

TITLE OF THE INVENTION
MACHINE ROOM-LESS ELEVATOR

FIELD OF THE INVENTION

5 The present invention relates to a machine room-less elevator having a governor rope extended in a hoist way in an endless manner, in which the governor rope and an elevator cage are coupled with each other.

10 BACKGROUND OF THE INVENTION

As a background art of the present technical field, there is one disclosed in Japanese Patent Laid-open No. 2003-081557 (Patent Document 1). There is described, in Japanese Patent Laid-open No. 2003-081557, a swing prevention device for a
15 governor rope wound around a governor pulley and a tension pulley in an endless manner. The governor rope is coupled with an elevator cage through a lever. Further, the governor rope on one side where the cage is coupled (hereafter called a "cage-side governor rope") is moved to the other side of the cage when
20 the cage goes up and down via the governor pulley and the tension pulley.

The swing prevention device has a roller or two or more rollers provided along the governor rope coupled with the cage at a predetermined interval on the other side of the cage with
25 respect to the governor rope. When a swing of a building forces

the governor rope to swing which gets greater, on one side of the rope swing in a horizontal direction, the governor rope comes in contact with an inner circumferential surface of the roller, and the swing of the governor rope is reduced. As a result, displacement of the governor rope can be constrained considerably (see paragraphs 0042 to 0045, Fig. 8).

SUMMARY OF THE INVENTION

According to the governor rope-swing prevention device of Patent Document 1, there is used a displacement constraining member, such as a roller, for preventing the governor rope from swinging. In this case, there is required an installation member, such as a bracket, for fixing the displacement constraining member in a hoist way. In addition, since the displacement constraining member and the installation member are mounted, it is necessary to also increase a planar dimension (dimension in a plan view) of the hoist way a little. Further, according to a machine room-less elevator in which there are disposed devices such as a hoisting machine and a control panel of the elevator in the hoist way, it is necessary to dispose devices such as the control panel adjacent to the governor device. When there is interference between an installation position of the displacement constraining member and the installation member and an installation position of the control panel etc., it may be necessary to move the position of the

control panel etc. adjacent to the governor device so as to prevent such interference. When one device is moved, an interference with another device has to be considered. Thus, a positional change of one device following the attachment of the displacement constraining member and the installation member may greatly affect the planar dimension of the hoist way. Therefore, the arrangement of devices including the displacement constraining member and the installation member becomes important in terms of space saving of the hoist way.

Also, the elevator disclosed in Patent Document 1 has a machine room on an upper side of the hoist way. According to the elevator having the machine room, it is possible to dispose devices such as a hoisting machine and a control panel in the machine room. Therefore, it is not necessary to consider the arrangement of the devices such as the hoisting machine and the control panel in the hoist way. Accordingly, in Patent Document 1, the configuration of arranging devices with effective use of a range in which the governor rope is wound around has not been considered.

An object of the present invention is to provide a machine room-less elevator capable of minimizing space for arrangement of devices in a hoist way and reducing the swing of a governor rope.

According to the present invention, in order to attain the above object, there is provided a roller in a control panel

of an elevator disposed near a governor rope coupled with a cage, moving up and down in synchronism with the cage, and extended in an endless manner in a hoist way, the roller pressing the extended governor rope. The control panel is provided in
5 a space formed by a retreat of the governor rope pressed by the roller.

As described above, according to the present invention, the space is formed by pressing the governor rope coupled with the cage in the hoist way by the roller installed in the control
10 panel and, using the space effectively to dispose the control panel in the space, it becomes possible to reduce the cross-sectional area of the hoist way. As a result, the space for arranging devices in the hoist way can be minimized. Moreover, by pressing the governor rope with the roller, the
15 swing of the governor rope can be reduced.

Objects, configurations, and effects other than the above will become apparent from the description of the embodiments below.

20 BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a plan view showing a first embodiment of an elevator according to the present invention;

Fig. 2A is a longitudinal cross-section showing an embodiment of the elevator according to the present invention;

25 Fig. 2B is a view in which a control panel 9 of Fig. 2A

is seen from a direction of arrow IIB;

Fig. 3A is a longitudinal cross-section showing a conventional elevator having an L-shaped steel as a displacement constraining member (swing-prevention member) for a governor
5 rope;

Fig. 3B is a longitudinal cross-section showing a conventional elevator having a roller as a displacement constraining member (swing-prevention member) for the governor rope;

10 Fig. 4 shows, in detail, the displacement constraining member of the conventional elevator;

Fig. 5 is a plan view of an elevator shown as a comparative example of the present invention;

Fig. 6A is a front view showing, in detail, a displacement
15 constraining member (swing-prevention member) of the present invention;

Fig. 6B is a side view showing, in detail, the displacement constraining member (swing-prevention member) of the present invention;

20 Fig. 6C is a top view showing, in detail, the displacement constraining member (swing-prevention member) of the present invention;

Fig. 7A is a longitudinal cross-section showing a second embodiment according to the present invention;

25 Fig. 7B shows a view in which a control panel 9 of Fig.

7A is seen from a direction of arrow VIIIB;

Fig. 8A is a longitudinal cross-section showing a third embodiment according to the present invention;

Fig. 8B shows a view in which a control panel 9 of Fig.

5 8A is seen from a direction of arrow VIIIB; and

Fig. 9 shows, in detail, a displacement constraining member (swing-prevention member) of Figs. 8A and 8B.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

10 Now, embodiments according to the present invention will be described.

First Embodiment

With reference to Fig. 1, Figs. 2A and 2B, and Figs. 6A to 6C, a first embodiment of an elevator of the present invention will be described. Fig. 1 is a plan view showing the first embodiment of the elevator according to the present invention. Fig. 2A is a longitudinal cross-section showing the embodiment of the elevator according to the present invention. Fig. 2B shows a view in which a control panel 9 of Fig. 2A is seen from a direction of arrow IIB. Fig. 6A is a front view showing, in detail, a displacement constraining member (swing-prevention member) of the present invention. Fig. 6B is a side view showing, in detail, the displacement constraining member (swing-prevention member) of the present invention. Fig. 6C is a top view showing, in detail, the displacement

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constraining member (swing-prevention member) of the present invention. In Fig. 2A, in order to simplify the explanation, a positional relationship of a cage 8, a governor device 12, and the control panel 9 is altered. A correct positional
5 relationship thereof can be obtained by referring to Fig. 1.

First, with reference to Fig. 1, the configuration of the machine room-less elevator according to the present invention will be explained. Also, as shown by arrows in Fig. 1, a width direction W and a depth direction D are defined.

10 The machine room-less elevator of the present embodiment comprises: a pair of guide rails 3a and 3b for a cage supported and erected by fixing members 6a and 6b in a hoist way 1; a cage 8 guided by the guide rails 3a and 3b for the cage to move up and down; a hoisting machine 10 installed on a lower side
15 of the hoist way at a position adjacent to the cage 8 in a plan view; a pair of guide rails 4a and 4b for a weight erected on a side face of the cage 8 at a position adjacent to the hoisting machine 10; a balancing weight 5 guided by the guide rails 4a and 4b for the weight to move up and down; and a main rope (not
20 shown) suspending the balancing weight 5 and the cage 8, and is driven through being wound by the hoisting machine 10.

Furthermore, the machine room-less elevator includes: the governor device 12 having a governor rope 11; and the control panel 9 installed near the governor rope 11.

25 In a space between a hoist way wall 2a located on one

side of the hoist way 1 in the width direction W and the cage 8, there are provided: the hoisting machine 10; the guide rail 3a for the cage; the pair of guide rails 4a and 4b for the weight; the fixing member 6a which fixes the guide rail 3a for the cage
5 and the guide rail 4a for the weight to the hoist way wall 2a; the balancing weight 5; and a fixing member 6c which fixes the guide rail 4b for the weight to a hoist way wall 2c located in the back of the hoist way 1.

In the width direction W, in a space between a hoist way
10 wall 2b located on the other side of the hoist way 1 and the cage 8, there are disposed the guide rail 3a for the cage, the fixing member 6b for fixing the guide rail 3b for the cage to the hoist way wall 2b; the governor device 12; and the control panel 9.

15 The present embodiment greatly differs from the elevator shown in Fig. 5 with respect to the arrangement of the devices installed in the hoist way 1 of Fig. 1.

A first difference is the position of the governor device 12 and the control panel 9.

20 Before explaining the difference from the comparative example, description will be given to the governor device 12 of the present embodiment in detail. As shown in a sectional view of Fig. 2A, the governor device 12 includes: a governor pulley 12a provided in an upper portion of the hoist way 1;
25 a tension pulley 12b provided in a lower portion of the hoist

way 1; and the governor rope 11 wound and hung in an endless manner between the governor pulley 12a and the tension pulley 12b. The governor rope 11 in an endless state is wound and hung, over the governor pulley 12a and the tension pulley 12b, on the other side (the control panel side) of the guide rail 3b side on the cage side. The governor rope 11 on the side of the guide rail 3b on the cage side is coupled with the cage 8 via a lifting part (coupling part) 23 at a portion indicated by numeral 11a. The portion of the governor rope 11 located on the side of the guide rail 3b on the cage side is moved, by the up and down movement of the cage 8, via the governor pulley 12a and the tension pulley 12b, to the opposite side.

That is, concerning the governor rope 11, with respect to the governor pulley 12a (first pulley) and the tension pulley 12b (second pulley), a portion hung on one side is coupled with the cage 8. With respect to the governor pulley 12a (the first pulley) and the tension pulley 12b (the second pulley), the roller 30 is configured so as to press a portion of the governor rope 11 hung on the other side against a portion of the governor rope 11 hung on one side.

Hereafter, the side (the side of the guide rail 3b on the cage side) on which the portion coupled with the cage 8 of the governor rope 11 exists with respect to the governor pulley 12a and the tension pulley 12b is referred to as a "cage side (the side of the cage 8)."

Next, the difference from the comparative example will be explained. According to the present embodiment, as shown in Figs. 2A and 2B, the governor rope 11 on the side opposite to the side coupled with the cage 8 is pressed, by the roller 30, toward the side coupled with the cage 8. The rollers 30 are rotatably mounted on an upper portion and a lower portion of the control panel 9. To be specific, the roller 30 is installed such that a shaft 32 which supports the roller 30 is mounted to the installation member 31 formed of a channel steel and such that the installation member 31 is fixed to the control panel 9. In this case, the roller 30 may be rotatably supported on the shaft 32. Alternatively, the shaft 32 may be rotatably supported on the installation member 31. Moreover, as shown in Fig. 2A, in a direction in which the control panel 9 and the governor device 12 are arranged side by side, the roller 30 is provided so as to protrude toward a governor rope 11 side from an end portion of the control panel 9. As a result, the roller 30 is capable of pressing the governor rope 11 without allowing it to be in contact with the control panel 9.

The control panel 9 is disposed in a space formed when the governor rope 11 is pressed by the roller 30 to retreat, and the control panel 9 and the governor device 12 are overlapped in a plan view. Moreover, the governor device 12 and the control panel 9 are properly thick to be put in a space (gap) between

a side face of the cage 8 and the hoist way wall 2b.

In this way, according to the present embodiment, the control panel 9 is disposed in the space formed when the governor rope 11 is pressed by the rollers 30 installed in the upper and lower portions of the control panel 9. As a result, the governor device 12 and the control panel 9 can be disposed in an overlapped manner in a plan view. Thus, the control panel can be disposed by effectively using a range in which the governor rope can be wound and hung, and a cross-sectional area of the hoist way can be reduced.

In this regard, with reference to Fig. 5, features of the present embodiment shown in Fig. 1 will be explained. Fig. 5 is a plan view of an elevator shown as a comparative example of the present invention.

When Fig. 1 and Fig. 5 are compared, in the case of Fig. 5, the control panel 9 is spaced from the governor rope 11 so as not to interfere with the governor rope 11, and protrudes toward a deeper side, in a plan view, of the hoist way. On the other hand, in Fig. 1, the control panel 9 does not protrude toward the deeper side, in a plan view, of the hoist way, making it possible to shorten the depth of the hoist way 1. Thus, according to the present embodiment, it becomes possible to dispose devices with effective use of the space in the hoist way 1, saving the space in the hoist way 1.

According to the present embodiment, the rollers 30 are

installed in the upper and lower portions of the control panel 9. However, the rollers 30 may be installed in devices other than the control panel, and such devices may be disposed as in the case of the control panel 9 of the present embodiment.

5 Moreover, according to the present embodiment, when the governor rope 11 is pressed by the rollers 30, the swing of the governor rope 11 can be reduced.

 A second difference is a device configuration of the swing-prevention member (displacement constraining member) 22
10 attached to the roller 30 of the displacement constraining member.

 Before explaining the present embodiment, with reference to Fig. 3A, Fig. 3B, and Fig. 4, description will be given to a swing-prevention member 22 in the swing-prevention device
15 of the prior art (Japanese Patent Laid-open No. 2003-081557). Fig. 3A is a longitudinal cross-section showing a conventional elevator having an L-shaped steel as a governor rope swing-prevention member (displacement constraining member). Fig. 3B is a longitudinal cross-section showing a conventional
20 elevator having rollers as governor rope swing-prevention members (displacement constraining members). Fig. 4 shows the displacement constraining member of the conventional elevator in detail.

 The swing-prevention member 22 of Fig. 3A includes the
25 L-shaped steel provided around the governor rope 11 and

constraining the displacement of one side in a horizontal direction. The swing-prevention members 22 formed of the L-shaped steel are fixed to a bracket (not shown) and are disposed at predetermined intervals along the governor rope on the side of the cage 8. Further, the swing-prevention member 22 of Fig. 3B includes a roller 30 or rollers 30 provided, at predetermined intervals, along the governor rope 11 on the side of the cage 8. As shown in Fig. 4, with respect to the governor rope 11 on the side of the cage 8, the roller 30 is provided on the opposite side of the cage 8, and suppresses the swing of the governor rope 11. The above roller 30 has to be fixed by a bracket (not shown) etc. Thus, according to the conventional configuration, since the swing-prevention member 22 is mounted with use of the bracket etc., the device arrangement is restricted, and the production cost is raised.

Next, the swing-prevention member 22 of the present embodiment will be explained. According to the present embodiment, as shown in Figs. 6A, 6B, and 6C, the swing-prevention member 22 is fixed to the control panel 9 together with the installation member 31 formed of the channel steel and the shaft 32 fixed to the installation member 31.

Now, the swing-prevention member 22 of the present embodiment will be described in detail. The swing-prevention member 22 is formed of a member whose shape is similar to that of the channel steel configuring the installation member 31.

That is, as shown in Fig. 6C, the swing-prevention member 22 includes: two flange portions 22a and 22b and a coupling part 22c for coupling the flange portions 22a with the flange portion 22b. The two flange portions 22a and 22b are parallel to each other. Also, the two flange portions 22a and 22b are perpendicular to the coupling part 22c. The two flange portions 22a and 22b are installed in parallel to flange portions 31a and 31b of the channel steel which configures the installation member 31. At this time, the coupling part 22c of the swing-prevention member 22 is perpendicular to a coupling part 31c which couples the flange portion 31a with the flange portion 31b of the installation member 31, and is parallel to the shaft 32. The coupling part 22c may fix the installation member 31 so that a gap between the outer circumferential portion of the roller 30 and the internal surface of the coupling part 22c may become smaller than a diameter of the governor rope 11. Accordingly, the governor rope 11 can be held in a groove of the roller 30 stably. As in the case of the installation member 31, the swing-prevention member 22 can be formed of a channel steel. Some channel steel has a tapered portion inside the flange portion. Even such a channel steel can be used as the installation member 31 or the swing-prevention member 22 if a member absorbing the taper is provided or additional processing is applied to the taper. Alternatively, the installation member 31 may be formed of an angle steel whose cross section

is in the shape of L or a member similar to the angle steel.

As shown in Fig. 6B, when the governor rope 11 is pressed by the roller 30, the governor rope 11 comes into contact with an inner circumferential surface of the roller 30 on one side of the rope swing in a horizontal direction. At this time, when the roller 30 functions as a displacement constraining member of the governor rope 11, the displacement of the governor rope 11 can be constrained considerably. Furthermore, when the governor rope 11 swings toward the side opposite to the roller 30, displacement of the governor rope 11 can be constrained by the swing-prevention member 22 installed in parallel to the installation member 31 formed of the channel steel. Thus, even when the governor rope 11 swings to both sides, the swing can be suppressed. Further, it becomes possible to prevent the governor rope 11 from coming off the groove of the roller 30 and being caught in other devices.

As a result, even when a building is swayed by a strong wind or an earthquake, displacement of the governor rope is minimized, preventing malfunction of the governor device 12 or the devices in the hoist way being caught. Moreover, in the prior art, the roller 30 is fixed with the bracket. However, according to the present embodiment, the bracket is also unnecessary, simplifying the configuration and reducing the production cost.

In addition, in the prior art, the shaft for the roller

30 and the configuration for supporting the shaft are not described. However, in the prior art also, there must exist a shaft of the roller 30 and a member for supporting the shaft and fixing the roller 30 to the bracket. For this reason, it is construed that the roller 30, the installation member 31, and the shaft 32 of the present embodiment correspond to the roller 30 in the prior art. The roller 30, the installation member 31, and the shaft 32 as a whole will be referred to as a roller device (or a roller part). In this case, the roller device of the present embodiment is mounted to the control panel 9. Moreover, the swing-prevention member 22 is mounted to the roller device.

According to the above structure, in a plan view in Fig. 1, the control panel 9 and the governor device 12 can be disposed in an overlapped manner. Particularly, in a plan view of Fig. 1, the control panel 9 is disposed, overlapping a suspension range of the governor rope 11. As a result, in the depth direction D, it is possible to prevent the control panel 9 from getting over a back surface position of the cage 8 to enter a space 1a between the back surface of the cage 8 and the wall 2c of the hoist way 1. Alternatively, a distance of jutting into the space 1a can be reduced. Therefore, the distance in the depth direction of the space 1a can be reduced, minimizing the cross-sectional area of the hoist way 1.

Moreover, by fixing the swing-prevention member 22 to

the roller device which has the roller 30, even when a building is swayed by a strong wind or an earthquake, displacement of the governor rope 11 is minimized. According to this structure, it is possible to avoid the malfunction of the governor device 5 12 or to prevent the governor rope from getting caught in devices in the hoist way. Moreover, the bracket for mounting the swing-prevention member 22 is also unnecessary, reducing the cost of materials and installation work.

Thus, according to the present embodiment, since the 10 devices are disposed with effective use of the space in the hoist way 1, the cross-sectional area of the hoist way can be reduced. Further, by mounting the swing-prevention member 22 to the roller device having the roller 30, it is possible to obtain a highly reliable elevator capable of preventing the 15 swing of the governor rope 11.

Second Embodiment

Next, with reference to Figs. 7A and 7B, a second embodiment according to the present invention will be described. Fig. 7A is a longitudinal cross-section showing the second embodiment 20 according to the present invention. Fig. 7B shows a view in which a control panel 9 of Fig. 7A is seen from a direction of arrow VIIB. Further, in Fig. 7A, in order to simplify the explanation, a positional relationship of the cage 8, the governor device 12, and the control panel 9 is altered. A correct 25 positional relationship can be obtained by referring to Fig.

1.

In particular, as shown in Fig. 7B, the roller 30 mounted to the control panel 9 is disposed so as to be protruding more than a thickness of the control panel 9. This is because it is necessary to carry out installation by shifting the position of the control panel 9 according to the hoist way 1. A fixing rectangular plate 33 is attached to the control panel 9 and the installation member 31 of the roller 30 is fixed to the fixing rectangular plate 33 so that the governor rope 11 may be pressed even when the position of the control panel 9 is shifted. By providing the fixing rectangular plate 33 as the fixing member, the roller 30 can be freely moved in a horizontal thickness direction Lt of the control panel 9. Device configuration and the like except for the configuration of the fixing rectangular plate 33 are similar to those in the first embodiment.

Third Embodiment

Next, with reference to Figs. 8A and 8B, a third embodiment according to the present invention will be described. Fig. 8A is a longitudinal cross-section showing the third embodiment according to the present invention. Fig. 8B shows a view in which a control panel 9 of Fig. 8A is seen from a direction of arrow VIIIB. Also, in Fig. 8A, in order to simplify the explanation, a positional relationship of the cage 8, the governor device 12, and the control panel 9 is altered. A correct

positional relationship can be obtained by referring to Fig. 1.

There is adopted a unitary device configuration in which a small-size device (rotation detector) 34 is mounted on the roller 30 attached to the control panel 9. The configurations shown in Figs. 8A and 8B are similar to those in the first and second embodiments except that the small-size device (rotation detector) 34 is mounted on the roller 30.

Figs. 8A and 8B are different from Figs. 6A, 6B, and 6C in the shape of the swing-prevention member 24 attached to the roller 30 and in that the rotation detectors 34 for detecting the rotational speed of the rollers 30 are mounted on the upper and lower rollers 30. The swing-prevention member 24 has a bracket structure having, for example, an L-shaped cross section. The swing-prevention member 24 is fixed to the shaft 32 coupling the roller 30 with the rotation detector 34. That is, the roller 30 is supported on the shaft 32 in a cantilevered manner. The shape of the swing-prevention member 24 may be such that it prevents the governor rope 11 from protruding from an outer peripheral surface of the roller 30. Since the rotation detector 34 needs electric power (voltage, current, etc.), it receives electric power from the control panel 9. In this regard, since there is the control panel 9 capable of supplying electricity in the neighborhood, a wiring 35 can be a short one. Moreover, the rotation detector 34 detects the rotational

speed of the roller 30. Therefore, the speed of the governor rope 11 can be detected based on the variation in voltage. Since an abnormal speed can be detected through electric signals, an encoder (not shown) for the governor becomes unnecessary.

5 Moreover, since the distance of movement can be learned on the basis of the speed, the position of the cage 8 can be grasped. In addition, usually, for preventing the control panel 9 from being submerged, the control panel 9 is disposed at a position above a level where passengers get on the elevator on the lowest

10 floor. For this reason, when a lower pit of the hoist way is submerged, the rotation detector 34 can be prevented from being damaged by being covered with water.

The rotation detector 34 may be mounted to one of the rollers 30 installed in the upper and lower portions of the control panel 9. The roller 30 on the side where the rotation

15 detector 34 is not provided may be mounted to the control panel 9 as in the first or second embodiment. When the roller 30 is provided protruding from the control panel 9 in a thickness direction of the control panel 9, the installation is preferably

20 carried out as in the second embodiment.

In order to allow the roller 30 to protrude from the control panel 9 in the thickness direction L_t of the control panel 9 and to vary the amount of protrusion, with use of the fixing rectangular plate 33 described in the second embodiment, the

25 rotation detector 34 and the roller 30 are mounted to the control

panel 9. The roller 30 with the rotation detector 34 of the present embodiment is mounted to the control panel 9 and, as in the first embodiment, the governor rope 11 is pressed by the roller 30. The control panel 9 is provided in the space
5 formed by pressing the governor rope 11 to retreat. According to this structure, an overall depth of the hoist way 1 in a plan view is reduced, and the space for arranging the devices inside the hoist way 1 can be minimized. Furthermore, by mounting the swing-prevention member 24 to the roller device
10 having the rollers 30, the governor rope 11 can be prevented from swinging. Although a shape of the swing-prevention member 24 differs from the ones in the first and second embodiments, the positional relationship with the roller 30, functions, and effects are similar to those in the first embodiment.

15 Each of the embodiments described above has the following configuration and effects.

There is provided a roller in a control panel of an elevator disposed near a governor rope coupled with a cage, moving up and down in synchronism with the cage, and extended in an endless
20 manner in a hoist way, the roller pressing the extended governor rope. The control panel is provided in a space formed by the retreat of the governor rope pressed by the roller.

In this regard, as swing-prevention means for the governor rope at the time of an earthquake or a strong wind, a governor
25 rope swing-prevention member may be mounted to the roller for

pressing the governor rope.

According to the above structure, the control panel can be disposed in the space formed by pressing the governor rope to retreat. As a result, a dimension, in a plan view, in the width direction necessary for installing the control panel is reduced to minimize the cross-section area of the hoist way. At the same time, even when the governor rope swings during the earthquake or the strong wind etc., since the governor rope is pressed by the roller, the swing of the governor rope is reduced or prevented. Further, since the swing-prevention member is mounted to the roller, when the governor rope is pressed by the roller to swing to the opposite side of the roller, it becomes possible to constrain displacement of the governor rope to reduce or prevent the swing of the governor rope.

The present invention is not limited to the embodiments described above but includes various modifications. For example, the above embodiments have been described in detail to explain the invention in an easily comprehensible manner and are not necessarily limited to those having all the configurations explained above. Part of the configuration of each embodiment can be replaced with the configuration of another embodiment, and the configuration of another embodiment can be added to the configuration of a certain embodiment. Furthermore, part of the configuration of each embodiment can be deleted, or added to, or replaced with, the configuration

of another embodiment.

[Claims]

[Claim 1]

A machine room-less elevator, comprising:

a governor rope coupled with a cage, moving up and down in synchronism with the cage, and extended in an endless manner in a hoist way; and

a control panel provided in the hoist way and disposed near the governor rope,

wherein a roller is mounted to the control panel; and

wherein the control panel is disposed in a space formed when the governor rope is pressed by the roller to retreat.

[Claim 2]

A machine room-less elevator according to claim 1,

wherein the rollers are provided in upper and lower portions of the control panel and protrude from the control panel toward the governor rope.

[Claim 3]

A machine room-less elevator according to claim 1 or claim 2,

wherein a first pulley is provided in an upper portion of the hoist way and a second pulley is provided in a lower portion of the hoist way;

wherein the governor rope is coupled with the cage on one side with respect to the first pulley and the second pulley; and

wherein, with respect to the first pulley and the second pulley, the roller presses the governor rope on the other side toward the governor rope on the one side.

[Claim 4]

A machine room-less elevator according to any one of claims 1 to 3,

wherein a swing-prevention member is provided in a roller part having the roller.

[Claim 5]

A machine room-less elevator according to any one of claims 1 to 4,

wherein a fixing rectangular plate is provided which installs the roller in a protruding manner from the control panel in a thickness direction of the control panel.

[Claim 6]

A machine room-less elevator according to any one of claims 1 to 5,

wherein a rotation detector is provided for detecting rotational speed of the roller.