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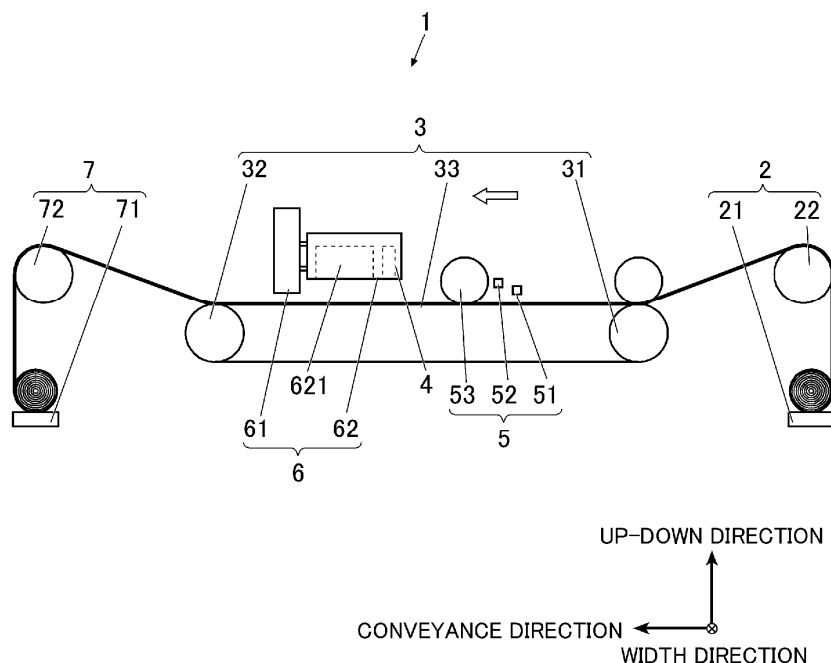
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(54) IMAGE FORMING APPARATUS

(57) An image forming apparatus (1) includes a conveyance section (3) configured to convey a textile in a conveyance direction, an air blow section (51) configured to blow air from an inner side toward an outer side of the textile in a width direction thereof orthogonal to the conveyance direction, a water spray section (52) configured

to spray water onto an end portion of the textile in the width direction onto which the air has been blown by the air blow section (51), and an ink ejection section (6) configured to form an image by ejecting ink onto the textile onto which the air has been blown and the water has been sprayed.

FIG. 1

Description

BACKGROUND OF THE INVENTION

TECHNICAL FIELD

[0001] The present disclosure relates to an image forming apparatus.

DESCRIPTION OF RELATED ART

[0002] There has been known a conventional image forming apparatus that forms an image by ejecting ink onto a textile from an ink ejection section. In the image forming apparatus, as illustrated in FIG. 5, when standing fuzz of the textile comes into contact with the ink ejection section, an image defect or a failure of the ink ejection section may occur. In addition, such a phenomenon occurs particularly noticeably in relatively inexpensive textiles having a fuzz region at an end portion(s) of the textile.

[0003] Such problems can be solved by cutting, in advance, fuzz together with the end portion of a textile using a known fuzz cutter. However, use of a fuzz cutter incurs an additional cost. In addition, when it is desired to form an image also in a fuzz region of the end portion of the textile, such an approach cannot be employed.

[0004] Thus, for example, Japanese Unexamined Patent Application Publication No. H11-227171 discloses a configuration in which a textile is pressed and nipped by a platen, and adopting such a configuration can suppress raising of fuzz. However, in the invention described in Japanese Unexamined Patent Publication No. H11-227171, fuzz at the end portion is pressed not toward the outside of the textile but toward the inside thereof, i.e., toward an image forming region, which may cause an image defect.

[0005] In view of this, Japanese Unexamined Patent Publication No. 2023-002226 further discloses a configuration in which fuzz is pressed by a roller toward the outer side of a textile to be adhered to an adhesive belt that conveys the textile. The invention described in Japanese Unexamined Patent Publication No. 2023-002226 does not have the problem of the invention described in Japanese Unexamined Patent Publication No. H11-227171, because fuzz is pressed toward the outside of the textile.

SUMMARY OF THE INVENTION

[0006] However, in the invention described in Japanese Unexamined Patent Publication No. 2023-002226, depending on the rigidity of the fuzz, the fuzz pressed against the adhesive belt may rise up, which may still cause an image defect or a failure of an ink ejection section.

[0007] The present disclosure has been made in view of such circumstances. An object of the present disclosure

is to provide an image forming apparatus capable of further suppressing the occurrence of the failures and image defects caused by fuzz.

[0008] To achieve at least one of the abovementioned objects, according to an aspect of the present disclosure, an image forming apparatus reflecting one aspect of the present disclosure includes:

a conveyance section configured to convey a textile in a conveyance direction;
an air blow section configured to blow air from an inner side toward an outer side of the textile in a width direction thereof orthogonal to the conveyance direction;
a water spray section configured to spray water onto an end portion of the textile in the width direction onto which the air has been blown by the air blow section; and
an ink ejection section configured to form an image by ejecting ink onto the textile onto which the air has been blown and the water has been sprayed.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] The advantages and features provided by one or more embodiments of the invention will become more fully understood from the detailed description given hereinafter and the appended drawings which are given by way of illustration only, and thus are not intended as a definition of the limits of the present disclosure, and wherein:

FIG. 1 is a side sectional view of an inkjet recording apparatus;
FIG. 2 is a block diagram of the inkjet recording apparatus;
FIG. 3 is an enlarged top view of a fuzz suppression section;
FIG. 4 is a table showing an effect of water spraying by a water spray section; and
FIG. 5 is a view illustrating an example of a textile having fuzz at an end portion.

DETAILED DESCRIPTION

[0010] Hereinafter, one or more embodiments of an image forming apparatus according to the present disclosure will be described in detail with reference to the drawings. However, the scope of the invention is not limited to the disclosed embodiments or illustrated examples. In the following description, components having the same functions and configurations are denoted by the same reference numerals, and descriptions thereof are omitted.

[Overall Configuration of Inkjet Recording Apparatus]

[0011] First, a configuration example of an inkjet re-

cording apparatus 1, which is an embodiment of the image forming apparatus of the present disclosure, will be described. FIG. 1 is a side sectional view illustrating a schematic configuration of the inkjet recording apparatus 1. FIG. 2 is a block diagram of the inkjet recording apparatus 1. The inkjet recording apparatus 1 includes a feeding section 2, a conveyance section 3, a fuzz suppression section 5, an ink ejection section 6, a textile ejection section 7, a controller 8, and the like.

(Feeding Section)

[0012] The feeding section 2 includes a placement section 21. For example, a textile wound around and rotatable about a support shaft is placed on the placement section 21. In the feeding section 2, a conveyance unit including one or more first conveyance rollers 22 is provided on the inkjet recording apparatus 1 side of the placement section 21. In the feeding section 2, the textile placed on the placement section 21 is conveyed to the inkjet recording apparatus 1 by the conveyance unit.

(Conveyance Section)

[0013] In the conveyance section 3, an endless conveyance belt 33 having a predetermined width is stretched over a drive roller 31 and a driven roller 32 that are arranged in parallel at a predetermined interval. The upper surface of the conveyance belt 33 stretched between the drive roller 31 and the driven roller 32 serves as a placement surface on which a textile is placed in close contact.

[0014] The drive roller 31 is driven by a sub-scanning motor (not shown). The sub-scanning motor is under the control of the controller 8 described below. By rotational driving of the sub-scanning motor, the drive roller 31 rotates at a predetermined speed in the conveyance direction indicated by an arrow in FIG. 1. As the drive roller 31 rotates, the conveyance belt 33 stretched between the drive roller 31 and the driven roller 32 rotates/moves. By this operation, the textile placed on the placement surface of the conveyance belt 33 is conveyed in the conveyance direction.

[0015] In addition, a known belt heater that is driven under the control of the controller 8 and heats the conveyance belt 33 is preferably provided in the vicinity of the conveyance belt 33. With this configuration, the rigidity of fuzz laid down by the fuzz suppression section 5 is reduced by the heat, which enhances the effect of maintaining the laid-down state of the fuzz.

(Fuzz Suppression Section)

[0016] FIG. 3 is an enlarged top view of the fuzz suppression section 5. In a top view of the textile, the fuzz suppression section 5 tilts fuzz provided at end portion(s) in a width direction orthogonal to the conveyance direction outward of the textile and suppresses rising of the

fuzz, thereby suppressing occurrence of a failure of the ink ejection section 6 due to the rising of the fuzz and disturbance in a formed image. The fuzz suppression section 5 includes an air blow section 51, a water spray section 52, and a pressing section 53.

{Air Blow Section}

[0017] The air blow section 51 blows air to the fuzz to tilt outward the fuzz that has fallen toward the inner side in the width direction of the textile. For example, the air blow section 51 includes a nozzle(s) and, as shown in FIG. 3, blows air from the inner side toward the outer side in the width direction of the textile.

[0018] Preferably, the air blow section 51 blows air such that an air speed is 12 m/s or more and a time during which the fuzz receives the air is 1/1000 seconds (1 millisecond, 1 ms) or more. With this configuration, the air blow section 51 can sufficiently blow air, and the fuzz can be laid down toward the outer side of the textile regardless of the type of textile. Note that the time during which the fuzz receives air can be calculated by dividing the length, in the conveyance direction, of an air blow region with the air blow section 51 by the conveyance speed of the conveyance belt 33.

[0019] Further, the air blow section 51 is configured to blow air at an angle of 0° or more and less than 90° with respect to an image forming surface of the textile. With this configuration, air blown by the air blow section 51 can reliably lay the fuzz down toward the outer side of the textile.

[0020] The position, in the up-down direction orthogonal to the conveyance direction and the width direction, of the air blow section 51 is preferably closer to the conveyance belt 33. Such a configuration is preferable because it can prevent the fuzz from being excessively laid down by air blowing.

[0021] In addition, the air blow section 51 is not limited to the configuration in which air is blown through a nozzle, and may be configured to blow air using, for example, a compressor or a fan.

{Water Spray Section}

[0022] The water spray section 52 includes a nozzle configured to spray (blow) water onto a fuzz formation region of the textile under the control of the controller 8. The water spray section 52 is provided, for example, downstream of the air blow section 51 in the conveyance direction. The water spray section 52 sprays water onto the fuzz that has been laid down outward in the width direction of the textile by air blown from the air blow section 51, thereby causing the fibers of the fuzz to swell and soften, so that the laid-down state outward in the width direction of the textile is maintained.

[0023] FIG. 4 is a table summarizing whether a softening effect is produced when different amounts of water are sprayed onto cotton satin and cambric as the textile.

In FIG. 4, "G (Good)" indicates that the softening effect is produced, and "NG (No Good)" indicates that no softening effect is produced.

[0024] As shown in FIG. 4, spraying water at a basis weight ratio of 25% or more produces the softening effect in both cotton satin and cambric. When the basis weight of the textile is about 50 g/m², spraying water at 12 g/m² is required at a basis weight ratio of 25%; therefore, the water spray section 52 preferably sprays at least 12 g/m² of water.

[0025] Although a larger amount of water sprayed by the water spray section 52 tends to make the softening effect more likely to be produced, it also increases the water spray region, thereby making ink ejected by the ink ejection section 6 more likely to bleed. Therefore, it is preferable for the controller 8 to appropriately set the amount of water to be ejected in accordance with textile information acquired from a print job.

[0026] Further, it is preferable that the air blow section 51 and the water spray section 52 be configured to be capable of blowing air and water heated by a known predetermined heater(s) driven under the control of the controller 8. With this configuration, heat reduces the rigidity of the fuzz, thereby enhancing not only the effect of maintaining the fuzz in the laid-down state but also a tendency of the fuzz to be laid down toward the outside of the textile.

[0027] Further, it is preferable that positions, in the width direction, of the air blow section 51 and the water spray section 52 be appropriately settable. With this configuration, air and water can be blown onto the fuzz from appropriate positions in accordance with the width of the textile and the width of the fuzz.

[0028] {Pressing Section}

[0029] The pressing section 53 is, for example, a roller located downstream of the air blow section 51 and the water spray section 52 in the conveyance direction and having, in the width direction, a length substantially equal to or greater than the width dimension of the conveyance belt 33. The pressing section 53 is movable up and down in the up-down direction by an elevating mechanism (not shown). The pressing section 53 presses, against the conveyance surface of the conveyance belt 33, the fuzz that has been laid down outward in the width direction of the textile by the air blow section 51 and whose laid-down state has been maintained by the water spray section 52, thereby further maintaining the laid-down state of the fuzz.

[0030] Similarly to the air blow section 51 and the water spray section 52, the pressing section 53 is preferably configured to be able to be heated by a known predetermined heater driven under the control of the controller 8, thereby enhancing the effect of maintaining the laid-down state.

(Ink Ejection Section)

[0031] Referring back to FIG. 1 and FIG. 2, the ink

ejection section 6 records an image by ejecting ink onto a textile conveyed by the conveyance section 3, on the downstream side of the fuzz suppression section 5 in the conveyance direction. The ink ejection section 6 includes, for example, a carriage rail 61 and a carriage 62.

{Carriage Rail and Carriage}

[0032] The carriage rail 61 is provided above the textile conveyed by the conveyance belt 33 along the width direction. Under the control of the controller 8, a carriage motor (not shown) drives to cause the carriage 62 to reciprocate in the width direction along the carriage rail 61. The carriage 62 includes a plurality of head units 621 each including a plurality of inkjet heads and recording an image by ejecting ink at appropriate timings based on image data. The carriage 62 includes, for example, four head units 621 respectively corresponding to four ink colors: yellow (Y), magenta (M), cyan (C), and black (K). The number of head units 621 may be three or fewer, or five or more. In addition, the head unit 621 may be configured with a single inkjet head.

[0033] The carriage 62 forms an image on the textile by ejecting ink from the head units 621 while moving in the width direction of the textile with the carriage rail 61. That is, the inkjet recording apparatus 1 according to the present embodiment includes the ink ejection section 6 of a so-called multi-pass type (serial head type).

[0034] The ink ejection section 6 is not limited to the one with the multi-pass type. For example, the ink ejection section 6 may be a so-called single-pass type (line head type) ink ejection section in which head units 621 of respective colors each having a length in the width direction substantially equal to the length of the conveyance belt 33 in the width direction are arranged at predetermined intervals in order from the upstream side in the conveyance direction to form an image.

(Bleeding Inhibitor Application Section)

[0035] In addition, a bleeding inhibitor application section 4 configured to apply a bleeding inhibitor may be mounted on the carriage 62. The bleeding inhibitor suppresses bleeding of ink ejected by the ink ejection section 6 due to water sprayed by the water spray section 52. The bleeding inhibitor is, for example, a sizing agent, but is not limited thereto. As described above, the water spray section 52 sprays water onto the end portion of the textile in the width direction. Accordingly, the bleeding inhibitor application section 4 is configured similarly to apply the bleeding inhibitor to the end portion of the textile in the width direction.

[0036] The bleeding inhibitor application section 4 is provided so as to be able to apply the bleeding inhibitor before the ink ejection section 6 ejects ink onto the textile. Accordingly, FIG. 1 illustrates an example configuration in which the bleeding inhibitor application section 4 is provided upstream of the head units 621 of the carriage

62 in the conveyance direction; however, the present disclosure is not limited thereto, and for example, the bleeding inhibitor application section 4 may be provided on both sides of the head units 621 in the width direction. The bleeding inhibitor application section 4 need not be mounted on the carriage 62, and may be provided at a predetermined point on the upstream of the ink ejection section 6 in the conveyance direction. However, since the bleeding inhibitor is preferably applied after water is sprayed, the bleeding inhibitor application section 4 is preferably provided downstream of the water spray section 52 in the conveyance direction.

(Textile Ejection Section)

[0037] The textile ejection section 7 is disposed downstream of the conveyance section 3 in the conveyance direction, and stores the textile conveyed by the conveyance section 3. The textile ejection section 7 includes, for example, a winding section 71 that winds the textile ejected by the conveyance section 3. In addition, the textile ejection section 7 includes a conveyance unit including one or more second conveyance rollers 72, on the inkjet recording apparatus 1 side of the winding section 71. The textile ejected from the conveyance section 3 is conveyed toward the winding section 71 by the conveyance unit. The winding section 71 winds, as appropriate, the textile conveyed by the conveyance unit into a roll.

(Controller)

[0038] The controller 8 includes a central processing unit (CPU) 81, a random access memory (RAM) 82, a read only memory (ROM) 83, a storage section 84, and the like.

{CPU}

[0039] The CPU 81 reads various control programs and setting data stored in the ROM 83, stores the control programs and the setting data in the RAM 82, and executes the control programs to perform various kinds of arithmetic processing. In addition, the CPU 81 comprehensively controls the overall operation of the inkjet recording apparatus 1.

{RAM}

[0040] The RAM 82 provides the CPU 81 with a working memory space and stores temporary data. The RAM 82 may include a nonvolatile memory.

{ROM}

[0041] The ROM 83 stores various control programs to be executed by the CPU 81, various setting data, and the like. Instead of the ROM 83, a rewritable nonvolatile

memory, such as an electrically erasable programmable read only memory (EEPROM), a flash memory, or the like, may be used.

5 {Storage Section}

[0042] The storage section 84 stores a print job (image recording instruction) input from an external apparatus (not shown) and image data related to the print job. As the storage section, for example, an HDD (Hard Disk Drive) is used, and a dynamic random access memory (DRAM) or the like may be used in combination.

{Head Controller}

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[0043] In particular, when the CPU 81 executes a program, the controller 8 functions as a head controller that supplies, to the head units 621, drive signals corresponding to image data at appropriate timings.

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{Conveyance Controller}

[0044] Further, by supplying a drive signal to a sub-scanning motor of the drive roller 31, the controller 8 functions as a conveyance controller that controls a conveyance operation by rotationally moving the conveyance belt 33 at predetermined speed and timing.

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{Pressing Controller}

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[0045] Further, the controller 8 functions as a pressing controller that brings the pressing section 53 into pressure contact with, and separates the pressing section 53 from, the placement surface of the conveyance belt 33, and controls a nip amount formed by the placement surface of the conveyance belt 33 and the pressing section 53.

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{Acquisition Section}

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[0046] Further, the controller 8 functions as an acquisition section that acquires environmental conditions of the environment in which the inkjet recording apparatus 1 is provided, for example, based on a measurement result of a sensor (not shown) provided in the inkjet recording apparatus 1. The environmental conditions include, for example, temperature, humidity, airflow, and atmospheric pressure. In addition, the controller 8 acquires, based on a print job obtained from an external device (not shown), printing conditions including a textile type of the textile, a speed (printing speed) of a printing process executed by the ink ejection section 6, and a conveyance speed of the textile by the conveyance section 3.

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{Heating Controller}

[0047] Further, the controller 8 functions as a heating controller that controls, based on the acquired environ-

mental conditions, output of the heaters provided in the conveyance section 3 (in particular, the conveyance belt 33), the air blow section 51, the water spray section 52, and the pressing section 53. Specifically, the controller 8 controls the temperatures of the conveyance belt 33 and the pressing section 53 and the temperatures of air blown by the air blow section 51 and water sprayed by the water spray section 52 to be equal to or higher than the acquired environmental temperature. With such control by the controller 8, the fibers of the textile are heated and thus reduced in rigidity, thereby making it easier for the air blow section 51 to lay down the fuzz and making it easier for the water spray section 52 and the pressing section 53 to maintain the fuzz in the laid-down state.

{First Controller and Second Controller}

[0048] Further, based on the acquired environmental conditions and printing conditions, the controller 8 functions as a first controller and a second controller that respectively control, based on the acquired environmental conditions and printing conditions, an airflow amount of the air blow section 51 and a water spray amount of the water spray section 52. For example, when the textile is a textile type of a high rigidity, the controller 8 controls the airflow amount (airflow speed) of the air blow section 51 and the water spray amount (water spray speed) of the water spray section 52 to be increased (faster) so as to make the fuzz more likely to be laid down. Further, when the printing speed and the conveyance speed are at or above a predetermined value, the time during which the fuzz receives air and water becomes shorter; therefore, the controller 8 controls the airflow amount of the air blow section 51 and the water spray amount of the water spray section 52 to be increased.

[Advantageous Effects of the Embodiment]

[0049] As described above, the inkjet recording apparatus 1 includes the conveyance section 3 configured to convey the textile in the conveyance direction. The inkjet recording apparatus 1 further includes the air blow section 51 configured to blow air from the inner side toward the outer side in the width direction orthogonal to the conveyance direction of the textile, and the water spray section 52 configured to spray water toward the end portion in the width direction of the textile to which the air has been blown by the air blow section 51. The inkjet recording apparatus 1 further includes the ink ejection section 6 configured to form an image by ejecting ink onto the textile onto which air and water have been blown. According to this configuration, after the air blow section 51 blows air to lay the fuzz down outward, the water spray section 52 sprays water to swell fibers of the textile and thereby reduce rigidity and suppress the fuzz from standing up again. Accordingly, it is possible to further suppress the occurrence of the failures and image defects caused by the fuzz.

[0050] Further, since the air blow section 51 lays the fuzz down toward the outer side in the width direction of the textile in a non-contact manner, rather than a roller or the like laying the fuzz down toward the outer side in the width direction in a contact manner, problems caused by contact of fibers of the fuzz are less likely to occur. In addition, fiber waste, dust, and the like present on the surface of the textile can also be blown off by the blown air, and problems are less likely to occur in an image to be formed.

[0051] Further, as described above, since the inkjet recording apparatus 1 according to the present embodiment has the configuration in which the rigidity of the fuzz laid down by air is reduced by water, the conveyance belt 33 need not be an adhesive belt.

[Other Configurations]

[0052] Although one embodiment of the present disclosure has been described above, the scope of the present disclosure is not limited thereto. The scope of the present disclosure includes the scope of claims and equivalents thereof.

[0053] For example, in the above description, the ink ejection section 6 forms an image by ejecting ink onto the textile onto which air and water have been blown; however, the point to which the ink ejection section 6 ejects ink is not limited to the end portion in the width direction of the textile onto which air and water have been blown. Of course, as in the conventionally known inkjet recording apparatus, ink may be appropriately ejected to the image forming region other than the end portion of the textile in the width direction.

[0054] Further, in the above description, as one embodiment of the image forming apparatus of the present disclosure, the inkjet recording apparatus 1 including the ink ejection section 6 configured to perform inkjet printing using the inkjet heads is exemplified; however, the present disclosure is not limited thereto. For example, the present disclosure is also applicable to an image forming apparatus including an ink ejection section configured to perform silk screen printing or sublimation transfer printing.

[0055] Further, in the above description, the configuration in which the conveyance section 3 includes the conveyance belt 33 and the textile is placed on the conveyance belt 33 and conveyed has been exemplified; however, the present disclosure is not limited thereto. That is, a configuration may be employed in which the conveyance section 3 does not include the conveyance belt 33, and the textile is conveyed in a so-called roll-to-roll manner in which the textile is tensioned around a plurality of conveyance rollers (e.g., first conveyance roller(s) 22 and second conveyance roller(s) 72).

[0056] Further, in the above description, the conveyance belt 33 may not be an adhesive belt, but may be an adhesive belt having an adhesive layer on the placement surface thereof, for the purpose of further suppressing

raising of fuzz. The adhesive layer is formed, for example, by applying an adhesive, which is so-called ground adhesive. Examples of the adhesive constituting the adhesive layer include a water-soluble resin, a pressure-sensitive resin, and a thermosensitive resin. In the above-described configuration, the textile is pressed against the conveyance belt 33 by a pressing roller (not shown), thereby being adhered to the adhesive layer.

[0057] Further, in the above, the configuration including the bleeding inhibitor application section 4 has been described; however, the present disclosure is not limited thereto. For example, without providing the bleeding inhibitor application section 4, the water sprayed by the water spray section 52 may contain a predetermined bleeding inhibitor. The bleeding inhibitor in the above-described configuration is, if the ink ejected by the ink ejection section 6 is a pigment ink or a dispersion ink, the bleeding inhibitor is, a coagulant that coagulates the ink. Alternatively, if the ink ejected by the ink ejection section 6 is an acid-coagulating ink, the bleeding inhibitor is an acidic treatment liquid for providing an acidic environment.

[0058] Although embodiments of the present disclosure have been described and illustrated in detail, the disclosed embodiments are made for purposes of illustration and example only and not limitation. The scope of the present disclosure should be interpreted by terms of the appended claims.

Claims

1. An image forming apparatus (1) comprising:

a conveyance section (3) configured to convey a textile in a conveyance direction;
an air blow section (51) configured to blow air from an inner side toward an outer side of the textile in a width direction thereof orthogonal to the conveyance direction;
a water spray section (52) configured to spray water onto an end portion of the textile in the width direction onto which the air has been blown by the air blow section (51); and
an ink ejection section (6) configured to form an image by ejecting ink onto the textile onto which the air has been blown and the water has been sprayed.

2. The image forming apparatus (1) according to claim 1, wherein the air blow section (51) blows the air at an angle of 0° or more and less than 90° to an image forming surface of the textile.

3. The image forming apparatus (1) according to claim 1, wherein the water spray section (52) sprays the water containing a bleeding inhibitor configured to suppress bleeding of the ink.

4. The image forming apparatus (1) according to claim 1, further comprising a bleeding inhibitor application section (4) configured to apply a bleeding inhibitor configured to suppress bleeding of the ink.

5. The image forming apparatus (1) according to claim 4, wherein the bleeding inhibitor application section (4) is configured to apply the bleeding inhibitor to the textile onto which the water has been sprayed by the water spray section (52).

6. The image forming apparatus (1) according to claim 1, further comprising:

an acquisition section (8) configured to acquire at least one content of contents that include a textile type of the textile, an ink ejection speed of the ink ejection section (6), a conveyance speed of the conveyance section (3), and an environmental condition; and
a first controller (8) configured to control an amount of the air that is blown by the air blow section (51) in accordance with the content acquired by the acquisition section (8).

7. The image forming apparatus (1) according to claim 6, wherein the first controller (8) is configured to control the air blow section (51) such that a time during which the air blow section (51) blows the air onto fuzz is 1 ms or longer.

8. The image forming apparatus (1) according to claim 6,

wherein the acquisition section (8) acquires an environmental temperature as the environmental condition, and
wherein the image forming apparatus (1) further comprises a heating controller (8) configured to heat the air that is blown by the air blow section (51) to a temperature equal to or higher than the environmental temperature.

9. The image forming apparatus (1) according to claim 1, further comprising:

an acquisition section (8) configured to acquire at least one content of contents that include a textile type of the textile, an ink ejection speed of the ink ejection section (6), a conveyance speed of the conveyance section (3), and an environmental condition; and
a second controller (8) configured to control an amount of the water that is sprayed by the water spray section (52) in accordance with the content acquired by the acquisition section (8).

10. The image forming apparatus (1) according to claim

9, wherein the second controller (8) is configured to control the amount of the water that is sprayed by the water spray section (52) to be 12 g/m² or more.

11. The image forming apparatus (1) according to claim 9, 5

wherein the acquisition section (8) acquires an environmental temperature as the environmental condition, and 10
wherein the image forming apparatus (1) further comprises a heating controller (8) configured to heat the water that is sprayed by the water spray section (52) to a temperature equal to or higher than the environmental temperature. 15

12. The image forming apparatus (1) according to claim 1, further comprising a pressing section (53) configured to press the textile from an image forming surface thereof, and provided upstream of the ink ejection section (6) in the conveyance direction and downstream of the air blow section (51) and the water spray section (52) in the conveyance direction. 20

13. The image forming apparatus (1) according to claim 12, wherein the pressing section (53) is provided so as to come into contact with a region onto which the air blow section (51) blows the air or a region onto which the water spray section (52) sprays the water. 25
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14. The image forming apparatus (1) according to claim 12, further comprising:

an acquisition section (8) configured to acquire an environmental temperature; and 35
a heating controller (8) configured to heat the pressing section (53) to a temperature equal to or higher than the environmental temperature.

15. The image forming apparatus (1) according to claim 1, further comprising: 40

an acquisition section (8) configured to acquire an environmental temperature; and 45
a heating controller (8) configured to heat the conveyance section (3) to a temperature equal to or higher than the environmental temperature. 50

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FIG.1

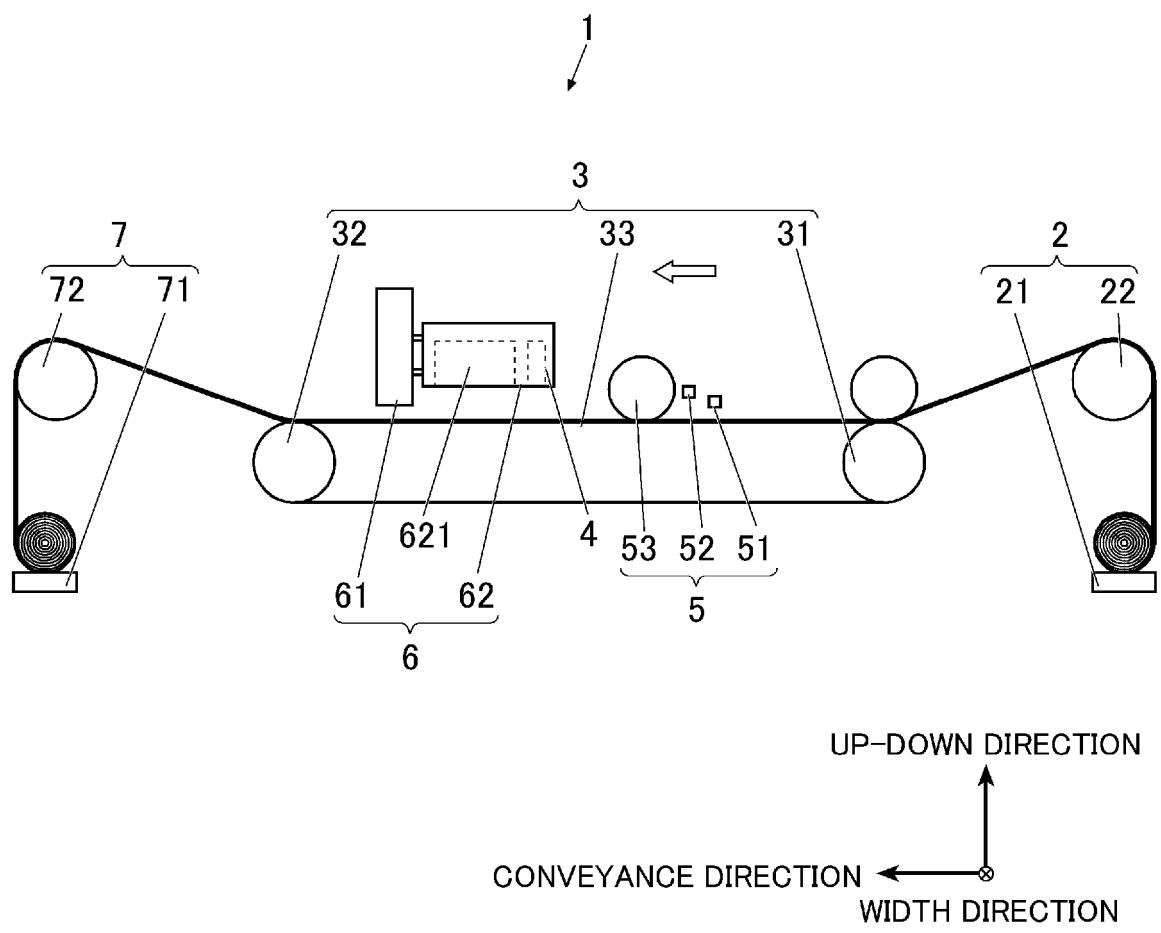


FIG. 2

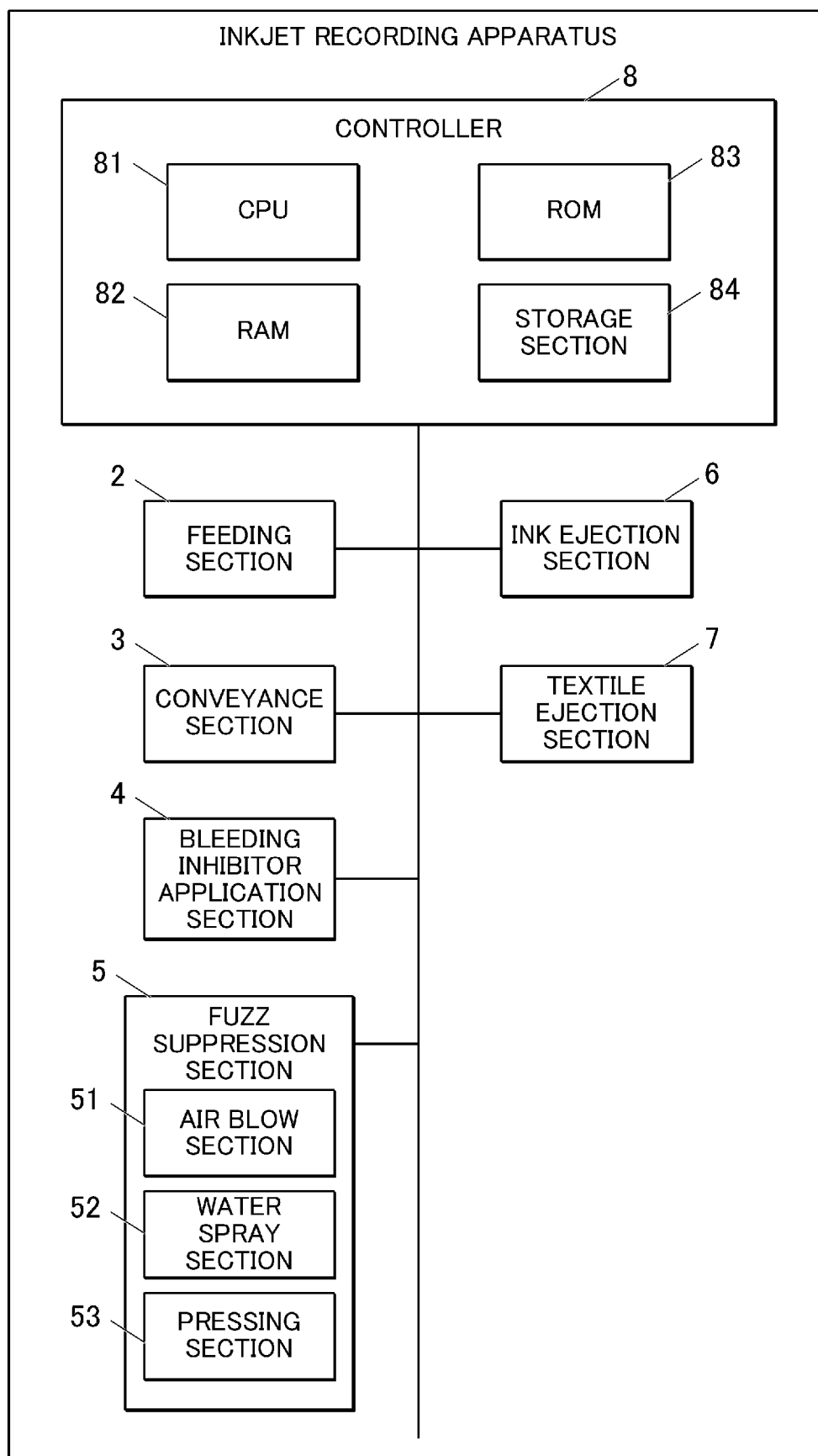


FIG. 3

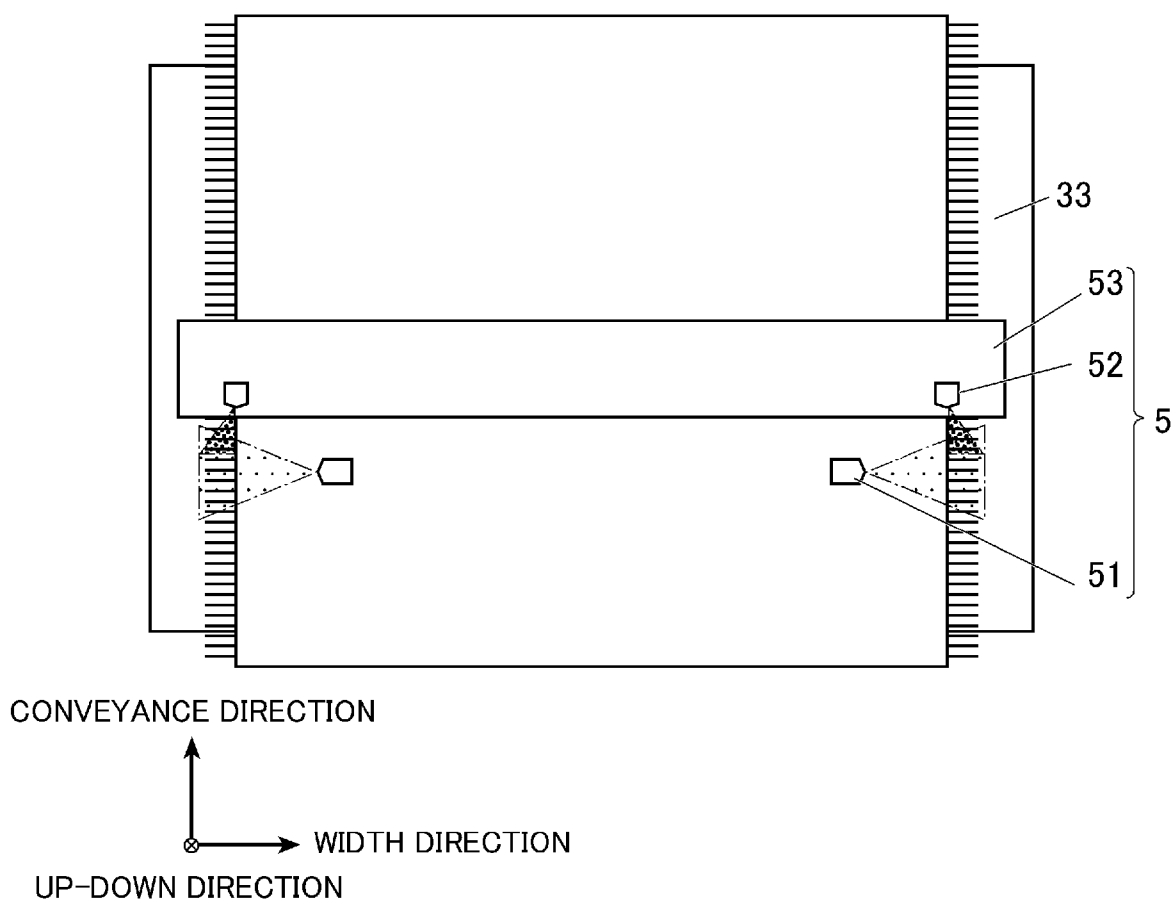
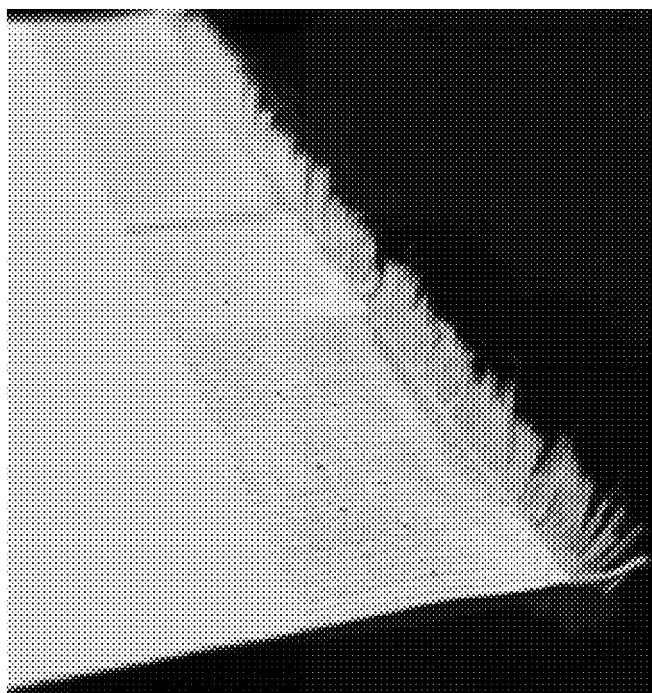


FIG. 4

BASIS WEIGHT RATIO %	COTTON SATIN (COARSE YARN)	CAMBRIC (FINE YARN)
5	NG	NG
10	NG	NG
15	NG	NG
20	NG	NG
25	G	G
30	G	G
35	G	G
40	G	G
45	G	G
50	G	G

FIG.5





EUROPEAN SEARCH REPORT

Application Number

EP 26 16 6624

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y,D A	JP 2023 002226 A (KONICA MINOLTA INC) 10 January 2023 (2023-01-10) * paragraph [0056]; figures 1, 5 *	1-5,12, 13 6-11,14, 15	INV. B41J3/407 B41J11/00
Y A	----- CN 111 070 889 A (KONICA MINOLTA CO LTD) 28 April 2020 (2020-04-28) * figures 1, 4 *	1-5,12, 13 6-11,14, 15	
A	----- US 2020/324560 A1 (HORIE SEIJUN [JP] ET AL) 15 October 2020 (2020-10-15) * figures 1-9 *	1-15	
A	----- US 2017/197441 A1 (MITSUO NORITAKA [JP]) 13 July 2017 (2017-07-13) * figures 1-8 *	1-15	
			TECHNICAL FIELDS SEARCHED (IPC)
			B41J
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		3 August 2026	Loi, Alberto
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone		T : theory or principle underlying the invention	
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P : intermediate document		& : member of the same patent family, corresponding document	

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

EP 26 16 6624

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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03-08-2026

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 2023002226 A	10-01-2023	JP 7697287 B2	24-06-2025
		JP 2023002226 A	10-01-2023

CN 111070889 A	28-04-2020	CN 111070889 A	28-04-2020
		JP 7238332 B2	14-03-2023
		JP 2020062847 A	23-04-2020

US 2020324560 A1	15-10-2020	CN 111806089 A	23-10-2020
		EP 3722100 A1	14-10-2020
		JP 7346882 B2	20-09-2023
		JP 2020172719 A	22-10-2020
		US 2020324560 A1	15-10-2020

US 2017197441 A1	13-07-2017	CN 106965553 A	21-07-2017
		EP 3196032 A1	26-07-2017
		JP 6686447 B2	22-04-2020
		JP 2017122295 A	13-07-2017
		US 2017197441 A1	13-07-2017

EPO FORM P0459

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

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- JP H11227171 A [0004] [0005]
- JP 2023002226 A [0005] [0006]