



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
01.11.2017 Bulletin 2017/44

(51) Int Cl.:
B41F 19/00 ^(2006.01) **B05C 1/08** ^(2006.01)
B41F 31/30 ^(2006.01) **B41F 31/36** ^(2006.01)
B41F 33/02 ^(2006.01) **B41F 33/10** ^(2006.01)
B41F 33/18 ^(2006.01)

(21) Application number: **17167468.2**

(22) Date of filing: **21.04.2017**

(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:
MA MD

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(30) Priority: **29.04.2016 IT UA20163030**

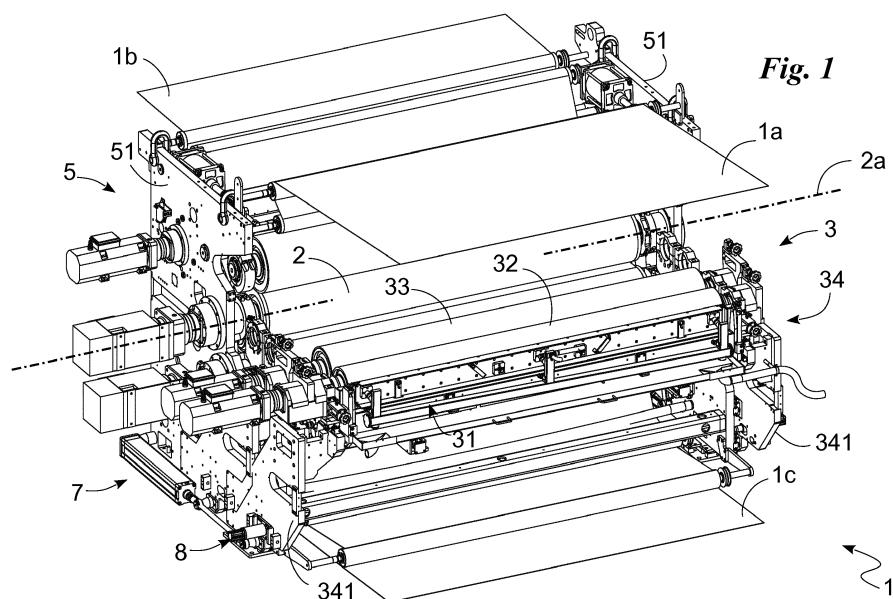
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(54) **DEPOSIT GROUP**

(57) A deposit group (1) for sheets (1 a, 1 b, 1 c) is provided, which comprises a contrast cylinder (2) along which a sheet (1 a, 1 b, 1 c) slides; a laying block (3) suitable to deposit a fluid on the sheet (1 a, 1 b, 1 c) when it slides on the contrast cylinder (2); a mover (7) suitable to reciprocally move the laying block (3) and the contrast cylinder (2) defining for the deposit group (1) a working configuration in which the working distance between the laying block (3) and the contrast cylinder (2) is less than

the thickness of said sheet (1 a, 1 b, 1 c); and a maintenance configuration in which the maintenance distance between the laying block (3) and the contrast cylinder (2) is greater than the working distance; and a limiter (8) suitable to limit the stroke of the mover (7) defining, for the deposit group (1), a stationary machine configuration in which the machine stop distance between the laying block (3) and the contrast cylinder (2) is intermediate between the maintenance and working distances.



Description

[0001] The present invention relates to a deposit group of the type specified in the preamble of the first claim.

[0002] In particular, the subject matter of the invention introduces an innovative device for depositing a liquid (such as a glue or a dye, a perfume/essence) on a suitably continuous sheet.

[0003] The sheets can be made either of a paper material (corrugated, preferably smooth), a polymeric material, or a cellulose hydrate such as cellophane.

[0004] As is well known, the deposit group, also known as gluer, is suitable to place a gluing liquid on a sheet, allowing its gluing to an additional sheet, thus providing a processed sheet. Alternatively, it is used to deposit a dyeing liquid on a continuous sheet so as to colour it entirely or preferably to reproduce thereon an image or a writing.

[0005] To date, the deposit group consists of a tank, also called chamber, containing the liquid to be deposited on the sheet; a roller for withdrawing the liquid from the tank; a laying roller interposed between the drawing roller and the paper/polymer sheet, which is suitable to withdraw the liquid from the drawing roller and to place it on the sheet; a contrast cylinder on which the laying roller rests, coming into contact with the sheet and ensuring the laying down of the liquid on the sheet; and a crankcase supporting the laying roller, the drawing roller and the contrast cylinder.

[0006] The tank and the drawing and laying rollers are mounted on a support structure hinged to the crankcase, and the deposit group comprises a pneumatic cylinder for controlling the rotation of the tank and the rollers with respect to the contrast cylinder between a working position, in which the laying roller is close to the contrast cylinder, and a machine stop position, in which the tank and the rollers are moved away from the cylinder at a predetermined distance from the contrast cylinder.

[0007] This distance is important in the case of gluing for preventing, during machine stoppage, the sheet, when in contact with the laying roller, from sticking to the same laying roller and/or to the contrast cylinder. Such distance is equal to 25-50 mm so that, irrespective of the thickness of the sheet, said contact between the sheet and the laying roller is prevented.

[0008] The above-mentioned prior art has a few major drawbacks.

[0009] A first drawback is the complex execution of the maintenance or repair operations on the deposit groups known to date.

[0010] In fact, in order to access it, it is necessary to remove the pneumatic control cylinder from the support structure, rotate and overturn said support structure together with the tank, the drawing roller and the laying roller, moving these elements away from the contrast cylinder.

[0011] The above-mentioned overturning of the tank, the drawing roller and the laying roller defines a free area

of limited size, which ensures a limited freedom of movement to the operator.

[0012] Another drawback is that, at each restart of production, the pneumatic cylinder takes a few seconds to bring back the laying roller into the working position, and consequently part of the sheet slides along the contrast cylinder before the liquid can be laid down thereon.

[0013] This drawback is important when considering the high feed rate of the sheet and the presence of many metres of unglued/uncoloured sheet.

[0014] The above drawback is further penalising since distributors often reject a lot thus produced due to the presence of non-perfectly glued/coloured rolls.

[0015] This rejection therefore results in a considerable waste of paper and, especially, in a substantial increase in costs.

[0016] In this context, the technical task underlying the present invention is to devise a deposit group, which is capable of substantially obviating the above-mentioned drawbacks.

[0017] Within the scope of said technical task, a major object of the invention is to provide a deposit group, which allows maintenance and repair operations to be performed in a simple and quick way.

[0018] Another important object of the invention is to obtain a deposit group, which avoids the presence of long sections of sheet devoid of gluing, dyeing or other liquid to be deposited.

[0019] The technical task and the specified objects are achieved by means of a deposit group as claimed in the appended claim 1.

[0020] Preferred embodiments are set forth in the dependent claims.

[0021] The features and advantages of the invention will be apparent from the detailed description of a preferred embodiment of the invention, with reference to the accompanying drawings, in which:

Fig. 1 shows a deposit group according to the invention;

Fig. 2a shows a section of the deposit group according to the invention;

Fig. 2b shows the deposit group in a different configuration;

Fig. 2c shows a further configuration of the deposit group;

Fig. 3a shows an assembly in section of the deposit group;

Fig. 3b shows the assembly of Fig. 3a in a different position; and

Fig. 4 shows a detail of the deposit group.

[0022] In the present document, the measures, values, shapes and geometric references (such as perpendicularity and parallelism), when associated with words like "about" or other similar terms such as "almost" or "substantially", are to be understood as unless measurement errors or inaccuracies due to production and/or manu-

facturing defects and, especially, unless a slight difference from the value, the measure, the shape, or the geometric reference with which it is associated. For example, these terms, if associated with a value, preferably indicate a difference of not more than 10% of the value itself.

[0023] Furthermore, when used, terms such as "first", "second", "higher", "lower", "main" and "secondary" do not necessarily identify an order, a priority relationship or a relative position, but can simply be used to distinguish more clearly the different components from each other.

[0024] With reference to the aforementioned figures, the deposit group according to the invention, as a whole, is indicated by the numeral **1**.

[0025] It is used to deposit a fluid, preferably a liquid (e.g. a glue or a colour) on a raw, preferably continuous sheet **1a**, thus obtaining a processed sheet **1b** also preferably continuous.

[0026] It should be noted that the expression "raw sheet" simply identifies the sheet before the liquid is deposited thereon by the deposit group **1**. The raw sheet differs from the processed sheet **1b**, which in fact comprises the raw sheet **1a** and the liquid deposited thereon.

[0027] The deposit group **1** can deposit a (fluid, in detail liquid) glue on the raw sheet **1a**, allowing its gluing to at least an additional, preferably continuous sheet **1c**. It is therefore capable of gluing together two or more sheets **1a** and **1c**, forming a processed sheet **1b** comprising said at least two sheets **1a** and **1c**, hence with two or more layers.

[0028] It should be noted that one or more of the sheets **1a**, **1b** and **1c** can also have two or more layers.

[0029] Alternatively, the deposit group **1** can be used to deposit a (fluid, in detail liquid) dye on the raw sheet **1a** so as to form a single processed sheet **1b** exhibiting a writing and/or a coloured image.

[0030] The sheets **1a**, **1b** and **1c** can be made either of a paper material (corrugated, or preferably smooth), a polymeric material, or a cellulose hydrate such as cellophane. In detail, they are made of paper and the liquid is a glue.

[0031] The group **1** may be part of a processing line of continuous sheets. This line can comprise multiple deposit groups **1**, so as to deposit several liquids and, for example, obtain a processed sheet **1b** with more than two layers or exhibiting a multi-coloured reproduction.

[0032] The deposit group **1** is suitable to define a sliding path (highlighted with arrows in Fig. 2b) of at least one sheet and therefore may comprise one or more cylinders (described below) suitable for defining the sliding path, and preferably at least partly motorised, so as to control the movement of the at least one sheet along said sliding path.

[0033] The deposit group **1** may comprise a contrast cylinder **2** along which at least one raw sheet **1a** slides; at least one laying block **3** for depositing at least one liquid on the raw sheet **1a**; and, suitably, a control unit

suitable to control the operation of the group **1** based on a command given by the operator.

[0034] The contrast cylinder **2** defines a preferably substantially horizontal rotation axis **2a**. The contrast cylinder **2** can be motorised.

[0035] The contrast cylinder **2** can have on its outer surface a reproduction suitable to be reproduced on the raw sheet **1a**. This reproduction is identifiable as a bas/high relief reproducing, for example, dots and/or figures.

[0036] In a further alternative, the outer surface of the contrast cylinder **2** is smooth.

[0037] At least in the case of gluing of the raw sheet **1a** to the additional sheet **1c**, the deposit group **1** may comprise a slide cylinder **4** along which the additional sheet **1c** slides before joining the raw sheet **1a** downstream of the laying block **3** with respect to the raw sheet **1a**.

[0038] It should be noted that in this document the expressions "downstream" and "upstream" are to be understood in relation to the feed directions of the sheets **1a**, **1b** and **1c** shown in Fig. 2b.

[0039] The slide cylinder **4** can be motorised.

[0040] The slide cylinder **4** may comprise an additional reproduction formed on the outer surface for the sliding of the additional sheet **1c**, which is suitable to be reproduced on the additional sheet **1c**. This additional reproduction can be somewhat similar to that of the contrast cylinder **2**.

[0041] Alternatively, the outer surface of the slide cylinder **4** is smooth.

[0042] The deposit group **1** may comprise a support structure **5** for the contrast cylinder **2**, the at least one laying block **3** and the slide cylinder **4**, if present. It should be noted that the various cylinders are associated with the structure **5** in a resolvable manner so as to allow its replacement.

[0043] Said support structure **5** comprises two side panels **51** suitable to enclose and support the contrast cylinder **2**, the at least one laying block **3** and the slide cylinder **4**, if present.

[0044] The side panels **51** are substantially perpendicular to the rotation axis **2a**, and suitably vertical.

[0045] The side panels **51** can be anchored to the ground, and in particular they define the only points of anchorage/support of the deposit group **1** to the ground. Consequently, the laying block **3** is spaced from the ground.

[0046] The deposit group **1** may comprise at least one laying block **3** (preferably only one) for depositing at least one liquid, suitably a glue or dye, on at least part of the raw sheet **1a** when it slides on the contrast cylinder **2**.

[0047] The laying block **3** comprises, for each liquid to be deposited, a dispenser **31** suitable to dispense the liquid; and at least one roller suitable to withdraw the liquid from the dispenser **31** and to deposit it on the raw sheet **1a**; and suitably a feeding apparatus suitable to withdraw the liquid from a tank and bring it to the dis-

penser 31.

[0048] In particular, for each liquid to be deposited, the laying block 3 may comprise a dispenser 31; a drawing roller 32 for withdrawing the liquid from the dispenser 31; and a laying roller 33 interposed between the drawing roller 32 and the contrast cylinder 2, which is suitable to receive the liquid from the drawing roller 32 and place it on the raw sheet 1a when it slides on the contrast cylinder 2.

[0049] The dispenser 31 may comprise a chamber containing the liquid, and preferably at least partially filled by the feeding apparatus; and one or more blades suitable to ensure the correct dosage and distribution of the liquid on the at least one roller.

[0050] Each roller 32 and 33 defines an additional rotation axis substantially parallel to the rotation axis 2a.

[0051] The drawing 32 and the laying 33 rollers are, at least when the group 1 is in operation, in mutual contact so as to allow the passage of liquid between said rollers 32 and 33.

[0052] The drawing cylinder 32 can be screened and preferably identifiable as an anilox cylinder.

[0053] The laying roller 33 can have on its outer surface a reproduction suitable to be reproduced on the raw sheet 1a. This reproduction is identifiable as a bas/high relief reproducing, for example, dots and/or figures. For example, the outer surface of the laying roller 33 can have radial protrusions (identifiable as rings equally spaced along axis 2a, figures or writings) substantially constituting the only deposit points of the liquid on the raw sheet 1a.

[0054] Alternatively, the outer surface of the laying roller 33 is smooth.

[0055] The laying block 3 may comprise a support frame 34 for the dispenser 31 and the at least one roller 32 and 33, which can allow said dispenser 31 and the at least one roller 32 and 33 to be moved simultaneously, as described hereinafter.

[0056] The support frame 34 comprises two walls 341 suitable to enclose and support the dispenser 31 and the at least one roller 32 and 33.

[0057] The walls 341 are substantially perpendicular to the additional axis of the at least one roller 32 and 33 and hence to the rotation axis 2a. Preferably, the walls 341 are vertical.

[0058] It is noted that the walls 341 are substantially parallel to the side panels 51.

[0059] The distance between the walls 341 is substantially different from the distance between the panels 51 so that they can slide reciprocally, and in particular so as to superimpose the walls 341 onto the side panels 51 with respect to the rotation axis 2a. Conveniently, the distance between the walls 341 is substantially greater than the distance between the panels 51.

[0060] Said distances are calculated along the rotation axis 2a.

[0061] In addition, the laying block 3 may comprise a distance-adjusting member.

[0062] The adjusting member is suitable to vary the distance between the rollers 32 and 33, thus moving the assembly of the drawing roller 32 and dispenser 31 with respect to the laying roller 33 preferably along a direction perpendicular to the rotation axis 2a, and more preferably to the gravitational gradient.

[0063] Alternatively, the adjusting member is suitable to move the dispenser 31 with respect to the drawing roller 32 by varying the distance between the dispenser 31 and the drawing roller 32, preferably along a direction perpendicular to the rotation axis 2a, and more preferably to the gravitational gradient.

[0064] Preferably, the adjusting member is adapted to move both said assembly with respect to the laying roller 33 and the dispenser 31 with respect to the drawing roller 32.

[0065] The deposit group 1 may comprise at least one pressure member 6 for pressing the sheets 1a and/or 1c on the cylinders 2 and/or 4.

[0066] The deposit group 1 can comprise a pressure member 6 arranged, with respect to the raw sheet 1a, upstream of the laying block 3 and adapted to press the raw sheet 1a against the contrast cylinder 2.

[0067] Alternatively, the deposit group 1 can comprise a pressure member 6 arranged, with respect to the additional sheet 1c, upstream of the slide cylinder 4 and adapted to press the additional sheet 1c against the said cylinder 4.

[0068] In a further alternative, the deposit group 1 can comprise a pressure member 6 arranged downstream of the laying block 3 and adapted to press any additional sheet 1c against the contrast cylinder 2 and hence the raw sheet 1a, ensuring the gluing of the sheets 1a and 1c.

[0069] Preferably, the deposit group 1 comprises two of said pressure members 6, and in detail all of the above described three pressure members 6.

[0070] Each pressure member 6 comprises a pressure cylinder 61 adapted to press said sheet 1a and/or 1c against said cylinder 2 and/or 4; and a kinematic mechanism for moving the pressure cylinder 61 adapted to move the pressure cylinder 61 with respect to the cylinder 2 and/or 4 and thus to adjust the pressure exerted by the pressure cylinder 61 on the cylinder 2 and/or 4.

[0071] The rotation axis of the pressure cylinder 61 of each pressure member 6 is parallel to and advantageously coplanar with the rotation axis of the cylinder 2 and/or 4. Suitably, the plane on which the rotation axes of the pressure cylinder 61 and of the cylinder 2 and/or 4 lie, against which the pressure cylinder 61 presses the sheet 1a, 1b and/or 1c, is transverse to the gravitational gradient as can be easily understood, for example, from Fig. 2b.

[0072] The pressure kinematic mechanism may comprise a thrust piston 62 that moves the pressure cylinder 61 with respect to the cylinder 2 and/or 4; and an L-shaped lever 63 of the first kind, the ends of which are hinged to the pressure cylinder 61 and the thrust piston 62, which is pivoted to the support structure 5.

[0073] The deposit group 1 may comprise a mover 7 adapted to move reciprocally the laying block 3 and the contrast cylinder 2, defining for the deposit group 1 a working configuration (Fig. 2b), in which the working distance between the cylinder 2 and the block 3 is substantially not greater than the thickness of the raw sheet 1a; and a maintenance configuration (Fig. 2a) in which the maintenance distance between the contrast cylinder 2 and the laying block 3 is greater than the working distance.

[0074] The working distance is not greater than 0.1 mm.

[0075] The maintenance distance is substantially equal to at least 0.5 m, preferably substantially comprised between 0.5 m and 1 m, and more preferably substantially equal to 0.7 m.

[0076] The working and maintenance distances are calculated between the contrast cylinder 2 and the laying roller 33 perpendicularly to the rotation axis 2a.

[0077] Advantageously, the mover 7 is engaged with the support structure 5 and support frame 34, more in particular with the walls 341 and the side panels 51, mutually constraining the block 3 and the structure 5.

[0078] It is adapted to move the laying block 3 with respect to the contrast cylinder 2 suitably by means of a translation along a movement axis 7a preferably substantially perpendicular to the rotation axis 2a.

[0079] The mover 7 comprises at least one actuator 71 adapted to reciprocally move the block 3 and the cylinder 2.

[0080] The actuator 71 may be linear and its ends may be constrained to the walls 341 and the panels 51, so that it operates said reciprocal motion by varying its elongation.

[0081] The actuator, and therefore the mover 7, are suitable to define stable positions between the laying block 3 and the contrast cylinder 2 almost exclusively at its end and start of travel, i.e. at its maximum and/or minimum extension.

[0082] They define a stable working configuration in which the mover 7 and, precisely, the actuator 71 exert a force to maintain the working configuration, which orders the maintenance of the working distance, i.e. a variation in the reciprocal distance between the laying block 3 and the contrast cylinder 2, ensuring the correct deposit of the liquid.

[0083] Preferably, the mover 7 and, precisely, the actuator 71 define a stable maintenance configuration in which they exert a force to maintain the maintenance configuration. The actuator 71 can be pneumatic, electronic or hydraulic.

[0084] Preferably, the mover 7 comprises two actuators 71, each subtended between a wall 341 and the adjacent side panel 51.

[0085] The mover 7 may comprise at least one abutment against which the deposit block 3 abuts when the group 1 passes into the working configuration.

[0086] Said abutment is adjustable by varying the dis-

tance between the deposit roller 33 and the contrast cylinder 2 on the basis of the thickness of the sheet.

[0087] To support the weight of the laying block 3, the mover 7 may comprise at least one guide 72 integral with the support structure 5, and more precisely with the side panels 51; and for each guide 72, at least one slider 73 integral with the laying block 3, and in particular with the walls 341, and suitable to slide along the guide 72. Preferably, the mover 7 comprises two guides 72 for each side panel 51; and two sliders 73 for each guide 72.

[0088] The guide 72 defines a sliding axis for the slider 73 substantially parallel to the movement axis 7a.

[0089] The deposit group 1 may comprise at least one limiter 8 suitable to limit the stroke of the mover 7 by reducing the possible mutual spacing between the contrast cylinder 2 and the laying block 3 and preventing the maintenance configuration from being reached.

[0090] The limiter 8 enables the group 1 to vary its own configuration between the working configuration and a stationary machine configuration interposed between the working and maintenance configurations, thereby defining a machine stop distance (between the contrast cylinder 2 and the laying block 3) intermediate between the working and maintenance distances.

[0091] In particular, the limiter 8 defines an active position in which it limits the stroke of the mover 7 and the group 1 varies its configuration, suitably exclusively between the working and the stationary machine configurations; and a passive position in which the limiter 8 does not limit the stroke of the mover 7 and the group 1 varies its configuration, suitably exclusively between the working and the maintenance configurations.

[0092] It should be noted that the machine stop distance is calculated between the contrast cylinder 2 and the laying roller 33 perpendicularly to the rotation axis 2a.

[0093] Suitably, the limiter 8 is adapted to define a machine stop distance ranging between a maximum value and a minimum value.

[0094] The limiter 8, by preventing at least a further distancing between the laying block 3 and the contrast cylinder 2, allows the mover 7 to define a stable stationary machine configuration wherein, in fact, the limiter 8, by preventing a further distancing between the block 3 and the cylinder 2, causes the mover 7 to exploit the blockage provided by the limiter 8 in order to exert a force to maintain the stationary machine configuration opposing a variation in the distance between the laying block 3 and the contrast cylinder 2.

[0095] The limiter 8 can be mechanical and, for example, limit the stroke of the mover 7 by engaging the contrast cylinder 2 with the laying block 3, and precisely the support structure 5 with the support frame 34.

[0096] Preferably, the deposit group 1 comprises two limiters 8, each of which suitable to engage a side panel 51 with the adjacent wall 341.

[0097] A limiter 8 may comprise a slot 81 and a stop 83, one of which is integral with the support structure 5 and the other with the support frame 34.

[0098] Preferably, the slot 81 is integral with the support structure 5, and in particular with a side panel 51. The stop 83 is suitable to be integral with the support frame 34, and precisely with a wall 341.

[0099] The slot 81 has an axis extending substantially parallel to the movement axis 7a.

[0100] The slot 81 may have a length, as calculated along the axis 7a, at least equal to the maximum value of the machine stop distance so that the stop 83 is able to slide therein along the movement axis 7a over a length substantially equal to the maximum value of the machine stop distance.

[0101] It may be formed in the side panel 51 or in a plate integral with it.

[0102] Additionally, the limiter 8 may comprise an additional slot 82 integral with the support frame 34, and more precisely with a wall 341.

[0103] The additional slot 82 has an axis extending substantially parallel to that of the slot 81.

[0104] The additional slot 82 may have a length, as calculated along the axis 7a, at least equal to the difference between the maximum and minimum values of the machine stop distance so that the stop 83 can slide therein along the movement axis 7a over a length substantially equal to said distance.

[0105] The stop 83 is connected to the control unit so as to be controlled by the same and thus it places the limiter 8 in the passive or active position based on a command coming from the control unit as described below.

[0106] It is suitable to place the limiter 8 into the active position by fitting into the slot 81 and into the passive position by coming out of the slot 81. In particular, in the active position the stop 83 is inserted in both of the slots 81 and 82 and in the passive position the stop 83 comes out of the slot 81 and is inserted only in the additional slot 82.

[0107] The stop 83 comprises a pin **831** suitable to fit into the slots 81 and 82 and a shifter **832** suitable to move the pin 831 with respect to the slots 81 and 82, defining said active position (Fig. 3a) and passive position (Fig. 3b).

[0108] In the active position, the pin 831 is inserted in both of the slots 81 and 82. In the passive position, it is not inserted in at least one of the slots 81 and 82 (suitably it is inserted only in the additional slot 82).

[0109] The shifter 832 is suitable to move the pin 831 along a translation axis 83a substantially perpendicular to the movement axis 7a, and in particular substantially parallel to the rotation axis 2a.

[0110] The stop 83 may comprise an anchor plate **833** for anchorage to the wall 341 through constraining means, which are releasable, or in detail resolvable and define a passage hole for the pin 831.

[0111] The anchor plate 833 can thus have screws or bolts.

[0112] Said passage hole is substantially shaped against the pin 831, and in particular the shifter 832.

[0113] Moreover, the limiter 8 may comprise a regula-

tor **84** adapted to enable adjustment, suitably in a continuous manner, of the machine stop distance between a minimum value, greater than the working distance, and a maximum value, smaller than the maintenance distance.

[0114] The maximum value is substantially less than 10% of the maintenance distance. It is substantially less than 5 cm, and in detail less than 3 cm. More in detail, it is substantially equal to 2.5 cm.

[0115] The minimum value of the machine stop distance is at least less than 15 times the working distance. It is substantially less than 1 cm, and in detail less than 0.5 cm, and more in detail less than 0.2 cm, and conveniently equal to 0.1 mm. Preferably, the machine stop distance has a minimum value at least equal to 0.1 mm and a maximum value of less than 5 cm.

[0116] To adjust the machine stop distance, the regulator 84 is suitable to vary the position of anchorage of the stop 83 to the laying block 3, and in particular to move the stop 83 along the movement axis 7a by adjusting the position of the stop 83 with respect to the slots 81 and 82, and in particular to the additional slot 82.

[0117] The regulator 84 may comprise, at each of the resolvable constraining means of the anchor plate 833, an adjustment slot extending substantially parallel to the movement axis 7a, i.e. to the slots 81 and 82.

[0118] Said adjustment slots are suitable to adjust the machine stop distance on the basis of the position of the passage hole and therefore of the pin 831 with respect to the additional slot 82, by modifying the stroke of the pin 831 in the slot 81.

[0119] In particular, the operator constrains the stop 83 so that the pin 831 is at the end of the additional slot 82 distal to the cylinder 2, and so as to have the minimum value of the machine stop distance. On the contrary, if the maximum value of the machine stop distance is required, the operator places the pin 831 at the end of the additional slot 82 proximal to the contrast cylinder 2. Finally, for any intermediate value of the machine stop distance, the operator places the stop 83, and in particular the pin 831, in an intermediate position between those described above.

[0120] Finally, alternatively or additionally, it should be stressed that the regulator 84 can vary the position of at least one of the slots 81 and 82 by changing the extension of the overlapping portions of the slots 81 and 82.

[0121] Lastly, the deposit group 1 may comprise at least one monitoring station 9 for monitoring at least one sheet 1 a, 1 b and 1 c, and in detail at least the raw sheet 1 a along the sliding path.

[0122] The monitoring station 9 is suitable to detect an error in the sliding of at least one of the sheets 1 a, 1 b and/or 1 c and, according to it, command the transition to the stop configuration in which the mover 7 does not exert the maintenance force, thereby defining a stop configuration for the deposit group 1 and, advantageously, the limiter 8 is in the passive position.

[0123] The sliding error can identify an error due to

non-feeding and/or absence of at least one sheet 1 a, 1 b and/or 1 c. In the first case, the sliding error may be due to a sheet jam, and the monitoring station 9, by detecting its presence but not its feed, sends a sliding error signal. In the second case, the monitoring station 9 sends a sliding error signal if it detects the absence of at least one sheet for example due to a breakage thereof.

[0124] Another possible sliding error, precisely in the case of a multilayer sheet 1 a, 1 b and/or 1 c, is the breakage of only some of the layers which, by not sliding any more along the sliding path, accumulate causing spacing between two components of the group 1 (in detail between the contrast cylinder 2 and the deposit roller 33 and/or between the walls 341 and the side panels 51) detected by the station 9. It is pointed out that the monitoring station 9 can detect distance variations of the order of tenths of mm.

[0125] The monitoring station 9 monitors the passage of the sheet at a point/area of the sliding path, detecting an error in the sliding of at least one of the sheets 1 a, 1 b and/or 1 c and/or an undesired variation of the distance between the components of the group 1. It may comprise one or more of an optical/magnetic sensor and a camera.

[0126] The monitoring station 9 is in data connection with the control unit so as to send said sliding error to said unit and therefore command the transition of the deposit group 1 to the stop configuration.

[0127] In the stop configuration, the mover 7 is ordered not to exert the aforesaid maintenance force, the limiter 8 is arranged in the passive position and, suitably, the feeding of the sheets along the sliding path is stopped.

[0128] In this stop configuration, the mover 7 does not lock the deposit group 1 in the working configuration and allows a mutual spacing between the laying block 3 and the contrast cylinder 2, and in particular a distancing of the laying block 3 from the contrast cylinder 2 at a distance greater than the working distance. In detail, as the limiter 8 is in the passive position, the distancing of the laying block 3 from the contrast cylinder 2 can define a distance equal to the maintenance distance.

[0129] The monitoring station 9 can order the discharge of the mover 7, allowing an idle distancing of the block 3. The mover 7 does not exert any force on the laying block 3 which is free to translate along the movement axis 7a and, as it is lifted from the ground, can move away from the contrast cylinder 2 as a result of any force external to the group, such as that of the operator and/or of the pressure of the sheets on the contrast cylinder 2 or on another component of the group 1.

[0130] Alternatively, the monitoring station 9 can order the mover 7 to reverse its action and to exert a force for moving the laying block 3 away from the contrast cylinder 2. Preferably, the monitoring station 9 can order the mover 7 to place the group 1 into the maintenance configuration.

[0131] To control the sliding of the processed sheet 1 b, the deposit group 1 may comprise a monitoring station

9 located downstream of the contrast cylinder 2.

[0132] To monitor the sliding of the raw sheet 1a, the deposit group 1 may comprise a monitoring station 9 located upstream of the contrast cylinder 2, and in particular of the corresponding pressure cylinder 61.

[0133] To check the sliding of the additional sheet 1c, the deposit group 1 may comprise a monitoring station 9 upstream of the slide cylinder 4.

[0134] Advantageously, the deposit group 1 can check the sliding of all the sheets 1a, 1b and 1c and thus may comprise the aforementioned three monitoring stations 9.

[0135] In addition to or replacement of one or more of said three stations 9, the deposit group 1 may comprise a monitoring station 9 adapted to measure a change in distance between the contrast cylinder 2 and the block 3 and available at the contrast cylinder 2; and/or a monitoring station 9 adapted to measure a change in distance between the rollers 33 and 32 and suitably located in the area of the deposit roller 33.

[0136] The operation of the deposit group, described above as regards structure, is described below.

[0137] Initially, the group 1 is in the maintenance configuration (Fig. 2a) and the stop 83 is in the passive position (Fig. 3b).

[0138] The operator, by exploiting the regulator 84, constrains the stop 83 to the wall 341, placing the pin 831 into a position relative to the additional slot 82 such that, with the limiter 8 in the active position, there is a certain machine stop distance.

[0139] Once the adjustment of the machine stop is completed, the operator orders the transition to the working configuration (Fig. 2b) and arranges the stop 83 into the active position (Fig. 3a).

[0140] In particular, the operator, thanks to the mover 7, brings the laying block 3 close to the contrast cylinder 2, superimposing the additional slot 82 and the pin 831 onto the slot 81, and commands the insertion of the pin 831 in both of the slots 81 and 82.

[0141] At this point, it orders the transition of the deposit group 1 to the stationary machine configuration (Fig. 2c).

[0142] In particular, the actuator 71 extends, moving the laying block 3 away from the contrast cylinder 2. The pin 831 slides in the slot 81 and, by abutting against the end of the slot 81 distal to the contrast cylinder 2, blocks the extension of the actuator 71, thereby preventing a further advance of the laying block 3 and the reaching of the maintenance configuration.

[0143] The deposit group 1 is in the stationary machine configuration (Fig. 2c).

[0144] At the beginning of the processing of the sheets 1a and 1c, the operator orders the deposit group 1 to pass into the working configuration (Fig. 2b).

[0145] The sheets 1a and 1c slide and simultaneously the mover 7 brings the deposit roller 33 close to the contrast cylinder 2, allowing the deposit of the liquid on the raw sheet 1a.

[0146] The transition to the working configuration

brings the pin 831 close to the end of the slot 81 proximal to the contrast cylinder 2.

[0147] The operator, when performing maintenance, brings the limiter 8 into the passive position (Fig. 3b) causing the pin 831 to come out of the slot 81 so that it is only inserted in the additional slot 82. 5

[0148] At this point, the operator orders the transition of the group to the maintenance configuration (Fig. 2a).

[0149] The transition to the passive position causes the mover 7, since its stroke is not limited by limiter 8, to fully extend and place the laying block 3 at the maintenance distance from the contrast cylinder 2. 10

[0150] Lastly, if one or more of monitoring stations 9 does/do not detect the passage of the sheet 1b 1a and/or 1c or the breaking of one or more of the layers of the sheet 1a, it/they sends/send a sliding error signal to the control unit. In response to the signal, the control unit commands the transition to the stop configuration, and in particular it orders the mover 7 to stop the maintenance force and the stop 83 to pass into the passive position. 20

[0151] The invention provides significant advantages.

[0152] A first advantage is the presence of the monitoring station 9 which, by detecting an incorrect paper flow, blocks the group, thereby preventing breakdowns thanks to the cessation of the maintenance force that moves the block 3 away from the contrast cylinder 2, avoiding accumulations. 25

[0153] This aspect brings the deposit block 3 close to the contrast cylinder 2 in complete safety, minimizing the machine stop distance, by adjusting it to the thickness of the sheet being processed, and therefore the transition time from the stationary machine configuration to the working configuration. 30

[0154] Another advantage is that the deposit group 1 reduces the ratio of liquid-free sheets, thus avoiding waste from production by distributors. 35

[0155] A non-secondary advantage is that, in the maintenance configuration, the laying block 3, compared to the known groups, has an increased distance from the contrast cylinder 2, thus ensuring a large operating/intervention space. 40

[0156] Another advantage is that the deposit group 1, being fully anchored to the support structure 5, is transportable already assembled.

[0157] The invention is susceptible of variations falling within the scope of the inventive concept, as specified in the independent claims, and of the related technical equivalents. In this context, all details are replaceable by equivalent elements and any type of materials, shapes and dimensions may be present. 50

Claims

1. A deposit group (1) for depositing a fluid on at least one sheet (1a, 1b, 1c) defining a sliding path of at least one sheet (1a, 1b, 1c) and comprising 55

- a contrast cylinder (2) along which said sheet slides (1a, 1b, 1c);
- a laying block (3) suitable to place said fluid on said sheet (1a, 1b, 1c) when said sheet of paper (1a, 1b, 1c) slides on said contrast cylinder (2);
- a mover (7) suitable to reciprocally move said laying block (3) and said contrast cylinder (2) defining for said deposit group (1)

◦ a working configuration in which said laying block (3) has a working distance from said contrast cylinder (2) substantially less than the thickness of said sheet (1a, 1b, 1c); and

◦ a maintenance configuration in which said laying block (3) has a maintenance distance from said contrast cylinder (2) greater than said working distance; and

- characterised in that

- said mover (7), when said deposit group (1) is in said working configuration, exerts a force to maintain said working configuration, which imposes the maintenance of said working distance;

- and that it comprises

- a limiter (8) suitable to limit the stroke of said mover (7) defining, for said deposit group (1), at least one stationary machine configuration in which said laying block (3) is fixed and in stable equilibrium and has a machine stop distance from said contrast cylinder (2) intermediate between said maintenance distance and said working distance; wherein said limiter (8) defines an active position;

- and that

- said limiter (8) defines an active position in which said limiter (8) limits the stroke of said mover (7) allowing said deposit group (1) to pass exclusively between said working configuration and said stationary machine configuration and a passive position in which said limiter (8) does not limit the stroke of said mover (7) allowing said deposit group (1) to pass exclusively between said working configuration and said maintenance configuration;

- and that it comprises

- at least one monitoring station (9) suitable to detect, when said deposit group (1) is in said working configuration, a sliding error of said sheet (1a, 1b, 1c) along said sliding path and to order said limiter (8) to move into said passive position and said mover (7) not to exert said maintenance force.

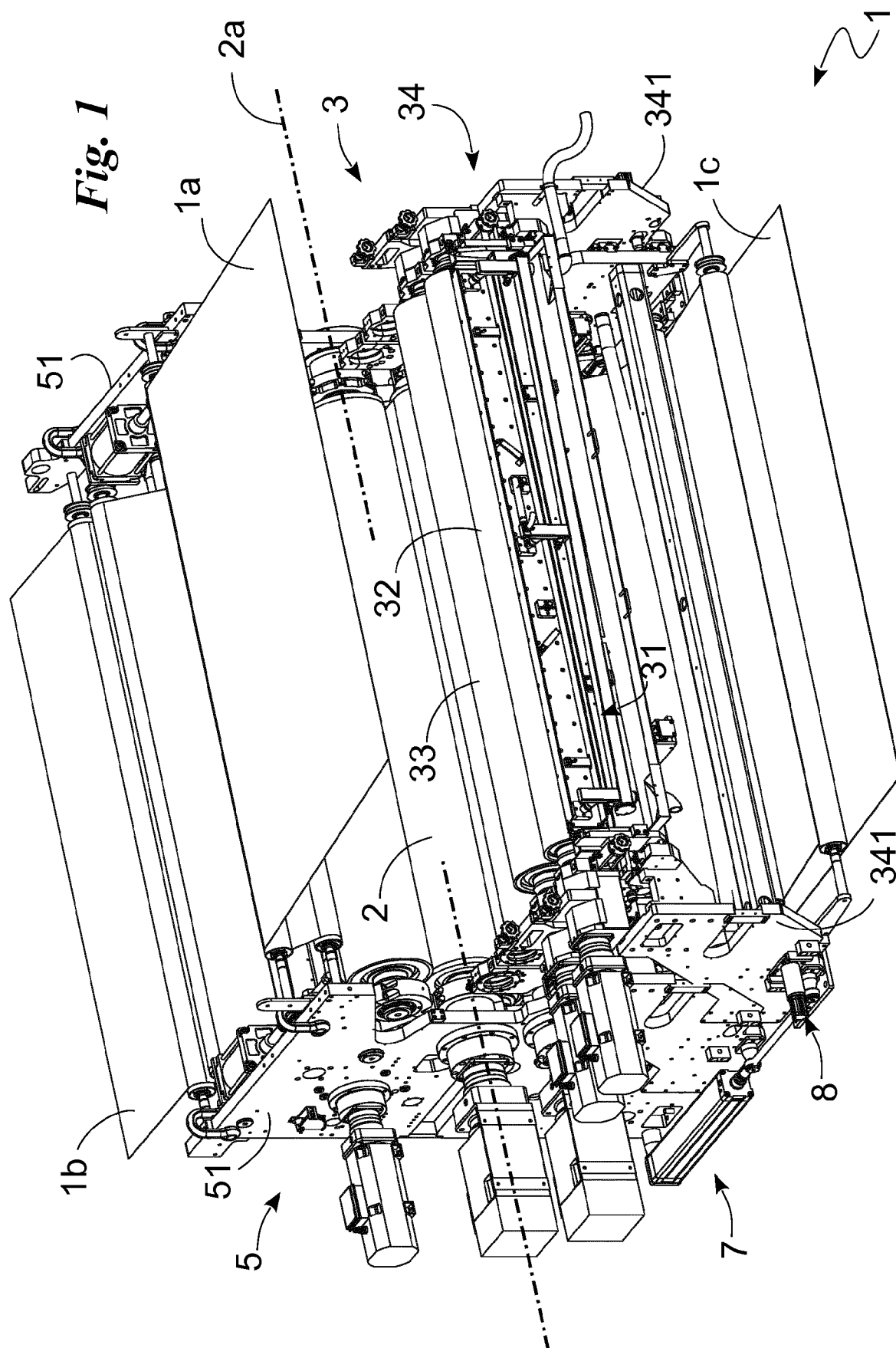
2. The deposit group (1) according to claim 1, wherein said monitoring station (9) can order the discharge of said mover (7) allowing an idle distancing between

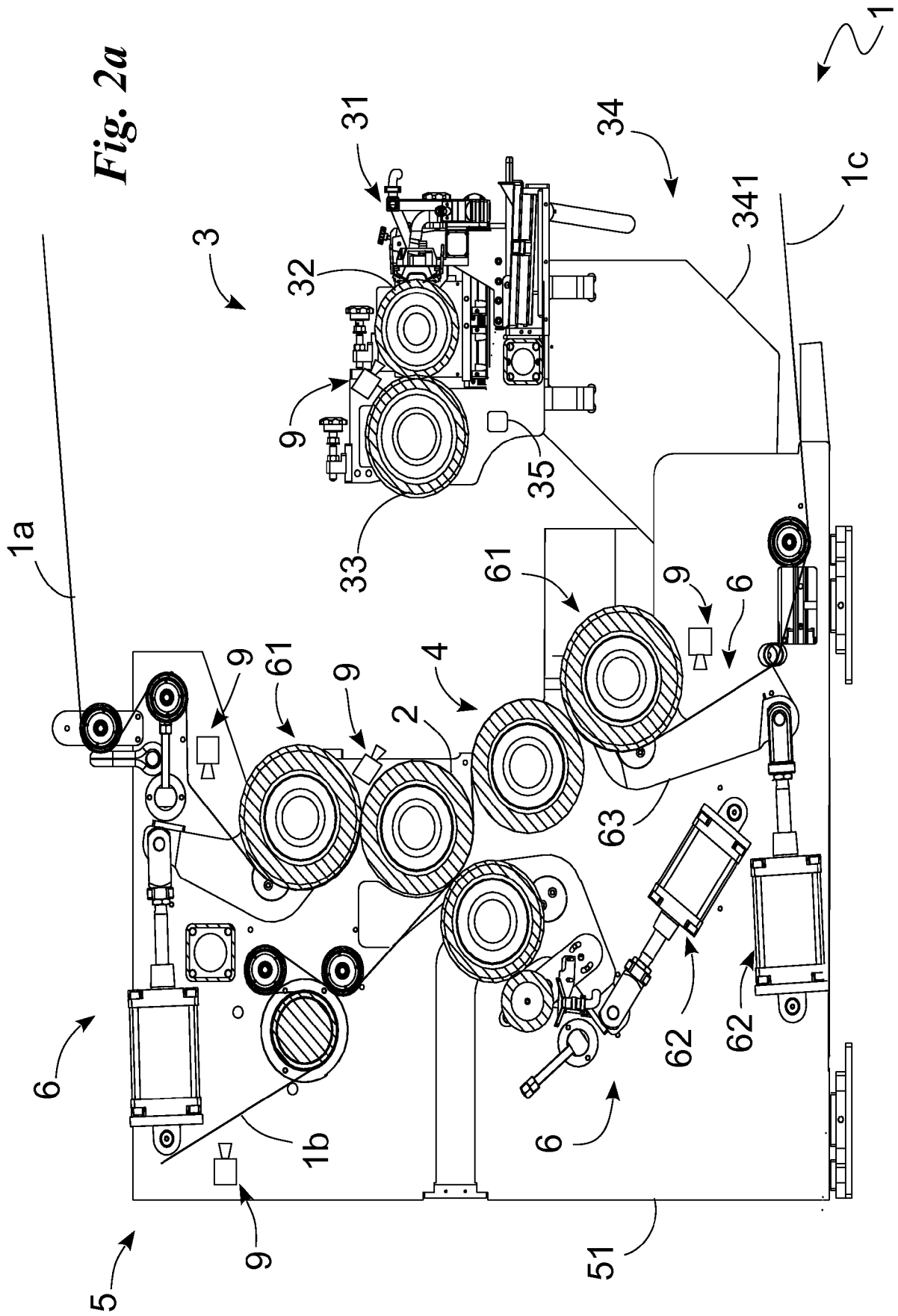
said laying block (3) and said contrast cylinder (2).

3. The deposit group (1) according to claim 1, wherein said monitoring station (9) can order said mover (7) to bring said deposit group (1) into said maintenance configuration. 5
4. The deposit group (1) according to one or more of the preceding claims, wherein said limiter (8) comprises a regulator (83) suitable to enable the variation of said machine stop distance. 10
5. The deposit group (1) according to the preceding claim, wherein said regulator (83) is suitable to define, for said machine stop distance, a minimum value substantially at least equal to 0.1 mm and a maximum value substantially less than 5 cm. 15
6. The deposit group (1) according to one or more of the preceding claims, comprising a support structure (5) for said contrast cylinder (2), wherein said laying block (3) comprises a dispenser (31) suitable to dispense said fluid, at least one roller (32, 33) suitable to withdraw said fluid from said dispenser (31) and to deposit said fluid on said sheet (1a, 1b, 1c) and a support frame (34) for said dispenser (31) and said at least one roller (32, 33); and wherein said mover (7) is constrained to said support structure (5) and to said support frame (34) constraining said laying block (3) and said support structure (5) to each other; and wherein said limiter (8) comprises a slot (81) integral with said support structure (5); and a stop (83) constrained to said support frame (34) and suitable to fit into said slot (81) defining for said limiter (8) said active position, and to come out of said slot (81) defining for said limiter (8) said passive position. 20
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7. The deposit group (1) according to the preceding claim, comprising a regulator (84) suitable to vary the position of constraint of said stop (83) to said support frame (34) by varying said machine stop distance between a minimum value and a maximum value. 40
8. The deposit group (1) according to the preceding claim, wherein said slot (81) has a length at least equal to the maximum value of said machine stop distance so that said stop (83) is able to slide in said slot (81) over a length substantially equal to said maximum value of said machine stop distance); and wherein said limiter (8) comprises an additional slot (82) integral with said support frame (34) and inside which said stop (83) is suitable to fit; and wherein said additional slot (82) has a length at least equal to the difference between said maximum value and said minimum value of said machine stop distance so that said stop (83) is able to slide in said additional slot (82) over a length substantially equal to said dis- 45
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tance.

9. The deposit group (1) according to one or more of the claims 4-6, wherein said stop (83) comprises a pin (831) suitable to fit into said slots (81, 82) and a shifter (832) suitable to move said pin (831) with respect to said slots (81, 82) so that in said active position said pin (831) is inserted in both said slots (81, 82) and a passive position in which said pin (831) is inserted only in said additional slot (82).
10. The deposit group (1) according to one or more of the preceding claims, wherein said maintenance distance is substantially equal to 0.7 m.





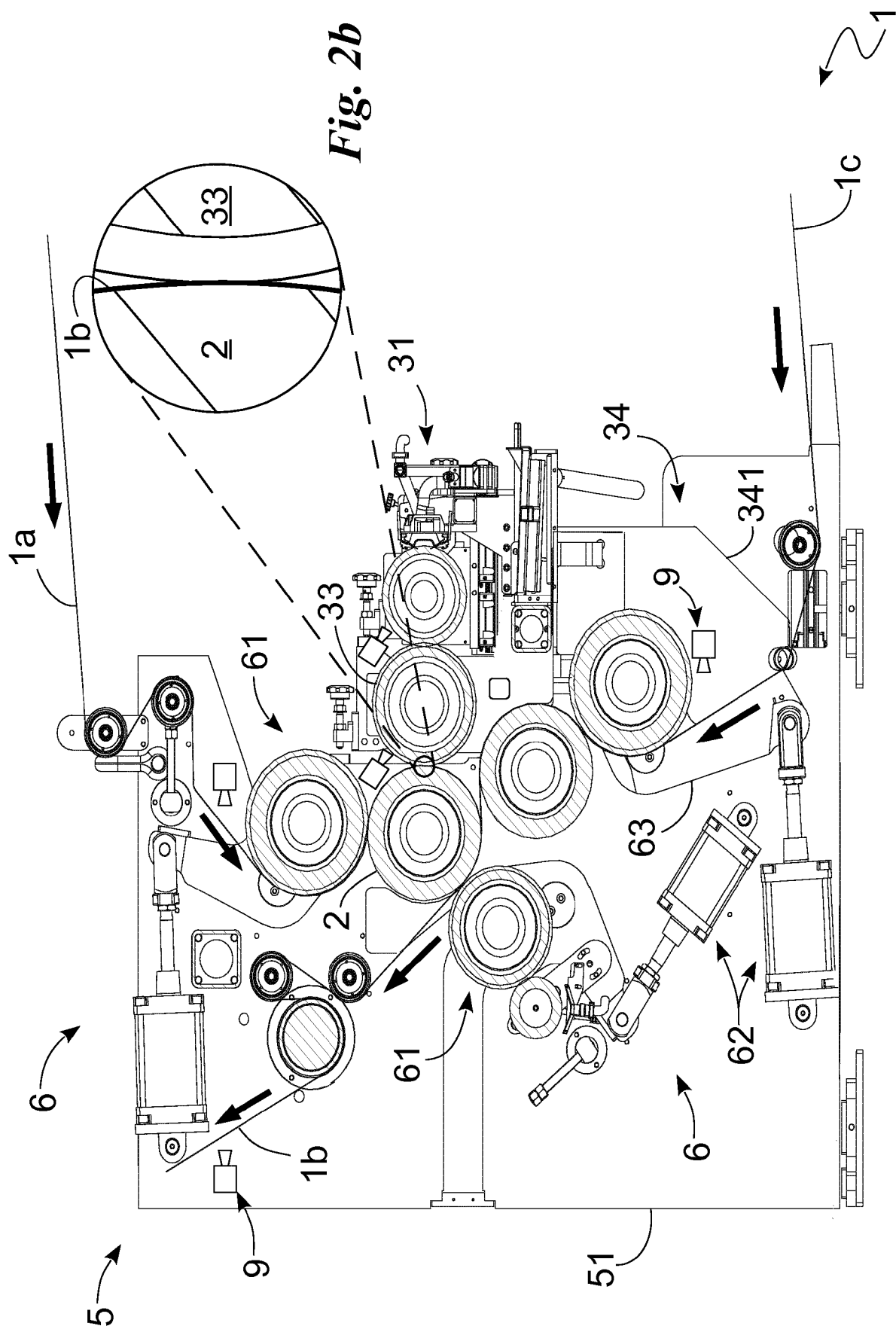
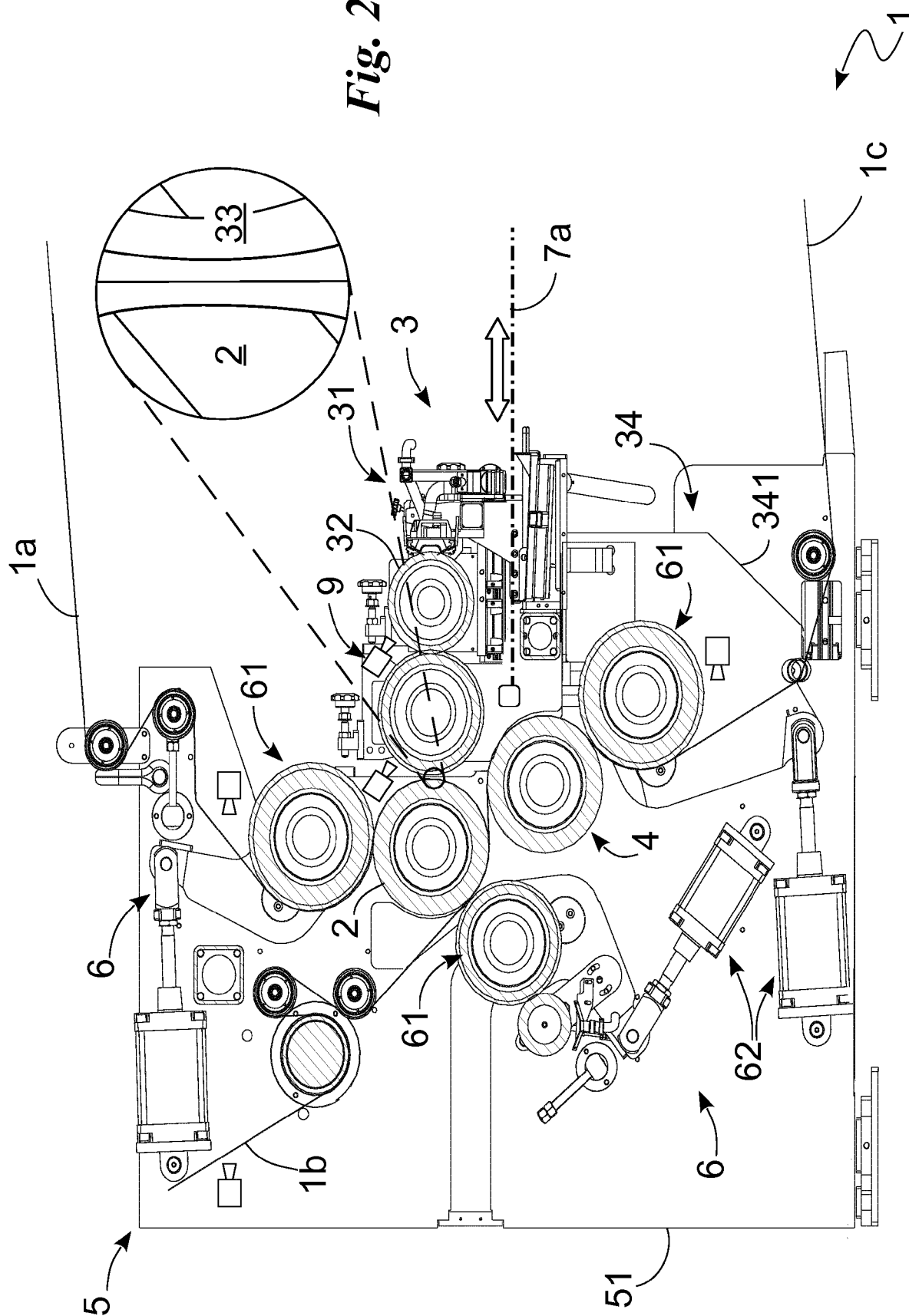
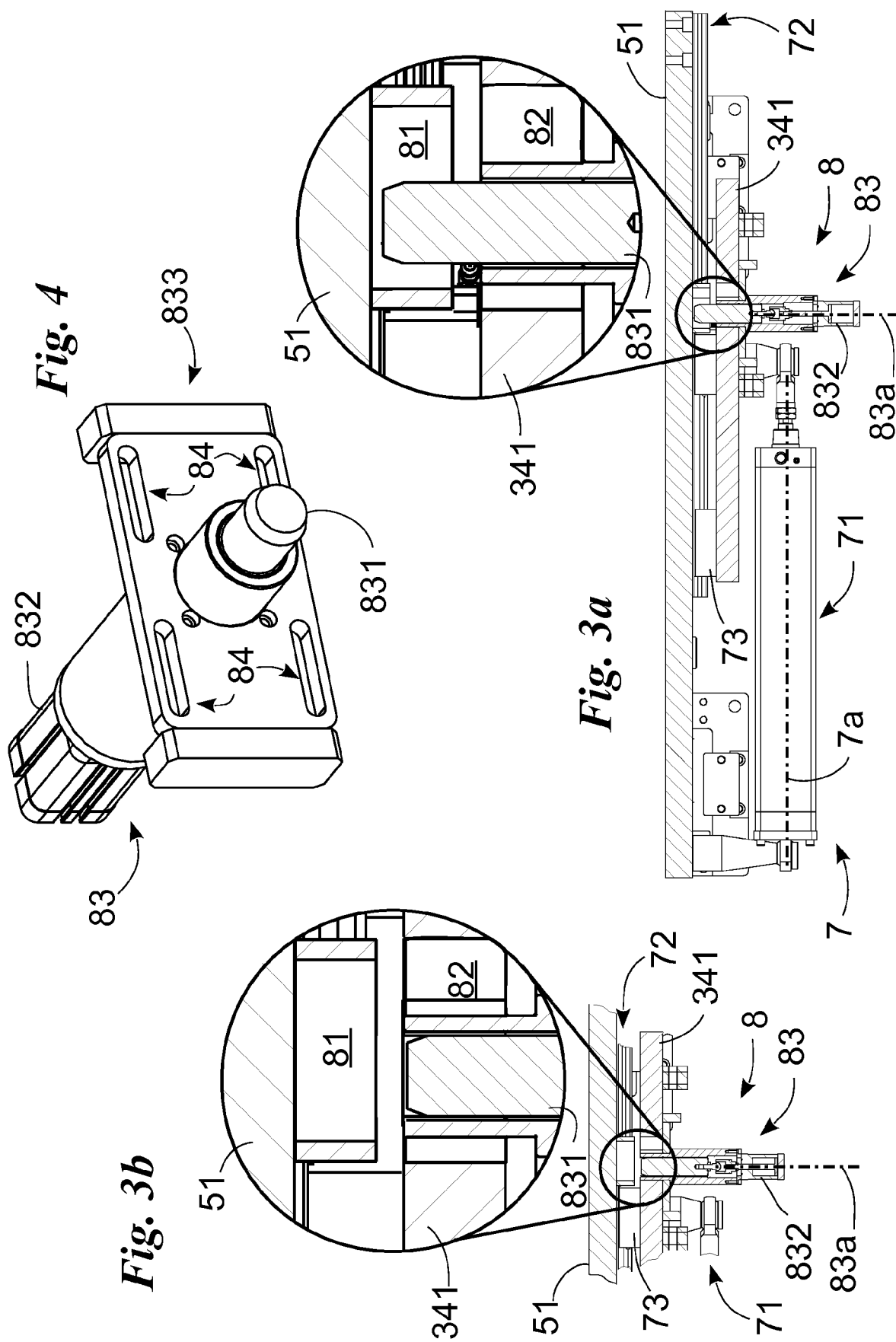


Fig. 2c







EUROPEAN SEARCH REPORT

Application Number
EP 17 16 7468

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			B41F B05C
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 21 June 2017	Examiner Bellofiore, Vincenzo
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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21-06-2017

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