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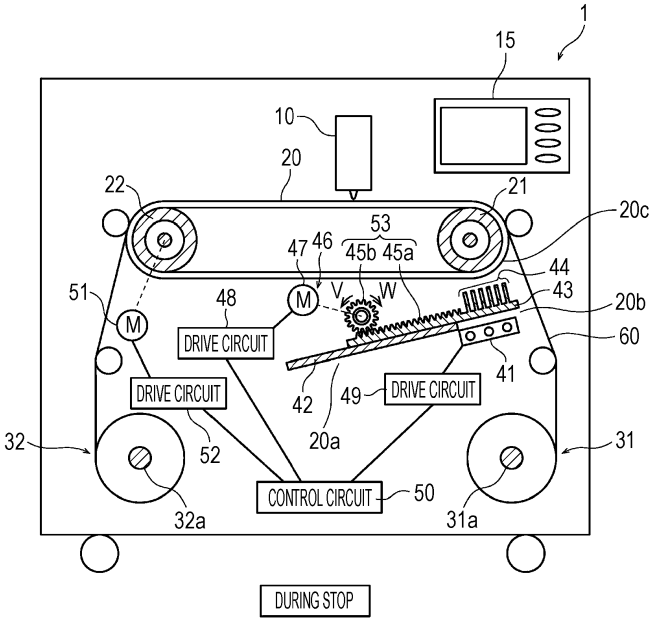
(54) HEATING CONTROL APPARATUS AND PRINTING APPARATUS

(57) Provided is a heating control apparatus capable of reducing a risk of damaging a conveyance member that conveys a planar conveyed object due to residual heat of a heat source that heats the conveyance member in a case printing ends and driving of the heat source is stopped.

The heating control apparatus that controls heating of a belt (20) that conveys a fabric (60) in a state in the fabric (60) is in close contact with a conveyance surface including an adhesive layer includes: a heater (41) disposed to face the belt (20); a shielding plate (43) provided to be movable forward and backward between a shielding position at which radiation of heat from the heater (41) to the belt (20) is shielded and a retraction position retracted from the shielding position; and a driving unit (46), a drive circuit (48), and a control circuit (50) that perform control to advance the shielding plate (43) to the shielding position in a case where the conveyance of the belt (20) is stopped.

FIG. 3



EP 4 070 962 A1

Description

Background

Technological Field

[0001] The present disclosure relates to a technique for attaching a planar conveyed object such as cloth or paper to a conveyance member and conveying the planar conveyed object, and more particularly to a technique for heating such a conveyance member.

Description of the Related art

[0002] In recent years, in textile printing on fabrics such as cotton and silk, an inkjet type printing apparatus that performs printing by ejecting ink toward a surface of the fabric has been used (JP 2018-192733 A).

[0003] According to JP 2018-192733 A, the printing apparatus includes a printing unit that performs printing on a fabric, a conveyance belt that supports the fabric, a belt driving roller that conveys the fabric in a conveyance direction by causing the conveyance belt to circulate, and a heating pressing unit that includes a heater and is provided to be movable along the conveyance direction while heating and pressing the fabric against the conveyance belt. The fabric is attached to the conveyance belt via an adhesive applied to the conveyance belt, and the adhesive is heated to increase its adhesion. When the printing ends, the driving of the heater is stopped, and the heating pressing unit is separated from the fabric by a lifting and lowering device.

[0004] According to JP 2018-192733 A, when the printing ends, the driving of the heater is stopped and the heating pressing unit is separated from the fabric, but since the temperature of the heater slowly decreases and the conveyance belt has been stopped, the same location of the conveyance belt is heated by residual heat of the heater. As a result, the conveyance belt is locally thermally damaged.

[0005] Note that in JP 2018-192733 A, the fabric is used as a conveyed object, but the above problem exists also in the case of a planar conveyed object such as paper other than the fabric.

Summary

[0006] An object of the present disclosure is to solve this problem and provide a heating control apparatus and a printing apparatus capable of reducing a risk of damaging a conveyance member due to residual heat of a heat source that heats the conveyance member in a case where conveyance of a planar conveyed object is stopped and driving of the heat source is stopped.

[0007] To achieve the abovementioned object, according to an aspect of the present invention, there is provided a heating control apparatus that controls heating of a conveyance member configured to convey a planar conveyed object in a state in which the planar conveyed object is in close contact with a conveyance surface including an adhesive layer, and the heating control apparatus reflecting one aspect of the present invention comprises: a heat source disposed to face the conveyance member; a shielding member provided to be movable forward and backward between a shielding position at which radiation of heat from the heat source to the conveyance member is shielded and a position retracted from the shielding position; and a control means configured to perform control to advance the shielding member to the shielding position in a case where conveyance of the conveyance member is stopped.

Brief Description of the Drawings

[0008] The advantages and features provided by one or more embodiments of the invention will become more fully understood from the detailed description given hereinbelow and the appended drawings which are given by way of illustration only, and thus are not intended as a definition of the limits of the present invention:

Fig. 1A is a side view illustrating a schematic configuration of a printing apparatus as one embodiment of the present disclosure;
Fig. 1B is a top view of a belt and a fabric provided in the printing apparatus as viewed from above;
Fig. 2 is a block diagram illustrating a configuration of a control circuit provided in the printing apparatus;
Fig. 3 is a side view illustrating a schematic configuration of the printing apparatus in a state in which the belt is stopped;
Fig. 4 is a flowchart illustrating the operation of the printing apparatus;
Fig. 5 is a side view illustrating a schematic configuration of a printing apparatus as a modification;
Fig. 6A is a side view illustrating a schematic configuration of a printing apparatus as a modification, and illustrates a state in which shielding plates have rotated to a shielding position between the belt and a heater and has stopped;
Fig. 6B illustrates a state in which the shielding plates make a half-turn from the shielding position to be positioned at a retraction position;
Fig. 6C is a view of the shielding plates in a shielding state as viewed from above;
Fig. 6D is a cross-sectional view taken along line D-D of Fig. 6C; and
Fig. 6E is a view of the shielding plates in the retraction position as viewed from above.

Detailed Description of Embodiments

[0009] Hereinafter, one or more embodiments of the present invention will be described with reference to the drawings. However, the scope of the invention is not limited to the disclosed embodiments.

1. Embodiment

[0010] A printing apparatus 1 as one embodiment of the present disclosure will be described below.

1.1 Printing Apparatus 1

[0011] As illustrated in Fig. 1A, the printing apparatus 1 is an ink jet printer that ejects ink in the form of droplets from a print head 10 to form (print) an image on a fabric 60 as a planar conveyed object. The fabric 60 includes cotton, silk, wool, chemical fiber, blended yarn, or the like.

[0012] The printing apparatus 1 is connected to an information processing device such as a personal computer (not illustrated) via a network. The printing apparatus 1 receives a print job including a print instruction, the number of times of repetition of printing, image data to be printed, and the like from the information processing device. The printing apparatus 1 generates print image data from the image data included in the received print job and forms an image on the fabric 60 with the ink ejected from the print head 10 on the basis of the generated print image data (Fig. 1B).

[0013] An endless belt 20 (conveyance member) stretched by a driving roller 22 and a driven roller 21 is provided in a housing of the printing apparatus 1. The driving roller 22 is rotated in a Y direction by a motor 51, and the motor 51 is rotationally controlled by a drive circuit 52. The belt 20 circulates in an X direction according to the rotation of the driving roller 22. The fabric 60 is conveyed by the circulating belt 20.

[0014] An adhesive is applied or attached to the outer peripheral surface (conveyance surface) of the belt 20 to form an adhesive layer. As the adhesive, a heat-sensitive base adhesive or the like that exhibits adhesion by heating can be used. Examples of commercially available heat-sensitive base adhesives include textile printing base adhesive HA series (heat-sensitive base adhesive) and textile printing base adhesive SI series (pressure-sensitive base adhesive), and the like manufactured by Yokohama Polymer Research Institute Co., Ltd. Additionally, a base adhesive described in each of JP 2006-176267 A, JP 2006-199498 A, JP 2006-264805 A, JP 2006-264806 A and the like can be used.

[0015] Since the outer peripheral surface of the belt 20 has adhesion, the fabric 60 can be conveyed while being in close contact with the outer peripheral surface of the belt 20, the fabric 60 does not slide on the belt 20, and contraction and extension of the fabric 60 can be substantially reduced.

[0016] A heater 41 (heat source) that heats the belt 20 (and the adhesive applied to the outer peripheral surface of the belt 20) is provided below the driven roller 21 across the belt 20 while being spaced apart from the outer peripheral surface (adhesive layer) of the belt 20 at a predetermined interval in order to exhibit the adhesion of the outer peripheral surface of the belt 20. Here, a distance between the belt 20 and the heater 41 can be, for example, 5 millimeters (mm) to 10 mm

[0017] The heater 41 can include, for example, an electric heating wire including an alloy (nichrome) mainly containing nickel and chromium, an alloy of iron, chromium, and aluminum, or the like. Alternatively, a halogen lamp can also be used. Temperature at which the adhesive is heated by the heater 41 is in a range of 30°C to 40°C. The length of the heater 41 in the width direction of the belt 20 (direction orthogonal to the circumferential direction of the belt 20) is substantially the same as the length of the belt 20 in the width direction. The heater 41 is turned on or off by turning on or off the supply of power from a drive circuit 49.

[0018] In a space 20a below the belt 20 and closer to the center of the housing of the printing apparatus 1 than the heater 41, a shielding plate 43 (shielding member), a guide plate 42, and a driving unit 46 are provided. The shielding plate 43 is plate-like and reciprocates between a retraction position (Fig. 1A) retracted from a space 20b between the belt 20 and the heater 41 and a shielding position (Fig. 3) entering the space 20b. The guide plate 42 supports the shielding plate 43 in a slidable (forward and backward movable) manner between the shielding position and the retraction position. The driving unit 46 drives the shielding plate 43. The shielding plate 43 includes, for example, a heat insulating material such as iron, aluminum, or a resin member, and has a thickness of, for example, 1 to 2 mm The length of the shielding plate 43 in the width direction is longer than the length of the heater 41 in the width direction.

[0019] A plurality of fins 44 (heat dissipation members) is provided upright on a surface of the shielding plate 43 that faces the belt 20 and is on a side close to the driven roller 21. The plurality of fins 44 radiates heat received from the heater 41.

[0020] The sliding movement of the shielding plate 43 is performed by a rack-and-pinion mechanism 53 including a rack 45a and a pinion 45b. The pinion 45b is connected to a motor 47, rotates by the rotation of the motor 47, and slides on the shielding plate 43 via the rack 45a.

[0021] The pinion 45b rotates in a V direction, whereby the shielding plate 43 moves to a shielding position between the heater 41 and a belt portion 20c wound around the driven roller 21 in the belt 20. Meanwhile, the pinion 45b rotates in a W direction opposite to the V direction, whereby the shielding plate 43 moves to a retraction position away from between the heater 41 and the belt portion 20c.

[0022] A fabric supplying unit 31 and a fabric collecting unit 32 are provided below the belt 20. The fabric supplying unit 31 pays out the strip-shaped fabric 60, and the fabric collecting unit 32 winds the fabric 60.

[0023] The fabric collecting unit 32 is driven in a direction of winding the fabric 60, and circulation of the belt 20 allows the fabric 60 to be paid out from the fabric supplying unit 31 and to the fabric 60 to be wound around the fabric collecting unit 32.

[0024] The print head 10 that ejects the ink downward

is provided above the belt 20.

[0025] The Ink ejected from the print head 10 forms an image on the fabric 60 during conveyance of the fabric 60 by the belt 20. Furthermore, the fabric 60 on which the image is formed is accommodated in the fabric collecting unit 32.

[0026] An operation panel 15 that receives a user's operation and displays a message to the user is provided above the housing of the printing apparatus 1.

[0027] In the housing of the printing apparatus 1, a control circuit 50 that controls drive circuits 48, 49, 52, and the like is provided. The control circuit 50 will be described next.

[0028] Here, a part of the heater 41, the shielding plate 43, the driving unit 46, the drive circuit 48, and the control circuit 50 constitutes a heating control apparatus. Additionally, a part of the driving unit 46, the drive circuit 48, and the control circuit 50 constitutes a control means.

1.2 Control Circuit 50

[0029] As illustrated in Fig. 2, the control circuit 50 includes a central processing unit (CPU) 71, a read only memory (ROM) 72, a random access memory (RAM) 73, a printer control circuit 74, a storage circuit 75, an input/output circuit 76, a network communication circuit 77, an image memory 78, an image processing circuit 79, and the like.

[0030] The RAM 73 temporarily stores various control variables, setting values set by the operation panel 15, and the like and provides a work area when the CPU 71 executes a program.

[0031] The ROM 72 stores a control program and the like for causing the printing apparatus 1 to execute a print job.

[0032] The CPU 71 operates according to the control program stored in the ROM 72.

[0033] The CPU 71, the ROM 72, and the RAM 73 constitute a main control unit 70.

[0034] The network communication circuit 77 receives a print job from an information processing device, for example, a personal computer, via the network. The print job includes a print instruction, the number of times of repetition of printing, image data, and the like. The network communication circuit 77 writes the received print job as a print job in the storage circuit 75.

[0035] The storage circuit 75 includes a nonvolatile semiconductor memory. Note that the storage circuit 75 may include a hard disk. The storage circuit 75 temporarily stores, for example, the print job and the like.

[0036] For example, the image processing circuit 79 performs various types of data processing on the image data of each color component of red (R), green (G), and blue (B) included in the print job, and generates print image data of each reproduced color of yellow (Y), magenta (M), cyan (C), and black (K).

[0037] The image memory 78 includes a nonvolatile semiconductor memory. The image memory 78 temporarily stores the print image data and the like.

[0038] The CPU 71 operates according to the control program, whereby the main control unit 70 controls the printer control circuit 74, the storage circuit 75, the input/output circuit 76, the network communication circuit 77, the image memory 78, the image processing circuit 79, and the like.

[0039] In a case where the print job is received by the network communication circuit 77, the main control unit 70 causes the printer control circuit 74 to execute printing according to the received print job.

[0040] The input/output circuit 76 relays transmission and reception of information between the operation panel 15 and the main control unit 70.

1.3 Operation of Printing Apparatus 1

[0041] The operation of the printing apparatus 1 will be described with reference to a flowchart illustrated in Fig. 4.

[0042] The network communication circuit 77 receives the print job from the personal computer via the network. The network communication circuit 77 writes the received print job in the storage circuit 75 (step S10).

[0043] The image processing circuit 79 generates print image data from the image data included in the print job (step S11).

[0044] The main control unit 70 outputs a print start instruction (signal instructing start of conveyance of the planar conveyed object) to the printer control circuit 74 (step S12).

[0045] When receiving the print start instruction, the printer control circuit 74 controls the drive circuit 52 so that the drive circuit 52 starts the traveling of the belt 20 (step S21). Next, the printer control circuit 74 controls the drive circuit 49 so that the drive circuit 49 turns on the heater 41 (step S22). Next, the printer control circuit 74 controls the drive circuit 48 so that the drive circuit 48 moves the shielding plate 43 to the retraction position (step S23).

[0046] The main control unit 70 repeats control to the printer control circuit 74 (step S14) so that the printer control circuit 74 outputs the print image data (steps S13 to S15). The printer control circuit 74 controls the print head 10 so that the print head 10 ejects the ink according to the print image data. The print head 10 ejects the ink according to the print image data (step S25). Thus, an image based on the print image data is printed on the fabric 60.

[0047] When the repetition of steps S13 to S15 ends, the main control unit 70 outputs a print end instruction (signal instructing stop of conveyance of the planar conveyed object) to the printer control circuit 74 (step S16).

[0048] When receiving the print end instruction, the printer control circuit 74 controls the drive circuit 52 so that the drive circuit 52 stops the traveling of the belt 20 (step S31). Next, the printer control circuit 74 controls the drive circuit 49 so that the drive circuit 49 turns off

the heater 41 (step S32). Next, the printer control circuit 74 controls the drive circuit 48 so that the drive circuit 48 moves the shielding plate 43 to the shielding position (step S33).

[0049] Thus, a series of processing in the printing apparatus 1 ends.

[0050] Note that the order of steps S31 and S32 may be reversed, or steps S31 and S32 may be executed simultaneously. Alternatively, steps S32, S33, and S31 may be executed in this order.

1.4 Summary

[0051] As described above, in a case where the traveling of the belt 20 is stopped in the printing apparatus 1, since the shielding plate 43 moves to the shielding position that shields the radiation of heat from the heat source to the conveyance member, heat generated from the heater 41 is shielded by the shielding plate 43 and is prevented from reaching the outer peripheral surface of the belt 20. As a result, a risk of damaging the belt 20 can be reduced.

2 Other modifications

[0052] Note that, although an aspect of the present disclosure has been described on the basis of the embodiment described above, it is a matter of course that the aspect of the present disclosure is not limited to the embodiment described above. The aspect of the present disclosure may be configured as follows.

(1) The printing apparatus 1 described above ejects the ink onto the surface of the long strip-shaped fabric 60 to form an image. However, the aspect of the present disclosure is not limited to this.

As illustrated in Fig. 5, a printing apparatus 1a as a modification includes a sheet cassette 90, a pickup roller 91, a conveyance path 92, a peeling tab 93, and a conveyance path 94 in place of the fabric supplying unit 31 and the fabric collecting unit 32 of the printing apparatus 1. The sheet cassette 90 accommodates a plurality of sheets S. The pickup roller 91 pays out the sheet S from the sheet cassette 90 to the conveyance path 92. The conveyance path 92 conveys the sheet S toward a belt 20. The peeling tab 93 peels the sheet S on which an image is formed from the belt 20. The conveyance path 94 conveys the sheet S on which the image is formed toward a discharge tray 95.

Also in the printing apparatus 1a, similarly to the printing apparatus 1, in a case where the traveling of the belt 20 is stopped, since a shielding plate 43 moves to a shielding position, heat generated from a heater 41 is shielded by the shielding plate 43 and is prevented from reaching the outer peripheral surface of the belt 20. As a result, a risk of damaging the belt 20 can be reduced.

(2) The printing apparatus 1 uses the belt 20 as the conveyance member that conveys the fabric 60. However, a conveyance roller may be used instead of the belt 20. In this case, an adhesive is applied or attached to the outer peripheral surface (conveyance surface) of the conveyance roller, and a heater (heat source) that heats an adhesive layer is provided while facing the conveyance roller.

(3) The printing apparatuses 1 and 1a described above perform printing by an inkjet method, but printing may be performed, for example, by screen textile printing using a plate or the like.

(4) In the printing apparatuses 1 and 1a described above, the plurality of fins 44 is provided upright on the surface of the shielding plate 43 facing the belt 20, and the shielding plate 43 and the plurality of fins 44 are configured as an integrally molded product, but the aspect of the present disclosure is not limited to this conflagration.

A heat dissipation member that is a member separate from the shielding plate 43 may be attached to a surface of the shielding plate 43 facing the belt 20.

(5) The printing apparatuses 1 and 1a described above adopt a configuration in which the shielding plate 43 is slid by the rack-and-pinion mechanism 53 to switch the shielding position to the retraction position, but as illustrated in Figs. 6A to 6E, a configuration including a mechanism 85 that rotates a shielding plate can be adopted.

[0053] Fig. 6A illustrates a state in which shielding plates 81a, 81b, ···, and 81g have rotated to a shielding position between a belt 20 and a heater 41 and have stopped. Fig. 6B illustrates a state in which the shielding plates 81a, 81b, ···, and 81g make a half-turn from the shielding position to be positioned at a retraction position. Fig. 6C is a view of the shielding plates 81a, 81b, ···, and 81g in a shielding state as viewed from above. Fig. 6D is a cross-sectional view taken along line D-D of Fig. 6C. Fig. 6E is a view of the shielding plates 81a, 81b, ···, and 81g in the retraction position as viewed from above.

[0054] In the figures, reference sign 47 denotes a motor that rotationally drives the shielding plates 81a, 81b, ···, and 81g in one of a rotation direction A and a rotation direction B via rotation shafts 82a, 82b, ···, and 82g. A motor 47 is rotationally controlled by a drive circuit 48 as follows.

[0055] When receiving a print start instruction from a main control unit 70, a printer control circuit 74 controls a drive circuit 52 so that the drive circuit 52 starts the traveling of the belt 20 and controls a drive circuit 49 so that the drive circuit 49 turns on the heater 41. Next, the printer control circuit 74 controls the drive circuit 48 so that the drive circuit 48 rotationally drives the shielding plates 81a, 81b, ···, and 81g in the rotation direction A to move the shielding plates 81a, 81b, ···, and 81g to the retraction position.

[0056] Meanwhile, when receiving a print end instruc-

tion from the main control unit 70, the printer control circuit 74 controls the drive circuit 52 so that the drive circuit 52 stops the traveling of the belt 20 and controls the drive circuit 49 so that the drive circuit 49 turns off the heater 41. Next, the printer control circuit 74 controls the drive circuit 48 so that the drive circuit 48 rotationally drives the shielding plates 81a, 81b, ···, and 81g in the rotation direction B to move the shielding plates 81a, 81b, ···, and 81g to the shielding position.

[0057] (6) In the embodiment and modifications described above, the heater 41 is disposed immediately below the belt 20, but the aspect of the present disclosure is not limited to this. For example, the heater 41 may be disposed around the belt 20 at a position suitable for heating the belt 20.

[0058] (7) In each of the embodiment and modifications described above, a printing unit is provided and performs printing on a fabric or the like, but the printing unit is not an essential configuration in the aspect of the present disclosure. The aspect of the present disclosure can also be implemented with a configuration in which a movable shielding member is provided while a configuration in which a planar conveyed object such as cloth is conveyed while being attached to a conveyance member such as a belt and a heating unit that heats the conveyance member to increase the viscosity of the adhesive layer a movable shielding member are included. For example, the aspect of the present disclosure can be used in a cutting device that cuts a long strip-shaped fabric in a conveyance direction.

[0059] (8) The embodiment and modifications described above may be used in combination.

[0060] The heating control apparatus of the present disclosure is useful as a technique that has an effect of reducing a risk of damaging the conveyance member due to residual heat of the heat source and heats the conveyance member that conveys the planar conveyed object.

[0061] Although embodiments of the present invention have been described and illustrated in detail, the disclosed embodiments are made for purposes of illustration and example only and not limitation. The scope of the present invention should be interpreted by terms of the appended claims.

Claims

1. A heating control apparatus that controls heating of a conveyance member configured to convey a planar conveyed object in a state in which the planar conveyed object is in close contact with a conveyance surface including an adhesive layer, the heating control apparatus comprising:

   a heat source disposed to face the conveyance member;
   a shielding member provided to be movable forward and backward between a shielding position at which radiation of heat from the heat source to the conveyance member is shielded and a position retracted from the shielding position; and
   a control means configured to perform control to advance the shielding member to the shielding position in a case where conveyance of the conveyance member is stopped.

2. The heating control apparatus according to claim 1, wherein
   the control means is configured to receive a signal instructing either start or stop of conveyance of the planar conveyed object and configured to perform control to advance the shielding member to the shielding position in a case where the control means receives the signal instructing stop of conveyance.

3. The heating control apparatus according to claim 2, wherein
   the control means is configured to control the heat source so that the heat source stops generation of heat in a case where the control means receives the signal instructing stop of conveyance.

4. The heating control apparatus according to any one of claims 1 to 3, wherein
   the adhesive layer includes a heat-sensitive base adhesive.

5. The heating control apparatus according to any one of claims 1 to 4, wherein
   the heat source is disposed at a position separated from the adhesive layer of the conveyance member.

6. The heating control apparatus according to any one of claims 1 to 5, wherein
   the shielding member includes a heat insulating material.

7. The heating control apparatus according to any one of claims 1 to 6, wherein
   temperature at which the adhesive layer is heated by the heat source is in a range of 30°C to 40°C.

8. The heating control apparatus according to any one of claims 1 to 7, wherein
   the shielding member includes a heat dissipation member configured to dissipate heat received from the heat source.

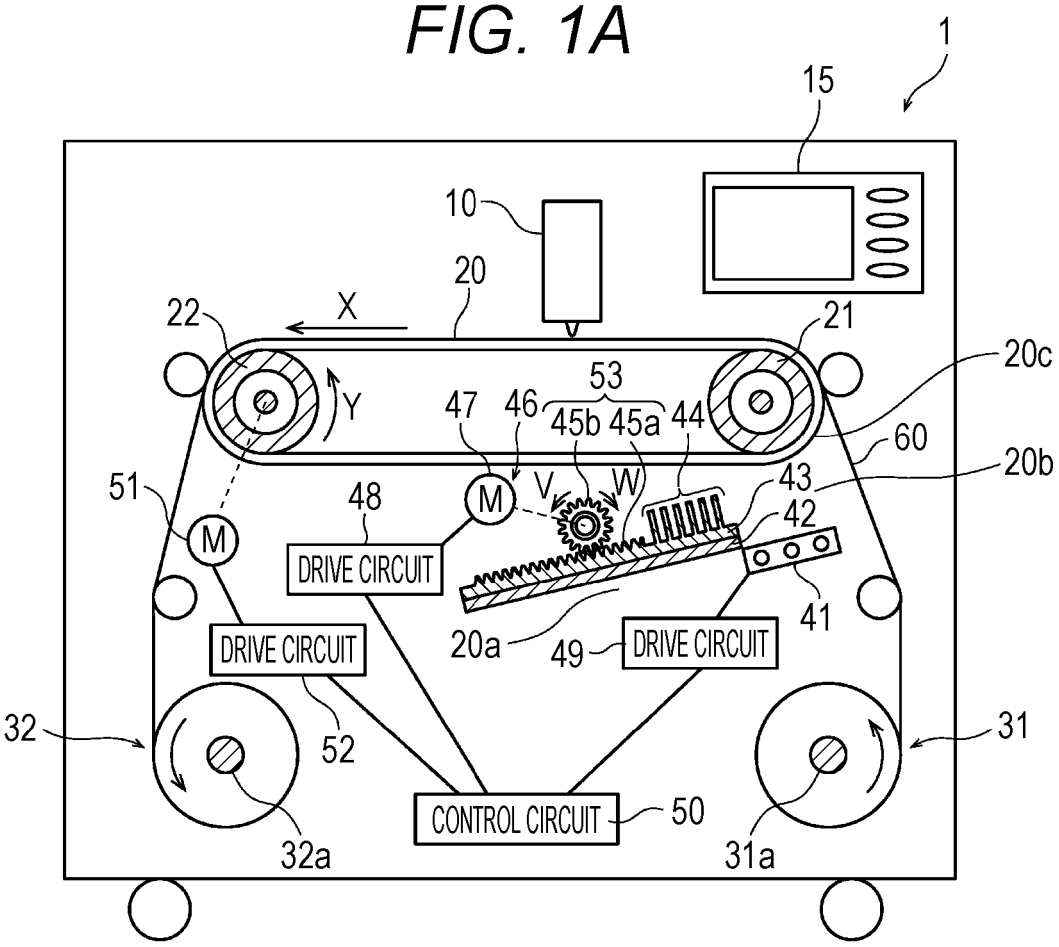
9. The heating control apparatus according to any one of claims 1 to 7, wherein
   a heat dissipation member configured to dissipate heat received from the heat source is attached to the shielding member.

10. The heating control apparatus according to claim 8 or 9, wherein
the heat dissipation member is provided on a side of the shielding member facing the conveyance member.

11. A printing apparatus (1, 1a, 1b) that performs printing on a planar conveyed object, the printing apparatus (1, 1a, 1b) comprising:

a conveyance member including an adhesive layer on a conveyance surface, the conveyance member being configured to convey the planar conveyed object; and
the heating control apparatus according to any one of claims 1 to 10.

FIG. 1A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Y
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46
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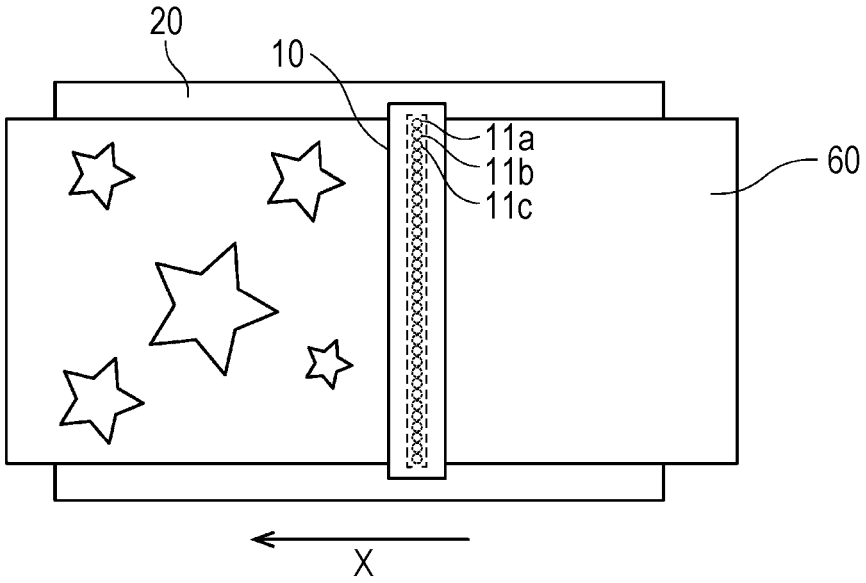
M
V
W
43
42
M
DRIVE CIRCUIT
41
20a
49
DRIVE CIRCUIT
DRIVE CIRCUIT
32
52
31
CONTROL CIRCUIT
50
32a
31a

FIG. 1B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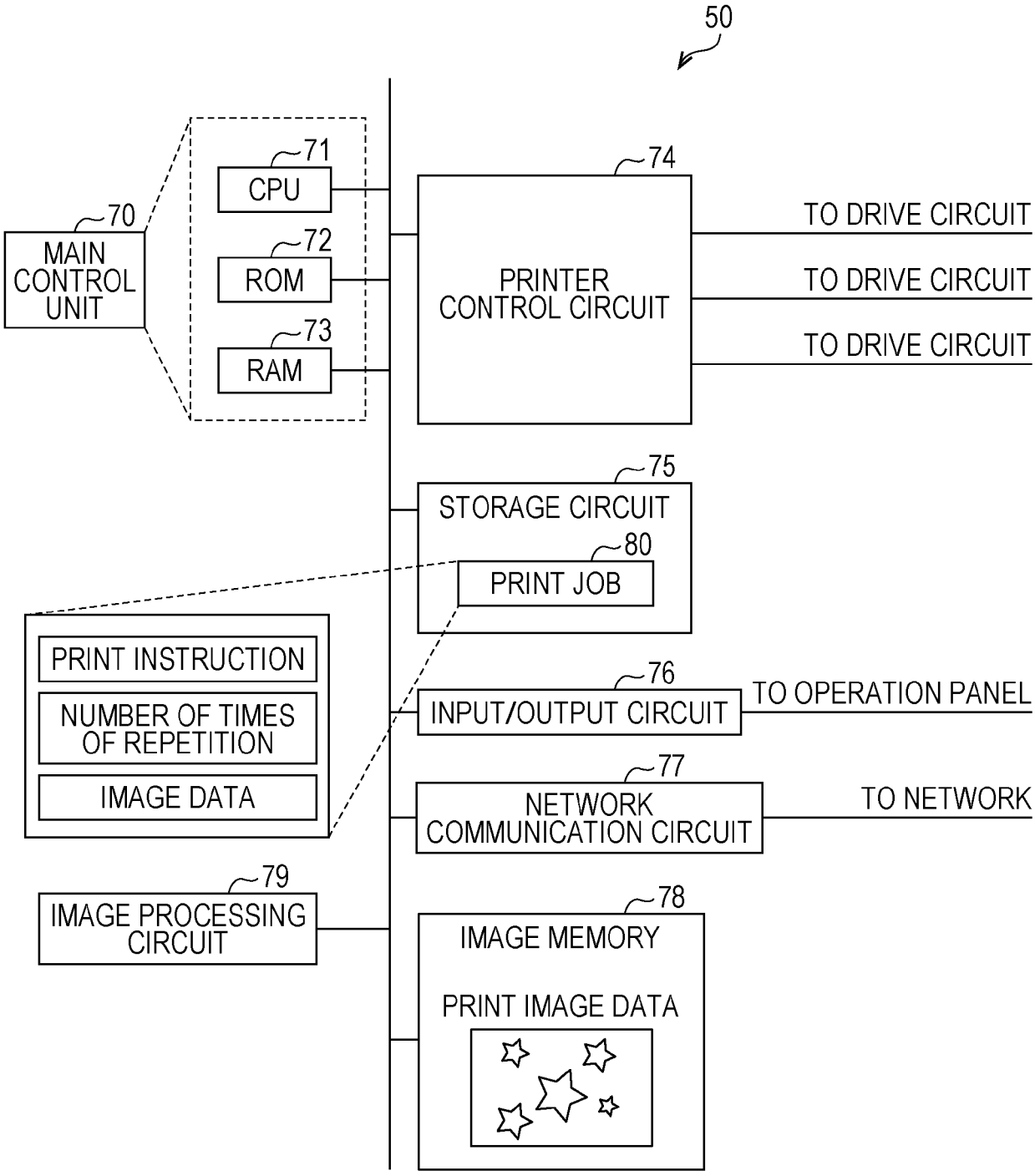
11b
11c
60
X

FIG. 2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MAIN CONTROL UNIT
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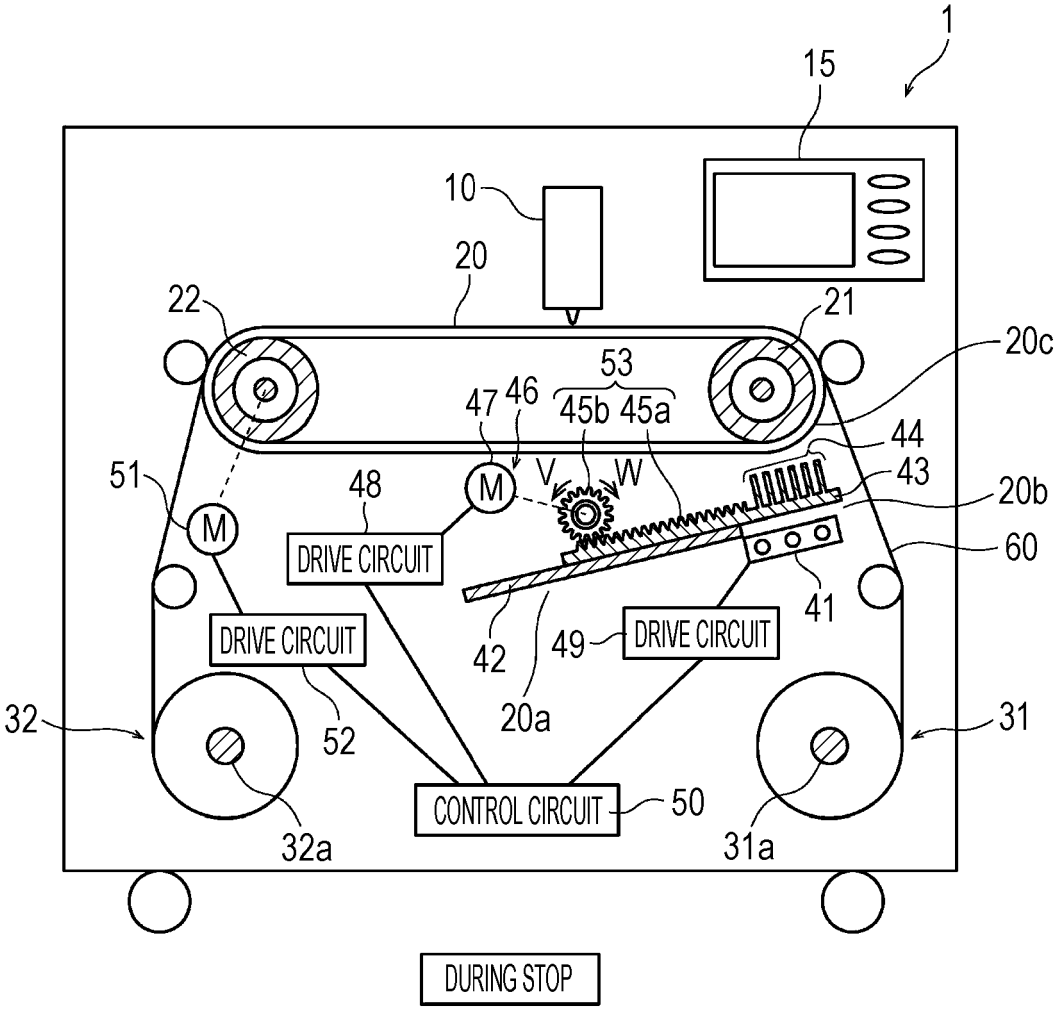
CPU
72
ROM
73
RAM
74
PRINTER CONTROL CIRCUIT
TO DRIVE CIRCUIT
TO DRIVE CIRCUIT
TO DRIVE CIRCUIT
75
STORAGE CIRCUIT
80
PRINT JOB
PRINT INSTRUCTION
NUMBER OF TIMES OF REPETITION
IMAGE DATA
76
INPUT/OUTPUT CIRCUIT
TO OPERATION PANEL
77
NETWORK COMMUNICATION CIRCUIT
TO NETWORK
79
IMAGE PROCESSING CIRCUIT
78
IMAGE MEMORY
PRINT IMAGE DATA

FIG. 3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M
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43
20b
M
DRIVE CIRCUIT
60
41
DRIVE CIRCUIT
42
49
DRIVE CIRCUIT
32
52
20a
31
CONTROL CIRCUIT
50
32a
31a
DURING STOP

FIG. 4

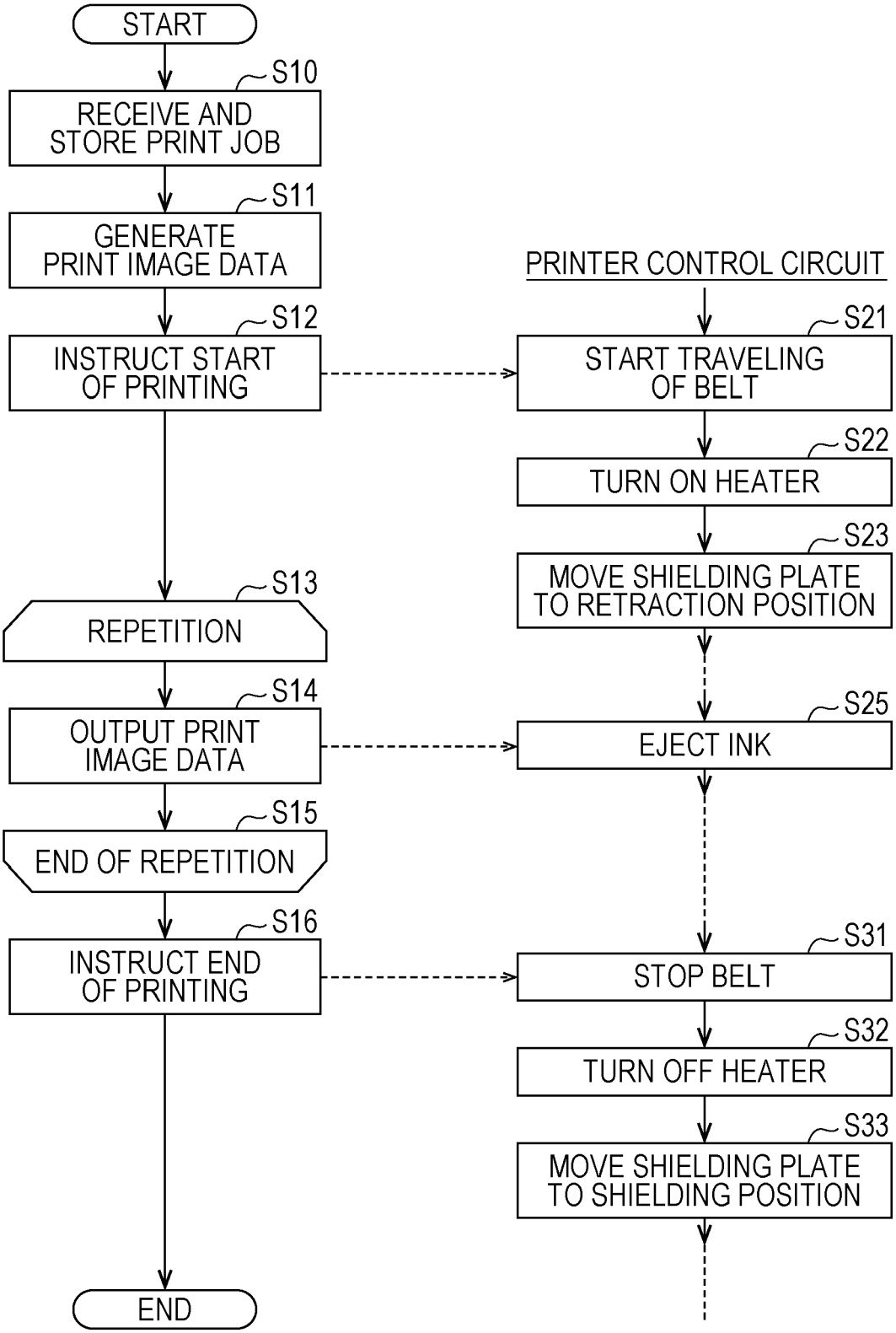

START
S10
RECEIVE AND STORE PRINT JOB
S11
GENERATE PRINT IMAGE DATA
S12
INSTRUCT START OF PRINTING
S13
REPETITION
S14
OUTPUT PRINT IMAGE DATA
S15
END OF REPETITION
S16
INSTRUCT END OF PRINTING
END
PRINTER CONTROL CIRCUIT
S21
START TRAVELING OF BELT
S22
TURN ON HEATER
S23
MOVE SHIELDING PLATE TO RETRACTION POSITION
S25
EJECT INK
S31
STOP BELT
S32
TURN OFF HEATER
S33
MOVE SHIELDING PLATE TO SHIELDING POSITION

FIG. 5

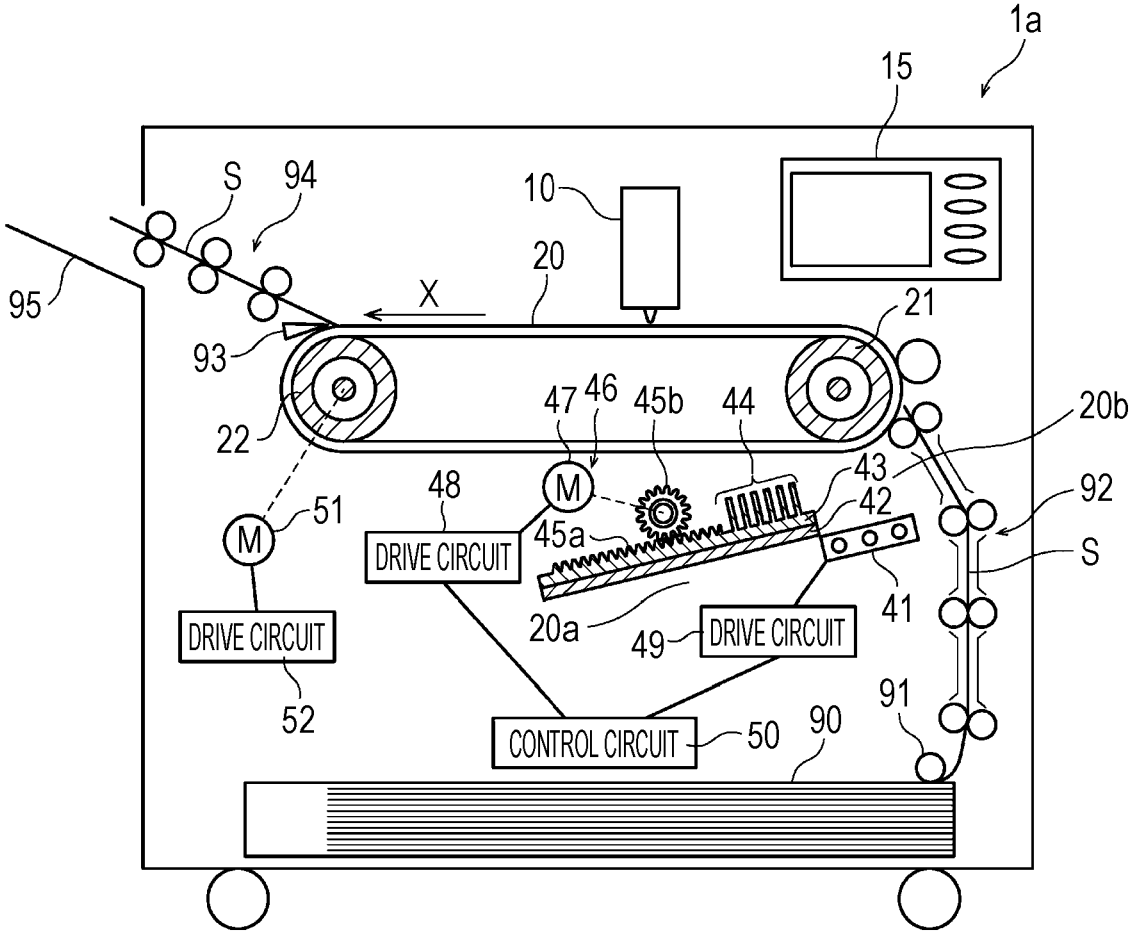

1a
15
S
94
10
20
X
95
21
93
47
46
45b
44
20b
22
43
48
M
92
51
42
45a
S
DRIVE CIRCUIT
41
20a
49
DRIVE CIRCUIT
DRIVE CIRCUIT
91
52
CONTROL CIRCUIT
50
90

FIG. 6A

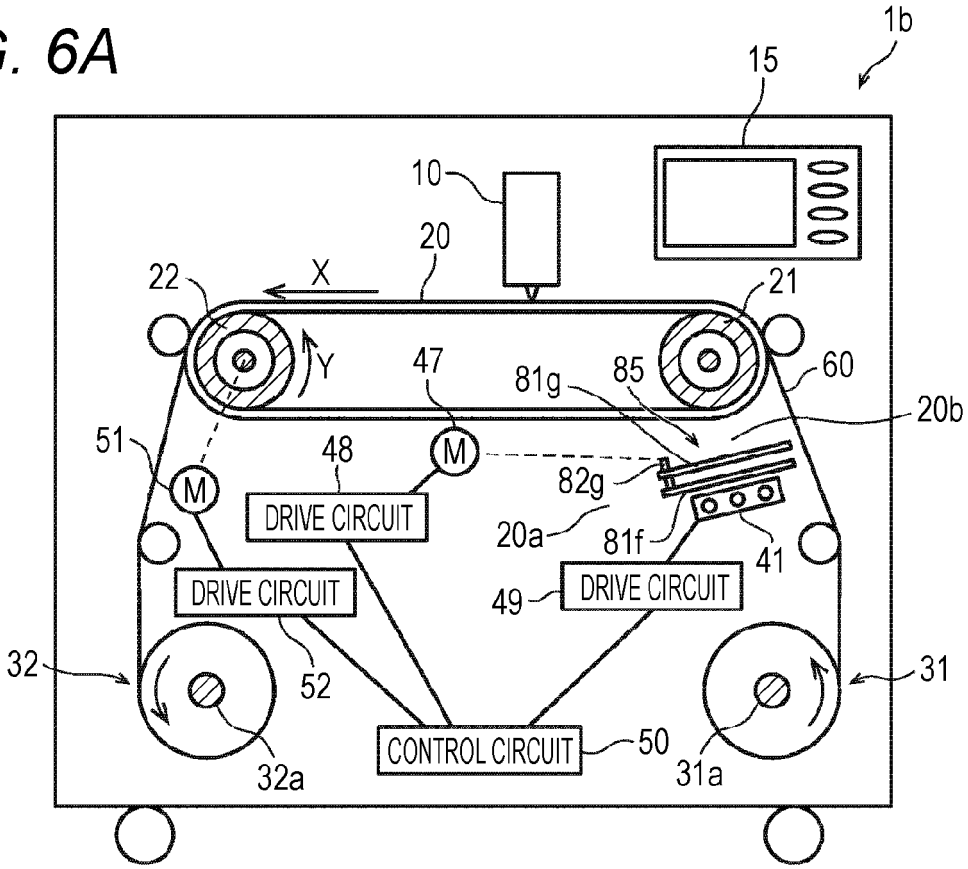

1b
15
10
20
22
X
21
Y
47
81g
85
60
20b
51
48
M
82g
M
DRIVE CIRCUIT
20a
81f
41
DRIVE CIRCUIT
49
DRIVE CIRCUIT
32
52
31
CONTROL CIRCUIT
50
32a
31a

FIG. 6B

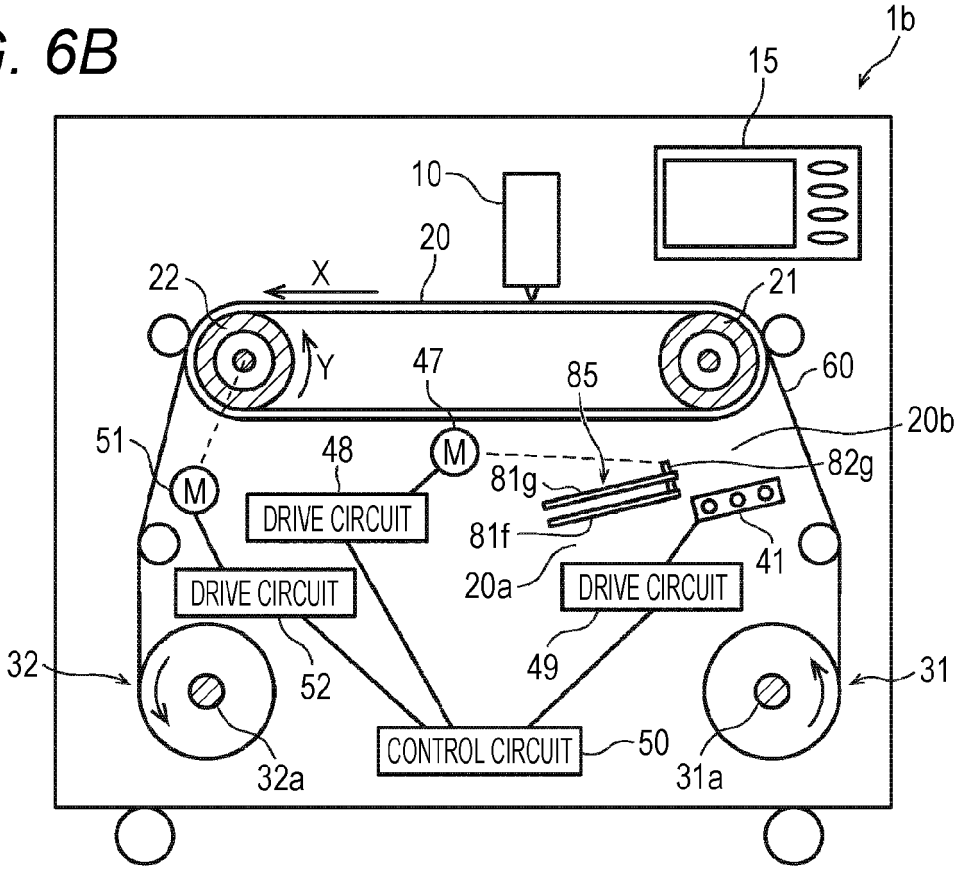

1b
15
10
20
22
X
21
Y
47
85
60
20b
51
48
M
82g
M
81g
DRIVE CIRCUIT
81f
41
20a
DRIVE CIRCUIT
DRIVE CIRCUIT
49
32
52
31
CONTROL CIRCUIT
50
32a
31a

FIG. 6E

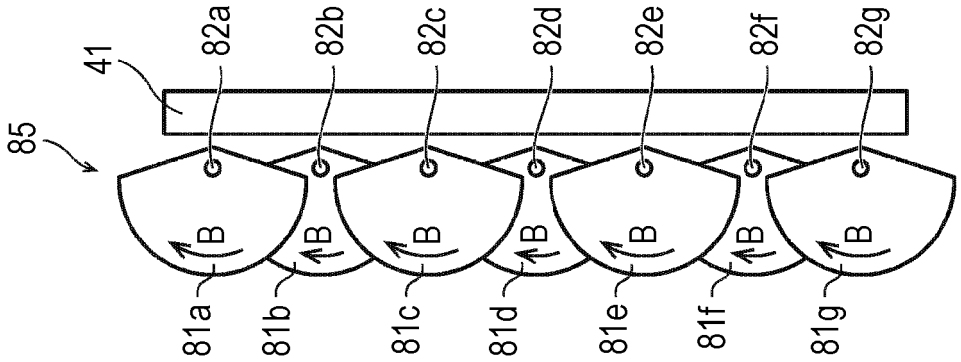


FIG. 6D

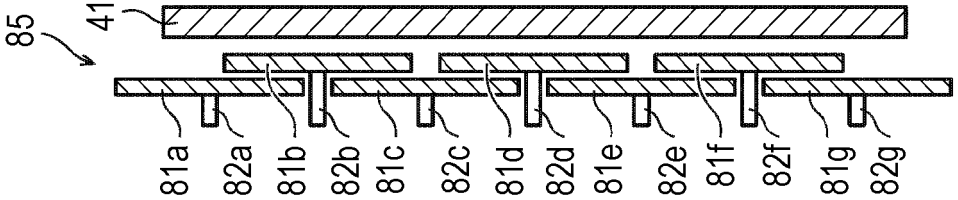
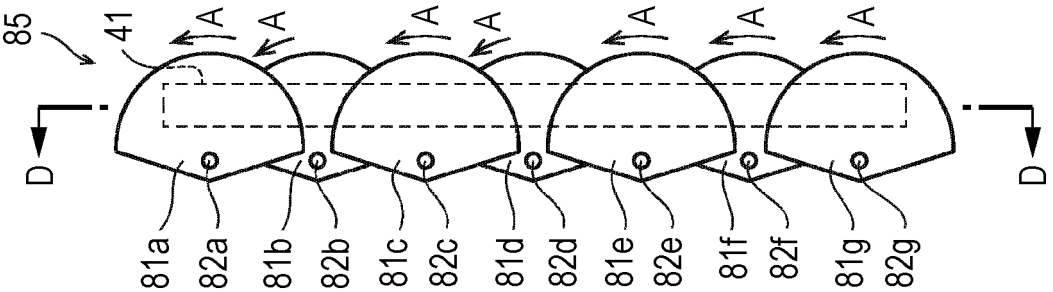


FIG. 6C



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EUROPEAN SEARCH REPORT

Application Number
EP 22 16 3176

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	11 August 2022	Bardet, Maude

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