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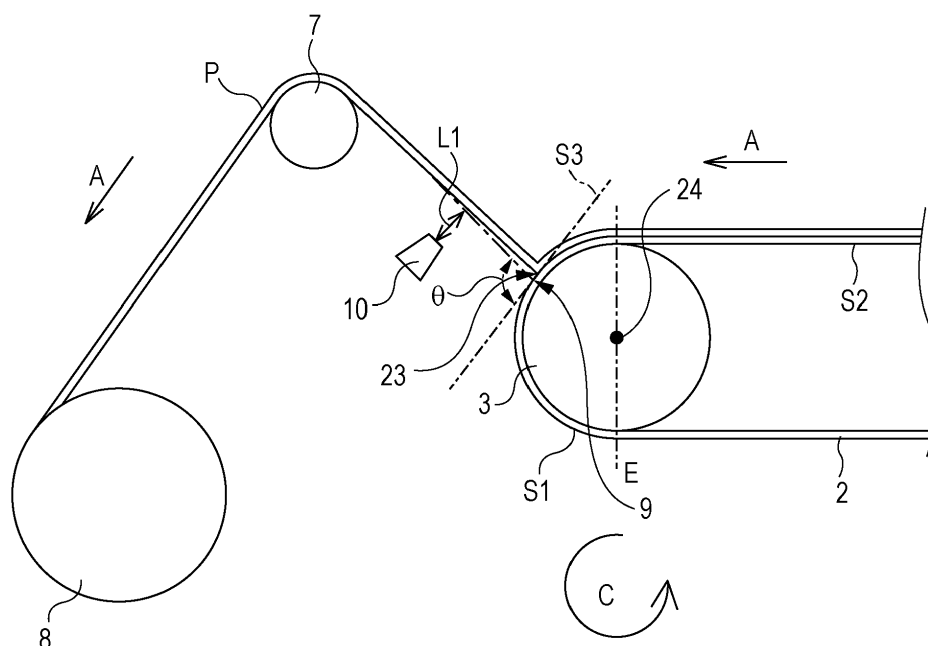
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(54) **Recording apparatus and recording method**

(57) A recording apparatus includes: an adhesive belt (2) that supports and transports a recording medium (P) on a support surface (S1); a sensor (10) that detects whether or not an angle ($\ominus$) formed between the support surface (S1) and the recording medium (P) separated from the support surface (S1) is in a range of 80° or more

and 100° or less in a separation position of the recording medium (P) from the support surface (S1); a winding section (8) on which the recording medium (P) is wound; and a control section that controls the winding section (12) to be driven when the sensor detects that the angle ($\ominus$) is in the range in the separation position.

FIG. 3



Description

BACKGROUND

1. Technical Field

[0001] The present invention relates to a recording apparatus and a recording method.

2. Related Art

[0002] In the related art, recording apparatuses are used in which a recording medium is supported and transported on a support surface of an adhesive belt, and the recording medium is wound by a winding section. Among them, a recording apparatus including a sensor that detects a separation position of the recording medium with respect to the adhesive belt is disclosed.

[0003] For example, a recording apparatus that is capable of controlling a separation position of a recording medium according to a difference in an extension degree of fabric as a recording medium is disclosed in JP-A-2007-196625.

[0004] Furthermore, a recording apparatus including a sensor that is capable of detecting an amount of looseness of a recording medium is disclosed in JP-A-2002-193509.

[0005] However, in the recording apparatus described above of the related art including the adhesive belt that supports and transports the recording medium on the support surface, a separation load may be increased when separating the recording medium from the support surface. If the separation load is increased, there is a concern that the recording medium is wound on the adhesive belt without being separated in a position of a predetermined range.

[0006] Moreover, there is no description nor suggestion about a decrease in the separation load when separating the recording medium from the support surface in JP-A-2007-196625 and JP-A-2002-193509.

SUMMARY

[0007] An advantage of some aspects of the invention is to decrease a separation load when separating a recording medium from a support surface in a recording apparatus including an adhesive belt that supports and transports the recording medium on the support surface.

[0008] According to an aspect of the invention, a recording apparatus includes: an adhesive belt that supports and transports a recording medium on a support surface; a sensor that detects whether or not an angle formed between the support surface and a part of the recording medium which is separated from the support surface is in a range of 80° or more and 100° or less at a separation position of the recording medium from the support surface; a winding section on which the recording medium is wound; and a control section that controls the

winding section to be driven when the sensor detects that the angle is in the range at the separation position.

[0009] Here, "the adhesive belt" means a belt that is capable of holding the recording medium to separate on the surface supporting the recording medium. For example, the adhesive belt is a belt to which adhesive is applied, an electrostatic attraction belt, or the like.

[0010] Moreover, a separation load is minimized when separating the recording medium in the separation position in which the angle is 90°. In this case, the control section controls the winding section to be driven when the sensor detects that the angle is in a range of 80° or more and 100° or less. That is, it is possible to separate the recording medium in the vicinity of the separation position in which the angle is 90° at which the separation load is minimized. Thus, it is possible to decrease the separation load of the recording medium.

[0011] The control section may control the winding section to stop driving thereof when the sensor detects that the angle is in the range in the separation position in a state where the winding section is driven.

[0012] In this case, the control section controls the winding section to stop the driving thereof when the sensor detects that the angle is in the range in the separation position in a state where the winding section is driven. That is, when the sensor detects that the angle is in the range in a state where the driving of the winding section is stopped, the winding section is driven, and when the sensor detects that the angle is in the range in a state where the winding section is driven, the driving of the winding section is stopped. Therefore, it is possible to maintain the separation position in the vicinity of a position in which the angle is 90°. Thus, it is possible to accurately decrease the separation load of the recording medium.

[0013] The adhesive belt may be extended between a plurality of rotating bodies and the separation position may be positioned within a range in which a surface opposite to the support surface comes into contact with the rotating bodies.

[0014] In this case, the separation position is positioned within the range in which the surface opposite to the support surface comes into contact with the rotating bodies. If the separation position is within the range in which the surface opposite to the support surface comes into contact with the rotating bodies, it is possible to control vibration of the adhesive belt when separating the recording medium from the support surface. Thus, it is possible to suppress deterioration of the quality of a recording image by the vibration of the adhesive belt when separating the recording medium from the support surface.

[0015] According to another aspect of the invention, a recording method includes: supporting and transporting a recording medium on a support surface of an adhesive belt; detecting whether or not an angle formed between the support surface and a part of the recording medium separated from the support surface is in a range of 80°

or more and 100° or less at a separation position of the recording medium from the support surface; and driving a winding section on which the recording medium is wound when detecting that the angle is in the range at the separation position in the detecting step.

[0016] In this case, the winding section is driven when detecting that the angle is in the range of 80° or more and 100° or less. That is, it is possible to separate the recording medium in the vicinity of the separation position in which the angle is 90° at which the separation load is minimized. Thus, it is possible to decrease the separation load of the recording medium.

[0017] According to still another aspect of the invention, a recording apparatus includes: an adhesive belt that supports and transports a recording medium on a support surface; a sensor that irradiates light from a direction intersecting a surface of a part of the recording medium separated from the support surface; a winding section on which the recording medium is wound; and a control section that controls the winding section to be driven when the sensor detects reflected light from the recording medium.

[0018] A range in which the sensor detects the reflected light may be a range in which an angle formed between the support surface and the recording medium separated from the support surface is 80° or more and 100° or less at a separation position of the recording medium from the support surface.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019] Embodiments of the invention will now be described by way of example only with reference to the accompanying drawings, wherein like numbers reference like elements.

Fig. 1 is a schematic side view illustrating a recording apparatus according to one embodiment of the invention.

Fig. 2 is a block view of the recording apparatus according to one embodiment of the invention.

Fig. 3 is an enlarged view of a main portion of the recording apparatus according to one embodiment of the invention.

Fig. 4 is an enlarged view of a main portion of the recording apparatus according to one embodiment of the invention.

Fig. 5 is an enlarged view of a main portion of the recording apparatus according to one embodiment of the invention.

Fig. 6 is a flow chart of a recording method according to one embodiment of the invention.

DESCRIPTION OF EXEMPLARY EMBODIMENTS

[0020] Hereinafter, a recording apparatus according to one embodiment of the invention will be described with reference to the accompanying drawings.

[0021] Fig. 1 is a schematic side view illustrating a recording apparatus 1 according to one embodiment of the invention.

[0022] The recording apparatus 1 of the embodiment includes an adhesive belt 2 that is extended between a driving roller 3 that rotates in a rotation direction C and a driven roller 4 and supports a recording medium P on a support surface S1, and transports the recording medium P in a transportation direction A. In other words, the adhesive belt 2 is a transportation belt that is extended between a plurality of rotating bodies and supports, and transports the recording medium P. The recording apparatus 1 of the embodiment includes two rollers of the driving roller 3 and the driven roller 4 as the plurality of rotating bodies, but may include three or more rollers and a plurality of rollers among them may be the driving roller.

[0023] Here, "the adhesive belt" means a belt that is capable of separably holding the recording medium on the surface on which the recording medium is supported. For example, the adhesive belt is a belt on which adhesive is applied, an electrostatic attraction belt, or the like. The adhesive belt 2 of the embodiment is a belt on which the adhesive is applied.

[0024] Furthermore, a recording head 6 is provided in a transportation path of the recording medium P by the adhesive belt 2. The recording apparatus 1 forms a desired image by ejecting ink from an ink ejecting surface F of the recording head 6 to the recording medium while reciprocating the recording head 6 in a direction B intersecting the transportation direction A through a carriage 5.

[0025] Furthermore, the recording apparatus 1 of the embodiment which includes the recording head 6 performs recording while reciprocating, but may also be a recording apparatus which includes a so-called line head in which a plurality of nozzles ejecting the ink are provided in the direction intersecting the transportation direction A.

[0026] Here, "line head" is a recording head that is used in the recording apparatus forming an image, in which a region of the nozzles formed in the direction intersecting the transportation direction A of the recording medium P is provided so as to be capable of covering an entire recording medium P in the intersecting direction and one of the recording heads and recording medium is fixed, and the other one is moved. Moreover, the region of the nozzles of the line head in the intersecting direction may be not capable of covering the entirety of the recording medium P in the intersecting direction, which corresponds to the recording apparatus.

[0027] Furthermore, the direction B corresponds to a width direction of the recording medium P.

[0028] In the recording apparatus 1 of the embodiment, as described below, the recording medium P is separated from the adhesive belt 2 in a separation position having an angle of a predetermined range and is wound on a winding section 8 through a driven roller 7 that is fixed at a predetermined position. Moreover, the winding section 8 rotates the recording medium P in the rotation direction

C when winding the recording medium P.

[0029] A sensor 10 is provided between the separation position in which the recording medium P is separated from the adhesive belt 2 and a position in which the driven roller 7 is provided in the transportation path of the recording medium P.

[0030] Here, the sensor 10 is an optical sensor that irradiates light from a direction intersecting a surface of the recording medium P and detects that the recording medium P is separated from the adhesive belt 2 by a reflected light from the surface of the recording medium P (see Figs. 3 to 5).

[0031] Thus, for example, the light is irradiated from a direction intersecting the surface of the recording medium P and the reflected light is detected by being blocked by the recording medium P by using the optical sensor which has the configuration that the reflection section is provided on a side facing an irradiation section and the reflected light from the reflection section is received. Therefore, detection accuracy is improved over the method of the related art to detect that the recording medium P is separated from the adhesive belt 2. In such a method of the related art, since a length (thickness) in the direction intersecting the surface of the recording medium P is short, a detection timing in the optical sensor and a timing when the reflected light is blocked by the recording medium P deviates so that a detection error may occur.

[0032] Next, an electrical configuration in the recording apparatus 1 of the embodiment will be described.

[0033] Fig. 2 is a block view of the recording apparatus 1 according to the embodiment of the invention.

[0034] A control section 11 is provided with a CPU 12 that performs control of an entire recording apparatus 1. The CPU 12 is connected to a ROM 14 in which various control programs, maintenance sequences, or the like which are executed by the CPU 12 is stored, and a RAM 15 which is capable of temporarily storing data through a system bus 13.

[0035] Furthermore, the CPU 12 is connected to a head driving section 16 driving the recording head 6 through the system bus 13.

[0036] Furthermore, the CPU 12 is connected to a motor driving section 17 that drives a carriage motor 18 that moves the carriage 5, a transportation motor 19 that is a drive source of the driving roller 3 as a moving mechanism of the adhesive belt 2 on which the recording medium P is supported and transported, and a winding motor 20 that is a drive source of the winding section 8 through the system bus 13.

[0037] Furthermore, the CPU 12 is connected to an input-output section 21 through the system bus 13 and the input-output section 21 is connected to the sensor 10, and a PC 22 that is an external device from which recording data and the like are input into the recording apparatus 1.

[0038] Next, the configuration will be described in detail with reference to an enlarged view of a main portion of the recording apparatus 1 of the embodiment.

[0039] Figs. 3 to 5 are enlarged views of a main portion of the recording apparatus 1 of the embodiment.

[0040] As described below, the recording apparatus 1 of the embodiment is configured such that when the sensor 10 detects that a separation position 23 of the recording medium P from the support surface S1 is at a predetermined position 9 in which the recording medium P separated from the support surface S1 forms an angle of 80° or more and 100° or less with respect to the support surface S1, the winding section 8 is driven.

[0041] Thus, Figs. 3 to 5 are described below in detail.

[0042] Fig. 3 illustrates a state where the sensor 10 does not detect the recording medium P and the driving of the winding section 8 is stopped.

[0043] Furthermore, Fig. 4 illustrates a state immediately after the sensor 10 detects the recording medium P in the state where the driving of the winding section 8 is stopped.

[0044] Furthermore, Fig. 5 illustrates a state where the sensor 10 detects the recording medium P and the winding section 8 is driven.

[0045] In the recording apparatus 1 of the embodiment, the driving roller 3 is rotated and the adhesive belt 2 is moved with the recording by the recording head 6, and the separation position 23 of the recording medium P with respect to the support surface S1 is also moved with the movement of the adhesive belt 2.

[0046] The recording apparatus 1 of the embodiment is configured such that when the separation position 23 reaches the predetermined position 9, the recording medium P enters a detection range of a length L1 with respect to the sensor 10 (see Fig. 4).

[0047] Here, the recording apparatus 1 of the embodiment is configured such that an angle Θ of the recording medium P separated from the support surface S1 with respect to the support surface S1 is 80° or more and 100° or less when the separation position 23 reaches the predetermined position 9.

[0048] Moreover, as illustrated in Fig. 3, the angle Θ of the recording medium P separated from the support surface S1 with respect to the support surface S1 when the separation position 23 reaches the predetermined position 9 is an angle that is formed by the recording medium P and a plane S3 contacting to the support surface S1 in the separation position 23 viewed in the width direction of the recording medium. That is, the angle Θ represents an angle that is formed by the support surface S1 and the recording medium P separated from the support surface S1 when the separation position 23 reaches the predetermined position 9.

[0049] In the invention, the sensor may detect whether or not the angle is in the range of 80° or more and 100° or less. Among the sensors, the sensor 10 of the embodiment is a sensor that detects when the separation position 23 reaches the predetermined position 9 in which the angle is in the range of 80° or more and 100° or less. That is, "detecting whether or not the angle is in the range of 80° or more and 100° or less" means that "detecting

whether or not the separation position is at the predetermined position in which the angle is in the range of 80° or more and 100° or less" is included.

[0050] However, the invention is not limited to the configuration and the sensor may be configured so that even if the angle formed between the support surface S1 and the recording medium P separated from the support surface S1 is not in the range of 80° or more and 100° or less in the separation position 23 of the recording medium P from the support surface S1 it is detected by a method other than the embodiment.

[0051] Then, when changing from the state of Fig. 3 to the state of Fig. 4, the winding section 8 is driven by the control section 11.

[0052] Moreover, fabric is used as the recording medium P in the embodiment, but when the driving of the winding section 8 is started, the recording medium P such as fabric is extended by tension. Then, the recording medium P is separated from the adhesive belt 2 by a state where the tension is applied to the recording medium P. On the other hand, even when the winding section 8 is driven, since the tension is not applied to the recording medium P immediately, the recording medium P is not separated from the adhesive belt 2 immediately. That is, a time lag occurs from driving of the winding section 8 to the separation of the recording medium P from the adhesive belt 2.

[0053] Fig. 5 illustrates a state where the winding section 8 is driven after occurrence of the time lag.

[0054] That is, in other words, the recording apparatus 1 of the embodiment includes the adhesive belt 2 that supports and transports the recording medium P on the support surface S1, the sensor 10 that detects whether or not the angle formed between the support surface S1 and the recording medium P separated from the support surface S1 is in the range of 80° or more and 100° or less in the separation position 23 of the recording medium P from the support surface S1, the winding section 8 that winds the recording medium P, and the control section 11 that controls the winding section 8 to be driven when the sensor 10 detects that the angle with respect to the separation position 23 is in the range.

[0055] When the recording medium P is separated from the separation position 23 at which the angle forms 90°, a separation load is at a minimum and the recording apparatus 1 of the embodiment can separate the recording medium P in the vicinity of the separation position where the angle in which the separation load is at a minimum forms 90°. Thus, the separation load of the recording medium P is decreased.

[0056] Furthermore, in the recording apparatus 1 of the embodiment, when the winding section 8 is driven in the state of Fig. 5, after a while, a positional relationship between the separation position 23 and the predetermined position 9 reaches the state of Fig. 4. Then, when becoming the state of Fig. 4, the recording medium P is out of the detection range of the length L1 with respect to the sensor 10 and the driving of the winding section 8

is stopped by the control of the control section 11.

[0057] Then, in the recording apparatus 1 of the embodiment, the positional relationship between the separation position 23 and the predetermined position 9 becomes the state indicated in Fig. 3 immediately after the driving of the winding section 8 is stopped.

[0058] That is, in other words, in the recording apparatus 1 of the embodiment, the control section 11 controls the winding section 8 such that when the sensor 10 detects that the angle is in the range of 80° or more and 100° or less in the separation position 23 in a state where the winding section 8 is driven, the driving of the winding section 8 is stopped.

[0059] Specifically, the control section 11 controls the winding section 8 such that when the sensor 10 detects that the separation position 23 is at the predetermined position 9 in a state where the winding section 8 is driven, the driving of the winding section 8 is stopped.

[0060] That is, in the recording apparatus 1 of the embodiment, when the sensor 10 detects that the separation position 23 is at the predetermined position 9 in a state where the driving of the winding section 8 is stopped, the winding section 8 is driven. When the sensor 10 detects that the separation position 23 is at the predetermined position 9 in a state where the winding section 8 is driven, the driving of the winding section 8 is stopped.

[0061] Therefore, it is possible to maintain the separation position 23 in the vicinity of the predetermined position 9, that is, in the vicinity of the separation position in which the angle forms 90°. Thus, it is possible to decrease the separation load of the recording medium P with a high accuracy. Moreover, the sensor 10 may be configured to detect that the angle is in the range of 80° or more and 100° or less by another method other than the configuration for detecting that the separation position 23 is at the predetermined position 9.

[0062] Furthermore, the separation position 23 in the recording apparatus 1 of the embodiment is positioned within a range in which a surface S2 opposite to the support surface S1 comes into contact with the driving roller 3 on which the adhesive belt 2 is extended. Specifically, in Figs. 3 to 5, the separation position 23 is positioned on the outside than a line E in the driving roller 3 in the vertical direction through a rotation center 24 of the driving roller 3.

[0063] That is, in other words, in the recording apparatus 1 of the embodiment, the adhesive belt 2 is extended on the driving roller 3 and the driven roller 4 that is the plurality of rotating bodies, and the separation position 23 is positioned within the range in which the surface S2 opposite to the support surface S1 comes into contact with the driving roller 3.

[0064] If the separation position 23 is within the range in which the surface S2 opposite to the support surface S1 comes into contact with the driving roller 3, it is possible to suppress vibration of the adhesive belt 2 when the recording medium P is separated from the support surface S1.

[0065] Thus, the recording apparatus 1 of the embodiment is configured such that it is possible to suppress the quality of the recording image from decreasing due to the vibration of the adhesive belt 2 when the recording medium P is separated from the support surface S1.

[0066] When summarizing the description of the recording apparatus 1 of the embodiment, in the recording apparatus 1 of the embodiment, the separation position 23 of the recording medium P from the adhesive belt 2 in which the recording medium P is supported and transported on the support surface S1 is maintained in the vicinity of the position in which the recording medium P forms the angle of 90° with respect to the support surface S1.

[0067] Thus, it is possible to decrease the separation load of the recording medium.

Embodiment of Recording Method (Fig. 6)

[0068] Next, an embodiment of a recording method using the recording apparatus 1 of the above embodiment will be described.

[0069] Fig. 6 is a flow chart of the recording method of the embodiment.

[0070] First, in Step S10, a user sets the recording medium P in the recording apparatus 1. Specifically, the rolled recording medium P is supported (adhered) on the support surface S1 of the adhesive belt 2 and a leading portion of the recording medium P is wound on the winding section 8 through the driven roller 7.

[0071] Next, in Step S20, the recording is performed by the recording head 6 based on the recording data input from the PC 22 and the recording medium P is supported and transported on the support surface S1 of the adhesive belt 2 (transporting process).

[0072] Next, in Step S30, the sensor 10 detects whether or not the angle between the support surface S1 and the recording medium P separated from the support surface S1 is in the range of 80° or more and 100° or less in the separation position 23 of the recording medium P from the support surface S1 (detecting process).

[0073] In Step S30, when detecting that the angle is in the range, the process proceeds to Step S40 and when not detecting that the angle is in the range, the process proceeds to Step S50.

[0074] In Step S40, the winding section 8 on which the recording medium P is wound is driven by the control of the control section 11 (driving process of the winding section).

[0075] Thereafter, the process proceeds to Step S60.

[0076] In Step S50, whether or not the recording is completed is determined in the control section 11 based on the recording data input from the PC 22.

[0077] In Step S50, when the recording is not determined to be completed, the process returns to Step S30 and when the recording is determined to be completed, the recording method of the embodiment is completed.

[0078] In Step S60, whether or not the recording is

completed is determined in the control section 11 based on the recording data input from the PC 22.

[0079] In Step S60, when the recording is not determined to be completed, the process proceeds to Step S70 and when the recording is determined to be completed, the recording method of the embodiment is completed.

[0080] In Step S70, whether or not the angle is in the range of 80° or more and 100° or less in the separation position 23 of the recording medium P from the support surface S1 is detected by the sensor 10.

[0081] In Step S70, when detecting that the angle is in the range, the process proceeds to Step S80 and when detecting that the angle is not in the range, the process returns to Step S60.

[0082] In Step S80, the driving of the winding section 8 on which the recording medium P is wound is stopped by the control of the control section 11.

[0083] Thereafter, the process proceeds to Step S90.

[0084] In Step S90, whether or not the recording is completed is determined by the control section 11 based on the recording data input from the PC 22.

[0085] In Step S90, when the recording is not determined to be completed, the process returns to Step S30 and when the recording is determined to be completed, the recording method of the embodiment is completed.

[0086] According to the recording method of the above embodiment, it is possible to separate the recording medium P in the vicinity of the separation position where the angle at which the separation load is at a minimum and forms 90°. Thus, it is possible to decrease the separation load of the recording medium P.

[0087] The foregoing description has been given by way of example only and it will be appreciated by a person skilled in the art that modifications can be made without departing from the scope of the present invention.

Claims

1. A recording apparatus (1) comprising:

an adhesive belt (2) that supports and transports a recording medium (P) on a support surface (S1);

a sensor (10) that detects whether or not an angle formed between the support surface (S1) and a part of the recording medium separated from the support surface is in a range of 80° or more and 100° or less at a separation position (23) of the recording medium from the support surface;

a winding section (8) on which the recording medium is wound; and

a control section (12) that controls the winding section to be driven when the sensor detects that the angle is in the range at the separation position.

2. The recording apparatus (1) according to Claim 1, wherein the control section (12) controls the winding section to stop driving thereof when the sensor detects that the angle is in the range in the separation position in a state where the winding section is driven. 5
3. The recording apparatus (1) according to Claim 1 or Claim 2, wherein the adhesive belt is extended between a plurality of rotating bodies (3, 4), and wherein the separation position is positioned within a range in which a surface (S2) of the adhesive belt opposite to the support surface comes into contact with the rotating bodies. 10 15
4. A recording method comprising:
 - supporting and transporting a recording medium (P) on a support surface (S1) of an adhesive belt (2); 20
 - detecting whether or not an angle formed between the support surface and a part of the recording medium separated from the support surface is in a range of 80° or more and 100° or less at a separation position (23) of the recording medium from the support surface; and 25
 - driving a winding section (8) on which the recording medium is wound when detecting that the angle is in the range at the separation position in the detecting. 30
5. A recording apparatus (1) comprising:
 - an adhesive belt (2) that supports and transports a recording medium (P) on a support surface (S1); 35
 - a sensor (10) that irradiates light from a direction intersecting a surface of a part of the recording medium separated from the support surface; 40
 - a winding section (8) on which the recording medium is wound; and
 - a control section (12) that controls the winding section to be driven when the sensor detects reflected light from the recording medium. 45
6. The recording apparatus (1) according to Claim 5, wherein a range in which the sensor detects the reflected light is in a range in which an angle formed between the support surface (S1) and the part of the recording medium separated from the support surface is 80° or more and 100° or less at a separation position (23) of the recording medium from the support surface. 50 55

FIG. 1

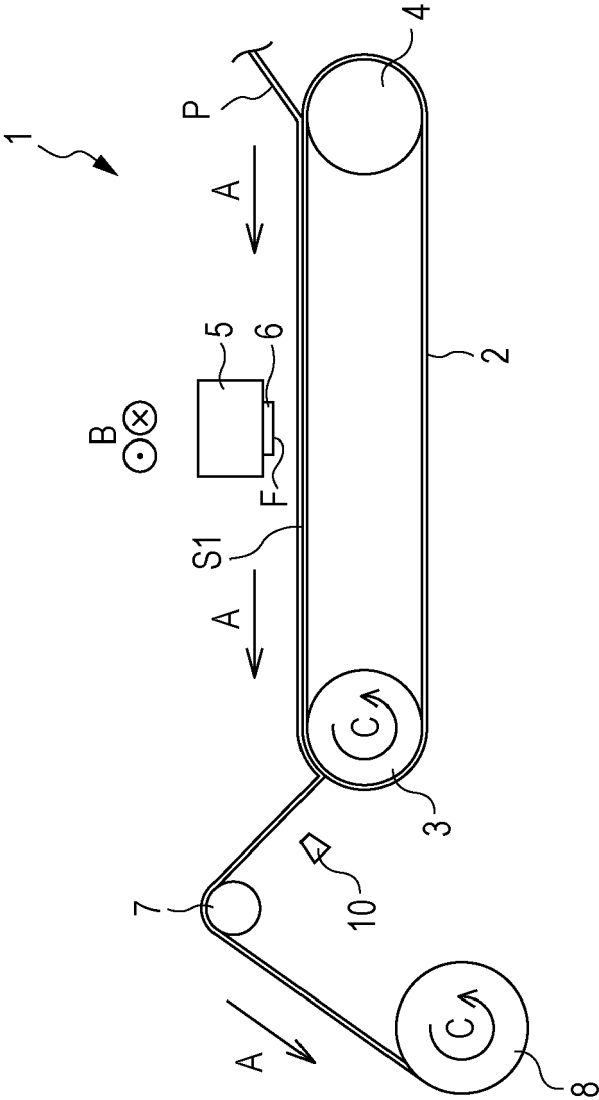


FIG. 2

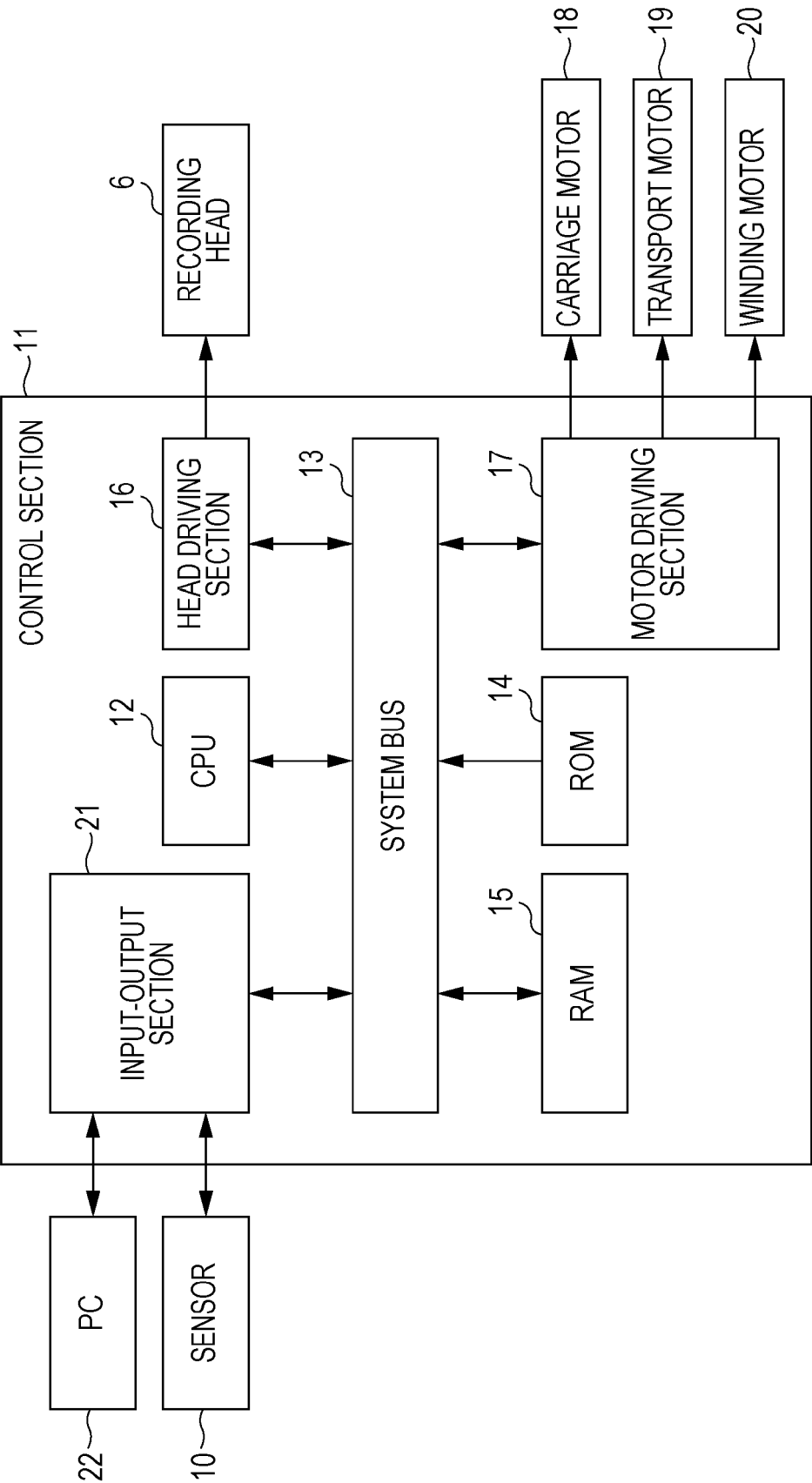


FIG. 3

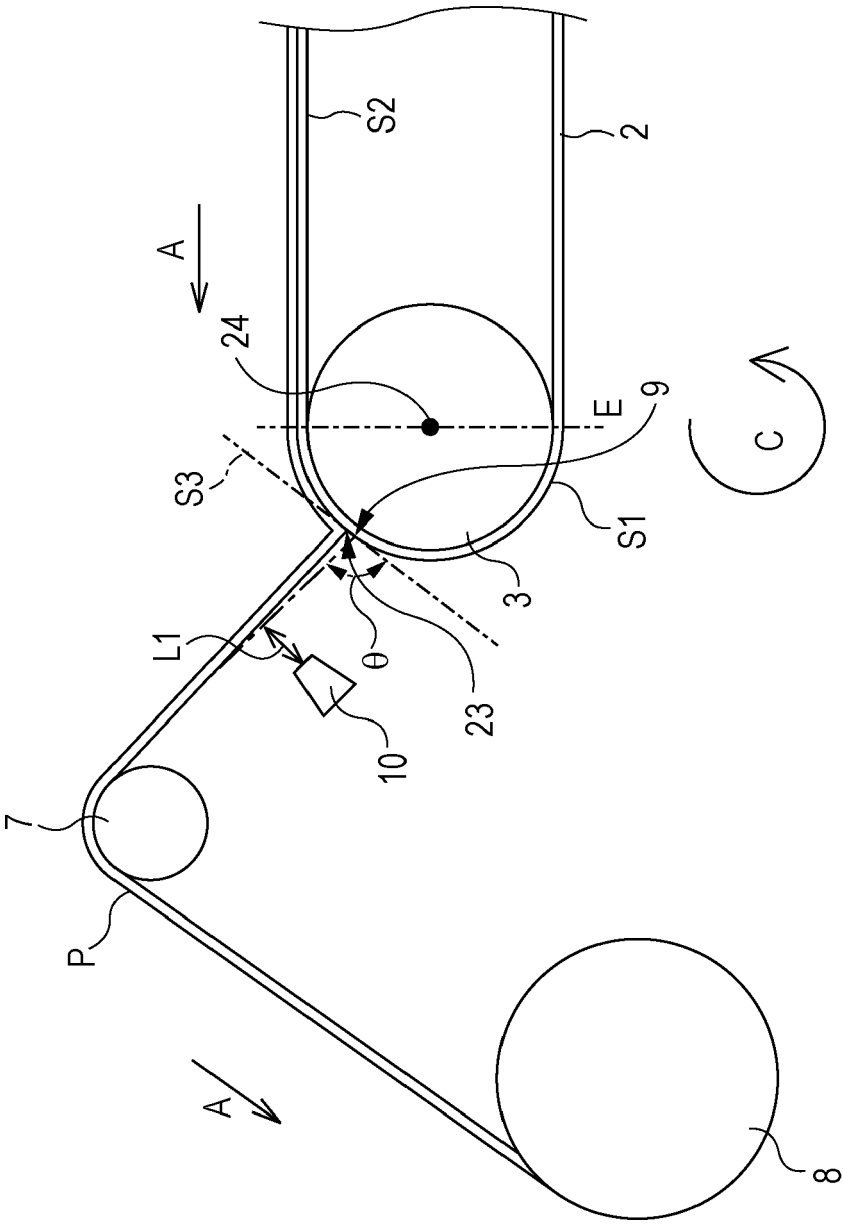


FIG. 4

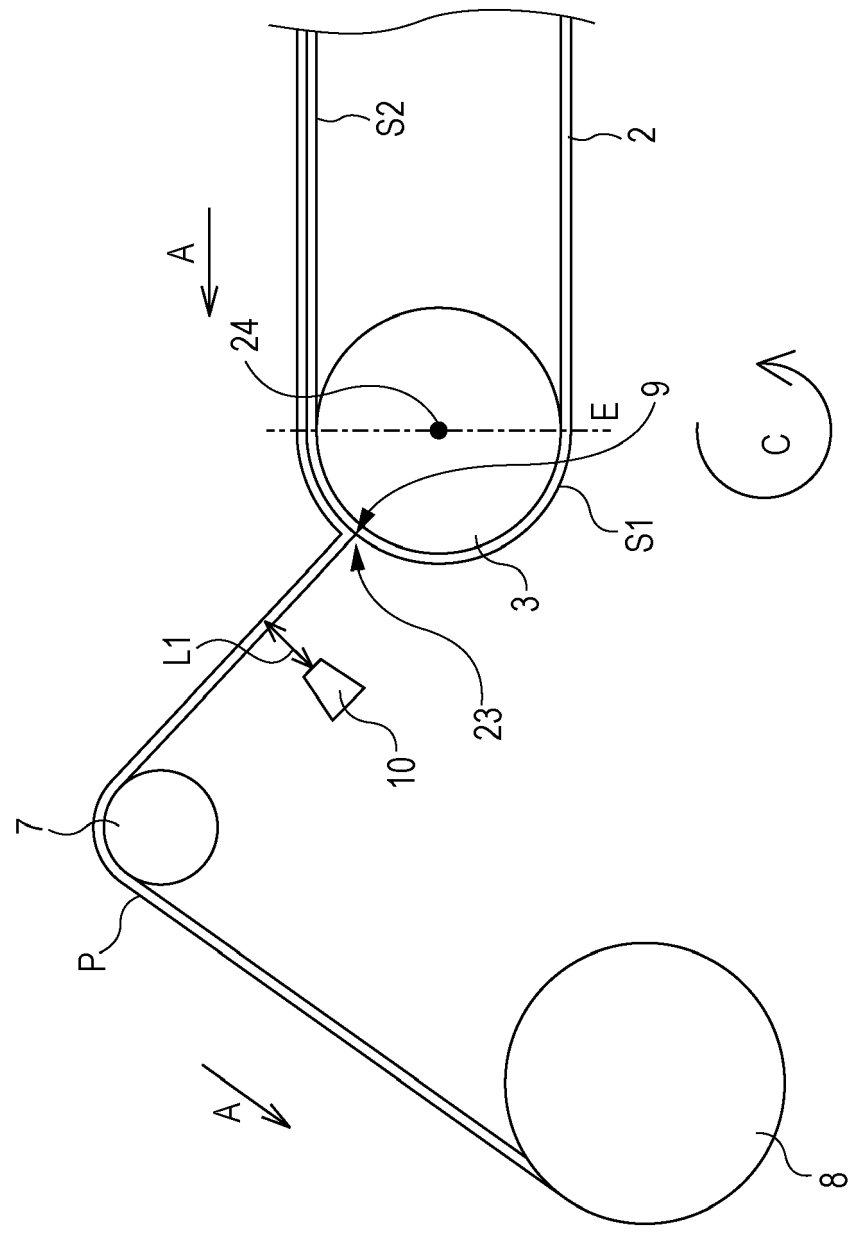


FIG. 5

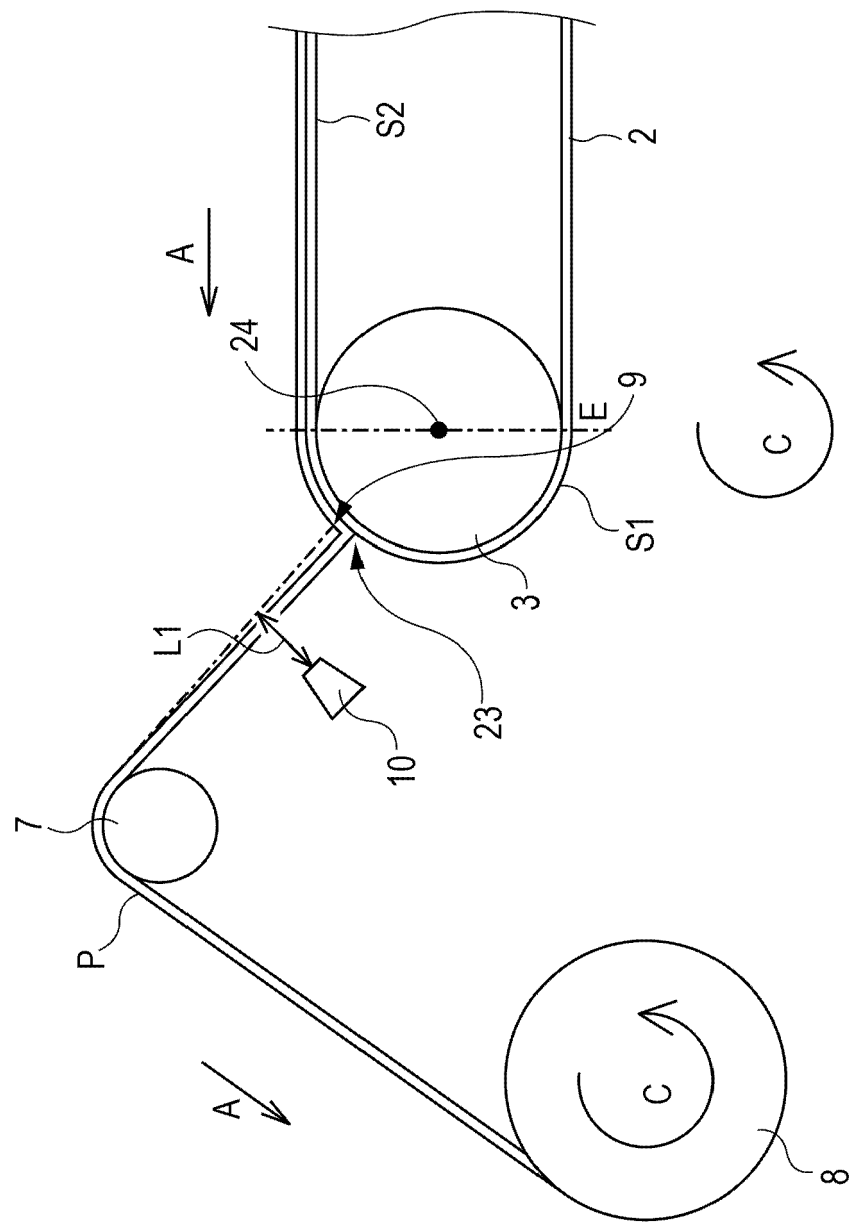
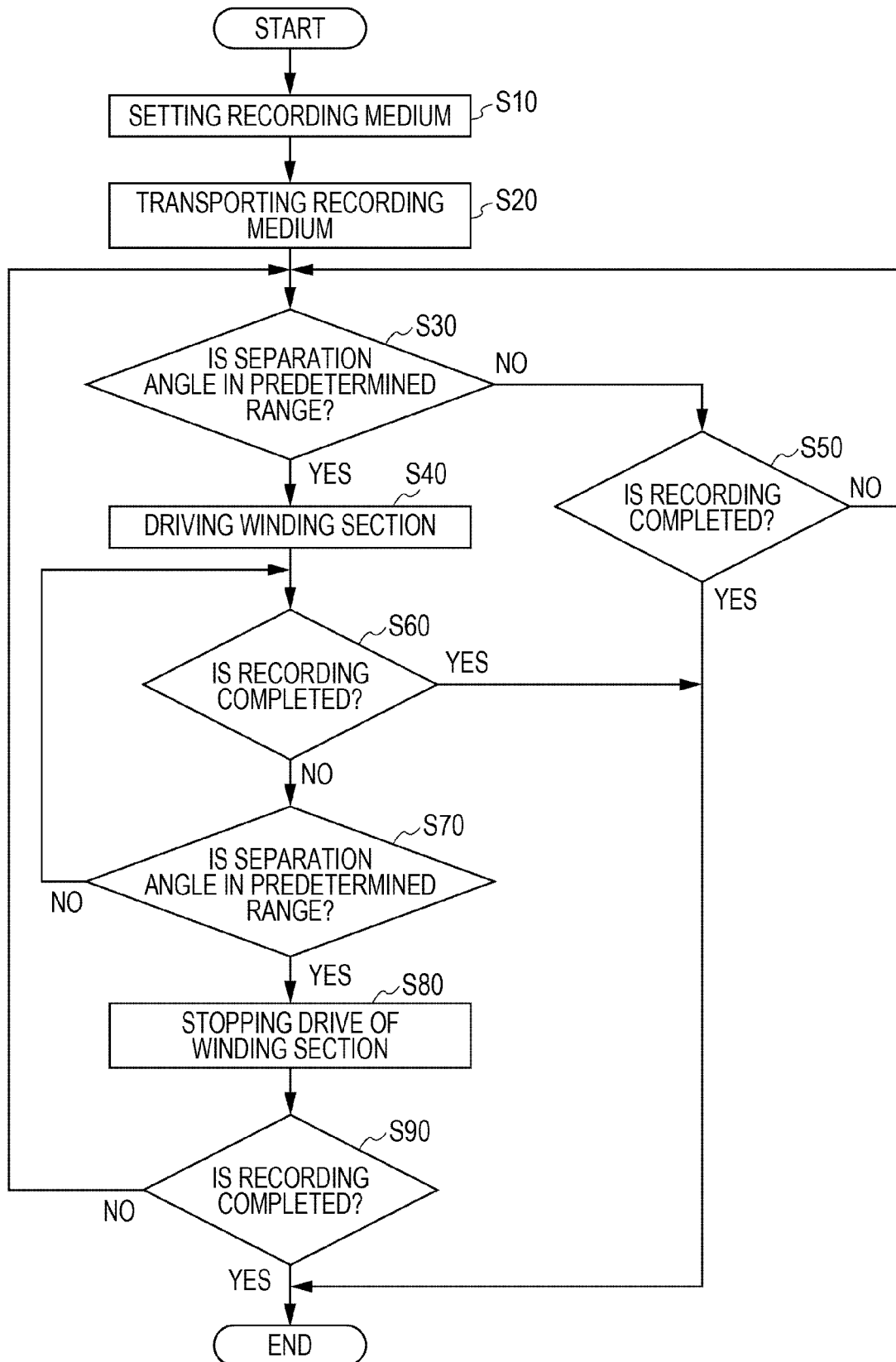


FIG. 6





EUROPEAN SEARCH REPORT

Application Number
EP 14 18 4804

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	JP 2006 321611 A (KONICA MINOLTA HOLDINGS INC) 30 November 2006 (2006-11-30)	5	INV. B65H26/00 B65H18/10 B65H20/06
A	* abstract; figures 1,8 * * paragraphs [0029] - [0032] * * paragraphs [0055] - [0058] * * claims 1-5 *	1-4,6	
A	----- EP 0 694 409 A2 (CANON KK [JP]) 31 January 1996 (1996-01-31) * abstract; figures 1-21 * * column 11, line 1 - column 14, line 36 *	1-6	
A	----- JP 2011 031418 A (SEIREN CO LTD) 17 February 2011 (2011-02-17) * abstract; figures 1-3 * * paragraphs [0042] - [0043] * * the whole document *	1-6	
			TECHNICAL FIELDS SEARCHED (IPC)
			B65H
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		27 February 2015	Piekarski, Adam
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03.82 (F04C01)

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

EP 14 18 4804

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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27-02-2015

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