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(54) **ELEVATOR DEVICE AND CAR MOVEMENT LIMITING DEVICE THEREOF**

AUFZUGSVORRICHTUNG UND ZUGEHÖRIGE VORRICHTUNG ZUR BEGRENZUNG DER
KABINENBEWEGUNG

DISPOSITIF ELEVATEUR ET DISPOSITIF DE LIMITATION DE MOUVEMENT DE L'AUTOMOBILE
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EP 1 437 320 B1

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Description

TECHNICAL FIELD

[0001] This invention relates to an elevator apparatus as defined in claim 7 in which the operation mode is switched to an on-car maintenance operation mode at the time of maintenance operation on the car and to a car movement regulating device as defined in claim 1 used in the elevator apparatus and adapted to mechanically regulate the car movement during maintenance operation on the car.

BACKGROUND ART

[0002] Fig. 7 is a plan view showing the car movement regulating device of a conventional elevator apparatus disclosed, for example, in JP 2000-203774 A, and Fig. 8 is a front view showing the car movement regulating device of Fig. 7. In the drawings, in a hoistway 1, there are installed a pair of guide rails 3 for guiding the ascent and descent of a car 2. Fixed to each guide rail 3 is a stationary plate 4 having an engagement hole 4a.

[0003] A bracket 6 is mounted to an upper beam 5 of the car 2. A lock bar 7 is supported by the bracket 6. The lock bar 7 is linearly reciprocated through manual operation between an engagement position (indicated by the broken line in the drawing) where its forward end portion is inserted into the engagement hole 4a and an accommodating position (indicated by the solid line in the drawing) where it is retracted to a position on the car 2.

[0004] An operating lever 8 for manually operating the lock bar 7 is mounted to the lock bar 7. Mounted to the bracket 6 is a retaining plate 9 for retaining the lock bar 7 at the engagement position and the accommodating position. Provided in the retaining plate 9 are first and second grooves 9a and 9b into which the operating lever 8 is inserted, respectively when the lock bar 7 is at the engagement position and at the accommodating position.

[0005] Mounted to the bracket 6 is a limit switch 10 to be closed when the lock bar 7 is at the accommodating position. An operating portion 10a of the limit switch 10 is operated by the rear end portion of the lock bar 7.

[0006] A hoist 11 for raising and lowering the car 2 is controlled by a control unit 12. In the control unit 12, there is provided a power circuit 13 for supplying power to the hoist 11. The limit switch 10 is connected to the power circuit 13. When the limit switch 10 is closed, the power circuit 13 is in the ON state, and when the limit switch 10 is open, the power circuit 13 is in the OFF state.

[0007] Next, the operation of this device will be described. When performing maintenance operation on the car 2, the lock bar 7 is slide from the accommodating position to the engagement position by operating the operating lever 8, and the forward end portion of the lock bar 7 is inserted into the engagement hole 4a, whereby movement of the car 2 is mechanically regulated. At this

time, the limit switch 10 is open, and the power circuit 13 is in the OFF state. Thus, there is no danger of the hoist 11 being inadvertently driven.

[0008] In the above-described conventional car movement regulating device, the limit switch 10 only detects whether the lock bar 7 is at the accommodating position or not; it is impossible for it to detect whether the lock bar 7 has been appropriately moved to the engagement position, that is, whether the forward end portion of the lock bar 7 has been surely inserted into the engagement hole 4a. Further, it is impossible to detect that the forward end portion of the lock bar 7 is somewhere between the accommodating position and the engagement position. Thus, when the lock bar 7 is not at the accommodating position, it is only possible to perform a simple control to prevent the hoist 11 from being driven.

[0009] Further, if, due to a failure such as defective welding, the limit switch 10 remains closed, the hoist 11 can be driven with the lock bar 7 somewhere between the two positions, so that the lock bar 7 may interfere with an apparatus in the hoistway 1, thereby damaging the apparatus.

DISCLOSURE OF THE INVENTION

[0010] This invention has been made with a view toward solving the above problems in the prior art. It is an object of this invention to provide an elevator apparatus in which it is possible to perform finer control according to the position of a movable member for regulating the movement of the car to thereby achieve an improvement in operability in the maintenance operation on the car and a car movement regulating device thereof.

[0011] According to the present invention according to claim 1, there is provided a car movement regulating device for an elevator apparatus which is used in an elevator apparatus equipped with a car ascending and descending in a hoistway, a driving device for raising and lowering the car, and a control device for controlling the driving device and which serves to mechanically regulate movement of the car during maintenance operation on the car, the device including: a stationary member fixed to one of the interior of the hoistway and the car and having a stationary side engagement portion; a movable member which has a movable side engagement portion to be engaged with the stationary side engagement portion, which is provided in the other of the interior of the hoistway and the car, and which can be displaced between an accommodating position and an engagement position where the movable side engagement portion is engaged with the stationary side engagement portion; and a switch device connected to the control device and adapted to distinguish and detect which of the three positions: the accommodating position, the engagement position, and a halfway position between the accommodating position and the engagement position the movable member is placed at.

[0012] Further, according to claim 7, an elevator ap-

paratus according to the present invention includes: a car ascending and descending in a hoistway; a driving device for raising and lowering the car; a stationary member fixed to one of the interior of the hoistway and the car and having a stationary side engagement portion; a movable member which has a movable side engagement portion to be engaged with the stationary side engagement portion, which is provided in the other of the interior of the hoistway and the car, and which can be displaced between an accommodating position and an engagement position where the movable side engagement portion is engaged with the stationary side engagement portion; a switch device for distinguishing and detecting which of the three positions: the accommodating position, the engagement position, and a halfway position between the accommodating position and the engagement position the movable member is placed at; and a control device which controls the driving device by selectively switching between a plurality of operation modes including a normal mode and an on-car maintenance mode and to which a signal from the switch device is input, wherein when the operation mode is the on-car maintenance mode, the control device allows operation of the car when it is detected that the movable member is at the accommodating position, and prohibits operation of the car when it is detected that the movable member is at the halfway position.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013]

Fig. 1 is a schematic diagram showing a car movement regulating device for an elevator apparatus according to an embodiment of this invention;
 Fig. 2 is a schematic diagram showing a state in which the arm of Fig. 1 has been rotated to a halfway position;
 Fig. 3 is a schematic diagram showing a state in which the arm of Fig. 2 has been rotated to an engagement position;
 Fig. 4 is a schematic diagram showing a state in which the car of Fig. 3 has been raised;
 Fig. 5 is a flowchart illustrating the operation in the normal operation mode of the control unit of Fig. 1;
 Fig. 6 is a flowchart illustrating the operation in the on-car maintenance operation mode of the control unit of Fig. 1;
 Fig. 7 is a plan view showing an example of the car movement regulating device of a conventional elevator apparatus; and
 Fig. 8 is a front view of the car movement regulating device of Fig. 7.

BEST MODE FOR CARRYING OUT THE INVENTION

[0014] A preferred embodiment of this invention will now be described with reference to the drawings.

[0015] Fig. 1 is a schematic diagram showing the car movement regulating device for an elevator apparatus according to an embodiment of this invention. In the drawing, an engagement plate 21 serving as a stationary member is fixed to a stationary portion in the hoistway, e.g., a guide rail. In the engagement plate 21, there is provided an engagement hole 21a serving as a stationary side engagement portion.

[0016] An arm 23 serving as a movable member is mounted on a car 22 that is raised and lowered in the hoistway. The arm 23 is rotatable about an axle 24 between an accommodating position (Fig. 1) and an engagement position (Figs. 3 and 4). Provided at the forward end portion of the arm 23 is a hook portion 23a serving as a movable side engagement portion to be engaged with the peripheral edge portion of the engagement hole 21a. Further, a cam 25 is fixed to the arm 23.

[0017] Mounted on the car 22 is a first switch 26 operated by the cam 25. The first switch 26 has a normally-closed contact 26a, and is closed when the arm 23 is at the accommodating position; when the arm 23 is at a halfway position between the accommodating position and the engagement position (Fig. 2) or the engagement position, it is operated to be opened by the cam 25.

[0018] Even when the normally-closed contact 26a does not spontaneously return to its original position although the arm 23 has been restored to the accommodating position, the first switch 26 is mechanically operated by the arm 23 and is forcibly closed.

[0019] Mounted on the arm 23 is a second switch 27 operated by the engagement plate 21. The second switch 27 has a normally-open contact 27a, and is open when the arm 23 is at the accommodating position or the halfway position; when the arm 23 is at the engagement position, it is closed.

[0020] A switch device 28 has first and second switches 26 and 27, and is adapted to detect which of the three positions: the accommodating position, the engagement position, and the halfway position the arm 23 is placed at.

[0021] The car 22 is raised and lowered by the drive force of a driving device 29. The driving device 29 is controlled by a control device 30. The control device 30 controls the driving device 29 by selectively switching between a plurality of operation modes including a normal mode and an on-car maintenance mode.

[0022] Further, the first switch 26 is connected in series to a safety circuit (not shown), so that when the normally-closed contact 26a is opened, supply of electricity to the driving device 29 is cut off. Thus, while the operation of the car 22 by the driving device 29 is possible when the arm 23 is at the engagement position, the operation of the car 22 is prohibited when the arm 23 is at the halfway position or the engagement position.

[0023] It is to be noted that on the car 22, there is provided a bypass switch (not shown) for opening and closing a bypass circuit for short-circuiting (bypassing) the first switch 26 along with an on-car operating switch for operating the car 22. Thus, even when the arm 23 is at

the engagement position, it is possible to raise and lower the car 22 at low speed by operating the on-car operating switch while closing the bypass circuit by operating the bypass switch.

[0024] Next, the operation of this device will be described. When the arm 23 is at the accommodating position shown in Fig. 1, the first switch 26 is closed, and the second switch 27 is open.

[0025] As shown in Fig. 2, when the arm 23 is rotated, the first switch 26 is operated by the cam 25, and the first switch 26 is opened. The second switch 27 is open since it does not abut the engagement plate 21.

[0026] As shown in Fig. 3, when the arm 23 reaches the engagement position, the second switch 27 is operated by the engagement plate 21 and closed while the first switch 26 is open.

[0027] When the arm 23 is at the engagement position, if the brake device (not shown) of the driving device 29 is opened, the movement of the car 22 is mechanically regulated within the range of the engagement hole 21a. For example, when the brake device is released with the balance weight (not shown) being heavier than the car 22, the car 22 ascends; however, as shown in Fig. 4, the hook portion 23a engages with the upper edge portion of the engagement hole 21a, whereby the ascent of the car 22 is regulated.

[0028] In the elevator apparatus as described above, when maintenance operations are to be performed on the car 22, the operation mode is first switched to the on-car maintenance operation mode, and the car 22 is moved at low speed to a predetermined maintenance position. Thereafter, the arm 23 is rotated to the engagement position, and the hook portion 23a is engaged with the engagement hole 21a of the stationary plate 21, whereby the movement of the car 22 is regulated, and maintenance operation is performed on the car 22.

[0029] After the completion of the maintenance operation, the arm 23 is restored to the accommodating position, and the operation mode is restored to the normal operation mode. At this time, when, as shown in Fig. 4, the hook 23a is in contact with the peripheral edge portion of the engagement hole 21a, the bypass switch and the on-car operating switch are simultaneously operated to slightly raise or lower the car 22 to restore the position of the hook portion 23a with respect to the engagement hole 21a to the position of Fig. 3, and then the arm 23 is rotated to the accommodating position.

[0030] Next, Fig. 5 is a flowchart illustrating the operation of the control device 30 of Fig. 1 in the normal operation mode. In the normal operation mode, it is first checked whether the arm 23 is at the accommodating position (step S1). Then, when the arm 23 is not at the accommodating position, the operation of the car 22 is prohibited (step S2), whereby interference of the arm 23 with the ascent/descent apparatus is more reliably prevented.

[0031] When it is confirmed that the arm 23 is at the accommodating position, a judgment is made as to

whether the arm 23 is at the engagement position (step S3). Normally, when the arm 23 is at the accommodating position, the second switch 27 is open, so that it is confirmed that the arm 23 is not at the engagement position, making it possible to operate the car 22 (step S4).

[0032] However, when it is detected that the arm 23 is at the engagement position although it has been detected that the arm 23 is at the accommodating position, it is determined that failure has occurred in the switch device 28, and an error detection signal is output (step S5).

[0033] For example, when the normally-open contact 27a of the second switch 27 remains closed as a result of welding or the like, both the first and second switches 26 and 27 are closed even if the arm 23 is at the accommodating position. In such a case, an error detection signal is output, and the switch device 28 is repaired or replaced by the operator.

[0034] Thus, in the normal operation mode, it is confirmed whether the arm 23 is at the accommodating position and whether the switch 28 is out of order, making it possible to operate the car 22 more safely.

[0035] Next, Fig. 6 is a flowchart illustrating the operation of the control device 30 of Fig. 1 in the on-car maintenance operation mode. In the on-car maintenance operation mode, it is first checked whether the arm 23 is at the accommodating position (step S1). When it is confirmed that the arm 23 is at the accommodating position, a judgment is made as to whether the arm 23 is at the engagement position (step S3).

[0036] When it is confirmed that the arm 23 is not at the engagement position, it is determined that the arm 23 is at the accommodating position and that there is no abnormality in the switch 28, making it possible to operate the car 22 (step S4). Thus, even in the on-car maintenance operation mode, when the arm 23 is at the accommodating position, it is possible to operate the car 22, and the car 22 can be moved to a predetermined maintenance position.

[0037] When it is detected that the arm 23 is at both the accommodating position and the engagement position, it is determined that the switch device 28 is out of order, and an error detection signal is output (step S5).

[0038] Further, in the on-car maintenance operation mode, even when it is detected that the arm 23 is not at the accommodating position, a judgment is made as to whether the arm 23 is at the engagement position (step S6). When it is detected that the arm 23 is at neither the accommodating position nor the engagement position, it is determined that the arm 23 is at the halfway position, and the operation of the car 22 is prohibited (step S7).

[0039] Thus, after the car 22 has been moved to the predetermined maintenance position, the operation of the car 22 is prohibited while the arm 23 is being operated and in the state in which the arm 23 is not appropriately engaged with the engagement plate 21. Thus, if, when the operator is performing operations on the car 22, the arm 23 is not at the engagement position, the car 22 is not raised or lowered.

[0040] When it is detected that the arm 23 is not at the accommodating position but at the engagement position, the operation of the car 22 is prohibited, and a release command signal for the brake device of the driving device 29 is made ready to be output (step S8), whereby the brake device can be released, and maintenance operation can be conducted with the brake device released. Further, as described above, when the bypass switch and the on-car operation switch are simultaneously operated, the car 22 can be operated at low speed.

[0041] In this car movement regulating device for an elevator apparatus, it is possible to detect by means of the switch device 28 which of the three positions: the accommodating position, the engagement position, and the halfway position, the arm 23 is placed at, so that it is possible to conduct finer control according to the position of the arm 23, whereby it is possible to achieve an improvement in the operability of maintenance operations on the car.

[0042] Further, the switch device 28, which has the first switch 26, which is closed when the arm 23 is at the accommodating position and opened when the arm 23 is at the halfway position or the engagement position, and the second switch 27, which is opened when the arm 23 is at the accommodating position or the halfway position and closed when the arm 23 is at the engagement position, is used, so that it is possible to distinguish and detect the accommodating position, the engagement position, and the halfway position with a simple construction.

[0043] Further, the first switch 26 is arranged such that when the arm 23 is restored to the accommodating position, it is operated by the arm 23 to be forcibly closed, so that even when the first switch 26 does not spontaneously return to its original position, it is possible to operate the first switch 26 in the normal fashion.

[0044] Furthermore, the arm 23 is equipped with the cam 25 that operates the first switch 26 when it is at the halfway position or the engagement position, so that the first switch 26 can be operated more reliably.

[0045] Further, when the operation mode is the on-car maintenance operation mode, the control device 30 enables the car 22 to be operated when it is detected that the arm 23 is at the accommodating position; when it is detected that the arm 23 is at the halfway position or the engagement position, it prohibits the operation of the car 22, so that it is possible to perform the maintenance operation on the car 22 more safely.

[0046] Further, when the operation mode is the normal operation mode, the control device 30 prohibits the operation of the car 22 when it is detected that the arm 23 is not at the accommodating position, so that it is possible to more reliably prevent interference of the arm 23 with the ascent/descent apparatus.

[0047] Furthermore, when both the first and second switches 26 and 27 are closed, an error detection signal of the switch device 28 is generated, so that it is possible to easily detect failure such as welding of the normally-

open contact 27a of the second switch 27, making it possible to achieve an improvement in reliability.

[0048] Further, a release command signal for the brake device is output only when it is detected that the arm 23 is at the engagement position, so that it is possible to release the brake device more safely.

[0049] Further, when the arm 23 is at the engagement position, closing the bypass circuit through operation of the bypass switch makes it possible to operate the car 22 through operation of the on-car operating switch, so that it is possible to raise or lower the car 22 even when the arm 23 is at the engagement position, making it possible to easily cancel the engaged state of the arm 23.

[0050] While in the above example, the engagement plate 21 is fixed in the hoistway and the arm 23 is mounted on the car 22, it is also possible to fix a stationary member to the car and to provide a movable member in the hoistway.

[0051] Further, while in the above example, the movable member consists of a rotatable arm 23, it is also possible to use a slidable movable member as shown in Figs. 7 and 8.

Claims

1. A car movement regulating device for an elevator apparatus which is used in an elevator apparatus equipped with a car (22) ascending and descending in a hoistway, a driving device (29) for raising and lowering the car (22), and a control device (30) for controlling the driving device (29) and which car movement regulating device serves to mechanically regulate movement of the car (22) during maintenance operations on the car (22), comprising:

a stationary member (21) fixable to one of the interior of the hoistway and the car (22) and having a stationary side engagement portion (21a); a movable member (23) which has a movable side engagement portion (23a) to be engaged with the stationary side engagement portion (21a), which is provided in the other of the interior of the hoistway and the car (22), and which can be displaced between an accommodating position and an engagement position where the movable side engagement portion (23a) is engaged with the stationary side engagement portion (21a); and

a switch device (28) connectable to the control device (30) and adapted to distinguish and detect which of the three positions: the accommodating position, the engagement position, and a halfway position between the accommodating position and the engagement position the movable member (23) is placed at.

2. A car movement regulating device for an elevator apparatus according to Claim 1, wherein the switch device (28) has a first switch (26) which is closed when the movable member (23) is at the accommodating position and opened when the movable member (23) is at the halfway position or the engagement position and a second switch (27) which is opened when the movable member (23) is at the accommodating position or the halfway position and closed when the movable member (23) is at the engagement position.
 3. A car movement regulating device for an elevator apparatus according to Claim 2, wherein the first switch (26) is arranged such that by restoring the movable member (23) to the accommodating position, it is operated by the movable member (23) to be forcibly closed.
 4. A car movement regulating device for an elevator apparatus according to Claim 2, wherein the movable member (23) is rotated to be displaced between the accommodating position and the engagement position about an axle.
 5. A car movement regulating device for an elevator apparatus according to Claim 4, wherein the movable member (23) is equipped with a cam for operating the first switch (26) when it is at the halfway position or the engagement position.
 6. A car movement regulating device for an elevator apparatus according to Claim 2, wherein the stationary member (21) is fixed in the interior of the hoistway, and wherein the movable member (23) is mounted on the car (22), with the first switch (26) being mounted on the car (22) and the second switch (27) being mounted on the movable member (23).
 7. An elevator apparatus comprising:
 - a car (22) that is raised and lowered in a hoistway;
 - a driving device (29) for raising and lowering the car (22);
 - a stationary member (21) fixed to one of the interior of the hoistway and the car (22) and having a stationary side engagement portion (21a);
 - a movable member (23) which has a movable side engagement portion (23a) to be engaged with the stationary side engagement portion (21a), which is provided in the other of the interior of the hoistway and the car (22), and which can be displaced between an accommodating position and an engagement position where the movable side engagement portion (23a) is engaged with the stationary side engagement portion (21a);
 - a switch device (28) for distinguishing and detecting which of the three positions: the accommodating position, the engagement position, and a halfway position between the accommodating position and the engagement position the movable member (23) is placed at; and
 - a control device (30) which controls the driving device (29) by selectively switching between a plurality of operation modes including a normal mode and an on-car maintenance mode and to which a signal from the switch device (28) is input,
8. An elevator apparatus according to Claim 7, wherein when the operation mode is the on-car maintenance mode, the control device (30) allows operation of the car (22) when it is detected that the movable member (23) is at the accommodating position, and prohibits operation of the car (22) when it is detected that the movable member (23) is at the halfway position.
9. An elevator apparatus according to Claim 7, wherein when the operation mode is the normal mode, the control device (30) prohibits operation of the car (22) when it is detected that the movable member (23) is not at the accommodating position.
10. An elevator apparatus according to Claim 7, wherein the driving device (29) is equipped with a brake device, and wherein the control device (30) makes it possible to output a release command signal for the brake device only when the operation mode is the on-car maintenance mode and it is detected that the movable member (23) is at the engagement position.
11. An elevator apparatus according to Claim 10, wherein when both the first and second switch (27)es are closed, the control device (30) generates an error detection signal for the switch device (28).
12. An elevator apparatus according to Claim 10, wherein provided on the car (22) are an on-car operating switch for operating the car (22) and a bypass switch for opening and closing a bypass circuit for short-circuiting the first switch (26), and wherein when the movable member (23) is at the engagement position, the control device (30) makes it possible to operate

the car (22) through operation of the on-car operating switch when the bypass circuit is closed through operation of the bypass switch.

Patentansprüche

1. Fahrkorb-Bewegungsregelvorrichtung für eine Aufzugvorrichtung, die in einer Aufzugvorrichtung verwendet wird, die mit einem Fahrkorb (22), der in einem Aufzugsschacht hinaufgeht und hinuntergeht, einer Antriebsvorrichtung (29) zum Heben und Senken des Fahrkorbs (22), und einer Steuervorrichtung (30) zum Steuern der Antriebsvorrichtung (29) ausgestattet ist, und wobei diese Fahrkorb-Bewegungsregelvorrichtung dazu dient, eine Bewegung des Fahrkorbs (22) während Wartungsarbeiten an dem Fahrkorb mechanisch zu regeln, mit:

einem stationären Element (21), das im Inneren des Aufzugsschachts oder des Fahrkorbs (22) befestigbar ist und einen Eingriffsabschnitt (21a) der stationären Seite aufweist;
 einem bewegbaren Element (23), das einen Eingriffsabschnitt (23a) der bewegbaren Seite aufweist, der mit dem Eingriffsabschnitt (21a) der stationären Seite in Eingriff zu bringen ist, wobei es in dem anderen des Inneren des Aufzugsschachts oder des Fahrkorbs (22) vorgesehen ist, und das zwischen einer Aufnahmeposition und einer Eingriffsposition verschoben werden kann, wo der Eingriffsabschnitt (23a) der bewegbaren Seite mit dem Eingriffsabschnitt (21a) der stationären Seite in Eingriff ist; und
 einer Schaltvorrichtung (28), die mit der Steuervorrichtung (30) verbindbar ist, und die geeignet ist, zu unterscheiden und zu erfassen in welcher der drei Positionen: die Aufnahmeposition, die Eingriffsposition, und eine Position auf halbem Weg zwischen der Aufnahmeposition und der Eingriffsposition, das bewegbare Element (23) platziert ist.

2. Fahrkorb-Bewegungsregelvorrichtung für eine Aufzugvorrichtung nach Anspruch 1, bei der die Schaltvorrichtung (28) einen ersten Schalter (26), der geschlossen ist, wenn das bewegbare Element (23) in der Aufnahmeposition ist, und geöffnet ist, wenn das bewegbare Element (23) in der Position auf halbem Weg oder der Eingriffsposition ist, und einen zweiten Schalter (27) aufweist, der geöffnet ist, wenn das bewegbare Element (23) in der Aufnahmeposition oder der Position auf halbem Weg ist, und geschlossen ist, wenn das bewegbare Element (23) in der Eingriffsposition ist.
3. Fahrkorb-Bewegungsregelvorrichtung für eine Aufzugvorrichtung nach Anspruch 2, bei welcher der er-

ste Schalter (26) derart angeordnet ist, dass durch ein Zurückführen des bewegbaren Elements (23) in die Aufnahmeposition, er durch das bewegbare Element (23) so betätigt wird, dass er zwangsläufig geschlossen wird.

4. Fahrkorb-Bewegungsregelvorrichtung für eine Aufzugvorrichtung nach Anspruch 2, bei der das bewegbare Element (23) so gedreht wird, dass es zwischen der Aufnahmeposition und der Eingriffsposition um eine Achse verschoben wird.

5. Fahrkorb-Bewegungsregelvorrichtung für eine Aufzugvorrichtung nach Anspruch 4, bei der das bewegbare Element (23) mit einer Nocke ausgestattet ist, zum Betätigen des ersten Schalters (26), wenn es in der Position auf halbem Weg oder der Eingriffsposition ist.

6. Fahrkorb-Bewegungsregelvorrichtung für eine Aufzugvorrichtung nach Anspruch 2, bei der das stationäre Element (21) in dem Inneren des Aufzugsschachts befestigt ist, und wobei das bewegbare Element (23) an dem Fahrkorb (22) angebracht ist, wobei der erste Schalter (26) an dem Fahrkorb (22) angebracht ist und der zweite Schalter (27) an dem bewegbaren Element (23) angebracht ist.

7. Aufzugvorrichtung, mit:

einem Fahrkorb (22), der in einem Aufzugsschacht angehoben und abgesenkt wird;
 einer Antriebsvorrichtung (29) zum Heben und Senken des Fahrkorbs (22);
 einem stationären Element (21), das im Inneren des Aufzugsschachts oder des Fahrkorbs (22) befestigt ist und einen Eingriffsabschnitt (21a) der stationären Seite aufweist;
 einem bewegbaren Element (23), das einen Eingriffsabschnitt (23a) der bewegbaren Seite aufweist, der mit dem Eingriffsabschnitt (21a) der stationären Seite in Eingriff zu bringen ist; wobei es in dem anderen des Inneren des Aufzugsschachts oder des Fahrkorbs (22) vorgesehen ist, und das zwischen einer Aufnahmeposition und einer Eingriffsposition verschoben werden kann, wo der Eingriffsabschnitt (23a) der bewegbaren Seite mit dem Eingriffsabschnitt (21a) der stationären Seite in Eingriff ist;
 einer Schaltvorrichtung (28), zum Unterscheiden und Erfassen in welcher der drei Positionen: die Aufnahmeposition, die Eingriffsposition, und eine Position auf halbem Weg zwischen der Aufnahmeposition und der Eingriffsposition, das bewegbare Element (23) platziert ist; und
 einer Steuervorrichtung (30), welche die Antriebsvorrichtung (29) steuert, durch ein selektives Umschalten zwischen einer Vielzahl von

Betriebsmodi, einschließlich eines normalen Modus und eines Wartungsmodus am Fahrkorb, und in die ein Signal von der Schaltvorrichtung (28) eingegeben wird,

wobei die Steuervorrichtung (30), wenn der Betriebsmodus der Wartungsmodus am Fahrkorb ist, einen Betrieb des Fahrkorbs (22) zulässt, wenn erfasst wird, dass das bewegbare Element (23) in der Aufnahmeposition ist, und einen Betrieb des Fahrkorbs (22) verhindert, wenn erfasst wird, dass das bewegbare Element (23) in der Position auf halbem Weg ist.

8. Aufzugvorrichtung nach Anspruch 7, bei welcher der Betriebsmodus der normale Modus ist, wobei die Steuervorrichtung (30) einen Betrieb des Fahrkorbs (22) verhindert, wenn erfasst wird, dass das bewegbare Element (23) nicht in der Aufnahmeposition ist.

9. Aufzugvorrichtung nach Anspruch 7, bei der die Antriebvorrichtung (29) mit einer Bremsvorrichtung ausgestattet ist, und wobei es die Steuervorrichtung (30) ermöglicht, ein Freigabe-Steuersignal für die Bremsvorrichtung lediglich auszugeben, wenn der Betriebsmodus der Wartungsmodus am Fahrkorb ist, und es erfasst wird, dass das bewegbare Element (23) in der Eingriffsposition ist.

10. Aufzugvorrichtung nach Anspruch 7, bei der die Schaltvorrichtung (28) einen ersten Schalter (26), der geschlossen ist, wenn das bewegbare Element (23) in der Aufnahmeposition ist, und geöffnet ist, wenn das bewegbare Element (23) in der Position auf halbem Weg oder der Eingriffsposition ist, und einen zweiten Schalter (27) aufweist, der geöffnet ist, wenn das bewegbare Element (23) in der Aufnahmeposition oder der Position auf halbem Weg ist, und geschlossen ist, wenn das bewegbare Element (23) in der Eingriffsposition ist.

11. Aufzugvorrichtung nach Anspruch 10, bei der die Steuervorrichtung (30), wenn sowohl der erste als auch der zweite Schalter (27) geschlossen sind, ein Fehler-Erfassungssignal für die Schaltvorrichtung (28) erzeugt.

12. Aufzugvorrichtung nach Anspruch 10, bei der an dem Fahrkorb (22) ein Betriebsschalter am Fahrkorb zum Betreiben des Fahrkorbs (22), und ein Bypass-Schalter zum Öffnen und Schließen eines Bypass-Schaltkreises zum Kurzschließen des ersten Schalters (26), vorgesehen sind, und wobei es das Steuergerät (30) ermöglicht, wenn das bewegbare Element (23) in der Eingriffsposition ist, den Fahrkorb (22) durch eine Betätigung des Betriebsschalters am Fahrkorb zu bedienen, wenn der Bypass-Schaltkreis durch eine Betätigung des Bypass-Schalters ge-

schlossen ist.

Revendications

1. Dispositif de régulation de mouvement d'une cabine pour appareil ascenseur qui est utilisé dans un appareil ascenseur équipé d'une cabine (22) montant et descendant dans une gaine, d'un dispositif d'entraînement (29) pour élever et abaisser la cabine (22), et d'un dispositif de commande (30) pour commander le dispositif d'entraînement (29), et lequel dispositif de régulation de mouvement de la cabine sert à réguler mécaniquement le mouvement de la cabine (22) pendant les opérations de maintenance sur la cabine (22), comprenant :

un élément stationnaire (21) pouvant être fixé à l'un de l'intérieur de la gaine et de la cabine (22), et ayant une partie d'engagement latérale stationnaire (21a) ;

un élément mobile (23) qui a une partie d'engagement latérale mobile (23a) devant entrer en prise avec la partie d'engagement latérale stationnaire (21a), qui est prévu dans l'autre de l'intérieur de la gaine et de la cabine (22), et qui peut être déplacé entre une position de logement et une position d'engagement où la partie d'engagement latérale mobile (23a) entre en prise avec la partie d'engagement latérale stationnaire (21a) ; et

un dispositif d'interrupteur (28) pouvant être connecté au dispositif de commande (30) et adapté pour distinguer et détecter dans laquelle des trois positions, la position de logement, la position d'engagement et une position intermédiaire entre la position de logement et la position d'engagement, l'élément mobile (23) est placé.

2. Dispositif de régulation de mouvement d'une cabine pour un appareil ascenseur selon la revendication 1, dans lequel le dispositif d'interrupteur (28) présente un premier interrupteur (26) qui est fermé lorsque l'élément mobile (23) se trouve dans la position de logement et ouvert lorsque l'élément mobile (23) se trouve dans la position intermédiaire ou la position d'engagement et un second interrupteur (27) qui est ouvert lorsque l'élément mobile (23) se trouve dans la position de logement ou la position intermédiaire et fermé lorsque l'élément mobile (23) se trouve dans la position d'engagement.

3. Dispositif de régulation de mouvement d'une cabine pour appareil ascenseur selon la revendication 2, dans lequel le premier interrupteur (26) est agencé de telle manière qu'en remettant l'élément mobile (23) dans la position de logement, il soit actionné par

l'élément mobile (23) pour être fermé de manière forcée.

4. Dispositif de régulation de mouvement d'une cabine pour appareil ascenseur selon la revendication 2, dans lequel l'élément mobile (23) est tourné pour être déplacé entre la position de logement et la position d'engagement autour d'un axe. 5
5. Dispositif de régulation de mouvement d'une cabine pour appareil ascenseur selon la revendication 4, dans lequel l'élément mobile (23) est équipé d'une came pour actionner le premier interrupteur (26) lorsqu'il est dans la position intermédiaire ou la position d'engagement. 10 15
6. Dispositif de régulation de mouvement d'une cabine pour appareil ascenseur selon la revendication 2, dans lequel l'élément stationnaire (21) est fixé à l'intérieur de la gaine, et dans lequel l'élément mobile (23) est monté sur la cabine (22), le premier interrupteur (26) étant monté sur la cabine (22) et le second interrupteur (27) étant monté sur l'élément mobile (23). 20 25
7. Appareil ascenseur comprenant :
 - une cabine (22) qui est élevée et abaissée dans une gaine ;
 - un dispositif d'entraînement (29) pour élever et abaisser la cabine (22) ;
 - un élément stationnaire (21) fixé à l'un de l'intérieur de la gaine et de la cabine (22) et ayant une partie d'engagement latérale stationnaire (21a) ;
 - un élément mobile (23) qui a une partie d'engagement latérale mobile (23a) devant entrer en prise avec la partie d'engagement latérale stationnaire (21a), qui est prévu dans l'autre de l'intérieur de la gaine et de la cabine (22), et qui peut être déplacé entre une position de logement et une position d'engagement où la partie d'engagement latérale mobile (23a) entre en prise avec la partie d'engagement latérale stationnaire (21a) ;
 - un dispositif d'interrupteur (28) pour distinguer et détecter dans laquelle des trois positions : la position de logement, la position d'engagement et une position intermédiaire entre la position de logement et la position d'engagement, l'élément mobile (23) est placé ; et
 - un dispositif de commande (30) qui commande le dispositif d'entraînement (29) en commutant sélectivement entre une pluralité de modes de fonctionnement comprenant un mode normal et un mode de maintenance sur cabine et auquel un signal en provenance du dispositif d'interrupteur (28) est fourni,

dans lequel le mode de fonctionnement est le mode de maintenance sur cabine, le dispositif de commande (30) permet le fonctionnement de la cabine (22) lorsqu'il est détecté que l'élément mobile (23) se trouve dans la position de logement, et interdit le fonctionnement de la cabine (22) lorsqu'il est détecté que l'élément mobile (23) se trouve dans la position intermédiaire.

8. Appareil ascenseur selon la revendication 7, dans lequel lorsque le mode de fonctionnement est le mode normal, le dispositif de commande (30) interdit le fonctionnement de la cabine (22) lorsqu'il est détecté que l'élément mobile (23) n'est pas dans la position de logement. 15
9. Appareil ascenseur selon la revendication 7, dans lequel le dispositif d'entraînement (29) est équipé d'un dispositif de frein, et dans lequel le dispositif de commande (30) permet de fournir un signal de commande de libération pour le dispositif de frein seulement lorsque le mode de fonctionnement est le mode de maintenance sur cabine et qu'il est détecté que l'élément mobile (23) se trouve dans la position d'engagement. 25
10. Appareil ascenseur selon la revendication 7, dans lequel le dispositif d'interrupteur (28) a un premier interrupteur (26) qui est fermé lorsque l'élément mobile (23) se trouve dans la position de logement et ouvert lorsque l'élément mobile (23) se trouve dans la position intermédiaire ou la position d'engagement et un second interrupteur (27) qui est ouvert lorsque l'élément mobile (23) se trouve dans la position de logement ou la position intermédiaire et fermé lorsque l'élément mobile (23) se trouve dans la position d'engagement. 30 35
11. Appareil ascenseur selon la revendication 10, dans lequel, lorsqu'à la fois le premier et le second interrupteurs (27) sont fermés, le dispositif de commande (30) génère un signal de détection d'erreur pour le dispositif d'interrupteur (28). 40
12. Appareil ascenseur selon la revendication 10, dans lequel sont prévus sur la cabine (22) un interrupteur de fonctionnement sur cabine pour faire fonctionner la cabine (22) et un sectionneur de dérivation pour ouvrir et fermer un circuit de dérivation pour court-circuiter le premier interrupteur (26), et dans lequel, lorsque l'élément mobile (23) se trouve dans la position d'engagement, le dispositif de commande (30) permet de faire fonctionner la cabine (22) par l'intermédiaire du fonctionnement de l'interrupteur de fonctionnement sur cabine lorsque le circuit de dérivation est fermé par l'intermédiaire du fonctionnement du sectionneur de dérivation. 45 50 55

FIG. 1

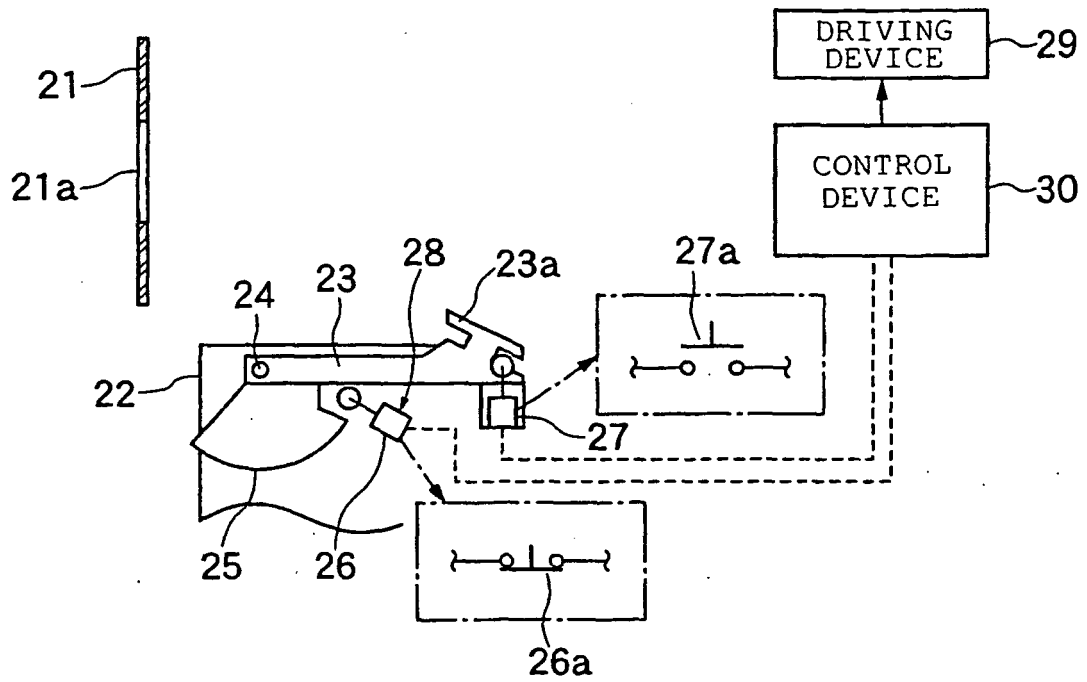


FIG. 2

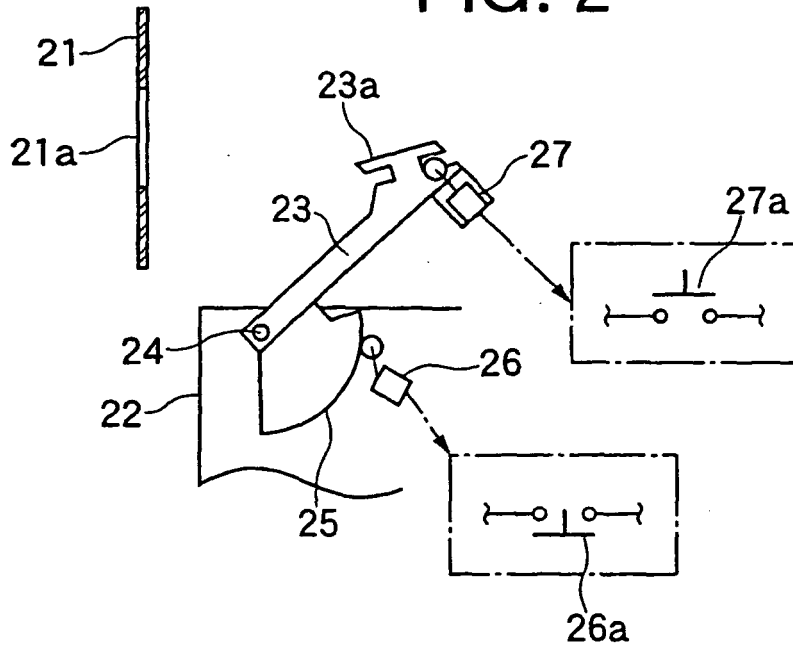


FIG. 3

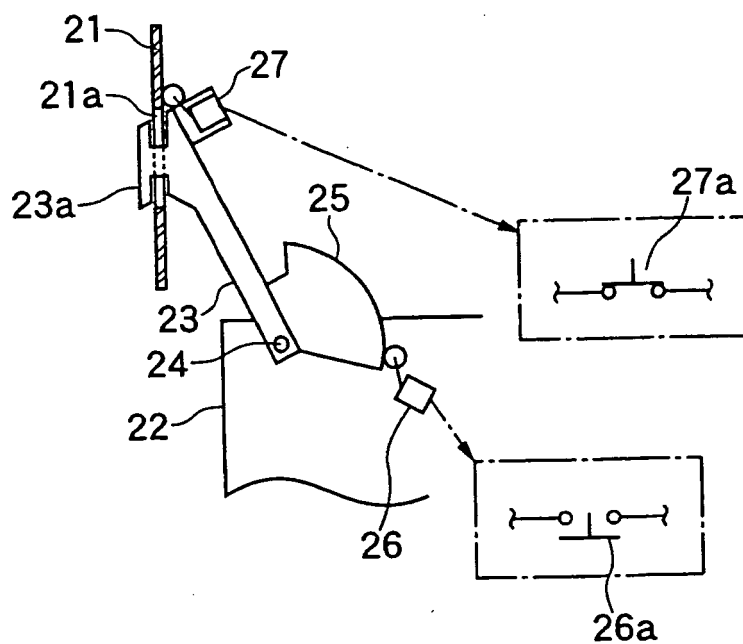


FIG. 4

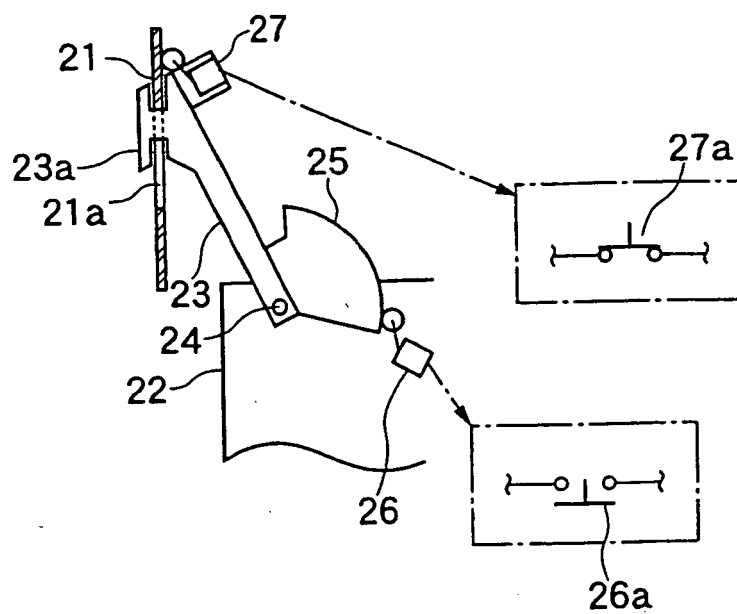


FIG. 5

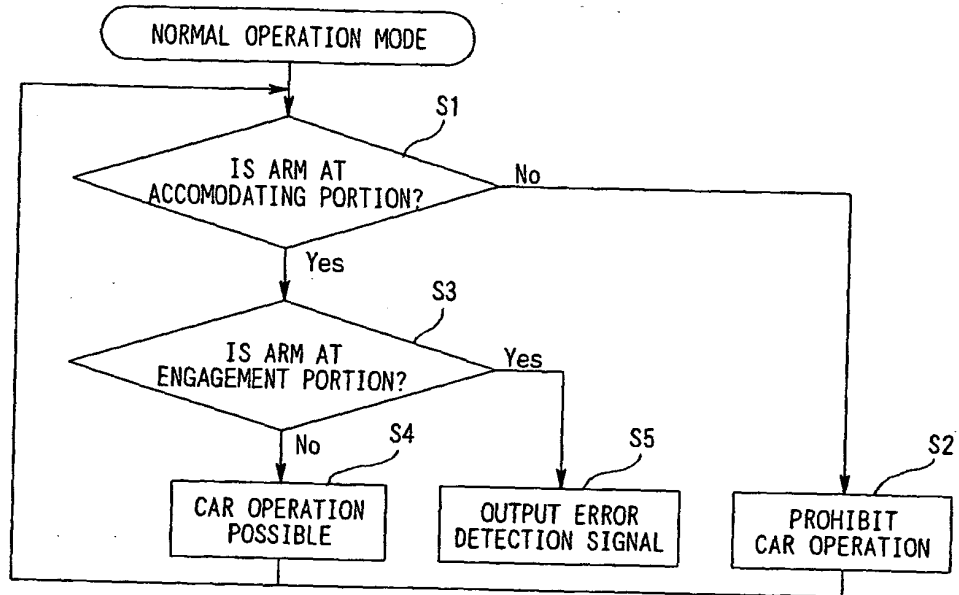


FIG. 6

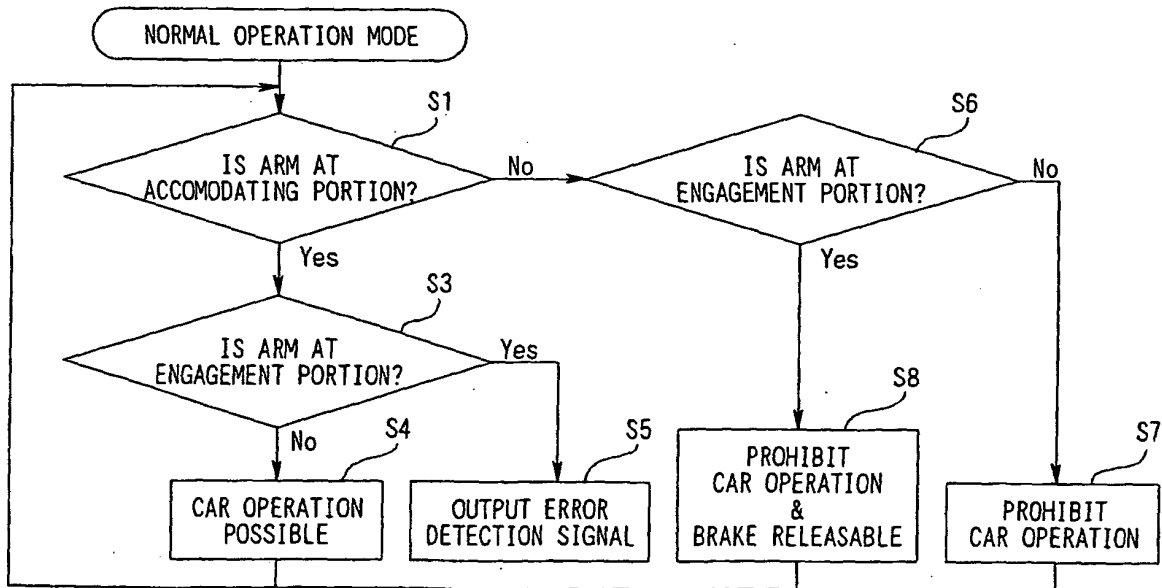


FIG. 7

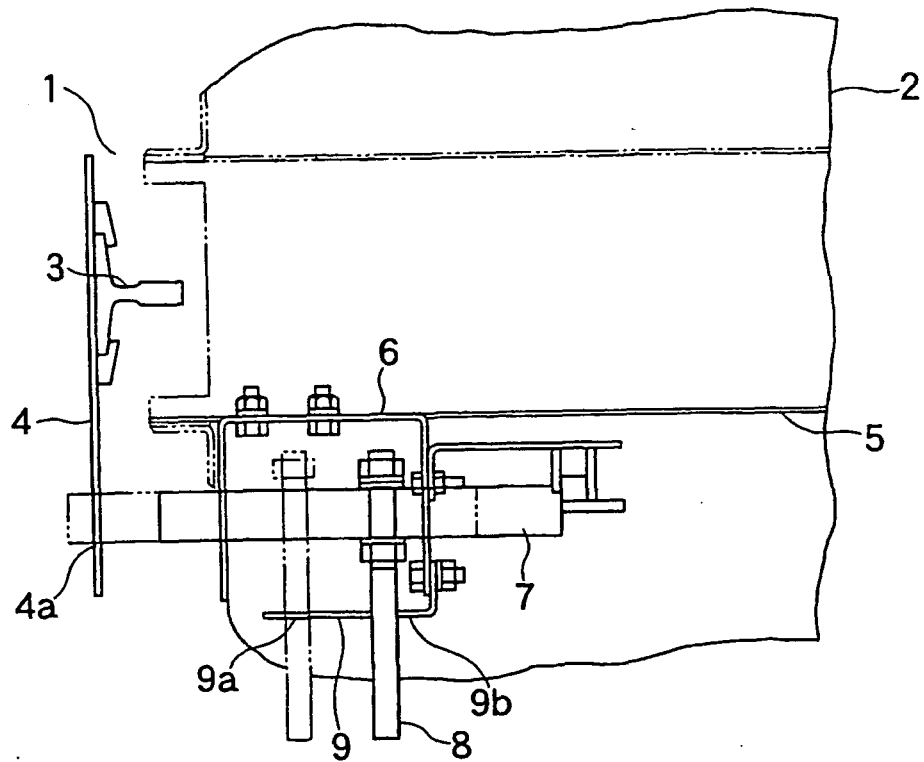


FIG. 8

