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Inventor(s)	SHIOBARA; Hiroshi

LIQUID DISCHARGE DEVICE

Abstract

A liquid discharge device includes a support unit configured to support a medium, a liquid discharge unit configured to discharge liquid in a discharge direction from a nozzle provided at a nozzle surface onto the medium supported by the support unit, and a moving unit configured to move in a first direction that is a direction intersecting the discharge direction and in a second direction that is a direction opposite to the first direction. The moving unit includes a scraping member configured to scrape off paper dust accumulated below the support unit.

Inventors: **SHIOBARA; Hiroshi (MATSUMOTO-SHI, JP)**

Applicant: **SEIKO EPSON CORPORATION** (Tokyo, JP)

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Background/Summary

[0001] The present application is based on, and claims priority from JP Application Serial Number 2024-024481, filed Feb. 21, 2024, the disclosure of which is hereby incorporated by reference herein in its entirety.

BACKGROUND

1. Technical Field

[0002] The present disclosure relates to a liquid discharge device that discharges liquid onto a medium.

2. Related Art

[0003] A liquid spray device disclosed in JP-A-2018-65303 includes a medium support unit that supports a medium at a recording position. The medium support unit includes a transport belt, and moves to a support position and a retreat position by rotating approximately 90 degrees.

[0004] Since paper dust adheres to the transport belt, a blade that scrapes off the paper dust adhering to the transport belt by coming into contact with the transport belt may be provided.

[0005] However, there is a concern that the paper dust scraped off by the blade falls below the transport belt and causes, for example, an operation failure in a mechanism located below the transport belt.

SUMMARY

[0006] In order to solve the above problems, a liquid discharge device of the present disclosure includes a support unit configured to support a medium, a liquid discharge unit configured to discharge liquid in a discharge direction from a nozzle provided at a nozzle surface onto the medium supported by the support unit, and a moving unit configured to move in a first direction that is a direction intersecting the discharge direction and in a second direction that is a direction opposite to the first direction, wherein the moving unit includes a scraping member configured to scrape off paper dust accumulated below the support unit.

Description

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] FIG. **1** is a diagram illustrating a medium transport path of a printer.

[0008] FIG. **2** is a diagram illustrating the medium transport path of the printer.

[0009] FIG. **3** is a block diagram illustrating a control system of the printer.

[0010] FIG. **4** is a perspective view of a belt unit and a support frame that supports the belt unit.

[0011] FIG. **5** is a perspective view of a moving mechanism for moving a cap.

[0012] FIG. **6** is a perspective view of the moving mechanism for moving the cap.

[0013] FIG. **7** is a perspective view of the moving mechanism for moving the cap.

[0014] FIG. **8** is a plan view of a wipe unit and a first guide and a second guide that guide the wipe unit.

[0015] FIG. **9** is a perspective view of the first guide and a brush provided in the wipe unit.

[0016] FIG. **10** is a side cross-sectional view of the moving mechanism for moving the cap.

[0017] FIG. **11** is a sectional side view of the moving mechanism for moving the cap.

[0018] FIG. **12** is a flowchart illustrating a flow of a maintenance operation.

DESCRIPTION OF EMBODIMENTS

[0019] Hereinafter, the present disclosure will be described in brief.

[0020] A liquid discharge device according to a first aspect includes a support unit configured to support a medium, a liquid discharge unit configured to discharge liquid in a discharge direction from a nozzle provided at a nozzle surface onto the medium supported by the support unit, and a

moving unit configured to move in a first direction that is a direction intersecting the discharge direction and in a second direction that is a direction opposite to the first direction, wherein the moving unit includes a scraping member configured to scrape off paper dust accumulated below the support unit.

[0021] According to the present aspect, since the paper dust accumulated below the support unit can be scraped off by the scraping member, it is possible to suppress an operation failure of a mechanism arranged below the support unit.

[0022] A second aspect is an aspect according to the first aspect, further including an accommodating unit provided below a position where the paper dust is scraped off by the scraping member, the accommodating unit being configured to accommodate the paper dust scraped off by the scraping member.

[0023] According to the present aspect, since the scraped paper dust can be accommodated in the accommodating unit, it is possible to prevent the paper dust from being diffused over a wide range.

[0024] A third aspect is an aspect according to the first aspect, further including a guide unit provided below the support unit, wherein the guide unit is configured to guide a guided unit provided in the moving unit, the moving unit includes a wiping unit configured to wipe the nozzle surface, and the scraping member is located in the first direction with respect to the guided unit, the scraping member being configured to scrape off the paper dust accumulated on the guide unit when the moving unit moves in the first direction.

[0025] According to the present aspect, since the scraping member is located in the first direction with respect to the guided unit and scrapes off the paper dust accumulated on the guide unit when the moving unit moves in the first direction, it is possible to prevent the moving unit from becoming unmovable due to the paper dust when the moving unit moves in the first direction.

[0026] A fourth aspect is an aspect according to the third aspect, wherein the scraping member is provided in a state of being inclined with respect to a moving direction of the moving unit.

[0027] According to the present aspect, since the scraping member is provided in a state of being inclined with respect to the moving direction of the moving unit, the paper dust can be appropriately removed from the guide unit.

[0028] A fifth aspect is an aspect according to the fourth aspect, further including an accommodating unit provided below a position of the guide unit where the paper dust is scraped off by the scraping member, the accommodating unit being configured to accommodate the scraped paper dust, wherein the accommodating unit is provided on a side to which the paper dust scraped off by the scraping member moves with respect to the guide unit.

[0029] According to the present aspect, since the scraped paper dust can be accommodated in the accommodating unit, it is possible to prevent the paper dust from being diffused over a wide range. In addition, since the accommodating unit is provided on the side to which the paper dust scraped off by the scraping member moves with respect to the guide unit, the paper dust can be more appropriately accommodated in the accommodating unit.

[0030] A sixth aspect is an aspect depending on the first or second aspect, wherein the liquid discharge unit is a line head having a moving direction of the moving unit as a longitudinal direction, the support unit includes a drive roller, a driven roller, and a transport belt which is an endless belt wound between the drive roller and the driven roller, and the transport belt is configured to move between a support position facing the liquid discharge unit and a retreat position separated from the support position.

[0031] According to the present aspect, since the transport belt is movable between the support position facing the liquid discharge unit and the retreat position separated from the support position, when the transport belt is at the retreat position, it is possible to perform a treatment such as maintenance of the liquid discharge unit.

[0032] A seventh aspect is an aspect according to the sixth aspect, further including a paper dust removing unit that comes into contact with the transport belt, the paper dust removing unit being

configured to remove paper dust adhering to the transport belt.
[0033] According to the present aspect, since the paper dust removing unit that comes into contact with the transport belt and removes the paper dust adhering to the transport belt is further provided, it is possible to suppress the paper dust adhering to the transport belt from adhering to the nozzle of the liquid discharge unit.
[0034] An eighth aspect is an aspect according to any one of the third to fifth aspects, wherein the liquid discharge unit is a line head having a moving direction of the moving unit as a longitudinal direction, the support unit includes a drive roller, a driven roller, and a transport belt which is an endless belt wound between the drive roller and the driven roller, and the transport belt is configured to move between a support position facing the liquid discharge unit and a retreat position separated from the support position.
[0035] According to the present aspect, since the transport belt is movable between the support position facing the liquid discharge unit and the retreat position separated from the support position, when the transport belt is at the retreat position, it is possible to perform a treatment such as maintenance of the liquid discharge unit.
[0036] A ninth aspect is an aspect according to the eighth aspect, wherein when an end portion in the second direction is set as a home position and wiping of the nozzle surface is performed by the wiping unit, the moving unit is configured to move from the home position in the first direction and scrape off the paper dust by the scraping member during the movement, and move in the second direction toward the home position and wipe the nozzle surface by the wiping unit during the movement.
[0037] As described above, the scraping member is located in the first direction with respect to the guided unit, and is configured to scrape the paper dust accumulated on the guide unit when the moving unit moves in the first direction.
[0038] In addition, according to the present aspect, since the end portion of the moving unit in the second direction is set as the home position, and the moving unit moves from the home position in the first direction in a case where the nozzle surface is wiped, it is possible to prevent the moving unit from being unable to move when the nozzle surface is wiped.
[0039] A tenth aspect is an aspect according to the eighth aspect, further including a paper dust removing unit that comes into contact with the transport belt, the paper dust removing unit being configured to remove paper dust adhering to the transport belt.
[0040] According to the present aspect, since the paper dust removing unit that comes into contact with the transport belt and removes the paper dust adhering to the transport belt is further provided, it is possible to suppress the paper dust adhering to the transport belt from adhering to the nozzle of the liquid discharge unit.
[0041] An eleventh aspect is an aspect according to the eighth aspect, further including a cap configured to contact the nozzle surface, a moving mechanism configured to move the cap between a facing position at which the cap faces the nozzle surface and a stand-by position that is further away from the guide unit in a horizontal direction than the facing position is, and a sheet member configured to deform in accordance with movement of the cap, wherein the sheet member is configured to cover at least a part of the moving mechanism when the cap is at the stand-by position.
[0042] According to the present aspect, it is possible to prevent paper dust from being accumulated on at least a part of the moving mechanism at the stand-by position by the sheet member, and to prevent an operation failure of the cap.
[0043] A twelfth aspect is an aspect according to the eleventh aspect, further including a push-up unit configured to push up at least a part of the sheet member from below the sheet member, wherein the push-up unit is configured to push up an end portion of the sheet member close to the guide unit as the cap moves toward the facing position.
[0044] According to the present aspect, since the push-up unit pushes up the end portion of the

sheet member close to the guide unit, it is possible to drop the paper dust accumulated on the sheet member.

[0045] A thirteenth aspect is an aspect according to the eleventh aspect, wherein the moving mechanism includes a push-up unit configured to push up at least a part of the sheet member from below the sheet member, and when the moving mechanism moves the cap toward the facing position, the push-up unit moves below an end portion of the sheet member close to the guide unit and pushes up the end portion.

[0046] According to the present aspect, since the push-up unit pushes up the end portion of the sheet member close to the guide unit, it is possible to drop the paper dust accumulated on the sheet member.

[0047] A fourteenth aspect is an aspect according to the second or fifth aspect, wherein the accommodating unit is configured to be detachable.

[0048] According to the present aspect, since the accommodating unit is configured to be detachable, the paper dust accommodated in the accommodating unit can be easily discarded.

[0049] Hereinafter, the present disclosure will be described in detail.

[0050] Hereinafter, an inkjet printer **1** that performs recording by discharging ink, which is an example of a liquid, onto a medium represented by a recording sheet will be described as an example of a liquid discharge device. Hereinafter, the inkjet printer **1** will be abbreviated as printer **1**.

[0051] An X-Y-Z coordinate system illustrated in each figure is an orthogonal coordinate system, and a Y-axis direction is a width direction that intersects with a medium transport direction and is also a device depth direction. In the present embodiment, among side surfaces constituting the periphery of a device body **2**, the side surface in a +Y direction is a back surface, and the side surface in a −Y direction is a front surface.

[0052] An X-axis direction is a device width direction, and a +X direction is the left side and an −X direction is the right side as viewed by an operator of the printer **1**. Further, the −X direction is a medium feed direction from each medium cassette, which will be described later.

[0053] A Z-axis direction is a vertical direction, that is, a device height direction, a +Z direction is an upward direction, and a −Z direction is a downward direction.

[0054] Hereinafter, a direction in which the medium is sent may be referred to as “downstream” and an opposite direction may be referred to as “upstream”. In FIG. **1**, the medium transport path is shown by a dashed line. In the printer **1**, the medium is transported through the medium transport path shown by the dashed line.

[0055] The printer **1** includes a medium cassette **3** in a lower portion of a device body **2** including a line head **12** which will be described below. A reference sign P denotes a medium accommodated in the medium cassette **3**.

[0056] The medium cassette **3** is provided with a pick roller **21** that feeds the accommodated medium in the −X direction. Further, the medium cassette **3** is provided with a feed roller pair **25** that feeds the medium sent out by the pick roller **21** further downstream. A plurality of medium cassettes (not illustrated) are further provided below the medium cassette **3**. In addition, a pick roller (not illustrated) and a feed roller pair (not illustrated) are provided for each of the plurality of medium cassettes (not illustrated).

[0057] Hereinafter, unless otherwise specified, it is assumed that a “roller pair” includes a drive roller driven by a power source such as a motor, and a driven roller that rotates in a driven manner in contact with the drive roller.

[0058] A reference sign T**1** indicates a transport path of the medium which is sent out from the medium cassette **3** and reaches the transport roller pair **34**. The medium sent out from the medium cassette **3** receives a feed force from the transport roller pairs **29** and **33** and is sent to the transport roller pair **34**.

[0059] The medium that receives the feeding force from the transport roller pair **34** is fed between

the line head **12**, which is an example of a liquid discharge unit, and the transport belt **53**, that is, to a recording position facing the line head **12**. The transport roller pair **34** constitutes a transport portion that transports the medium between the line head **12** and the transport belt **53**.

[0060] The line head **12** performs recording by discharging ink, which is an example of liquid, from a nozzle **13** provided in a nozzle surface **12***a*. In the present embodiment, the discharge direction of the ink from the nozzle **13** is the −Z direction. The line head **12** is an ink discharge head in which a plurality of nozzles **13** that discharge ink are arranged to cover the entire area in the width direction of the medium, and is configured as an ink discharge head that can perform recording over the entire width of the medium without moving in the width direction of the medium. However, the ink discharge head is not limited thereto, and may be a type that is mounted on a carriage and discharges ink while moving in the width direction of the medium.

[0061] Further, the recording method is not limited to the inkjet method, and may be an electrophotographic method such as a dot impact method, a laser method, or an LED method.

[0062] The line head **12** according to the present embodiment discharges, for example, ink of a plurality of colors. Specifically, in the present embodiment, the plurality of nozzles **13** include a plurality of nozzles **13** that discharge yellow ink, a plurality of nozzles **13** that discharge magenta ink, a plurality of nozzles **13** that discharge cyan ink, and a plurality of nozzles **13** that discharge magenta ink.

[0063] Next, the transport belt **53** is an endless belt which is wound around a first roller **54** which is a drive roller and a second roller **55** which is a driven roller, and is rotated when the first roller **54** is driven by a belt rotation motor **89** (refer to FIG. **3**). The medium is transported to the position facing the line head **12** while being adsorbed to a belt surface of the transport belt **53**.

[0064] The first roller **54**, the second roller **55**, and the transport belt **53** constitute a belt unit **52**. The belt unit **52** is an example of a support unit that supports a medium. The belt unit **52** uses the first roller **54** as a rotation shaft, and is provided so as to be rotatable by power of a belt moving motor **90** (see FIG. **3**). When the belt unit **52** rotates, the transport belt **53** moves between a support position (refer to FIG. **1**) facing the line head **12** and a retreat position (refer to FIG. **2**) separated from the support position.

[0065] FIG. **4** is a perspective view of the belt unit **52**, and a reference sign **57** denotes a support frame that rotatably supports the belt unit **52**. Further, in FIG. **4**, a reference sign **58** denotes a link mechanism for rotating the belt unit **52**. In FIG. **4**, the reference sign **57***a* denotes an opening formed in the support frame **57**. An accommodating unit **65**, which will be described below, is detachably provided at an opening **57***a*.

[0066] A reference sign **56** denotes a blade serving as a paper dust removing unit that comes into contact with the transport belt **53** to remove paper dust adhering to the transport belt **53**. As an example, the blade **56** is a plate-shaped elastic member having a predetermined thickness, is formed of urethane, rubber, or the like, and can be elastically deformed in a state of being in contact with the transport belt **53**. Not only paper dust but also foreign matter such as dust may adhere to the transport belt **53**, and the blade **56** scrapes off such foreign matter and causes the foreign matter to fall below the transport belt **53**. In the present specification, paper dust is treated as a representative example of foreign matter.

[0067] The blade **56** constitutes the belt unit **52** and rotates integrally with the belt unit **52**. When the belt unit **52** is at the support position, the blade **56** contacts the transport belt **53** from below as illustrated in FIG. **1**. Therefore, the paper dust scraped off by the blade **56** falls downward from the blade **56**. A moving mechanism **60** and a first guide **16**, which will be described below, are arranged below the blade **56**.

[0068] In FIG. **1**, the medium on which the recording is performed on the first surface by the line head **12** is sent toward any one of the transport roller pair **36** and the transport roller pair **40** by the transport roller pair **35** located downstream of the transport belt **53**. A path switching flap (not shown) is provided downstream of the transport roller pair **35**, and the medium receiving the feed

force from the transport roller pair **35** is sent to any one of the transport roller pair **36** and the transport roller pair **40** by this path switching flap.

[0069] In a case where recording is not performed on both the first side and the second side opposite to the first side of the medium, that is, in a case where double-sided recording is not performed, the medium is sent from the transport roller pair **35** toward the transport roller pair **36**, pass through the ejecting path T**4**, and are ejected toward an ejecting tray **8**. The ejecting path T**4** is provided with the transport roller pair **38** and the transport roller pair **39**.

[0070] When recording is performed on both the first side and the second side opposite to the first side of the medium, that is, when the double-sided recording is performed, the medium is sent from the transport roller pair **35** to the transport roller pair **40** and enters a switchback path T**2**. Thereafter, a rotation direction of the transport roller pair **40** is switched, the medium enters a reversal path T**3**, and is sent to the transport roller pair **34** by the transport roller pairs **41**, **42**, and **43**.

[0071] A reference sign **10** denotes an ink accommodating unit as a liquid accommodating unit that accommodates ink before discharge. The ink discharged from the line head **12** is supplied from the ink accommodating unit **10** to the line head **12** via a tube (not illustrated). The ink accommodating unit **10** accommodates, for example, ink of black, yellow, magenta, and cyan.

[0072] A reference sign **9** denotes a capping unit having a cap **9***a* that can come into contact with the nozzle surface **12***a* of the line head **12**. The capping unit **9** is displaced between a facing position (refer to FIG. **2**) at which the cap **9***a* faces the nozzle surface **12***a* of the line head **12** and a stand-by position (refer to FIG. **1**) which is horizontally further away from the facing position by power of a cap moving motor **91** (refer to FIG. **3**). An ink tube (not illustrated) is coupled to the cap **9***a*, and the ink ejected to the cap **9***a* is sent to a waste liquid accommodating unit (not illustrated).

[0073] The overall configuration of the printer **1** has been described above, and the control unit **80** will be described below with reference to FIG. **3**.

[0074] The control unit **80** performs various controls including recording control in the printer **1**. In FIG. **3**, only components necessary for description in the present specification are illustrated, and illustration of other components is omitted.

[0075] As an output system, a feeding motor **87**, a transport motor **88**, a belt rotation motor **89**, a belt moving motor **90**, a cap movement motor **91**, a wiper moving motor **92**, a head moving motor **93**, and the line head **12** are electrically coupled to the control unit **80**. The feeding motor **87** is a power source for each pick roller and each feed roller pair described above. Further, the transport motor **88** is a power source for each transport roller pair described above.

[0076] The head moving motor **93** is a power source for moving the line head **12** forward and backward with respect to the transport belt **53**. That is, the line head **12** is provided so as to be displaceable in the Z-axis direction, that is, in a direction of advancing and retreating with respect to the transport belt **53**, by a guide unit (not illustrated). The control unit **80** can adjust the position of the line head **12** in the Z-axis direction by controlling the head moving motor **93**.

[0077] Each motor is a DC motor as an example. Each of the motors is provided with a rotary encoder (not illustrated), and the control unit **80** can detect a rotation direction, a rotation amount, and a rotation speed of each of the motors by the rotary encoder. That is, the control unit **80** can detect the driving direction, the driving amount, and the driving speed of each driving target.

[0078] The control unit **80** includes a CPU **81** that executes a computer program, in other words, software, a volatile memory **82**, and a non-volatile memory **83**. The CPU **81** performs various calculations required to execute a program **84** stored in the non-volatile memory **83**. The volatile memory **82** is used as a temporary data storage area. The non-volatile memory **83** stores the program **84** and control parameters **85** required to execute the program **84**. The program **84** includes a program that executes various processes to be described later, and the control parameters **85** include parameters for executing the program **84**. Various processes to be described later are realized by the control unit **80** executing the program **84**.

[0079] Next, the moving mechanism **60** that moves the cap **9***a* between the stand-by position (see FIG. **1**) and the facing position (see FIG. **2**) will be described.
[0080] FIGS. **5**, **6**, and **7** are perspective views of the moving mechanism **60**. In FIGS. **5**, **6**, and **7**, the cap **9***a* is not illustrated. The cap **9***a* is supported by a link mechanism **61** in a raised state as illustrated in FIGS. **6** and **11**.
[0081] A base body of the moving mechanism **60** is constituted by a base frame **63** and side frames **59**A and **59**B. The base frame **63** has a tray shape. The side frames **59**A and **59**B are frames extending along the X-axis direction, the side frame **59**A is provided in the +Y direction with respect to the base frame **63**, and the side frame **59**B is provided in the −Y direction with respect to the base frame **63**. The side frames **59**A and **59**B guide the link mechanism **61**.
[0082] A slider **62** that moves along the X-axis direction is provided inside the side frames **59**A and **59**B. The link mechanisms **61** are provided on both sides of the slider **62** in the Y-axis direction. The link mechanism **61** is engaged with the slider **62**, and the slider **62** moves along the X-axis direction to switch the link mechanism **61** between a fallen state (see FIG. **5**) and a raised state (see FIG. **6**). When the link mechanism **61** falls down, the cap **9***a* is positioned at the stand-by position (see FIG. **1**). When the link mechanism **61** is raised, the cap **9***a* is positioned at the facing position (see FIG. **2**). The link mechanism **61** is a so-called four bar link mechanism, and detailed description of the configuration and operation thereof will be omitted.
[0083] The slider **62** is provided with a screw portion (not illustrated in FIGS. **5** to **7**), and a ball screw **64** is passed through the screw portion. The ball screw **64** extends in the X-axis direction and rotates by receiving the power of the cap moving motor **91**. The slider **62** is moved along the X-axis direction by the rotation of the ball screw **64**.
[0084] A sheet member **66** is provided at an upper portion of the slider **62**. The sheet member **66** will be described below.
[0085] Next, a wipe unit **14** will be described with reference to FIGS. **8** and **9**.
[0086] The wipe unit **14** is provided to be movable along the Y-axis direction. The wipe unit **14** is an example of a moving unit that can move in the Y-axis direction intersecting the ink discharge direction from the line head **12**, that is, the −Z direction. Further, in the Y-axis direction, the −Y direction is an example of a first direction, and the +Y direction is an example of a second direction.
[0087] A reference sign **16** denotes a first guide extending along the Y-axis direction, and a reference sign **18** denotes a second guide extending along the Y-axis direction. The first guide **16** is an example of a guide unit provided below the belt unit **52**. The upper surfaces of the first guide **16** and the second guide **18** are formed as flat surfaces parallel to the X-Y plane. The wipe unit **14** is supported by the upper surfaces of the first guide **16** and the second guide **18** and is guided in the Y-axis direction.
[0088] As illustrated in FIG. **9**, the wipe unit **14** includes a sandwiching unit **14***a* that sandwiches the first guide **16** in the Z-axis direction. The sandwiching unit **14***a* is an example of a guided unit that is guided by the first guide **16**.
[0089] In FIG. **8**, a reference sign **17** denotes a ball screw extending in the Y-axis direction. The wipe unit **14** has a screw unit **19**, and the ball screw **17** is passed through the screw unit **19**. The ball screw **17** is rotated by a wiper moving motor **92** (see FIG. **3**), whereby the wipe unit **14** is moved along the Y-axis direction.
[0090] The wipe unit **14** includes a wiper **15**. The wiper **15** is an example of a wiping unit capable of wiping the nozzle surface **12***a* of the line head **12**. The wiper **15** is formed of urethane, rubber, or the like, and can be elastically deformed in a state of being in contact with the nozzle surface **12***a*.
[0091] A brush **68**, which is an example of a scraping member, is provided on a side surface of the wipe unit **14** in the −Y direction. As illustrated in FIG. **9**, the brush **68** is provided so as to contact the upper surface of the first guide **16** in an elastically deformed state. The brush **68** is formed of a chemical fiber such as nylon, polypropylene, or polyester, a metal fiber, an animal fiber, a plant

fiber, or the like.
[0092] The brush **68** is provided so as to be inclined at an angle θa with respect to the Y-axis direction as illustrated in FIG. **8**. It can be said that the angle θa is an angle formed between the arrangement direction of the bristles of the brush **68** and the Y-axis direction.
[0093] The wipe unit **14** sets an end portion in the +Y direction in the movable range as a home position. When wiping the nozzle surface **12***a* of the line head **12**, the line head **12** is at a height position where the nozzle surface **12***a* does not come into contact with the wiper **15**, and in this state, the wipe unit **14** moves to the end portion in the −Y direction. Next, the line head **12** descends to a position where the nozzle surface **12***a* comes into contact with the wiper **15**, and in this state, the wipe unit **14** moves in the +Y direction, so that the wiper **15** wipes the nozzle surface **12***a*.
[0094] Next, the flow of the head maintenance will be further described with reference to FIG. **12**. It is assumed that the process illustrated in FIG. **12** is started in a state where the belt unit **52** is at the support position as illustrated in FIG. **1**, the cap **9***a* is at the stand-by position, and the wipe unit **14** is at the home position as illustrated in FIG. **8**. An example of this state is that a recording job is being executed.
[0095] When the control unit **80** determines that it is the head maintenance timing (Yes in step S**101**), the control unit **80** moves the belt unit **52** to the retracted position (step S**102**). Accordingly, a space for the cap **9***a* to face the line head **12** is formed.
[0096] The head maintenance timing may be, for example, a timing at which a predetermined number of sheets are recorded after a recording job is started.
[0097] Next, the control unit **80** moves the cap **9***a* to the facing position (step S**103**). As a result, the cap **9***a* of the capping unit **9** seals the nozzle surface **12***a*. An ink tube (not illustrated) is coupled to the cap **9***a*, and a pump (not illustrated) is coupled to the ink tube. The control unit **80** drives the pump in a state where the cap **9***a* seals the nozzle surface **12***a*, thereby forming a negative pressure in the cap **9***a* and sucking the ink from the nozzle **13** (step S**104**).
[0098] Next, the control unit **80** moves the cap **9***a* to the stand-by position (step S**105**). Accordingly, a space for the wipe unit **14** to move is formed. Next, the control unit **80** moves the wipe unit **14** from the home position in the −Y direction (step S**106**), and moves the line head **12** in the −Z direction (step S**107**). In this state, the control unit **80** moves the wipe unit **14** in the +Y direction (step S**108**), and wipes the nozzle surface **12***a* with the wiper **15**. Then, the control unit **80** moves the belt unit **52** to the support position (step S**109**).
[0099] When the recording job is completed, the control unit **80** moves the belt unit **52** to the retracted position, moves the cap **9***a* to the facing position, and seals the nozzle surface **12***a* with the cap **9***a*. This state is a recording stand-by state.
[0100] Next, the sheet member **66** provided in the upper portion of the moving mechanism **60** will be described.
[0101] As illustrated in FIGS. **5** to **7**, in the present embodiment, the sheet member **66** is provided covering at least the ball screw **64** of the moving mechanism **60**. In FIGS. **5** and **6**, the sheet member **66** is illustrated by an imaginary line in order to illustrate the configuration of the moving mechanism **60**. FIG. **7** depicts the sheet member **66** of FIG. **5** in solid lines.
[0102] The sheet member **66** has a linear portion **66***a* extending along the X-axis direction, and a widened portion **66***b* which is a portion located in the −X direction with respect to the linear portion **66***a* and has a shape in which the Y-axis direction is widened toward the −X direction. The sheet member **66** is an elastically deformable sheet member, and as an example, a polypropylene (PP) sheet, a polyethylene terephthalate (PET) sheet, or a polycarbonate (PC) sheet can be adopted.
[0103] In the present embodiment, the +X direction end of the linear portion **66***a* of the sheet member **66** is fixed to a motor attachment portion **63***a*, which is a portion of the base frame **63** to which the cap moving motor **91** is fixed. The motor attachment portion **63***a* is a portion formed so as to rise in the +Z direction.

[0104] Further, in the present embodiment, the −X direction end portion of the widened portion **66***b* of the sheet member **66** is fixed to a wall portion **63***b* formed so as to rise in the +Z direction in the base frame **63**.
[0105] The sheet member **66** can be fixed to the base frame **63** with screws, an adhesive, a double-sided tape, or the like.
[0106] As illustrated in FIGS. **10** and **11**, the sheet member **66** is located above the slider **62** constituting the moving mechanism **60** and below the cap **9***a*.
[0107] As illustrated in FIG. **10**, when the cap **9***a* is at the stand-by position, the sheet member **66** is pressed by the cap **9***a*. Here, as described above, since the paper dust adhering to the transport belt **53** is scraped off by the blade **56** (see FIG. **1**), the fallen paper dust is accumulated on the sheet member **66**. In FIG. **10**, a reference sign D schematically indicates paper dust accumulated on the sheet member **66**.
[0108] When the cap **9***a* moves toward the facing position from this state, as illustrated in the change from FIG. **10** to FIG. **11**, the pressing of the sheet member **66** by the cap **9***a* is released, and the −X direction end portion of the sheet member **66** is pushed up by the slider **62**. As a result, as indicated by an arrow a in FIG. **11**, the paper dust D accumulated on the sheet member **66** moves in the −X direction and is accumulated on the first guide **16**.
[0109] In order to obtain a plurality of effects of pushing up the sheet member **66** by the slider **62**, the reciprocating operation of the slider **62** may be performed a plurality of times at the end portion in the −X direction of the moving range of the slider **62**.
[0110] Here, as described with reference to FIGS. **8** and **9**, the wipe unit **14** is provided with the brush **68** that comes into contact with the first guide **16**. Accordingly, when the wipe unit **14** moves in the −Y direction in a state where the paper dust D is accumulated on the first guide **16** (step S**106** in FIG. **12**), the paper dust D accumulated on the first guide **16** is scraped off by the brush **68**.
[0111] In the present embodiment, since the brush **68** is provided in a state of being inclined at the angle θa as illustrated in FIG. **8**, the paper dust D scraped off by the brush **68** moving in the −Y direction moves in the −X direction. An accommodating unit **65** capable of accommodating the paper dust D is provided in the −X direction with respect to the first guide **16**. Therefore, the paper dust D scraped off by the brush **68** can enter the accommodating unit **65**.
[0112] Here, in the present embodiment, the brush **68** is provided in the −Y direction with respect to the wipe unit **14**, that is, provided in the −Y direction with respect to the sandwiching unit **14***a* (refer to FIG. **9**). The home position of the wipe unit **14** is at the end in the +Y direction, and the wipe unit **14** moves from the home position in the −Y direction during the wiping operation (step S**106** in FIG. **12**). Therefore, the paper dust D is scraped off by the brush **68** before the paper dust D is caught by the sandwiching unit **14***a*, and thus it is possible to suppress an operation failure of the wipe unit **14**.
[0113] When the wipe unit **14** is moved to remove the paper dust accumulated on the first guide **16** by the brush **68**, the wiping of the nozzle surface **12***a* by the wiper **15** may not be performed. That is, the wipe unit **14** may be moved only to remove the paper dust accumulated on the first guide **16** by the brush **68**.
[0114] Hereinafter, operational effects of the printer **1** according to the embodiment will be described.
[0115] The printer **1** according to the present embodiment includes the wipe unit **14** that is movable in the −Y direction and the +Y direction. The wipe unit **14** has the brush **68** capable of scraping off the paper powder accumulated below the belt unit **52**.
[0116] Since the brush **68** can scrape off the paper dust accumulated below the belt unit **52**, it is possible to suppress the operation failure of the mechanism arranged below the belt unit **52**.
[0117] In the present embodiment, the brush **68** scrapes off the paper dust accumulated on the first guide **16**, thereby suppressing the operation failure of the wipe unit **14**. However, the present disclosure is not limited thereto, and the brush **68** may scrape off the paper dust accumulated on

other portions, thereby suppressing the operation failure of other operation mechanisms.
[0118] In addition, the printer **1** according to the embodiment includes the accommodating unit **65** which is provided below the portion where the paper dust is scraped off by the brush **68**, and can accommodate the paper dust scraped off by the brush **68**. Accordingly, since the scraped paper dust can be accommodated in the accommodating unit **65**, it is possible to suppress the paper dust from being diffused over a wide range.
[0119] The arrangement position of the accommodating unit **65** is not limited to the position illustrated in the present embodiment, and may be another position where the paper dust scraped off by the brush **68** can be accommodated.
[0120] The printer **1** according to the present embodiment includes the first guide **16** provided below the belt unit **52**. The first guide **16** is configured to guide the sandwiching unit **14***a* provided in the wipe unit **14**. The wipe unit **14** has the wiper **15** capable of wiping the nozzle surface **12***a*.
[0121] The brush **68** is located in the −Y direction with respect to the sandwiching unit **14***a*, and is configured to scrape off the paper dust accumulated on the first guide **16** when the wipe unit **14** moves in the −Y direction. Accordingly, when the wipe unit **14** moves in the −Y direction as described above, it is possible to prevent the wipe unit **14** from being unable to move due to the paper dust.
[0122] Further, in the present embodiment, the brush **68** is provided in a state of being inclined with respect to the Y-axis direction which is the moving direction of the wipe unit **14**. Accordingly, the paper dust can be appropriately removed from the first guide **16**.
[0123] In the present embodiment, the angle θa in FIG. **8** is less than 90°, but is not limited thereto, and may be 90° or greater than 90°.
[0124] Further, in the printer **1** according to the present embodiment, the accommodating unit **65** is provided on the side to which the paper dust scraped off by the brush **68** moves with respect to the first guide **16**. As a result, the paper dust can be more appropriately accommodated in the accommodating unit **65**.
[0125] In addition, in the printer **1** according to the embodiment, the liquid discharge unit is the line head **12** in which the moving direction of the wipe unit **14** is the longitudinal direction. The belt unit **52** includes the first roller **54**, the second roller **55**, and the transport belt **53** which is an endless belt wound between the first roller **54** and the second roller **55**. The transport belt **53** is movable between a support position facing the line head **12** and a retracted position away from the support position. Accordingly, when the transport belt **53** is at the retreat position, it is possible to perform a treatment such as maintenance of the line head **12**.
[0126] In addition, the printer **1** according to the embodiment includes the blade **56** which comes into contact with the transport belt **53** and removes the paper dust attached to the transport belt **53**. Accordingly, it is possible to prevent the paper dust attached to the transport belt **53** from being attached to the nozzles **13** of the line head **12**.
[0127] In addition, in the printer **1** according to the embodiment, an end portion of the wipe unit **14** in the +Y direction is a home position. When the wiper **15** wipes the nozzle surface **12***a*, the wiper **15** moves from the home position in the −Y direction, and the brush **68** scrapes off the paper dust during the movement. Next, the wiper **15** moves in the +Y direction toward the home position, and wipes the nozzle surface **12***a* during the movement. Accordingly, it is possible to prevent the wipe unit **14** from becoming immovable.
[0128] In addition, the printer **1** according to the present embodiment includes the cap **9***a* that can come into contact with the nozzle surface **12***a*, the moving mechanism **60** that moves the cap **9***a* between the facing position that faces the nozzle surface **12***a* and the stand-by position that is horizontally further away from the first guide **16** more than the facing position, and the sheet member **66** that can be deformed following the movement of the cap **9***a*. The sheet member **66** covers the ball screw **64** which is at least a part of the moving mechanism **60** when the cap **9***a* is located at the stand-by position. Accordingly, it is possible to suppress an operation failure of the

cap **9***a*.
[0129] Although the seat member **66** covers the ball screw **64** in the present embodiment, it is needless to say that the seat member **66** may cover other portions.
[0130] Further, in the present embodiment, the sheet member **66** has the linear portion **66***a* extending along the X-axis direction and the widened portion **66***b* having a shape in which the Y-axis direction is widened toward the −X direction. Since the length of the linear portion **66***a* is limited to a length necessary to cover the ball screw **64**, it is possible to prevent the sheet member **66** from interfering with other portions due to the deformation of the sheet member **66** and causing a problem. In addition, since the widened portion **66***b* has a shape that widens toward the blade **56** in the X-axis direction, it is possible to more reliably catch paper dust that falls downward from the blade **56**.
[0131] The sheet member **66** is preferably a black sheet, and the upper surface of the sheet member **66** is preferably subjected to reflection suppression treatment. Accordingly, it is possible to prevent the reflected light from causing erroneous detection of the sensors.
[0132] In the printer **1** according to the present embodiment, the moving mechanism **60** includes the slider **62** which is a push-up unit capable of pushing up at least a part of the sheet member **66** from below the sheet member **66**. When the moving mechanism **60** moves the cap **9***a* toward the facing position, the slider **62** moves below the end portion of the sheet member **66** close to the first guide **16** and pushes up the end portion. Accordingly, the paper dust accumulated on the sheet member **66** can be dropped.
[0133] The push-up unit capable of pushing up at least a part of the sheet member **66** from below the sheet member **66** is not limited to the slider **62**, and may be another portion. For example, the push-up unit may be a raising/lowering member that protrudes upward from below the sheet member **66** when the cap **9***a* moves toward the facing position and retracts downward when the cap **9***a* moves to the stand-by position.
[0134] Further, the push-up unit capable of pushing up at least a part of the sheet member **66** from below the sheet member **66** may be provided so as to be independently operable under the control of the control portion **80** without being interlocked with the movement of the cap **9***a*. For example, the raising/lowering member can be raised and lowered by an actuator such as a solenoid or a motor.
[0135] In addition, in the printer **1** according to the embodiment, the accommodating unit **65** is configured to be detachable. Accordingly, it is possible to easily discard the paper dust accommodated in the accommodating unit **65**. For example, the accommodating unit **65** may be detachably attached to the support frame **57** by a snap-fit structure.
[0136] The present disclosure is not limited to the embodiments and modifications described above, and it is obvious that various modifications are possible within the scope of the disclosure described in the claims, and these are also included in the scope of the present disclosure.

Claims

1. A liquid discharge device comprising: a support unit configured to support a medium; a liquid discharge unit configured to discharge liquid in a discharge direction from a nozzle provided at a nozzle surface onto the medium supported by the support unit; and a moving unit configured to move in a first direction that is a direction intersecting the discharge direction and in a second direction that is a direction opposite to the first direction, wherein the moving unit includes a scraping member configured to scrape off paper dust accumulated below the support unit.
2. The liquid discharge device according to claim 1, further comprising an accommodating unit provided below a position where the paper dust is scraped off by the scraping member, the accommodating unit being configured to accommodate the paper dust scraped off by the scraping member.

3. The liquid discharge device according to claim 1, further comprising a guide unit provided below the support unit, wherein the guide unit is configured to guide a guided unit provided in the moving unit, the moving unit includes a wiping unit configured to wipe the nozzle surface, and the scraping member is located in the first direction with respect to the guided unit, the scraping member being configured to scrape off the paper dust accumulated on the guide unit when the moving unit moves in the first direction.

4. The liquid discharge device according to claim 3, wherein the scraping member is provided in a state of being inclined with respect to a moving direction of the moving unit.

5. The liquid discharge device according to claim 4, further comprising an accommodating unit provided below a position of the guide unit where the paper dust is scraped off by the scraping member, the accommodating unit being configured to accommodate the scraped paper dust, wherein the accommodating unit is provided on a side to which the paper dust scraped off by the scraping member moves with respect to the guide unit.

6. The liquid discharge device according to claim 1, wherein the liquid discharge unit is a line head having a moving direction of the moving unit as a longitudinal direction, the support unit includes a drive roller, a driven roller, and a transport belt which is an endless belt wound between the drive roller and the driven roller, and the transport belt is configured to move between a support position facing the liquid discharge unit and a retreat position separated from the support position.

7. The liquid discharge device according to claim 6, further comprising a paper dust removing unit that comes into contact with the transport belt, the paper dust removing unit being configured to remove paper dust adhering to the transport belt.

8. The liquid discharge device according to claim 3, wherein the liquid discharge unit is a line head having a moving direction of the moving unit as a longitudinal direction, the support unit includes a drive roller, a driven roller, and a transport belt which is an endless belt wound between the drive roller and the driven roller, and the transport belt is configured to move between a support position facing the liquid discharge unit and a retreat position separated from the support position.

9. The liquid discharge device according to claim 8, wherein when an end portion in the second direction is set as a home position and wiping of the nozzle surface is performed by the wiping unit, the moving unit is configured to: move from the home position in the first direction and scrape off the paper dust by the scraping member during the movement; and move in the second direction toward the home position and wipe the nozzle surface by the wiping unit during the movement.

10. The liquid discharge device according to claim 8, further comprising a paper dust removing unit that comes into contact with the transport belt, the paper dust removing unit being configured to remove paper dust adhering to the transport belt.

11. The liquid discharge device according to claim 8, further comprising a cap configured to contact the nozzle surface; a moving mechanism configured to move the cap between a facing position at which the cap faces the nozzle surface and a stand-by position that is further away from the guide unit in a horizontal direction than the facing position is; and a sheet member configured to deform in accordance with movement of the cap, wherein the sheet member is configured to cover at least a part of the moving mechanism when the cap is at the stand-by position.

12. The liquid discharge device according to claim 11, further comprising a push-up unit configured to push up at least a part of the sheet member from below the sheet member, wherein the push-up unit is configured to push up an end portion of the sheet member close to the guide unit as the cap moves toward the facing position.

13. The liquid discharge device according to claim 11, wherein the moving mechanism includes a push-up unit configured to push up at least a part of the sheet member from below the sheet member, and when the moving mechanism moves the cap toward the facing position, the push-up unit moves below an end portion of the sheet member close to the guide unit and pushes up the end portion.

14. The liquid discharge device according to claim 2, wherein the accommodating unit is configured to be detachable.