

MULTI-ANGLE INSTALLATION-TYPE INDUSTRIAL CONVEYING ROBOT

TECHNICAL FIELD

5 **[0001]** The present invention relates to the technical field of industrial machinery, in particular to a multi-angle installation-type industrial conveying robot.

BACKGROUND

10 **[0002]** An industrial robot is a multi-joint manipulator or multi-degree-of-freedom robot for the industrial field. The industrial robot is a machine device that automatically operates and a machine that realizes various functions by its own power and control capabilities. The industrial robot consists of three basic parts: a main body, a driving system and a control system. The industrial robot can accept human command or run in accordance with pre-arranged programs. Modern
15 industrial robots can also act according to the principles and programs formulated by artificial intelligence technology. Typical applications of industrial robots comprise welding, painting, assembling, capturing and placing, product inspecting and testing, etc.; all operations are completed with high efficiency, durability, high speed and precision. All the industrial robots in the prior art control the clamping of the
20 clamping mechanism by a cylinder, but the transmission precision of the cylinder is not high, which is easy to result in various clamping forces. The transmission mode of the pinion and rack will bring greater friction, resulting in greater power and a waste of energy, large abrasion, and low service life. The industrial robot can only operate and be installed at a fixed height. When it is necessary to clamp items of

different heights, the robot needs to be installed on other machines, which is not only inconvenient, but also increases cost. It is difficult to dissipate the heat generated by the servo motor in operation uniformly. In view of this, a multi-angle installation-type industrial conveying robot is proposed.

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SUMMARY

Technical problem

[0003] An object of the present invention is to provide a multi-angle installation-type industrial conveying robot to solve the problems raised in the background described above.

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Solution to the problems

Technical solution

[0004] To achieve the above object, the present invention provides the following technical solutions:

15 [0005] A multi-angle installation-type industrial conveying robot, comprises a fixed base, wherein a rotating base is provided on the surface of the fixed base, a first joint is provided on the surface of the rotating base, one end of the first joint is provided with a main arm and is rotatably connected to one end of the main arm, one end of the main arm is provided with a second joint and is rotatably connected to the second joint, one end of the second joint is provided with a first fixed block, a second fixed block parallel to the first fixed block is provided on one side of the first fixed block, the four corners of the second fixed block are all provided with fixed holes which are fixedly connected by four connecting posts, one end of the second fixed block is provided with a clamping jaw component, the four corners of the rotating base are all provided with lifting mechanisms, the bottom end of the rotating base is

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provided with a clamping installation mechanism, the surface of the rotating base is provided with a supporting base, and a heat dissipation device is provided above the supporting base.

5 [0006] Preferably, a first servo motor is provided on the surface of the rotating base, the output shaft of the first servo motor passes through a motor shaft hole on the rotating base, the first servo motor is coaxially provided with a pinion gear between the rotating base and the fixed base, a large gear is provided on one side of the pinion gear, the pinion gear meshes with the large gear, the top end of the large gear is fixedly connected to the rotating base, and the bottom end of the large gear is
10 rotatably connected to the fixed base.

[0007] Preferably, a side of the first joint is provided with a second servo motor for driving the main arm to rotate, the side wall at one end of the main arm is provided with a third servo motor for driving the second joint to rotate, and a fourth servo motor is provided between the first fixed block and the second fixed block.

15 [0008] Preferably, the clamping jaw component comprises a screw fixedly connected to the output shaft of the fourth servo motor, a sleeve is provided at one end of the screw which is screwed with a screw hole in the sleeve, an outer wall section of the sleeve is elliptical, one end of the sleeve passes through the second fixed block and is slidingly connected to the second fixed block, and a pull rod is
20 fixedly connected to the other end of the sleeve.

[0009] Preferably, two clamps are provided on both sides of the pull rod, one end of the two clamps is rotatably connected to each other through a rotating shaft, an empty groove for sliding along the rotating shaft is provided in the center of the pull rod, one end of the pull rod is rotatably connected to two struts, one end of the two
25 struts is rotatably connected to one end of the two clamps, respectively, and rubber

anti-skid heads are provided at the ends of the two clamps.

[0010] Preferably, a motor bracket is provided on the supporting base, a rocker motor is provided at the top of the motor bracket, the output shaft of the rocker motor is provided with a second rocker and is rotatably connected to one end of the second
5 rocker, and one end of the second rocker is provided with a first rocker and is rotatably connected to one end of the first rocker.

[0011] Preferably, the heat dissipation device comprises a protective shell, a rear cover at one end of the protective shell and an air outlet head at the other end of the protective shell, a gear motor is provided inside the protective shell, the output shaft
10 of the gear motor is coaxially and fixedly connected to the fan at one end thereof, swing arms are provided on both sides of the protective shell, one end of one swing arm is rotatably connected to one end of the first rocker, the side of the other swing arm is provided with a fixed rod and is rotatably connected to one end of the fixed rod, and the other end of the fixed rod is fixed to the supporting base.

15 [0012] Preferably, the lifting mechanism comprises four lifting rods, each of the lifting rods is installed in the telescopic grooves provided at the four corners of the fixed base respectively and is slidingly connected to the corresponding telescopic groove respectively, each of the lifting rods is provided with several limit holes at equal intervals uniformly, a through hole corresponding to the position of the lifting
20 rod is provided on the side wall of the fixed base, and the through hole is provided with a limit pin matched with the through hole and the limit hole in a plug-in manner.

[0013] Preferably, the clamping installation mechanism comprises guide rails on both side walls of the bottom surface of the fixed base and two clamping blocks provided vertically between the guide rails, the opposite vertical surfaces of the two
25 clamping blocks are both provided with anti-skid grooves, chutes are provided on the

inner wall of the guide rails, and both ends of the clamping block are provided with a sliding clamp which is slidingly connected to the chute.

[0014] Preferably, several locking mechanisms are provided on the inner wall of the chute at equal intervals uniformly, a pull rod is provided directly above the guide rail, a round hole corresponding to the position of the locking mechanism is provided on the pull rod, the locking mechanism comprises a connecting rod and a locking tongue, a square hole corresponding to the position of the locking tongue is provided on the inner wall of the chute, the locking tongue is slidingly connected to the square hole and is fixedly connected to the inner wall of the square hole through a return spring, the connecting rod passes through the guide rail and is slidingly connected to the round hole, and one end of the connecting rod is further provided with an anti-dropping piece to prevent the drop out from the round hole.

Beneficial effects of the present invention

Beneficial effects

[0015] Compared with the prior art, the beneficial effects of the present invention are as follows.

[0016] 1. In the present invention, the first servo motor drives the gear to rotate, thereby driving the large gear meshed with it to rotate, so that the rotating base can rotate in all directions at the angle of 360° along the fixed base. The second servo motor and the third servo motor drive the rotation of the first joint and the second joint, respectively, so that the entire main arm can move in three degrees of freedom, simulating the joint structure of the human arm, which has achieved excellent results and precision in the industrial conveying process.

[0017] 2. In the present invention, the fourth servo motor drives the screw to rotate, so that the elliptical sleeve can be freely retracted and extended laterally along the

second fixed block, and pull the pull rod to move forward and backward during the retracting and extending process. The tension of the strut controls the clamping and unclamping of the two clamps. The fourth servo motor is used in conjunction with the screw for transmission, so that the clamping of the clamp is accurate to
5 micrometers. The item will not be damaged when it is clamped, the transmission abrasion is small, and the service life is long. The rubber anti-skid head can also effectively increase the friction during clamping and prevent slipping.

[0018] 3. In the present invention, the height of the entire robot is controlled by lifting the lifting rod in the telescopic groove, so that the height of the robot can be
10 freely adjusted. After the robot is adjusted to the required height, the limit pin is inserted into the corresponding limit hole to be fixed. It is not only simple in operation and stable in lifting, but also greatly improves the applicability of the robot when conveying different goods. No other machines are needed to complete the height adjustment, and a low-cost manner is used to achieve lifting, greatly
15 increasing market competitiveness and production cost.

[0019] 4. In the present invention, the reduction motor drives the fan to quickly rotate to generate strong wind, which is blown out of the air outlet head. The rocker motor drives the second rocker to rotate around the motor shaft in a circular manner, so that the first rocker drives the swing arm to swing using the principle of the crank
20 rocker, so that the whole heat dissipation device can swing up and down under the rotation of one end of the fixed rod. Only one heat dissipation device is required to dissipate the heat of the motor and joint friction of each joint of the entire robot, which saves a lot of cost, so that the robot dissipates heat uniformly in the operating process, which increases the service life of the robot.

25 **[0020]** 5. In the present invention, two clamping blocks are pushed along the guide

5 rail to the middle. The sliding clamp touches the arc surface of the locking tongue in the process of moving along the chute to the center. The locking tongue is forced to retract into the square hole. At the same time, the connecting rod is retracted into the round hole. When the sliding clamp crosses a locking tongue, the locking tongue
5 pops out and resets under the elastic force of the return spring. At this time, the straight surface of the locking tongue prevents the clamping block from moving outward, which can continuously cause the clamping block to move toward the center to be clamped and fixed to any part of some machines. The robot not only can be installed and used on flat ground, but also can be installed on other mechanisms at
10 any angle. It is also easy to disassemble the robot. It is only required that the pull rod is pulled upward. All the locking tongues are pulled to retract under the anti-dropping effect of the anti-dropping piece, so that the clamping block is loosened. The operation is simple. The distance between the clamping blocks can be adjusted arbitrarily. It is very adaptable to the clamping installation of any different
15 mechanisms.

BRIEF DESCRIPTION OF THE DRAWINGS

- [0021] FIG. 1 is a schematic diagram of the overall structure of a perspective according to the present invention;
- 20 [0022] FIG. 2 is a schematic diagram of the overall structure of another perspective according to the present invention;
- [0023] FIG. 3 is a schematic diagram of the connection structure of a fixed base and a rotating base according to the present invention;
- [0024] FIG. 4 is a schematic structural diagram of a clamping installation
25 mechanism according to the present invention;

[0025] FIG. 5 is a schematic structural diagram of a guide rail according to the present invention;

[0026] FIG. 6 is an enlarged schematic structural diagram of the area A according to the present invention;

5 [0027] FIG. 7 is a schematic structural diagram of a clamping jaw component according to the present invention;

[0028] FIG. 8 is a schematic structural diagram of a heat dissipation device according to the present invention;

10 [0029] FIG. 9 is a front diagram of the overall structure according to the present invention.

[0030] In the figures: 1. Fixed base; 10. Rotating base; 100. Motor shaft hole; 11. First servo motor; 12. Pinion gear; 13. Large gear; 14. Telescopic groove; 15. Through hole; 16. Limit pin; 2. First joint; 20. Second servo motor; 3. Main arm; 30. Third servo motor; 4. Second joint; 40. First fixed block; 41. Connecting post; 42. 15 Second fixed block; 43. Fixed hole; 44. Fourth servo motor; 45. Clamping jaw component; 450. Sleeve; 4500. Screw hole; 451. Screw; 452. Pull rod; 4520. Empty groove; 453. Clamp; 454. Strut; 455. Rubber anti-skid head; 5. Supporting base; 50. Motor bracket; 51. First rocker; 52. Second rocker; 53. Rocker motor; 54. Fixed rod; 6. Heat dissipation device; 60. Protective shell; 61. Rear cover; 62. Gear motor; 63. 20 Fan; 64. Air outlet head; 65. Swing arm; 7. Lifting mechanism; 70. Bottom stud; 71. Lifting rod; 72. Limit hole; 8. Clamping installation mechanism; 80. Guide rail; 800. Chute; 801. Locking mechanism; 802. Square hole; 8010. Connecting rod; 8011. Locking tongue; 8012. Return spring; 8013. Anti-dropping piece; 81. Clamping block; 810. Anti-skid groove; 811. Sliding clamp; 82. Pull rod; 820. Round hole.

DESCRIPTION OF THE EMBODIMENTS

[0031] The technical solutions in the embodiments of the present invention will be described clearly and completely in conjunction with the drawings in the
5 embodiments of the present invention. Obviously, the described embodiments are only a part of the embodiments of the present invention, rather than all the embodiments. Based on the embodiments of the present invention, all other embodiments obtained by those skilled in the art without paying creative labor fall within the protection scope of the present invention.

10 **[0032]** Referring to FIGS. 1-9, the present invention provides a technical solution:

[0033] A multi-angle installation-type industrial conveying robot, comprises a fixed base 1, wherein a rotating base 10 is provided on the surface of the fixed base 1, a first servo motor 11 is provided on the surface of the rotating base 10, the output shaft of the first servo motor 11 passes through a motor shaft hole 100 on the rotating
15 base 10, the first servo motor is coaxially provided with a pinion gear 12 between the rotating base 10 and the fixed base 1, a large gear 13 is provided on one side of the pinion gear 12, the pinion gear meshes with the large gear 13, the top end of the large gear 13 is fixedly connected to the rotating base 10, and the bottom end of the large gear 13 is rotatably connected to the fixed base 1. The first servo motor 11 drives the
20 gear 12 to rotate, thereby driving the large gear 13 meshed with it to rotate, so that the rotating base 10 can rotate in all directions at the angle of 360° along the fixed base 1. A first joint 2 is provided on the surface of the rotating base 10, one end of the first joint 2 is provided with a main arm 3 and is rotatably connected to one end of the main arm 3, one end of the main arm 3 is provided with a second joint 4 and is
25 rotatably connected to the second joint 4, one end of the second joint 4 is provided

with a first fixed block 40, a second fixed block 42 parallel to the first fixed block is provided on one side of the first fixed block 40, the four corners of the second fixed block 42 are all provided with fixed holes 43 which are fixedly connected by four connecting posts 41, a side of the first joint 2 is provided with a second servo motor 20 for driving the main arm 3 to rotate, and the side wall at one end of the main arm 3 is provided with a third servo motor 30 for driving the second joint 4 to rotate. The second servo motor 20 and the third servo motor 30 drive the rotation of the first joint 2 and the second joint 4, respectively, so that the entire main arm 3 can move in three degrees of freedom, simulating the joint structure of the human arm, which has achieved excellent results and precision in the industrial conveying process.

[0034] A fourth servo motor 44 is provided between the first fixed block 40 and the second fixed block 42, one end of the second fixed block 42 is provided with a clamping jaw component 45, the clamping jaw component 45 comprises a screw 451 fixedly connected to the output shaft of the fourth servo motor 44, a sleeve 450 is provided at one end of the screw 451 which is screwed with a screw hole 4500 in the sleeve 450, an outer wall section of the sleeve 450 is elliptical, one end of the sleeve 450 passes through the second fixed block 42 and is slidingly connected to the second fixed block, and a pull rod 452 is fixedly connected to the other end of the sleeve 450. Two clamps 453 are provided on both sides of the pull rod 452, one end of the two clamps 453 is rotatably connected to each other through a rotating shaft, an empty groove 4520 for sliding along the rotating shaft is provided in the center of the pull rod 452, one end of the pull rod 452 is rotatably connected to two struts 454, one end of the two struts 454 is rotatably connected to one end of the two clamps 453, respectively, and rubber anti-skid heads 455 are provided at the ends of the two clamps 453. The fourth servo motor 44 drives the screw 451 to rotate, so that the

elliptical sleeve 450 can be freely retracted and extended laterally along the second fixed block 42, and pull the pull rod 452 to move forward and backward during the retracting and extending process. The tension of the strut 454 controls the clamping and unclamping of the two clamps 453. The fourth servo motor 44 is used in conjunction with the screw 451 for transmission, so that the clamping of the clamp 453 is accurate to micrometers. The item will not be damaged when it is clamped, the transmission abrasion is small, and the service life is long. The rubber anti-skid head 455 can also effectively increase the friction during clamping and prevent slipping.

[0035] The four corners of the rotating base 10 are all provided with lifting mechanisms 7, the lifting mechanism 7 comprises four lifting rods 71, each of the lifting rods 71 is installed in the telescopic grooves 14 provided at the four corners of the fixed base 1 respectively and is slidably connected to the corresponding telescopic groove 14 respectively, each of the lifting rods 71 is provided with several limit holes 72 at equal intervals uniformly, a through hole 15 corresponding to the position of the lifting rod 71 is provided on the side wall of the fixed base 1, and the through hole 15 is provided with a limit pin 16 matched with the through hole 15 and the limit hole 72 in a plug-in manner. The height of the entire robot is controlled by lifting the lifting rod 71 in the telescopic groove 14, so that the height of the robot can be freely adjusted. After the robot is adjusted to the required height, the limit pin 16 is inserted into the corresponding limit hole 72 to be fixed. It is not only simple in operation and stable in lifting, but also greatly improves the applicability of the robot when conveying different goods. No other machines are needed to complete the height adjustment, and a low-cost manner is used to achieve lifting, greatly increasing market competitiveness and production cost.

[0036] The surface of the rotating base 10 is provided with a supporting base 5,

and a heat dissipation device 6 is provided above the supporting base 5. A motor bracket 50 is provided on the supporting base 5, a rocker motor 53 is provided at the top of the motor bracket 50, the output shaft of the rocker motor 53 is provided with a second rocker 52 and is rotatably connected to one end of the second rocker 52, and one end of the second rocker 52 is provided with a first rocker 51 and is rotatably connected to one end of the first rocker 51. The heat dissipation device 6 comprises a protective shell 60, a rear cover 61 at one end of the protective shell 60 and an air outlet head 64 at the other end of the protective shell 60, a gear motor 62 is provided inside the protective shell 60, the output shaft of the gear motor 62 is coaxially and fixedly connected to the fan 63 at one end thereof, swing arms 65 are provided on both sides of the protective shell 60, one end of one swing arm 65 is rotatably connected to one end of the first rocker 51, the side of the other swing arm 65 is provided with a fixed rod 54 and is rotatably connected to one end of the fixed rod 54, and the other end of the fixed rod 54 is fixed to the supporting base 5. The heat dissipation device 6 drives the fan 63 by the reduction motor 62 to quickly rotate to generate strong wind, which is blown out of the air outlet head 64. The rocker motor 53 drives the second rocker 52 to rotate around the motor shaft in a circular manner, so that the first rocker 51 drives the swing arm 65 to swing using the principle of the crank rocker, so that the whole heat dissipation device 6 can swing up and down under the rotation of one end of the fixed rod 54. Only one heat dissipation device 6 is required to dissipate the heat of the motor and joint friction of each joint of the entire robot, which saves a lot of cost, so that the robot dissipates heat uniformly in the operating process, which increases the service life of the robot.

[0037] The bottom end of the rotating base 10 is provided with a clamping installation mechanism 8, the clamping installation mechanism 8 comprises guide

rails 80 on both side walls of the bottom surface of the fixed base 1 and two clamping blocks 81 provided vertically between the guide rails 80, the opposite vertical surfaces of the two clamping blocks 81 are both provided with anti-skid grooves 810, chutes 800 are provided on the inner wall of the guide rails 80, and both
5 ends of the clamping block 81 are provided with a sliding clamp 811 which is slidably connected to the chute 800. Several locking mechanisms 801 are provided on the inner wall of the chute 800 at equal intervals uniformly, a pull rod 82 is provided directly above the guide rail 80, a round hole 820 corresponding to the position of the locking mechanism 801 is provided on the pull rod 82, the locking
10 mechanism 801 comprises a connecting rod 8010 and a locking tongue 8011, one surface of the locking tongue 8011 is a straight surface, and the other surface thereof is an arc surface. A square hole 802 corresponding to the position of the locking tongue 8011 is provided on the inner wall of the chute 800, the locking tongue 8011 is slidably connected to the square hole 802 and is fixedly connected to the inner
15 wall of the square hole 802 through a return spring 8012, the connecting rod 8010 passes through the guide rail 80 and is slidably connected to the round hole 820, and one end of the connecting rod 8010 is further provided with an anti-dropping piece 8013 to prevent the drop out from the round hole 820. When it needs to be fixed in a complicated position for use, two clamping blocks 81 are pushed along the guide rail
20 to the middle. The sliding clamp 811 touches the arc surface of the locking tongue 8011 in the process of moving along the chute 800 to the center. The locking tongue 8011 is forced to retract into the square hole 802. At the same time, the connecting rod 8010 is retracted into the round hole 820. When the sliding clamp 811 crosses a locking tongue 8011, the locking tongue 8011 pops out and resets under the elastic
25 force of the return spring 8012. At this time, the straight surface of the locking

tongue 8011 prevents the clamping block 81 from moving outward, which can continuously cause the clamping block to move toward the center to be clamped and fixed to any part of some machines. The robot not only can be installed and used on flat ground, but also can be installed on other mechanisms at any angle. It is also
5 easy to disassemble the robot. It is only required that the pull rod 82 is pulled upward. All the locking tongues 8011 are pulled to retract under the anti-dropping effect of the anti-dropping piece 8013, so that the clamping block 81 is loosened. The operation is simple. The distance between the clamping blocks 81 can be adjusted arbitrarily. It is very adaptable to the clamping installation of any different
10 mechanisms.

Claims

WHAT IS CLAIMED IS:

1. A multi-angle installation-type industrial conveying robot, comprising a fixed base (1), wherein a rotating base (10) is provided on the surface of the fixed base (1), a
5 first joint (2) is provided on the surface of the rotating base (10), one end of the first joint (2) is provided with a main arm (3) and is rotatably connected to one end of the main arm (3), one end of the main arm (3) is provided with a second joint (4) and is rotatably connected to the second joint (4), one end of the second joint (4) is provided with a first fixed block (40), a second fixed block (42)
10 parallel to the first fixed block is provided on one side of the first fixed block (40), the four corners of the second fixed block (42) are all provided with fixed holes (43) which are fixedly connected by four connecting posts (41), one end of the second fixed block (42) is provided with a clamping jaw component (45), the four corners of the rotating base (10) are all provided with lifting mechanisms (7),
15 the bottom end of the rotating base (10) is provided with a clamping installation mechanism (8), the surface of the rotating base (10) is provided with a supporting base (5), and a heat dissipation device (6) is provided above the supporting base (5).

20 2. The multi-angle installation-type industrial conveying robot according to claim 1, wherein a first servo motor (11) is provided on the surface of the rotating base (10), the output shaft of the first servo motor (11) passes through a motor shaft hole (100) on the rotating base (10), the first servo motor (11) is coaxially provided with a pinion gear (12) between the rotating base (10) and the fixed
25 base (1), a large gear (13) is provided on one side of the pinion gear (12), the

pinion gear (12) meshes with the large gear (13), the top end of the large gear (13) is fixedly connected to the rotating base (10), and the bottom end of the large gear (13) is rotatably connected to the fixed base (1).

- 5 3. The multi-angle installation-type industrial conveying robot according to claim 1,
wherein a side of the first joint (2) is provided with a second servo motor (20) for
driving the main arm (3) to rotate, the side wall at one end of the main arm (3) is
provided with a third servo motor (30) for driving the second joint (4) to rotate,
and a fourth servo motor (44) is provided between the first fixed block (40) and
10 the second fixed block (42).
4. The multi-angle installation-type industrial conveying robot according to claim 3,
wherein the clamping jaw component (45) comprises a screw (451) fixedly
connected to the output shaft of the fourth servo motor (44), a sleeve (450) is
15 provided at one end of the screw (451) which is screwed with a screw hole (4500)
in the sleeve (450), an outer wall section of the sleeve (450) is elliptical, one end
of the sleeve (450) passes through the second fixed block (42) and is slidingly
connected to the second fixed block, and a pull rod (452) is fixedly connected to
the other end of the sleeve (450).
- 20 5. The multi-angle installation-type industrial conveying robot according to claim 4,
wherein two clamps (453) are provided on both sides of the pull rod (452), one
end of the two clamps (453) is rotatably connected to each other through a
rotating shaft, an empty groove (4520) for sliding along the rotating shaft is
25 provided in the center of the pull rod (452), one end of the pull rod (452) is

rotatably connected to two struts (454), one end of the two struts (454) is rotatably connected to one end of the two clamps (453), respectively, and rubber anti-skid heads (455) are provided at the ends of the two clamps (453).

5 6. The multi-angle installation-type industrial conveying robot according to claim 1, wherein a motor bracket (50) is provided on the supporting base (5), a rocker motor (53) is provided at the top of the motor bracket (50), the output shaft of the rocker motor (53) is provided with a second rocker (52) and is rotatably connected to one end of the second rocker (52), and one end of the second rocker
10 (52) is provided with a first rocker (51) and is rotatably connected to one end of the first rocker (51).

7. The multi-angle installation-type industrial conveying robot according to claim 6, wherein the heat dissipation device (6) comprises a protective shell (60), a rear
15 cover (61) at one end of the protective shell (60) and an air outlet head (64) at the other end of the protective shell (60), a gear motor (62) is provided inside the protective shell (60), the output shaft of the gear motor (62) is coaxially and fixedly connected to the fan (63) at one end thereof, swing arms (65) are provided on both sides of the protective shell (60), one end of one swing arm (65)
20 is rotatably connected to one end of the first rocker (51), the side of the other swing arm (65) is provided with a fixed rod (54) and is rotatably connected to one end of the fixed rod (54), and the other end of the fixed rod (54) is fixed to the supporting base (5).

25 8. The multi-angle installation-type industrial conveying robot according to claim 1,

wherein the lifting mechanism (7) comprises four lifting rods (71), each of the lifting rods (71) is installed in the telescopic grooves (14) provided at the four corners of the fixed base (1) respectively and is slidingly connected to the corresponding telescopic groove (14) respectively, each of the lifting rods (71) is provided with several limit holes (72) at equal intervals uniformly, a through hole (15) corresponding to the position of the lifting rod (71) is provided on the side wall of the fixed base (1), and the through hole (15) is provided with a limit pin (16) matched with the through hole (15) and the limit hole (72) in a plug-in manner.

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9. The multi-angle installation-type industrial conveying robot according to claim 1, wherein the clamping installation mechanism (8) comprises guide rails (80) on both side walls of the bottom surface of the fixed base (1) and two clamping blocks (81) provided vertically between the guide rails (80), the opposite vertical surfaces of the two clamping blocks (81) are both provided with anti-skid grooves (810), chutes (800) are provided on the inner wall of the guide rails (80), and both ends of the clamping block (81) are provided with a sliding clamp (811) which is slidingly connected to the chute (800).

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20 10. The multi-angle installation-type industrial conveying robot according to claim 9, wherein several locking mechanisms (801) are provided on the inner wall of the chute (800) at equal intervals uniformly, a pull rod (82) is provided directly above the guide rail (80), a round hole (820) corresponding to the position of the locking mechanism (801) is provided on the pull rod (82), the locking mechanism (801) comprises a connecting rod (8010) and a locking tongue (8011), a square

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hole (802) corresponding to the position of the locking tongue (8011) is provided on the inner wall of the chute (800), the locking tongue (8011) is slidingly connected to the square hole (802) and is fixedly connected to the inner wall of the square hole (802) through a return spring (8012), the connecting rod (8010) passes through the guide rail (80) and is slidingly connected to the round hole (820), and one end of the connecting rod (8010) is further provided with an anti-dropping piece (8013) to prevent the drop out from the round hole (820).