the power supply portion in the pallet is low, the user must bend down to perform the connection task, which makes it highly likely that a woman wearing a skirt will end up getting her skirt dirty from touching the pallet, for example, and thus, this work has been considered hard to perform. Furthermore, since the charging cable ends up touching the floor surface of the pallet, the charging cable tends to get dirty, and since the user touches it with bare hands, his or her hands, clothes, etc. tend to get dirty.

{0009}

Furthermore, in both of Patent Literatures 1 and 2, since an extra length is provided in the charging cable, the charging cable sometimes droops downward from the pallet when charging the electrically-charged vehicle, and, since a vehicle in a multi-storey mechanical parking lot is rapidly transported up and down, left and right, as well as back and forth many times while placed on the pallet, there is a risk of the charging cable interfering with other structures in the surroundings of the pallet when the charging cable hanging out of the pallet swings about, and thereby causing inconveniences such as damage thereto or the like.

{0010}

The present invention has been conceived in order to solve the above-described problems, and an object thereof is to provide a pallet for a multi-storey mechanical parking lot

capable of efficiently accomodating a charging cable for charging an electrically-powered vehicle at the pallet side with a simple, low-cost, compact structure having a good external appearance, facilitating the work of connecting the charging cable, preventing the charging cable from drooping, and, additionally, preventing the vehicle from being damageed or the like; as well as to provide a multi-storey mechanical parking lot provided therewith.

{Means for solving the Problem}

{0011}

In order to achieve the object described above, the present invention provides the following solutions.

Specifically, a pallet for a multi-storey mechanical parking lot according to a first aspect of the present invention is a pallet for a multi-storey mechanical parking lot which an electrically-powered vehicle is parked on and transports the vehicle to a predetermined parking position, the pallet comprising a charging device that can charge a battery installed in the electrically-powered vehicle while the electrically-powered vehicle is parked on the pallet, wherein the charging device has: a charging cable that is connected to the pallet side at one end thereof, that is provided with a charging connector at the other end which can be connected to a charging connection portion of the electrically-powered vehicle, that can be expanded and

contracted in a curled cord-like form, and that is contracted into a coil-like form when a stretching force is not exerted thereon; and a cable accommodating portion that is provided in the pallet and that accommodates the charging cable when contracted into the coil-like form.

{0012}

With the above-described configuration, since the charging cable, when not in use, contracts into a coil-like form having its minimum volume, the cable accommodating portion formed in the pallet to accommodate this charging cable may also have a small volume, and thereby the pallet can have a structure that is simple, low-cost, and also compact. In addition, since the charging cable contracts into the coil-like form, it is not necessary to accommodate the charging cable by winding or hanging it, as has conventionally been done, and since the charging cable contracted into the coil-like form can be accommodated in the cable accommodating portion without taking any additional action, the charging cable can be accommodated easily.

{0013}

In the pallet for the multi-storey mechanical parking lot according to the first aspect of the present invention, it is preferable that the cable accommodating portion comprises an accommodating hollow portion provided as a hollow shape along an edge portion of the pallet and an openable/closable lid

member for closing an opening at an upper part of the accommodating hollow portion. When this configuration is employed, since the edge portion of the pallet is generally formed like a curb that guides a tire so as to prevent derail, and an excess space exists inside thereof, the cable accommodating portion can be provided by utilizing this excess space. Accordingly, it is possible to prevent the cable accommodating portion from being externally exposed, and, with this configuration, it is possible to make the structure of the pallet compact and also to improve the external appearance thereof. In addition, since the charging cable contracts into the coil-like form, it is not necessary to accommodate it by winding or hanging it, as has conventionally been done, and since the charging cable contracted into the coil-like form merely needs to be put into the cable accommodating portion, the charging cable can be easily accommodated.

{0014}

In addition, in the pallet for the multi-storey mechanical parking lot according to the first aspect of the present invention, it is preferable that the cable accommodating portion is provided inside an upright pole member on an edge portion of the pallet, the charging cable extends from a lower part or an upper part of the pole member, and the charging connector is held by the pole member so as to be positioned at a location higher than the pallet when the

vehicle, and also to avoid the inconveniences caused by drooping of the charging cable. In addition, since the connection work can be performed without causing the charging cable to touch the floor surface of the pallet, it is possible to prevent the charging cable from getting dirty or damaged.

{0017}

In addition, in the pallet for the multi-storey mechanical parking lot according to the first aspect of the present invention, it is preferable that, in the state in which the charging cable is accommodated in the cable accommodating portion, the pole member can be pivoted between a collapsed position, in which the pole member is collapsed so as to be positioned below the edge portion of the pallet, and an upright position, in which the pole member stands perpendicularly to the top surface of the edge portion. With this configuration, since the charging cable can be accommodated inside the pole member and the pole member can be collapsed down into the collapsed position when the charging cable is not in use, the external appearance can be improved by making the charging cable and the pole member inconspicuous, and it is also possible to eliminate concerns about the electrically-powered vehicle or other vehicle coming into contact with the pole member.

{0018}

In addition, in the pallet for the multi-storey

mechanical parking lot according to the first aspect of the present invention, it is preferable that the pallet further comprises folding means for enabling the pole member to be collapsed into the collapsed position in the state in which the charging cable extends from the lower part of the pole member. With this configuration, it is possible to prevent the pole member from becoming a hindrance to the user while using the charging cable and to improve the external appearance at the same time.

{0019}

In addition, in the pallet for the multi-storey mechanical parking lot according to the first aspect of the present invention, it is preferable that at least a surface of the pole member is of a material that does not harm the parked vehicle. With this configuration, it is possible to prevent damage to the vehicle in the unlikely event of the parked vehicle coming into contact with the pole member.

{0020}

In addition, in the pallet for the multi-storey mechanical parking lot according to the first aspect of the present invention, it is preferable that the pole member be flexible. With this configuration, in the unlikely event of the parked vehicle colliding with the pole member, due to bending of the pole member, it is possible to prevent damage to the vehicle and also to prevent breakage of the pole member

at the same time.

{0021}

In addition, a multi-storey mechanical parking lot according to a second aspect of the present invention is provided with one of the pallets described above, and therefore, it is possible to provide a multi-storey mechanical parking lot that affords functions and advantages afforded by the individual pallets described above.

{Advantageous Effects of Invention}

{0022}

As described above, in a pallet for a multi-storey mechanical parking lot and a multi-storey mechanical parking lot provided therewith according to the present invention, with a simple, low-cost, compact structure having a good external appearance, a charging cable for charging an electrically-powered vehicle can efficiently be accommodated in the pallet, the work for connecting the charging cable is easy, drooping of the charging cable can also be prevented, and, additionally, damage, etc. to the vehicle can be prevented.

{Brief Description of Drawings}

{0023}

{Fig. 1} Fig. 1 is a longitudinal sectional view showing an example of a multi-storey mechanical parking lot in which a pallet according to the present invention can be employed.

{Fig. 2} Fig. 2 is a front view showing a pallet provided with a charging device, which is a first embodiment of the present invention, as well as an electrically-powered vehicle.

{Fig. 3} Fig. 3 is a perspective view showing a state in which a lid member of a cable accommodating portion in the charging device shown in Fig. 2 is open.

{Fig. 4} Fig. 4 is a perspective view showing a state in which a charging cable is pulled out from the cable accommodating portion in the charging device shown in Fig. 2.

{Fig. 5} Fig. 5 is a perspective view showing a state in which the charging cable is pulled out from the cable accommodating portion in the charging device shown in Fig. 2 and the lid member thereof is closed.

{Fig. 6} Fig. 6 is a front view showing a pallet provided with a charging device, which is a second embodiment of the present invention, as well as an electrically-powered vehicle.

{Fig. 7} Fig. 7 shows the charging device in Fig. 6, where (a) is a front view showing a state in which a charging cable is accommodated in a cable accommodating portion, and (b) is a front view showing a state in which the charging cable is pulled out from the cable accommodating portion.

{Fig. 8} Fig. 8 is a perspective view of the charging device shown in Figs. 6 and 7.

{Fig. 9} Fig. 9 is a longitudinal sectional view of the charging device taken along the line IX-IX in Fig. 7(a), and

(a) and (b) are diagrams respectively showing the differences in the shape of a charging-connector holding portion.

{Fig. 10} Fig. 10 is a perspective view showing a state in which a pole member of a charging device, which is a third embodiment of the present invention, is in a collapsed position.

{Fig. 11} Fig. 11 is a perspective view showing a state in which the pole member shown in Fig. 10 is in an upright position.

{Fig. 12} Fig. 12 is a front view showing a state in which the charging cable is pulled out from the pole member.

{Fig. 13} Fig. 13 is a perspective view showing a state in which the charging cable is pulled out from the cable accommodating portion, and the pole member is returned to the collapsed position.

{Fig. 14} Fig. 14 is a perspective view showing an example in which a locking mechanism is provided in the pole member.

{Description of Embodiments}

{0024}

Embodiments of the present invention will be described below with reference to the drawings. Note that, so long as a multi-storey mechanical parking lot having a vehicle mounting function employing a pallet is considered, the present invention can widely be employed, and it is not limited only to a multi-storey parking lot with an elevator system

described below.

{0025}

Fig. 1 is a perspective view showing an example of a multi-storey mechanical parking lot in which a pallet according to the present invention can be employed. This multi-storey mechanical parking lot 1 is a multi-storey parking facility with an elevator system in which a plurality of vehicles can be accommodated and is provided with a parking tower 4 having an entry/exit gate 3 for a vehicle 2 provided at a ground portion thereof. A turntable 5 that rotationally changes the direction of a vehicle is provided at a floor surface on the ground level of the parking tower 4. The turntable 5 is provided with a turning plate 7 and a turning drive portion 8 in a depression-like pit 6 formed in the floor surface of the ground level.

{0026}

A vertical ascending/descending pathway 11 is formed in a center portion of the parking tower 4, inside of which an elevator-like transport platform 12 is provided so that it can ascend/descend. The transport platform 12 is, for example, suspended by a plurality of wire ropes 13, which hold the platform at four corners thereof and extend downward from a winch (not shown in the drawings) provided at a top portion of the parking tower 4, and ascends/descends in the ascending/descending pathway 11 when the winch described above

motive power of an electrically-driven motor can be parked on the pallet 15, and a charging device is provided for charging a vehicle-installed battery while the electrically-powered vehicle is parked, after transporting the electrically-powered vehicle to the vehicle-housing shelf 14. A plurality of embodiments of the pallet 15 and the charging device will separately be described below. Note that, in the individual embodiments, reference signs for the pallet and the charging device will be distinguished as 15A and 16A in a first embodiment, 15B and 16B in a second embodiment, and 15C and 16C in a third embodiment, respectively.

{0031}

{First Embodiment}

Figs. 2 to 5 show the first embodiment of the present invention, and Fig. 2 is a front view of the pallet 15A, the charging device 16A, and an electrically-powered vehicle EV. The main body of the pallet 15A has a general, W-shaped cross-sectional structure which is formed by press molding a steel plate, as with ones employed in general multi-storey mechanical parking lots, and two wheel-guiding channels 24 that guide wheels 23 of the electrically-powered vehicle EV, as well as those of a general vehicle, along the longitudinal direction of the pallet 15A are formed between a center-guide protrusion 21 formed at a center portion of the pallet 15A in the width direction and a pair of left and right upright edge

have a compact structure and also can be advantageous in terms of its external appearance.

{0041}

In addition, since the pallet 15A is provided with the charging cable 26 as the charging device 16A, the user does not need to take out a charging cable installed in his/her own vehicle to connect it to the pallet 15A. Accordingly, the trouble of taking out the charging cable from the vehicle body and the trouble of connecting both ends of the charging cable to both the vehicle and the pallet 15A can be avoided.

{0042}

{Second Embodiment}

Figs. 6 to 9 show the second embodiment of the present invention, and Fig. 6 is a front view of the pallet 15B, the charging device 16B, and the electrically-powered vehicle EV. Since the basic configuration of the pallet 15B is the same as that of the pallet 15A described in the first embodiment except for the portion relating to the charging device 16B, the same reference signs are assigned to each of the relating portions, and descriptions thereof are omitted here. In addition, although the charging device 16B is provided at the edge portion 22 of the pallet 15B, it may be provided, as with the first embodiment, at one of the left and right edge portions 22 or may be provided at both of them, and, in addition, it may be provided at any of the front, rear, and

Figs. 10 to 13 show the pallet 15C and the charging device 16C according to the third embodiment of the present invention. The basic configuration of the pallet 15C is the same as that of the pallets 15A and 15B described in the first embodiment and the second embodiment except for the portion relating to the charging device 16C. The charging device 16C in this case may also be provided at one of the left and right edge portions 22 of the plate 15C or may be provided at both of them, and, in addition, it may be provided at any of the front, rear, and middle of the edge portions 22 at any number of locations.

{0056}

This charging device 16C is formed by making the pole member 41 of the charging device 16B in the second embodiment collapsible. Specifically, an opening 61 is formed by cutting out a portion of the top surface of the edge portion 22 of the pallet 15C in a rectangular shape, a pivot shaft 62 is provided at the inner surface side of the edge portion 22 adjacent to one end (for example, front end) of this opening 61 so as to protrude perpendicularly and horizontally, and the proximal end of the pole member 63 is supported by this pivot shaft 62 in a freely pivotable manner. With this configuration, the pole member 63 can be pivoted between a collapsed position 63a, in which it is collapsed down so as to be positioned below a top surface of the edge portion 22, as

{CLAIMS}

{Claim 1}

A pallet for a multi-storey mechanical parking lot which an electrically-powered vehicle is parked on and transports the vehicle to a predetermined parking position, comprising:

a charging device that can charge a battery installed in the electrically-powered vehicle while the electrically-powered vehicle is parked on the pallet,

wherein the charging device has:

a charging cable that is connected to the pallet side at one end thereof, that is provided with a charging connector at the other end which can be connected to a charging connection portion of the electrically-powered vehicle, that can be expanded and contracted in a curled cord-like form, and that is contracted into a coil-like form when a stretching force is not exerted thereon; and

a cable accommodating portion that is provided in the pallet and that accommodates the charging cable when contracted into the coil-like form.

{Claim 2}

The pallet for the multi-storey mechanical parking lot according to Claim 1, wherein the cable accommodating portion comprises an accommodating hollow portion provided as a hollow

shape along an edge portion of the pallet and an openable/closable lid member for closing an opening at an upper part of the accommodating hollow portion.

{Claim 3}

The pallet for the multi-storey mechanical parking lot according to Claim 1, wherein the cable accommodating portion is provided inside an upright pole member on an edge portion of the pallet, the charging cable extends from a lower part or an upper part of the pole member, and the charging connector is held by the pole member so as to be positioned at a location higher than the pallet when the charging cable is accommodated in the cable accommodating portion of the upright pole member.

{Claim 4}

The pallet for the multi-storey mechanical parking lot according to Claim 3, wherein, in the state in which the charging cable is accommodated in the cable accommodating portion, the pole member can be pivoted between a collapsed position, in which the pole member is collapsed so as to be positioned below the edge portion of the pallet, and an upright position, in which the pole member stands perpendicularly to the top surface of the edge portion.

{Claim 5}

The pallet for the multi-storey mechanical parking lot according to Claim 4, further comprising:

folding means for enabling the pole member to be collapsed into the collapsed position in the state in which the charging cable extends from the lower part of the pole member.

{Claim 6}

The pallet for the multi-storey mechanical parking lot according to any one of Claims 3 to 5, wherein at least a surface of the pole member is of a material that does not harmthe parked vehicle.

{Claim 7}

The pallet for the multi-storey mechanical parking lot according to any one of Claims 3 to 5, wherein the pole member is flexible.

{Claim 8}

The multi-storey mechanical parking lot comprising the pallet according to any one of Claims 1 to 7.

the power supply portion in the pallet is low, the user must bend down to perform the connection task, which makes it highly likely that a woman wearing a skirt will end up getting her skirt dirty from touching the pallet, for example, and thus, this work has been considered hard to perform. Furthermore, since the charging cable ends up touching the floor surface of the pallet, the charging cable tends to get dirty, and since the user touches it with bare hands, his or her hands, clothes, etc. tend to get dirty.

{0009}

Furthermore, in both of Patent Literatures 1 and 2, since an extra length is provided in the charging cable, the charging cable sometimes droops downward from the pallet when charging the electrically-charged vehicle, and, since a vehicle in a multi-storey mechanical parking lot is rapidly transported up and down, left and right, as well as back and forth many times while placed on the pallet, there is a risk of the charging cable interfering with other structures in the surroundings of the pallet when the charging cable hanging out of the pallet swings about, and thereby causing inconveniences such as damage thereto or the like.

{0010}

The present invention has been conceived in order to solve the above-described problems, and implementation of the techniques disclosed herein may provide a pallet for a multi-storey mechanical parking lot

capable of efficiently accomodating a charging cable for charging an electrically-powered vehicle at the pallet side with a simple, low-cost, compact structure having a good external appearance, facilitating the work of connecting the charging cable, preventing the charging cable from drooping, and, additionally, preventing the vehicle from being damageed or the like; as well as to provide a multi-storey mechanical parking lot provided therewith.

{Means for solving the Problem}

{0011}

The invention is defined in the independent claim. Some optional features of the invention are defined in the dependent claims.

The present invention may provide the following solutions.

Specifically, a pallet for a multi-storey mechanical parking lot according to a first exemplary arrangement is a pallet for a multi-storey mechanical parking lot which an electrically-powered vehicle is parked on and transports the vehicle to a predetermined parking position, the pallet comprising a charging device that can charge a battery installed in the electrically-powered vehicle while the electrically-powered vehicle is parked on the pallet, wherein the charging device has: a charging cable that is connected to the pallet side at one end thereof, that is provided with a charging connector at the other end which can be connected to a charging connection portion of the electrically-powered vehicle, that can be expanded and

contracted in a curled cord-like form, and that is contracted into a coil-like form when a stretching force is not exerted thereon; and a cable accommodating portion that is provided in the pallet and that accommodates the charging cable when contracted into the coil-like form.

{0012}

With the above-described configuration, since the charging cable, when not in use, contracts into a coil-like form having its minimum volume, the cable accommodating portion formed in the pallet to accommodate this charging cable may also have a small volume, and thereby the pallet can have a structure that is simple, low-cost, and also compact. In addition, since the charging cable contracts into the coil-like form, it is not necessary to accommodate the charging cable by winding or hanging it, as has conventionally been done, and since the charging cable contracted into the coil-like form can be accommodated in the cable accommodating portion without taking any additional action, the charging cable can be accommodated easily.

{0013}

In the pallet for the multi-storey mechanical parking lot according to the first exemplary arrangement, it is preferable that the cable accommodating portion comprises an accommodating hollow portion provided as a hollow shape along an edge portion of the pallet and an openable/closable lid

member for closing an opening at an upper part of the accommodating hollow portion. When this configuration is employed, since the edge portion of the pallet is generally formed like a curb that guides a tire so as to prevent derail, and an excess space exists inside thereof, the cable accommodating portion can be provided by utilizing this excess space. Accordingly, it is possible to prevent the cable accommodating portion from being externally exposed, and, with this configuration, it is possible to make the structure of the pallet compact and also to improve the external appearance thereof. In addition, since the charging cable contracts into the coil-like form, it is not necessary to accommodate it by winding or hanging it, as has conventionally been done, and since the charging cable contracted into the coil-like form merely needs to be put into the cable accommodating portion, the charging cable can be easily accommodated.

{0014}

In addition, in the pallet for the multi-storey mechanical parking lot according to the first exemplary arrangement, it is preferable that the cable accommodating portion is provided inside an upright pole member on an edge portion of the pallet, the charging cable extends from a lower part or an upper part of the pole member, and the charging connector is held by the pole member so as to be positioned at a location higher than the pallet when the

vehicle, and also to avoid the inconveniences caused by drooping of the charging cable. In addition, since the connection work can be performed without causing the charging cable to touch the floor surface of the pallet, it is possible to prevent the charging cable from getting dirty or damaged.

{0017}

In addition, in the pallet for the multi-storey mechanical parking lot according to the first exemplary arrangement, it is preferable that, in the state in which the charging cable is accommodated in the cable accommodating portion, the pole member can be pivoted between a collapsed position, in which the pole member is collapsed so as to be positioned below the edge portion of the pallet, and an upright position, in which the pole member stands perpendicularly to the top surface of the edge portion. With this configuration, since the charging cable can be accommodated inside the pole member and the pole member can be collapsed down into the collapsed position when the charging cable is not in use, the external appearance can be improved by making the charging cable and the pole member inconspicuous, and it is also possible to eliminate concerns about the electrically-powered vehicle or other vehicle coming into contact with the pole member.

{0018}

In addition, in the pallet for the multi-storey

mechanical parking lot according to the first exemplary arrangement, it is preferable that the pallet further comprises folding means for enabling the pole member to be collapsed into the collapsed position in the state in which the charging cable extends from the lower part of the pole member. With this configuration, it is possible to prevent the pole member from becoming a hindrance to the user while using the charging cable and to improve the external appearance at the same time.

{0019}

In addition, in the pallet for the multi-storey mechanical parking lot according to the first exemplary arrangement, it is preferable that at least a surface of the pole member is of a material that does not harm the parked vehicle. With this configuration, it is possible to prevent damage to the vehicle in the unlikely event of the parked vehicle coming into contact with the pole member.

{0020}

In addition, in the pallet for the multi-storey mechanical parking lot according to the first exemplary arrangement, it is preferable that the pole member be flexible. With this configuration, in the unlikely event of the parked vehicle colliding with the pole member, due to bending of the pole member, it is possible to prevent damage to the vehicle and also to prevent breakage of the pole member

at the same time.

{0021}

In addition, a multi-storey mechanical parking lot according to a second exemplary arrangement is provided with one of the pallets described above, and therefore, it is possible to provide a multi-storey mechanical parking lot that affords functions and advantages afforded by the individual pallets described above.

{Advantageous Effects of Invention}

{0022}

As described above, in a pallet for a multi-storey mechanical parking lot and a multi-storey mechanical parking lot provided therewith, with a simple, low-cost, compact structure having a good external appearance, a charging cable for charging an electrically-powered vehicle can efficiently be accommodated in the pallet, the work for connecting the charging cable is easy, drooping of the charging cable can also be prevented, and, additionally, damage, etc. to the vehicle can be prevented.

{Brief Description of Drawings}

{0023}

{Fig. 1} Fig. 1 is a longitudinal sectional view showing an example of a multi-storey mechanical parking lot in which a pallet as described herein can be employed.

{Fig. 2} Fig. 2 is a front view showing a pallet provided with a charging device, which is a first exemplary arrangement, as well as an electrically-powered vehicle.

{Fig. 3} Fig. 3 is a perspective view showing a state in which a lid member of a cable accommodating portion in the charging device shown in Fig. 2 is open.

{Fig. 4} Fig. 4 is a perspective view showing a state in which a charging cable is pulled out from the cable accommodating portion in the charging device shown in Fig. 2.

{Fig. 5} Fig. 5 is a perspective view showing a state in which the charging cable is pulled out from the cable accommodating portion in the charging device shown in Fig. 2 and the lid member thereof is closed.

{Fig. 6} Fig. 6 is a front view showing a pallet provided with a charging device, which is a second exemplary arrangement, as well as an electrically-powered vehicle.

{Fig. 7} Fig. 7 shows the charging device in Fig. 6, where (a) is a front view showing a state in which a charging cable is accommodated in a cable accommodating portion, and (b) is a front view showing a state in which the charging cable is pulled out from the cable accommodating portion.

{Fig. 8} Fig. 8 is a perspective view of the charging device shown in Figs. 6 and 7.

{Fig. 9} Fig. 9 is a longitudinal sectional view of the charging device taken along the line IX-IX in Fig. 7(a), and

(a) and (b) are diagrams respectively showing the differences in the shape of a charging-connector holding portion.

{Fig. 10} Fig. 10 is a perspective view showing a state in which a pole member of a charging device, which is a third exemplary arrangement, is in a collapsed position.

{Fig. 11} Fig. 11 is a perspective view showing a state in which the pole member shown in Fig. 10 is in an upright position.

{Fig. 12} Fig. 12 is a front view showing a state in which the charging cable is pulled out from the pole member.

{Fig. 13} Fig. 13 is a perspective view showing a state in which the charging cable is pulled out from the cable accommodating portion, and the pole member is returned to the collapsed position.

{Fig. 14} Fig. 14 is a perspective view showing an example in which a locking mechanism is provided in the pole member.

{Description of Embodiments}

{0024}

Embodiments of the present invention will be described below with reference to the drawings. Note that, so long as a multi-storey mechanical parking lot having a vehicle mounting function employing a pallet is considered, the present invention can widely be employed, and it is not limited only to a multi-storey parking lot with an elevator system

described below.

{0025}

Fig. 1 is a perspective view showing an example of a multi-storey mechanical parking lot in which a pallet can be employed. This multi-storey mechanical parking lot 1 is a multi-storey parking facility with an elevator system in which a plurality of vehicles can be accommodated and is provided with a parking tower 4 having an entry/exit gate 3 for a vehicle 2 provided at a ground portion thereof. A turntable 5 that rotationally changes the direction of a vehicle is provided at a floor surface on the ground level of the parking tower 4. The turntable 5 is provided with a turning plate 7 and a turning drive portion 8 in a depression-like pit 6 formed in the floor surface of the ground level.

{0026}

A vertical ascending/descending pathway 11 is formed in a center portion of the parking tower 4, inside of which an elevator-like transport platform 12 is provided so that it can ascend/descend. The transport platform 12 is, for example, suspended by a plurality of wire ropes 13, which hold the platform at four corners thereof and extend downward from a winch (not shown in the drawings) provided at a top portion of the parking tower 4, and ascends/descends in the ascending/descending pathway 11 when the winch described above

motive power of an electrically-driven motor can be parked on the pallet 15, and a charging device is provided for charging a vehicle-installed battery while the electrically-powered vehicle is parked, after transporting the electrically-powered vehicle to the vehicle-housing shelf 14. A plurality of embodiments of the pallet 15 and the charging device will separately be described below. Note that, in the individual embodiments, reference signs for the pallet and the charging device will be distinguished as 15A and 16A in a first embodiment, 15B and 16B in a second embodiment, and 15C and 16C in a third embodiment, respectively.

{0031}

{First Embodiment}

Figs. 2 to 5 show the first exemplary arrangement, and Fig. 2 is a front view of the pallet 15A, the charging device 16A, and an electrically-powered vehicle EV. The main body of the pallet 15A has a general, W-shaped cross-sectional structure which is formed by press molding a steel plate, as with ones employed in general multi-storey mechanical parking lots, and two wheel-guiding channels 24 that guide wheels 23 of the electrically-powered vehicle EV, as well as those of a general vehicle, along the longitudinal direction of the pallet 15A are formed between a center-guide protrusion 21 formed at a center portion of the pallet 15A in the width direction and a pair of left and right upright edge

have a compact structure and also can be advantageous in terms of its external appearance.

{0041}

In addition, since the pallet 15A is provided with the charging cable 26 as the charging device 16A, the user does not need to take out a charging cable installed in his/her own vehicle to connect it to the pallet 15A. Accordingly, the trouble of taking out the charging cable from the vehicle body and the trouble of connecting both ends of the charging cable to both the vehicle and the pallet 15A can be avoided.

{0042}

{Second Embodiment}

Figs. 6 to 9 show the second exemplary arrangement, and Fig. 6 is a front view of the pallet 15B, the charging device 16B, and the electrically-powered vehicle EV. Since the basic configuration of the pallet 15B is the same as that of the pallet 15A described in the first embodiment except for the portion relating to the charging device 16B, the same reference signs are assigned to each of the relating portions, and descriptions thereof are omitted here. In addition, although the charging device 16B is provided at the edge portion 22 of the pallet 15B, it may be provided, as with the first embodiment, at one of the left and right edge portions 22 or may be provided at both of them, and, in addition, it may be provided at any of the front, rear, and

Figs. 10 to 13 show the pallet 15C and the charging device 16C according to the third exemplary arrangement. The basic configuration of the pallet 15C is the same as that of the pallets 15A and 15B described in the first embodiment and the second embodiment except for the portion relating to the charging device 16C. The charging device 16C in this case may also be provided at one of the left and right edge portions 22 of the plate 15C or may be provided at both of them, and, in addition, it may be provided at any of the front, rear, and middle of the edge portions 22 at any number of locations.
{0056}

This charging device 16C is formed by making the pole member 41 of the charging device 16B in the second embodiment collapsible. Specifically, an opening 61 is formed by cutting out a portion of the top surface of the edge portion 22 of the pallet 15C in a rectangular shape, a pivot shaft 62 is provided at the inner surface side of the edge portion 22 adjacent to one end (for example, front end) of this opening 61 so as to protrude perpendicularly and horizontally, and the proximal end of the pole member 63 is supported by this pivot shaft 62 in a freely pivotable manner. With this configuration, the pole member 63 can be pivoted between a collapsed position 63a, in which it is collapsed down so as to be positioned below a top surface of the edge portion 22, as

[CLAIMS]

{Claim 1}

A pallet for a multi-storey mechanical parking lot, the pallet configured for an electrically-powered vehicle to park on and to transport the vehicle to a predetermined parking position, comprising:

a charging device that can charge a battery installed in the electrically-powered vehicle while the electrically-powered vehicle is parked on the pallet,

wherein the charging device has:

a charging cable arranged for connection to the pallet side at one end thereof, that is provided with a charging connector at the other end which can be connected to a charging connection portion of the electrically-powered vehicle, that can be expanded and contracted in a curled cord-like form, and that is contracted into a coil-like form when a stretching force is not exerted thereon; and

a cable accommodating portion that is provided in the pallet and that accommodates the charging cable when contracted into the coil-like form,

wherein the charging cable is arranged for connecting a proximal portion of the charging cable and the charging connection portion without causing any drooping of the charging cable by the contractibility which makes the charging cable contracted into the coil-like form, when the charging connector is being connected to the charging connection portion of the electrically-powered vehicle.

{Claim 2}

The pallet for the multi-storey mechanical parking lot according to Claim 1, wherein the cable accommodating portion comprises an accommodating hollow portion provided as a hollow shape along an edge portion of the pallet and an openable/closable lid member for closing an opening at an upper part of the accommodating hollow portion.

{Claim 3}

The pallet for the multi-storey mechanical parking lot according to Claim 1, wherein the cable accommodating portion is provided inside an upright pole member on an edge portion of the pallet, arranged for the charging cable to extend from a lower part or an upper part of the pole member, and arranged for the charging connector to be held by the pole member so as to be positioned at a location higher than the pallet when the charging cable is accommodated in the cable accommodating portion of the upright pole member.

{Claim 4}

The pallet for the multi-storey mechanical parking lot according to Claim 3, wherein, in the state in which the charging cable is accommodated in the cable accommodating portion, the pole member can be pivoted between a collapsed position, in which the pole member is folded so as to be positioned below the top surface of the edge portion of the pallet, and an upright position, in which the pole member stands perpendicularly to the top surface of the edge portion.

{Claim 5}

The pallet for the multi-storey mechanical parking lot 15 according to Claim 4, further comprising:

folding means for enabling the pole member to be folded into the collapsed position in the state in which the charging cable extends from the lower part of the pole member.

{Claim 6}

The pallet for the multi-storey mechanical parking lot according to any one of Claims 3 to 5, wherein at least a surface of the pole member is of a material that does not harm the parked vehicle.

{Claim 7}

The pallet for the multi-storey mechanical parking lot according to any one of Claims 3 to 5, wherein the pole member has flexibility.

{Claim 8}

The multi-storey mechanical parking lot comprising the pallet according to any one of Claims 1 to 5.