

CHAIN GUIDE UNIT AND HANDRAIL-BELT DRIVE UNIT FOR PASSENGER CONVEYOR

FIELD

5 [0001]

Embodiments relates to a chain guide unit and a handrail-belt drive unit for passenger conveyor.

BACKGROUND

10 [0002]

A handrail-belt drive unit for driving a handrail belt of a passenger conveyor is known. The handrail-belt drive unit comprises an endless handrail chain, a drive sprocket, and a drive roller. The handrail chain is wound around the drive sprocket and the drive roller. A drive force is transmitted from a drive unit to the drive sprocket, and the handrail chain is moved in circulation by rotation of the drive sprocket. Then, the drive roller is driven in rotation, so that the handrail belt is moved in circulation together with steps.

20 [0003]

The circulating movement of the handrail chain is guided by an idler. The idler includes an idler sprocket around which the handrail chain is wound, and a boss projecting from the idler sprocket to one side. If the handrail chain is detached from the idler sprocket toward the boss, the handrail chain could continue the circulating movement while it is wound around the boss. In this case, the handrail chain may be damaged.

BRIEF DESCRIPTION OF THE DRAWINGS

30 [0004]

Fig. 1 is a view showing an overall schematic structure of a passenger conveyor comprising a handrail-belt drive unit according to a present embodiment.

Fig. 2 is an enlarged view of the handrail-belt drive unit of Fig. 1.

Fig. 3 is a top view showing a first chain guide unit of Fig. 2.

Fig. 4 is a front view showing the first chain guide unit of Fig. 2.

Fig. 5 is a partially enlarged top view showing a handrail chain of Fig. 2.

Fig. 6 is a partially enlarged front view of the handrail chain of Fig. 2.

Fig. 7 is a front view showing a second chain guide unit of Fig. 2.

Fig. 8 is a bottom view of the second chain guide unit of Fig. 5.

DETAILED DESCRIPTION

[0005]

A chain guide unit for passenger conveyor according to the present embodiment is a unit that guides a circulating movement of an endless handrail chain for driving a handrail belt. The chain guide unit for passenger conveyor comprises a bracket, an idler rotatably supported on the bracket, and a presser plate supported on the bracket. The idler includes an idler sprocket around which the handrail chain is wound, and a boss projecting from the idler sprocket toward the bracket along a rotation center axis of the idler sprocket. The presser plate is located radially more outside than the boss with respect to a rotation center of the idler, and

extends from the bracket toward the idler sprocket. The presser plate includes a proximity portion closest to the idler sprocket. A gap dimension between the idler sprocket and the proximity portion of the presser plate in a direction along the rotation center axis is smaller than a width dimension of the handrail chain.

[0006]

A chain guide unit for passenger conveyor according to the present embodiment is a unit that guides a circulating movement of an endless handrail chain for driving a handrail belt. The chain guide unit for passenger conveyor comprises a bracket, an idler rotatably supported on the bracket, and a presser plate supported on the bracket. The idler includes an idler sprocket around which the handrail chain is wound, and a boss projecting from the idler sprocket toward the bracket along a rotation center axis of the idler sprocket. The presser plate is located radially more outside than the boss with respect to a rotation center of the idler, and extends from the bracket toward the idler sprocket. The presser plate includes a proximity portion closest to the idler sprocket. When seen along the rotation center axis, a minimum gap dimension between the boss and the presser plate is smaller than a height dimension of the handrail chain.

[0007]

A handrail-belt drive unit for passenger conveyor according to the present embodiment is a unit for driving a handrail belt. The handrail-belt drive unit for passenger conveyor comprises an endless handrail chain, a handrail drive sprocket that moves the handrail chain in circulation, a drive roller that is rotated by a circulating movement of the handrail chain to drive the handrail belt, and the aforementioned chain guide unit for passenger conveyor that guides the circulating movement of the handrail

chain.

[0008]

A chain guide unit and a handrail-belt drive unit for passenger conveyor according to the present embodiment are
5 described herebelow with reference to the drawings.

[0009]

A passenger conveyor 1 according to the present embodiment is described first with reference to Fig. 1. Here, an escalator is taken as an example of the passenger conveyor 1.
10 However, the passenger conveyor 1 according to the present embodiment may also be a moving walkway.

[0010]

As shown in Fig. 1, the passenger conveyor 1 comprises a plurality of steps 2, a pair of parapets 3, a pair of skirt guards 4,
15 a pair of handrail belts 5, a drive unit 6, and a pair of handrail-belt drive units 20.

[0011]

The steps 2 are coupled by an endless step chain 7. Each step 2 is guided by a guide rail, not shown, to move in circulation
20 between two platforms 8. An entrance may be the platform 8 on an upper floor side or may be the platform 8 on a lower floor side. An exit is the platform 8 opposite to the entrance. In the present embodiment, a moving direction of the steps 2 is a direction starting from the platform 8 on the lower floor side toward the
25 platform 8 on the upper floor side. Thus, an example of conveying a passenger from the lower floor to the upper floor is described. However, the moving direction of the steps 2 may be a direction starting from the platform 8 on the upper floor side toward the platform 8 on the lower floor side to convey a
30 passenger from the upper floor to the lower floor.

[0012]

The parapets 3 are provided to stand on both right and left sides of the steps 2. Each parapet 3 extends from the one platform 8 to the other platform 8 along the moving direction of the steps 2.

[0013]

The skirt guards 4 are provided at the lower part of each of the parapets 3 and extend along the parapets 3. The steps 2 move between the pair of skirt guards 4.

10 [0014]

Each handrail belt 5 moves along a handrail rail 9 provided at the top of the parapet 3. The handrail belt 5 that has reached the platform 8 on the upper floor side enters the skirt guard 4 and moves inside the skirt guard 4 toward the platform 8 on the lower floor side. The handrail belt 5 that has reached the platform 8 on the lower floor side goes outside from the skirt guard 4 and moves again along the aforementioned handrail rail 9 toward the platform 8 on the upper floor side. The handrail belt 5 moves in circulation in this manner. The circulating movement of the handrail belts 5 is in synchronization with the circulating movement of the steps 2.

[0015]

The drive unit 6 drives the steps to move in circulation. The drive unit 6 may include an electric motor 6a and a speed reducer, not shown.

[0016]

A structure for moving the steps 2 in circulation is more specifically described. A step chain 7 is located inside a truss 10 installed under a floor of a building. An upper machine room 11 is provided on the upper floor side of the truss 10. The drive

unit 6 and a drive sprocket 12 driven by the drive unit 6 are housed in the upper machine room 11. A lower machine room 13 is provided on the lower floor side of the truss 10. A driven sprocket 14 is housed in the lower machine room 13. The step chain 7 is wound around the drive sprocket 12 and the driven sprocket 14. When the drive unit 6 is driven, the drive sprocket 12 on the upper floor side is rotated so that the step chain 7 moves in circulation. Thus, the steps 2 move in circulation between the platform 8 on the upper floor side and the platform 8 on the lower floor side to convey a passenger.

[0017]

Next, a handrail-belt drive unit 20 according to the present embodiment is described with reference to Fig. 2. The handrail-belt drive unit 20 is a unit for driving the corresponding handrail belt 5.

[0018]

The handrail-belt drive unit 20 comprises an endless handrail chain 21, a handrail drive sprocket 22, a plurality of drive rollers 23, a plurality of pressure rollers 24, and two chain guide units 30, 40. The handrail-belt drive unit 20 is located inside the corresponding skirt guard 4.

[0019]

The handrail drive sprocket 22 is rotated by a drive force given thereto from the drive sprocket 12 of the aforementioned drive unit 6. The handrail chain 21 is wound around the handrail drive sprocket 22. When the handrail drive sprocket 22 is rotated, the handrail chain 21 is moved in circulation in synchronization with the aforementioned step chain 7.

[0020]

Each drive roller 23 includes a drive roller sprocket 23a,

and the handrail chain 21 is wound around the drive roller sprocket 23a. When the handrail chain 21 is moved in circulation, the drive roller 23 is rotated in contact with the handrail belt to move the handrail belt 5 in circulation. Fig. 2 shows an example in which the handrail belt 5 is moved in circulation by the four drive rollers 23, but the number of the drive rollers 23 is optional. The four drive rollers 23 are arranged side by side along the movement direction of the handrail belt 5. A stationary sprocket 25 is located between the two center drive rollers 23.

10 [0021]

Each pressure roller 24 faces the drive roller 23. The handrail belt 5 is interposed between the pressure roller 24 and the drive roller 23. The pressure roller 24 is configured to press the handrail belt 5 against the drive roller 23. For example, the pressure roller 24 may be pressed toward the drive roller 23 by urging force of a spring 26. This increases frictional force between the drive roller 23 and the handrail belt 5, which causes the rotating drive roller 23 to move the handrail belt 5.

[0022]

20 Next, the chain guide units 30, 40 according to the present embodiment are described with reference to Figs. 3 to 8. The chain guide units 30, 40 are units for guiding the circulating movement of the handrail chain 21 that drives the handrail belt 5. The two chain guide units 30, 40 include a first chain guide unit 30 and a second chain guide unit 40. The first chain guide unit 30 has a function for adjusting a tension of the handrail chain 21. The second chain guide unit 40 does not have a function for adjusting the tension of the handrail chain 21. The first chain guide unit 30 is located closer to the drive roller 23 than the
25
30 second chain guide unit 40.

[0023]

As shown in Figs. 3 and 4, the first chain guide unit 30 comprises a first bracket 31, a first idler 32, and a first presser plate 33.

5 [0024]

The first bracket 31 may include a pair of first base parts 31a, and a first support part 31b. Each first base part 31a is a part that is attached to a first immobile member 15 fixed on the building. The first immobile member 15 is provided with a long
10 hole 31c into which a bolt 17 is inserted. The long hole 31c is formed to have an elongated shape and extends in the lateral direction. A lateral dimensional range of the long hole 31c can adjust a position of the first bracket 31 in the lateral direction. This allows the first bracket 31 to adjust the tension applied to
15 the handrail chain 21. As shown in Fig. 4, two long holes 31c may be formed in one first base part 31a, and one long hole 31c may be formed in the other first base part 31a. The number of long holes 31c to be formed in each first base part 31a is optional.

[0025]

20 As shown in Fig. 4, the first support part 31b is a part on which the first idler 32 is supported. The first support part 31b is formed to have a U-shape when seen from above. The first idler 32 is housed in a space defined by the first support part 31b. The first support part 31b is located between the pair of first base
25 parts 31a. The first support part 31b is provided with a first through hole 31d into which a below-described first rotation shaft 32c of the first idler 32 is inserted.

[0026]

The two first base parts 31a and the first base part 31b
30 may be formed in one piece. For example, the two first base

parts 31a and the first support part 31b may be integrally formed by a bending process.

[0027]

The first idler 32 is rotatably supported on the first bracket
5 31. The first idler 32 includes a first idler sprocket 32a around which the handrail chain 21 is wound, a first boss 32b, and the first rotation shaft 32c. The first boss 32b projects from the first idler sprocket 32a toward the first support part 31b of the first bracket 31 along a rotation center axis 32x of the first idler sprocket 32a. The first rotation shaft 32c projects from the first
10 boss 32b toward the first support part 31b of the first bracket 31 to be inserted into the first through hole 31d. The first idler sprocket 32a, the first boss 32b and the first rotation shaft 32c are concentrically formed and can rotate integrally. It is not
15 necessary that a part projecting from the first idler sprocket 32a be formed on a side of the first idler sprocket 32a opposite to the first boss 32b.

[0028]

The first presser plate 33 is supported on the first bracket
20 31. As shown in Fig. 4, the first presser plate 33 is located radially more outside than the first boss 32b with respect to a rotation center 32o of the first idler 32. The first presser plate 33 may be located diagonally above the first boss 32b. The first presser plate 33 may be formed to have a plate-like shape along
25 a horizontal plane. As shown in Fig. 3, the first presser plate 33 extends from the first bracket 31 toward the first idler sprocket 32a. More specifically, the first presser plate 33 is connected to the first support part 31b and is located at a corner of the first support part 31b.

30 [0029]

The first presser plate 33 may be formed as a component separate from the first bracket 31 and may be joined to the first bracket 31. For example, the first presser plate 33 may be welded to or bonded to the first bracket 31. However, the first
5 bracket 31 and the first presser plate 33 may be formed in one piece. For example, the first bracket 31 and the first presser plate 33 may be integrally formed by a bending process. This can facilitate formation of the first presser plate 33.

[0030]

10 The first presser plate 33 includes a first proximity portion 33a closest to the first idler sprocket 32a. A gap between the first presser plate 33 and the first idler sprocket 32a is minimum between the first proximity portion 33a and the first idler sprocket 32a. The first proximity portion 33a is a portion of the first
15 presser plate 33, which has the smallest three-dimensional distance to the first idler sprocket 32a.

[0031]

As shown in Fig. 3, in a direction along the rotation center axis 32x, a gap dimension B1 between the first idler sprocket 32a
20 and the first proximity portion 33a of the first presser plate 33 may be smaller than a width dimension D (see Fig. 5) of the handrail chain 21.

[0032]

The width dimension D of the handrail chain 21 is defined
25 as shown in Fig. 5. Namely, the handrail chain 21 is composed of a pair of plates 21b coupled by a pin 21a. A roller 21c is interposed between the pair of plates 21b so that they can be smoothly engaged with or disengaged from each sprocket. A distance between an outer surface of the plate 21b, which is one
30 of the pair of plates 21b facing each other, and an outer surface

of the other plate 21b is defined as the width dimension D. The handrail chain 21 is formed by alternately coupling a pair of plates 21b having a larger width dimension and a pair of plates 21b having a smaller width dimension. The width dimension D is defined by the pair of plates 21b having the larger width dimension.

[0033]

As shown in Fig. 4, when seen along the rotation center axis 32x, a minimum gap dimension A1 between the first boss 32b and the first presser plate 33 may be smaller than a height dimension H (see Fig. 6) of the handrail chain 21. The minimum gap dimension A1 may be a minimum distance between the first boss 32b and the first presser plate 33 when seen along the rotation center axis 32x. The minimum gap dimension A1 may be a dimension along a radial direction with respect to the rotation center 32o.

[0034]

The height dimension H of the handrail chain 21 is defined as shown in Fig. 6. Namely, the handrail chain 21 is formed by alternately coupling the plate 21 having a larger height dimension and the plate 21b having a smaller height dimension. The height dimension H is defined by the plate 21b having the larger height dimension.

[0035]

As shown in Figs. 7 and 8, the second chain guide unit 40 comprises a second bracket 41, a second idler 42, and a second presser plate 43.

[0036]

The second bracket 41 may include a second parse part 41a and a second support part 41b. The second base part 41a

is a part that is attached to a second immobile member 16 fixed on the building. The second immobile member 16 is provided with a round hole 41c into which a bolt 18 is inserted. The round hole 41c has a circular planar shape. The second support part 5 41b is a part on which the second idler 42 is supported. The second bracket 41 is formed to have an L-shape when seen from above. The second idler 42 is housed in a space defined by the second bracket 41. The second support part 41b is provided with a second through hole 41d into which a below-described second 10 rotation shaft 42c of the second idler 42 is inserted.

[0037]

The second base part 41a and the second support part 41b may be formed in one piece. For example, the second base part 41a and the second support part 41b may be integrally formed 15 by a bending process.

[0038]

As shown in Fig. 8, the second idler 42 is rotatably supported on the second bracket 41. The second idler 42 includes a second idler sprocket 42a around which the handrail 20 chain 21 is wound, a second boss 42b, and the second rotation shaft 42c. The second boss 42b projects from the second idler sprocket 42a toward the second support part 41b of the second bracket 41 along a rotation center axis 42x of the second idler sprocket 42a. The second rotation shaft 42c projects from the 25 second boss 42b toward the second support part 41b of the second bracket 41 to be inserted into the second through hole 41d. The second idler sprocket 42a, the second boss 42b and the second rotation shaft 42c are concentrically formed and can rotate integrally. It is not necessary that a part projecting from 30 the second idler sprocket 42a be formed on a side of the second

idler sprocket 42a opposite to the second boss 42b.

[0039]

As shown in Fig. 7, the second presser plate 43 is located radially more outside than the second boss 42b with respect to a rotation center 42o of the second idler 42. A normal direction of the second presser plate 43 may be along a radial direction of the second idler 42. The normal direction is a direction perpendicular to a main surface of the second presser plate 43 and corresponds to an up and down direction shown in Fig. 7.

10 The second presser plate 43 may be located below the second boss 42b. The second presser plate 43 may be formed to have a plate-like shape along a horizontal plane. As shown in Fig. 8, the second presser plate 43 extends from the second bracket 41 toward the second idler sprocket 42a. More specifically, the

15 second presser plate 43 is connected to the second base part 41a and the second support part 41b.

[0040]

The second presser plate 43 may be formed as a component separate from the second bracket 41, and may be joined to the second bracket 41. For example, the second presser plate 43 may be welded to or bonded to the second bracket 41. However, the second bracket 41 and the second presser plate 43 may be formed in one piece. For example, the second bracket 41 and the second presser plate 43 may be

20 integrally formed by a bending process. This can facilitate formation of the second presser plate 43.

[0041]

The second presser plate 43 includes a second proximity portion 43a closest to the second idler sprocket 42a. A gap

30 between the second presser plate 43 and the second idler

sprocket 42a is minimum between the second proximity portion 43a and the second idler sprocket 42a. The second proximity portion 43a is a portion of the second presser plate 43, which has the smallest three-dimensional distance to the second idler sprocket 42a.

[0042]

As shown in Fig. 8, in a direction along the rotation center axis 42x, a gap dimension B2 between the second idler sprocket 42a and the second proximity portion 43a of the second presser plate 43 may be smaller than the aforementioned width dimension D (see Fig. 5) of the handrail chain 21.

[0043]

As shown in Fig. 7, when seen along the rotation center axis 42x, a minimum gap dimension A2 between the second boss 42b and the second presser plate 43 may be smaller than the aforementioned height dimension H (see Fig. 6) of the handrail chain 21. The minimum gap dimension A2 may be a minimum distance between the second boss 42b and the second presser plate 43 when seen along the rotation center axis 42x. The minimum gap dimension A2 may be a dimension along a radial direction with respect to the rotation center 42o.

[0044]

Next, a case in which the handrail belt 5 is moved in circulation by the handrail-belt drive unit 20 according to the present embodiment is described.

[0045]

In this case, the drive unit 6 shown in Fig. 1 drives the drive sprocket 12 in rotation so that the handrail drive sprocket 22 of the handrail-belt drive unit 20 is driven in rotation. The rotation of the handrail drive sprocket 22 moves the handrail

chain 21 in circulation, and rotates the drive roller 23 in rotation. Thus, the handrail belt 5 interposed between the drive rollers 23 and the pressure rollers 24 is moved in circulation.

[0046]

5 The handrail chain 21 is wound around the first idler sprocket 32a of the first chain guide unit 30, so that the circulating movement of the handrail chain 21 is guided. The tension of the handrail chain 21 is adjusted by adjusting the lateral position of the first bracket 31 of the first chain guide unit
10 30 with respect to the first immobile member 15. This enables the smooth circulating movement of the handrail chain 21. The first presser plate 33 supported on the first bracket 31 is located near the handrail chain 21 wound around the first idler sprocket 32a.

15 [0047]

 As described above, in the direction along the rotation center axis 32x, the gap dimension B1 between the first idler sprocket 32a and the first proximity portion 33a of the first presser plate 33 is smaller than the width dimension D of the
20 handrail chain 21. This can prevent the handrail chain 21 from passing through the gap between the first boss 32b and the first presser plate 33. Thus, the handrail chain 21 can be prevented from being detached from the first idler sprocket 32a toward the first boss 32b. On the other hand, when seen along the rotation
25 center axis 32x, the minimum gap dimension A1 between the first boss 32b and the first presser plate 33 is smaller than the height dimension H of the handrail chain 21. This can prevent the handrail chain 21 from passing through the gap between the first boss 32b and the first presser plate 33. Thus, the handrail chain
30 21 can be prevented from being detached from the first idler

sprocket 32a toward the first boss 32b.

[0048]

A case in which the first bracket 31 is not provided with the first presser plate 33 is described. If the handrail chain 21
5 is detached from the first idler sprocket 32a toward the first boss 32b, the handrail chain 21 could continue the circulating movement while it is wound around the first boss 32b. This may damage the handrail chain 21.

[0049]

10 However, in the present embodiment, the first presser plate 33 can prevent the handrail chain 21 from being detached from the first idler sprocket 32a toward the first boss 32b as described above. Thus, the handrail chain 21 can be prevented from continuing the circulating movement while it is detached
15 from the first idler sprocket 32a. This can prevent the handrail chain 21 from being damaged. If the handrail chain 21 is detached from the first idler sprocket 32a on a side opposite to the first boss 32b, the tension of the handrail chain 21 greatly lowers. Thus, it is difficult for the handrail chain 21 to continue
20 its circulating movement, and the circulating movement of the handrail chain 21 is stopped.

[0050]

The handrail chain 21 is wound around the second idler sprocket 42a of the second chain guide unit 40, so that the
25 circulating movement of the handrail chain 21 is guided. The second presser plate 43 supported on the second bracket 41 is located near the handrail chain 21 wound around the second idler sprocket 42a.

[0051]

30 As described above, in the direction along the rotation

center axis 42x, the gap dimension B2 between the second idler sprocket 42a and the second proximity portion 43a of the second presser plate 43 is smaller than the aforementioned width dimension D of the handrail chain 21. This can prevent the
5 handrail chain 21 from passing through the gap between the second idler sprocket 42a and the second presser plate 43. This can prevent the handrail chain 21 from being detached from the second idler sprocket 42a toward the second boss 42b. On the other hand, when seen along the rotation center axis 42x, the
10 minimum gap dimension A2 between the second boss 42b and the second presser plate 43 is smaller than the height dimension H of the handrail chain 21. This makes it difficult that the handrail chain 21 passes through the gap between the second boss 42b and the second presser plate 43. This can prevent the
15 handrail chain 21 from being detached from the second idler sprocket 42a toward the second boss 42b.

[0052]

A case in which the second bracket 41 is not provided with the second presser plate 43 is described. If the handrail chain
20 21 is detached from the second idler sprocket 42a toward the second boss 42b, the handrail chain 21 could continue the circulating movement while it is wound around the second boss 42. This may damage the handrail chain 21.

[0053]

25 However, in the present embodiment, the second presser plate 43 can prevent the handrail chain 21 from being detached from the second idler sprocket 42a toward the second boss 42b, as described above. Thus, the handrail chain 21 can be prevented from continuing the circulating movement while it is
30 detached from the second idler sprocket 42a. This can prevent

the handrail chain 21 from being damaged. If the handrail chain 21 is detached from the second idler sprocket 42a on a side opposite to the second boss 42b, the tension of the handrail chain 21 greatly lowers. Thus, it is difficult for the handrail chain 21 to continue its circulating movement, and the circulating movement of the handrail chain 21 is stopped.

[0054]

According to the present embodiment, in the direction along the rotation enter axis 32x, the gap dimension B1 between the first idler sprocket 32a and the first proximity portion 33a of the first presser plate 33 is smaller than the width dimension D of the handrail chain 21. Thus, the handrail chain 21 can be prevented from continuing the circulating movement while it is detached from the first idler sprocket 32a. As a result, the handrail chain 21 can be prevented from being damaged, which improves reliability.

[0055]

In addition, according to the present embodiment, when seen along the rotation center axis 32x, the minimum gap dimension A1 between the first boss 32b and the first presser plate 33 is smaller than the height dimension H of the handrail chain 21. Thus, the handrail chain 21 can be prevented from continuing the circulating movement while it is detached from the first idler sprocket 32a. As a result, the handrail chain 21 can be prevented from being damaged, which improves reliability.

[0056]

In addition, according to the present embodiment, in the direction along the rotation center axis 42x, the gap dimension B2 between the second idler sprocket 42a and the second proximity portion 43a of the second presser plate 43 is smaller

than the aforementioned width dimension D of the handrail chain 21. Thus, the handrail chain 21 can be prevented from continuing the circulating movement while it is detached from the second idler sprocket 42a. As a result, the handrail chain 21 can be prevented from being damaged, which improves reliability.

[0057]

In addition, when seen along the rotation center axis 42x, the minimum gap dimension A2 between the second boss 42b and the second presser plate 43 is smaller than the height dimension H of the handrail chain 21. Thus, the handrail chain 21 can be prevented from continuing the circulating movement while it is detached from the second idler sprocket 42a. As a result, the handrail chain 21 can be prevented from being damaged, which improves reliability.

[0058]

In addition, according to the present embodiment, the normal direction of the second presser plate 43 of the second chain guide unit 40 is along the radial direction of the second idler 42. This allows an area where the second presser plate 43 covers the second boss 42b from radially outside to increase. This can effectively prevent the handrail chain 21 from being detached from the second idler sprocket 42a toward the second boss 42b.

[0059]

In addition, according to the present embodiment, the first bracket 31 of the first chain guide unit 30 includes the laterally extending long hole 31c. This enables the lateral position of the first chain guide unit 30 to be adjusted, and the tension loaded on the handrail chain 21 to be adjusted.

[0060]

The aforementioned embodiment can prevent damage of the handrail chain 21 and improve reliability.

[0061]

While some embodiments of the present invention have
5 been described, these embodiments have been presented as
examples, and are not intended to limit the scope of the invention.
These novel embodiments can be implemented in various other
forms, and various omissions, replacements, and alterations can
be made without departing from the gist of the invention. These
10 embodiments and modifications thereof are included in the scope
and gist of the invention, and are included in the invention
described in the claims and the equivalent scope thereof.

CLAIMS

1. A chain guide unit for passenger conveyor that guides a circulating movement of an endless handrail chain for driving a handrail belt, comprising:

a bracket;

an idler rotatably supported on the bracket; and

a presser plate supported on the bracket;

wherein:

the idler includes an idler sprocket around which the handrail chain is wound, and a boss projecting from the idler sprocket toward the bracket along a rotation center axis of the idler sprocket;

the presser plate is located radially more outside than the boss with respect to a rotation center of the idler, and extends from the bracket toward the idler sprocket;

the presser plate includes a proximity portion closest to the idler sprocket; and

a gap dimension between the idler sprocket and the proximity portion of the presser plate in a direction along the rotation center axis is smaller than a width dimension of the handrail chain.

2. The chain guide unit for passenger conveyor according to claim 1, wherein

when seen along the rotation center axis, a minimum gap dimension between the boss and the presser plate is smaller than a height dimension of the handrail chain.

3. A chain guide unit for passenger conveyor that guides a

circulating movement of an endless handrail chain for driving a handrail belt, comprising:

- a bracket;
- an idler rotatably supported on the bracket; and
- a presser plate supported on the bracket;

wherein:

- the idler includes an idler sprocket around which the handrail chain is wound, and a boss projecting from the idler sprocket toward the bracket along a rotation center axis of the idler sprocket;

- the presser plate is located radially more outside than the boss with respect to a rotation center of the idler, and extends from the bracket toward the idler sprocket; and

- when seen along the rotation center axis, a minimum gap dimension between the boss and the presser plate is smaller than a height dimension of the handrail chain.

4. The chain guide unit for passenger conveyor according to claim 3, wherein

- a normal direction of the presser plate is along a radial direction of the idler.

5. The chain guide unit for passenger conveyor according to claim 1 or 2, wherein:

- the bracket includes a long hole extending in a predetermined direction; and

- a tension of the handrail chain is adjustable.

6. The chain guide unit for passenger conveyor according to any one of claims 1 to 5, wherein

the bracket and the presser plate are formed in one piece.

7. A handrail-belt drive unit for passenger conveyor that drives a handrail belt, comprising:

an endless handrail chain;

a handrail drive sprocket that moves the handrail chain in circulation;

a drive roller that is rotated by a circulating movement of the handrail chain to drive the handrail belt; and

a chain guide unit for passenger conveyor that guides the circulating movement of the handrail chain according to any one of claims 1 to 6.