

"Indicating apparatus for a passenger conveyor, indicating
body used therefor and a method of assembling the apparatus"

5 The present invention relates to an indicating
apparatus for a passenger conveyor, such as an escalator
or an electrically driven pathway, and an indicating
body used therefor and a method of assembling the
apparatus.

10 Heretofore, there is known, as disclosed in
Japanese Patent Unexamined No. 61-287692, an indicating
apparatus having an indicating body disposed on a
balustrade at a position near to a platform for
indicating information for passengers and for providing
an improved decorative design of the apparatus.

15 In the above-mentioned arrangement, since a
gap exists between the indicating body and the
balustrade panel, there may be a risk that, when a
passenger gets on the conveyor with his hand reached
outward and downward of the moving handrail, his
20 fingertip may be inserted into the above-mentioned gap
formed at the upper end of the indicating body.

 An object of the present invention is to

- 1 provide an indicating apparatus for a passenger conveyor
having an improved safety.

Another object of the present invention is to
provide an indicating apparatus for a passenger conveyor
5 which is supported with a sufficient stability.

Still another object of the present invention
is to provide an indicating apparatus for a passenger
conveyor in which an indicated information can be easily
replaced and the maintenance and assembling of the
10 apparatus are also easy.

For achieving these objects, in the present
invention, an upper end of an indicating body, which is
disposed outside the balustrade panel, is located at a
position downwardly spaced apart from a frame which
15 carries a moving handrail and is fixed to the panel.

Further, there are provided holding devices
for supporting the upper and lower portions of the
indicating body in a manner that the indicating body can
be easily mounted and removed.

20 By virtue of the above-mentioned arrangement
of the present invention, a risk of fingertip insertion
into a gap above a indicating body is avoided, resulting
in an improved safety of the apparatus, and the
indicating body is surely supported with a sufficient
25 stability. Further, since the indicating body is easily
mounted and removed, the apparatus can be easily
assembled, and the content of indication can be also
easily changed.

The present invention will now be described in greater detail by way of examples, with reference to the accompanying drawings, wherein:-

Fig. 1 is a perspective view of an indicating apparatus for a passenger conveyer according to an embodiment of the present invention,

Fig. 2 is an enlarged crosssectional view taken on line I-I of Fig. 1,

Fig. 3 is a left side view of the apparatus shown in Fig. 1,

Fig. 4 is an enlarged crosssectional view taken on line II-II of Fig. 2,

Fig. 5 is an enlarged view of the portion indicated with arrow A in Fig. 2,

Fig. 6 is an enlarged view of the portion indicated with arrow B in Fig. 2,

Fig. 7 to Fig. 9 are views similar to Fig. 2, showing the other embodiments according to the present invention, and

Fig. 10 is a crosssectional view showing a main portion of an embodiment of an indicating body according to the present invention.

Referring to Figs. 1 to 6, an embodiment of the present invention applied to an escalator will be described below.

The basic structure of the escalator is conventional, and includes an endless step 2 moving along a horizontal path 2a and a slant path 2b from a

1 platform 1 to another platform (not shown) and moving
handrails moving in synchronism with the motion of the
step along a turning path 3a, a horizontal path 3b and a
slant path 3c. The moving handrail 3 is guided by a
5 balustrade 4, which is supported by a main frame 5.

In general, the balustrade 4 includes a
balustrade panel 6 made of a transparent reinforced
glass and a frame F mounted on the upper portion of the
balustrade panel 6 for guiding the moving handrail 3,
10 and is fixed to the main frame 5 at its lower portion.
The lower portion of the balustrade panel 6 to be fixed
to the frame is covered by a inner deck cover 7 and an
outer deck cover 8 at the inner side and the outer side
of the panel, respectively.

15 In the above-mentioned escalator, an
indicating apparatus 9 is disposed outside of the
balustrade panel 6 at a position downwardly apart by a
distance h (in Fig. 2) from the frame F of the
horizontal path 3b of the moving handrail 3 near the
20 platform 1. The indicating apparatus 9 includes an
upper holder 10, a lower holder 11 and an indicating
panel 12 indicating an indication content 12A. The
upper holder 10 includes a support member 10A secured to
the outside surface of the balustrade panel 6 and having
25 a crosssection of a laterally turned U³⁵ letter shape. An
illuminating lamp 10B is disposed inside of the support
member 10A, and an illuminating cover 10C is provided
for covering the lamp and closing the opening of the

1 support member. The support member 10A is formed with
an aperture 10H at a surface opposed to the balustrade
panel 6 (bottom surface of the U-shaped crosssection)
for permitting the light of the lamp to penetrate the
5 support member towards the balustrade panel 6. Further,
the support member 10A includes an indicating body 10D
having a transparent indicating portion 10d disposed on
the inside surface of the balustrade panel 6. The
indicating portion 10d has an information 10e (Fig. 5)
10 such as letters, symbols, or patterns, which may be
written, carved on the base plate of the indicating
portion 10d, or may be written on a film adhered to the
base plate for providing a passenger guide service. In
addition, the support member 10A and the illuminating
15 cover 10C are formed with grooves N and M, respectively,
at the respective lower portions, into which the upper
end of the indicating panel 12 is inserted.

The lower holder 11 has an U-shaped cross-
section for receiving the lower end of the indicating
20 panel 12, and the bottom of the holder is fixed to the
outer deck cover 8 by means of screws 11D. The lower
holder 11 includes side walls 11A and 11B and an end
wall 11C for receiving the indicating panel 12.

For fitting the indicating panel 12 between
25 the upper holder 10 and the lower holder 11, the
indicating panel 12 is so sized as to have a height
greater than the distance from the lower surface of the
upper holder 10 to the bottom of the lower holder 11 by

1 a slight length Q, and firstly, the upper portion of the
indicating panel is inserted into the grooves M and N in
a direction indicated with arrow Pa by a distance
corresponding to the depth of the U-shaped groove of the
5 lower holder 11, and next, the lower end of the
indicating panel 12 is lowered and inserted into the
lower holder 11 in a direction indicated with arrow Pb.
Thus, the indicating panel is held at the upper end
portion thereof having the before-mentioned length Q,
10 and is held at the lower end by the U-shaped lower
holder. The breadth W_1 of the upper holder 10 is
determined to be wider than the breadth W_2 of the
indicating panel 12 for covering the upper edge of the
indicating panel 12.

15 Along a side edge of the indicating panel 12
on the opposite side of the end wall 11C of the lower
holder 11 there is disposed a hollow pillar 13 extending
between the upper holder 10 and the lower holder 11, and
wires 14 for supplying an electric power to the
20 illuminating lamp 10B are passed through the hollow
space of the pillar 13.

In the above-mentioned arrangement of the
indicating apparatus according to the illustrated
embodiment, since the upper end of the indicating panel
25 12 is downwardly apart from the frame F supporting the
moving handrail 3 and covered by the upper holder 10
having a long breadth W_1 , the fingertip of a passenger
touches only on the upper holder 10 when the finger is

1 moved over the balustrade panel 6. Due to the touch of
the finger on the upper holder 10, the passenger
retracts his hand, thereby preventing his finger from
being moved farther, caught by an edge of the indicating
5 panel 12, or inserted into a gap between the indicating
panel 12 and the balustrade panel 6.

Further, since the indicating panel 12 is held
at its upper and lower portions by the upper holder 10
and the lower holder 11, respectively, the support of
10 the indicating panel is very stable and can not be
easily displaced even in case a child playing near the
escalator shakes the indicating panel 12.

Further, since the indicating panel 12 can be
mounted or removed by vertically moving the indicating
15 panel relative to the upper holder 10 and the lower
holder 11, the indicating apparatus can be simply
assembled and the indicating panel can be easily mounted
and removed for change of the indication content or for
maintenance and inspection of the panel.

20 In the above-mentioned embodiment, the illumi-
nating lamp 10B is disposed in the upper holder 10, and
the indicating panel 12 has a slant upper end surface
12S opposed to the illuminating lamp 10B for introducing
there along light from the illuminating lamp 10B in
25 order to illuminate the indicating panel 12. In addi-
tion, the light from the illuminating lamp 10B is
adapted to penetrate the balustrade panel 6 for illumi-
nating the indicating portion 10d of the indicating body

1 10D. In consequence, the present invention can be applied to an escalator in which it is impossible to mount an illuminating lamp on the frame F which guides the moving handrail 3.

5 Further, the illuminating lamp 10B can be easily replaced only by removing and remounting the illumination cover 10C, because the illuminating lamp 10B is contained in the upper holder 10.

Another embodiment of the present invention will be described below by referring to Fig. 7. This embodiment is generally similar to that shown in Fig. 2, and the members same as shown in Fig. 2 are indicated with the same numerals and description therefor is omitted. Members different from those shown in Fig. 2 are only an upper holder 15 and a lower holder 16. The upper holder 15 has only a function of holding the upper end of the indicating panel 12 on the balustrade panel 6, while the lower holder 16 is secured to the outer deck cover 8 and has a hollow square crosssection, in which an illuminating lamp 16A is disposed.

In this embodiment, wires to be connected to the illuminating lamp 16A can be led from the lower holder 16 directly to the inside of the outer deck cover 8, and therefore, any support pillar 13 seen in the before-mentioned embodiment can be omitted.

Fig. 8 shows further embodiment developed from that shown in Fig. 7. An indicating body 15D including an indicating portion 15d is provided on the inner side

1 of the balustrade panel 6 at a position opposite to the
upper holder 15, and an illuminating lamp 16A is located
at the lower portion of the indicating panel 12. In
this case, the upper end of the indicating panel 12 is
5 bent toward the indicating portion 15d so that the light
from the illuminating lamp 16A may be passed through the
interior of the indicating panel 12 and projected toward
the indicating portion 15d. Thus, both of the indicat-
ing panel 12 and the indicating portion 15d can be
10 illuminated at the same time by means of only one
illuminating lamp 16A.

Fig. 9 shows still further embodiment, in
which the lower holder 17 is disposed inside the outer
deck cover 8 and contains an illuminating lamp 17A
15 therein, arrangements other than this being similar to
those of Fig. 8. In this arrangement, the appearance of
the apparatus is improved due to no existence of the
lower holder 17 on the upper surface of the outer deck
cover 8. In case the upper holder 15 is not required to
20 have an indicating body 15D as shown in Fig. 8, the
upper holder 15 can be decreased in its size to a size
indicated in Fig. 9 with two dot chain line, which is
equivalent to that shown in Fig. 7.

In the above description, the present
25 invention is applied to an escalator in which the frame
F for guiding the moving handrail 3 is substantially
enclosed by the moving handrail and fixed to the upper
edge of the balustrade panel 6. However, the present

1 invention can be applied not only to an escalator of
this kind, but also to escalators in which, for example,
the frame F largely protrudes for the moving handrail 3
and further, an illuminating lamp is mounted at the
5 protruded frame F for illuminating the balustrade panel
6. Further, the present invention can be applied not
only to an escalator, but also to an electrically driven
pathway, of course.

For indicating an information on the indicat-
10 ing panel, there are measures such as writing or print-
ing of indication content 12A directly on the indicating
panel 12, or adhering a paper or film printed with the
content. Further, according to indication contents, as
shown in Fig. 10, unevenness 18A may be formed on a
15 transparent acrylic plate by etching or carving, or a
plurality of holes 18H may be drilled and, in addition,
filled with paints 18P. When a light L is projected
from the above of the indicating panel 18 as shown in
Fig. 10, the light is reflected at the regions of these
20 unevenness 18A or holes 18H, and perceived by passengers
or passersby in directions indicated with arrows C
and D.

Although, in the above description, the
indicating panel is a plate made of a transparent
25 material such as an acrylic plate, the indicating panel
is not required to be a plate, but may be a plurality of
optical fibers disposed parallel to one another and
formed into a plate-like shape, or a combination of a

1 plate and optical fibers.

In the above-mentioned embodiments, as shown in Figs. 1 and 3, the breadth W_1 of the upper holder 10 is wider than the breadth W_2 of the indicating panel 12, and the indicating panel 12 is located aside with one side thereof near to one side of the upper holder 10. Therefore, when a passenger stretches his hand from a left upper position in Fig. 3 to a right lower position, there may be a risk that the tip of his finger firstly touches the indicating panel 12 without having touched the upper holder 10. In order to eliminate this risk, the indicating panel may be shifted to a position indicated in Fig. 3 with two dot lines, where the end portions of the upper holder extend beyond the side edges of the indicating panel by widths W_a and W_b , respectively. By virtue of this arrangement, the finger of a passenger is prevented from touching the indicating panel, because the finger firstly touches the upper holder and the hand is protected from farther stretching. In other words, the upper holder has a function to inform a passenger of existence of the indicating panel therebelow, and to prevent the fingertip of a passenger from touching any corner or edge of the indicating panel.

25 — As mentioned above, according to the present invention, the holder for holding the upper portion of the indicating panel to the balustrade panel is located downwardly apart from the frame supporting the moving

1 handrail, and covers the upper edge of the indicating
panel. As a result of this arrangement, the fingertip
of a passenger stretched over the handrail is protected
from contacting with any corner or edge of the indicat-
5 ing panel, or going into a gap between the indicating
body and the balustrade panel.

Further, since the upper portion of the
indicating body is secured to the balustrade panel, the
indicating body can not be easily displaced by any
10 external force, resulting in a stiff mounting of the
indicating body.

In addition, since the indicating body is
easily mounted on and removed from the holders, the
assembling of the indicating apparatus and the change of
15 indicating contents are both simple, resulting in a
simple and easy maintenance of the apparatus.

**CLAIMS**

1. A passenger conveyor including a balustrade panel, a moving handrail supported on an upper portion of the balustrade panel by way of a support member, a cover covering a lower portion of the balustrade panel, and an indicating body disposed outside the balustrade panel with a gap defined therebetween in a region where the moving handrail runs in a substantially horizontal direction, characterized in that an upper end of the indicating body is secured to the balustrade panel at a position downwardly apart from the support member.
2. A passenger conveyor as claimed in claim 1, wherein the upper portion of the indicating body is secured to the balustrade panel by way of a holder which is provided at the upper end of the indicating body.
3. A passenger conveyor as claimed in claim 2, wherein the holder is constructed to close the gap between the upper end of the indicating body and the balustrade panel.
4. A passenger conveyor as claimed in claims 2 or 3, wherein the holder embraces or covers the upper end of the indicating body.
5. A passenger conveyor as claimed in claims 2, 3 or 4 wherein the holder includes a light source for illuminating the indicating body.
6. A passenger conveyor as claimed in claim 5, wherein the holder includes an indicating portion which is disposed on an inner side of the balustrade panel and is illuminated by the light source.
7. A passenger conveyor as claimed in claim 2 wherein a lower portion of the indicating body is supported by a lower holder.



8. A passenger conveyor as claimed in claim 7, wherein a light source for supplying light to the indicating body is provided inside at least one of the upper holder and the lower holder.
9. A passenger conveyor as claimed in claim 7, wherein the lower portion of the indicating body extends below the cover.
10. A passenger conveyor as claimed in any of claims 7 to 9, wherein the indicating body is formed as a plate or panel.
11. A passenger conveyor as claimed in claim 10, wherein the indicating body is removably supported by the upper holder and the lower holder.
12. A passenger conveyor as claimed in claims 10 or 11, wherein the indicating body is provided with an indicating content.
13. A passenger conveyor as claimed in any of claims 10 to 12, wherein the breadth of the indicating body is smaller than the length of the upper holder.
14. A passenger conveyor as claimed in claim 13, wherein the upper holder extends in a horizontal direction beyond both lateral edges of the indicating body.
15. A passenger conveyor as claimed in any of claims 10 to 14, wherein the indicating body includes a pillar extending between the upper holder and the lower holder at one side of the indicating body.
16. A passenger conveyor as claimed in claim 15, wherein the upper holder contains a light source for supplying light to the indicating body, and wires for supplying electric



power to the light source are led through the interior of the pillar.

17. A passenger conveyor as claimed in claim 2, wherein light reflecting portions are formed on the indicating body.

18. A passenger conveyor as claimed in claim 2, wherein the indicating body is made of transparent material.

19. A method of installing indicating apparatus on a passenger conveyor which includes a balustrade panel, a moving handrail supported on an upper portion of the balustrade panel by way of a support member, and a cover covering a lower portion of the balustrade panel, the method comprising the steps of securing an upper holder to an outside surface of the balustrade panel at a position downwardly apart from the support member, securing a lower holder to the cover, and then fitting an indicating body between the upper holder and the lower holder.

20. An indicating apparatus for a passenger conveyor, constructed substantially as herein described with reference to and as illustrated in the accompanying drawings.
