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(54) **COILED TAPE MATERIAL GUIDING MACHINE AND GUIDING METHOD FOR COILED TAPE MATERIAL**

(57) A coiled tape material guiding machine, comprising a base (10), and a material guiding roller group (301) disposed on the base; the coiled tape material guiding machine further comprising a material guiding portion which is catered for an extending section (501) of a coiled tape (50) so as to guide the extending section (501) to enter, along the material guiding portion, into the material

guiding roller group (301). Further provided is a guiding method for coiled tape material. Compared with a manual guiding mode in the prior art, the coiled tape material guiding machine and the guiding method, obviously, improve efficiency, save manpower and material resources, and increase the safety factors for an operator.

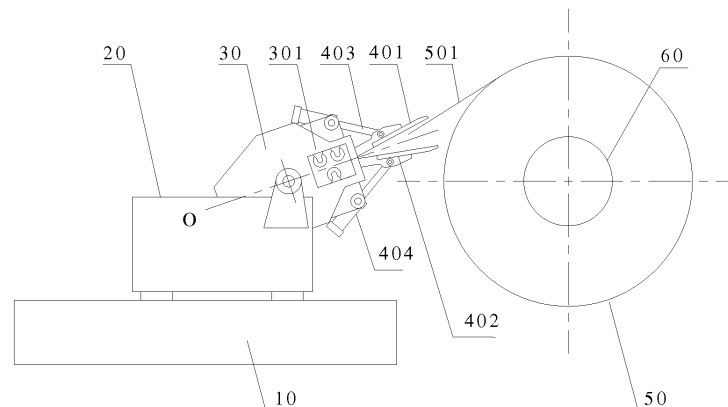


Figure 2

Description

[0001] The present application claims the priority to Chinese Patent Application No. 201710064356.5, titled "COILED TAPE MATERIAL GUIDING MACHINE AND GUIDING METHOD FOR COILED TAPE MATERIAL", filed on February 04, 2017 with the Chinese Patent Office, which is incorporated herein by reference in its entirety.

FIELD

[0002] The present disclosure relates to the technical field of coiled tape, and in particular to a coiled tape material guiding machine and a method for guiding a coiled tape material.

BACKGROUND

[0003] Currently, for guiding a coiled tape material to a next station of a production line, a material guiding roller group is usually used.

[0004] The material guiding roller group includes an upper roller and a lower roller. The coiled tape material is putted into a space between the upper roller and the lower roller, and is driven to the next station under rolling friction of the rollers. For putting the coiled tape material into the space between the upper roller and the lower roller, a usual way is to pull the coiled tape material manually into the space.

[0005] The above way is slow, resulting in not only low efficiency of the production line, but also a high danger and a waste of manpower and material resources.

[0006] In view of this, a problem to be solved by those skilled in the art is how to improve the way of guiding a material into a material guiding roller group.

SUMMARY

[0007] To solve the above technical problem, the present disclosure provides a coiled tape material guiding machine, to guide the coiled tape material into a material guiding roller group efficiently.

[0008] A coiled tape material guiding machine is provided. The coiled tape material guiding machine includes a base and a material guiding roller group provided on the base. The machine further includes a material guiding portion configured to receive an extending end of a coiled tape, and guide the extending end to enter into the material guiding roller group.

[0009] The coiled tape material guiding machine is provided with the material guiding portion configured to receive the extending end of the coiled tape and guide the extending end into the material guiding roller group. Compared with the conventional way of guiding a material manually, the efficiency of guiding the material is improved, the manpower and material resources are saved, and the safety factor of operation is increased.

[0010] Optionally, the material guiding portion is hinged to the base, and a pitch angle of the material guiding portion is adjustable to receive the extending end.

[0011] Optionally, the material guiding portion includes a gripping assembly. The gripping assembly includes a first picking plate and a second picking plate configured to be open or closed, to grip the coiled tape, and guide the extending end of the coiled tape into the material guiding roller group.

[0012] Optionally, the coiled tape material guiding machine further includes a pitch driving device configured to drive the gripping assembly to pitch relative to the base.

[0013] Optionally, the coiled tape material guiding machine further includes a material guiding box installed on the base. The material guiding roller group is provided in the material guiding box, the gripping assembly is installed to the material guiding box, and the pitch driving device is configured to drive the material guiding box to pitch relative to the base.

[0014] Optionally, an end of the first picking plate and an end of the second picking plate are hinged to the material guiding box. The coiled tape material guiding machine further includes a first opening-closing driving component and a second opening-closing driving component which are installed to the material guiding box, the first opening-closing driving component is configured to drive the first picking plate to pitch, and the second opening-closing driving component is configured to drive the second picking plate to pitch.

[0015] Optionally, a central line between the first picking plate and the second picking plate coincides with a central line of the material guiding roller group.

[0016] Optionally, the material guiding portion includes a guiding plate. The guiding plate is configured to pitch relative to the base. An upper surface and a lower surface of the guiding plate each forms a guiding surface. The guiding plate is configured to guide the extending end into the material guiding roller group via the upper surface or the lower surface.

[0017] Optionally, the coiled tape material guiding machine further includes a baseplate. A relative position of the baseplate to the material guiding roller group is fixed. The baseplate and the guiding plate are both in a triangular shape.

Upper surfaces and lower surfaces of the baseplate and the guiding plate are each a slope. Bottoms of the baseplate and the guiding plate are hinged together.

[0018] The guiding plate is configured to pitch to form, by cooperation of the upper surfaces of the guiding plate and the baseplate or by cooperation of the lower surfaces of the guiding plate and the baseplate, a guiding surface fitting the extending end.

[0019] Optionally, the coiled tape material guiding machine further includes a material guiding box installed on the base. The material guiding roller group is arranged in the material guiding box. The baseplate and the guiding plate are installed to the material guiding box. The guiding plate is configured to pitch relative to the material guiding box.

[0020] Optionally, the coiled tape material guiding machine further includes a sliding platform installed on the base. The material guiding box is installed on the sliding platform, and the sliding platform is configured to slide relative to the base, to be close to or away from the coiled tape.

[0021] A method for guiding a coiled tape material is provided. The method includes:

providing a material guiding portion on a base of a coiled tape material guiding machine;

outfeeding a coiled tape, to form an extending end of the coiled tape;

adjusting an angle of the material guiding portion, receiving the extending end, and guiding the extending end into a material guiding roller group on the base along the material guiding portion.

[0022] Technical effect of the guiding method is similar to that of the coiled tape material guiding machine stated above.

BRIEF DESCRIPTION OF THE DRAWINGS

[0023]

Figure 1 is a schematic structural diagram of a coiled tape material guiding machine in a crankshaft balanced structure according to a first embodiment of the present disclosure;

Figure 2 is a schematic view showing that a coiled tape is guided from a position above the coiled tape material guiding machine according to Figure 1;

Figure 3 is a schematic view showing that the coiled tape is driven by a material guiding roller group after being guided according to Figure 2;

Figure 4 is a schematic view showing that a coiled tape is guided from a position below the coiled tape material guiding machine according to Figure 1;

Figure 5 is a schematic view showing that a coiled tape is driven by a material guiding roller group after being guided according to Figure 4;

Figure 6 is a schematic structural diagram of a coiled tape material guiding machine according to a second embodiment of the present disclosure, showing that a coiled tape is guided from a position above the coiled tape material guiding machine; and

Figure 7 is a schematic view showing that a coiled tape is guided from a position below the coiled tape material guiding machine according to Figure 6.

Reference Numerals:

10-base,	20-sliding platform,
30-material guiding box,	301-material guiding roller group,
401-first picking plate,	401-second picking plate,
403-first opening-closing driving component,	
404-second opening-closing driving component,	
50-coiled tape,	501-extending end,
60-reel,	701-baseplate,

(continued)

702-guiding plate, O-central line.

DETAILED DESCRIPTION

[0024] In order to make the person skilled in the art better understand the technical solutions of the present disclosure, the technical solution will be described completely hereinafter in conjunction with the drawings and embodiments of the present disclosure.

[0025] Reference is made to Figure 1, which is a schematic structural diagram of a coiled tape material guiding machine according to a first embodiment of the present disclosure.

[0026] A coiled tape material guiding machine in the embodiment is provided with a material guiding portion. The material guiding portion includes a gripping assembly. The gripping assembly includes a first picking plate 401 and a second picking plate 402. As shown in Figure 1, the first picking plate 401 and the second picking plate 402 are arranged in an upper position and a lower position respectively. The first picking plate 401 and the second picking plate 402 are capable of open and close. When the first picking plate 401 and the second picking plate 402 are open, a coiled tape 50 can enter into a space between the two plates, and then the first picking plate 401 and the second picking plate 402 are closed to grip the coiled tape 50, so as to guide the coiled tape 50 into a material guiding roller group 301. The material guiding roller group as shown in Figure 1 includes two upper rollers and a lower roller.

[0027] In addition, the coiled tape material guiding machine further includes a pitch driving device configured to drive the gripping assembly to pitch relative to a base 10. In the embodiment, the gripping assembly and the material guiding roller group 301 are both arranged on a material guiding box 30. The material guiding roller group 301 is located in the material guiding box 30 for protection. A most part of the gripping assembly is arranged outside the material guiding box 30, to facilitate the entering of the coiled tape 50. In addition, the material guiding box 30 is arranged on a sliding platform 20. The sliding platform 20 is slidably connected to the base 10.

[0028] In this case, the pitch driving device (no shown in the figure) drives the whole material guiding box 30 to pitch relative to the sliding platform 20. Thus the material guiding box 30 and the gripping assembly thereon pitch relative to the base 10. The position of the base 10 relative to a reel 60 is fixed, and thus the gripping assembly pitches relative to the reel 60. The material guiding box 30 is hinged to the sliding platform 20. The pitch driving device may be an oil cylinder, a gas cylinder, or the like.

[0029] Since the gripping assembly can pitch relative to the reel 60, a pitch angle of the gripping assembly may be adjusted based on an actual situation of the coiled tape 50. The actual situation of the coiled tape 50 mainly includes an angle, a bending degree, a location and an extending path of an extending end 501 (a start part of the coiled tape) of the coiled tape 50. The pitch angle of the gripping assembly is adjusted to receive the extending end 501 of the coiled tape 50, so that the extending end 501 enters into a space between the first picking plate 401 and the second picking plate 402 when the reel 60 rotates.

[0030] Reference is made to Figures 2-5. Figure 2 is a schematic view showing that the coiled tape 50 is guided from a position above the coiled tape material guiding machine according to Figure 1. Figure 3 is a schematic view showing that the coiled tape 50 is driven by the material guiding roller group 301 after being guided according to Figure 2. Figure 4 is a schematic view showing that the coiled tape 50 is guided from a position below the coiled tape material guiding machine according to Figure 1. Figure 5 is a schematic view showing that the coiled tape 50 is driven by the material guiding roller group 301 after being guided according to Figure 4.

[0031] As shown in Figure 2, when a material is guided from above (that is, the extending end 501 extends from an upper side of the reel 60 when the reel 60 rotates), the pitch driving device drives the material guiding box 30 to be inclined upward, and the gripping assembly hereby slopes upward to face to the extending end 501 of the coiled tape 50. The extending end 501 then enters into the space between the first picking plate 401 and the second picking plate 402.

[0032] As shown in Figure 3, when the extending end 501 enters into the space between the first picking plate 401 and the second picking plate 402, the first picking plate 401 and the second picking plate 402 are closed. The pitch driving device drives the material guiding box 30 to return to a horizontal position, and the gripping assembly and the material guiding roller group 301 are hereby in the horizontal position. The extending end 501 keeps extending and enters into the material guiding roller group 301, and then is driven horizontally to a next station.

[0033] Figures 4-5 show a process of guiding a material from below (that is, the extending end 501 extends from a lower side of the reel 60 when the reel 60 rotates). The process is similar to the above process of guiding a material from above, only differing in that the material guiding box 30 is inclined downward, and the gripping assembly thereon also slopes downward to face to the extending end 501 of the coiled tape 50.

[0034] The first picking plate and the second picking plate of the gripping assembly in the embodiment are capable of open and close. An opening angle between the first picking plate and the second picking plate is adjustable for better receiving the extending end 501 of the coiled tape 50. For example, if the coiled tape 50 extends upward or downward

greatly, the coiled tape 50 can also be guided into the gripping assembly by adjusting the opening angle. Therefore, the coiled tape material guiding machine is adaptive to various conditions without requiring manual adjustment.

[0035] In the embodiment, an end of the first picking plate 401 is hinged to an end of the second picking plate 402. A first opening-closing driving component 403 and a second opening-closing driving component 404 are installed to the material guiding box 30. The first opening-closing driving component 403 drives the first picking plate 401 to pitch, and the second opening-closing driving component 404 drives the second picking plate 402 to pitch. That is, the gripping assembly is in a structure similar to a scissor, to realize control of opening and closing. The first opening-closing driving component 403 and the second opening-closing driving component 404 each may be a hydraulic cylinder, a gas cylinder, or some other conventional driving component. In the structure, the opening angle can be controlled in a wide range, thereby easily receiving the extending end 501.

[0036] It is understood that, the structure of the first picking plate 401 and the second picking plate 402 is not limited to the above. For example, the first picking plate 401 and the second picking plate 402 may be arranged in parallel, with a large or small distance therebetween. This structure can also guide the extending end 501 by only adjusting the pitch angle. It is more flexible to guide the coiled tape by using the "scissor" structure, because the "scissor" structure, in corporate with the adjustment of the pitch angle of the entire gripping assembly, can guide the extending end 501 in more conditions. In addition, the extending end 501 is slightly guided when the gripping assembly in the "scissor" structure is closed, facilitating the guide of the extending end 501 to the material guiding roller group 301.

[0037] In fact, the way of only providing the two picking plates in the "scissor" structure can also realize picking and gripping a material. For example, during a process of guiding a material from above, the two picking plates are both inclined upward, but the first picking plate 401 is inclined upward in a greater angle. During a process of guiding a material from below, the two picking plates are both inclined downward, but the second picking plate 402 is inclined downward in a greater angle. Apparently, the way of pitching the entire gripping assembly and controlling the opening and closing of the two picking plates as shown in Figure 2 is more adaptive and more reliable.

[0038] It is noted that, the gripping assembly in the present disclosure is not configured to clamp the coiled tape 50 tightly. Instead, it is configured to clamp the coiled tape 50 gently, and guide the coiled tape 50 to move, along a direction determined by the gripping assembly, to the material guiding roller group 301. That is, the gripping assembly plays a role of guiding, rather than limiting the movement of the coiled tape 50. Once the coiled tape 50 enters into the material guiding roller group 301, the gripping assembly may releases the coiled tape 50, so that the coiled tape 50 is driven to the down steam only by the material guiding roller group 301.

[0039] In the embodiment, the material guiding box 30 is provided. The material guiding roller group 301 is arranged in the material guiding box 30 for protection. The material guiding box 30 is driven to pitch, to realize pitching control of the gripping assembly. It is understood that, it is feasible to merely drive the gripping assembly to pitch. As a whole, a pitching degree of the gripping assembly is greater if the whole material guiding box 30 pitches, and thus the scope for receiving the extending end 501 of the coiled tape 50 is wider, facilitating the gripping. Additionally, when the whole material guiding box 30 pitches, a position relation between the gripping assembly and the material guiding roller group 301 in the material guiding box 30 is not impacted by the change of the pitch angle, facilitating the guide of the coiled tape 50 into the material guiding roller group 301 in the material guiding box 30, without complex control.

[0040] In the embodiment, because the next station is horizontally arranged, the material guiding box 30 is controlled to return to a horizontal position, so that the coiled tape 50 from the material guiding roller group 301 can enter into the next station easily. It is understood that, if some other angle is required by the next station to receive the coiled tape, the material guiding box 30 may not return to the horizontal position, but turns to the required angle.

[0041] In the embodiment, a central line between the first picking plate 401 and the second picking plate 402 coincides with a central line O of the material guiding roller group 301. As shown in Figure 3, for the gripping assembly in the "scissor" structure, the first opening-closing driving component 403 and the second opening-closing driving component 404 may be arranged symmetrically on two sides of the gripping assembly. As shown in Figure 3, for each of the first opening-closing driving component 403 and the second opening-closing driving component 404, one end is connected to the material guiding box 30, and an extensible pole at the other end is connected to a corresponding picking plate. The first opening-closing driving components 403 and the second opening-closing driving component 404 have consistent movement, so that the central line of the first picking plate 401 and the second picking plate 402 always coincides with the central line O of the material guiding roller group 301. In this way, the extending end 501 can enter into the material guiding roller group 301 once it enters the gripping assembly. Apparently, the coincidence of the two central lines helps the coiled tape 50 to enter into the material guiding group 301. It is understood that, an angular deviation between the two central lines is acceptable.

[0042] In addition, the material guiding box 30 is installed on the sliding platform 20. The sliding platform 20 is installed on the base 10, and can slide relative to the base 10, so as to be close to or away from the coiled tape 50 along a radial direction of the coiled tape 50. Therefore, the sliding platform 20 drives the material guiding box 30 and the gripping assembly on the sliding platform 20 to be close to or away from the coiled tape 50. It is noted that, the diameter of the reel 60 varies, and the radial dimension of the reel 60 wound with the coiled tape 50 also varies. The sliding platform

20 is configured to adjust a distance between the gripping assembly and the reel 60 based on an actual dimension of the reel 60 wound with the coiled tape 50, so that the gripping assembly can easily receive the extending end 501 of the coiled tape 50 after the pitching degree and the opening angle are adjusted.

[0043] In the above method, when the location of the extending end 50 of the coiled tape 50 is obtained, a desired distance between the sliding platform 20 and the reel 60, the pitch angle of the material guiding box 30 and the gripping assembly, and an opening angle of the gripping assembly can be calculated based on parameters of an outfeeding angle, a diameter of the reel 60, or the like. Therefore, the coiled tape 50 is guided to the material guiding machine automatically, thereby realizing intelligent operation without manual adjustment.

[0044] It can be seen from Figures 2-3 or Figures 4-5 that, the sliding platform 20 moves close to the reel 60 to grip the extending end 501 of the coiled tape 50. Then the sliding platform 20 moves away from the coiled tape 50, so that the extending end 501 of the coiled tape 50 is smoothly changed to a direction consistent with the central line O, and then is driven to the next station by the material guiding roller group 301.

[0045] The material guiding portion, which is configured to receive the extending end 501 of the coiled tape 50 and guide the extending end 501 into the material guiding roller group 301, is not limited to the gripping assembly as described above, but may be in other structures. Reference is made to Figures 6-7. Figure 6 is a schematic structural diagram of a coiled tape material guiding machine according to a second embodiment of the present disclosure, showing that a coiled tape is guided from a position above the coiled tape material guiding machine. Figure 7 is a schematic view showing that a coiled tape is guided from a position below the coiled tape material guiding machine according to Figure 6.

[0046] In the embodiment, the material guiding portion includes a guiding plate 702. A pitch driving device (not shown in the figure) may be provided to adjust the pitch angle of the guiding plate 702 relative to a base 10 to receive a coiled tape 50, such that the coiled tape 50 is guided into a material guiding roller group 301 along an upper surface or a lower surface of the guiding plate 702.

[0047] Similar to the above embodiment, a material guiding box 30 for installing the material guiding roller group 301 and a sliding platform 20 slidably connected to the base 10 are also provided in the coiled tape material guiding machine according to this embodiment. The material guiding box 30 is installed on the sliding platform 20. Functions of the material guiding box 30 and the sliding platform 20 in this embodiment are similar to those in the above embodiment, which are not described again herein for simplicity.

[0048] The guiding plate 702 is in cooperation with a baseplate 701 in an embodiment. As shown in Figure 6, the baseplate 701 is fixed in the material guiding box 30, in a fixed position relative to the material guiding roller group 301. The baseplate 701 and the guiding plate 702 are both in a triangular shape. Bottoms of the baseplate 701 and the guiding plate 702 are hinged together. The baseplate 701 and the guiding plate 702 each have an upper guiding surface and a lower guiding surface. When a material is guided from above, as shown in Figure 7, the guiding plate 702 is inclined upward under the drive of the pitch driving device, so that an inclination angle of the upper guiding surface of the guiding plate 702 is almost the same as an inclination angle of the extending end 501. The upper guiding surface and the lower guiding surface of the baseplate 701 are symmetrically arranged about a central line O of the material guiding roller group 301. The upper guiding surface of the guiding plate 702 cooperates with the upper guiding surface of the baseplate 701, to form a guiding slope in a gentle gradient, so that the extending end 501 of the coiled tape 50 is easily guided into the material guiding roller group 301 along the guiding slope.

[0049] Similarly, when the material is guided from below, as shown in Figure 6, the guiding plate 702 is inclined downward. The lower guiding surface of the guiding plate 702 cooperates with the lower guiding surface of the baseplate 701 to form a guiding slope in a gentle gradient.

[0050] In the case of using the guiding plate 702, rollers may be provided on upside and downside of the guiding plate 702, to facilitate the movement of the extending end 501 of the coiled tape 50 along the guiding slope to the material guiding roller group 301, avoiding the instability caused by the unilateral guiding. Compared with this embodiment, the guiding realized by the gripping assembly in the above embodiment is more reliable, and has a wide range of application.

[0051] The guiding plate 702 in Figure 6 is in cooperation with the baseplate 701, to form the guiding slope in a gentle gradient, so that the guiding of a material is smooth. It is noted that, the baseplate 701 may be unnecessary, and the shape of the guiding plate 702 is not limited to the triangular shape. For example, an upper surface and a lower surface of the guiding plate 702 may be both a concave surface, which may also play a role of guiding the material. The guiding plate 702 may be removed from a side after the extending end 501 enters into the material guiding roller group 301.

[0052] The embodiments described hereinabove are only preferred embodiments of the present disclosure. It should be noted that, for the person skilled in the art, several modifications and improvements may be made without departing from the principle of the present disclosure, and these modifications and improvements are also deemed to fall into the scope of protection of the present disclosure.

Claims

1. A coiled tape material guiding machine, comprising:

a base (10), and
a material guiding roller group (301) provided on the base (10),
wherein the coiled tape material guiding machine further comprises a material guiding portion configured to receive an extending end (501) of a coiled tape (50), and guide the extending end (501) to enter into the material guiding roller group (301).

2. The coiled tape material guiding machine according to claim 1, wherein the material guiding portion is hinged to the base (10), and a pitch angle of the material guiding portion is adjustable to receive the extending end (501).

3. The coiled tape material guiding machine according to claim 1 or 2, wherein the material guiding portion comprises a gripping assembly, the gripping assembly comprises a first picking plate (401) and a second picking plate (402) configured to be open and closed to grip the coiled tape (50), and guide the extending end (501) of the coiled tape (50) into the material guiding roller group (301).

4. The coiled tape material guiding machine according to claim 3, further comprising a pitch driving device configured to drive the gripping assembly to pitch relative to the base (10).

5. The coiled tape material guiding machine according to claim 4, further comprising a material guiding box (30) installed on the base (10), wherein the material guiding roller group (301) is provided in the material guiding box (30), the gripping assembly is installed to the material guiding box (30), and the pitch driving device is configured to drive the material guiding box (30) to pitch relative to the base (10).

6. The coiled tape material guiding machine according to claim 5, wherein an end of the first picking plate (401) and an end of the second picking plate (402) are hinged to the material guiding box (30), the coiled tape material guiding machine further comprises a first opening-closing driving component (403) and a second opening-closing driving component (404) which are installed to the material guiding box (30), the first opening-closing driving component (403) is configured to drive the first picking plate (401) to pitch, and the second opening-closing driving component (404) is configured to drive the second picking plate (402) to pitch.

7. The coiled tape material guiding machine according to claim 6, wherein a central line between the first picking plate (401) and the second picking plate (402) coincides with a central line (O) of the material guiding roller group (301).

8. The coiled tape material guiding machine according to claim 2, wherein the material guiding portion comprises a guiding plate (702), the guiding plate (702) is configured to pitch relative to the base (10), an upper surface and a lower surface of the guiding plate (702) each forms a guiding surface, the guiding plate (702) is configured to guide the extending end (501) into the material guiding roller group (301) via the upper surface or the lower surface.

9. The coiled tape material guiding machine according to claim 8, further comprising a baseplate (701), wherein a relative position of the baseplate (701) to the material guiding roller group (301) is fixed, the baseplate (701) and the guiding plate (702) are both in a triangular shape, upper surfaces and lower surfaces of the baseplate (701) and the guiding plate (702) are each a slope, bottoms of the baseplate and the guiding plate are hinged together; wherein the guiding plate (702) is configured to pitch to form, by cooperation of the upper surfaces of the guiding plate (702) and the baseplate (701) or by cooperation of the lower surfaces of the guiding plate (702) and the baseplate (701), a guiding surface fitting the extending end (501).

10. The coiled tape material guiding machine according to claim 9, further comprising a material guiding box (30) installed on the base (10), wherein the material guiding roller group (301) is arranged in the material guiding box (30), the baseplate (701) and the guiding plate (702) are installed to the material guiding box (30), and the guiding plate (702) is configured to pitch relative to the material guiding box (30).

11. The coiled tape material guiding machine according to claim 9 or 10, further comprising a sliding platform (20) installed on the base (10), wherein the material guiding box (30) is installed on the sliding platform (20), and the sliding platform (20) is configured to slide relative to the base (10), to be close to or away from the coiled tape (50).

12. The coiled tape material guiding machine according to claim 5, further comprising a sliding platform (20) installed on the base (10), wherein the material guiding box (30) is installed on the sliding platform (20), and the sliding platform (20) is configured to slide relative to the base (10), to be close to or away from the coiled tape (50).

5 13. A method for guiding a coiled tape material, comprising:

providing a material guiding portion on a base (10) of a coiled tape material guiding machine;
outfeeding a coiled tape (50), to form an extending end (501) of the coiled tape (50); and
10 adjusting an angle of the material guiding portion, receiving the extending end (501), and guiding the extending end (501) into a material guiding roller group (301) on the base (10) along the material guiding portion.

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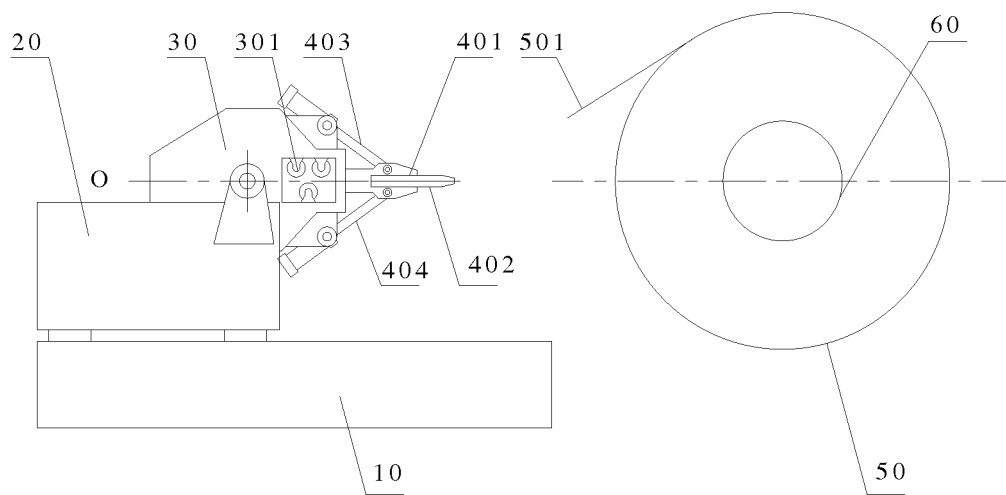


Figure 1

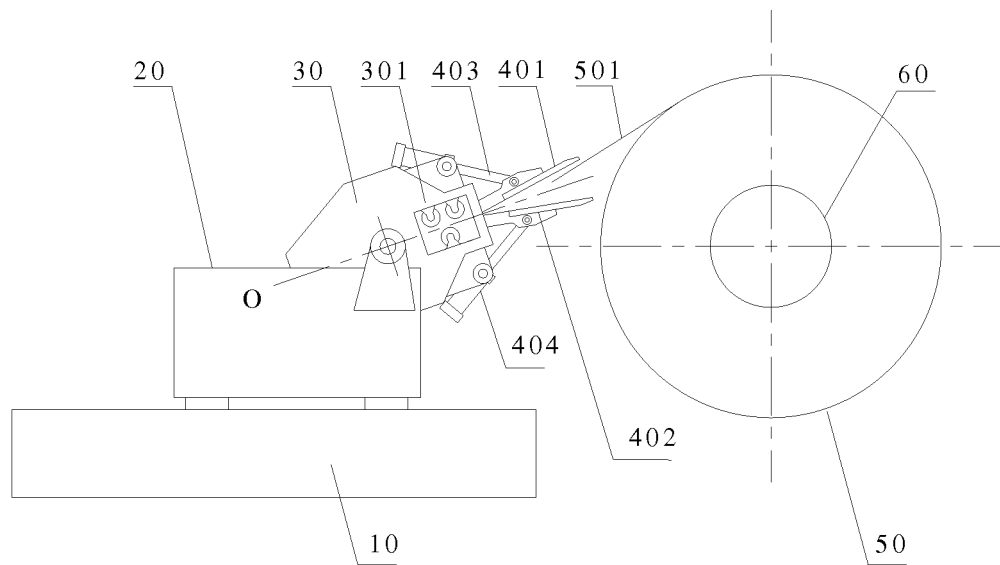


Figure 2

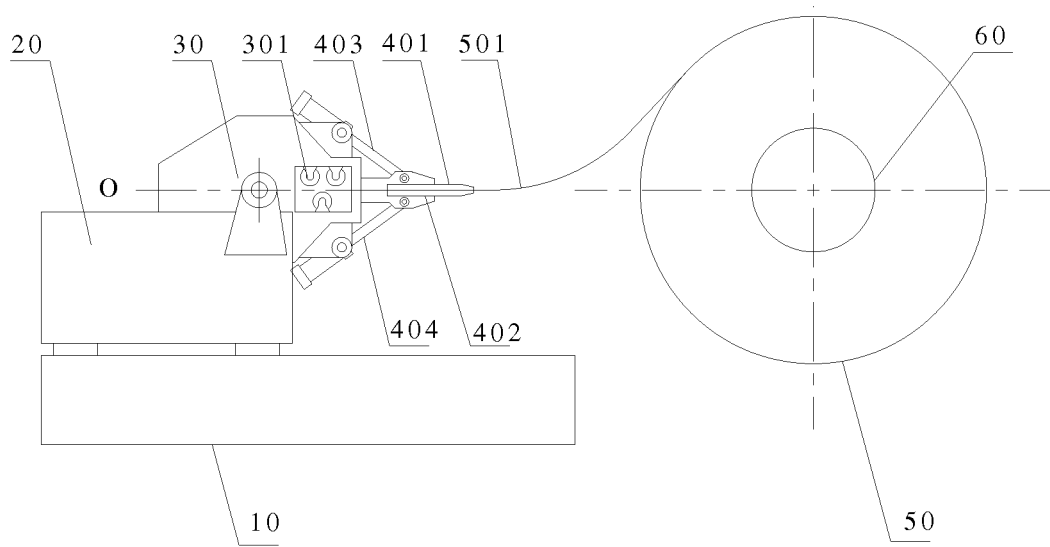


Figure 3

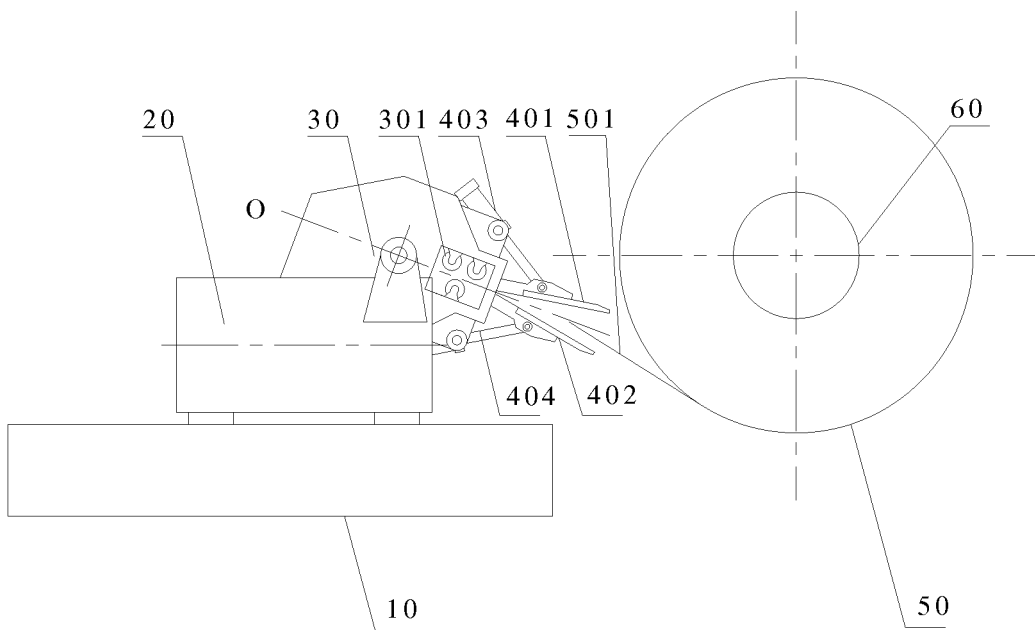


Figure 4

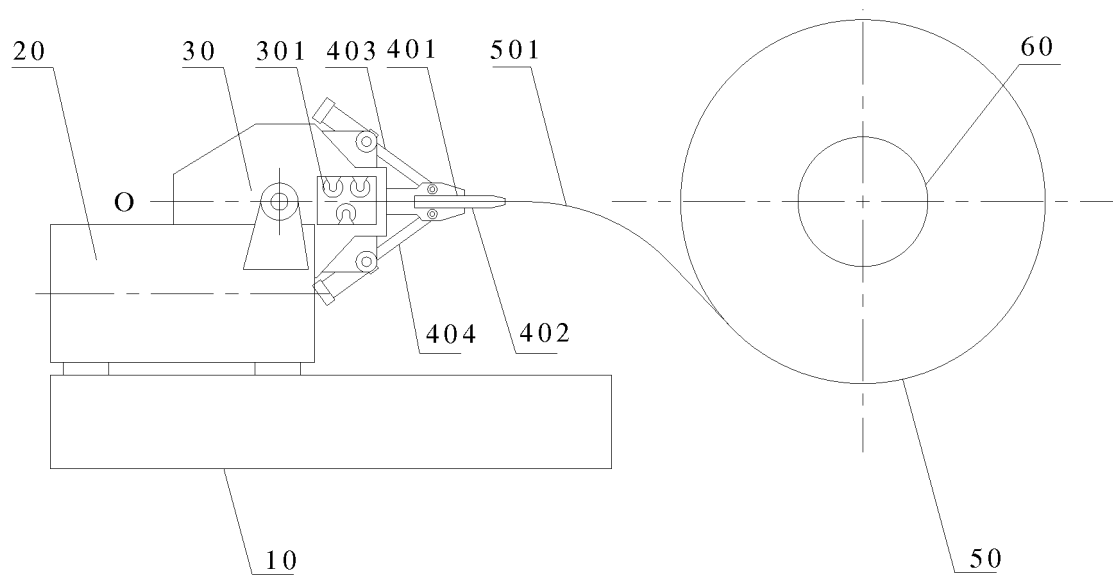


Figure 5

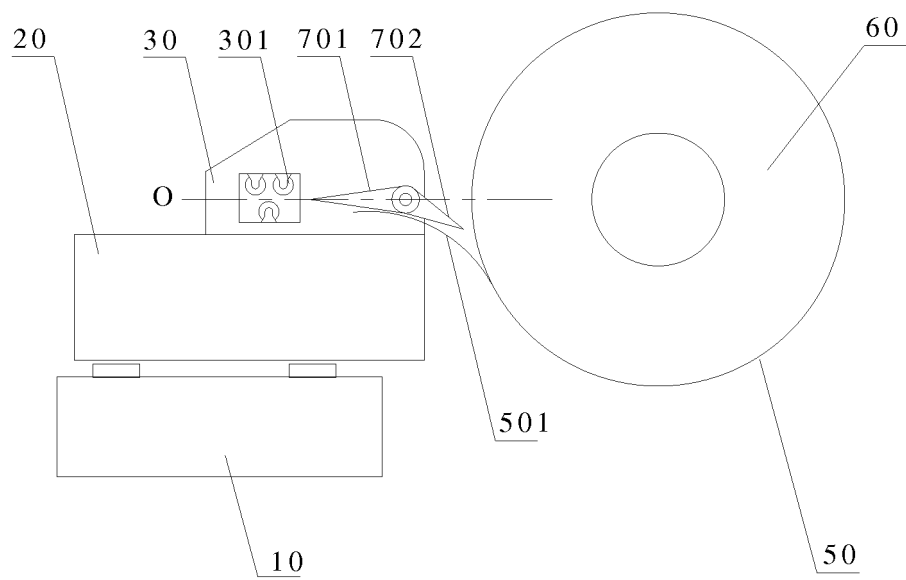


Figure 6

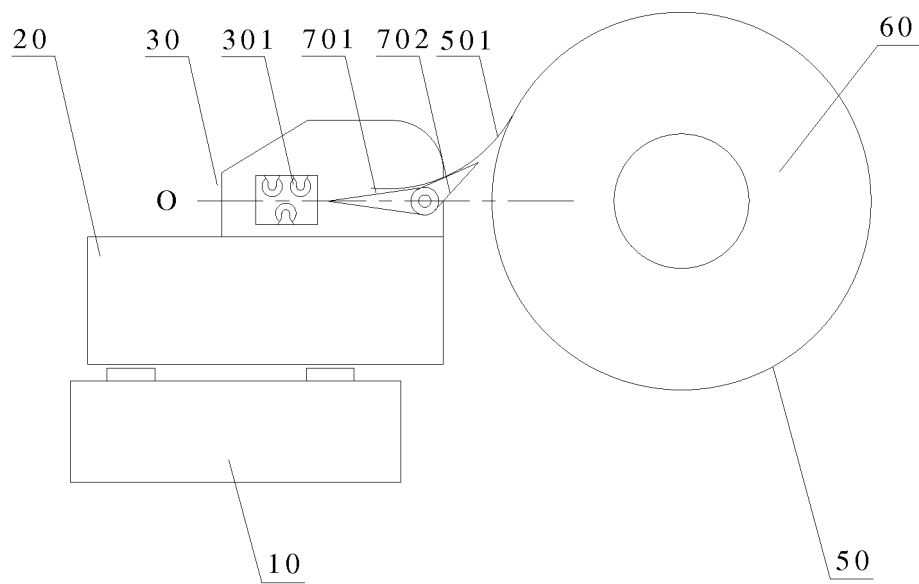


Figure 7

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2018/074919

A. CLASSIFICATION OF SUBJECT MATTER

B65H 23/26 (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)

B65H 23, B65H 16, B65H 19, B65H 20, B21B, B23Q, B23P, B21C, B21D,

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

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

CNABS; DWPI; VEN; CNKI: 卷带物料引料机, 开卷, 放卷, 引料, 引导, 导引, 拾取, 张合, 张开, 张闭, 伸出, 辑; uncoil+,
unwind+, guid+, steel, level+, plate, open+, roller?, stretch+.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 107055175 A (DALIAN FIELD HEAVY MACHINERY MFG CO., LTD.) 18 August 2017 (18.08.2017), claims 1-13	1-13
PX	CN 206447375 U (DALIAN FIELD HEAVY MACHINERY MFG CO., LTD.) 29 August 2017 (29.08.2017), claims 1-12, description, paragraphs [0030]-[0056], and figures 1-7	1-13
X	CN 203556637 U (WUXI XINJIAYUAN METALLURGY MACHINERY MANUFACTURING CO., LTD.) 23 April 2014 (23.04.2014), description, paragraphs [0001]-[0008], and figure 1	1, 2, 13
A	CN 203903550 U (ZHEJIANG HENGLI CNC TECHNOLOGY CO., LTD.) 29 October 2014 (29.10.2014), entire document	1-13
A	CN 103659271 A (WUXI XINJIAYUAN METALLURGY MACHINERY MANUFACTURING CO., LTD.) 26 March 2014 (26.03.2014), entire document	1-13

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

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
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"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	"&" document member of the same patent family

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Name and mailing address of the ISA State Intellectual Property Office of the P. R. China No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088, China Facsimile No. (86-10) 62019451	Authorized officer YUAN, Cong Telephone No. (86-10) 62085147

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2018/074919

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CN 101829690 A (PANGANG GROUP STEEL VANADIUM & TITANIUM CO., LTD. et al.) 15 September 2010 (15.09.2010), entire document	1-13
A	CN 203526245 U (CHONGQING BAOSTEEL AUTO STEEL PARTS CO., LTD.) 09 April 2014 (09.04.2014), entire document	1-13
A	JP 06238333 A (NIPPON STEEL CORP.) 30 August 1994 (30.08.1994), entire document	1-13

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INTERNATIONAL SEARCH REPORT
Information on patent family members

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Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
CN 107055175 A	18 August 2017	None	
CN 206447375 U	29 August 2017	None	
CN 203556637 U	23 April 2014	None	
CN 203903550 U	29 October 2014	None	
CN 103659271 A	26 March 2014	None	
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CN 203526245 U	09 April 2014	None	
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REFERENCES CITED IN THE DESCRIPTION

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