

(19)



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(11)

EP 0 943 573 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention
of the grant of the patent:

02.06.2004 Bulletin 2004/23

(51) Int Cl.7: **B65H 65/00**, B65H 54/72,
B65H 57/00

(21) Application number: **99102879.6**

(22) Date of filing: **03.03.1999**

(54) **Filament yarn take-up winder**

Filamentgarnaufwickelmaschine

Bobinoir pour fil continu

(84) Designated Contracting States:
DE IT

(30) Priority: **20.03.1998 JP 7206898**

(43) Date of publication of application:
22.09.1999 Bulletin 1999/38

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(56) References cited:
EP-A- 0 072 908 **EP-A- 0 374 536**
DE-A- 4 203 196

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Description

[0001] The invention relates to a filament yarn take-up winder for winding a filament yarn according to the first part of claim 1.

[0002] In a filament yarn take-up winder, its body includes a turret plate having two bobbin holders protruding therefrom so that the turret plate rotates by 180 ° to switch the bobbin holders between a winding position and a standby position. A contact roller that contacts a bobbin installed on the bobbin holder is provided above the bobbin holder. A filament yarn spinned and continuously supplied is wound into a package while being traversed by a traverse device.

[0003] When a package becomes full, this filament yarn take-up winder rotates the turret plate to switch an empty bobbin from the standby position to the winding position for winding while removing the full package moved at the standby position from the bobbin holder and passing the empty bobbin on the holder to set it in a standby condition, thereby allowing the yarn to be continuously wound.

[0004] In switching between the winding position and the standby position, the yarn leading to the full package must be transferred to the empty bobbin around which the yarn is to be wound. Accordingly, the winder includes a yarn-removal guide for removing the yarn from the traverse device, a yarn-shifting guide for moving the removed yarn to a yarn-catching groove position in the empty bobbin, and a yarn-anchoring guide for temporarily bearing the moved yarn before transferring it to the traverse device. These guides are used during a threading operation for initially installing the yarn on the empty bobbin, as well as during the operation for transferring the yarn from a full package to an empty package. In said conventional filament yarn take-up winder, the traverse device, the contact roller, the yarn-removal guide, the yarn-shifting guide, and the yarn-anchoring guide are arranged on both sides of the yarn path, resulting in difficult threading and maintenance operations.

[0005] In the EP 0 374 536 A there is disclosed a take-up winding machine for a continuously supplied yarn, comprising two bobbin holders mounted on a revolving plate for moving a bobbin from a winding position to a standby position and vice versa. Above the winding position of the bobbin a contact roller is disposed on a swing arm for applying a pressure onto the surface of said bobbin. For guiding the supplied yarn during the winding operation in a direction parallel to the bobbin axis a blade type rotary traverse device is provided above the contact roller. For a changing operation of the bobbins, when the yarn will be transferred from a full packaged bobbin to an empty bobbin, a yarn guiding apparatus lifts the yarn from the traverse device and guides the lifted yarn in an axial position in which the yarn comes into engagement with a yarn engaging means of the bobbin. Said guiding apparatus and the

traverse device are disposed on the same side of the yarn supply path and the guiding apparatus comprises a swing flap which is axially shiftably mounted on a rod and swingable in the rod axis. The inclined front edge of said swing flap has the function of a yarn removal guide and lifts the yarn from the traverse device by swinging the flap in a horizontal position. Thereby, the yarn slides on inclined guiding edges into a notch provided in said guiding edges. A problem is that after forming the desired spiral portion, when releasing the yarn from the guide notch, the traverse movement of the yarn caught by the traverse device is restricted by the swing flap, because the swing flap crosses the plane of the traverse movement of the yarn, when releasing the yarn from the swing flap.

[0006] It is an object of the invention to solve this problem in order to provide a filament yarn take-up winder that enables easy threading and maintenance operations.

[0007] This object will be solved by the features of claim 1.

[0008] In a further aspect of the invention the filament yarn take-up winder the yarn-shifting guide and the yarn-anchoring guides are linked with the yarn-removal guide so as to move forward and backward integrally with the yarn-removal guide.

[0009] Further, the yarn-anchoring guide can adjust its position in the axial direction of the bobbin.

Brief Description of the Drawing

[0010]

Figure 1 is a front view showing one embodiment of the present invention.

Figure 2 is a top view showing the upper yarn guide apparatus of Figure 1 in detail.

Figure 3 is an enlarged front view of the integral part of Figure 1.

Figure 4 is a front view showing a state in which the yarn-removal plate of the upper guide apparatus in Figure 3 has been operated.

Figure 5 is a front view shown a state in which the yarn-shifting guide in Figure 4 has been operated.

Figure 6 is a top view showing the relationship between the yarn-anchoring guide and the package under the conditions shown in Figure 5.

Figure 7 is a perspective view showing the filament yarn take-up winder of Figure 1.

Detailed Description of the Preferred Embodiments

[0011] An embodiment of the present invention is described below in detail with reference to the drawings.

[0012] First, the basic configuration of a filament yarn take-up winder according to the present invention will be described with reference to Figures 1 and 7.

[0013] In Figures 1 and 7, a body 10 includes a rotat-

able revolver turret plate 12 having two bobbin holders 11 that protrude from the turret plate 12 and that have a plurality of bobbins B passed thereon. The turret plate 12 rotates by 180° each time to switch a bobbin holder 11 between a winding position Wp and a standby position Sp.

[0014] Above the winding position Wp, a slide box 14, which ascends simultaneously as the packages P become larger and descends when empty bobbins B are switched from a standby position Sp to a winding position Wp, is arranged so that ascends and descends independently in the body 10. A contact roller 13 that rotates in contact with the bobbins B (the packages P), it is supported within the lower part of the slide box 14 in such a way that it can rotate independently.

[0015] A blade type rotary traverse device 16 comprising two blades that rotate in relatively opposite directions is provided above the contact roller 13 in the slide box 14. The traverse device 16 and the contact roller 13 are arranged to one side of a yarn path for a continuously supplied yarn Y. An upper yarn guide apparatus 20 is located above the traverse device 16 in such a way as to be concentrated on the traverse device 16 side of the yarn Y.

[0016] In addition, the body 10 includes an swinging arm 21 having a lower yarn guide apparatus 21a.

[0017] The lower yarn guide apparatus 21a slides on the arm 21 and is composed of a yarn-drop prevention guide for preventing yarn being wound in a full package transferred to the standby position Sp from dropping onto the end of the layered yarn section of the full package when transferring the yarn, and a yarn-shift guide for aligning the yarn with a yarn-catching groove (a yarn-engaging section) formed in the empty bobbin. The traverse device 16, the upper yarn guide apparatus 20 and the lower yarn guide apparatus 21a are provided at every each yarn Y.

[0018] 22 is a control board that allows take-up winding operation conditions to be set, and 23 is a partitioning cover.

[0019] In this filament yarn take-up winder, the turret plate 12 rotates by 180° to switch the bobbin holders 11 between the winding position Wp and the standby position Sp. When the yarns Y are wound, the bobbin holder 11 at the winding position Wp is rotated while the contact roller 13 located above the bobbin holder 11 rotates in contact with the bobbins B (the packages P) to apply a predetermined pressure to the bobbins B. Thus, the traverse devices traverse a plurality of yarns Y spinned and continuously supplied as shown in Figure 7, while the yarns are wound into the packages P.

[0020] In this filament yarn take-up winder, when the package P becomes full, the turret plate 12 is rotated to switch the empty bobbin B at the standby position Sp to the winding position Wp for continuously winding. Moreover, when the full package P moved at the standby position Sp is removed from the bobbin holder 11, an empty bobbin B is then passed on the holder 11 to enter the

standby condition Sp. In this manner, the yarn can be wound continuously.

[0021] In switching between the winding position Wp and the standby position Sp, the yarn Y leading to the full package P must be transferred to an empty bobbin B around which the yarn is to be wound. Accordingly, the upper yarn guide apparatus 20 guides the yarn in such a way as to remove the yarn Y from the traverse device 16, move the removed yarn to a yarn-catching groove position in the empty bobbin B, and temporarily bear the yarn until it transfers to the traverse device 16 again.

[0022] The upper yarn guide apparatus 20 will be described below.

[0023] The upper yarn guide apparatus 20 according to the present invention is located in the slide box 14 in such a way as to be concentrated on one side of a yarn path (during package formation) together with the blade type rotary traverse device 16. This configuration precludes a relevant member from being located opposite to the yarn path (opposite to the side on which the traverse device 16 is installed, that is, the closing cover 14a side) when a closing cover 14a that covers the traverse device 16 in the slide box 14 is opened.

[0024] As shown in the enlarged view in Figure 3, the upper yarn guide apparatus 20 is composed of an inverse-V-shaped yarn-removal plate 25 which is provided so that can moved forward and backward on a supporting plate 24, a yarn-anchoring guide 44 that is provided on the yarn-removal plate 25 at a position corresponding to a yarn engaging portion S (Figure 6) for the bobbin B and that is moved forward to a position where it can capture the yarn Y while the yarn-removal plate 25 is moving forward, and a yarn-shifting guide 45 that is provided on the yarn-removal plate 25 opposite to the yarn-anchoring guide 44 so as to move forward and backward in the traverse direction and that biases the yarn Y to the yarn engaging portion S of the bobbin B to engage it with the yarn-anchoring guide 44.

[0025] The upper yarn guide apparatus 20 will be described in detail with reference to Figure 2.

[0026] The supporting plate 24 is supported on a frame 30 of the slide box 14, and a yarn-removal plate 25 is provided below the supporting plate 24 so as to move on a pair of rails 32 forward and backward relative to the yarn path.

[0027] The yarn-removal plate 25 has at its tip a yarn-removal guide 33 that has a circular cross section and that removes the yarn from the traverse device 16 (changing the position of the yarn path Y in such a way as to leave the traverse device 16). The yarn-removal plate 25 also has an opening 34 located at a position corresponding to the blade type rotary traverse device 16, which is described below.

[0028] The yarn-removal plate 25 is linked with the supporting plate 24 via a pair of linking mechanisms 35, which are linked with a coupling rod 36, to which a moving cylinder 37 is coupled. Thus, a rod 38 extends from

the cylinder 37 to move the yarn-removal plate 25 forward, via the coupling rod 36 and the linking mechanisms 35, from the position shown by the continuous line in Figure 2 to a position 25P shown by the double chain-dotted line. In addition, the coupling rod 36 and the supporting plate 24 are coupled together via a spring 39 so that the spring force of the spring 39 returns the yarn-removal guide 25 from its extended position to its retracted position, which is shown by the continuous line in Figure 2.

[0029] The yarn-removal guide 33 is configured as a bar common to all yarns and extending in the traverse direction. The yarn-removal guide 33 is located on the traverse device 16 side of the yarn Y at its standby position, and since it is coupled to the yarn-removal plate 25, when the yarn-removal plate 25 moves forward, the yarn-removal guide 33 is moved together with the yarn-removal plate 25 crossing the yarn in the direction orthogonal to the traverse direction, thereby separating the yarn Y from the traverse device 16.

[0030] The blade type rotary traverse device 16 is arranged below the yarn-removal plate 25 and mounted on the frame 30 of the slide box 14. The traverse device 16 comprises a traverse guide member 40 that guides the yarn and defines a traverse range T, and two blades 42a and 42b that frequently appear on a yarn moving surface 41 of the traverse guide member 40 to move the yarn in the lateral direction. One blade 42a rotates counterclockwise in Figure 2, whereas the other blade 42b rotates clockwise, and the two blades 42a and 42b cross each other at the respective traverse ends to switch the traverse direction of the yarn.

[0031] The yarn-removal plate 25 has L-shaped yarn-anchoring guides 44 at positions located out of the traverse range T and corresponding to the slits in the yarn engaging portions S in the bobbins B, wherein the number of guides are installed corresponds to the number of packages on which the yarn is wound. The yarn-anchoring guide 44 is located on the traverse device 16 side of the yarn Y at its standby position, and since it is coupled to the yarn-removal plate 25, when the yarn-removal plate 25 moves forward, the yarn-anchoring guide 44 is moved together with the yarn-removal plate 25 to move to a position where a yarn-engaging portion 44a (see Figure 6) beyond the yarn removed from the traverse device 16 by the yarn-removal guide 33.

[0032] The position of the yarn-anchoring guide 44 can be fine-tuned in the axial direction of the bobbin B using a long hole 55, which is shown in Figure 6, and the tip of the yarn-engaging portion 44a is aligned with the traverse end. The yarn-engaging portion 44a temporarily bears the yarn Y.

[0033] A yarn-shifting guide 45 is provided on the yarn-removal plate 25. The yarn-shifting guide 45 is opposed to the yarn-anchoring guide 44 and is normally located another outside of the traverse range T, while, in operation, moving toward the yarn-anchoring guide

44 to shift the yarn to a position of the yarn engaging portion S. The yarn-shifting guide 45 is provided on a rod-shaped upper guide 46 common to all yarns. The upper guide 46 can be moved in the axial direction of the bobbin using a guide rail 47 and can be moved back and forth in the traverse direction using a yarn-shifting cylinder 48 provided on the yarn-removal plate 25.

[0034] The yarn-shifting guide 45 is located on the traverse device 16 side of the yarn Y at its standby position so as not to contact the yarn. Since, however, it is coupled to the yarn-removal plate 25, when the yarn-removal plate 25 moves forward, the guide 45 is moved together with the yarn-removal plate 25 to move to a position where it engages the yarn removed from the traverse device 16 by the yarn-removal guide 33.

[0035] In addition, the yarn-removal plate 25 includes a proximity switch 50 for detecting the movement of the yarn-shifting guide 45 to the yarn-anchoring guide 44, and a detector 51 is mounted on the upper guide 46.

[0036] The operation of the present invention will now be described.

[0037] First, the yarn Y spinned and continuously supplied as shown in Figures 1 and 7 is wound around the bobbin B at the winding position Wp into the package P while being traversed by the blade type rotary traverse device 16. During winding, the bobbin holder 11 at the winding position Wp is rotated, and the contact roller 13 is rotated while contacting the package P around which the yarn is being wound, thereby controlling the rotation of the bobbin holder 11 while elevating the slide box 14 as the winding diameter increases.

[0038] During winding, when the package P becomes full as shown in Figure 3, the turret plate 12 shown in Figure 1 is rotated to move the empty bobbin B at the standby position Sp to the winding position Wp while moving the full package P to the standby position Sp, as shown by a locus L. Then, the slide box 14 lowers to allow the contact roller 13 and the empty bobbin B to contact each other. Subsequently, the yarn-removal guide 33 moves forward to the yarn Y side to remove the yarn Y from the traverse device 16, as shown in Figure 4.

[0039] That is, as shown in Figure 2, the rod 38 of the moving cylinder 37 extends to move the coupling rod 36 leftward in Figure 2, thereby moving forwardly the yarn-removal guide 33 via the linking mechanisms 35 to the position 25P shown by the double chain-dotted line.

[0040] Until the forward movement of the yarn-removal guide 33 causes the yarn Y to be separated from the traverse device 16, the yarn Y remains within the traverse range T and between the yarn-anchoring guide 44 and the yarn-shifting guide 45.

[0041] Then, when the yarn-shifting cylinder 48 is extended, the upper guide 46 moves to engage the yarn Y, which is located within the traverse range T, with the yarn-shifting guide 45. Finally, the yarn Y is caught between the yarn-anchoring guide 44 and the yarn-shifting guide 45.

[0042] Then, the yarn Y moves out from the traverse range T to the yarn engaging portion S of the bobbin B.

[0043] Then, the proximity switch 50 described in Figure 2 operates to move the yarn-removal guide 33 backward to bend the yarn Y toward the traverse device 16 as shown in Figure 5. Then as shown in Figure 6, while being caught between the yarn-shifting guide 45 and the yarn-anchoring guide 44, the yarn Y is pressed against and borne by the yarn-engaging portion 44a of the yarn-anchoring guide 44.

[0044] Subsequently, a yarn-shift guide of the lower yarn guide apparatus 21a operates to catch the yarn Y in the yarn engaging portion S of the bobbin B, and the yarn leading to the full package P is cut by tension so as to be separated from the yarn Y leading to the empty bobbin B.

[0045] Subsequently, when the yarn-shifting cylinder 48 contracts to move the yarn-shifting guide 45 backward, the yarn Y moves simultaneously with the backward movement of the yarn-shifting guide 45 while sliding down the yarn-engaging portion 44a of the yarn-anchoring guide 44. Once the yarn-shifting guide 45 has been separated from the yarn-anchoring guide 44, the yarn is removed from the yarn-engaging portion 44a. Then, the traverse device 16 immediately catches and traverses the yarn Y to wind it around the new bobbin B.

[0046] The yarn-removal guide 33, the yarn-anchoring guide 44, and the yarn-shifting guide 45 are located on one side of the yarn path through normal winding process which the yarn is being wound normally (the yarn path shown in Figure 1), that is, the rear side of yarn path closer to the traverse device 16, whereas the opposite side, that is, the front side of the yarn path is an open space. Thus, maintenance and threading operations are easy to perform.

[0047] In addition, after the yarn engaging portion S of the empty bobbin has caught the yarn, when the yarn is moved to within the traverse range, the yarn-anchoring guide 44 has biased the yarn the traverse device 16 side relative to the yarn path through normal winding process, and the yarn-shifting guide 45 has been moved closer to the device 16 than to the yarn path. Consequently, when the yarn is removed from the yarn-anchoring guide 44 and traversed by the traverse device 16, the yarn and the yarn-shifting guide 45 are prevented from interfering with each other, thereby preventing the wound yarn from being damaged. In addition, as shown in Figure 6, the mounting position of the yarn-anchoring guide 44 can be fine-tuned in the axial direction of the yarn-removal guide 25 using the long hole 55, thereby enabling the forward and backward movements of the yarn-shifting guide 45 to be fine-tuned in the traverse direction. As a result, the range of a spiral portion can be fine-tuned that is formed when the process transfers to production winding after a bunch winding has been formed at the yarn engaging portion S. The spiral portion can thus be formed in such a way that it is easily cut later on.

[0048] Since the yarn-anchoring guide 44 and the yarn-shifting guide 45 are adapted to move forward and backward together with the yarn-removal guide 33 in the direction orthogonal to the traverse direction, no means for driving the yarn-anchoring 44 or yarn-shifting guide 45 in this direction needs to be provided, thereby simplifying the control of the guide operations. The above embodiment provides the yarn-removal guide 33 in proximity to the traverse device 16, and this proximity helps make the machine more compact and makes it easier to fine-tune the yarn path.

[0049] Although the above embodiment references the example in which the slide box including the contact roller ascends as the diameter of the package increases, this box may be fixed in position while the turret plate rotates, which occurs as the diameter of the package increases.

[0050] Since this apparatus is used not only to transfer the yarn from the full package to the empty bobbin as illustrated in the above embodiment but also to thread the yarn, it is applicable to a filament yarn take-up winder that are not based on the automatic switching method.

[0051] In summary, according to the present invention, the traverse device and the yarn-removal guide, etc. are concentrated on one side of the yarn path, and the other side is an open space. Thus, the present invention facilitates maintenance and threading operations.

[0052] Moreover, because the yarn-shifting guide and the yarn-anchoring guide, etc. are located in such a way as to be completely biased to one side of the yarn path without crossing the yarn path, these guides, etc. are prevented from interfering with threading operations.

Claims

1. Filament yarn take-up winder comprising

- a plurality of bobbin holders (11) for supporting and rotating bobbins (B), and for moving a bobbin (B) from a winding position (Wp) to a stand-by position (Sp) and vice versa,
- a contact roller (13) for applying a pressure to the winding bobbin (P),
- a traverse device (16) for traversing a continuously supplied yarn (Y) during the winding operation, and
- a yarn guiding apparatus (20) for removing the yarn (Y) from the traverse device (16) when the bobbin is full, guiding the yarn (Y) towards a yarn-engaging portion (S) of the bobbin (B) and temporarily bearing the yarn (Y) until it will be transferred to the traverse device (16),
- wherein, in the stand-by position, the yarn guide apparatus (20) is disposed on the same side of the yarn path as is the traverse device (16) and the contact roller (13),

characterized in that

the yarn guiding apparatus (20) comprises

- a yarn-removal guide (33) movable in the direction orthogonal to the traverse direction, thereby separating the yarn (Y) from the traverse device (16), 5
- an L-shaped yarn-anchoring guide (44) located corresponding to the yarn engaging portion (S) of the bobbin (B) and also movable forward to cross the yarn path, and 10
- a yarn-shifting guide (45) opposed to the yarn-anchoring guide (44) and also movable forward to cross the yarn path and additionally movable in the traverse direction for shifting the yarn (Y) in an engagement with the L-shaped yarn-anchoring guide (44). 15

2. Yarn winder according to claim 1, **characterized in that** the yarn removal guide (33) is linked with the yarn-anchoring guide (44) and with the yarn-shifting guide (45) so as to move integrally forward and backward. 20
3. Yarn winder according to claim 1 or 2, **characterized in that** the L-shaped yarn-anchoring guide (44) has a yarn-engaging portion (44a), the tip of said yarn engaging portion (44a) is aligned with the traverse end. 25
4. Yarn winder according to any one of claims 1 to 3, **characterized in that** the position of the yarn-anchoring guide (44) is adjustable in the axial direction of the bobbin (B). 30

Patentansprüche**1. Filamentgarn-Aufwickler mit**

- einer Vielzahl von Spulenhaltern (11) zur Halterung und zum Drehen von Spulen (B) sowie zum Bewegen einer Spule (B) aus einer Wickelposition (Wp) zu einer Standby-Position (Sp) und umgekehrt, 45
- einer Kontaktrolle (13) zum Aufbringen eines Druckes auf die Wickelspule (B),
- einer Traversiereinrichtung (16) zum Traversieren eines kontinuierlich zugeführten Garns (Y) während des Aufwickelvorgangs, und 50
- einer Garnführungseinrichtung (20) zum Abnehmen des Garns (Y) von der Traversiereinrichtung (16), wenn die Spule voll ist, zum Führen des Garns (Y) zu einem Garn-Greifteil (S) der Spule (B) und zum zeitweiligen Halten des Garns (Y) bis zu seiner Übergabe an die Traversiereinrichtung (16), 55
- wobei in der Standby-Position die Garnfüh-

rungseinrichtung (20) an der gleichen Seite der Garnbahn wie die Traversiereinrichtung (16) und die Kontaktrolle (13) angeordnet ist,

dadurch gekennzeichnet, dass
die Garnführungseinrichtung (20) enthält

- einen senkrecht zur Traversierrichtung bewegbaren Garn-Abführer (33), der dabei das Garn (Y) von der Traversiereinrichtung (16) trennt,
- einen entsprechend dem Garn-Greifteil (S) der Spule (B) angeordneten L-förmigen Garn-Halteführer (44), der auch nach vorn zum Kreuzen der Garnbahn bewegbar ist, und
- einen zum Garn-Halteführer (44) entgegengesetzten Garn-Schiebeführer (45), der auch nach vorn zum Kreuzen der Garnbahn sowie zusätzlich in der Traversierrichtung zum Verschieben des Garns (Y) bis zum Eingriff mit dem L-förmigen Garn-Halteführer (44) bewegbar ist.

2. Garnaufwickler nach Anspruch 1, **dadurch gekennzeichnet, dass** der Garn-Abführer (33) mit dem Garn-Halteführer (44) und mit dem Garn-Schiebeführer (45) für eine gemeinsame Vor- und Rückwärtsbewegung verbunden ist.
3. Garnaufwickler nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** der L-förmige Garn-Halteführer (44) ein Garn-Greifteil (44a) aufweist, dessen Spitze mit dem Traversierende fluchtet.
4. Garnaufwickler nach einem der Ansprüche 1 bis 3, **dadurch gekennzeichnet, dass** die Position des Garn-Halteführers in der Axialrichtung der Spule (B) einstellbar ist.

40 Revendications**1. Bobinoir pour fil continu comprenant**

- plusieurs supports de bobine (11) pour le maintien et la rotation des bobines (B) et pour le déplacement d'une bobine (B) d'une position d'enroulement (Wp) vers une position de réserve (Sp) et réciproquement,
- un rouleau de contact (13) pour l'application d'une pression sur la bobine d'enroulement (P),
- un mécanisme de course (16) pour la course d'un fil alimenté en continu (Y) pendant l'opération d'enroulement,
- un dispositif de guidage du fil (20) pour le retrait du fil (Y) du mécanisme de course (16) quand la bobine est chargée, guidant le fil (Y) vers une partie d'engagement du fil (S) de la bobine (B) et retenant temporairement le fil (Y) jusqu'à ce

que celui-ci soit transféré vers le mécanisme de course (16),

- dans lequel, dans la position de réserve, le dispositif de guidage du fil (20) est disposé du même côté du fil que le mécanisme de course (16) et le rouleau de contact (13),

caractérisé en ce que

le dispositif de guidage du fil (20) comprend

- un guide de retrait du fil (33) déplaçable dans le sens perpendiculaire au sens de course, où il sépare alors le fil (Y) du mécanisme de course (16),
- un guide d'attache du fil en L (44) disposé en correspondance de la partie d'engagement du fil (S) de la bobine (B) et déplaçable vers l'avant pour croiser le fil,
- un guide de décalage du fil (45) opposé au guide d'attache du fil (44) et déplaçable vers l'avant pour croiser le fil, et de plus déplaçable dans le sens de la course pour décaler le fil (Y) vers un engagement sur le guide d'attache du fil en L (44).

2. Bobinoir pour fil selon la revendication 1, **caractérisé en ce que** le guide de retrait du fil (33) est relié au guide d'attache du fil (44) et au guide de décalage du fil (45) pour un déplacement complet vers l'avant et vers l'arrière.
3. Bobinoir pour fil selon la revendication 1 ou 2, **caractérisé en ce que** le guide d'attache du fil en L (44) présente une partie d'engagement du fil (44a), l'extrémité de ladite partie d'engagement du fil (44a) étant alignée sur la fin de course.
4. Bobinoir pour fil selon l'une quelconque des revendications 1 à 3, **caractérisé en ce que** la position du guide d'attache du fil (44) est réglable dans le sens axial de la bobine (B).

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FIG. 1

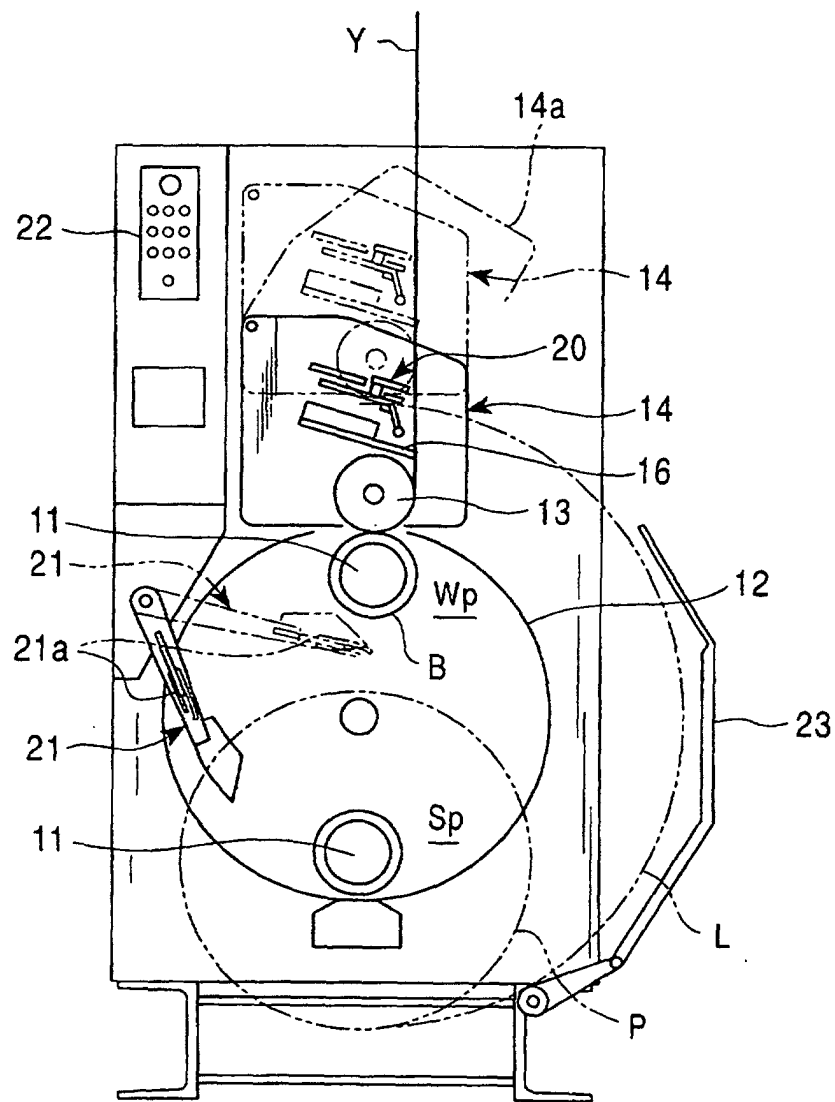


FIG. 2

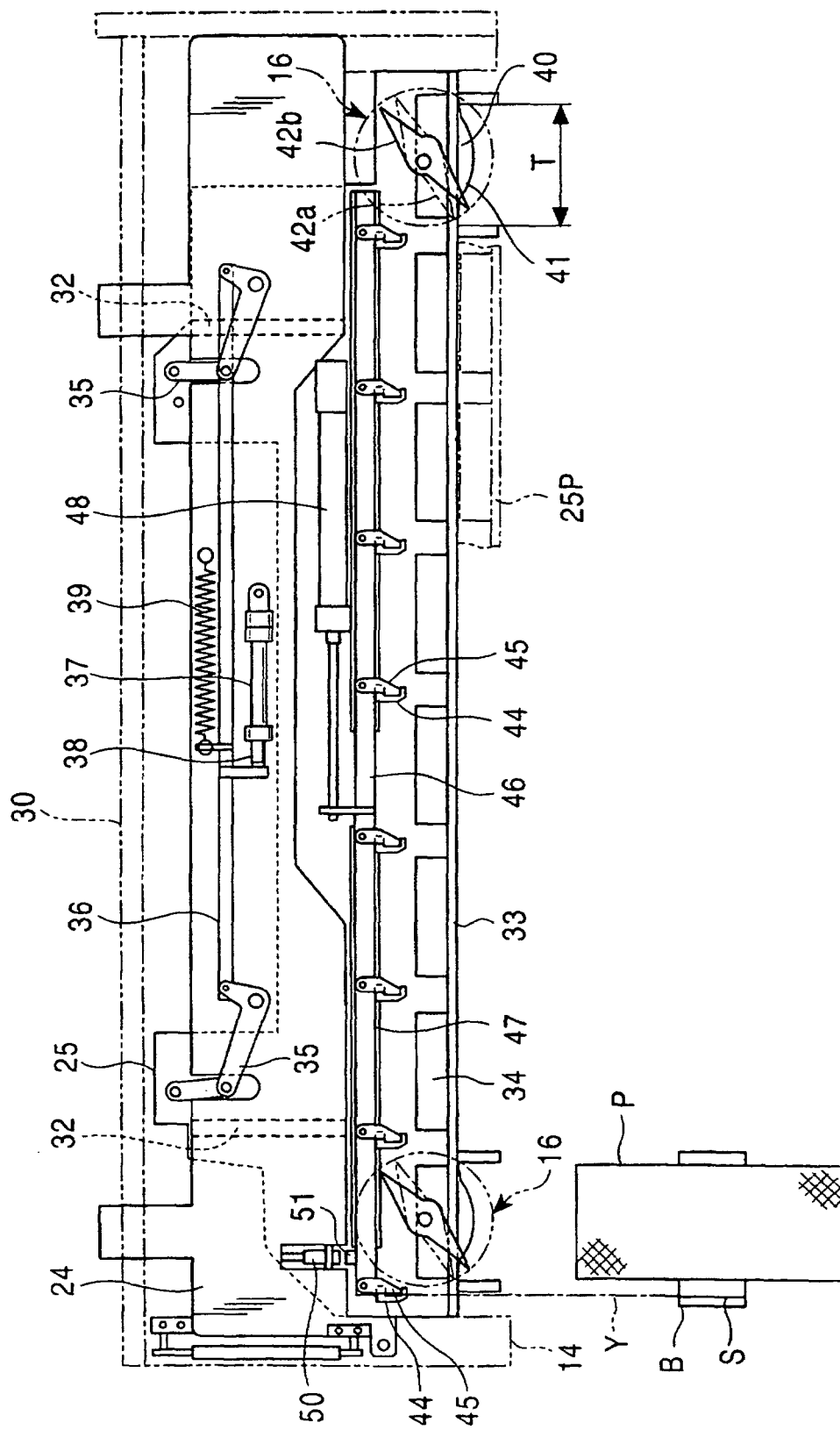


FIG. 3

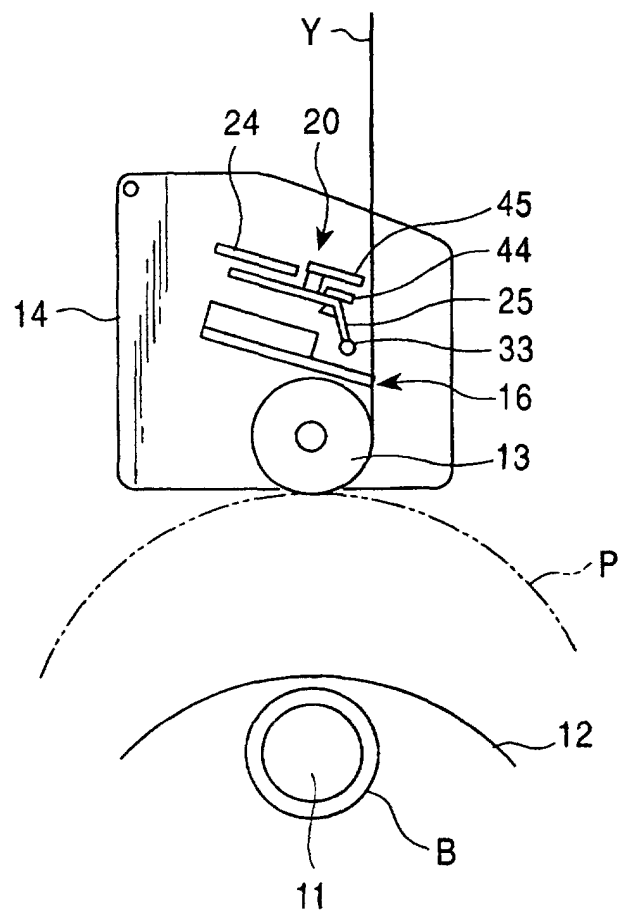


FIG. 4

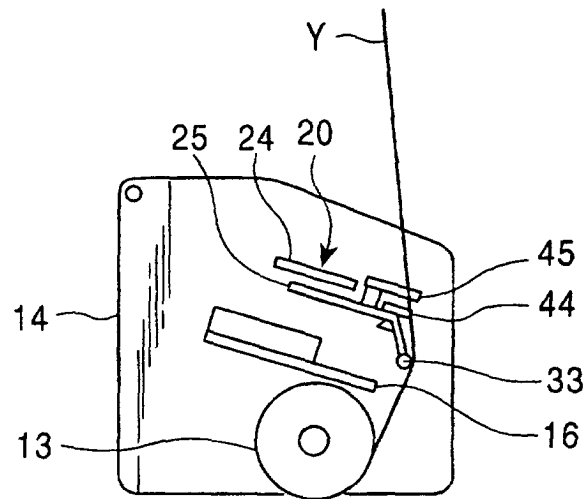


FIG. 5

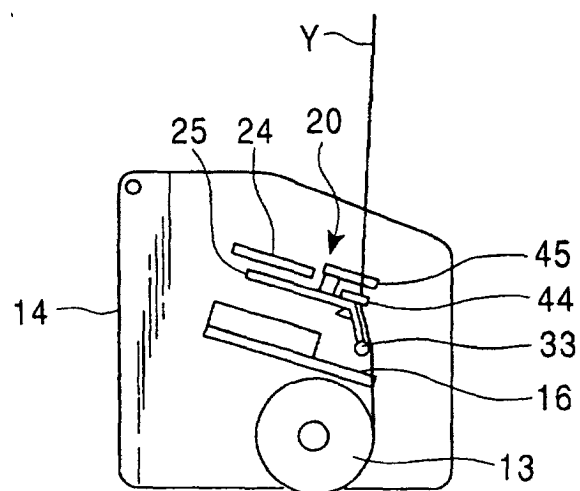


FIG. 6

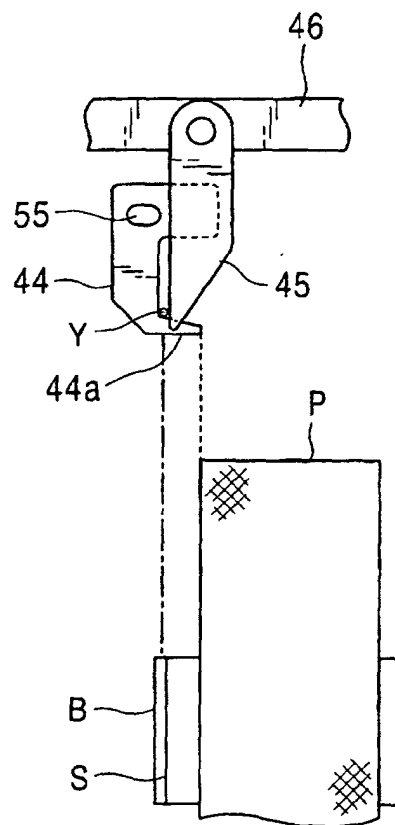


FIG. 7

