

DESCRIPTION



166166

PASSENGER CONVEYER FACILITY



G00002

5 Technical Field

The present invention relates to a passenger (passenger) conveyer, such as an escalator, a moving walks (moving walks) and so forth, and more particularly to a passenger conveyer facility having an improved use condition monitoring apparatus.

Background Art

As the conventional monitoring apparatus for passenger conveyer, there are apparatus for preventing accident upon occurrence of abnormality during operation of the passenger conveyer, or for monitoring abnormal condition and stopping the passenger conveyer after appropriately giving caution or guidance.

For example, as the first prior art, as disclosed in Japanese Patent Application Laid-Open No. Heisei 4-277191, a load current of an escalator is monitored to broadcast a caution for restricting getting on board upon slight over-loading, and to stop the escalator after preliminarily providing guidance by broadcasting.

As the second prior art, as disclosed in Japanese Utility Model Application Laid-Open No. Heisei 6-80777, when a safety switch of the escalator is operated, in case of the matter touching safety of the passenger, the escalator is stopped instantly, and, in case of failure of machine, the escalator

is stopped after preliminary announcement by broadcasting.

As the third prior art, as disclosed in Japanese Utility Model Application Laid-Open No. Showa 60-130274, in the passenger conveyer which can not take a view over the entire transporting path, a portion where cannot be viewed is picked
5 up by a camera and a monitor displaying the picked up image is installed in the vicinity of an operation switch of the passenger conveyer. An operator performs operation of actuating and stopping the passenger conveyer after manually
10 confirming that no passenger is on the passenger conveyer by a monitor screen.

As the fourth prior art, as disclosed in Japanese Patent Application Laid-Open No. Heisei 5-319762, a flow of passengers of the passenger conveyer is monitored on the basis of an image
15 data, an abnormality is judged based on disturbance of moving direction of the image data determined by moving direction of the passenger conveyer to produce an alarm to a monitoring personnel or to prevent expansion of accident by speed control.

In the foregoing first prior art, while broadcasting
20 attracting attention is performed so as not to interrupt operation of the escalator due to overloading of the passenger, it is not possible to attract attention of the passenger other than overloading.

The foregoing second prior art is directed to attracting
25 attention when the safety switch providing in the escalator is operated. Unless the safety switch is operated, abnormality cannot be detected.

In the foregoing third prior art, manual judgment for presence or absence of passenger is required. It is not

- 3 -

possible to safely actuate and stop without intervention of the operator.

In the fourth prior art, only disturbance of particular passenger can be detected, and it is not possible to quickly
5 resolve disturbance of the passenger.

The first object of the present invention is to provide a passenger conveyer facility which can attract attention to a user (passenger) for proper use of a passenger conveyer.

The second object of the present invention is to provide
10 a passenger conveyer facility wherein, in a passenger conveyer having an image pick-up means for monitoring, the image pick-up means is used for attracting attention for the user for proper use of the passenger conveyer and can also be used for inspection of cause of abnormality of the passenger conveyer.

15 The third object of the present invention is to provide a passenger conveyer facility wherein, in a passenger conveyer having an image pick-up means for monitoring, the image pick-up means is used for attracting attention for the user for proper use of the passenger conveyer and can also be used for safely
20 actuating and stopping the passenger conveyer.

Other objects of the present invention will be discussed in detail in the following discussion of the embodiment.

Disclosure of Invention

25 According to one aspect of the present invention (An aspect of the Invention), a passenger conveyer facility having image pick-up means for imaging a condition around a passenger conveyer and performing monitoring around the passenger conveyer on the basis of an output image of the image pick-up

- 4 -

means, comprises image processing means for detecting a passenger utilizing improper condition of the passenger conveyer on the basis of the output image of the image pick-up means, and guidance means for attracting attention for improper use depending upon an output of the image processing means.

with the construction set forth above, it becomes possible to provide the passenger conveyer facility which can attract attention of the user for properly using the passenger conveyer.

10 According to another aspect of the present invention, a passenger conveyer facility having a safety switch active by detecting an abnormal condition of a passenger conveyer, means for stopping the passenger conveyer by operation of the safety switch and image pick-up means for imaging a condition
15 around a passenger conveyer and performing monitoring around the passenger conveyer on the basis of an output image of the image pick-up means, comprises image processing means for detecting a passenger utilizing improper condition of the passenger conveyer on the basis of the output image of the image
20 pick-up means, guidance means for attracting attention for improper use depending upon an output of the image processing means, and means for storing a fraction of a predetermined period among the output image of the image pick-up means in response to operation of the safety switch.

25 with the construction set forth above, by the common image pick-up means, in addition to attracting attention for improper use, the image can be recorded for inspection of cause upon occurrence of abnormality of the passenger conveyer.

According to a further aspect of the present invention,

- 5 -

the output of the image pick-up means is used for detecting the passenger of the passenger conveyer in operation and/or resting and also used for safely actuating and/or stopping the passenger conveyer, and guidance or the like of inhibition of
5 boarding of the passenger conveyer while resting.

with the construction set forth above, since monitoring can be performed even while maintenance operation of the passenger conveyer, attention can be attracted for the user who erroneously board the passenger conveyer during
10 maintenance operation.

On the other hand, accident potentially caused during resting of the passenger conveyer can be monitored.

On the other hand, since the image for the predetermined period before and after the timing of occurrence of accident
15 on the passenger conveyer or therearound can be stored, a customer engineer may easily verify the cause or the like of the accident from the stored image.

Also, upon remote actuation/stop of the passenger conveyer, actuation/stop can be done only when no passenger
20 is present on the passenger conveyer to improve safety.

Brief Description of Drawings

Fig. 1 is an illustration of a construction of one embodiment of an escalator facility according to the present
25 invention;

Fig. 2 is a functional block diagram showing a monitoring device 7 of one embodiment in Fig. 1;

Fig. 3 is a flowchart showing a process procedure of the monitoring device 7 in Fig. 1;

- 6 -

Fig. 4 is a detailed flowchart of a step S4 in Fig. 3;

Fig. 5 is an explanatory illustration of a detection process of hanging out riding in an image processing portion 73 in Fig. 2;

5 Fig. 6 is an explanatory illustration of detection process of play plank by the image processing portion 73 in Fig. 2;

Fig. 7 is a detailed flow chart of step S5 in Fig. 3;

Fig. 8 is an explanatory illustration of an image
10 updating process of an image storing portion 75 in Fig. 2;

Fig. 9 is a flowchart showing one example of a process procedure of a monitoring device 7 when a remote actuation and stop switch 12 is operated in Fig. 1; and

Fig. 10 is a flowchart showing another example of process
15 procedure of the monitoring device 7 when a remote actuation and stop switch 12 is operated in Fig. 1.

Best Mode for Carrying Out the Invention

One embodiment of the present invention will be discussed
20 hereinafter with reference to the drawings.

Fig. 1 is an illustration of a construction of one embodiment of an escalator facility according to the present invention. In Fig. 1, 1 denotes a hand rail of an escalator, 2 denotes a step, 3 denotes a gear connected for driving the
25 step 2, 4 denotes a driving motor, and 5 denotes a control unit for controlling the motor 4. Image pick-up means 6 such as a camera images a condition of the escalator and there around to feed to a monitoring device 7. In Fig. 1, the image pick-up means 6 and the monitoring device 7 are illustrated separately

- 7 -

for facilitating understanding. However, in practice, the monitoring device 7 is incorporated within the image pick-up means 6. The monitoring device 7 detects presence or absence of passenger on the escalator, hanging out riding over a hand rail or play plank, and picks up the condition of the escalator and therearound depending upon operating condition of the escalator. On the other hand, these image can be stored. Display means 8, such as a liquid crystal display, LED display or the like and an audio output means 9, such as a speaker or the like are used for providing guidance, such as attracting attention to the user of the escalator.

Guidance for attracting attention are, against getting on board during resting or on maintenance, "Please refrain from using while resting" or "Please get out as being in maintenance", against improper boarding or play plant, "Dangerous to hang over the body beyond the hand rail", "Please ride in correct attitude." or "Don't play around platform." and so on.

A maintenance operation switch 10 is a switch for announcing on maintenance operation to the monitoring device 7.

To the monitoring device 7, a function for actuation after confirming that no passenger is present on the escalator when an actuation command is applied, is added. 11 denotes a building manager room of a building where the escalator is installed or a maintenance center for maintenance of escalator by a customer engineer. 12 denotes a remote actuation and stop switch installed in the building manager room. 13 denotes announcing means for notifying that actuation and stop cannot be done for presence of passenger on the escalator, and is a

- 8 -

character display by liquid crystal, LED or lamp, speaker, buzzer or the like, for example. It should be noted that the basic function of the remote actuation and stop can be realized even when the announcing means 13 is omitted.

5 Fig. 2 is a functional block diagram showing one embodiment of the monitoring device 7. An input portion 71 receives an operation signal of a safety switch from the control unit 5 or a signal or the like indicative whether the escalator is in operation or not, receives an image information from the
10 image pick-up means 6, receives a signal whether on maintenance operation or not from the maintenance operation switch 10, and receives an actuation and stop signal from the remote actuation switch 12. A judgment portion 72 performs judgment whether the escalator is in operation or on maintenance or not, performs
15 judgment whether the safety switch (not shown) is operated or not, performs judgment whether an actuation and stop command is fed or not, or so forth. As is well known, the safety switch performs operation by detecting abnormality, such as limb of the passenger is wedged or so forth, and several kinds including
20 not shown inlet safety switch, drive chain safety switch, step chain safety switch, skirt guard safety switch, step floating detection switch, emergency stop button or the like may be provided for emergency stop of the escalator by operation thereof.

25 An image processing portion 73 performs judgment process by image processing of an image data transmitted from the image pick up means 6. A guide and control portion 74 performs various guidance depending upon the result of judgment in the image processing portion 73 using the display means 8 or the

- 9 -

audio output means 9. Depending upon the result of judgment in the image processing portion 73, a command is issued to the control unit 5 to perform actuation and stop of the escalator. The image storage portion 75 stores image information of the escalator and therearound picked up before and after operation of the safety switch. An output portion 76 transmits a signal for displaying a guidance on the display means 8, transmits a signal to the audio output means 9 for broadcasting guidance for attracting attention, and further transmits to the announcing means 13 in the building manager room.

Next, a control procedure of the shown embodiment of the monitoring device 7 will be discussed with reference to the flowchart of Fig. 3.

At step S1, the judgment portion 72 makes judgment whether the escalator is on maintenance operation or stopping or not. When the escalator is on maintenance operation or stopping, at step S2, the image processing portion 73 makes judgment whether the passenger is present on the escalator or not. If the passenger is present, at step S3, guidance and control portion 74 performs guidance for attracting attention using the display means 8 or audio output means 9. On maintenance operation, a guidance such as "Please get out as being in maintenance" is presented, and on resting, a guidance, such as "Please refrain from using while resting" is presented.

When the escalator is in operation and not on maintenance operation, process is advanced to steps S4 and S5.

At step S4, the image processing portion 73 performs detection of hanging out riding or play plank. At step S5, monitoring of operation of the safety switch is performed to

- 10 -

store image over a predetermined period before and after operation when the safety switch is operated.

The hanging out riding means that the passenger hangs out the body beyond the hand rail to outside of the escalator.

5 Play plank means walking in a direction opposite to the operating direction of the escalator, playing around the platform or hanging around or so forth.

while the monitoring device 7 is illustrated in the construction for directly transmitting and receiving with the control unit 5 of the escalator, similar function can be
10 realized even when transmission and reception of the signal is performed via a not shown maintenance device of the escalator.

Judgment whether the escalator is in rest or not at step
15 S1, can be realized by transmitting an operation signal from the control unit 5 of the escalator to the monitoring device 7. In the alternative, whether the escalator is in operation or in resting can be detected not via the control unit or the maintenance device by providing a current detector or the like
20 detecting a current flowing through the driving motor 4 during operation of the escalator, to realize the similar function.

The monitoring of operation of the safety switch at step S5 can be realized by transmitting a signal from the control unit 5 to the monitoring device 7 when the safety switch is
25 operated. In the alternative, it is also realized even by directly connecting the safety switch and the monitoring device 7 via a relay or the like.

while the escalator is illustrated as an example of the passenger conveyer in Fig. 1, the similar function can be

- 11 -

realized by the method disclosed in the foregoing embodiment even in the case of moving walks.

Next, detail of step S4 in Fig. 3 will be discussed with reference to Fig. 4.

5 At first, at step S41, the image of the escalator picked up by the image pick-up means 6 is processed. The content of the process is to perform image recognition on the basis of the image data after binarization, differentiation, deriving differential, smoothing, noise elimination and so forth. When
10 hanging out is detected at step S42, caution guidance for hanging out, such as "Dangerous to hang out.", "Please ride in correct attitude." is performed at step S43. When play plank is detected at step S44, caution guidance for play plank, such as "Don't play around the platform" is performed at step S45.

15 Discussion will be given for the process for detecting hanging out in the image processing portion 73 in the shown embodiment, with reference to Fig. 5.

Fig. 5 shows the image of the escalator in the image processing portion 73, which shows the condition where the
20 passenger 14 riding on the step 2 hangs out beyond the hand rail 1. 15 denotes a hanging out detecting region A, and 16 denotes a hanging out detecting region B.

The simplest detection method of hanging out is to record a background image of the detection region A to compare with
25 the current image for detecting hanging out when a difference is greater than or equal to a predetermined value. It should be noted that, in this method, recognition ratio is low for causing erroneous judgment of hanging out even when the man is standing within the detection region A. Therefore, by

- 12 -

setting the detection region B even on the hand rail, the detection region A is checked when the image is varied so as not to make erroneous judgment of hanging out only by standing of man within the detection region A to improve recognition
5 ratio.

Play plan detection process in the image processing portion 73 in the shown embodiment will be discussed with reference to Fig. 6.

Fig. 6 shows the image of the escalator in the image
10 processing portion 73. 17 denotes the passenger in playing plank, and 18 denotes a play plan detection region.

The simplest play plan detection method is to record the background image of the detection region 18 to compare with the current image to detect play plank when the difference is
15 greater than or equal to a predetermined value and continued for a predetermined period. It should be noted that in this method, the recognition ratio is low for erroneous judgment or so forth of play plank even when passengers passes across the detection region continuously. Therefore, recognition
20 ratio is improved by making judgment of motion of the passenger and by adding a condition for making judgment of play plank if moving in the direction different from the moving direction of the escalator.

Next, the detail of step S5 in Fig. 3 will be discussed
25 with reference to Fig. 7.

Here, the image storing portion 75 in the shown embodiment normally records the image in endless manner, like a flight recorder. However, when the safety switch is operated, the image is stored according to the procedure of flowchart

- 13 -

shown in Fig. 7.

At first, at step S51, the judgment portion 72 makes judgment whether the safety switch is operated or not. When the safety switch is operated, the image storage portion 75
 5 continues storing of image picked up the condition of the escalator and therearound until a predetermined period t elapsed at steps S52 and S53. At step S53, when elapsing of the predetermined period t is confirmed, storing of the image is terminated at step S54. On the other hand, recording of
 10 image is not resumed until the customer engineer or the janitor of the building or so forth operates so that the image before and after operation of the safety switch will not be erased by overwriting.

Next, updating process of the image in the image storing
 15 portion 75 in the shown embodiment will be discussed with reference to Fig. 8. It should be noted that Fig. 8 shows one example where storage capacity for five images is provided. On the other hand, discussion will be given for an example where the predetermined period t at step S53 of Fig. 7 is taken as:

20

$$t = t_{n+2} - t_n$$

Fig. 8(a) shows storing condition at a time t_n to store the image from a time t_{n-4} to the time t_n . Assuming that the
 25 safety switch is operating at this timing, image is updated as shown in Figs. 8(b) and 8(c) to store imaged at timing t_{n+1} and t_{n+2} . Associating with overwriting of image at the timing t_{n+1} and t_{n+2} , images at timing t_{n-4} and t_{n-3} are erased.

At the timing of Fig. 8(c), since the predetermined

period t is elapsed, storing of image is terminated. The condition of Fig. 8(c) is maintained until the customer engineer or the like resumes storing image, the image between the timing t_{n-2} to t_{n+2} before and after operation of the safety switch can be seen to facilitate inspection of cause of abnormality.

One example of the process in the case where the remote actuation and stop switch 12 is operated in the shown embodiment will be discussed with reference to Fig. 9.

At first, the judgment portion 72 makes judgment whether the escalator is on maintenance operation or in resting or not (step S6). When the escalator is on maintenance or resting, judgment is made at step S7 whether maintenance operation is on-going or not. If maintenance is on-going, process is terminated without performing remote actuation. In resting, in the judgment portion 72, judgment is made whether actuation command of the escalator is transmitted from the remote actuation and stop switch 12 to the monitoring device 7 or not (step S8). When the actuation command is transmitted, judgment is made in the image processing portion 73 whether the passenger is present on the escalator or not (step S9). If the passenger is absent, the actuation command is fed to the control unit 5 to actuate the escalator (step S10). If the passenger is present, monitoring by the image processing portion 73 is continued until the passengers go away (step S9).

Next, if judgment is made that the escalator is not on maintenance operation or resting at step S6 (in operation), the process is advanced to steps S4 and S5. Steps S4 and S5 are the completely the same function as that foregoing Fig.

- 15 -

3, and discussion will be omitted.

while in operation, in the judgment portion 72, judgment is made whether stop command of the escalator is transmitted from the remote actuation and stop switch 12 to the monitoring
5 device 7, or not (step S11). When the stop command is transmitted, in the image processing portion 73, judgment is made whether the passenger is present on the escalator or not (step S12). If the passenger is not present, the stop command is transmitted to the control unit 5 to stop escalator (step
10 S13). If the passenger is present, monitoring by the image processing portion 73 is continued until the passengers go away (step S12).

Another embodiment of the process in the case where the remote actuation and stop switch 12 is operated will be
15 discussed with reference to Fig. 10. In Fig. 10, those identified by the same reference numerals are the same function and discussion therefor is omitted, and discussion will be given for only portion different from Fig. 9.

In the image processing portion 73, when judgment is made
20 that passenger is present on the escalator, the fact that escalator cannot be actuated for possibility of falling down of the passenger is announced to the building manager room using the announcing means 13 (step S14). The announcing means 13 can be realized by providing LED, lamp or so forth in the
25 building manager room to illuminate the same. On the other hand, it is also possible to announce by sound or voice by installing buzzer or speaker. On the other hand, announcement can be done by performing character display by installing character display device.

Industrial Applicability

With the present invention set forth above, appropriate monitoring can be performed depending upon operating condition
5 of a passenger conveyer, such as escalator, moving walks and so forth.

During maintenance operation of the passenger conveyer, the guidance attracting attention can be given for the passenger erroneously boarding, and also, it becomes possible
10 to call attention of the customer engineers in operation.

During operation of the passenger conveyer, safety can be improved by detecting hanging out riding, or play plank. On the other hand, since image before and after operation of the safety switch of the passenger conveyer is stored, the customer
15 engineer or the like can easily verify the cause of accident or the like from the stored image data.

Upon remote actuation, the passenger conveyer can be actuated only when the passenger is not present on the passenger conveyer to improve safety.

CLAIMS

1. A passenger conveyer facility having a safety switch
active by detecting an abnormal condition of a passenger
conveyer, means for stopping the passenger conveyer by
5 operation of the safety switch and image pick-up means for
imaging a condition around a passenger conveyer and performing
monitoring around the passenger conveyer on the basis of an
output image of said image pick-up means, comprising image
processing means for detecting a passenger utilizing improper
10 condition of the passenger conveyer on the basis of the output
image of said image pick-up means, guidance means for
attracting attention for improper use depending upon an output
of the image processing means, and means for storing a fraction
of a predetermined period among the output image of said image
15 pick-up means in response to operation of said safety switch.

2. A passenger conveyer facility having a safety switch
active by detecting an abnormal condition of a passenger
conveyer, means for stopping the passenger conveyer by
20 operation of the safety switch and image pick-up means for
imaging a condition around a passenger conveyer and performing
monitoring around the passenger conveyer on the basis of an
output image of said image pick-up means, comprising means for
storing a fraction of a predetermined period among the output
25 image of said image pick-up means in response to operation of
said safety switch.

3. A passenger conveyer facility having image pick-up means for imaging a condition around a passenger conveyer and performing monitoring around the passenger conveyer on the basis of an output image of said image pick-up means, comprising
5 image processing means for detecting a passenger utilizing improper condition of the passenger conveyer on the basis of the output image of said image pick-up means, guidance means for attracting attention for improper use depending upon an output of the image processing means, manually operating means
10 providing a stop command to the passenger conveyer, means for detecting a passenger on the passenger conveyer on the basis of the output image of said image pick-up means, and means for stopping the passenger conveyer in response to detection of absence of passenger by said passenger detecting means under
15 presence of said stop command.

4. A passenger conveyer facility having image pick-up means for imaging a condition around a passenger conveyer and
20 performing monitoring around the passenger conveyer on the basis of an output image of said image pick-up means, comprising manually operating means providing a stop command to the passenger conveyer, means for detecting a passenger on the passenger conveyer on the basis of the output image of said
25 image pick-up means, and means for stopping the passenger conveyer in response to detection of absence of passenger by said passenger detecting means under presence of said stop command.

5. A passenger conveyer facility having image pick-up means for imaging a condition around a passenger conveyer and performing monitoring around the passenger conveyer on the basis of an output image of said image pick-up means, comprising

5 image processing means for detecting a passenger utilizing improper condition of the passenger conveyer on the basis of the output image of said image pick-up means during operation of the passenger conveyer and guidance means for attracting attention for improper use depending upon an output
10 of the image processing means, and

image processing means detecting the passenger on the passenger conveyer on the basis of the output image of said image pick-up means during resting of the passenger conveyer, and guidance means for attracting attention for boarding on
15 the passenger conveyer while resting depending upon the output of the image processing means.

6. A passenger conveyer facility having image pick-up means for imaging a condition around a passenger conveyer and
20 performing monitoring around the passenger conveyer on the basis of an output image of said image pick-up means, comprising image processing means detecting the passenger on the passenger conveyer on the basis of the output image of said image pick-up means during resting of the passenger conveyer, and guidance
25 means for attracting attention for boarding on the passenger conveyer while resting depending upon the output of the image processing means.

7. A passenger conveyer facility having a safety switch active by detecting abnormal condition of the passenger conveyer, means for stopping the passenger conveyer by operation of the safety switch, manual operation means for
5 applying a stop command to the passenger conveyer, and image pick-up means for imaging a condition around a passenger conveyer and performing monitoring around the passenger conveyer on the basis of an output image of said image pick-up means, comprising means for storing a fraction for a
10 predetermined period among output image of said image pick-up means by operation of said safety switch, means for detecting the passenger on the passenger conveyer on the basis of the output image of said image pick-up means, and means for stopping the passenger conveyer in response to detection of absence of
15 passenger by said passenger detecting means under presence of said stop command while the passenger conveyer is in operation.

8. A passenger conveyer facility having a safety switch active by detecting abnormal condition of the passenger
20 conveyer, means for stopping the passenger conveyer by operation of the safety switch, manual operation means for applying a stop command to the passenger conveyer, and image pick-up means for imaging a condition around a passenger
25 conveyer and performing monitoring around the passenger conveyer on the basis of an output image of said image pick-up means, comprising means for storing a fraction for a predetermined period among output image of said image pick-up means by operation of said safety switch, means for detecting the passenger on the passenger conveyer on the basis of the

output image of said image pick-up means, and means for
actuating the passenger conveyer depending upon detection of
absence of the passenger by said passenger detecting means
under presence of said actuation command while the passenger
5 conveyer is resting.

9. A passenger conveyer facility having manual operation
means for applying an actuation command and a stop command to
a passenger conveyer and image pick-up means for imaging a
10 condition around a passenger conveyer and performing
monitoring around the passenger conveyer on the basis of an
output image of said image pick-up means, comprising means for
detecting the passenger on the passenger conveyer on the basis
of the output image of said image pick-up means, means for
15 actuating the passenger conveyer depending upon detection of
absence of the passenger by said passenger detecting means
under presence of said actuation command while the passenger
conveyer is resting, and means for stopping the passenger
conveyer in response to detection of absence of passenger by
20 said passenger detecting means under presence of said stop
command while the passenger conveyer is in operation.

10. A passenger conveyer facility having manual operation
means for applying an actuation command to a passenger conveyer
25 and image pick-up means for imaging a condition around a
passenger conveyer and performing monitoring around the
passenger conveyer on the basis of an output image of said image
pick-up means, comprising means for detecting the passenger

on the passenger conveyer on the basis of the output image of said image pick-up means, and means for actuating the passenger conveyer depending upon detection of absence of the passenger by said passenger detecting means under presence of said
5 actuation command while the passenger conveyer is resting.

11. A passenger conveyer facility having a safety switch active by detecting abnormal condition of the passenger conveyer, means for stopping the passenger conveyer by
10 operation of the safety switch, and image pick-up means for imaging a condition around a passenger conveyer and performing monitoring around the passenger conveyer on the basis of an output image of said image pick-up means, comprising means for storing a fraction for a predetermined period among output
15 image of said image pick-up means by operation of said safety switch, image processing means for detecting a passenger on the passenger conveyer on the basis of the output image of said image pick-up means while the passenger conveyer is in resting, and means for attracting attention for boarding on the
20 passenger conveyer in resting depending upon the output of the image processing means.

12. A passenger conveyer facility having manual operation means for applying an actuation command to a passenger conveyer
25 and image pick-up means for imaging a condition around a passenger conveyer and performing monitoring around the passenger conveyer on the basis of an output image of said image pick-up means, comprising means for detecting the passenger

on the passenger conveyer on the basis of the output image of
said image pick-up means, means for actuating the passenger
conveyer depending upon detection of absence of the passenger
by said passenger detecting means under presence of said
5 actuation command while the passenger conveyer is resting, and
guidance means for attracting attention for boarding on the
passenger conveyer in resting upon detection of presence of
the passenger by said image processing means.