In the shown embodiment, the feed-

ing and guiding means 250, 250' and the submerged means 213, 213' for feeding and guiding the fabric 1000 are rollers.

[0045] Figure 4 schematically shows a front view of the third module 300 of the embodiment of a machine 1 for washing fabrics shown in figure 1. In contrast with the first module shown in figures 1 and 2, in the module 300 shown in figure 4 the fabric 1000 is wound, almost completely, onto the second motorised cylinder 310, thus making it possible to observe the position that the spreader device 330 adopts when the fabric 1000 is wound onto the motorised cylinder 310. Note that this is the opposite configuration to that of the first module shown in figures 1 and 2. However, as explained above, the fabric 1000 is wound onto and unwound from the motorised cylinders 110, 310 in an alternating manner until the desired treatment for said fabric is completed.

[0046] The third module 300 comprises a fabric dryer 320 in order to extract moisture from the fabric 1000, and specifically to extract the moisture not fixed to the fibre that is located between the gaps between the weft and the warp. Although in the shown embodiment the fabric dryer 320 is a vacuum tube, in other embodiments it can be a system of squeezing rollers (padders), an air-blowing system, etc.

[0047] In addition to the above-mentioned components, said third module 300 can also comprise means 350 for feeding and guiding the fabric 1000 and a sprinkler 340 for wetting the fabric 1000 when it is unwound from the second motorised cylinder 310.

[0048] The operation of the third module 300 is similar to that of the first module 100 described beforehand, although, as mentioned above, the operating cycles of the first and the third module 100, 300 are alternating.

[0049] In the embodiment shown in figures 1 to 4, the sprinklers 140, 340 (see figures 2 and 4) are configured so that when the fabric 1000 is unwound from the first motorised cylinder 110, the sprinkler 140 wets said fabric 1000 before being inserted into the vats 210, 210' with their respective baths 212, 212' (see figure 3). After passing through the vats 210, 210' and their respective baths 212, 212', and before it is wound onto the second motorised cylinder 310 after passing through the spreader device 330, the dryer dries the fabric 1000 as described above, without the sprinkler 340 coming into operation. Said sprinkler 340 comes into operation when the work cycle is reversed and the fabric 1000 is unwound from the second cylinder 310 and wound onto the first cylinder 110.

[0050] In the embodiment shown in figures 1 to 4 the bath 212, 212' contains detergents since in the shown embodiment the machine 1 is configured to wash the fabric 1000. However, in other embodiments the bath 212, 212' can contain dye or other chemical products so that the machine dyes or impregnates the fabric 1000.

[0051] In the embodiment shown in figures 1 to 4, the internal components of the machine for washing and/or treating fabrics that is the subject of the present invention

are made of materials that are resistant to the chemical products used in the bath 212, 212', for example stainless steel. However, it is possible for only the elements that are most exposed to the attack of the chemical products used, for example the vats 212, 212', to be made of materials that are resistant to said chemical products, thus reducing the manufacturing cost of the machine.

[0052] While the invention has been described and depicted based on several representative examples, it should be understood that said embodiments given by way of example have no limiting effect on the present invention, so any of the variations that are included directly or by way of equivalence in the content of the appended claims should be considered to be included in the scope of the present invention.

Claims

1. A machine for washing fabrics, which comprises:

- a first module for collecting and supplying fabric with a first motorised cylinder for winding fabric,
- a second washing module which comprises a first and a second vat for holding a bath for treating the fabric,
- a third module for collecting and supplying fabric with a second motorised cylinder for winding the fabric, and means for feeding and guiding the fabric configured so that the fabric travels from the first module to the third module passing through the first and the second vat of the washing module, and vice versa **characterised in that** it comprises a first and a second fabric dryer arranged between the first motorised cylinder and the first vat and between the second vat and the second motorised cylinder, respectively.

2. The machine according to claim 1, **characterised in that** it comprises reversible means for controlling the level of the bath of the vats configured for counter-current fabric treatment.

3. The machine according to claim 2, **characterised in that** each vat comprises means for controlling the level of the bath, configured so that the level of the bath is lower in the fabric intake vat, and which comprise a drain and a bath fluid inlet in each vat.

4. The machine according to claim 3, **characterised in that** it comprises automatic means for opening and closing said drains.

5. The machine according to claim 3 or 4, **characterised in that** it comprises a fluid connection between vats which rises above said drains.

6. The machine according to any of the preceding

claims, **characterised in that** each vat comprises a particular submerged suction device configured to circulate the bath in a way substantially perpendicular to the fabric.

7. The machine according to any of the preceding claims, **characterised in that** the washing module additionally comprises between the first and the second vat a motorised drum configured to guide and convey the fabric from the first vat to the second vat and to minimise the tensions of the fabric.

8. The machine according to claim 7, **characterised in that** said drum comprises a plurality of perforations distributed around its entire perimeter.

9. The machine according to claim 7 or 8, **characterised in that** it comprises at least one sprinkler for each vat, each of which is configured to sprinkle the fabric that passes around the drum.

10. The machine according to claim 9, **characterised in that** each sprinkler is configured to sprinkle the fabric with the bath of its particular vat.

11. The machine according to any of the preceding claims, **characterised in that** it comprises a fabric dryer between the first and the second vat.

12. The machine according to any of the preceding claims, **characterised in that** the above-mentioned dryers are configured to dry the fabric by suction.

13. The machine according to any of the preceding claims, **characterised in that** said winding cylinders are offset horizontally with respect to the vats.

14. The machine according to any of the preceding claims, **characterised in that** it comprises a spreader device for each winding cylinder configured to remove any wrinkles from the fabric before it is wound onto the corresponding cylinder.

15. The machine according to any of the preceding claims, **characterised in that** each module for collecting and supplying fabric comprises means for wetting the fabric.

16. The machine according to any of the preceding claims, **characterised in that** it additionally comprises an auxiliary reel holder configured to load and/or unload the fabric from the machine.

17. The machine according to any of the preceding claims, **characterised in that** each vat is provided with a plurality of rollers configured to guide the fabric that circulates through the inside thereof.

18. The machine according to any of the preceding claims, **characterised in that** each vat is provided with a device for stirring the bath contained therein.
19. The machine according to any of the preceding claims, **characterised in that** it comprises means for heating the bath contained in each vat. 5
20. The machine according to any of the preceding claims, **characterised in that** it comprises a casing configured to house inside of same the components of the above-mentioned device. 10

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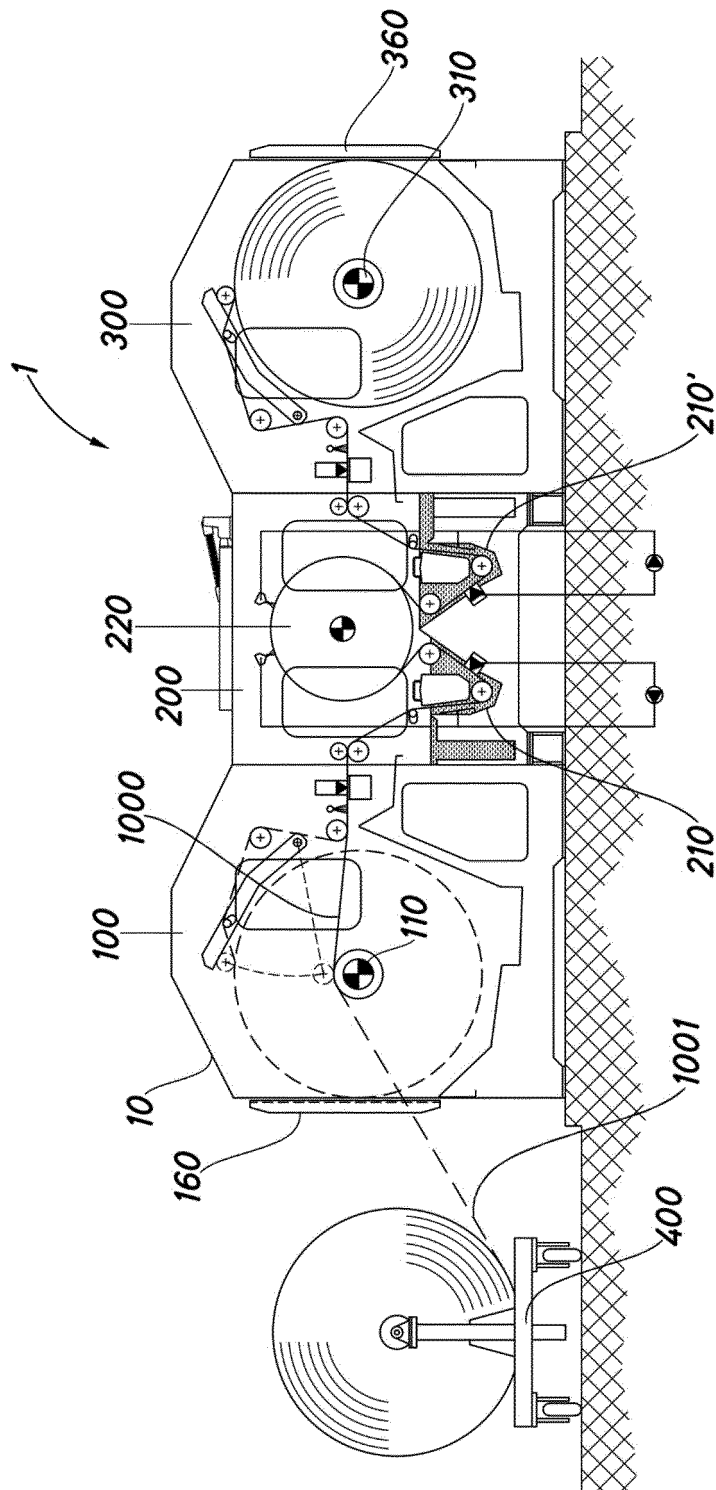


Fig.1

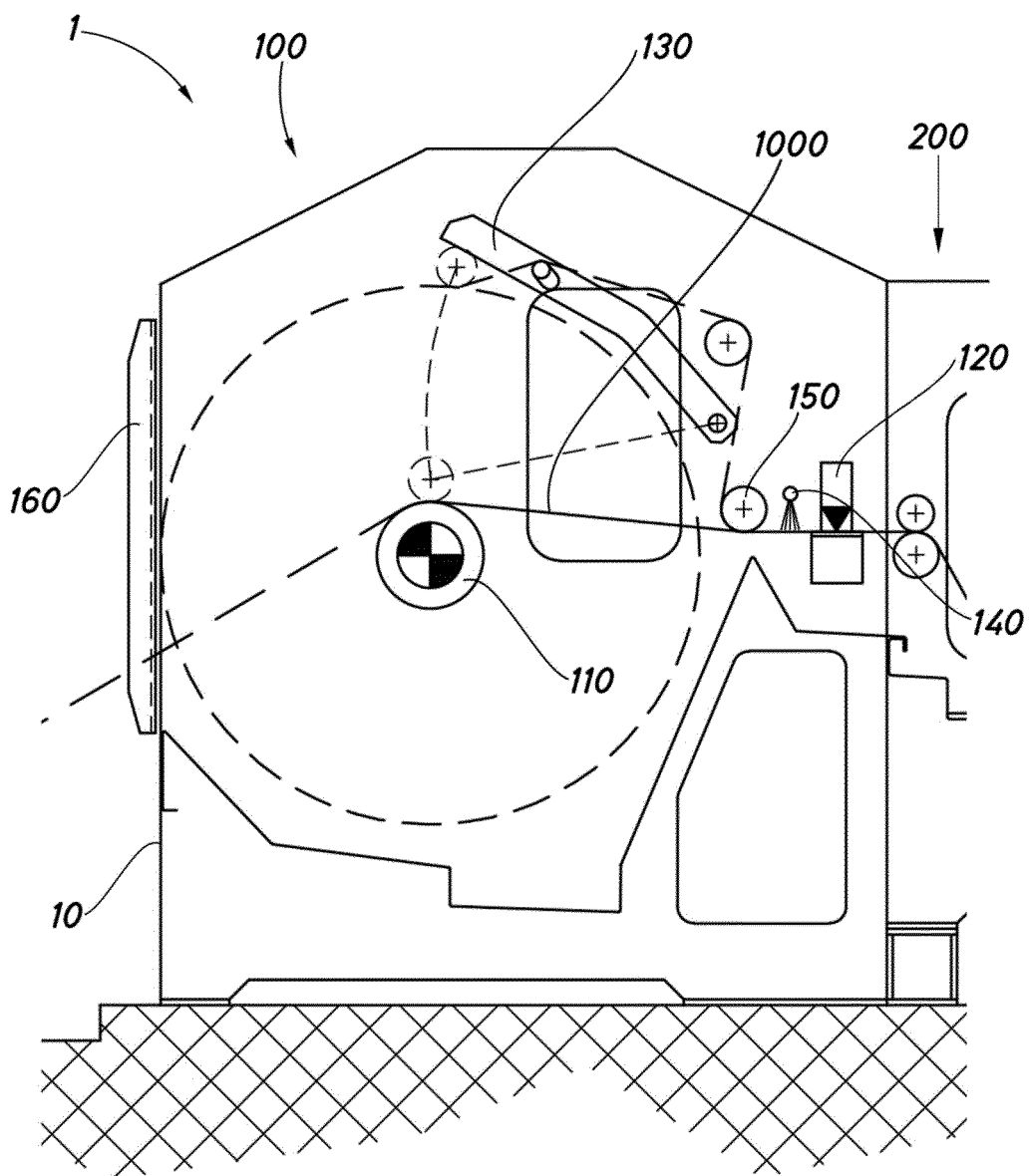


Fig.2

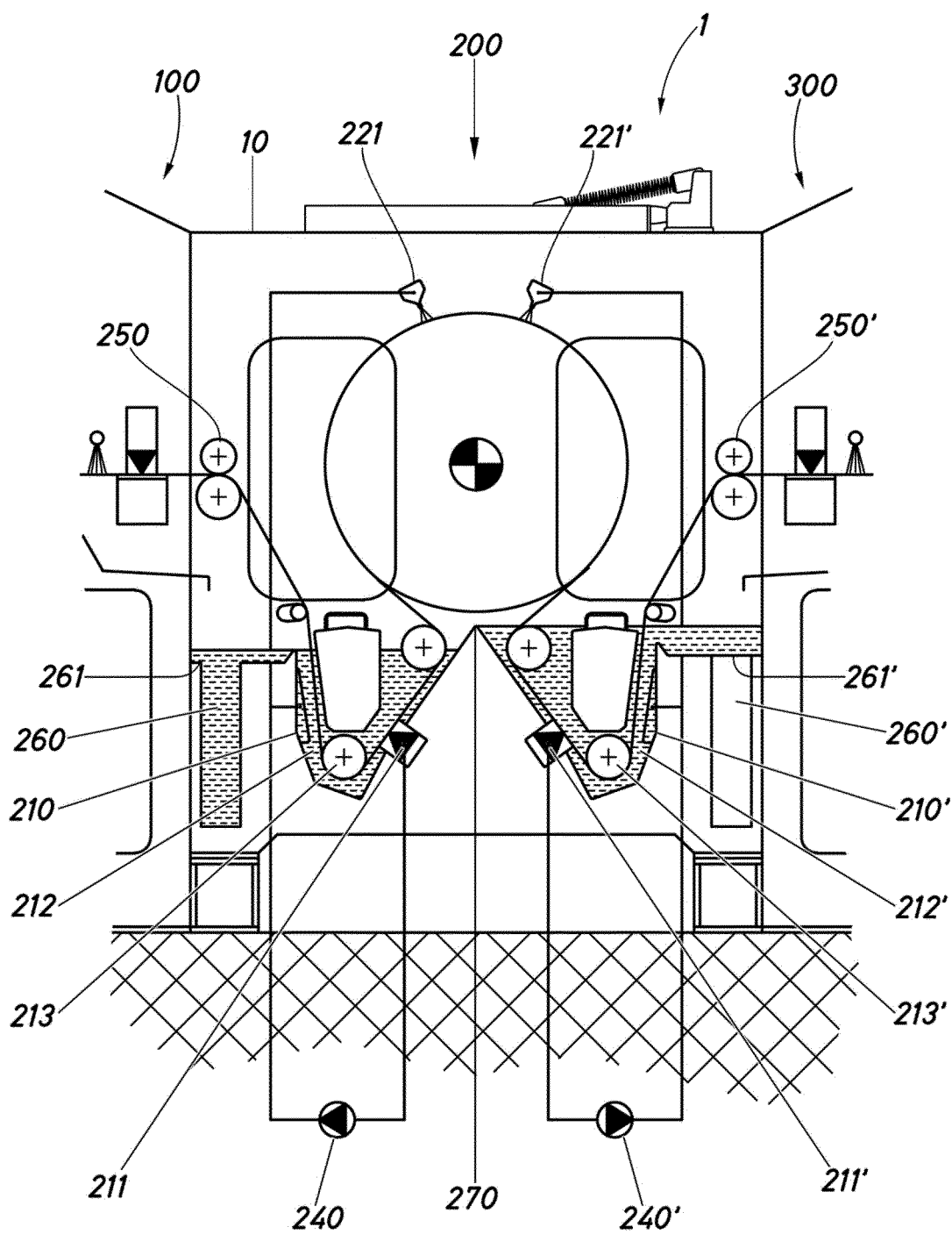


Fig.3

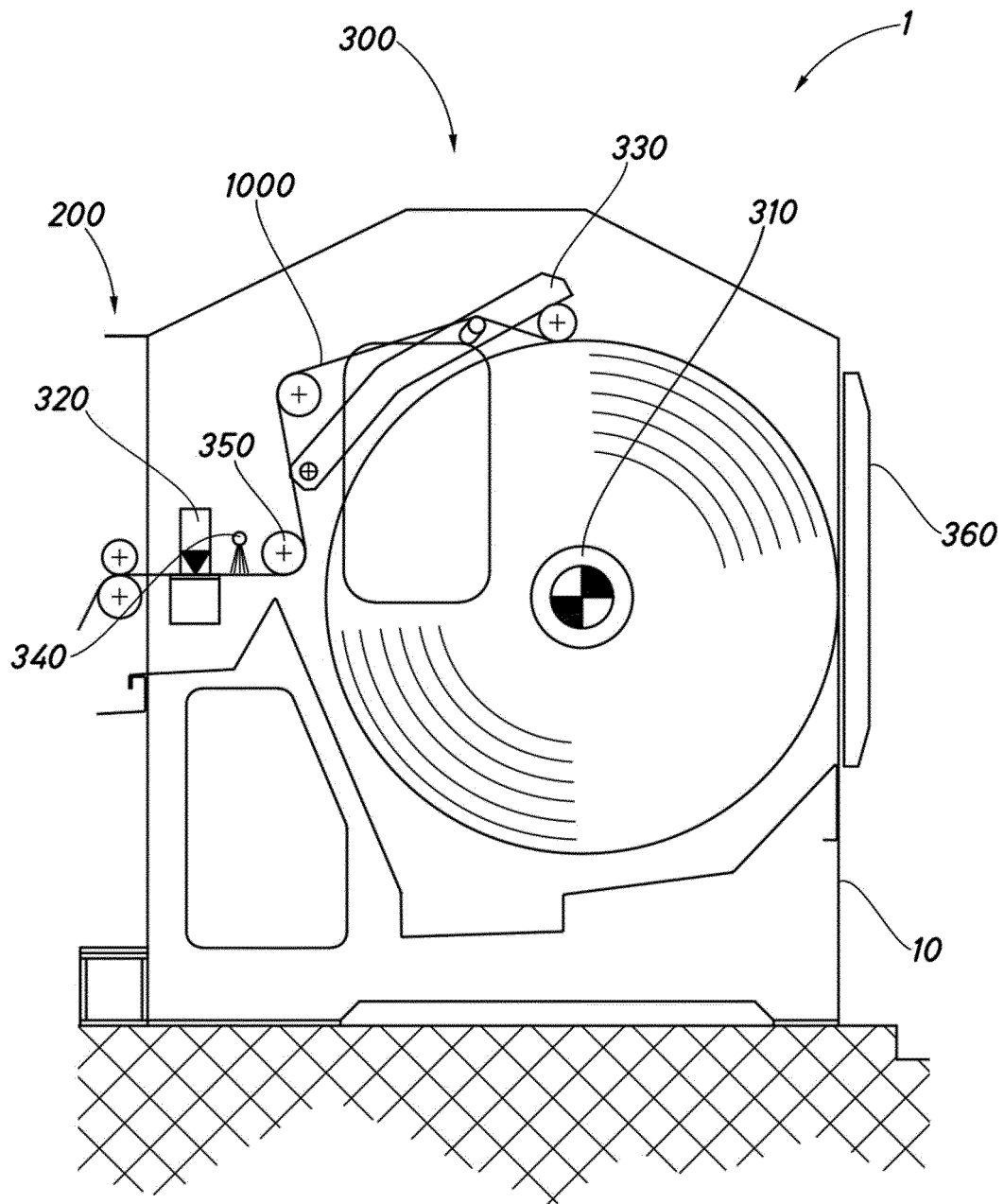


Fig.4

INTERNATIONAL SEARCH REPORT

International application No.

PCT/ES2020/070367

A. CLASSIFICATION OF SUBJECT MATTER

See extra sheet

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

D06F, D06B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPODOC, INVENES

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	US 6158256 A (KURSCHATKE WOLFGANG ET AL.) 12/12/2000, column 3, line 31 - column 4, line 38; column 4, lines 39 - 60; figure 1,	1-5, 7-20 6
Y	FR 1118921 A 13/06/1956, figures 1 - 4.	6
X	ES 8705056 A1 (BENNINGER AG MASCHF) 01/05/1987, claims 1-11; page 1, lines 1 - 8; figures 1 - 3. page 2, lines 8 - 14; page 3, lines 10 - 20; page 5, line 28 - page 6, line 3; page 8, lines 2 - 10; figure 5, page 8, lines 11 - 25;	1-5, 11-20

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
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"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"O" document referring to an oral disclosure use, exhibition, or other means.	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other documents, such combination being obvious to a person skilled in the art
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Date of the actual completion of the international search
10/09/2020Date of mailing of the international search report
(15/09/2020)

Name and mailing address of the ISA/

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Telephone No. 91 3493023

Form PCT/ISA/210 (second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT

International application No.

PCT/ES2020/070367

C (continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of documents, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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CLASSIFICATION OF SUBJECT MATTER

D06F11/00 (2006.01)

D06F17/00 (2006.01)

D06F18/00 (2006.01)

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D06B3/32 (2006.01)

D06B23/00 (2006.01)