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(54) DIGITAL INKJET DYEING MACHINE

(57) Disclosed is a digital inkjet dyeing machine, the machine comprising an unwinding and feeding device, an inkjet device, a drying device and a winding device which are sequentially arranged in a fabric feeding direction, wherein the inkjet device comprises a machine body, a controller, an ink tank, a cleaning liquid tank, a waste liquid bucket and an inkjet module; the machine body is provided with at least two sets of inkjet modules, at least one ink tank, at least one cleaning liquid tank and at least one waste liquid bucket; the inkjet module comprises a spray head, a positioning frame, and a supporting and moving mechanism; and a plurality of parallelly arranged spray heads form a spray head set, and each inkjet module contains at least one spray head set. The solution uses fixed single-channel spray heads to evenly dot color-matched ink of a single color on a textile so as to complete digital pure color printing. Thus, the inkjet dyeing machine will not cause the most troublesome perception of point-like particles, as can be seen in a conventional digital printing machine, is greatly improved with regard to the coloring effect compared with the coloring effect of printing a pure color by the printing machine, and has the advantages of cleaning and being fast.

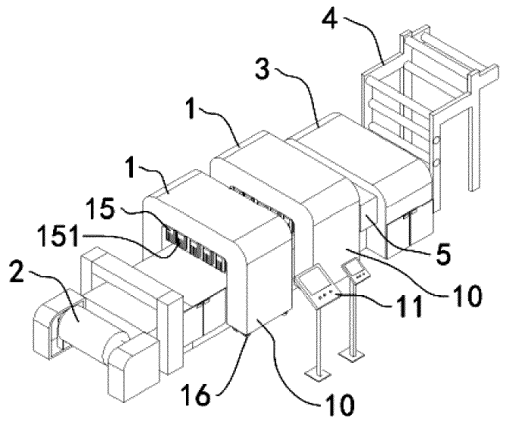

FIG. 1

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Description

TECHNICAL FIELD

[0001] The present disclosure relates to the technical field of fabric dyeing equipment, and in particular, to a digital inkjet dyeing machine for pure color dyeing of fabrics.

BACKGROUND

[0002] With the continuous improvement of people's quality of life and the continuous promotion of modern technology, people have an increasingly high pursuit to the color of fabrics. For pure color dyeing of different types of fabrics, a traditional dyeing process can be used to dye, and a digital printer can be used to print individual colors.

[0003] The traditional dyeing process of fabrics can be classified into dip dyeing and pad dyeing according to different contact modes between dye and fabric. The dip dyeing is a dyeing method in which a to-be-dyed fabric is immersed in dye liquor, and the dye is evenly applied to the textile by circulating the dye liquor and relatively moving the to-be-dyed fabric, wherein when the dip dyeing is performed, the dye and the fabric can be circulated simultaneously or individually. The pad dyeing is to immerse an open-width fabric in a dye liquor for a short time, then squeeze the dye liquor into the interior of the fiber and the gaps of the fabric tissue through the pressure roller, and remove the redundant dye liquor, so as to distribute the dye evenly on the fabric, wherein the fabric, after being immersed and padded with the dye, is steamed or baked to complete the diffusion and fixation of the dye on the fiber. However, the traditional dyeing process has disadvantages as follows: large minimum order quantity, large color matching differences, large water consumption, large usage amount of steam, large differences between color matching and dyeing matching, and more reliance on the skill of the dyeing personnel; consequently, the traditional dyeing process is not environmentally friendly, high in cost, and low in efficiency. The traditional dyeing process has advantages as follows: wide color gamut, good dyeing uniformity, and high level of depth and hue.

[0004] However, all the pure color printing achieved by digital printing in the current market is based on a printing mode of a digital printing machine, wherein various colors are dotted by a positioning dotting mode to achieve the pure color under the visual effect. This printing method has problems that the printed pure color fabric is visually a dot-like grainy, resulting in rough dots, insufficient hue and saturation of color, insufficient depth and ink volume, and unsatisfactory color consistency. Consequently, the digital printing machine has the disadvantage that industrialization, large-block-surface, high-speed, and long-time pure color block printing cannot be achieved. In addition, the digital printing machine has high requirements for color management when printing, however, the degree of color restoration cannot meet the requirements of pure color printing, and the color gamut that can be printed is limited.

[0005] In view of this, how to overcome the disadvantages that the traditional dyeing process is not environment-friendly, has high cost and low efficiency, and the digital pure color printing is dot-like grainy and has a low color precision, when pure color dyeing is performed, becomes an subject to be researched and solved by the present disclosure.

SUMMARY

[0006] An objective of the present disclosure is to provide a digital inkjet dyeing machine, which overcomes the disadvantages that the traditional dyeing process is not environment-friendly, and has high cost and low efficiency, and the digital pure color printing is dot-like grainy and has a low color precision, when pure color dyeing is performed. The digital inkjet dyeing machine of the present disclosure has the advantages of both traditional dyeing process and digital printing, such as cleaning, fastness, complete color matching of printed samples and mass production, wide color gamut, very good uniformity, and the same depth and hue as traditional dyeing.

[0007] To achieve the above objective, the present disclosure adopts a technical solution as follows: a digital inkjet dyeing machine, configured to perform pure color digital dyeing on a fabric and including an unwinding and feeding device, an inkjet device, a drying device, and a winding device that are sequentially arranged in a fabric feeding direction,

wherein the unwinding and feeding device is configured to convey a to-be-dyed fabric to a station of the inkjet device;
the inkjet device is configured to inkjet-print prepared ink onto the fabric;
the drying device is configured to dry the dyed fabric; and
the winding device is configured to wind the dried fabric.

[0008] The innovation points are as follows: the inkjet device includes a machine body, a controller, an ink tank, a cleaning liquid tank, a waste liquid bucket, and an inkjet module;

the machine body is provided with at least two groups (sets) of inkjet modules, at least one ink tank, at least one cleaning liquid tank, and at least one waste liquid bucket, wherein the ink tank is a container for containing ink, the cleaning liquid tank is a container for containing a cleaning liquid, and the waste liquid bucket is a container for collecting waste liquid;
the machine body is provided with a working area

and a cleaning area; the inkjet module is installed on the machine body and is movable between the working area and the cleaning area; the inkjet module includes a spray head, a positioning frame, and a supporting and moving mechanism; a plurality of spray heads arranged in parallel form a spray head group, each inkjet module includes at least one spray head group, the plurality of spray heads are connected through ink pipelines, the ink pipelines are connected to the ink tank and the cleaning liquid tank through pipelines, an inkjet valve is arranged on a pipeline between the ink pipeline and the ink tank, and a cleaning valve is arranged on a pipeline between the ink pipeline and the cleaning liquid tank; and the spray heads are installed on the positioning frame, the positioning frame is installed on the supporting and moving mechanism, and the supporting and moving mechanism includes a lifting unit configured to make the positioning frame up and down in the working area and a translation unit configured to make the positioning frame horizontally translate in the cleaning area; and

a cleaning support flow guide plate is arranged below the cleaning area, a flow guide hole for waste liquid to flow out is opened in the cleaning support flow guide plate, and the waste liquid enters the waste liquid bucket through the flow guide hole.

[0009] The related contents of the present disclosure are explained as follows:

1. A working procedure of the above technical solution is as follows: performing fixed single-channel inkjet dyeing production, and putting a pretreated to-be-dyed fabric on a machine; filling an ink system with a colored ink; starting the machine, conveying the to-be-dyed fabric to a station of the inkjet device by the unwinding and feeding device, directly spraying and dyeing the ink by the inkjet device, and inkjet-printing the prepared ink onto the fabric; conveying the printed fabric into the drying device via a belt guide device; and winding the dried fabric by the winding device. Nodes are added for the newly added colors, so that the accuracy of the formula with colors added later is greatly improved. Only one group of inkjet modules is working while the dyeing operation is in progress. When a first group of inkjet modules are working, other inkjet modules perform cleaning and ink changing under the control of a microcomputer, wherein firstly, ink in other inkjet modules is emptied, then valves of a cleaning liquid pool communicated with other inkjet modules are opened for cleaning, after cleaning is completed, valves of an ink pool with the prepared ink are opened, and the ink enters other inkjet modules to prepare for printing of the next color.

2. In the above technical solution, the inkjet device includes two groups of inkjet modules, the spray head groups in the two groups of inkjet modules are each connected to one of the ink tanks, and the spray head groups in the two groups of inkjet modules are jointly connected to the cleaning liquid tank and the waste liquid bucket; however, the present disclosure is not limited thereto, and one ink module may use the cleaning liquid tank and the waste liquid bucket separately.

3. In the above technical solution, the supporting and moving mechanism mainly includes motor drivers with lifting and moving functions, that is, the lifting unit and the translation unit are both motor drivers. The motor drivers have lifting and moving functions, wherein when the spray head group needs to work, the motor driver moves the spray head group to an inkjet position, and lowers the spray head group to a certain height to enter a working area for inkjet work; when this spray head group completes inkjet and needs to be cleaned and ink-changed (color-changed), the motor driver firstly raises the spray head group to a certain height, and then horizontally moves the spray head group to a cleaning area, that is, moves the spray head group to above the cleaning support flow guide plate for cleaning and ink changing works.

4. In the above technical solution, an upper surface of the flow guide plate is formed with a trapezoidal flow guide groove, and the flow guide hole is positioned at a bottom of the flow guide groove. The trapezoidal flow guide groove is designed as a trapezoidal groove, so that the cleaning ink or waste ink can easily flow out of the flow guide groove and flow into the waste liquid bucket through the flow guide hole, thereby accelerating the cleaning efficiency and facilitating the cleaning and ink changing (color changing) works.

5. In the above technical solution, the machine body is divided into two parts, the inkjet module, the ink tank, the working area, and the cleaning area are independently arranged in each machine body, and the two machine bodies share the cleaning liquid tank and the waste liquid bucket. The purpose of independently arranging the inkjet module, the ink tank, the working area, and the cleaning area in each of the machine bodies is to facilitate the completion of inkjet of the spray head group, and the inkjet and cleaning work in each machine body is not interfered when cleaning and ink changing (color changing) are needed, and the cleaning and ink changing works can be independently performed, so that the cleaning and ink changing (color changing) work is more thorough, and dyeing is avoided.

6. In the above technical solution, a bottom of the machine body is provided with a universal wheel, so that the machine body can be moved conveniently, and subsequent repairs, maintenance or other operations can be performed conveniently.

7. In the above technical solution, the spray head

has an inkjet amount of 12 pl to 80 pl, the used ink is compatible with the ink used by the digital printing machine, and it can also use special ink for the digital dyeing machine, which has a large particle size range, less damage to the chromogenic groups, and a greatly improved color development effect than printing pure color by the printing machine.

8. In the above technical solution, the spray heads in the inkjet module are pipeline-connected in a single-channel serial connection mode, that is, the ink pipelines among the spray heads are connected in series, and ink is jetted and printed on the cloth surface by a row of fixed spray heads in a single channel, so that the most troublesome feeling of dot-like grainy that occurs in a conventional digital printing machine will not be caused.

9. In the above technical solution, the digital inkjet dyeing machine is further provided with a belt guide device, wherein the belt guide device is arranged between the inkjet device and the drying device and is configured to convey a fabric dyed by the inkjet device into the drying device.

10. In the present disclosure, unless otherwise clearly specified and defined, the terms "installation", "linkage", "connection", "fixation", and the like should be understood broadly. For example, unless otherwise clearly limited, the term "connection" may be a fixed connection, a detachable connection, or integration; may be a mechanical connection or a direct connection, may be an indirect connection implemented by using an intermediate medium, or may be a communication inside two elements or an interaction relationship between two elements. Those of ordinary skill in the art may understand specific meanings of the foregoing terms in the present disclosure according to specific cases.

11. In the present disclosure, orientation or location assembly relationships indicated by terms "center", "above", "below", "circumferential", "bottom", "inner", "outer", and the like are orientation or location relationships based on the accompanying drawings, and are merely intended for ease of describing the present disclosure and simplifying description, rather than indicating or implying that an apparatus or element in question needs to have a specific orientation or needs to be constructed and operated in a specific orientation. Therefore, such terms cannot be construed as a limitation on the present disclosure.

12. Furthermore, the terms "first", "second", and the like are merely intended for a purpose of description, and shall not be understood as an indication or implication of relative importance or an implicit indication of a quantity of indicated technical features. Thus, a feature defined by "first" or "second" may explicitly or implicitly include at least one such feature. In the description of the present disclosure, "a plurality of means at least two, for example, two or three, unless specifically limited otherwise.

[0010] Through the application of the above solution, compared with the conventional technology, the present disclosure has the following advantages and effects:

1. According to the above solution of the present disclosure, fixed single-channel spray heads are used to evenly dot the color-matched ink of a single color onto a textile so as to complete digital pure color printing. In this way, the most troublesome feeling of dot-like grainy that occurs in a conventional digital printing machine will not be caused. The spray head with a large inkjet amount can be used due to the condition of no feeling of dot-like grainy, and the used ink can be compatible with the ink used by the digital printing machine, meanwhile, the special ink for a digital dyeing machine can also be used, wherein such ink has a large particle size range, less damage to the chromogenic groups, and a greatly improved color development effect than printing pure color by the printing machine.

2. According to the above solution of the present disclosure, at least two groups of inkjet modules are used, and the two groups of inkjet modules can be used alternatively, wherein one group of inkjet modules enter an inkjet position in the working area under the driving of the lifting unit of the supporting and moving mechanism, and is lowered to a certain height to perform inkjet work, and the other group of inkjet modules can perform cleaning or ink change in the cleaning area; when the inkjet modules in the working area complete inkjet and need to be cleaned or ink-changed, after the lifting unit of the supporting and moving mechanism drives the inkjet modules to a certain height, the translation unit drives the inkjet modules to horizontally move to the cleaning area, that is, move to above the cleaning support flow guide plate for cleaning and ink changing works, and the other group of inkjet modules enter the working area for inkjet printing; therefore, the working efficiency is high, and the spray heads are cleaned in time to prevent clogging of the spray heads and avoid residual ink from affecting the inkjet quality.

3. According to the above solution of the present disclosure, the spray heads are arranged on the positioning frame in rows, and the inkjet modules is drove by the lifting unit of the supporting and moving mechanism to be lower to the inkjet position in the working area during inkjet, and then inkjet operation is performed, so that the inkjet precision is high, and the inkjet effect is good.

4. According to the above solution of the present disclosure, the inkjet module can print dispersed, active, coated, acidic and other inks, and the printable fabrics include almost all cloth types such as polyester, cotton, silk, wool, blended fabrics; therefore, the application range is wide.

BRIEF DESCRIPTION OF DRAWINGS

[0011]

FIG. 1 is a schematic three-dimensional diagram of a digital inkjet dyeing machine according to an embodiment of the present disclosure;
FIG. 2 is a schematic top view of a digital inkjet dyeing machine according to an embodiment of the present disclosure;
FIG. 3 is a block diagram of a structure of an inkjet module in a digital inkjet dyeing machine according to an embodiment of the present disclosure;
FIG. 4 is a schematic diagram of a working procedure of an inkjet module in a digital inkjet dyeing machine according to an embodiment of the present disclosure;
FIG. 5 is a schematic diagram of a cleaning support flow guide plate and a waste liquid bucket in a digital inkjet dyeing machine according to an embodiment of the present disclosure; and
FIG. 6 is a partial cross-sectional schematic view of a cleaning support flow guide plate in a digital inkjet dyeing machine according to an embodiment of the present disclosure.

[0012] In the drawings:

1: inkjet device;
10: machine body; 101: working area; 102: cleaning area;
11: controller; 12: ink tank; 13: cleaning liquid tank; 14: waste liquid bucket;
15: inkjet module; 151: spray head; 152: positioning frame; 153: supporting and moving mechanism; 1531: lifting unit; 1532: translation unit; 154: ink pipeline; 155: inkjet valve; 156: cleaning valve; 157: cleaning support flow guide plate; 1571: flow guide hole; 1572: trapezoidal flow guide groove;
16: universal wheel;
2: unwinding and feeding device; 3: drying device; 4: winding device; 5: belt guide device.

DETAILED DESCRIPTION OF EMBODIMENTS

[0013] To make the objectives, features, and advantages of the present disclosure clear and more comprehensible, the specific embodiments of the present disclosure are described in detail with reference to the drawings. In the following description, many specific details are explained in order for those skilled in the art to fully understand the present disclosure. However, the present disclosure can be implemented in many other manners different from those described herein. Those skilled in the art may make similar improvements without departing from the spirit of the present disclosure. Therefore, the present disclosure is not limited by the specific embodiments disclosed below.

[0014] The present disclosure is further described below with reference to the drawings and embodiments.

[0015] As shown in FIG. 1 and FIG. 2, an embodiment of the present disclosure provides a digital inkjet dyeing machine, which is configured to perform pure color digital dyeing on a fabric and includes an unwinding and feeding device 2, an inkjet device 1, a drying device 3, and a winding device 4 that are sequentially arranged in a fabric feeding direction, wherein the unwinding and feeding device 2 is configured to convey a to-be-dyed fabric to a station of the inkjet device 1; the inkjet device 1 is configured to perform inkjet printing on the fabric by using prepared ink; the drying device 3 is configured to dry the dyed fabric; and the winding device 4 is configured to wind the dried fabric.

[0016] According to an embodiment of the present disclosure, as shown in FIG. 3 and FIG. 4, the inkjet device 1 includes a machine body 10, a controller 11, an ink tank 12, a cleaning liquid tank 13, a waste liquid bucket 14, and an inkjet module 15, wherein the machine body 10 is provided with at least two groups of inkjet modules 15, at least one ink tank 12, at least one cleaning liquid tank 13, and at least one waste liquid bucket 14, wherein the ink tank 12 is a container for containing ink, the cleaning liquid tank 13 is a container for containing a cleaning liquid, and the waste liquid bucket 14 is a container for collecting waste liquid; and wherein the machine body 10 is provided with a working area 101 and a cleaning area 102; the inkjet module 15 is installed on the machine body 10 and can be moved between the working area 101 and the cleaning area 102; the inkjet module 15 includes spray head 151s, a positioning frame 152, and a supporting and moving mechanism 153; a plurality of spray heads 151 arranged in parallel form a spray head group, each inkjet module 15 includes at least one spray head group, wherein the spray heads 151 are connected through ink pipelines 154, the ink pipelines 154 are connected to the ink tank 12 and the cleaning liquid tank 13 through pipelines, an inkjet valve 155 is arranged on a pipeline between the ink pipeline 154 and the ink tank 12, and a cleaning valve 156 is arranged on a pipeline between the ink pipeline 154 and the cleaning liquid tank 13; and wherein the spray heads 151 are installed on the positioning frame 152, the positioning frame 152 is installed on the supporting and moving mechanism 153, and the supporting and moving mechanism 153 includes a lifting unit 1531 configured to make the positioning frame 152 up and down in the working area 101 and a translation unit 1532 configured to make the positioning frame 152 horizontally translate in the cleaning area 102; and a cleaning support flow guide plate 157 is arranged below the cleaning area 102, a flow guide hole 1571 for waste liquid to flow out is formed in the cleaning support flow guide plate 157, and the waste liquid enters the waste liquid bucket 14 through the flow guide hole 1571.

[0017] The working procedure of the embodiment of the present disclosure may be referred to as follows: performing fixed single-channel inkjet dyeing production,

and putting a pretreated to-be-dyed fabric on a machine; filling an ink system with a colored ink; starting the machine, conveying the to-be-dyed fabric to a station of the inkjet device 1 by the unwinding and feeding device 2, directly spraying and dyeing the ink by the inkjet device 1, and inkjet-printing the prepared ink onto the fabric; conveying the printed fabric into the drying device 3 through a guide belt; and winding the dried fabric by the winding device 4. Nodes are added for the newly added colors, so that accuracy of the formula of the colors added later is greatly improved.

[0018] Taking two groups of inkjet modules 15 provided in the present disclosure as an example, since the machine body 10 of the inkjet modules 15 has the working area 101 and the cleaning area 102, only one group of inkjet modules 15 work during the dyeing work using the digital inkjet dyeing machine. Specifically, as shown in FIG. 4, when a first group of inkjet modules 15 work, the supporting and moving mechanism 153 moves the spray head group to the inkjet position in the working area 101, and lowered the spray head to a certain height for inkjet work, a second group of inkjet modules 15 enter the cleaning area 102 under the control of the controller 11 for cleaning and ink changing works, and when the first group of inkjet modules 15 complete inkjet and need to be cleaned and ink changed (color changed), the supporting and moving mechanism 153 first raises the inkjet modules 15 to a certain height, and then horizontally moves the spray head group to the cleaning area 102, that is, moves to above the cleaning support flow guide plate 157 for cleaning and ink changing works. The procedure of the cleaning and ink changing works may be referred to as follows: firstly, the ink in the other inkjet modules 15 is emptied, then cleaning valves 156 of a cleaning liquid pool communicated with other inkjet modules 15 are opened for cleaning, after cleaning is completed, valves of an inkjet pool with the prepared ink are opened, and the ink entering other inkjet modules 15 to prepare for printing of the next color.

[0019] According to the above embodiment of the present disclosure, the supporting and moving mechanism 153 is mainly composed of a motor driver with lifting and moving functions, that is, the lifting unit 1531 and the translation unit 1532 both use the motor driver. The upper surface of the flow guide plate is provided with a trapezoidal flow guide groove 1572, and the flow guide hole 1571 is positioned at a bottom of the flow guide groove, so that the cleaning efficiency is accelerated. Meanwhile, a bottom of the machine body is provided with a universal wheel 16, so that the whole machine body can move conveniently.

[0020] According to the above embodiment of the present disclosure, the spray head 151 uses a spray head 151 with an inkjet amount of 12 pl to 80 pl, wherein the used ink is compatible with the ink used by the digital printing machine, and it can also use special ink for the digital dyeing machine, which has a large particle size range, less damage to the chromogenic groups, and a color development effect that is greatly improved compared to the color development effect of printing pure color by the printing machine.

[0021] According to the above embodiment of the present disclosure, the spray heads 151 in the inkjet module 15 are connected by pipeline in a single-channel series connection mode. The ink is jetted and printed on the cloth surface by a row of fixed spray heads 151 in a single channel, so that the most troublesome feeling of point-like grainy that occurs in a digital printing machine will not be caused.

[0022] According to the above embodiment of the present disclosure, the digital inkjet dyeing machine is further provided with a belt guide device 5, which is arranged between the inkjet device 1 and the drying device 3 and is configured to convey a fabric dyed by the inkjet device 1 into the drying device 3.

[0023] According to the above embodiment of the present disclosure, the controller 11 is electrically connected to the control circuit, the control circuit is electrically connected to the execution components at the same time, and the controller 11 performs the associated control with the spray head 151, the inkjet valve 155, the cleaning valve 156, the motor driver, and the like. Since the components such as the unwinding and feeding device 2, the inkjet device 1, the drying device 3, the winding device 4 are all common mechanisms in the field of dyeing machines, detailed structures thereof will not be described; similarly, the components such as the unwinding and feeding device 2, the inkjet device 1, the drying device 3, the winding device 4, the motor driver belong to the conventional technology, are not the inventive point of the present disclosure, and therefore they are not described herein again.

[0024] For the above embodiments, possible changes in the present disclosure are described as follows:

1. According to the above embodiment, the inkjet device 1 includes two groups of inkjet modules 15, spray head groups in the two groups of inkjet modules 15 are each connected to one of the ink tanks 12, and the spray head groups in the two groups of inkjet modules 15 are jointly connected to the cleaning liquid tank 13 and the waste liquid bucket 14; however, the present disclosure is not limited thereto, and one ink module may use the cleaning liquid tank 13 and the waste liquid bucket 14 separately.
2. According to the above embodiment, the machine body 10 is divided into two machine bodies, the inkjet module 15, the ink tank 12, the working area 101, and the cleaning area 102 are independently arranged in each machine body 10, and the two machine bodies 10 share the cleaning liquid tank 13 and the waste liquid bucket 14; however, the present disclosure is not limited thereto, and individual cleaning liquid tank 13 and the waste liquid bucket 14 can be used in a single machine body 10.

[0025] The above embodiments are merely for illustrating the technical concept and features of the present disclosure, and the purpose of these embodiments is to enable those skilled in the art to understand the content of the present disclosure and implement the present disclosure, and the protection scope of the present disclosure is not limited thereto. All equivalent changes and modifications made according to the spirit of the present disclosure should be covered in the protection scope of the present disclosure.

Claims

1. A digital inkjet dyeing machine, configured to perform digital dyeing of solid color on a fabric, and comprising an unwinding and feeding device (2), an inkjet device (1), a drying device (3), and a winding device (4) which are sequentially arranged in a fabric feeding direction, wherein

the inkjet device (1) comprises a machine body (10), a controller (11), an ink tank (12), a cleaning liquid tank (13), and inkjet modules (15);
the machine body (10) is provided with at least two groups of the inkjet modules (15), at least one ink tank (12), and at least one cleaning liquid tank (13), wherein the ink tank (12) is a container for containing ink, and the cleaning liquid tank (13) is a container for containing cleaning liquid;
the machine body (10) is provided with a working area (101) and a cleaning area (102); the inkjet modules (15) are installed on the machine body (10) and are displaceable between the working area (101) and the cleaning area (102);
each of the inkjet module (15) comprises spray heads (151), a positioning frame (152), and a supporting and moving mechanism (153), wherein the spray heads (151) are arranged in parallel and form a spray head group, each inkjet module (15) comprises at least one spray head group, the spray heads (151) are connected through ink pipelines (154), the ink pipelines (154) are connected to the ink tank (12) and the cleaning liquid tank (13) through pipelines, an inkjet valve (155) is arranged on a pipeline between the ink pipeline (154) and the ink tank (12), and a cleaning valve (156) is arranged on a pipeline between the ink pipeline (154) and the cleaning liquid tank (13); and wherein the spray heads (151) are installed on the positioning frame (152), the positioning frame (152) is installed on the supporting and moving mechanism (153), and the supporting and moving mechanism (153) comprises a lifting unit (1531) configured to drive the positioning frame (152) up and down in the working area (101), and a translation unit (1532) configured to drive the positioning frame (152) to horizontally translate in the cleaning area (102).

2. The digital inkjet dyeing machine according to claim 1, wherein at least one waste liquid bucket (14) is arranged on the machine body (10) or on one side of the machine body (10), and the waste liquid barrel (14) is a container for collecting waste liquid; and wherein a cleaning support flow guide plate (157) is arranged below the cleaning area (102), a flow guide hole (1571) for waste liquid to flow out is opened in the cleaning support flow guide plate (157), and the waste liquid enters the waste liquid bucket (14) through the flow guide hole (1571).

3. The digital inkjet dyeing machine according to claim 2, wherein the inkjet device (1) comprises two groups of the inkjet modules (15), the spray head groups in the two groups of the inkjet modules (15) are each connected to one of the ink tanks (12), and the spray head groups in the two groups of the inkjet modules (15) are jointly connected to the cleaning liquid tank (13) and the waste liquid bucket (14).

4. The digital inkjet dyeing machine according to claim 1, wherein the supporting and moving mechanism (153) is mainly composed of a motor driver with lifting and translation functions, that is, the lifting unit (1531) and the translation unit (1532) both comprise the motor driver.

5. The digital inkjet dyeing machine according to claim 2, wherein an upper surface of the cleaning support flow guide plate (157) is formed with a trapezoidal flow guide groove (1572), and the flow guide hole (1571) is positioned at a bottom of the trapezoidal flow guide groove (1572).

6. The digital inkjet dyeing machine according to claim 2, wherein two machine bodies (10) are provided, each of the machine bodies (10) is independently provided therein with the inkjet modules (15), the ink tank (12), the working area (101), and the cleaning area (102), and the two machine bodies (10) share the cleaning liquid tank (13) and the waste liquid bucket (14).

7. The digital inkjet dyeing machine according to claim 6, wherein a bottom of each of the machine bodies (10) is provided with a universal wheel (16).

8. The digital inkjet dyeing machine according to claim 1, wherein the spray head (151) has an inkjet amount of 12 pl to 80 pl.

9. The digital inkjet dyeing machine according to claim 1, wherein spray heads (151) in the inkjet modules (15) are pipeline-connected in a single-channel se-

ries connection mode.

10. The digital inkjet dyeing machine according to claim 1, wherein the digital inkjet dyeing machine is further provided with a belt guide device (5), and the belt guide device (5) is arranged between the inkjet device (1) and the drying device (3), and is configured to convey a fabric dyed by the inkjet device (1) into the drying device (3).

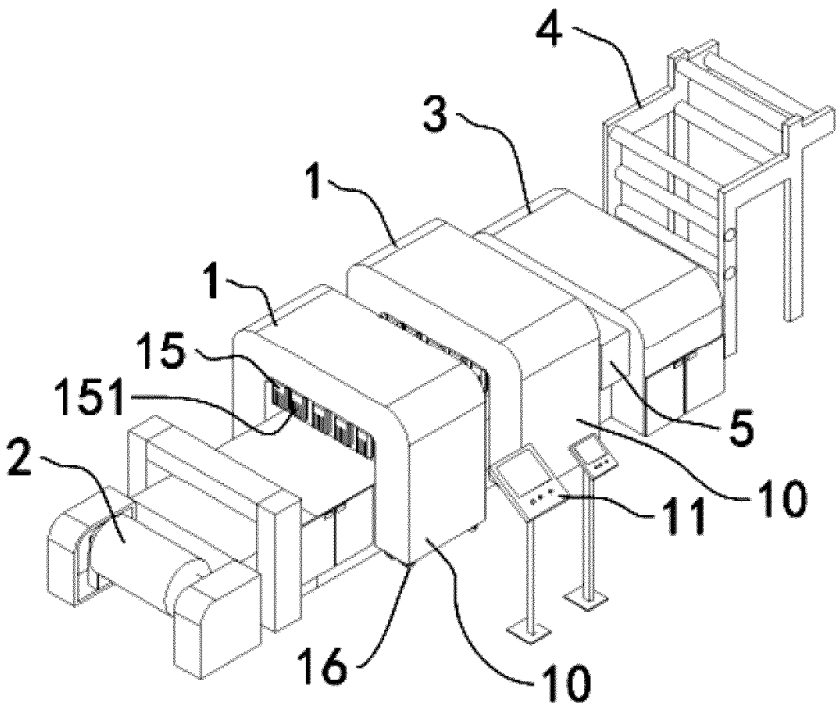

FIG. 1

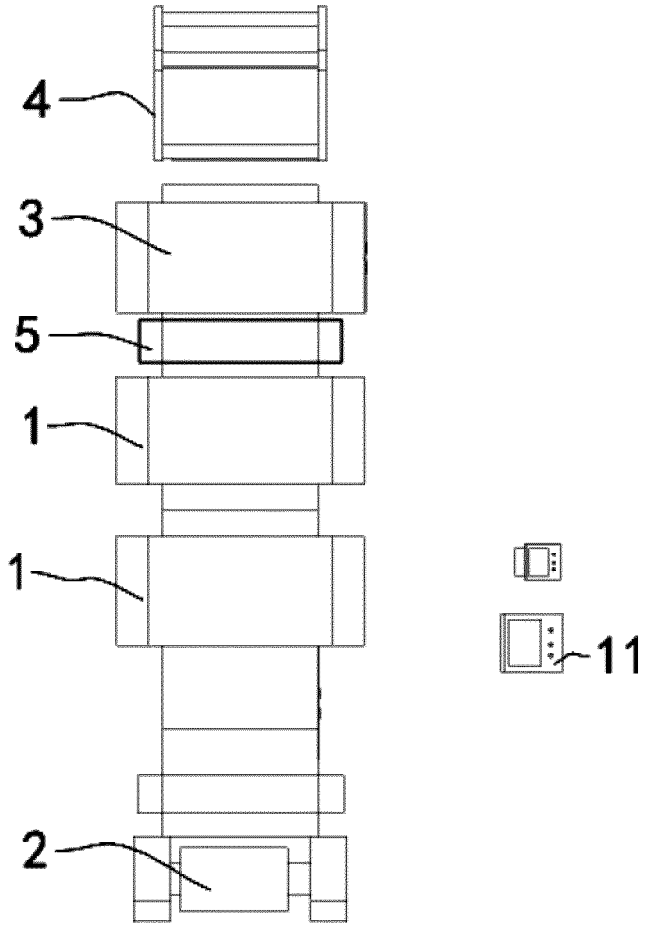

FIG. 2

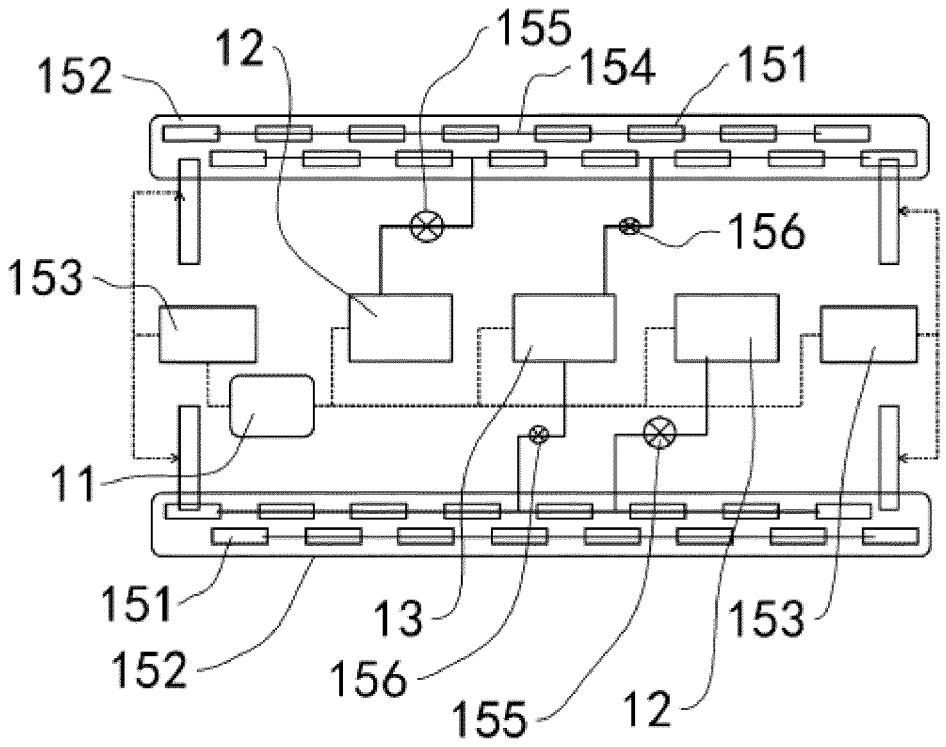

FIG. 3

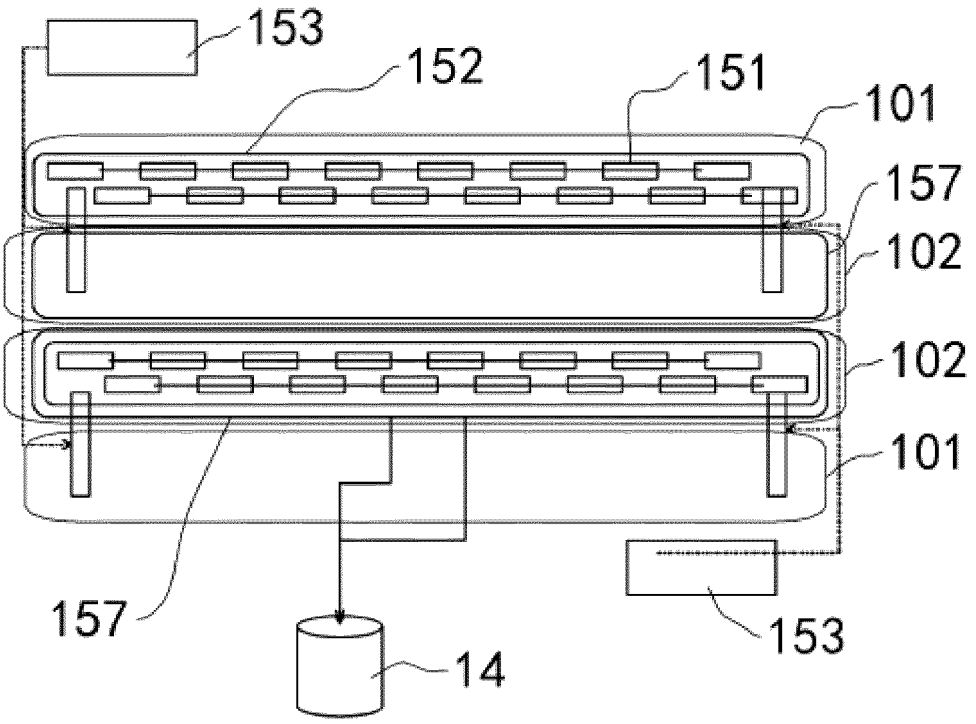

FIG. 4

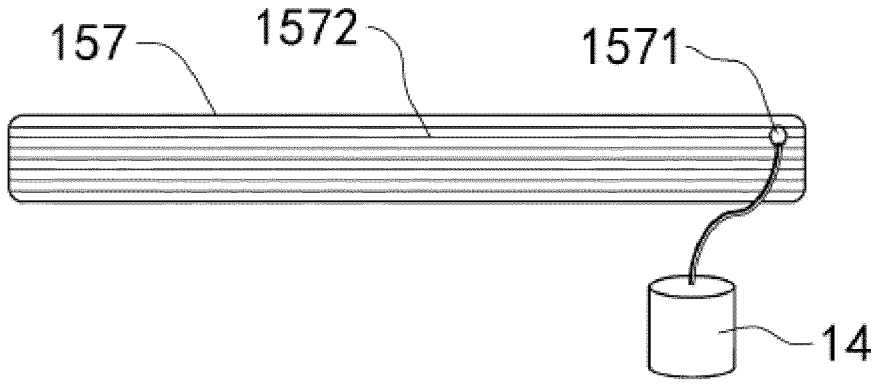

FIG. 5

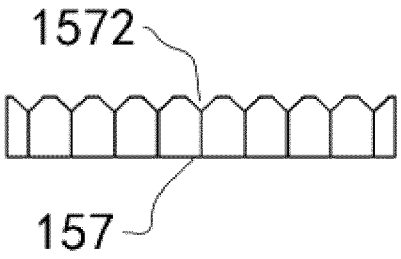

FIG. 6

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2021/094538

A. CLASSIFICATION OF SUBJECT MATTER

B41J 2/01(2006.01)i; B41J 11/00(2006.01)i

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)

B41J

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)

WPI, EPODOC, CNPAT, CNKI: 浙江山峪集团股份有限公司, 数码, 喷墨, 喷头, 染色, 纺织, 织物, 面料, 清洗, 移动, 平移, 位移, 滑轨, 滑动, 管路, 阀, digital+, inkjet, spray+, sprinkl+, dye+, textile, fabric, cloth+, clean+, wash+, mov+, slid+, translat+, pipe+, valve

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
E	CN 113103762 A (ZHEJIANG SHANYU GROUP CO., LTD.) 13 July 2021 (2021-07-13) claims 1-10	1-10
A	CN 205890234 U (HOPETECH DIGITAL CO., LTD.) 18 January 2017 (2017-01-18) description, specific embodiments, and figures 1-10	1-10
A	CN 205890201 U (YAN, Bojian) 18 January 2017 (2017-01-18) entire document	1-10
A	CN 201604355 U (WENSLI SILK SCIENCE & TECHNOLOGY CO., LTD.) 13 October 2010 (2010-10-13) entire document	1-10
A	CN 107264026 A (YUEYANG BAOLI TEXTILES CO., LTD.) 20 October 2017 (2017-10-20) entire document	1-10
A	JP 2015218419 A (RICOH K. K.) 07 December 2015 (2015-12-07) entire document	1-10
A	WO 2018088979 A2 (TURAN, Ali) 17 May 2018 (2018-05-17) entire document	1-10

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

* Special categories of cited documents:
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"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"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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"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 such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
17 November 2021	**25 November 2021**
Name and mailing address of the ISA/CN **China National Intellectual Property Administration (ISA/CN)** **No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088, China** Facsimile No. **(86-10)62019451**	Authorized officer Telephone No.

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2021/094538

Patent document cited in search report			Publication date (day/month/year)	Patent family member(s)			Publication date (day/month/year)
CN	113103762	A	13 July 2021	None			
CN	205890234	U	18 January 2017	None			
CN	205890201	U	18 January 2017	None			
CN	201604355	U	13 October 2010	None			
CN	107264026	A	20 October 2017	None			
JP	2015218419	A	07 December 2015	JP	6349958	B2	04 July 2018
WO	2018088979	A2	17 May 2018	EP	3538369	A2	18 September 2019
				WO	2018088979	A3	23 August 2018
				EP	3538369	A4	22 July 2020
				TR	201616296	A	23 January 2017

Form PCT/ISA/210 (patent family annex) (January 2015)