

【DESCRIPTION】

【Invention Title】

TRANSPORT DEVICE FOR LAYING POWER LINES

【Technical Field】

5 The present invention relates to a transport device for laying a power line, and more particularly to a transport device for laying a power line, capable of laying the power onto a preset pathway by drawing the cable from a cable tray of a ship.

【Background Art】

10 In general, a work of laying a cladded power line having a multi-core requires significantly much labor. As various devices for laying a power line are introduced, the efficiency of laying the power line is gradually increased. Nevertheless, a work of laying the power line in a cable tray installed on
15 a narrow place, such as a ship, or a marine plant still depends on the hand of a worker. Above all, much labor is required, so that the musculoskeletal disorders of workers may be easily caused. Accordingly, the efficiency of the work may be degraded.

For a device for laying a power line,
20 electric/engine/pneumatic winch laying machine, a roller/caterpillar/ball shape puller and feeder, and a robot for towing a guide rope are mainly used. However, most devices are heavy and have a large size suitably for a linear type power line. Accordingly, the devices may not be applied to a narrow
25 space or a power line vertically connected with a curved line.

In the case of a ship or a plant, since most of power lines have sections perpendicular to the curved line, a new cable laying system is required. The device for the system requires small, light, high-rate, and high power characteristics.

5 According to Korean Patent Registration No. 1086385 as a prior art for a reference, since a driving drum and a compression unit have a large size, much labor is still required when laying a power line onto a wire pathway having a long distance, which is narrow or includes a plurality of straight lines and a curved
10 lines.

 According to Korean Patent Registration No. 120592 as another prior art, a whole length including that of a towing unit is increased, so that the installation is difficult at a narrow space.

15 According to Korean Utility Model Registration No. 0454764 as still another prior art, the reliability and the durability may be deteriorated as a structure is complicated.

【Disclosure】

【Technical Problem】

20 In order to solve the above problems, an object of the present invention is to provide a transport device for laying a power line, which can be installed in a light, thin, small, and compact structure when a work of laying the power line is performed on a cable tray installed at a narrower place, such as a ship or

a marine plant, thereby reducing the number of workers and time number for a work of laying the power line.

Another object of the present invention is to simplify the whole structure for the convenient assembling and disassembling and to enhance the reliability and the durability to flexibly
5 cope with the variation of a cable diameter.

【Technical Solution】

In order to accomplish the above objects, there is provided a transport device for transporting and laying a power line on
10 a wire pathway having a plurality of trays. The device includes at least one driving unit provided on the wire pathway to form force of laying the power line according to reciprocal movement of an actuator, a gripping unit to grip the power line and to apply the laying force to the power line in synchronization with
15 the driving unit, and a control unit to distributed-control the gripping unit and the driving unit through a unit controller and a centralized controller.

According to the detailed configuration of the present invention, the operating timing of the actuator of the driving
20 unit is adjusted by a switch, a control valve, and a time delay valve.

According to the detailed configuration of the present invention, the unit controller of the control unit synchronizes the gripping unit and the driving unit provided at an allocated
25 region to a tray to control the laying of the power line.

According to another embodiment of the present invention, there is provided a transport device for laying a power line by applying laying force to the power line to transport the power line onto a set pathway. The transport device includes a movable
5 body having a link movable in a forward-backward direction of the power line, and a gripping unit including a gripper to grip the power line in linkage with the link.

According to the detailed configuration of the present invention, the link of the movable body applies the laying force
10 to the power line by moving together with the power line only in one-way movement.

According to the detailed configuration of the present invention, a hinge shaft is detachably mounted by providing at least one of a splitting pin, a snap pin, a screw, and key to
15 couple the movable body to the link.

According to the detailed configuration of the present invention, the movable body and the link interpose a stopper between the movable body and the link to limit a forward-backward movement range.

20 According to the detailed configuration of the present invention, the transport device further includes an auxiliary member based on a roller to reduce frictional resistance when laying the power line.

According to another embodiment of the present invention,
25 there is provided a transport device for transporting and laying

a power line. The transport device includes a base having a hinge shaft, a link rotatably installed on the hinge shaft of the base, and having a wire rope for coupling of the power line, and an actuator coupled to induce reciprocal movement of the link.

5 According to another embodiment of the present invention, the link includes a frictional shoe to apply one-way frictional force to the power line.

 According to another embodiment of the present invention, the link comprises a fixed groove and a ball pocket to support
10 the wire rope.

【Advantageous Effects】

 As described above, according to the present invention, when the wire pathway is narrow, or the power is laid on a long wire pathway including a straight line and a curved line, several
15 transport devices cooperate with each other to minimize the number of workers while reducing time number for the work.

 In addition, the installation and control methods are significantly simple to facilitate maintenance.

【Description of Drawings】

20 FIG. 1 is a view showing the structure of a system for laying a power line according to the present invention.

 FIG. 2 is a block diagram showing the coupling state between main components of the system shown in FIG. 1

 FIG. 3 is a block diagram showing a driving unit and a control
25 unit of FIG. 1.

FIG. 4 is a view showing the structure of a device for laying a power line according to the present invention.

FIG. 5 is a schematic view showing the main component of FIG. 4.

5 FIGS. 6 and 7 are schematic views showing the operating state of FIG. 4.

FIG. 8 is an exploded perspective view showing a gripper for the laying of the power line according to the present invention.

10 FIGS. 9 to 12 are views showing the operating state of the gripper of FIG. 8.

FIG. 13 is a perspective view showing another example of the gripper for the laying of the power line according to the present invention.

15 **【Best Mode】**

【Mode for Invention】

Hereinafter, an embodiment of the present invention will be described in detail with reference to accompanying drawings.

20 FIG. 1 is a view showing a system for laying a power line 150 on a wire pathway having a plurality of trays 110, 120, 130. The wire pathway includes a horizontal tray 110, a vertical tray 120, and a corner tray 130. The narrow wire pathway in a ship or a marine plant includes a plurality of straight lines and curved lines and has a long length. The wire pathway of the curved

line is formed at a plurality of points including the corner tray 130.

According to the present invention, a gripping unit 300 is provided on the wire pathway. The gripping unit 300 automatically grips or releases a driving unit 400 in the reciprocal movement of the driving unit 400. The gripping unit 300 is introduced to easily lay the power line on the wire pathway. A conventional winch laying machine is used to mainly lay a thick power line on a straight wire pathway. When a cable is laid on a very long wire pathway, a roller is mainly used to reduce the friction between the cable and the wire pathway. Nevertheless, since significantly great tensile force is applied to the power line, the power line may be damaged.

In addition, according to the present invention, the driving unit 400 to draw the power line through the reciprocal movement of an actuator is synchronized with the gripping unit 300 at a plurality of points of the wire pathway. Since the gripping unit 300 is intermittently installed at the trays 110, 120, and 130, the tensile force to be applied to the power line 150 is not great. Accordingly, the driving unit 400 may be provided in a compact size. If the tensile force of the power line 150 is great, devices such as conventional winch, drawer, and feeder may be operated together with the driving unit 400.

According to the detailed configuration of the present invention, the driving unit 400 includes a switch 410, a control

valve 412, and a time delay valve 415 to adjust the operating timing between actuators. The driving unit 400 properly includes a pneumatic actuator for reciprocal movement. However, the driving unit 400 may include a hydraulic cylinder, electric, or engine-type actuator. The actuator operation is performed through the configuration including the switch 410, the control valve 412, or the time delay valve 415 as shown in FIG. 3. The switch 410 employs a lever manually manipulated by a worker. The control valve 412 performs functions such as "start", "stop", or "reset". The time delay valve 415 makes a difference between a start time point and a stop time point of devices including the gripping unit 300 and the driving unit 400. In addition, as shown in FIG. 3, the electric circuit may be used together with the pneumatic circuit.

Meanwhile, the present invention may employ a structure of attaching the gripping unit 300 to an actuator of the driving unit 400 and automatically moving the power line 150 when the actuator of the driving unit 400 reciprocally moves. The actuator may include all actuators to perform the reciprocal movement as well as a pneumatic actuator. When low resistance exists in the forward direction of the power line 150, the gripping unit 300 may be replaced with a roller (not shown). In addition, a laying speed of the power line may be increased using both of an actuator of the driving unit 400 and a large-size winch.

Pneumatic pressure represents superior maintenance at a site as compared with electricity. Although a cable is not moved, as a plurality of mechanisms are not synchronized with each other temporarily so that the overload is applied, an error, such as the overload of an electric motor, may be prevented. The pneumatic pressure is advantageous to the automatic synchronization since the synchronization is automatically made, that is, an operation delay is made until the maximum pressure is applied to each actuator.

In addition, according to the present invention, a control unit 500 distributed-controls the gripping unit 300 and the driving unit 400 through a unit controller 510 and a central controller 520. The unit controller 510 is installed at each of preset regions of the trays 110, 120, and 130, and the central controller 520 is connected with a plurality of unit controllers 510 at a convenient manipulation place. Processor logics according to the present invention are distributed to a plurality of logics so that the operating speed and the operating reliability can be improved. Accordingly, when an abnormal phenomenon occurs, the risk may be reduced. The central controller 520 has a process information processing function performed together with an external device in addition to a management function for the distributed unit controller 510. A wirelessly operating unit 530 may be interposed between the unit controller 510 and the central controller 520.

According to the detailed configuration of the present invention, the unit controller 510 of the control unit 500 draws the power line 150 in synchronization with the gripping unit 300 and the driving unit 400 provided at the regions allocated to the trays 110, 120, and 130. As shown in FIG. 1, the gripping unit 300 and the driving unit 400 may be installed by distinguishing among the region of the horizontal tray 110, the region of the vertical tray 120, and the region of the corner tray 130 and connected with the unit controller 510. Accordingly, the power line 150 is drawn and moved with the present load and at the preset speed in the horizontal part, the vertical part, and the corner part of the wire pathway.

According to the detailed configuration of the present invention, the central controller 520 of the control unit 500 computes and displays the arrangement positions of the gripping unit 300 and the driving unit 400 on the trays 110, 120, and 130. The central controller 520 may compute the arrangements of the gripping unit 300 and the driving unit 400, and the unit controller 510 by utilizing the information of coordinates of the trays 110, 120, and 130. The computation results are displayed on a display device, so that the minimum number of workers may rapidly and exactly lay the power line.

FIG. 4 shows the device for laying the power line 150 on the preset wire pathway by applying the laying force of the power line 150. In the case of a ship, the cable tray 100 to support

the power line 150 is arranged in horizontal, vertical, and curved formed at the narrow, complex, and high positions. The device 160 for laying the power line according to the present invention aims at the cable tray 100 of the ship and the marine plant having inferior installation environments, but the present invention is not limited thereto.

The device 160 for laying the power line according to the present invention includes a movable body 210, a gripping unit 300, and a driving unit 400 as main components. Hereinafter, the details of the main components will be described

The movable body 210 according to the present invention has a structure of having a link 220 movable in a forward-backward direction of the power line 150. The movable body 210 is configured based on a frame so that the movable body 210 is fixed to the cable tray 100, and receives the link 220 on the frame so that the link 220 is movable forward/backward. The 'forward-backward movement' represents movement in a direction in which the power line 150 is laid. Accordingly, the 'forward/backward' includes all of horizontal, vertical, and curved directions which represent the pathway of the cable tray 100. The forward/backward movement of the link 220 is not limited to the linear movement, but includes rotation movement.

According to the detailed configuration of the present invention, the link 220 of the movable body 210 is moved together with the power line 150 only in one-way movement. Accordingly,

the link 220 may move together with the power line 150 in the forward movement by applying the frictional force to the power line 150. In the backward movement, the link 220 may move backward separately from the power line 150. In addition, when the movable
5 body 210 is reversely turned and attached to the driving unit 400, the movable body 210 may move backward the power line by applying frictional force to the power line in the backward movement, and move forward separately from the power line 150 in the forward movement. While the link 220 is repeatedly moved
10 backward and forward on the movable body 210, the frictional force is applied to the power line 150 only in the forward movement so that the laying force is applied to the power line 150. The above one-way wire laying force is applied through the mechanical mechanism to be described later, which is a main component to
15 simplify the whole structure

According to the detailed configuration of the present invention, a hinge shaft 223 is detachably installed to couple the movable body 210 to the link 220 as at least one of a splitting pin, a snap ring, and a key is interposed between the movable
20 body 210 and the link 220. According to one embodiment of the present invention, the link 220 is rotatably (swingable) mounted on the movable body 210 by interposing the hinge shaft 223 between the link 220 and the movable body 210. Preferably, the link 220 has a structure that may be easily detached for the convenience
25 of the use and maintenance. To this end, the hinge shaft 223

is detachably coupled by a splitting pin, a snap ring, a key, and the like.

According to the detailed configuration of the present invention, a stopper 225 is interposed between the movable body 210 and the link 220 so that the forward-backward movement range is restricted. As the stopper 225, a concavo-convex structure may be applied between the movable body 210 and the link 220. Although a concealed structure is suitable for the stopper 225, the stopper 225 may have a structure exposed to the outside. In addition, the stopper 225 may be set to the maximum movement range that is allowable instead of an actual movement range.

In addition, the gripping unit 300 according to the present invention has a gripper 310 to grip the power line 150 in linkage with the link 220. The gripper 310 is a main component to restrict the laying force for the power line 150 together with the above-described link 220. Although one gripper 310 is generally applied to one link 220, a plurality of grippers 310 may be applied to one link 220.

In addition, the driving unit 400 according to the present invention has a structure of applying laying force to the power line 150 by inducing the movement of the link 220 and the gripper 310. The forward/backward movement of the link 220 and the gripper 310 is performed by the driving unit 400. As described above, only in one-way movement of the driving unit 400, the laying force is applied to the power line 150.

According to the detailed configuration of the present invention, the driving unit 400 employs at least one of a hydraulic cylinder, a pneumatic cylinder, and an electric actuator, and includes the control unit 500 allowing the driving unit 400 to perform the reciprocal movement at a set period for the laying of the power line. Although double-acting hydraulic and pneumatic cylinders are preferred, single-acting hydraulic and pneumatic cylinders may be used. The electric actuator is used together with reciprocal movement mechanisms such as a ball screw, a link, and a cam in addition to a servo-motor or a linear-motor. In addition, well-known engine-type reciprocal movement devices may be used. The circuit configurations of the control unit 500 may be varied depending on the hydraulic and pneumatic type and the electric type.

In this case, the control unit 500 preferably allows the driving unit 400 to perform reciprocal movement at a predetermined operating period by interposing valves having functions of controlling a flow rate and time delay in the case of the hydraulic and pneumatic type. The pneumatic-type control unit 500 operates the pneumatic cylinder of the driving unit 400 by a start valve, a main valve or a time delay valve. In particular, the pneumatic-type or hydraulic-type control unit 500 is preferred in that the pneumatic-type or hydraulic-type control unit 500 does not require the synchronization through the electric control and are not affected by an external environment.

In more detail, when the start valve is open, air is supplied to the pneumatic cylinder through the main valve so that the link 220 performs the forward movement while being supplied to the time delay valve and in the standby state until a predetermined pressure is formed. Then, the main valve is operated to induce the backward movement of the pneumatic cylinder. The timing (period) of the time-limited operation in which the main valve and the link 220 are operated is determined by the control of the flow rate and the time delay function. As shown in FIG. 8, when a plurality of devices 160 for laying power lines are arranged in a pneumatic type, the devices may not be synchronized with each other. In other words, when the overload occurs in the devices 160 for laying the power lines, which are provided at one side, due to timing mismatch, the control of the flow rate of air remaining in the control unit 500 and the time delay are performed, so that the devices 160 for laying the power lines are returned to a non-operation state. At the next period of time, the devices 160, which are returned to the non-operation state, are automatically synchronized with adjacent devices 160 for laying the power and operated when the sum of force is maximized. In addition, when the overload does not occur, the devices 160 may operate without the synchronization.

According to the detailed configuration of the present invention, an auxiliary member 480 based on a roller is further provided to reduce the frictional resistance when the power line

150 is laid. The auxiliary 480 is installed at a starting part, a distal end part, a cross part of horizontal and vertical pathways, a curved part, and a member of the cable tray 100, which prevents a separator from passing therethrough, to help the movement of the power line 150. In other words, if the auxiliary member 480 is installed, the load applied to the device 160 for laying the power line is reduced during the laying process of the power line. The auxiliary member 480 includes one or a plurality of multi-directional support rollers.

10 In addition, although not shown, all tray clamps representing brackets required when the device 160 for laying the power line is installed on the cable tray 100. The tray clamp is configured through allowable installation manners regardless of the size and the width of the cable tray 100. In general, 15 the tray clamp includes the device 160 for laying the power line, and the device 160 for laying the power line is fixed to the inside and the outside of the tray.

Regarding the operation, as shown in FIG. 6, the link 220 is moved forward while being inclined backward together with the gripper 310 to maximize the sliding frictional force to apply the laying force to the power wire. As shown in FIG. 7, the link 220 is moved backward while being inclined forward together with the gripper 310 to remove the sliding frictional force, so that the power line 150 is located without change. The forward 25 inclination and the backward inclination of the link 220 are

induced by restricting a forward/backward angle of the stopper 225. For reference, the directions of applying the wire laying force may be varied depending on the installation directions of the movable body 210 and the gripping unit 300.

5 In this case, as shown in FIG. 6, different materials may be applied to front and rear portions of the link 220 and the gripper 310 in order to increase the frictional force to the power line 150, or an additional frictional shoe (not shown) may be further applied to the front portion of the link 220.
10 The sliding frictional force of the power line 150 is varied depending on the material and the attached height of the frictional shoe.

 Meanwhile, when the device 160 for laying the power line according to the present invention is provided to the vertical
15 pathway of the cable tray 100, a drop preventing device for preventing the power line from being dropped down (not shown) may be used, in which the device includes the movable body 210 and the gripping unit 300 shown in FIG. 5. During the returning of the device 160 for laying the power line after drawing the
20 power line 150, the drop preventing device serves as a brake to prevent the power line 150 from being dropped down by the self-weight of the power line 150. The drop preventing device may produce the same effect by using a plurality of devices 160 for laying the power line.

FIG. 8 shows the device for laying the power line 150, particularly, the device for laying the power line 150 through the gripper technique. If the device based on the gripper technique is used, the power line 150 may be easily laid on the pathway at a narrower space such as a cable tray of a ship. The power line 150 aims at a large-scale wire having a large diameter and heavy weight, but the present invention is not limited thereto.

According to the present invention, a base 211 is provided with therein a hinge shaft 223. The base 211 is a part to support the link 220 to be described later and fixed to the actuator (not shown) by a bolt. The hinge shaft 223 to couple the link 220 to the base 211 is installed in a structure that can be easily detached using a snap pin.

In addition, according to the present invention, the link 220 having the wire rope 320 is rotatably installed on the hinge shaft 223 of the base 211 to couple the power line 150. The link 220 has a semi-circular structure having an open upper portion, and the hinge shaft 223 of the base 211 is coupled to a lower portion of the link 220. The wire rope 320 employs steel or a fiber material and has a cladding by a predetermined section in order to increase the frictional force of the power line 150.

According to the detailed configuration of the present invention, the base 211 has the stopper 25 to restrict the movement range of the link 220. The stopper 225 is provided in the form

of a groove or a protrusion on a part of the base 211 close to the link 220. The stopper 225 induces the rotation movement of the link 220 at a predetermined angle about a vertical line in the process that the power line 150 is laid.

5 According to the detailed configuration, the wire rope 320 of the link 220 includes a plurality of spherical members 321 to adjust the coupling length. The spherical members 321 are coupled to each other with a slight gap therebetween throughout a predetermined section of the wire rope 32. The gap between
10 the spherical members 321 is used to be inserted into an incision part formed in one side of the link 220 for the coupling of the link 220. The diameter of the spherical member 321 is a factor to determine the coupling length (diameter) of the wire rope 320 corresponding to the variation in the thickness of the power
15 line 150.

 According to the detailed configuration of the present invention, the link 220 has a ball plunger 323 to support the wire rope 320. The ball plunger 323 includes a ball and a spring to be received in the groove of the link 220 to prevent the wire
20 rope 320 from being arbitrarily deviating from the link 220 by elastic force applied to the ball. In addition, the ball of the ball plunger 323 does not require a spherical shape at an entire portion thereof but the ball may have a semi-spherical shape at a portion thereof.

According to the detailed configuration of the present invention, the link 220 further includes a frictional shoe 325 to apply one-way slip resistance to the power line 150. The frictional shoe 325 is coupled to one surface of the link 220 so that the frictional resistance may be applied to the cladding of the power line 150. As described later, the frictional shoe 325 makes contact with the power line 150 at a portion of a rotational movement range of the link 220. In this case, the frictional shoe 325 is installed in a replaceable structure corresponding to the size of the power line 150.

Regarding the operation described with reference to FIGS. 9 and 12, the gripper according to the present invention is fixed to the region of the cable tray for the installation of the power line 150, pneumatic pressure, hydraulic pressure, and electricity are supplied, and the wire rope 320 is open, so that the wire 150 is mounted on the link 220. Then, the power line 150 is coupled by inserting the wire rope 320 into the link 220, and the actuator is operated at a preset period of time.

Accordingly, as shown in FIG. 9, while the operating cylinder 455 is moved forward, the wire rope 320 is inclined backward, and the frictional shoe 325 makes contact with the power line 150 to move forward the power line 150 through the frictional resistance against the sliding. As shown in FIG. 10, when the operating cylinder 455 starts being moved backward, the wire rope 320 is inclined forward, and the contact between the

frictional shoe 325 and the power line 150 is released. As shown in FIG. 11, during the backward movement of the operating cylinder 455, the power line 150 loses the sliding frictional resistance to be maintained in a present position. As shown in FIG. 12, if the operating cylinder 455 starts moving forward, the wire rope 320 starts being inclined backward.

As described above, according to the present invention, energy formed by the linear movement of the actuator 450 is converted into energy for the gripping of the power line 150.

FIG. 13 shows a locking mechanism for the attaching and the detaching of the power line 150 by the gripper for the power laying. The device for laying the power line through the gripper technique may be realized in a light, thin, short, and compact structure, and proper when laying the power line in a horizontal, vertical, or curved shape at a narrow, high, and deep place such as a cable tray. The gripper performs reciprocal movement in the movement direction of the power line to apply frictional force in one direction.

The base 211 according to the present invention is coupled to the hydraulic and pneumatic cylinders (not shown) to move forward and backward while applying the drawing force to the power line.

In addition, according to the present invention, the link 220 is installed on the base 211 by interposing the hinge shaft 223 between the link 220 and the base 211. The link 220 has a

semi-circular section to support the lower portion of the link 220. The link 220 is coupled to the base 211 by interposing the hinge shaft 223 between the link 220 and the base 211 to rotate forward and backward within a preset angle range. In the link 220, the backward inclination angle at the moment that the power line 150 is drawn is set to be greater than the forward inclination angle at the moment that the power line is slid due to the backward movement.

In this case, the frictional shoe 325 is attached to the front surface of the link 220 to increase the frictional force to the power line 150. The frictional shoe 325 makes close contact with the power line 150 only in the backward inclination due to the forward movement of the link 220 to increase the frictional force resulting from applied pressure.

According to the detailed configuration of the present invention, the link 220 includes a fixing groove 231 and a ball pocket 235 to support the wire rope 320. The fixing groove 231 tightly supports one end of the wire rope 320, and the ball pocket 235 easily detachably supports an opposite end of the wire rope 320. A coupling groove 233 is formed in a peripheral portion of the fixing groove 231, and a separation pin 318 is coupled to the coupling groove 233 to prevent the arbitrary separation of the wire rope 320. The ball packet 235 is formed in a semispherical shape to tightly receive one of the spherical members 321 of the wire rope 320. Accordingly, during the forward

movement of the link 220 inclined in the backward direction, the wire rope 320 maintains the tight coupling state by the ball pocket 235.

In use, the power line is placed on the link 220 in the state that the opposite end of the wire rope 320 is released, the gap of the spherical member 321 is spread at the opposite end of the wire rope 320, and the power line is inserted into the fixing groove 231 and the ball pocket 235. In this case, the lower spherical member 321 is provided at the lower ball pocket 235, and the upper spherical member 321 is mounted in the fitting groove 231. Thereafter, the base 211 is operated to induce the forward/backward movement of the link 220. In this case, the power line is drawn in one way due to the linkage among the wire rope 320, the link 220, and the frictional shoe 325.

Although the exemplary embodiments of the present invention have been described, it is understood that the present invention should not be limited to these exemplary embodiments but various changes and modifications can be made by one ordinary skilled in the art within the spirit and scope of the present invention as hereinafter claimed.

The transport device according to the present invention is application for the use of drawing the power line on the cable tray of the ship and installing the power line on the preset path.

【CLAIMS】

【Claim 1】

A transport device for transporting and laying a power line on a wire pathway having a plurality of trays, the device
5 comprising:

at least one driving unit provided on the wire pathway to form force of laying the power line according to reciprocal movement of an actuator;

a gripping unit to grip the power line and to apply the
10 laying force to the power line in synchronization with the driving unit; and

a control unit to distributed-control the gripping unit and the driving unit through a unit controller and a centralized controller.

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【Claim 2】

The transport device of claim 1, wherein operating timing of the actuator of the driving unit is adjusted by a switch, a control valve, and a time delay valve.

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【Claim 3】

The transport device of claim 1, wherein the unit controller of the control unit synchronizes the gripping unit and the driving unit provided at an allocated region to a tray to control the
25 laying of the power line.

【Claim 4】

A transport device for laying a power line by applying laying force to the power line to transport the power line onto a set pathway, the transport device comprising:

a movable body having a link movable in a forward-backward direction of the power line; and

a gripping unit comprising a gripper to grip the power line in linkage with the link.

【Claim 5】

The transport device of claim 4, wherein the link of the movable body applies the laying force to the power line by moving together with the power line only in one-way movement.

【Claim 6】

The transport device of claim 4, wherein a hinge shaft is detachably mounted by providing at least one of a splitting pin, a snap pin, a screw, and key to couple the movable body to the link.

【Claim 7】

The transport device of claim 4, wherein the movable body and the link interpose a stopper between the movable body and the link to limit a forward-backward movement range.

【Claim 8】

The transport device of claim 4, further comprising an auxiliary member based on a roller to reduce frictional resistance
5 when laying the power line.

【Claim 9】

A transport device for transporting and laying a power line,
the transport device comprising:
10 a base having a hinge shaft;
a link rotatably installed on the hinge shaft of the base,
and having a wire rope for coupling of the power line; and
an actuator coupled to induce reciprocal movement of the
link.

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【Claim 10】

The transport device of claim 9, wherein the link comprises
a frictional shoe to apply one-way frictional force to the power
line.

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【Claim 11】

The transport device of claim 9, wherein the link comprises
a fixed groove and a ball pocket to support the wire rope.