

TITLE OF THE INVENTION
PASSENGER CONVEYER



BACKGROUND OF THE INVENTION

In a conventional passenger conveyer, for example, as disclosed in Japanese Patent Laid-open No. 3-124692 bulletin,

a main frames having a right and a left side frame bodies and a transverse member connecting said right and left side frame bodies is installed in a building, and plural steps which are connected endlessly and circulate, railings installed on both sides of these steps and moveing handrails which move around the railings, are supported in this main

In the above conventional technology, it is not considered about reducing establishment space of the passenger conveyer, and even if replacing an old passenger conveyer which passed 20 years after it is founded with a new one, a passenger conveyer having a same step size could not but be installed.

A object of the present invention is to provide a
25 passenger conveyer which is able to reduce an establishment
space thereof, in particular, the establishment space of a
width direction.

Another purpose of the present invention is to provide

a passenger conveyer which can be installed in the same establishment size and can be expanded to a width direction, when being replaced.

In order to achieve the above object in the present invention, a side frame body of the main frame and a vertical projection of a moving handrail are arranged to overlap, and this moving handrail and a vertical projection of the wheel of the step are arranged to overlap too.

According to the above constitution, air space part of a right and a left side between both ends in a width direction of the step and the side frame bodies can be reduced largely, and as a result, a size in a width direction of a passenger conveyer can be reduced.

It means that the passenger conveyer can be installed with a good room in a width direction thereof, in other words, a step which is expanded a size in a width direction can be provided, and a transportation ability of the passenger conveyer can be boosted by renewing the passenger conveyer.

20 BRIEF DESCRIPTION OF THE DRAWING

Figure 1 shows a construction of a main part of a passenger conveyer in the invention and is a cross section along II - II line in figure 2.

Figure 2 is a brief side view showing a whole construction of the passenger conveyer in the present invention.

THE BEST EMBODIMENT TO ENFORCE THE PRESENT INVENTION

An embodiment of the present invention applied to an

escalator will be explained using Figs. 1 and 2.

Escalator 1 has a main frame 2 installed from an upper floor UF to a lower floor LF of a building. This main frame 2 has side frame bodies 3 in a right and a left sides, and a transverse member 4 to connect these side frame bodies 3. The side frame bodies 3 are constituted with a top chord 5 extended to a long direction of the escalator 1, a bottom chord 6 located to a lower direction of the top chord 5 with an interval, and a vertical member 7 connecting the top chord 5 and the bottom chord 6.

To inner both sides part of the main frame 2 constituted as above, guide rail 8 to guide the step mentioned later is fixed.

The step 9 consists of a step frame 10 and a step board 11 fixed in this step frame 10 horizontally, and wheels which consists of a pair of a front wheel 12 and a rear wheel 13 are respectively provided to both ends of the step frame 10 in a width direction thereof. These wheels are rotated on the guide rail 7 mentioned above and travels so as to always keep a level direction of the step board in an approach route.

In addition, in an upper part of the right and left side frame bodies 3, railings 14 are provided through a tool for fixation. The railing 14 has a railing panel 15 to consist of a rainforced glass panel, for example, a handrail frame 16 fixed to a fringe of the railing panel 15, and a moving handrail 17 which can be moved endlessly on the handrail frame 16, and a basal part of the railing panel 15 is covered with an inner deck cover 18 and an outer deck cover 19. A skirt

guard 20 is extended vertically from a lower part of the inner deck cover 18 so as to partition off an inner side of the inner deck cover 18 and the outer deck cover 19 and an end of the step 9. In addition, the moving handrail 17 changes a direction in one side of the railing 14 in the long direction thereof so as to come in inside of inner deck cover 18 and the outer deck cover 19, and comes out to outside of the inner deck cover 18 and the outside deck cover 19 in the other side of the railing 14. The moving handrail 17 travels outside of an inner deck cover 18 and an outside deck cover 19 as an approach route, and travels inside of the outside deck cover 18 and the inner deck cover 19 as a return route.

An axis of the front wheel 12 of the step 9 is connected by step chain 21, this step chain 21 is wound on a drive sprocket 22 which is pivoted in an upper part machine room of the main frame 2 and is wound on a coupled driving wheel 23 wound in a lower part machine room of the main frame 2. The drive chain sprocket 22 provides a turning force with a drive machine 24 installed in a neighborhood thereof.

In an escalator 1 constituted as above, a vertical projection of the moving handrail 17 is arranged so as to overlap to a side frame body 3, with a measurement L in a direction along the width of the step 9, and the vertical projection of the wheel of said step 8, especially the front wheel 12 is arranged so as to overlap on the moving handrail 17 arranged as above. The moving handrail 17 that the vertical projection overlaps on the side frame body 3, constitutes the moving handrail 17 so as to travel at least the return

route side.

More in detail, a step difference part 7A is formed on the upper part of the vertical member 7 so that the vertical projection of the moving handrail 17 overlaps to the top chord 5 of the side frame body 3 relating to the width direction of the step, thereby interference with the moving handrail 17 is avoided. In addition, relating to the moving handrail 17 arranged as above, the front wheel 12 of the step moved to a direction along the step width, and the vertical projection of the moving handrail 17 is overlapped to the front wheel 12, thereby an end of the step 9 comes close to the side frame body 3. However, if the front wheel 12 is overlapped to the vertical projection of the moving handrail 17 so that the center of the front wheel 12 moves to the side frame body 3 to differ in L0 from the center of the moving handrail 17, the end of the step 9 becomes to approach the side frame body 3 side moreover.

In this way according to this embodiment, as the moving handrail 17 can be sent to the side frame body 3 side, it becomes possible to let a skirt guard 20 close to the moving handrail 17 arranged in the return route and inside of the inner deck cover 18 and the outside deck cover 19, and the end of the step 9 in the width direction thereof can be arranged to be close to the skirt guard 20 by moving the center of the front wheel 12 of the step 9 to the side frame body 3 side from the center of the moving handrail 17, this time.

Thereby, an installation width of the escalator 1 can be decreased when the width of the step 9 is the same with

the conventional one.

The escalator which passed 20 year around after being installed, is designed to have a sufficient room of the inside constitution considerably, and when renewaling the escalator in spite of the same establishment width, for example, 5 in case of the constructed escalator having the step width of 1000 MM, a new escalator having a step width of 1200 MM, and the transportation ability thereof can be improved.

In the above embodiment, although the escalator was 10 explained as one example as the passenger conveyer, the present invention can apply easily in the same way to the electric road which the basic constitution is the same as the escalator and does not produce the difference between the step boards.

According to the present invention explained as things 15 mentioned above, an installation space, especially the installation space in the width direction can be reduced, and when renewaling the passenger conveyer, the passenger conveyer having a wider step boards in the same installation measurement can be provided.

What is claimed is;

1. A passenger conveyer having a plurality of step boards connected endlessly so as to circulate, moving handrails moving on a periphery of railings installed on both sides
5 of said step boards, side frame bodies installed on a right and a left sides, a transverse member connecting said side frame bodies, and a main frame for supporting said step boards and said moving handrail on a building, wherein

said movement handrail is arranged so as to overlap
10 to a vertical projection of a side frame body of said main frame, and

a vertical projection of said moving handrail is constructed so as to overlap to a wheel of said step boards.

15 2. A passenger conveyer having a plurality of step boards connected endlessly so as to circulate, moving handrails moving on a periphery of railings installed on both sides of said step boards, side frame bodies installed on a right and a left sides, a transverse member connecting said side
20 frame bodies, and a main frame for supporting said step boards and said moving handrail on a building, wherein

said movement handrail is arranged so as to overlap to a vertical projection of a side frame body of said main frame, and

25 a vertical projection of a wheel of said step boards is constructed so as to overlap to a main frame side of said moving handrail.

3. A passenger conveyer as defined in claim 1 or 2, wherein
a wheel of said step boards is displaced so that the
wheel center is close to said side frame body from center
of said handrail.

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4. A passenger conveyer as defined in claim 1, 2 or 3, wherein
said step board has front wheels having an larger
interval than that of a pair of rear wheels.

10 5. A passenger conveyer as defined in claim 1, 2, 3 or 4,
wherein

said moving handrail which said vertical projection
of said side frame body of said main frame overlaps is arranged
in a return route thereof.

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