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(54) **METHOD FOR MANUFACTURING MARKED TOILET PAPER ROLL**

(57) Using a marked toilet paper roll manufacturing apparatus 1A constituted by a log roll manufacturing apparatus 10 added with a stamping device 8 including a stamp body 81 provided with stamp portions 8a applying arrows A stamps at intervals, each interval of a predetermined width corresponding to a width of a single toilet paper roll T, toilet paper rolls T, on which an arrow A stamp is applied to an end portion of an winding end of each toilet paper roll T, are obtained by temporarily stopping a rotationally moving log roll L at an arresting portion 82 between a position where a gluing device 5 and a cutter 3 are disposed, and a position where support rolls 6 are disposed, which is the advance position of the log roll L, by applying stamps with the stamp portions 8a by pushing up the stamp body 81 against an end portion of an winding end of the stopped log roll L, and, then, by pulling a winding shaft 1 out from the log roll L and cutting the log roll L into toilet paper rolls T with a predetermined width.

FIG.1(a)

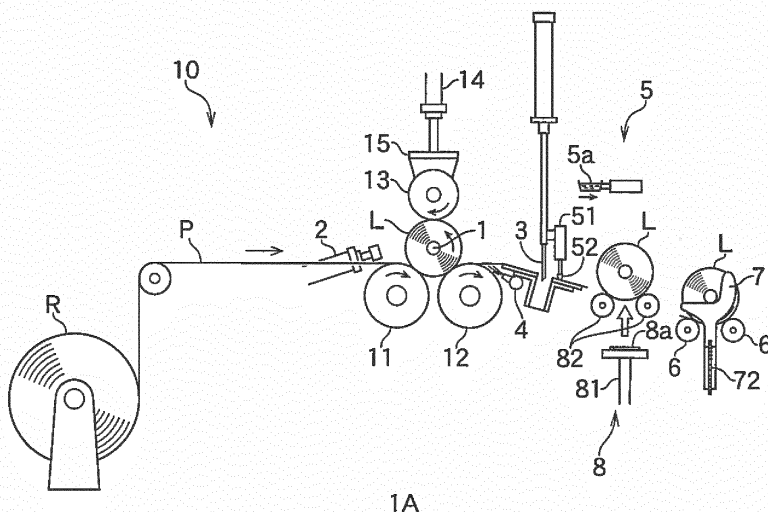
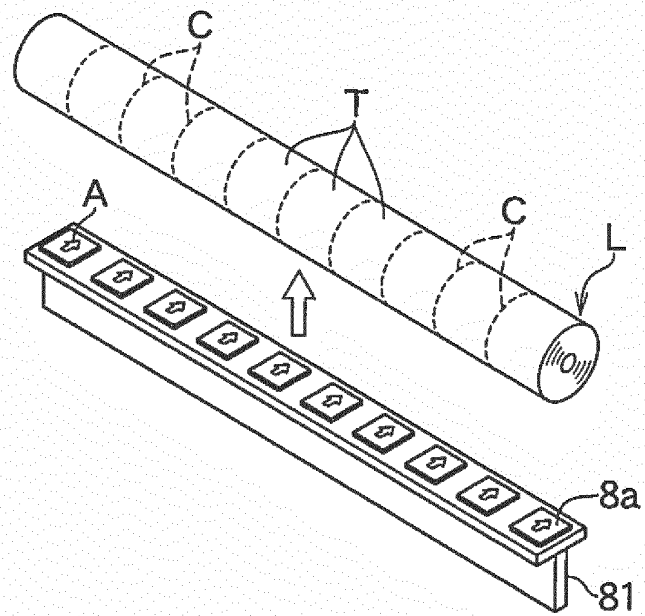


FIG.1(b)



Description

Technical Field

[0001] The present invention relates to a method for manufacturing a marked toilet paper roll with a mark that enables the toilet paper roll to be set to a holder without any mistake in direction.

Background Art

[0002] Referring to Fig. 4, an example of a conventional method for manufacturing toilet paper rolls will be described.

[0003] As a conventional method for manufacturing toilet paper rolls, as illustrated in Fig. 4(a), a manufacturing method that uses a manufacturing apparatus 10 manufacturing a log roll of toilet paper can be exemplified. In other words, the log roll manufacturing apparatus 10 includes a winding shaft 1 that winds a toilet paper P, a pair of parallel inlet side friction drive roll 11 and outlet side friction drive roll 12 that are positioned where the winding shaft 1 is disposed and at the winding position of the toilet paper P.

[0004] The winding shaft 1 is placed on both of the friction drive rolls 11 and 12 and is rotated by frictional force associated with the rotational drive of both friction drive rolls 11 and 12. With the rotational drive, the winding shaft 1 draws out the toilet paper P from the web roll R including a wide toilet paper P, and winds the toilet paper P around the outer periphery thereof. During the winding, a freely rotating rider roll 13 comes in contact with the winding shaft 1 from above the winding shaft 1. The rider roll 13 is lifted upwards by thickening of the winding layers caused by winding of the toilet paper P wound about the winding shaft 1. The rider roll 13 is supported in a rotatable manner by a piston cylinder 14 or a support frame 15 to which the piston cylinder 14 is fitted.

[0005] When the wide toilet paper P is wound a predetermined length about the winding shaft 1 into a log roll L, both friction drive rolls 11 and 12 stop and the rider roll 13 is retreated to an upward position. Subsequently, a kicker 2 pushes the two end portions of the winding shaft 1 that protrude from both ends of the log roll L and sends the log roll L together with the winding shaft 1 to an advance position. After a winding shaft 1 for the next log roll L is supplied between both friction drive rolls 11 and 12 and is placed on the toilet paper P, a cutter 3 cuts the toilet paper P between the winding shaft 1 and the log roll L at the advance position. At the same time, liquid glue is applied on an end portion of a winding end of the log roll L formed when the toilet paper P is cut by the cutter 3. Furthermore, air is ejected by an air ejection nozzle 4 from below towards the winding start portion of the following toilet paper P, and the winding start portion is bent over the winding shaft 1. The rider roll 13 that is lowered once more presses down the winding start portion of the following toilet paper P above the winding shaft

1. When both friction drive rolls 11 and 12 start rotating, winding of the next log roll L is restarted.

[0006] Application of the liquid glue on the end portion of the winding end of the log roll L is performed with a known gluing device 5 provided with a container 5a that accommodates the liquid glue. Specifically, air cylinders 51 are attached to the two end portions of the cutter 3 so that pistons are oriented downwards and a gluing string 52 is provided across the lower ends of the two pistons. Then, when the toilet paper P is cut by the cutter 3, by extending the pistons downwards with the air cylinders 51, the liquid glue in the gluing string 52 can be applied on the end portion of the winding end of the log roll L.

[0007] The log roll L that has been sent out by the kicker 2 is placed on two parallel support rolls 6 at the advance position. A flange is provided at the other end of the winding shaft 1 to move the log roll L out from one end of the winding shaft 1 in an axial direction. A branched yoke member to which the flange of the winding shaft 1 is fitted is fixed to a portion in the advance position that opposes the other end of the winding shaft 1. When the winding shaft 1 is placed between the support rolls 6, the flange is fitted to the branched portion of the yoke member. With the above, when the log roll L is pushed towards the one end of the winding shaft 1, the flange can receive and stop the yoke member such that the movement of the winding shaft 1 is stopped. The member pushing the other end surface of the log roll L towards the one end of the winding shaft 1 in the axial direction is a pusher 71. The pusher 71 is disposed between the support rolls 6 and is fitted into an endless chain 72 provided in the axial direction of the winding shaft 1.

[0008] The endless chain 72 is driven, the other end surface of the log roll L is pushed towards the one end of the winding shaft 1 with the pusher 71, and the log roll L is pushed out from the one end of the winding shaft 1. In the above, the support rolls 6 are rotationally driven and the log roll L is rotated in a single direction together with the winding shaft 1 such that the end portion of the winding end of the toilet paper P in the log roll L that has been cut by the cutter 3 is wound and adhered. The pusher 71 has a shape that can push substantially the whole surface of the other end surface of the log roll L. Furthermore, it is desirable that, a pull-out conveyor that holds the upper and lower portion of the log roll L, which is to be pushed out from the winding shaft 1 with the pusher 71, and that, while working together with the pusher 71, is driven in the direction in which the log roll L is pulled out from the winding shaft 1 is provided in front of the one end of the winding shaft 1.

[0009] The log roll L that has been moved out from the winding shaft 1 is obtained in the above manner. Subsequently, the log roll L is cut into a plurality of toilet paper rolls at a predetermined width (a narrow width). Note that the winding shaft 1 remaining at the advance position is detached from the yoke member before the next log roll L rolls to the advance position and may be made to stand-by in order to be supplied to the winding position.

[0010] Fig. 4(b) illustrates the log roll L that has been moved out from the winding shaft 1. The dotted lines illustrated in Fig. 4(b) indicate cutting positions C for cutting the log roll L into a plurality of narrow toilet paper rolls T. The width of each of the narrow toilet paper rolls is uniform and is 114 mm, for example. If 12 narrow toilet paper rolls T can be obtained by cutting a single log roll L, then, the 12 toilet paper rolls T may be packed in a single bag.

[0011] Note that in order to prevent the unused toilet paper roll T from unintentionally unwinding at the winding end edge, as described above, the end portion of the winding end is glued to the outer surface. Specifically, with the gluing string 52, the end portion of the winding end is glued in a linear manner across the entire width of the toilet paper roll T (the log roll L), and in the succeeding process, the end portion of the winding end is adhered to the outer surface. However, in such a form of linear adhesion at the end portion of the winding end, there is a problem in that it is difficult to visually recognize where the free portion on the end side of the winding end is positioned with respect to the adhered position, thereby making it difficult to intuitively grasp the free portion. Furthermore, when it is difficult to visually recognize where the free portion on the end side of the winding end is positioned with respect to the adhesion position, the drawing out direction of the end portion of the winding end cannot be understood and there are cases in which the toilet paper roll T is set to the holder so as to rotate in the wrong direction when in use.

[0012] In response to such a problem, PTLs 1 and 2 described below propose a toilet paper roll with a mark and expect to obtain an effect of facilitating visual recognition of the rotation direction of the roll paper and the position of the free portion.

Citation List

Patent Literature

[0013]

PTL 1: Japanese Registered Utility Model No. 3015411

PTL 2: Japanese Unexamined Patent Application Publication No. 2009-268534

Summary of Invention

Technical Problem

[0014] However, PTLs 1 and 2 described above do not state any specific method of manufacturing the toilet paper roll with a mark. Applying a mark on a toilet paper roll increases a process; accordingly, marking needs to be economically and efficiently performed so as to suppress, as much as possible, the cost required to apply a mark.

[0015] The present invention has been proposed in

view of the actual circumstance described above and an object thereof is to provide a method for manufacturing a marked toilet paper roll that is capable of performing the mark applying process in an economical and efficient manner and suppress, to the extent possible, the cost for marking when providing a marked toilet paper roll with a mark that enables the free portion on the end side of the winding end to be grasped intuitively and that enables the toilet paper roll to be set to the holder without the direction being mistaken.

Solution to Problem

[0016] In order to achieve the above object, the present invention relates to a method for manufacturing a marked toilet paper roll by winding a sheet of wide toilet paper a predetermined length about a winding shaft to form a log roll and by cutting the log roll at a predetermined width into a plurality of toilet paper rolls, the method comprising the steps of: marking stamps at intervals, each interval of the predetermined width, on an end portion of a winding end of the log roll before the log roll is cut into the toilet paper rolls.

[0017] In particular, in the marking step, the stamps are applied with a pressing body that includes stamp portions provided at intervals of the predetermined width and by pressing the stamp portions against the end portion of the winding end.

[0018] Furthermore, in the marking step, a roll that includes stamp portions provided at intervals of the predetermined width is used and the stamps are applied by having the stamp portions come into surface contact with the end portion of the winding end while the roll is rotated so as to synchronize with the rotation of the log roll.

[0019] In the present invention, desirably, the stamps are each of a character, a drawing, a symbol, or a pattern; a combination of the character, the drawing, or the symbol, and the pattern; or a combination of the character, the drawing, the symbol, and/or the pattern and a color; each of which identifies a rotation direction when the toilet paper roll is used.

Advantageous Effects of Invention

[0020] In the present invention, the method of manufacturing a marked toilet paper roll is provided and the method includes a marking step of applying stamps at intervals, each interval of the predetermined width, on the end portion of the winding end of the log roll before the log roll is cut into the toilet paper rolls. Accordingly, since a plurality of marked toilet paper rolls can be manufactured with a single marking process, the process can be performed economically and efficiently, and it will be possible to suppress the cost for marking to the extent possible. Furthermore, with the applied stamps, visual recognition of the position of the free portion on the end side of the winding end with respect to the adhesion position can be facilitated, and it will be possible to reduce

a case in which the toilet paper roll T is set to the holder so as to rotate in the wrong direction when in use.

[0021] In particular, in the marking step of the present invention, the stamps are applied with a pressing body that includes stamp portions provided at intervals of the predetermined width and by pressing the stamp portions against the end portion of the winding end. In other words, the pressing body can reliably apply stamps on the end portion of the winding end of the log roll, which has stopped rotating, such that an economical and efficient marking process can be achieved.

[0022] Furthermore, the present invention may be configured such that in the marking process, a roll that includes stamp portions provided at intervals of the predetermined width is used and the stamps are applied by having the stamp portions come into surface contact with the end portion of the winding end while the roll is rotated so as to synchronize with the rotation of the log roll. In other words, stamps can be applied even on a rotating log roll by printing with a roll that synchronizes with the rotation of the log roll. With the above, the rotation of the log roll is stopped in the marking process can be eliminated. In other words, it is possible to implement a manufacturing process of the toilet paper roll added with a marking process without stopping the rotation even once from the start of the winding of the wide toilet paper until the process of moving the winding shaft out from the log roll.

[0023] As a desirable configuration of the present invention, proposed is the stamps applied on the end portion of the winding end be a character, a drawing, a symbol, or a pattern, or a combination of the above or a combination of the above and a color, which identifies the rotation direction when the toilet paper roll is used. With the above, it goes without saying that visual recognition of the position of the free portion on the end side of the winding end with respect to the adhesion position can be facilitated and that it will be possible to prevent the toilet paper roll T from being set to the holder in the wrong rotation direction when in use.

Brief Description of Drawings

[0024]

[fig. 1] Fig. 1(a) is a schematic explanatory drawing illustrating an outline of a toilet paper roll manufacturing apparatus for implementing a manufacturing method of a first embodiment, and Fig. 1(b) is an explanatory drawing illustrating a stamp body that is an essential portion in Fig. 1(a).

[fig. 2]

Fig. 2(a) is a schematic explanatory drawing illustrating an outline of a toilet paper roll manufacturing apparatus for implementing a manufacturing method of a second embodiment, and Fig. 2(b) is an explanatory drawing illustrating a

stamp application roll that is an essential portion in Fig. 2(a).

[fig. 3]

Fig. 3(a) is a schematic explanatory drawing illustrating an outline of a toilet paper roll manufacturing apparatus for implementing a manufacturing method of a third embodiment, and Fig. 3(b) is an explanatory drawing illustrating a roll with stamps that is an essential portion in Fig. 3(a).

[fig. 4] Fig. 4(a) is a schematic explanatory drawing illustrating an outline of a log roll manufacturing apparatus for implementing a conventional manufacturing method, and Fig. 4(b) is an explanatory drawing illustrating a log roll that is manufactured in Fig. 4(a).

Description of Embodiments

[0025] Hereinafter, several embodiments included in the technical scope of the invention will be described together with the drawings. It should be noted that the embodiments are merely exemplifications embodying the configuration of the present invention. Note that the same or corresponding portions as those of the device illustrated in Fig. 4 illustrated as a conventional example that is used in the manufacturing method of a toilet paper roll are denoted with the same reference numerals and descriptions thereof are omitted.

<First Embodiment>

[0026] A method for manufacturing a marked toilet paper roll according to a first embodiment is implemented using a marked toilet paper roll manufacturing apparatus 1A illustrated in Fig. 1(a). The marked toilet paper roll manufacturing apparatus 1A is constituted by a log roll manufacturing apparatus 10 added with a stamping device 8 including a stamp body 81, serving as a pressing body, provided with stamp portions 8a capable of applying stamps at intervals, each interval of a predetermined width corresponding to a width of a single toilet paper roll T.

[0027] The stamping device 8 is disposed between a position where a gluing device 5 and a cutter 3 are disposed in the log roll manufacturing apparatus 10 and a position where the support rolls 6 are disposed at an advanced position of a log roll L. Accordingly, the marking process is performed in the manufacturing process of the toilet paper roll T after toilet paper P that is drawn out from the log roll L is cut by the cutter 3 and liquid glue is applied on the end portion of the winding end, and before the log roll L is supported by the support rolls 6.

[0028] The stamping device 8 includes, between a position where the gluing device 5 and the cutter 3 are dis-

posed and the position where the support rolls 6 are disposed, an arresting portion 82 that temporarily stops the rotation of the log roll L that have rotated and moved thereto. Due to the arresting portion 82, the stamp body 81 is capable of applying stamps with the stamp portions 8a on the end portion of the winding end of the log roll L that is at a stop. A pair of receiving rolls that are capable of receiving the advancing log roll L may be exemplified as the arresting portion 82.

[0029] As illustrated in Fig. 1(b), the stamp body 81 is configured as a rectangular pressing body that has a width that is the same as that of the wide toilet paper P. The stamp portions 8a are provided on the surface of the stamp body 81 at intervals, each interval of a predetermined width (114 mm, for example) corresponding to the width of a single toilet paper roll T. The stamp portions 8a apply stamps each formed of a character, a drawing, a symbol, or a pattern, or a combination of the above or a combination of the above and a color, which identifies the rotation direction when the toilet paper roll T is used, such as arrows A stamps, on the end portion of the winding end of the log roll L. With the arrows A, the end side of the winding end of the toilet paper roll T (the log roll L) is indicated such that visual recognition of the free portion that is to be the end side of the winding end with respect to the adhesion position can be facilitated. Additionally, it will be possible to prevent the toilet paper roll T from being set to the holder in the wrong rotation direction when in use.

[0030] Hereinafter, a process of the method for manufacturing the marked toilet paper roll according to the first embodiment will be described briefly.

[0031] Similar to conventional methods, first, the wide toilet paper P is wound a predetermined length about a winding shaft 1 to form a log roll L, and the log roll L is advanced by the kicker 2. Subsequently, in order to form the end portion of the winding end of the log roll L, the toilet paper P drawn out from the log roll L is cut by the cutter 3 provided at an intermediate portion of where the log roll L advances. Liquid glue is applied on the end portion of the winding end using the gluing device 5.

[0032] Furthermore, while receiving the advanced receiving roll L with the receiving rolls of the arresting portion 82 of the stamping device 8, the rotations of the receiving rolls are reduced and stopped, the rotation of the log roll L is stopped, and the log roll L is temporarily retained there. While rotating on the receiving rolls of the arresting portion 82, the end portion of the winding end of the log roll L is adhered to the outer surface of the log roll L with the liquid glue. Furthermore, by controlling the rotations of the receiving rolls, the end portion of the winding end can be oriented towards the side in which the stamp body 81 is provided when the rotation of the log roll L stops.

[0033] Then, the stamp body 81 is pushed up towards the end portion of the winding end of the log roll L and stamps (the arrows A) are applied on the end portion of the winding end with the stamp portions 8a. The log roll

L on which the stamps have been applied starts rotating again when the receiving rolls of the stamping device 8 is rotated again and is advanced towards the support rolls 6 with a kicker (not shown) that is provided in the stamping device 8. After the above, by performing the manufacturing process of the toilet paper roll through the steps similar to those of the conventional methods, for example, 12 narrow toilet paper rolls T can be obtained from a single log roll L. The arrow A stamp is applied on the end portion of the winding end of each of the 12 toilet paper rolls T.

<Second Embodiment>

[0034] A method for manufacturing a marked toilet paper roll according to a second embodiment is implemented using a marked toilet paper roll manufacturing apparatus 1B illustrated in Fig. 2(a). The marked toilet paper roll manufacturing apparatus 1B is constituted by the log roll manufacturing apparatus 10 added with a printing device 9 including a stamp application roll 91 provided with stamp portions 9a capable of applying stamps at intervals, each interval of a predetermined width corresponding to a width of a single toilet paper roll T (also see Fig. 2(b)).

[0035] The printing device 9 is disposed between the position where the gluing device 5 and the cutter 3 are disposed in the log roll manufacturing apparatus 10 and the position where the support rolls 6 are disposed, and thus disposed at the advanced position of the log roll L. Accordingly, in the second embodiment as well, the marking process is performed after the toilet paper P that is drawn out from the log roll L is cut by the cutter 3 and liquid glue is applied on the end portion of the winding end, and before the log roll L is supported by the support rolls 6.

[0036] As illustrated in Fig. 2(b), the stamp application roll 91 is a roll that has a width that is the same as that of the wide toilet paper P. The stamp portions 9a are provided on the surface at intervals, each interval of a predetermined width (114 mm, for example) corresponding to the width of a single toilet paper roll T. Similar to the stamp portions 8a according to the stamp body 81 of the first embodiment, the stamp portions 9a apply arrows A stamps on the end portion of the winding end of the log roll L. With the arrows A, the end side of the winding end of the toilet paper roll T (the log roll L) is indicated such that visual recognition of the free portion that is to be the end side of the winding end with respect to the adhesion position can be facilitated. Additionally, it will be possible to prevent the toilet paper roll T from being set to the holder in the wrong rotation direction when in use. The stamp application roll 91 is driven at a rotation that is synchronized with the rotation of the log roll L advanced by the kicker 2.

[0037] Hereinafter, a process of the method for manufacturing the marked toilet paper roll according to the second embodiment will be described briefly.

[0038] Similar to conventional methods, first, the wide toilet paper P is wound a predetermined length about the winding shaft 1 to form the log roll L, and the log roll L is advanced by the kicker 2. Subsequently, in order to form the end portion of the winding end of the log roll L, the toilet paper P drawn out from the log roll L is cut by the cutter 3 provided at the intermediate portion of where the log roll L advances. Liquid glue is applied on the end portion of the winding end using the gluing device 5.

[0039] Subsequently, the stamp application roll 91 that is driven so as to synchronize with the rotation of the log roll L comes into surface contact with the advancing log roll L, and stamps are applied on the end portion of the winding end of the log roll L with the stamp portions 9a of the stamp application roll 91. Note that while the log roll L is advanced with the kicker 2, the end portion of the winding end of the log roll L is adhered to the outer surface with the liquid glue. Furthermore, since the stamp application roll 91 is driven to rotate in synchronization with the rotation of the log roll L advanced with the kicker 2, mere control of the timing to start the rotation of the stamp application roll 91 will enable the stamp portions 9a of the stamp application roll 91 to come in surface contact with the end portion of the winding end of the log roll L.

[0040] The log roll L on which the stamps have been applied advances towards the support rolls 6 while maintaining rotation. After the above, by performing the manufacturing process of the toilet paper roll through the steps similar to those of the conventional methods, for example, 12 narrow toilet paper rolls T can be obtained from a single log roll L. The arrow A stamp is applied on the end portion of the winding end of each of the 12 toilet paper rolls T. Since the log roll L does not stop rotating during the marking process, the manufacturing of the marked toilet paper roll can be performed in a more economical and efficient manner compared to that of the first embodiment.

<Third Embodiment>

[0041] A method for manufacturing a marked toilet paper roll according to a third embodiment is implemented using a marked toilet paper roll manufacturing apparatus 1C illustrated in Fig. 3(a). The marked toilet paper roll manufacturing apparatus 1C is constituted by the log roll manufacturing apparatus 10 added with another stamping device 80 including a roll 83 with stamps, the roll 83 serving as a pressing body, provided with stamp portions 8b in the circumferential direction capable of applying stamps at intervals, each interval of a predetermined width corresponding to a width of a single toilet paper roll T.

[0042] The another stamping device 80 is disposed above the two parallel support rolls 6 and a pusher 71 that presses the other end surface of the log roll L towards the one end of the winding shaft 1 in the axial direction. Accordingly, in the third embodiment, the marking process is performed concurrently with a process of pulling

out the winding shaft 1 from the log roll L, after the toilet paper P that is drawn out from the log roll L is cut by the cutter 3 and liquid glue is applied on the end portion of the winding end, and, further, after the log roll L is supported by the support rolls 6.

[0043] As illustrated in Fig. 3(b), the roll 83 with stamps is a role in which a circumferential length thereof is a length that is an integral multiplication of the width of a single toilet paper roll T. The stamp portions 8b are provided in the circumferential direction on the surface at intervals, each interval of a predetermined width corresponding to the width of a single toilet paper roll T. Similar to the stamp portions 8a according to the stamp body 81 of the first embodiment, the stamp portions 8b apply arrows A stamps on the end portion of the winding end of the log roll L. With the arrows A, the end side of the winding end of the toilet paper roll T (the log roll L) is indicated such that visual recognition of the free portion that is to be the end side of the winding end with respect to the adhesion position can be facilitated. Additionally, it will be possible to eliminate cases in which the toilet paper roll T is set to the holder so as to rotate in the wrong direction when in use. The roll 83 with stamps is rotationally driven in the width direction of the log roll L at a speed synchronizing with the speed in which the pusher 71 pushes the other end surface of the log roll L towards the one end of the winding shaft 1.

[0044] Hereinafter, a process of the method for manufacturing the marked toilet paper roll according to the third embodiment will be described briefly.

[0045] Similar to conventional methods, first, the wide toilet paper P is wound a predetermined length about a winding shaft 1 into a log roll L, and the log roll L is advanced by the kicker 2. Furthermore, in order to form the end portion of the winding end of the log roll L, the toilet paper P drawn out from the log roll L is cut by the cutter 3 provided at an intermediate portion of where the log roll L advances. Liquid glue is applied on the end portion of the winding end using the gluing device 5. Subsequently, the log roll L is placed on the two parallel support rolls 6 at the advance position. After that, the support rolls 6 are rotationally driven and the log roll L is rotated in a single direction together with the winding shaft 1 such that the end portion of the winding end is wound and adhered.

[0046] Subsequently, the winding shaft 1 is pushed out from the log roll L using the pusher 71 and a pull-out conveyer at the advance position of the support rolls 6. In the above, since the roll 83 with stamps is disposed above the support rolls 6, stamps are applied by pressing the stamp portions 8b of the roll 83 with stamps against the end portion of the winding end of the log roll L while the winding shaft 1 is in the course of being pushed out. The roll 83 with stamps is rotationally driven at a speed that is synchronized with the speed in which the pusher 71 presses the log roll L and is provided with stamp portions 8b in the circumferential direction thereof at intervals, each interval of a predetermined width correspond-

ing to the width of a single toilet paper roll T. Accordingly, when the log roll L on which arrows A stamps are applied on the end portion of the winding end with the stamp portions 8b is cut into rolls, owing to the roll 83 with stamps, toilet paper rolls T, each having the arrow A stamp applied thereto, are obtained. Furthermore, by controlling the rotational drive of the support rolls 6, the end portion of the winding end of the log roll L can be positioned at a position where the stamp portions 8b of the roll 83 with stamps come in surface contact thereto.

[0047] Subsequently, the winding shaft 1 of the log roll L on which the stamp has been applied is pushed out using the pusher 71 and the pull-out conveyer. After the winding shaft 1 is pulled out from the log roll L, the log roll L is cut into a plurality of toilet paper rolls at a predetermined width (a narrow width). For example, the log roll L is cut into 12 narrow toilet paper rolls T, and 12 toilet paper rolls T, each toilet paper roll T having the arrow A stamp applied thereon, can be obtained. In the present embodiment, the process is, rather than adding a marking process to a conventional process, a process that merges the marking process with the conventional process; accordingly, no time whatsoever is needed solely for the marking process. Accordingly, it can be said that the manufacturing of the marked toilet paper roll can be performed in an ultimately economical manner.

[0048] Accordingly, in the present invention, since a plurality of marked toilet paper rolls T can be manufactured with a single marking process, the manufacturing process can be performed economically and efficiently, and it will be possible to suppress the cost for marking to the extent possible. Furthermore, visual recognition of the position of the free portion on the end side of the winding end with respect to the adhesion position can be facilitated, and it will be possible to prevent the toilet paper roll T from being set to the holder in the wrong rotation direction when in use. The specific method of the above can be implemented by using the stamp portion provided with the stamp body 81, the stamp application roll 91, or the roll 83 with stamps.

[0049] Particularly, by using the stamp application roll 91, stamps can be applied on the log roll L without stopping the rotation thereof and the process of moving out the winding shaft 1 from the log roll L can be performed while maintaining the rotation; accordingly, a more efficient toilet paper roll manufacturing process can be implemented. When the roll 83 with stamps is used, the process can be a process in which the marking process is merged with the conventional process such that no time dedicated for the marking process is required; accordingly, manufacturing of the marked toilet paper roll can be performed in an ultimately economical manner.

[0050] Furthermore, in the present invention, in order to facilitate visual recognition of where the free portion on the end side of the winding end is positioned with respect to the adhesion position and to make it be possible to prevent the toilet paper roll T from being set to the holder in the wrong rotation direction when in use,

the stamps applied on the end portion of the winding end may be configured of a character, a drawing, a symbol, or a pattern, or a combination of the above or a combination of the above and a color, which identifies the rotation direction when the toilet paper roll T is used.

[0051] While the embodiments of the present invention have been described above, the technical scope of the invention is not limited to the embodiments described above and various design modifications may be made that do not depart from the recitations stipulated in the claims. For example, the configurations of the stamp body and the stamp application roll described in the embodiments described above are exemplifications, and a member that has various shapes and functions capable of applying stamps on the end portion of the winding end of the log roll may be applied.

[0052] Furthermore, the stamps applied on the end portion of the winding end may be a character, a drawing, a symbol, or a pattern, or a combination of the above or a combination of the above and a color, which identifies the rotation direction when the toilet paper roll is used, and are not limited to the arrow exemplified in the embodiments described above. The intervals of a predetermined width in which the stamps are applied refer to intervals between the center points of the stamps on the log roll. Accordingly, for example, a stamp designed with a plurality of triangular marks or arrows for each toilet paper roll, a stamp designed with continuous triangular marks or arrows on the toilet paper roll, and the like are also included in the technical scope of the invention.

Reference Signs List

[0053]

- 1A Marked toilet paper roll manufacturing apparatus (first embodiment)
- 1B Marked toilet paper roll manufacturing apparatus (second embodiment)
- 1C Marked toilet paper roll manufacturing apparatus (third embodiment)
- 1 Winding shaft
- 10 Log roll manufacturing apparatus
- 11 Inlet side friction roll
- 12 Outlet side friction roll
- 13 Rider roll
- 14 Piston cylinder
- 15 Support frame
- 2 Kicker
- 3 Cutter
- 4 Air ejection nozzle
- 5 Gluing device
- 5a Container
- 51 Air cylinder
- 52 Gluing string
- 6 Support roll
- 71 Pusher
- 72 Endless chain

8 Stamping device (first embodiment)	
81 Stamp body (first embodiment)	
82 Arresting portion	
8a Stamp portion	
80 Another stamping device (third embodiment)	5
83 Roll with stamps (third embodiment)	
8b Stamp portion	
9 Printing device (second embodiment)	
91 Stamp application roll (second embodiment)	
9a Stamp portion	10
A Arrow	
C Cutting position	
L Log roll of wide toilet paper	
P Wide toilet paper	
R Web roll of wide toilet paper	15
T Narrow toilet paper roll	

Claims

- 20
1. A method for manufacturing a marked toilet paper roll by winding a sheet of wide toilet paper a predetermined length about a winding shaft to form a log roll and by cutting the log roll at a predetermined width into a plurality of toilet paper rolls, the method comprising the steps of: marking stamps at intervals, each interval of the predetermined width, on an end portion of a winding end of the log roll before the log roll is cut into the toilet paper rolls. 25
 2. The method of manufacturing a marked toilet paper roll according to claim 1, wherein in the marking step, the stamps are applied with a pressing body that includes stamp portions provided at intervals of the predetermined width and by pressing the stamp portions against the end portion of the winding end. 30 35
 3. The method of manufacturing a marked toilet paper roll according to claim 1, wherein in the marking step, a roll that includes stamp portions provided at intervals of the predetermined width is used and the stamps are applied by having the stamp portions come into surface contact with the end portion of the winding end while the roll is rotated so as to synchronize with the rotation of the log roll. 40 45
 4. The method of manufacturing a marked toilet paper roll according to any one of claims 1 to 3, wherein the stamps are each of a character, a drawing, a symbol, or a pattern; a combination of the character, the drawing, or the symbol, and the pattern; or a combination of the character, the drawing, the symbol, and/or the pattern and a color; each of which identifies a rotation direction when the toilet paper roll is used. 50 55

FIG.1(a)

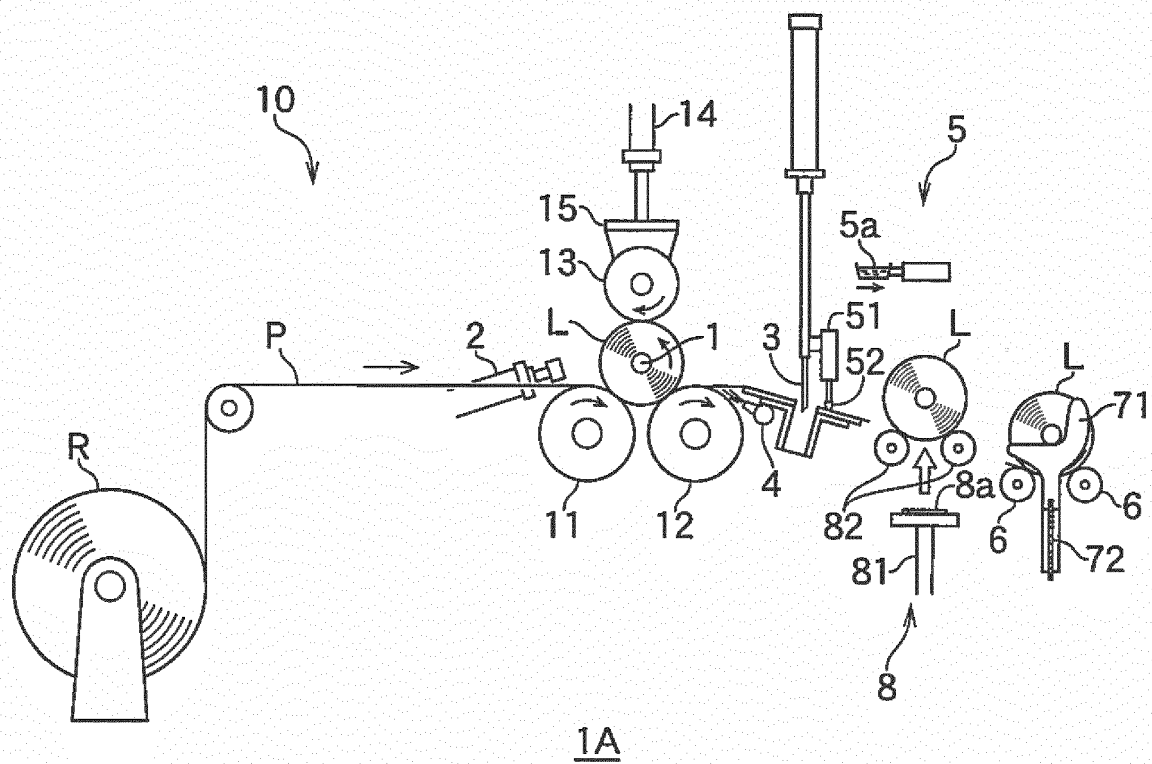


FIG.1(b)

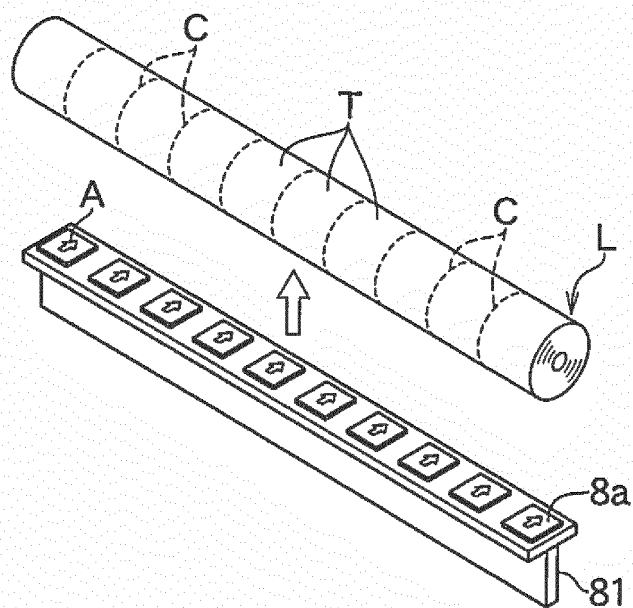
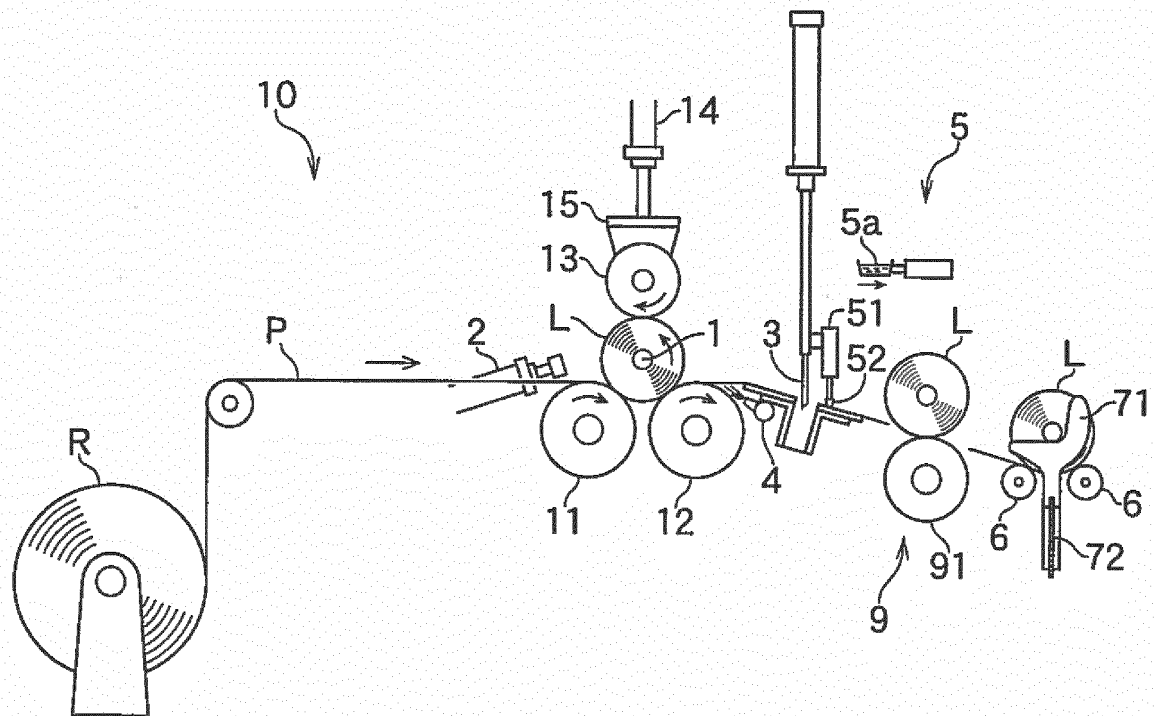


FIG.2(a)



1B

FIG.2(b)

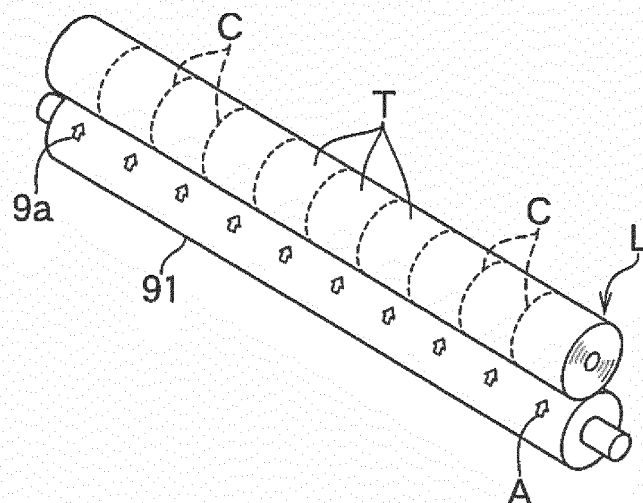
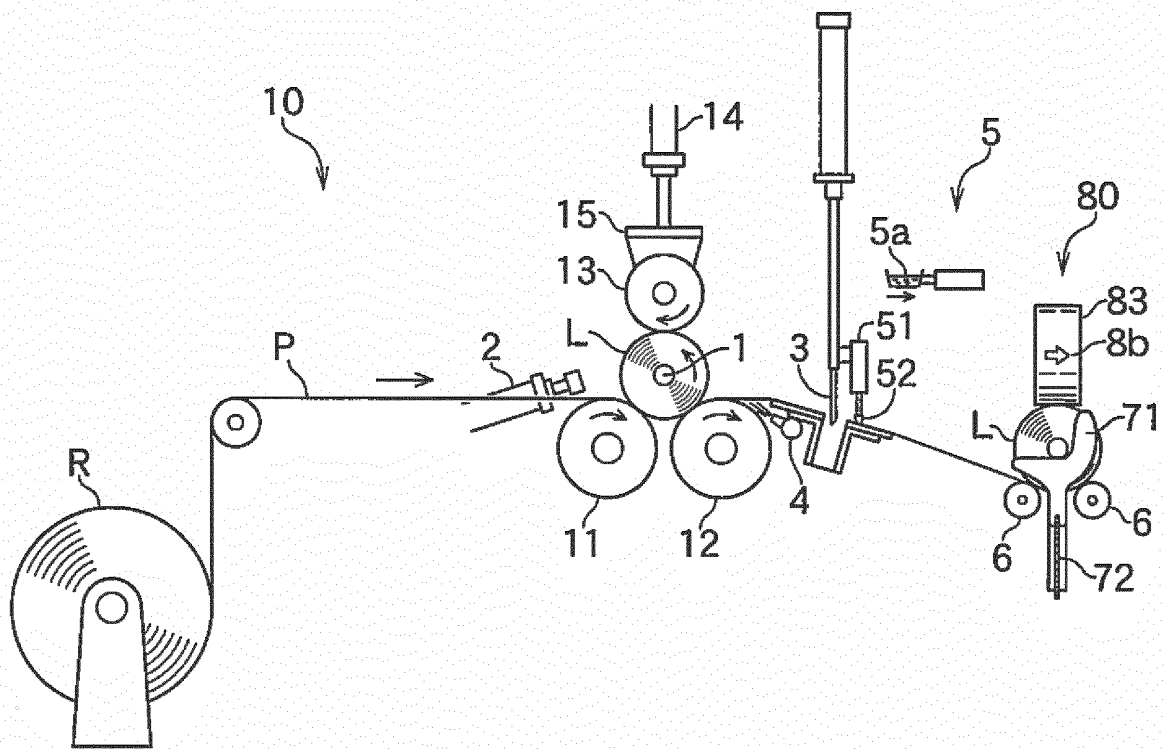


FIG.3(a)



1C

FIG.3(b)

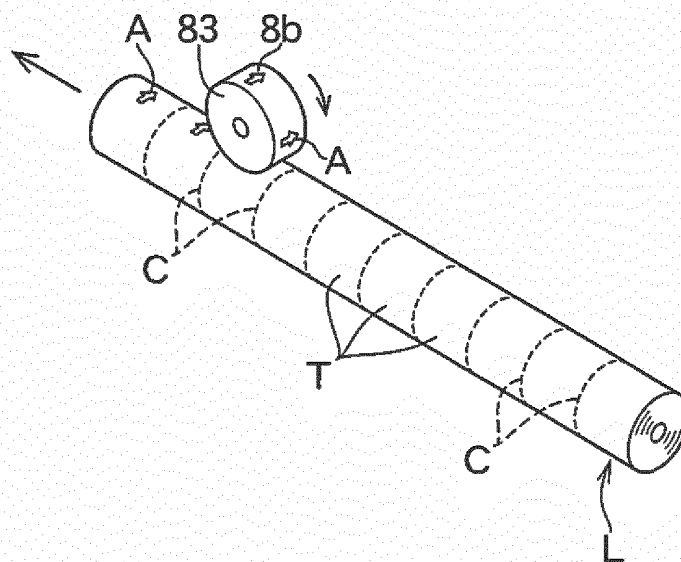


FIG.4(a)

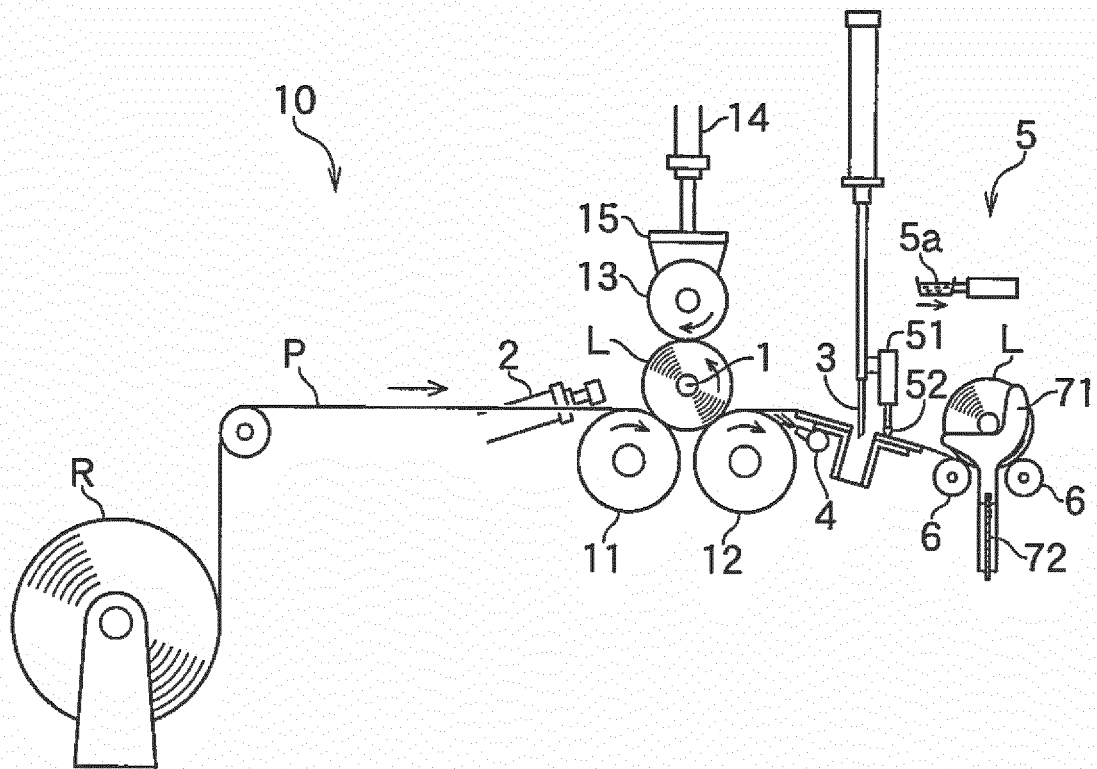
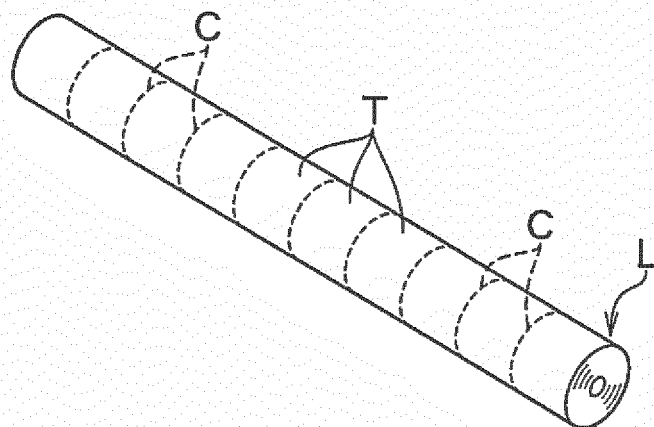


FIG.4(b)



INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2015/004032

A. CLASSIFICATION OF SUBJECT MATTER

A47K10/16(2006.01)i, B65H18/28(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A47K10/16, B65H18/28, B41K3/12

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Jitsuyo Shinan Koho 1922-1996 Jitsuyo Shinan Toroku Koho 1996-2015

Kokai Jitsuyo Shinan Koho 1971-2015 Toroku Jitsuyo Shinan Koho 1994-2015

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP 2013-256131 A (Oji Holdings Corp.), 26 December 2013 (26.12.2013), paragraphs [0075] to [0081]; fig. 3 (Family: none)	1-4
Y	JP 2014-133074 A (Meiji Paper Co., Ltd.), 24 July 2014 (24.07.2014), paragraphs [0019], [0023], [0026], [0029], [0032], [0033]; fig. 2, 3 (Family: none)	1-4
Y	JP 3042640 U (Tomy Co., Ltd.), 31 October 1997 (31.10.1997), paragraphs [0011], [0022], [0025]; fig. 6, 10 (Family: none)	3, 4

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

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"&"

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Date of the actual completion of the international search
26 August 2015 (26.08.15)Date of mailing of the international search report
08 September 2015 (08.09.15)Name and mailing address of the ISA/
Japan Patent Office
3-4-3, Kasumigaseki, Chiyoda-ku,
Tokyo 100-8915, Japan

Authorized officer

Telephone No.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2015/004032

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP 2009-268534 A (Daio Paper Corp.), 19 November 2009 (19.11.2009), paragraphs [0014], [0015]; fig. 1 (Family: none)	4

Form PCT/ISA/210 (continuation of second sheet) (July 2009)

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- JP 3015411 B [0013]
- JP 2009268534 A [0013]