

1 VARIABLE - SPEED PALLET - TYPE PASSENGER MOVING WALK.

The present invention relates to a pallet-type passenger moving walk such as a moving walk and an escalator, and more particularly to a variable-speed
5 pallet-type passenger moving walk of the type in which the speed of movement of pallets is changed between an entrance and an exit.

In a conventional variable-speed pallet-type passenger moving walk as disclosed in Japanese Patent
10 Unexamined Publication No. 50-43686, all of pallets are interconnected by an associated link mechanism, and the distance between the adjacent pallets is made smaller at an exit portion, and is made larger at an intermediate portion, thereby changing the speed of movement of the
15 pallets.

In the above prior art, any consideration has not been given to a simplified construction of the pallet-type passenger moving walk, and there has been encountered a problem that the overall construction of
20 the apparatus is complicated.

One object of the invention is to provide a variable-speed pallet-type passenger moving walk in which the speed of movement of pallets can be changed with a simple construction.

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The invention provides in one aspect a variable-speed pallet-type passenger moving walk wherein the speed of movement of a plurality of pallets is changed between an entrance portion and an exit portion; a rotary member for driving the pallet is mounted on the pallet; a power transmission mechanism in contact with the rotary member to transmit a power is provided to extend between the entrance portion and the exit portion; and there is provided means for changing the position of contact between the rotary member and the power transmission mechanism in a direction of movement of the pallets.

In the above construction, the power transmitting position is changed in a radial direction of the rotary member, and therefore the speed of movement of each pallet can be changed by changing the rotational speed of the rotary member.

The term moving walk is used herein to include moving pavements and escalators.

20 Fig. 1 is a partly-broken, perspective view of a moving walk showing one example of variable-speed pallet-type passenger moving walk of the present invention;

25 Fig. 2 is a schematic side-elevational view of the moving walk showing one example of variable-speed pallet-type passenger moving walk of the present invention;

1 Fig. 3 is a vertical cross-sectional, front-elevational view of the moving walk showing one example of variable-speed pallet-type passenger moving walk of the present invention;

5 Fig. 4 is a view of an important portion of a pallet shown in fig. 3;

 Fig. 5 is a view of an important portion of the pallet shown in Fig. 3;

10 Fig. 6 is a perspective view of the pallets of the moving walk showing one example of variable-speed pallet-type passenger moving walk of the present invention;

 Fig. 7 is a vertical cross-sectional, side-elevational view taken along line VII-VII in Fig. 6;

15 Fig. 8 is a schematic vertical cross-sectional, side-elevational view showing a drive mechanism for a moving handrail of the variable-speed pallet-type passenger moving walk of the present invention;

20 Fig. 9 is a schematic vertical cross-sectional, side-elevational view showing an operating condition of the drive mechanism for the moving handrail of Fig. 8;

25 Fig. 10 is a vertical cross-sectional, front-elevational view of a pallet of a moving walk showing another example of variable-speed pallet-type passenger moving walk of the present invention;

 Fig. 11 is a plan view showing an arrangement

1 of power transmission mechanisms of a moving walk
showing a further example of variable-speed pallet-type
passenger moving walk of the present invention;

Fig. 12 is an enlarged side-elevational view
5 of a portion of the power transmission mechanisms of
Fig. 11;

Fig. 13 is a vertical cross-sectional, front-
elevational view of a pallet of a moving walk showing a
further example of variable-speed pallet-type passenger
10 moving walk of the present invention; and

Fig. 14 is a vertical cross-sectional, front-
elevational view of a pallet of a moving walk showing a
further example of variable-speed pallet-type passenger
moving walk of the present invention.

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One embodiment of the present invention will
now be described by way of a moving walk shown in Figs.
1 to 9. The moving walk includes a plurality of pallets
3 moving on a pair of left and right guide rails 2A and
20 2B fixedly mounted on a frame 1, and handrails 4
provided along the direction of movement of the pallets
3.

The plurality of pallets 3 are arranged in an
endless manner so that passengers can get on an advance
25 side of these pallets whereas a return side moves
beneath the advance side to be returned to the initial
position. As shown in Figs. 3, 6 and 7, the pallet 3

1 broadly comprises a pallet frame 5, and a main cleat 6
mounted horizontally on a top surface 5U of the pallet
frame 5. The main cleat 6 is formed by continuously
bending a thin steel sheet (e.g. a thin stainless steel
5 sheet) into a corrugated shape, and the pallet is
fixedly mounted on the pallet frame 5 in such a manner
that the direction of extending of ridges of the
corrugation coincides with the direction of movement of
the pallets. Side cleats 7A and 7B are provided
10 adjacent respectively to the opposite ends of the
corrugation of the main cleat 6, and front and rear
cleats 8A and 8B each having generally the same cross-
section as that of the main cleat 6 are provided
adjacent respectively to the opposite ends of the main
15 cleat 6 in the direction of the movement of the pallet,
these cleats being fixedly mounted on the pallet frame.
5. The side cleats 7A and 7B and the front and rear
cleats 8A and 8B have a color (for example, yellow which
has the effect of arousing the attention) different from
20 the color of the main cleat 6, and are molded, for
example, of a synthetic resin material.

The main cleat 6 may be provided by molding an
aluminum alloy material into a corrugated shape.

A rotation shaft 9 extends through the pallet
25 frame 5 via bearings 9B in the direction of the width of
the pallet 3, and front wheels 10A and 10B are fixed to
the opposite ends of this shaft, respectively. Rear
wheels 11A and 11B are rotatably supported on the pallet

1 frame 5, and are spaced from the front wheels 10A and
10B in the direction of movement. The front wheels 10A
and 10B, as well as the rear wheels 11A and 11B, roll on
the guide rails 2A and 2B, respectively. there is no
5 component part which interconnects the adjacent pallets
3, and each pallet 3 can be move freely.

As shown in Fig. 3, a power conversion
mechanism for changing the direction of a transmitted
drive force, as well as a speed conversion mechanism for
10 changing the speed of the transmitted drive force, is
provided on an intermediate portion of the rotation
shaft 9. Specifically referring to this power conver-
sion mechanism and this speed conversion mechanism, a
spline hub 12, having at its outer periphery an
15 engagement portion defined by a number of grooves or
projections extending in the axial direction, is fixedly
mounted on the intermediate portion of the rotation
shaft 9, and a rotary member 13 is engaged with the
engagement portion of the spline hub 12 so as to move
20 only in the axial direction. The rotary member 13
comprises a pair of rotary elements 13A and 13B having
respective inclined surfaces 13a and 13b at their
opposed surfaces. Spring seats 14A and 14B are fixedly
mounted on the rotation shaft 9, and are spaced a
25 predetermined distance from the outer sides of the pair
of rotary elements 13A and 13B, respectively. A push
spring 15A is provided between the spring seat 14A and
the rotary element 13A, and a push spring 15B is

1 provided between the spring seat 14B and the rotary
element 13B, thereby urging the pair of rotary elements
13A and 13B toward each other. When the pair of rotary
elements 13A and 13B are disposed in contact with each
5 other, a V-shaped groove is defined by the inclined
surfaces 13a and 13b.

As shown in Figs. 6 and 7, a number of
elongate members 16 are pivotally connected at their one
ends by respective pins 17 to the rear end of the pallet
10 3 in the direction of movement thereof, and similarly a
closure plate 18 is provided beneath the elongate
members 16, and is connected to the rear end through the
pins 17. The other end portions of the elongate members
16 and the closure plate 18 are withdrawably inserted in
15 the rearwardly-adjacent pallet 3 in the direction of
movement. Namely, the elongate members 16 are
withdrawably inserted respectively in spaces 6H formed
by the corrugation of the main cleat 6 and the top
surface 5U of the pallet frame 5. The closure plate 18
20 is withdrawably inserted in guide grooves 19A and 19B
provided beneath the top surface 5U of the pallet frame
5.

Next, a power transmission mechanism for
moving the pallets 3 of the above construction will now
25 be described. As shown in Fig. 2, a power transmission
member 20 in an endless form is provided beneath the
advance side of the row of the pallets 3 along the
entire length thereof. The power transmission member 20

1 comprises friction members 21 of a trapezoidal cross-
section each having inclined surfaces 21a and 21b
similar to the inclined surfaces 13a and 13b of the pair
of rotary elements 13A and 13B, and a chain 22 inter-
5 connecting connection portions 21c extending respective-
ly from the bottoms of the trapezoidal friction members
21. The power transmission member 20 is extended
between and around a drive pulley 23 and a driven pulley
24 supported on the frame 1, and the advance side of
10 this power transmission member is disposed in opposed
relation to the advance side of the pallets 3. The
drive pulley 23 has a sprocket 25A provided coaxially
therewith, and a rotational force of an electric motor
26 is transmitted to this drive pulley via a drive chain
15 25B. The driven pulley 24 is supported on a support bed
24S so as to be movable in a chain tensioning direction
to absorb an elongation of the chain 22, and this driven
pulley is normally urged in a tensioning direction by a
resilient member 27. The power transmission member 20
20 is guided by a guide rail 28 so that it can be opposed
to the advance side of the pallets 3, and that the
friction members 21 can be disposed in agreement with
the V-shaped groove defined by the pair of rotary
elements 13A and 13B. The guide rail 28 is fixedly
25 mounted on the frame 1 so as to guide the movement of
the chain 22. The height of this guide rail at entrance
and exit portions where the passengers get on and off
the moving walk is different from the height of the

1 intermediate portion of the moving walk. More
specifically, as shown in Fig. 2, this guide rail has a
rising gradient or inclination angle S in the direction
of movement in the vicinity of the entrance portion, and
5 is maintained at the height of the upper portion of the
above gradient at the intermediate portion, and has a
falling gradient or inclination angle S in the vicinity
of the exit portion. The height of the guide rail 28 is
thus changed. By changing the height of the guide rail
10 28 in this manner, the guided power transmission member
20 is also displaced upward and downward with respect to
the direction of movement, and as a result the position
of contact of the friction members 21 with the V-shaped
groove defined by the pair of rotary elements 13A and
15 13B is changed. In other words, the position of
transmission of the power to the pallets 3, or the
position of reception of the power, is changed in
accordance with the movement of the pallets 3.

Next, the guiding and driving of the moving
20 handrails 4 will now be described. The moving handrail
4 has a C-shaped cross-section, and is guided by a guide
member 29G (see Fig. 1), mounted on the upper end
portion of a balustrade-constituting member 29, to move
therealong. As shown in Figs. 8 and 9, the handrail 4
25 comprises a plurality of handrail elements 30, and gap-
closing members 31 (e.g. bellows) for absorbing a change
in the gap between the adjacent handrail elements 30 to
close this gap. Each handrail element 30 includes a

- 1 tongue 32 extending downwardly from the central portion
of the inner surface thereof, a plurality of holes 33
which are elongate in the direction of movement and are
juxtaposed along the C-shaped cross-section, and
5 positioning bars 34 withdrawably inserted in the holes
33 in the adjacent handrail element 30.

The tongue 32 rotatably supports a pair of
vertically-spaced guide rollers 35A and 35B gripping a
guide rail 36 fixedly secured to the frame 1. The
10 tongue 32 pivotally supports one ends of first and
second links 37A and 37B of the same length at the same
position. The other ends of the two links 37A and 37B
are pivotally connected to drive pieces 38. The first
link 37A is pivotally connected, together with the
15 second link 37B on the adjacent tongue 32, to the drive
piece 38 at the same position, so that these links are
continuously arranged in a zigzag fashion as a whole.
The drive piece 38 rotatably supports a pair of
vertically-spaced guide rollers 39A and 39B gripping a
20 guide rail 40 fixedly mounted on the frame 1. The
position of fixing of the guide rail 40 is so changed
that the spacing H_1 , H_2 between the two guide rails 36
and 40 comes smaller progressively in the direction of
movement in the vicinity of the entrance portion, and is
25 kept small at the intermediate portion, and becomes
larger progressively in the vicinity of the exit
portion, as described above for the change in the height
of the guide rail 28 of the chain 22.

1 The drive piece 38 has a spacer 41 which has
such a length that when the spacing between the two
guide rails 36 and 40 is the largest, this spacer comes
into contact with the adjacent drive piece 38. An
5 elastic member 42 made of rubber or the like is mounted
on the distal end of the spacer 41, and provides a
cushioning effect when the spacer comes into contact
with the adjacent drive piece 38. A projection 43 is
formed on the spacer 41. As shown in Fig. 2, the
10 projections 43 are engaged with handrail drive devices
44A and 44B, provided respectively in opposite end
portions of the balustrade-constituting member 29, to
drive the moving handrail 4. Each of the handrail drive
devices 44A and 44B comprises an electric motor 45, a
15 rotating chain 46 for transmitting the power of this
motor 45, and a sprocket 47 which is rotated by this
chain 46 and has teeth engageable with the projections
43.

 The operation of the moving walk of the above
20 construction will now be described.

 First, when the pallets 3 are at an
accelerating region A having a rising gradient as shown
in Fig. 2, the friction members 21 of the power
transmission member 20 are in contact with an outer
25 portion of the V-shaped groove defined by the rotary
elements 13A and 13B, as shown in Fig. 3. In this
condition, when the friction members 21 are driven in a
direction reverse to the direction of movement of the

1 pallets, that is, in one direction from the exit side
toward the entrance side, the rotary elements 13A and
13B in contact with the friction members begin to be
rotated by the frictional force. Therefore, the rotary
5 elements 13A and 13B serve as a power conversion
mechanism for converting the above drive force, exerted
in the above one direction, into a rotational force. By
the rotation of the rotary elements 13A and 13B, the
front wheels 10A and 10B are driven, so that the pallet
10 3 runs. Since the power transmission member 20 is
guided by the guide rail 28 into the rising gradient,
the friction members 21 forcibly spread the V-shaped
groove against the push springs 15A and 15B urging the
rotary elements 13A and 13B as shown in Figs. 4 and 5,
15 and therefore are forced into a radially-inward portion
of the V-shaped groove. As a result, the position of
contact of the friction member 21 with the rotary
elements 13A and 13B (that is, the position of trans-
mission of the power) is changed from the radially-
20 outward side toward the radially-inward side, and
therefore the speed of rotation of the rotary elements
13A and 13B becomes higher progressively relative to the
friction members 21 driven at a constant speed, so that
the speed of travel of the pallets 3 also becomes
25 higher. Therefore, the inclined surfaces 13a and 13b,
defining the V-shaped groove, constitutes a rotational
speed conversion mechanism for changing the rotational
speed of the front wheels 10A and 10B, a moving-speed

1 conversion mechanism for changing the speed of movement
of the pallets, and a drive speed conversion mechanism
for changing the drive speed transmitted from the power
transmission member 20. The running speed of the pallet
5 3 becomes higher at the accelerating region A, and with
a high speed condition the pallet 3 runs at a high speed
region B at the intermediate portion, and then enters a
deceleration region C in the vicinity of the exit
portion. At this deceleration region C, the friction
10 member 21, held in contact with the inner portion of the
V-shaped groove defined by the rotary elements 13A and
13B, gradually shifts toward the outer side of the V-
shaped groove as shown in Figs. 5, 4 and 3, thereby
gradually reducing the rotational speed of the front
15 wheels 10A and 10B.

As described above, the pallet 3 is gradually
accelerated, in the vicinity of the entrance portion,
from a speed which is safe for the passengers to get on
the moving walk, and is maintained at the accelerated
20 maximum speed at the intermediate portion, and is
decelerated, in the vicinity of the exit portion, from
the maximum speed to a speed which is safe for the
passengers to get off the moving walk. Therefore, there
can be obtained the variable-speed moving walk in which
25 the speed of movement of the pallets is the maximum at
the intermediate portion of the moving walk.
Furthermore, since the pallets 3 can be driven at
variable speeds by the simple power transmission

1 mechanism, provided over the entire length in the
direction of movement of the pallets 3, and the speed
conversion mechanism provided on the pallet 3, the
variable-speed moving walk of a simple construction can
5 be obtained without the use of a complicated link
mechanism.

At the accelerating region A and the
decelerating region B, the pallets 3 are different in
speed from one another, so that a gap is formed between
10 the adjacent pallets 3; however, a number of
withdrawably-received elongate members 16 are disposed
at this gap, and therefore even if the passenger walks
on the pallets, there is no risk that he would fall in
between the pallets. A gap is formed between the
15 adjacent elongate members 16, and therefore the interior
of the frame 1 can be viewed through these gaps. The
closure plate 18 conceals it from a view, and closes,
together with the elongate members 16, the gap between
the pallets 3.

20 On the other hand, as described above for the
driving of the pallets 3, the moving handrail 4 is
driven correspondently with the speeds at the
acceleration region A, the high-speed region B and the
deceleration region C. For effecting this speed
25 control, the spacing between the two guide rails 36 and
40 is changed to change the angle θ_1 , θ_2 between the
first link 37A and the second link 37B, thereby changing
the gap between the handrail elements 30 from a small

1 value L_1 to a large value L_2 . More specifically, when
the spacing between the guide rails 36 and 40 is the
large distance H_1 , the angle between the first link 37A
and the second link 37B is small as at θ_1 , and at this
5 time the gap between the handrail elements 30 is the
distance L_1 , in which condition the gap-closing member 31
is most contracted. In contrast, when the spacing
between the guide rails 36 and 40 is the small distance
 H_2 , the angle between the first link 37A and the second
10 link 37B is large as at θ_2 , and at this time the gap
between the handrail elements 30 is the largest distance
 L_2 , in which condition the gap-closing member is most
expanded. By thus changing the gap between the handrail
elements 30, the speed of movement of the handrail
15 elements 30 is changed. Naturally, the spacing between
the two guide rails 36 and 40 is gradually changed to
ensure that an abrupt speed change will not occur.

If the speed of movement of the handrail
elements 30 is not in synchronism with the speed of
20 movement of the pallets 3, this would lead to a serious
accident in which the passengers fall. Therefore,
although not shown, there is provided a synchronizing
device for synchronizing the speed of movement of the
handrail elements 30 with the speed of movement of the
25 pallets 3.

Although the moving handrail 4 is driven by
the use of the links, the handrail elements 30 may have
the same drive construction as that of the pallets 3 so

1 as to be driven by a similar power transmission
mechanism.

In the above embodiment, the single power
transmission mechanism is arranged over the entire
5 length in the direction of movement of the pallets, and
Figs. 10 to 12 show another embodiment in which pallets
are moved by a plurality of power transmission
mechanisms. Namely, a plurality of disks 48A to 48E are
mounted on a rotation shaft 9 for front wheels 10A and
10 10B of each pallet 3, and a plurality of power
transmission mechanisms 49A, 50A, 51A, 52A, 53, 52B,
51B, 50B and 49B are mounted on a frame 1 disposed in
opposed relation to the disks. With respect to the
plurality of power transmission mechanisms, the power
15 transmission mechanisms 49A and 49B for transmitting a
movement speed which is safe for passengers to get on
and off a moving walk are provided at an entrance
portion and an exit portion, respectively, and then the
power transmission mechanisms 50A, 51A and 52A which are
20 set to sequentially increase the movement speed as
compared with the power transmission mechanisms 49A and
49B are provided at a pallet accelerating region.
Further, the power transmission mechanisms 52B, 51B and
50B which are set to sequentially decrease the movement
25 speed are provided at a pallet decelerating region, and
the power transmission mechanism 53 which continues to
transmit the maximum movement speed is provided a region
between the accelerating and decelerating regions. As

1 shown in Fig. 12, for example, the power transmission
mechanisms 52A, 53 and 52B disposed adjacent to one
another are arranged in such a manner that they have
partial overlap & in the direction of movement of the
5 pallets, thereby ensuring that the power can be always
transmitted to the pallets. Each of the power
transmission mechanisms comprises a power transmission
member 54 in the form of an endless construction, and a
pair of rotatable pulleys 55A and 55B around which the
10 power transmission member 54 is wound and by which the
power transmission member 54 is moved. One of the pair
of pulleys 55A and 55B serves as the drive pulley for
moving the power transmission member 54. Reference
numerals 56 and 57 denote pulleys around which the power
15 transmission members 54 of the adjoining power trans-
mission mechanisms 52A and 52B extend, respectively.

The manner of moving the pallets 3 in the
above construction will now be described. At the time
of starting the operation, all of the power transmission
20 mechanisms are driven, so that the power transmission
members 54 are moved at their respective predetermined
speeds. In this condition, the pallets 3 located at the
entrance portion is disposed in opposed relation to the
power transmission mechanism 49A, and at this time the
25 disk 48E is in contact with the power transmission
member 54 of the power transmission mechanism 49A, and
therefore is rotated by the frictional force. By this
rotational force, the front wheels 10A and 10B are

1 rotated through the rotation shaft 9 to roll on guide
rails 2A and 2B, thereby moving the pallet 3. Then,
when the pallet 3 reaches the power transmission
mechanism 50A, the disk 48D of the pallet 3 is brought
5 into contact with the power transmission member 54 of
the power transmission mechanism 50A, and then after the
pallet is moved the overlapping distance ℓ , the disk 48E
is disengaged from the power transmission member 54 of
the power transmission mechanism 49A. Within the
10 overlapping distance, the powers are transmitted
respectively from the power transmission members 54 of
the power transmission mechanisms 49A and 50A to the two
disks 48E and 48D at different speeds, and the speed
difference at this time can be absorbed by a slip
15 between each of the disks 48E and 48D and the power
transmission member 54. In this manner, the pallet 3 is
accelerated, receiving the powers from the plurality of
power transmission mechanisms which are set to
sequentially increase the movement speed. The pallet
20 moves at the maximum speed at the region of the power
transmission mechanism 53, and then the pallet is
decelerated, receiving the powers from the power
transmission mechanisms which are set to sequentially
decrease the movement speed in contrast with the above
25 case, so that the movement speed is brought to the speed
generally the same as the speed at the entrance portion.

In the above embodiment, also, the speed of
movement of the pallet 3 can be increased and decreased

1 with the simple mechanisms.

Fig. 13 shows a further embodiment of the present invention. More specifically, a rotary member 58 having a tapered surface at its outer periphery is
5 mounted on a rotation shaft 9 of a pallet 3, and a power transmission member 60 of a power transmission mechanism is disposed in opposed relation to the tapered surface 59. The power transmission member 60 is provided over the entire length, and the speed of transmission of the
10 power is constant. Therefore, in order to change the speed of rotation of the rotary member 58, the power transmission member 60 is moved to a position indicated in a broken line by a guide rail (not shown) which guides the power of the power transmission member 60,
15 thereby changing the position of contact between the power transmission member 60 and the tapered surface 59 at pallet accelerating and decelerating regions. In the above construction, at entrance and exit portions where the passengers get on and off the moving walk, the power
20 transmission member 60 is in contact with the outer peripheral side of the tapered surface 59 of the rotary member 58, so that the rotational speed of front wheels 10A and 10B is low. As the position of contact shifts toward the radially-inward side of the tapered surface
25 59, the rotational speed of the front wheels 10A and 10B gradually increases. The speed of movement of the pallet 3 is changed in this manner.

Incidentally, in each of the above

1 embodiments, although the transmission force is
transmitted between the power transmission member of the
power transmission mechanism and the rotary member of
the pallet by the frictional force, the transmission
5 force may be transmitted by an engaging force, instead
of using the friction transmission. More specifically,
as shown in Fig. 14, a power transmission member 61 of a
power transmission mechanism is in the form of a chain-
like member such as a chain, and sprockets 62A to 62D
10 for engaging this power transmission member are mounted
on a rotation shaft 9 of a pallet 3. The diameters of
the sprockets 62A to 62D are different from one another,
and the power transmission member 61 is sequentially
engaged with the sprockets 62A to 62D, thereby changing
15 the speed of movement of the pallet 3. In Figs. 10 to
12, the same can be achieved when the power transmission
member 54 is in the form of a chain-like member, and
also when the disks 48A to 48E are replaced by
sprockets. Further, the power transmission member may
20 be a member with a number of teeth formed by recesses
and projections like a timing belt, in which case gears
for engagement with these teeth are mounted on the
rotation shaft, thereby transmitting the power.

By thus effecting the transmission of the
25 power from the power transmission mechanism to the
pallet by means of the engagement transmission, instead
of using the friction transmission, the power can be
positively transmitted.

1 Although the above embodiments are directed to
the horizontally-disposed moving walks having no step at
the advance side of the pallets, the present invention
can be applied to an inclined moving walk, and can also
5 be applied to an escalator in which steps are formed at
pallets at an advance side. Namely, as compared with
the moving walk, the pallets of an escalator travel at
an inclined portion, and these pallets can be moved by
the mechanisms described in the above embodiments, and
10 when the movement speed is increased to widen the gap
between the adjacent pallets, a riser provided at the
rear end of the pallet is inclined, and its length in
the direction of the height is variable, thereby closing
the gap between the adjacent pallets. Alternatively, a
15 closure member may be provided instead of the riser.

 In the above embodiments, although one power
transmission mechanism is used per power conversion
mechanism (or the rotational speed conversion mechanism
or the movement speed conversion mechanism) disposed in
20 opposed relation thereto, a plurality of such power
transmission mechanisms and a plurality of such power
conversion mechanisms (or the rotational speed
conversion mechanisms or the movement speed conversion
mechanisms) may be used as one set, thereby obtaining
25 the variable-speed pallet-type passenger moving walk.

CLAIMS:

1. A variable-speed pallet-type passenger moving
walkway in which the speed of movement of a plurality of
5 pallets is varied between an entrance portion and an exit
portion, wherein each of said plurality of pallets has
wheels and force receiving means for receiving a driving
force to rotate said wheels so as to impart a driving
force to said pallet.
10
2. A walkway according to claim 1 having
 a power transmission mechanism for transmitting
a drive force to each of said pallets, extending between
said entrance portion and said exit portion; and
15 a rotational speed conversion mechanism for
changing the speed of rotation of said wheels.
3. A walkway according to claim 2, wherein said
rotational speed conversion mechanism is provided between
20 said wheels and said power transmission mechanism.
4. A walkway according to claim 1 in which said
force receiving means comprises a rotary member for
driving each said pallet;
25 a power transmission mechanism in contact with
said rotary member to transmit power is provided to
extend between said entrance portion and said exit
portion; and



there is provided means for changing the position of contact between said rotary member and said power transmission mechanism in dependence upon the position of said pallet.

5

5. A walkway according to claim 4, wherein said means for changing the position of contact between said rotary member and said power transmission mechanism is means for changing the height of said power transmission mechanism in dependence upon the position of said pallet.

10

6. A walkway according to claim 4 or claim 5, wherein said rotary member is a wheel-supporting shaft of said pallet.

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7. A walkway according to claim 4 or claim 5, wherein said rotary member is mounted on a wheel-supporting shaft of said pallet.

20

8. A walkway according to any one of claims 4, 5, 6 and 7, wherein said rotary member has an inclined surface extending from an inner diameter portion to an outer diameter portion, said power transmission mechanism being in contact with said inclined surface.

25

9. A walkway according to any of claims 4 to 8, wherein said rotary member comprises two opposed members which can change a gap therebetween, a V-shaped groove



being defined by said opposed two members, and becoming wider from its inner diameter portion toward its outer diameter portion, and said power transmission mechanism comprises an endless power transmission member in contact with an open side of said V-shaped groove, said means for changing the position of contact of said power transmission means with said rotary member being a guide rail for guiding said power transmission member.

10 10. A walkway according to claim 1, having a plurality of power transmission mechanisms for transmitting a drive force to each of said pallets; the force receiving means comprising a power conversion mechanism mounted on each said pallet in opposed relation to said plurality of power transmission mechanisms; and

power selection means for selectively transmitting the power, applied from said plurality of power transmission mechanisms, to said power conversion mechanism to change the speed of movement of each said pallet.

11. A walkway according to claim 10, wherein said power selection means is a mechanism for changing the position of opposition of said power conversion mechanism relative to said plurality of said power transmission mechanisms.



12. A walkway according to claim 10 or claim 11, wherein a plurality of said power conversion mechanisms are provided on said pallet in opposed relation to said plurality of power transmission mechanisms, regions of transmission of the powers from said plurality of power transmission mechanism to the corresponding power conversion mechanisms opposed thereto being changed in the direction of movement of said pallets from one power conversion mechanism to another.

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13. A walkway according to any one of claims 10 to 12, wherein said plurality of power transmission mechanisms are so constructed as to transmit the power to said power conversion mechanism, opposed thereto, at different speeds.

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14. A walkway according to any of claims 10 to 13, wherein said plurality of power transmission mechanisms are so constructed as to transmit the power to said power conversion mechanism, opposed thereto, at the same speed, and said plurality of power conversion mechanisms are so constructed as to output their respective pallet-moving speeds different from one another.

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15. A walkway according to any of claims 10 to 14, wherein the transmission of the power between said power transmission mechanism and said power conversion mechanism is a friction transmission.

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16. A walkway according to any of claims 10 to 14, wherein the transmission of the power between said power transmission mechanism and said power conversion mechanism is a transmission due to an engagement between
5 a chain-like member and teeth.

17. A walkway according to claim 1 in which a power transmission mechanism for transmitting a drive force to said pallets is provided to extend between said entrance
10 portion and said exit portion; and

each of said pallets has means for converting the direction of said drive force transmitted by said power transmission mechanism.

15 18. A walkway according to claim 17 in which said drive force of said power transmission mechanism is a force in a straight direction along the pallet moving direction; and

said means for converting the direction of said
20 drive force is means for converting a force in a straight direction into a rotational force.

19. A variable-speed pallet-type passenger moving walkway in which the speed of movement of a plurality of
25 pallets is changed between an entrance portion and an exit portion, wherein a power transmission mechanism for imparting a drive force to each of said pallets is operative substantially throughout the region between

said entrance portion and said exit portion; and

there is provided means for changing the drive speed transmitted to each said pallet.

5 20. A walkway according to claim 19, in which said means for changing the drive speed of each said pallet is provided on said pallet or said power transmission means;

a second power transmission mechanism for transmitting a power to a moving handrail provided along
10 the direction of movement of said pallets is provided within a balustrade member which guides said moving handrail;

means for changing the speed of movement of said moving handrail is provided on said moving handrail
15 or said second power transmission mechanism; and

there is provided means for synchronizing the speed of movement of said pallets with the speed of movement of said moving handrail.

20 21. A walkway according to any preceding claim in which each said pallet has a number of cleats elongate in a direction of movement of said pallet, wherein a hollow portion is formed in each said cleat;

members are received respectively in said
25 hollow portions, said members being withdrawn to extend between the adjacent pallets when the spacing between adjacent pallets becomes large.



22. A moving walkway substantially as herein described with reference to and as shown in Figs. 1-9, Fig. 10, Figs. 11 and 12, Fig. 13 or Fig. 14 of the accompanying drawings.

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23. A pallet for a moving walkway substantially as hereby described with reference to and as shown in Figs. 1-9, Fig. 10, Figs. 11 and 12, Fig. 13 or Fig. 14 of the accompanying drawings.