

MESH WELDING ROBOT

TECHNICAL FIELD

This disclosure relates to the technical field of mesh welding, for example, to a mesh welding robot.

5 BACKGROUND

A reinforcing steel mesh is a mesh in which both transverse and longitudinal bars are steel bars, and is widely used in bridge construction, high-speed railways, buildings, and other fields. The mesh however has a high cost and is not convenient to be transported. A mesh welding robot found in the related art includes a longitudinal steel wire release frame in which longitudinal
10 steel wires in the form of coils are placed, a wire organizing and straightening mechanism for straightening the longitudinal steel wires, a drawing mechanism for drawing the longitudinal steel wires, and a stepping mechanism for advancing the longitudinal steel wires, a welding mechanism for welding the longitudinal steel wires with transverse steel wires, a mesh shearing machine for cutting the mesh, and a mesh flipping mechanism for overturning the mesh. If a
15 rolled steel mesh is desired, a mesh rolling device needs to be further added.

The above mesh welding robot has a complex structure, high equipment cost, and low production efficiency, thus failing to meet development requirements of the steel bar processing industry.

SUMMARY

20 This application provides a mesh welding robot, which can produce a steel strip mesh, while simplifying the machine structure, reducing cost, and improving the production efficiency.

In an embodiment, this application provides a mesh welding robot, including the following mechanisms.

25 A steel strip feeding mechanism, including a first rack, a first guide rail, a limiting portion, and a feeding portion; where the first guide rail is arranged on the first rack along a feeding direction of a steel strip, and the limiting portion is fixed to the first guide rail, and configured to restrict the steel strip to moving along the feeding direction until the feeding portion arrives; and the

feeding portion is slidably arranged on the first guide rail, configured to secure the steel strip and drive the steel strip to move in the feeding direction.

A material laying mechanism configured to carry and transfer a transverse bar to a welding mechanism.

- 5 A welding mechanism arranged on the first rack and configured to weld the steel strip and the transverse bar together into a mesh.

- 10 A mesh rolling mechanism including a stationary base, a spindle, a movable base and a transmission assembly, where the stationary base is fixedly arranged relative to a ground; the spindle is rotatably inserted through the stationary base; the movable base is connected to the spindle and rotates around the spindle; and the transmission assembly is arranged on the stationary base and the movable base, and configured to drive the mesh to move from one end of the stationary base away from the movable base to a direction of nearing the movable base thus rolling the mesh.

- 15 Optionally, the feeding portion includes a feeding frame, and the feeding frame is arranged to straddle the first guide rail and is operative to reciprocate in the feeding direction of the first guide rail. The feeding frame is provided with a first fastening structure, and the first fastening structure is configured to secure the steel strip on the feeding frame.

- 20 Optionally, the first fastening structure includes a support plate and a first driving device arranged on the support plate. The first driving device is connected to a pressing block, the pressing block is arranged inside the support plate and configured to press the steel strip tightly on the feeding frame driven by the first driving device.

Optionally, the steel strip feeding mechanism further includes a driving portion, and the driving portion includes a connecting rod assembly, a first transmission shaft and a second driving device.

- 25 A first end of the connecting rod assembly is connected to the feeding portion, and a second end of the connecting rod assembly is connected to a first end of the first transmission shaft. The first transmission shaft is fixed to the first rack, and a second end of the first transmission shaft is connected to the second driving device fixed to the first rack.

The second driving device is configured to drive the first transmission shaft to rotate to perform reciprocation circumferentially, and drive the connecting rod assembly to make the feeding portion reciprocate in a straight line along the first guide rail.

5 Optionally, the connecting rod assembly includes a feeding beam, an intermediate connecting rod, and a swinging arm.

10 A first end of the feeding beam is fixed to the feeding portion, and a second end of the feeding beam farther away from the feeding portion is hinged to a first end of the intermediate connecting rod. A second end of the intermediate connecting rod farther away from the second end of the feeding beam is hinged to the swinging arm, and the swinging arm is fixed to the first transmission shaft.

The first transmission shaft is configured to drive the swinging arm to swing under driven by the second driving device, making the swinging arm drive the feeding beam together with the feeding portion connected to the feeding beam to reciprocate in a straight line along the first guide rail through the intermediate connecting rod.

15 Optionally, the limiting portion includes a base fixed to the first guide rail and a second fastening structure arranged on the base.

The second fastening structure is configured to secure the steel strip on the base.

Optionally, the material laying mechanism includes a horizontal material storage device, a step feeding device, and a material laying device.

20 The step feeding device is configured to receive the transverse bar transferred from the horizontal material storage device, and transfer the transverse bar step by step to a top of the step feeding device.

25 A first end of the material laying device is arranged adjacent to the step feeding device, and a second end of the material laying device is arranged adjacent to the welding mechanism, and configured to carry the transverse bar from the top of the step feeding device and transfer the transverse bar to the welding mechanism.

Optionally, the material laying mechanism further includes a material laying slide. The material

laying slide is located between the step feeding device and the material laying device, and the transverse bar located at the top of the step feeding device slides to one end of the material laying slide adjacent to the material laying device.

5 Optionally, the material laying device includes a plurality of supporting slides arranged side by side, a driving shaft inserted through a same end of the plurality of supporting slides, and a transmission assembly located at one side of each supporting slide and driven into motion by the driving shaft.

The transverse bar located on the material laying slide is allowed to fall on the transmission assembly and is transferred by the transmission assembly to the welding mechanism.

10 Optionally, the horizontal material storage device includes a plurality of horizontal transmission assemblies arranged side by side, and the transverse bar is placed on the horizontal transmission assembly, and is further transferred to the step feeding device via the horizontal transmission assembly.

Optionally, the material laying mechanism further includes a second rack.

15 The horizontal transmission assembly includes a storage body mounted on the second rack and configured to store the transverse bar, and a storage sprocket mounted at each of both ends in a length of the storage body. The storage sprocket at one end of the length of the storage body is sleeved onto the second transmission shaft and is operative to rotate driven by the second transmission shaft, thus enabling the plurality of horizontal transmission assemblies to transfer
20 the transverse bar.

Optionally, the transmission assembly includes a driving wheel operative to be driven into rotation by the driving shaft, a driven wheel arranged on the respective supporting slide and rotatable around an axis of the driven wheel, and a transmission chain connecting the driving wheel to the driven wheel. The transmission chain is provided with a hook having an upward
25 opening and configured to carry the transverse bar.

Optionally, the welding mechanism includes a plurality of welding assemblies. The plurality of welding assemblies are spaced apart at set intervals, and movably mounted on the first rack. Each of the plurality of welding assemblies includes the following components.

A fixed bar movably disposed on the first rack.

A guide block, disposed on the fixed bar and configured to allow the steel strip to pass through and to limit and guide the steel strip.

5 A lower electrode disposed on a side of the guide block and configured to support a lower end surface of the steel strip.

An upper electrode arranged at a side of an upper end surface of the steel strip opposite to the lower electrode, and configured to draw near to the lower electrode when welding the steel strip with the transverse bar, and move away from the lower electrode after finishing welding the steel strip and the transverse bar.

10 A transformer, both terminals of which are respectively coupled to the upper electrode and the lower electrode.

15 Optionally, each of both ends of the fixed bar is provided with a gear, and the two gears are coupled to each other by a gear shaft. A gear rack engaged is arranged at each of both sides of the first rack and engaged with the corresponding gear. The fixed bar is allowed to move relative to the first rack through meshing of the gear with the gear rack. Both ends of the fixed bar are each provided with a walking frame. Both sides of the first rack are each provided with a walking groove, and the walking frame is disposed in the corresponding walking groove and operative to slide along the walking groove.

20 Optionally, the transmission assembly includes a first sprocket, a second sprocket, a third sprocket, a first chain and a second chain. The first sprocket is a double sprocket and sleeved onto the spindle. The spindle is driven to rotate by a driving device. The second sprocket is rotatably arranged at one end of the stationary base farther away from the spindle. The third sprocket is rotatably arranged at one end of the movable base farther away from the spindle, and the second sprocket and the third sprocket are connected to the first sprocket via the first chain
25 and the second chain, respectively.

The mesh welding robot provided in this application includes a steel strip feeding mechanism, a material laying mechanism, a welding mechanism, and a mesh rolling mechanism that are suitable for fabricating a steel strip mesh. Therefore, the mesh welding robot can meet the requirements of welding steel strip mesh and development requirements of the steel bar

processing industry. A welded mesh is directly wound and packed into a coil, which facilitates transportation, and reducing the cost of the steel strip mesh. Accordingly, the mesh welding robot has a simple structure, low cost, ease of operation. Thus, it reduces the working hours, saves manpower, thereby improving the production efficiency.

5 BRIEF DESCRIPTION OF DRAWINGS

FIG. 1 is a schematic diagram illustrating a mesh welding robot provided by an embodiment of this application.

FIG. 2 is a schematic diagram illustrating a steel strip feeding mechanism provided by an embodiment of this application.

10 FIG. 3 is a schematic diagram illustrating a feeding portion provided by an embodiment of this application.

FIG. 4 is a schematic diagram illustrating the connecting relationship between the feeding portion and a feeding beam provided by an embodiment of this application.

15 FIG. 5 is a schematic diagram illustrating a steel strip feeding mechanism provided by an embodiment of this application when the steel strip feeding mechanism feeds the steel strip.

FIG. 6 is a schematic diagram illustrating a feeding portion of the steel strip feeding mechanism provided by an embodiment of this application when the feeding portion of the steel strip feeding mechanism moves in a direction of nearing a limiting portion.

20 FIG. 7 is a schematic diagram illustrating another mesh welding robot provided by an embodiment of this application.

FIG. 8 is a front view illustrating the mesh welding robot provided by an embodiment of this application.

FIG. 9 is a front view illustrating a material laying mechanism provided by an embodiment of this application.

25 FIG. 10 is a top view illustrating the material laying mechanism provided by an embodiment of this application.

FIG. 11 is a schematic diagram illustrating a step feeding device provided by an embodiment of this application.

FIG. 12 is a partial enlarged view illustrating part A shown in FIG. 9 of this application.

FIG. 13 is a partial enlarged view illustrating part B shown in FIG. 9 of this application.

5 FIG. 14 is a front view illustrating a welding mechanism provided by an embodiment of this application.

FIG. 15 is a side view illustrating the welding mechanism provided by an embodiment of this application.

10 FIG. 16 is a top view illustrating the welding mechanism provided by an embodiment of this application.

FIG. 17 is a schematic diagram illustrating a welding assembly of the welding mechanism provided by an embodiment of this application.

FIG. 18 is a partial enlarged view illustrating part C shown in FIG. 17 of this application.

15 FIG. 19 is a schematic diagram illustrating a mesh rolling mechanism provided by an embodiment of this application.

FIG. 20 is a schematic diagram illustrating another mesh rolling mechanism provided by an embodiment of this application.

FIG. 21 is a side view illustrating the mesh welding robot provided by an embodiment of this application.

20 FIG. 22 is a partial enlarged view illustrating part D shown in FIG. 21 of this application.

FIG. 23 is a top view of FIG. 21 of this application.

FIG. 24 is a partial enlarged view illustrating part E in FIG. 23 of this application.

Reference Signs

1000. Steel strip feeding mechanism	1100. First rack
1200. First guide rail	1300. feeding portion
1400. limiting portion	1500. Driving portion
1600. Guide portion	1700. Steel strip
1310. Feeding frame	1320. Walking wheel
1330. First fastening structure	1331. Support plate
1332. First driving device	1333. Pressing block
1410. Base	1420. Second fastening structure
1510. Connecting rod assembly	1520. First transmission shaft
1530. Second driving device	1511. Feeding beam
1512. Intermediate connecting rod	1513. Swinging arm
1610. Mounting base	1620. bearing
2000. Material laying mechanism	2100. Horizontal material storage device
2200. Step feeding device	2300. Material laying slide
2400. Material laying device	2500. Second rack
2600. Transverse bar	2110. Second transmission shaft
2120. Storage body	2130. Storage sprocket
2140. Storage chain	2150. Storage alignment plate
2210. Fixed plate	2220. Movable plate
2230. Second guide rail	2240. Movable wheel
2250. Eccentric wheel	2260. Feeding shaft
2270. Connecting plate	2310. Material laying surface
2320. Stopping portion	2330. Distribution device
2410. Supporting slide	2420. Driving shaft
2430. Driving wheel	2440. Driven wheel
2450. Transmission chain	2460. Hook
2470. Transmission motor	2411. Arc surface
2412. Extension portion	3000. Welding mechanism
3100. Welding assembly	3110. Fixed bar

3120. Guide block	3130. Lower electrode
3140. Upper electrode	3150. Transformer
3160. Gear	3170. Gear shaft
3180. Gear rack	3190. Walking frame
3200. Lower electrode base connecting plate	3210. Lower electrode base
3220. Electrode pressing block	3230. First gas cylinder
3240. First gas cylinder stationary base	3250. Pin shaft
3260. Upper electrode welding arm	3270. Upper electrode base connecting plate
3280. Upper electrode base	3290. Transformer fixed plate
3300. Upper electrode wire	3310. Lower electrode wire
4000. Mesh rolling mechanism	4100. Third rack
4200. Stationary base	4300. Spindle
4400. Movable base	4500. Transmission assembly
4600. Second gas cylinder	4700. Motor
4800. Rolling mesh	4510. First sprocket
4520. Second sprocket	4530. Third sprocket
4540. First chain	4550. Second chain
4560. First sprocket shaft	4570. Second sprocket shaft
4610. Second gas cylinder body	4620. Piston rod
5000. Bogie	

DETAILED DESCRIPTION

The solutions of this application are described hereinafter through embodiments in conjunction with drawings.

- 5 This embodiment provides a mesh welding robot. As illustrated in FIGS. 1 to 24, the mesh welding robot includes a steel strip feeding mechanism 1000, a material laying mechanism 2000, a welding mechanism 3000, a mesh rolling mechanism 4000 and a bogie 5000. The bogie 5000 is configured to hold and transfer the steel strip 1700 to the steel strip feeding mechanism 1000.

A steel strip feeding mechanism 1000 includes a first rack 1100, a first guide rail 1200, a limiting portion 1400, and a feeding portion 1300. The first guide rail 1200 is arranged on the rack along a feeding direction of the steel strip 1700. The limiting portion 1400 is fixed to the first guide rail 1200, and configured to restrict the steel strip 1700 to moving in the feeding direction until the feeding portion arrives. The feeding portion 1300 is slidably arranged on the first guide rail 1200. The steel strip 1700 is fixed to the feeding portion 1300, and moves with the feeding portion 1300.

The welding mechanism 3000 is arranged on the first rack 1100 and located at a front end of the steel strip feeding mechanism 1000, and includes an upper electrode 3140 and a lower electrode 3130. The welding mechanism 3000 is configured to weld the steel strip 1700 and the transverse bar 2600 into a mesh.

The material laying mechanism 2000 is arranged above the steel strip feeding mechanism 1000 and the welding mechanism 3000 to carry and transfer a straightened transverse bar 2600 to the lower electrode 3130.

The mesh rolling mechanism 4000 is arranged at a front end of the welding mechanism 3000, and includes a stationary base 4200, a spindle 4300, a movable base 4400 and a transmission assembly 4500. The stationary base 4200 is fixedly arranged relative to a ground. The spindle 4300 is rotatably inserted through the stationary base 4200. The movable base 4400 is connected to the spindle 4300 and rotates around the spindle 4300. The transmission assembly 4500 is arranged on the stationary base 4200 and the movable base 4400, and configured to drive the mesh to move from one end of the stationary base 4200 farther away from the movable base 4400 to a direction of nearing the movable base 4400, so as to roll the mesh.

As illustrated in FIGS. 2 to 8, the steel strip feeding mechanism 1000 includes the first rack 1100, the first guide rail 1200, the feeding portion 1300, the limiting portion 1400 and the driving portion 1500, which can realize automatic transmission of the steel strip 1700. The first guide rail 1200 is arranged on the first rack 1000 along the feeding direction of the steel strip 1700. The limiting portion 1400 is fixed to the first guide rail 1200, and configured to limit movement of the steel strip 1700 along the feeding direction. The feeding portion 1300 is slidably arranged on the first guide rail 1200. The steel strip 1700 is fixed to the feeding portion 1300, and moves with the feeding portion 1300. Because the steel strip 1700 is relatively soft, it is impossible to transfer the steel strip 1700 by pushing the steel strip 1700. In the steel strip

feeding mechanism 1000, step-by-step transmission of the steel strip 1700 can be realized through cooperation of the limiting portion 1400 and the feeding portion 1300. When the feeding portion 1300 is relatively far away from the limiting portion 1400, the limiting portion 1400 fixes the steel strip 1700, the feeding portion 1300 slides in a direction on nearing the limiting portion 1400, then the feeding portion 1300 fixes the steel strip 1700, the limiting portion 1400 releases the steel strip 1700, and the steel strip 1700 can be fed along with the feeding portion 1300 to the feeding direction, thereby realizing the transference of the steel strip 1700.

In this embodiment, as illustrated in FIG. 3, the feeding portion 1300 includes a feeding frame 1310. The feeding frame 1310 is arranged across on the first guide rail 1200 and capable of reciprocating along the feeding direction of the first guide rail 1200. In an embodiment, a rotatable walking wheel 1320 is arranged on the feeding frame 1310, and the walking wheel 1320 is in rolling contact with the first guide rail 1200. A plurality of walking wheels 1320 are provided, and arranged in two layers. A first layer of walking wheels 1320 are in contact with an upper surface of the first guide rail 1200, and a second layer of walking wheels 1320 are in contact with a lower surface of the first guide rail 1200. Such arrangements of the plurality of walking wheels 1320 ensure that the feeding frame 1310 moves stably along the first guide rail 1200.

A first fastening structure 1330 is arranged on the feeding frame 1310, and the first fastening structure 1330 is capable of fixing the steel strip 1700 on the feeding frame 1310. In an embodiment, the first fastening structure 1330 includes a support plate 1331 and a first driving device 1332 arranged on the support plate 1331. The first driving device 1332 is connected to a pressing block 1333, and the pressing block 1333 is operative to press the steel strip 1700 tightly on the feeding frame 1310. The first driving device 1332 is a cylinder. Expansion and contraction of a piston rod of the first driving device 1332 is capable of controlling the pressing block 1333 to get close to or away from a position of the steel strip 1700. The above-mentioned support plate 1331 is in a shape of a hollow sleeve. A main body of the first driving device 1332 is fixed to a top portion of the support plate 1331. The piston of the first driving device 1332 can go into a hollow position of the support plate 1331. The pressing block 1333 is arranged inside the support plate 1331 and connected to the piston rod. An interior portion of the support plate 1331 is also capable of guiding reciprocating movement of the pressing block 1333.

A pressing surface of the pressing block 1333 is provided with bumped texture, which can

increase a maximum static friction between the steel strip 1700 and the pressing block 1333, thereby better pressing the steel strip 1700.

A surface of the support plate 1331 in contact with the feeding frame 1310 is provided with a through groove for accommodating the steel strip 1700, and the steel strip 1700 is able to pass through the through groove.

In this embodiment, as illustrated in FIGS. 2 and 6, the limiting portion 1400 includes a base 1410 fixed to the first guide rail 1200 and a second fastening structure 1420 arranged on the base 1410. The steel strip 1700 can pass through between the base 1410 and the second fastening structure 1420. The second fastening structure 1420 is operative to secure the steel strip 1700 on the base 1410.

The structure of the second fastening structure 1420 in this embodiment is the same as that of the first fastening structure 1330, except that arranged positions are different. The second fastening structure 1420 includes the support plate 1331 and the first driving device 1332 arranged on the support plate 1331. The first driving device 1332 is connected to the pressing block 1333, and the pressing block 1333 is capable of pressing the steel strip 1700 tightly on the base 1410. Structures of the support plate 1331, the first driving device 1332 and the pressing block 1333 are as described above.

In this embodiment, as illustrated in FIGS. 4 and 5, the driving portion 1500 includes a connecting rod assembly 1510, a first transmission shaft 1520 and a second driving device 1530. A first end of the connecting rod assembly 1510 is connected to the feeding portion 1300, and a second end of the connecting rod assembly 1510 is connected to a first end of the first transmission shaft 1520. A second driving device 1530 is connected to the first transmission shaft 1520 and drives the first transmission shaft 1520 to rotate. The first transmission shaft 1520 is fixed to the first rack 1100 through a housed bearing, and a second end of the first transmission shaft 1520 is connected to the second driving device 1530 fixed to the first rack 1100. The first transmission shaft 1520 is able to reciprocate in a circumferential direction under drive of the second driving device 1530, and the feeding portion 1300 connected to the connecting rod assembly 1510 is able to reciprocate in a straight line along the first guide rail 1200 under transmission of the connecting rod assembly 1510. In order to realize that the feeding portion 1300 reciprocates along the first guide rail 1200, the connecting rod assembly 1510 includes a feeding beam 1511 fixed to the feeding portion 1300, and one end of the

feeding beam 1511 away from the feeding portion 1300 is hinged with an intermediate connecting rod 1512, one end of the intermediate connecting rod 1512 away from the feeding beam 1511 is hinged with a swinging arm 1513, and the swinging arm 1513 is fixed to the first transmission shaft 1520. The first driving shaft 1520 is able to realize forward and reverse rotation under action of the second driving device 1530, and an angle of the forward and reverse rotation of the first driving shaft 1520 can also be controlled by the second driving device 1530. When the first transmission shaft 1520 performs forward and reverse rotation, the swinging arm 1513 is driven to swing, so that the swinging arm 1513 is able to drive the feeding beam 1511 forward and backward in a direction along the first guide rail 1200 via the intermediate connecting rod 1512. The second driving device 1530 in this embodiment is a motor and can also be selected according to specific conditions and will not be repeated here.

As illustrated in FIGS. 5 and 7, the steel strip feeding mechanism 1000 of this embodiment also includes a guide portion 1600, which is arranged on the first guide rail 1200. The guide portion 1600 includes a mounting base 1610 and a plurality of bearings 1620. The bearings 1620 are distributed above, below and on both sides of the steel strip 1700.

In this embodiment, the guide portion 1600, the limiting portion 1400 and the feeding portion 1300 are arranged in sequence along the feeding direction of the steel strip 1700.

When the steel strip feeding mechanism 1000 is in operation, the steel strip 1700 first reaches the limiting portion 1400 through the guide portion 1600, then passes through the limiting portion 1400, and then passes through the feeding portion 1300, finally reaches a position between the upper electrode 3140 and the lower electrode 3130, and welds the transverse bar 2600 and the steel strip 1700 through the electrode. When transferred forward, the steel strip 1700 is pressed on the base 1410 by driving the pressing block 1333 through the first driving device 1332 on the limiting portion 1400. Then, as illustrated in FIG. 6, the first driving shaft 1520 is driven to rotate by the second driving device 1530, and the feeding portion 1300 is driven to move on the first guide rail 1200 in a direction of nearing the limiting portion 1400 by the connecting rod assembly 1510, the first driving device 1332 on the feeding portion 1300 drives the pressing block 1333 to press the steel strip 1700 tightly on the feeding frame 1310. At the same time, the first driving device 1332 of the limiting portion 1400 drives the pressing block 1333 to move upward, and the steel strip 1700 is not limited by the limiting portion 1400. Finally, the feeding portion 1300 is pushed by the swinging arm 1513 to move away from the limiting portion 1400. As illustrated in FIG. 5, the steel strip 1700 is fed to the electrode at a

preset distance that is between two steel bars adjacent to the mesh. Reciprocating feed is realized according to the above steps.

As illustrated in FIGS. 9 to 13, the material laying mechanism 2000 includes a horizontal material storage device 2100, a step feeding device 2200, a material laying slide 2300, a material laying device 2400, and a second rack 2500.

As illustrated in FIG. 10, the horizontal material storage device 2100 includes a plurality of horizontal transmission assemblies arranged side by side. The plurality of horizontal transmission assemblies are connected to a driving member through the second transmission shaft 2110. The transverse bar 2600 is disposed on the horizontal transmission assembly, and transferred by the horizontal transmission assembly to the step feeding device 2200. In an embodiment, the horizontal transmission assembly includes a storage body 2120 mounted on the second rack 2500 and configured to store the transverse bar 2600, and a storage sprocket 2130 mounted at both ends of a length of the storage body 2120. One of the storage sprocket 2130 is sleeved onto the second transmission shaft 2110 and rotates under drive of the second transmission shaft 2110. The two storage sprockets 2130 are connected by a storage chain 2140. Optionally, the above driving member is a motor, or a hydraulically driven structure can be used to drive the second transmission shaft 2110 to rotate. The material storage bodies 2120 of the plurality of horizontal transmission assemblies of this embodiment simultaneously store and carry the transverse bar 2600, and the storage sprockets 2130 at a same end of the plurality of horizontal transmission assemblies each are driven by the second transmission shaft 2110 synchronously, thereby enabling the plurality of horizontal transmission assemblies to horizontally transfer the transverse bar 2600 at the same time. Structures of the storage sprocket 2130 and the storage chain 2140 can also be replaced by structures of a synchronous pulley and a synchronous strip, which can simply satisfy transmission of the transverse bar 2600.

In this embodiment, two sides of the horizontal material storage device 2100 are symmetrically provided with storage alignment plates 2150. Two ends of each of the plurality of transverse bars 2600 on the horizontal material storage device 2100 can be aligned by the storage alignment plates 2150, so as to facilitate transmission of the transverse bar 2600. In an embodiment, the above-mentioned storage alignment plate 2150 is mounted on the second rack 2500 in a manner of an adjustable position, which can be adjusted according to a length of the transverse bar 2600, so as to align the transverse bar 2600.

The step feeding device 2200 is arranged on one side of the horizontal material storage device 2100 to receive the transverse bar 2600 transferred by the horizontal material storage device 2100, and is capable of transferring the a received transverse bar 2600 to a top step by step. In an embodiment, the step feeding device 2200 includes a plurality of step feeding assemblies arranged side by side, and the plurality of step feeding assemblies are in one-to-one correspondence with the horizontal transmission assemblies. As illustrated in FIG. 11, each step feeding assembly includes two fixed plates 2210 arranged at a fixed interval and a movable plate 2220 located between the two fixed plates 2210. Both the fixed plate 2210 and the movable plate 2220 are provided with a step surface inclined to a transferring direction of the transverse bar 2600. A direction and a structure of the step surface of the fixed plate 2210 are the same as those of the movable plate 2220. The transverse bar 2600 transferred by the horizontal material storage device 2100 can be disposed on a step of a lowermost step surface of the fixed plate 2210 and the movable plate 2220.

The movable plate 2220 is capable of reciprocating along the transferring direction of the transverse bar 2600. In an embodiment, a second guide rail 2230 is mounted on the second rack 2500, and the movable plate 2220 is capable of sliding along the second guide rail 2230. In an embodiment, the second guide rail 2230 is slidably connected to a connecting plate 2270, and the movable plate 2220 is fixedly connected to the connecting plate 2270. A plurality of movable wheels 2240 are arranged at a bottom portion of the movable plate 2220, and a lower portion of each movable wheel 2240 is provided with an eccentric wheel 2250 tangent to the movable wheel 2240. The eccentric wheel 2250 is mounted on a feeding shaft 2260 and driven by the feeding shaft 2260. The feeding shaft 2260 is rotatably mounted on the second rack 2500 and driven by a feeding motor. The feeding motor drives the feeding shaft 2260 to rotate, the feeding shaft 2260 drives the eccentric wheel 2250 to rotate, then the eccentric wheel 2250 drives the movable wheel 2240 to reciprocate, and then the movable wheel 2240 drives the movable plate 2220 to reciprocate along the second guide rail 2230 in the transferring direction of the transverse bar 2600. Through reciprocating movement of the movable plate 2220, the transverse bar 2600 on the step surface can be transferred upward step by step and finally to the top.

The material laying slide 2300 is located between the step feeding device 2200 and the material laying device 2400, and the transverse bar 2600 at the top of the step feeding device 2200 is capable of sliding to one end of the material laying slide 2300 close to the material laying device 2400. In an embodiment, as illustrated in FIG. 9, the material laying slide 2300 has an

inclined material laying surface 2310, and one end of the material laying slide 2300 is connected to the top of the step feeding device 2200, so that the transverse bar 2600 at the top of the step feeding device 2200 is capable of sliding onto the material laying slide 2300. Referring to FIG. 12, one end of the material laying slide 2300 close to the material laying device 2400 is provided with a stopping portion 2320. When the transverse bar 2600 slides to the end, the stopping portion 2320 is capable of stopping the transverse bar 2600, and prevents the transverse bar 2600 from falling off directly from the material laying slide 2300.

In an embodiment, one end of the material laying slide 2300 close to the material laying device 2400 is further provided with a distribution device 2330. The distribution device 2330 is capable of ejecting the transverse bar 2600 on the material laying slide 2300 one by one, and the transverse bar 2600 ejected by the distribution device 2330 falls on the material laying device 2400. In an embodiment, an air cylinder, an oil cylinder or a linear motor can be used to drive a jacking rod, through which the transverse bar 2600 is ejected from the material laying slide 2300.

One end of the material laying device 2400 is arranged on one side of the material laying slide 2300, and the other end of the material laying device 2400 is arranged close to the lower electrode 3130 to carry and transfer the transverse bar 2600 ejected by the distribution device 2330 on the material laying slide 2300 to the lower electrode 3130. In an embodiment, as illustrated in FIGS. 9, 10, 12 and 13, the material laying device 2400 includes a plurality of supporting slides 2410 arranged side by side on the second rack 2500, a driving shaft 2420 inserted through a same end of the plurality of supporting slides 2410, and a transmission assembly located at one side of each supporting slide 2410 and driven by the driving shaft 2420. The transverse bar 2600 on the material laying slide 2300 can fall on the transmission assembly and be transferred by the transmission assembly to the lower electrode 3130. The above-mentioned plurality of supporting slides 2410 and transmission assemblies of this embodiment operate synchronously, that is, the plurality of supporting slides 2410 and transmission assemblies work together to transfer the transverse bar 2600 from the material laying slide 2300 to the lower electrode 3130.

One end of the supporting slide 2410 close to the lower electrode 3130 is provided with an arc surface 2411. When the transverse bar 2600 on the transmission assembly is transferred to a lower end of the supporting slide 2410, the transverse bar 2600 will fall on the arc surface 2411 and eventually fall to the lower electrode 3130 via the arc surface 2411.

The transmission assembly includes a driving wheel 2430 driven by the driving shaft 2420, a driven wheel 2440 arranged on the supporting slide 2410 and rotatable around an axis of the driven wheel 2440, and a transmission chain 2450 connecting the driving wheel 2430 and the driven wheel 2440. The transmission chain 2450 is provided with a hook 2460 opening upward and configured to carry the transverse bar 2600. The driving shaft 2420 can be driven to rotate by the transmission motor 2470. The driving shaft 2420 is driven to rotate by the transmission motor 2470, and the driving wheel 2430 is driven to rotate by the driving shaft 2420, so that the transmission chain 2450 rotates with the driving wheel 2430 and the driven wheel 2440. With movement of the transmission chain 2450, the hook 2460 and the transverse bar 2600 on the hook 2460 are also driven to move and finally fall on the arc surface 2411 of the supporting slide 2410 and transferred to the lower electrode 3130.

In this embodiment, an extension portion 2412 is arranged at one end of the supporting slide 2410 close to the material laying slide 2300, and a channel is formed between the extension portion 2412 and the material laying slide 2300. The transverse bar 2600 that slides from the material laying slide 2300 would enter the channel and slides to the stopping portion 2320 of the material laying slide 2300.

When the material laying mechanism 2000 is in use, firstly, according to requirements of different specifications of the mesh, a certain number of pre-straightened transverse bars 2600 are stored on the storage body 2120. The transverse bar 2600 is transferred forward and finally to the movable plate 2220 of the step feeding device and the step surface of the fixed plate 2210 by the horizontal transmission assembly. Subsequently, the eccentric wheel 2250 drives the movable plate 2220 to move up and down, so that the plurality of transverse bars 2600 are separated and transferred upward step by step. Then, the transverse bar 2600 falls onto the material laying slide 2300, and the distribution device 2330 on the material laying slide 2300 ejects the transverse bar 2600 one by one. The transverse bar 2600 falls into the hook 2460 of the operating transmission chain 2450, and is then driven to the lower end of the supporting slide 2410. Finally, the transverse bar 2600 falls onto the lower electrode 3130 to be welded with the steel strip 1700.

As illustrated in FIGS. 14 to 18, with regard to a plurality of welding assemblies 3100 that are arranged at intervals of the welding mechanism 3000, the plurality of welding assemblies 3100 each are movably mounted on the first rack 1100, and welding of meshes with different grid spacing can be realized by adjusting the position of the welding assembly 3100.

The plurality of welding assemblies 3100 each include a fixed bar 3110, a guide block 3120, the lower electrode 3130, the upper electrode 3140 and a transformer 3150.

The fixed bar 3110 can be movably disposed on the first rack 1100. Referring to FIGS. 15 and 16, two gears 3160 are respectively provided at two ends of the fixed bar 3110, and the two gears 3160 are connected by a gear shaft 3170. Gear racks 3180 engaged with the gear 3160 are arranged on two sides of the first rack 1100. When the fixed bar 3110 moves, the gear shaft 3170 is rotated, and the fixed bar 3110 can be moved relative to the first rack 1100 simply by engaging the gear 3160 with the gear rack 3180. In this embodiment, the gear shaft 3170 can be rotated manually, such as setting a screw portion at an end portion of the gear shaft 3170. An operator makes the gear shaft 3170 rotate by screwing the screw portion using a wrench, thereby making the fixed bar 3110 move. The gear shaft 3170 can also be driven to rotate in an electric manner, for example, the gear shaft 3170 is driven to rotate by a motor. The above-mentioned gear 3160 and the gear rack 3180 of this embodiment can also be replaced by sprockets and chains, and movement of the fixed bar 3110 relative to the first rack 1100 can also be realized.

In this embodiment, walking frames 3190 are also arranged at two ends of the fixed bar 3110, and walking grooves (not shown in the figure) are arranged at two sides of the first rack 1100. The walking frame 3190 is disposed in and capable of sliding along the walking groove. By setting the walking frame 3190, the fixed bar 3110 can be supported and guided, which is beneficial to position adjustment of the fixed bar 3110.

In this embodiment, referring to FIGS. 17 and 18, a lower electrode base connecting plate 3200 is fixedly arranged on the fixed bar 3110, and a lower electrode base 3210 is mounted on the lower electrode base connecting plate 3200. In addition, the lower electrode base 3210 is insulated from the lower electrode base connecting plate 3200, and the lower electrode 3130 is mounted on the lower electrode base 3210. Optionally, the lower electrode 3130 is detachably mounted on the lower electrode base 3210, and the lower electrode 3130 can be pressed and fixed to the lower electrode base 3210 by the electrode pressing block 3220, so as to facilitate replacement of the lower electrode 3130.

In this embodiment, the guide block 3120 is mounted on the lower electrode base 3210. In an embodiment, the guide block 3120 is arranged adjacent to the lower electrode 3130. The guide block 3120 is configured for the steel strip 1700 to pass through and to limit and guide the steel

strip 1700. In an embodiment, the guide block 3120 is provided with a trumpet-shaped groove through which the steel strip 1700 passes, and a lower end surface of the steel strip 1700 is disposed on the lower electrode 3130. When the mesh is being welded, the transverse bar 2600 is disposed on the steel strip 1700.

5 The upper electrode 3140 is matched with the lower electrode 3130, that is, the upper electrode 3140 is arranged on one side of the upper end surface of the steel strip 1700 relative to the lower electrode 3130, and the upper electrode 3140 and the lower electrode 3130 can cooperate to realize welding of the steel strip 1700 and the transverse bar 2600. In an embodiment, as illustrated in FIGS. 17 and 18, a first gas cylinder stationary base 3240 is fixedly mounted on
10 the fixed bar 3110, a first gas cylinder 3230 is mounted on the first gas cylinder stationary base 3240, an output end of the first gas cylinder 3230 is rotatably connected to an upper electrode welding arm 3260 by a pin shaft 3250, and two ends of the upper electrode welding arm 3260 are rotatably connected to the fixed bar 3110 by the pin shaft 3250. In addition, one end of the upper electrode welding arm 3260 that is not connected to the output end of the first gas
15 cylinder 3230 is fixedly provided with an upper electrode base connecting plate 3270, an upper electrode base 3280 is mounted on the upper electrode base connecting plate 3270, the upper electrode base 3280 is insulated from the upper electrode base connecting plate 3270, and the upper electrode 3140 is mounted on the upper electrode base 3280. In an embodiment, the upper electrode 3140 is pressed and fixed to the upper electrode base 3280 by the electrode pressing
20 block 3220, so as to facilitate replacement of the upper electrode 3140. The upper electrode welding arm 3260 is driven by the first gas cylinder 3230 to press down to drive the upper electrode 3140 to get close to the lower electrode 3130, thereby realizing welding of the transverse bar 2600 and the steel strip 1700. The upper electrode welding arm 3260 is driven by the first gas cylinder 3230 to rise up to drive the upper electrode 3140 to get away from the
25 lower electrode 3130, thereby facilitating carrying and transmission of the mesh after welding.

Referring to FIG. 15, a transformer fixed plate 3290 is mounted on the fixed bar 3110, the transformer 3150 is fixed to the transformer fixed plate 3290. In addition, a first end of the transformer 3150 is connected to the upper electrode 3140 via the upper electrode wire 3300, and a second end of the transformer 3150 is connected to the lower electrode 3130 via the lower
30 electrode wire 3310 to form a whole welding circuit, thereby realizing welding of the steel strip 1700 and the transverse bar 2600. In this embodiment, each welding assembly 3100 is provided with an independent transformer 3150, and the transformer 3150 can move with the welding assembly 3100, so as to facilitate position adjustment of the welding assembly 3100. Moreover,

the independent transformer 3150 has the advantages of high solder joint quality and small deformation, and the upper electrode wire 3300 and the lower electrode wire 3310 are relatively short, which can effectively reduce shunt and power loss, thereby saving electricity.

When the adjustable welding mechanism 3000 of this application is in operation, according to requirements of welding-type meshes of different specifications of steel strips 1700 and transverse bars 2600, a whole mesh is welded by a plurality of steel strips 1700 and transverse bars 2600, and each steel strip 1700 corresponds to a set of welding assemblies 3100. After passing through the guide block 3120, the steel strip 1700 is disposed above the lower electrode 3130, and then the first gas cylinder 3230 protrudes out, so that the upper electrode welding arm 3260 rotates around the pin shaft 3250. In addition, when the upper electrode welding arm 3260 rotates, the upper electrode 3140 is driven to press down, and cooperates with the lower electrode 3130 to weld the transverse bar 2600 and the steel strip 1700 together. When different specifications of meshes are being welded, the position of the steel strip 1700 would change. At this moment, by rotating the gear shaft 3170, the position of the whole welding assembly 3100 can be adjusted, so as to correspond to the position of the steel strip 1700 of the mesh with this specification, and each solder joint is adjusted in a same manner, which is simple and quick. After the adjustment is completed, the steel strip 1700 and the transverse bar 2600 can be welded. Through the above manner, the welding of the mesh with different grid spacing can be effectively realized, so that adjustment time when the grid spacing is changed is saved, thereby improving production efficiency and satisfying production requirements of multi-specification of the mesh.

As illustrated in FIGS. 19 to 24, the mesh rolling mechanism 4000 includes a third rack 4100, a stationary base 4200, a spindle 4300, a movable base 4400, a transmission assembly 4500, a third driving device and a fourth driving device. The third rack 4100 is disposed at a lowest position and fixed to the ground. The stationary base 4200 is arranged on the third rack 4100. The spindle 4300 is rotatably inserted through on the stationary base 4200. The movable base 4400 is connected to the spindle 4300, and capable of rotating around the spindle 4300. The transmission assembly 4500 is arranged on the stationary base 4200 and the movable base 4400, and capable of driving the mesh from one end of the stationary base 4200 farther away from the movable base 4400 toward the movable base 4400. The third driving device is configured to drive the movable base 4400 to rotate around the spindle 4300, and the fourth driving device is configured to drive the transmission assembly 4500. In the mesh rolling mechanism 4000, the mesh can be transferred from one end of the stationary base 4200 toward the movable base 4400

by the transmission assembly 4500. When there is a certain included angle between the movable base 4400 and the stationary base 4200, due to softness, the mesh bends at the included angle formed between the movable base 4400 and the stationary base 4200, and rotates continuously under friction action of the transmission assembly 4500 to form a rolling mesh 4800.

5 In this embodiment, as illustrated in FIGS. 21 to 24, the transmission assembly 4500 includes a first sprocket 4510, a second sprocket 4520, a third sprocket 4530, a first chain 4540 and a second chain 4550. The first sprocket 4510 is a double sprocket and is sleeved onto the spindle 4300, and the spindle 4300 is configured to drive the first sprocket 4510 to rotate via the fourth driving device. The second sprocket 4520 is rotatably arranged at one end of the stationary base
10 4200 away from the spindle 4300. The third sprocket 4530 is rotatably arranged at one end of the movable base 4400 away from the spindle 4300. The second sprocket 4520 is connected to the first sprocket 4510 by the first chain 4540, and the third sprocket 4530 is connected to the first sprocket 4510 by the second chain 4550. When the fourth driving device drives the spindle 4300 to rotate, the first sprocket 4510 rotates, and the second sprocket 4520 and the third
15 sprocket 4530 are driven to rotate by the first chain 4540 and the second chain 4550. During rotation of the first chain 4540 and the second chain 4550, the mesh is driven to move by friction with the steel strip 1700.

The movable base 4400 is connected to the third driving device, and the third driving device is configured to drive the movable base 4400 to perform reciprocating rotation around the spindle
20 4300. In an embodiment, the third driving device is a second gas cylinder 4600. The second gas cylinder 4600 includes a second gas cylinder body 4610 and a piston rod 4620. The second gas cylinder body 4610 is hinged with the third rack 4100, and the piston rod 4620 is hinged with the movable base 4400. A connecting ear is arranged on the movable base 4400, and the connecting ear is hinged with the piston rod 4620 of the second gas cylinder 4600. When the
25 piston rod 4620 performs reciprocating extension or retraction in the second gas cylinder body 4610, the second gas cylinder 4600 then drives the movable base 4400 to swing relative to the spindle 4300 within a certain range of angle. When the movable base 4400 swings, the included angle between the movable base 4400 and the stationary base 4200 also changes, so that an included angle between a contact surface of the first chain 4540 and the steel strip 1700 and an
30 included angle between a contact surface of the second chain 4550 and the steel strip 1700 are changed, making an outer diameter of a rolled mesh also correspondingly different. Therefore, if rolling meshes 4800 of different sizes are to be obtained, just change the included angle between the movable base 4400 and the stationary base 4200 accordingly.

In an embodiment, the first sprocket 4510 is connected to the spindle 4300 by a key. As shown in FIG. 21, the fourth driving device is a motor 4700, a motor shaft coincides with an axis of the spindle 4300, and the motor 4700 is arranged on the third rack 4100. The motor 4700 can also be replaced by a hydraulic system. The second sprocket 4520 and the stationary base 4200 are connected by a first sprocket shaft 4560, and a tightening sleeve is arranged between the second sprocket 4520 and the first sprocket shaft 4560. The third sprocket 4530 and the movable base 4400 are connected by a second sprocket shaft 4570, and a tightening sleeve is arranged between the third sprocket 4530 and the second sprocket shaft 4570. When the first sprocket 4510 rotates, the second sprocket 4520 and the third sprocket 4530 are driven to rotate by a chain. As illustrated in FIGS. 23 and 24, the first sprocket shaft 4560 is mounted on the stationary base 4200 by a housed bearing and the second sprocket shaft 4570 is mounted on the movable base 4400 by a housed bearing.

A cross-shaped through hole is arranged on the stationary base 4200. The first sprocket shaft 4560 is inserted through in a cross-shaped through hole and can be fixed at different positions of the cross-shaped through hole, thereby adjusting tension degree of a chain between the first sprocket shaft 4560 and the spindle 4300, or adjusting the included angle between the first chain 4540 and the second chain 4550, so as to adjust a size of the rolling mesh 4800. The cross-shaped through hole includes a transverse hole and a longitudinal hole, so as to adjust position of the first sprocket shaft 4560 in an upper and lower direction and a horizontal direction.

This embodiment further provides a mesh welding robot. The mesh welding robot includes a welding electrode and at least one set of the mesh rolling mechanisms 4000. The one set of the mesh rolling mechanisms 4000 are located downstream of the welding electrode. Because the mesh has a certain width, the mesh rolling mechanisms 4000 can be arranged side by side to realize stable transmission of the mesh.

A process of rolling the mesh by the mesh welding robot is described as follows.

First, the steel strip 1700 and the steel bar which form the mesh are transferred to the first chain 4540 after being welded by the welding electrode, and the first chain 4540 is configured to drive the mesh to move by friction with the steel strip 1700; a pipe frame is welded at a front end of the mesh; when the mesh comes into contact with the included angle between the first chain 4540 and the second chain 4550, as illustrated in FIG. 19, with rotation of the chain, the pipe

frame rotates at the included angle, and due to softness, the mesh constantly roll on the pipe frame during the transmission of the mesh to form the rolling mesh 4800; when the steel strip 1700 is wound for a certain length on the pipe frame, the mesh is cut off and the movable base 4400 is rotated by adjusting the piston rod 4620 of the second gas cylinder 4600 until a free end of the movable base 4400 is inclined diagonally downward, as illustrated in FIG. 20, the rolling meshes 4800 roll out of the movable base 4400 to complete rolling of one rolling mesh 4800.

In this embodiment, the working process of the mesh welding robot is as follows.

The discoidal steel strip 1700 stored in the bogie 5000 is fed to an electrode of the welding mechanism 3000 by the steel strip feeding mechanism 1000. The feeding portion 1300 drives the steel strip 1700 to perform a reciprocating motion to realize step-by-step feeding of the steel strip 1700. When the steel strip 1700 is fed forward, the steel strip 1700 is pressed tightly onto the base 1410 by driving the pressing block 1333 through the first driving device 1332 on the limiting portion 1400. Then, as illustrated in FIG. 6, the first driving shaft 1520 is driven to rotate by the second driving device 1530, and the feeding portion 1300 is driven to move on the first guide rail 1200 in a direction of nearing the limiting portion 1400 by the connecting rod assembly 1510, then the first driving device 1332 on the feeding portion 1300 drives the pressing block 1333 to press the steel strip 1700 tightly onto the feeding frame 1310. At the same time, the first driving device 1332 of the limiting portion 1400 drives the pressing block 1333 to move upward, and the steel strip 1700 is free from the restriction imposed by the limiting portion 1400. Finally, the feeding portion 1300 is pushed by the swinging arm 1513 to move away from the limiting portion 1400. As illustrated in FIG. 5, the steel strip 1700 is fed to the upper electrode 3140 and the lower electrode 3130 at a preset distance. A certain number of pre-straightened transverse bars 2600 are stored on the storage body 2120, and the transverse bars 2600 are transferred forward and finally to the movable plate 2220 of the step feeding device and the step surface of the fixed plate 2210 by the horizontal transmission assembly. Subsequently, the eccentric wheel 2250 drives the movable plate 2220 to move up and down, so that the plurality of transverse bars 2600 are separated and transferred upward step by step. Then, the transverse bar 2600 falls onto the material laying slide 2300, and the distribution device 2330 on the material laying slide 2300 ejects the transverse bar 2600 one by one. The transverse bar 2600 falls onto the hook 2460 of the operating transmission chain 2450, and is then driven to the lower end of the supporting slide 2410. Finally, the transverse bar 2600 falls onto the lower electrode 3130 of the welding mechanism 3000 to weld the steel strip 1700 and the transverse bar 2600 by the welding mechanism 3000. First, welded meshes are transferred to

the first chain 4540 , and the first chain 4540 is configured to drive the mesh to move by friction with the steel strip 1700; the pipe frame is welded at the front end of the mesh; when the mesh comes into contact with the included angle between the first chain 4540 and the second chain 4550, as illustrated in FIG. 19, with rotation of the chain, the pipe frame rotates at the included angle, and due to softness, the mesh constantly roll on the pipe frame during the transmission of the mesh to form the rolling mesh 4800; when the steel strip 1700 is rolled a certain length on the pipe frame, the mesh is cut off and the movable base 4400 is rotated by adjusting the piston rod 4620 of the second gas cylinder 4600 until a free end of the movable base 4400 inclines diagonally downward as illustrated in FIG. 20, then the rolling meshes 4800 roll out of the movable base 4400, and are manually packed to be unloaded.

What is claimed is:

1. A mesh welding robot, comprising:

5 a steel strip feeding mechanism (1000), comprising a first rack (1100), a first guide rail (1200), a limiting portion (1400), and a feeding portion(1300); wherein the first guide rail (1200) is arranged on the first rack (1100) along a feeding direction of a steel strip (1700), and the limiting portion (1400) is fixed to the first guide rail (1200) and is configured to restrict the steel strip (1700) to moving along the feeding direction until the feeding portion (1300) arrives; and the feeding portion (1300) is slidably arranged on the first guide rail (1200), and is configured to secure the steel strip (1700) and drive the steel strip (1700) to move in the feeding direction;

10 a material laying mechanism (2000), configured to carry and transfer a transverse bar (2600) to a welding mechanism (3000);

the welding mechanism (3000), arranged on the first rack (1100) and configured to weld the steel strip (1700) and the transverse bar (2600) together into a mesh;

15 a mesh rolling mechanism (4000), comprising a stationary base (4200), a spindle (4300), a movable base (4400), and a transmission assembly (4500), wherein the stationary base (4200) is fixedly arranged relative to a ground; the spindle (4300) is rotatably inserted through the stationary base (4200); the movable base (4400) is connected to the spindle (4300) and is operative to rotate around the spindle (4300); and the transmission assembly (4500) is arranged on the stationary base (4200) and the movable base (4400), and is configured to drive the mesh
20 to move from an end of the stationary base (4200) farther away from the movable base (4400) in a direction of nearing the movable base (4400) thus rolling the mesh.

2. The mesh welding robot of claim 1, wherein the feeding portion (1300) comprises a feeding frame (1310) arranged to straddle the first guide rail (1200) and is operative to reciprocate in the feeding direction of the first guide rail (1200); wherein the feeding frame (1310) is provided
25 with a first fastening structure (1330) configured to secure the steel strip (1700) on the feeding frame (1310).

3. The mesh welding robot of claim 2, wherein the first fastening structure (1330) comprises a support plate (1331) and a first driving device (1332) arranged on the support plate (1331); wherein the first driving device (1332) is connected to a pressing block (1333) arranged inside
30 the support plate (1331) and configured to press the steel strip (1700) tightly on the feeding frame (1310) driven by the first driving device (1332).

4. The mesh welding robot of claim 1, 2, or 3, wherein the steel strip feeding mechanism (1000)

further comprises a driving portion (1500), the driving portion (1500) comprising a connecting rod assembly (1510), a first transmission shaft (1520), and a second driving device (1530); wherein a first end of the connecting rod assembly (1510) is connected to the feeding portion (1300), and a second end of the connecting rod assembly (1510) is connected to a first end of the first transmission shaft (1520); the first transmission shaft (1520) is fixed to the first rack (1100), and a second end of the first transmission shaft (1520) is connected to the second driving device (1530) fixed to the first rack (1100);

wherein the second driving device (1530) is configured to drive the first transmission shaft (1520) to reciprocate circumferentially and drive the connecting rod assembly (1510) to make the feeding portion (1300) reciprocate in a straight line along the first guide rail (1200).

5. The mesh welding robot of claim 4, wherein the connecting rod assembly (1510) comprises a feeding beam (1511), an intermediate connecting rod (1512), and a swinging arm (1513);

a first end of the feeding beam (1511) is fixed to the feeding portion (1300), and a second end of the feeding beam (1511) farther away from the feeding portion (1300) is hinged to a first end of the intermediate connecting rod (1512), a second end of the intermediate connecting rod (1512) farther away from the second end of the feeding beam (1511) is hinged to the swinging arm (1513), and the swinging arm (1513) is fixed to the first transmission shaft (1520);

the first transmission shaft (1520) is configured to drive the swinging arm (1513) to swing driven by the second driving device (1530), making the swinging arm (1513) drive the feeding beam (1511) together with the feeding portion (1300) connected to the feeding beam (1511) to reciprocate in the straight line along the first guide rail (1200) through the intermediate connecting rod (1512).

6. The mesh welding robot of any one of claims 1 to 5, wherein the limiting portion (1400) comprises a base (1410) fixed to the first guide rail (1200) and a second fastening structure (1420) arranged on the base (1410);

wherein the second fastening structure (1420) is configured to secure the steel strip (1700) on the base (1410).

7. The mesh welding robot of any one of claims 1 to 6, wherein the material laying mechanism (2000) comprises a horizontal material storage device (2100), a step feeding device (2200), and a material laying device (2400);

wherein the step feeding device (2200) is configured to receive the transverse bar (2600) transferred from the horizontal material storage device (2100), and further transfer the

transverse bar (2600) step by step to a top of the step feeding device (2200);

a first end of the material laying device (2400) is arranged adjacent to the step feeding device (2200), and a second end of the material laying device (2400) is arranged adjacent to the welding mechanism (3000), wherein the material laying device (2400) is configured to carry the transverse bar (2600) transferred from the top of the step feeding device (2200) and transfer the transverse bar (2600) to the welding mechanism (3000).

8. The mesh welding robot of claim 7, wherein the material laying mechanism (2000) further comprises a material laying slide (2300), wherein the material laying slide (2300) disposed between the step feeding device (2200) and the material laying device (2400), and the transverse bar (2600) located at the top of the step feeding device (2200) is allowed to slide to an end of the material laying slide (2300) adjacent to the material laying device (2400).

9. The mesh welding robot of claim 8, wherein the material laying device (2400) comprises a plurality of supporting slides (2410) arranged side by side, a driving shaft (2420) inserted through a same end of each of the plurality of supporting slides (2410), and a transmission assembly disposed at a side of each of the plurality of supporting slides (2410) and configured to be driven into motion by the driving shaft (2420);

wherein the transverse bar (2600) located on the material laying slide (2300) is allowed to fall on the transmission assembly and be transferred by the transmission assembly to the welding mechanism (3000).

10. The mesh welding robot of claim 7, 8, or 9, wherein the horizontal material storage device (2100) comprises a plurality of horizontal transmission assemblies arranged side by side, and the transverse bar (2600) is placed on the horizontal transmission assembly, and is further transferred to the step feeding device (2200) by the horizontal transmission assembly.

11. The mesh welding robot of claim 10, wherein the material laying mechanism (2000) further comprises a second rack (2500);

the horizontal transmission assembly comprises a storage body (2120) mounted on the second rack (2500) and configured to store the transverse bar (2600), and a storage sprocket (2130) mounted at each of both ends in a length of the storage body (2120), the storage sprocket (2130) at one end of the length of the storage body (2120) is sleeved onto the second transmission shaft (2110) and is operative to rotate driven by the second transmission shaft (2110), thus enabling the plurality of horizontal transmission assemblies to transfer the transverse bar.

12. The mesh welding robot of claim 9, wherein the transmission assembly comprises a driving

- wheel (2430) operative to be driven into rotation by the driving shaft (2420), a driven wheel (2440) arranged on the respective supporting slide (2410) and rotatable around an axis of the driven wheel (2440), and a transmission chain (2450) connecting the driving wheel (2430) to the driven wheel (2440), wherein the transmission chain (2450) is provided with a hook (2460) having an upward opening and configured to carry the transverse bar (2600).
- 5
13. The mesh welding robot of any one of claims 1 to 12, wherein the welding mechanism (3000) comprises a plurality of welding assemblies (3100) that are spaced apart at set intervals and movably mounted on the first rack (1100), wherein each of the plurality of welding assemblies (3100) comprises:
- 10 a fixed bar (3110), movably disposed on the first rack (1100);
- a guide block (3120), disposed on the fixed bar (3110) and configured to allow the steel strip (1700) to pass through and to limit and guide the steel strip (1700);
- a lower electrode (3130), disposed on a side of the guide block (3120) and configured to support a lower end surface of the steel strip (1700);
- 15 an upper electrode (3140), arranged at a side of an upper end surface of the steel strip (1700) opposite to the lower electrode (3130), and configured to draw near to the lower electrode (3130) when welding the steel strip (1700) with the transverse bar (2600), and move away from the lower electrode (3130) after finishing welding the steel strip (1700) and the transverse bar (2600); and
- 20 a transformer (3150), both terminals of which are respectively coupled to the upper electrode (3140) and the lower electrode (3130).
14. The mesh welding robot of claim 13, wherein each of both ends of the fixed bar (3110) is provided with a gear (3160), and the two gears (3160) are coupled to each other by a gear shaft (3170); a gear rack (3180) is arranged at each of both sides of the first rack (1100) and engaged with the corresponding gear (3160), and the fixed bar (3110) is allowed to move relative to the first rack (1100) through meshing of the gear (3160) with the gear rack (3180); both ends of the fixed bar (3110) are each provided with a walking frame (3190), and two sides of the first rack (1100) are each provided with a walking groove, and the walking frame (3190) is arranged in the corresponding walking groove and operative to slide along the walking groove.
- 25
15. The mesh welding robot of any one of claims 1 to 14, wherein the transmission assembly (4500) comprises a first sprocket (4510), a second sprocket (4520), a third sprocket (4530), a first chain (4540), and a second chain (4550); wherein the first sprocket (4510) is a double
- 30

5 sprocket and sleeved onto the spindle (4300), the spindle (4300) is operative to be driven to rotate by a driving device, the second sprocket (4520) is rotatably arranged at one end of the stationary base (4200) farther away from the spindle (4300), the third sprocket (4530) is rotatably arranged at one end of the movable base (4400) farther away from the spindle (4300), and the second sprocket (4520) and the third sprocket (4530) are connected to the first sprocket (4510) via the first chain (4540) and the second chain (4550), respectively.