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Takenaka

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(54) **DOOR LATCH DEVICE**

(71) Applicant: **U-SHIN LTD.**, Nagano (JP)

(72) Inventor: **Hideto Takenaka**, Hiroshima (JP)

(73) Assignee: **U-SHIN LTD.**, Nagano (JP)

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E05B 85/24 (2014.01)

(52) **U.S. Cl.**
CPC ***E05B 85/26*** (2013.01); ***E05B 85/243*** (2013.01)

(58) **Field of Classification Search**
CPC E05B 85/00; E05B 85/20; E05B 85/24; E05B 85/243; E05B 85/26
USPC 70/144
See application file for complete search history.

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Primary Examiner — Nathan Cumar
(74) *Attorney, Agent, or Firm* — Chrisman Gallo Tochtrop LLC

(57) **ABSTRACT**

A door latch device includes a restricting portion that locks a spring member and restricts swinging of a link toward the unlock position by the spring member when the link swings toward the lock position against a biasing force of the spring member by the action of an inertial force equal to or greater than a set value. The link includes a restriction release portion that moves at least a part of the spring member to release the locking to that restricting portion and releases the swinging restriction of the link when the swinging is restricted by the restricting portion and the link is moved from the retreated position to the advanced position by receiving the rotational force of an open lever.

9 Claims, 16 Drawing Sheets

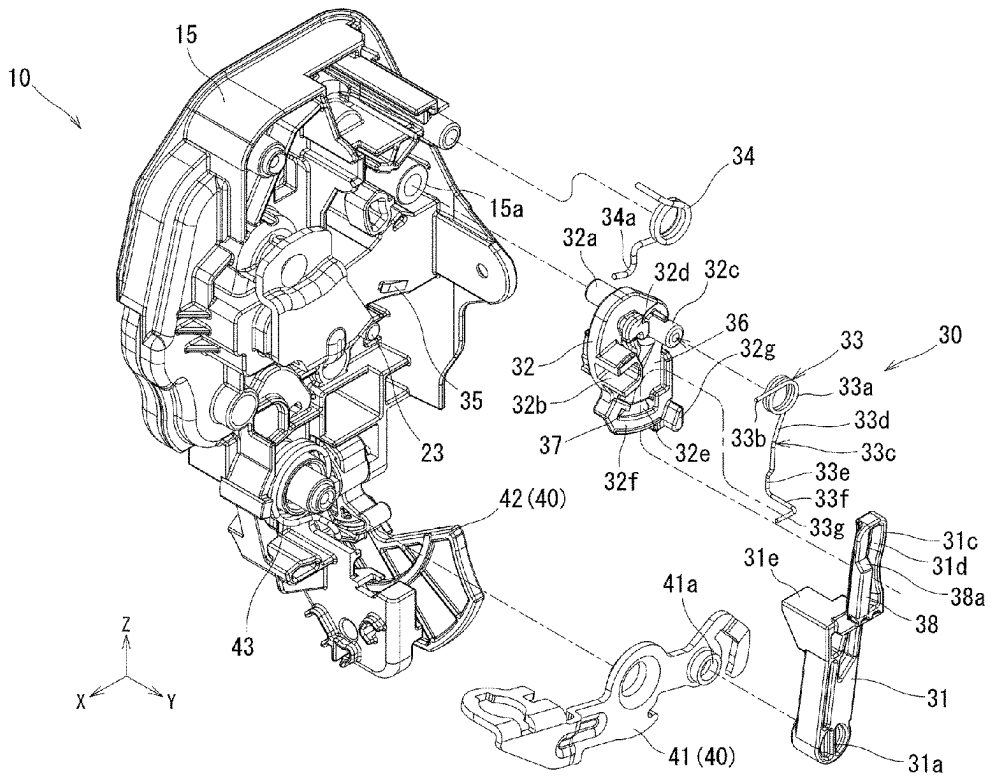


Fig. 1

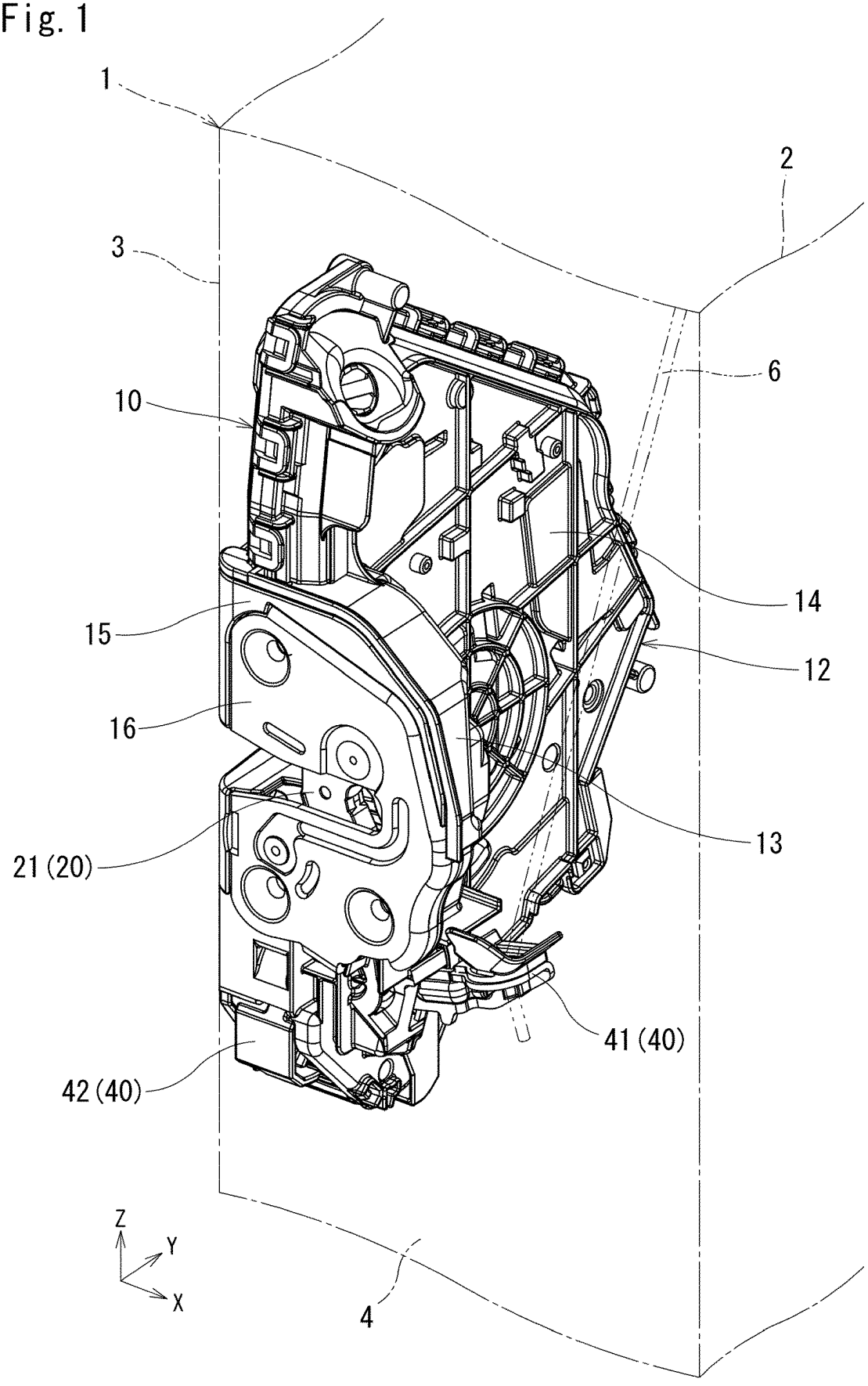


Fig. 2

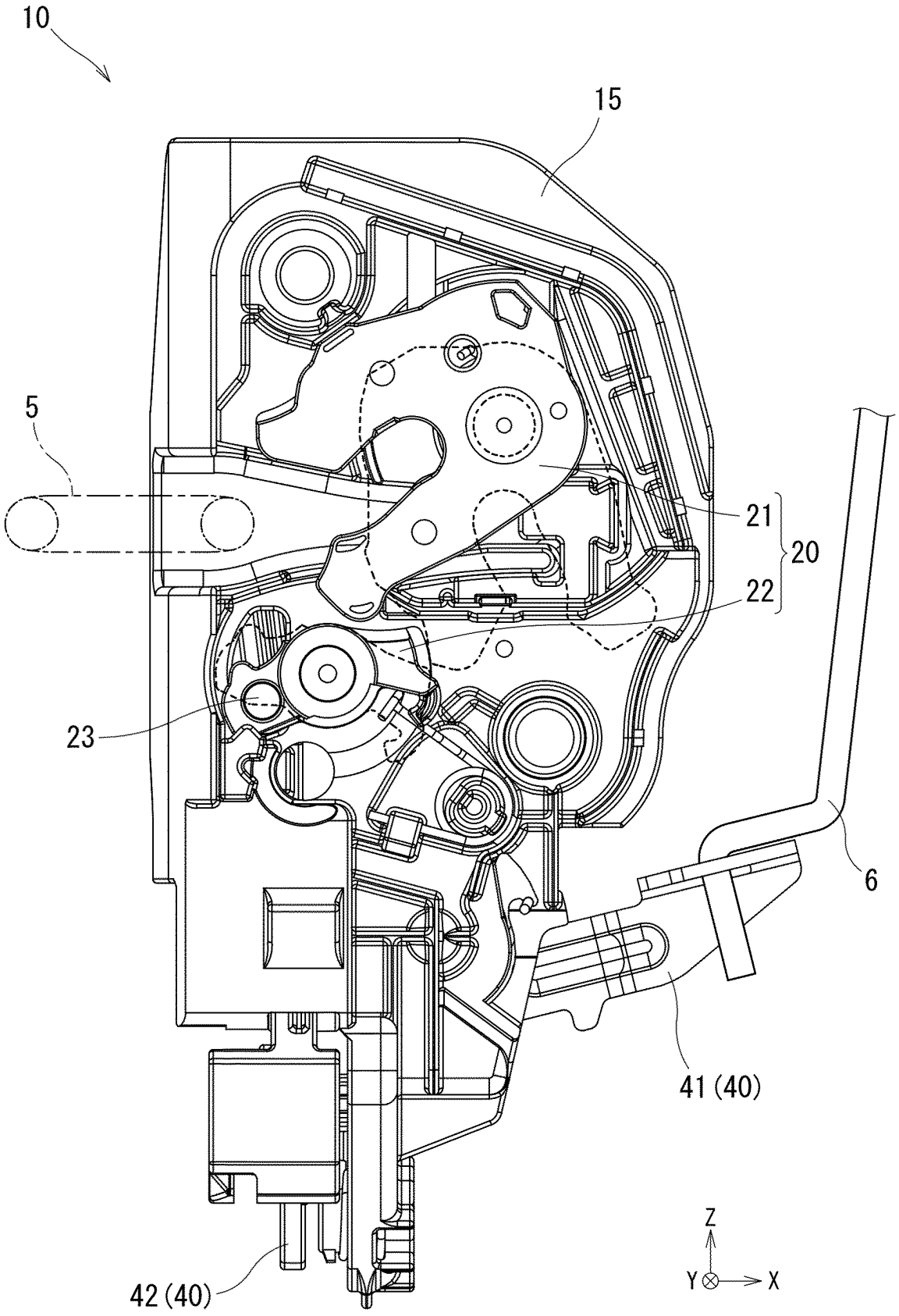
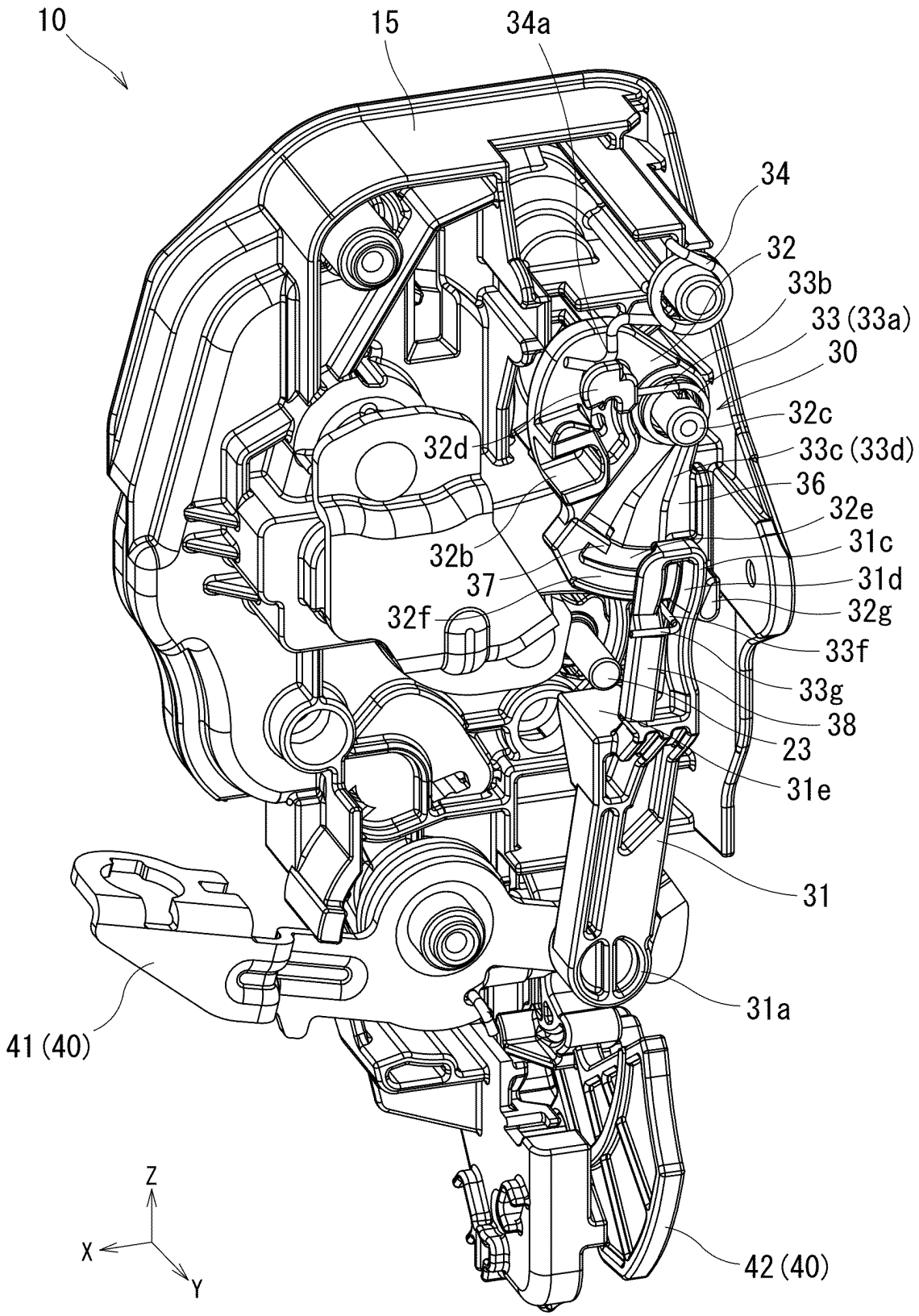


Fig. 3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15
34a
34
32
33b
33 (33a)
30
32c
32d
33c (33d)
36
32e
32b
31c
37
31d
32f
32g
33f
33g
38
23
31e
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31a
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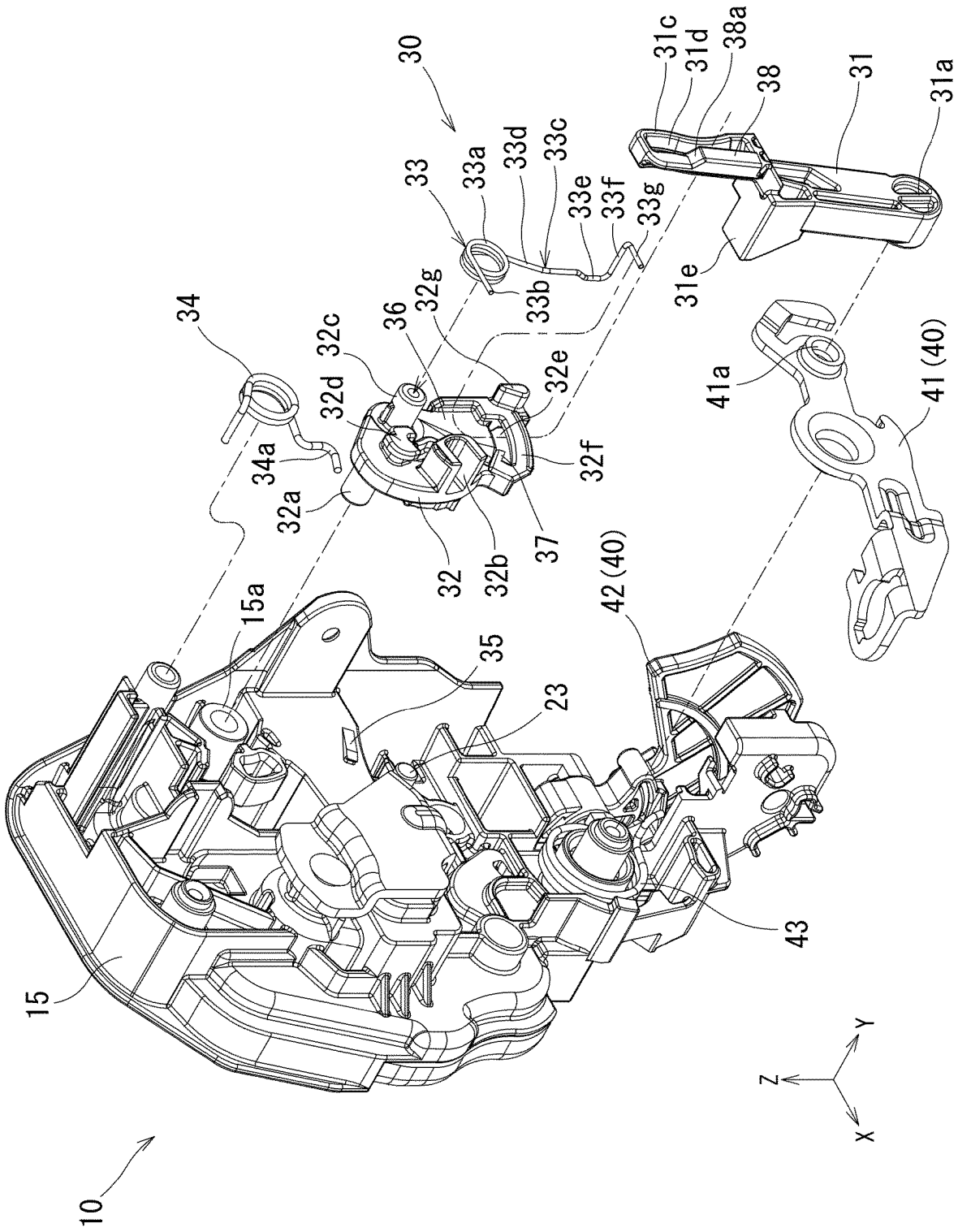
X
Y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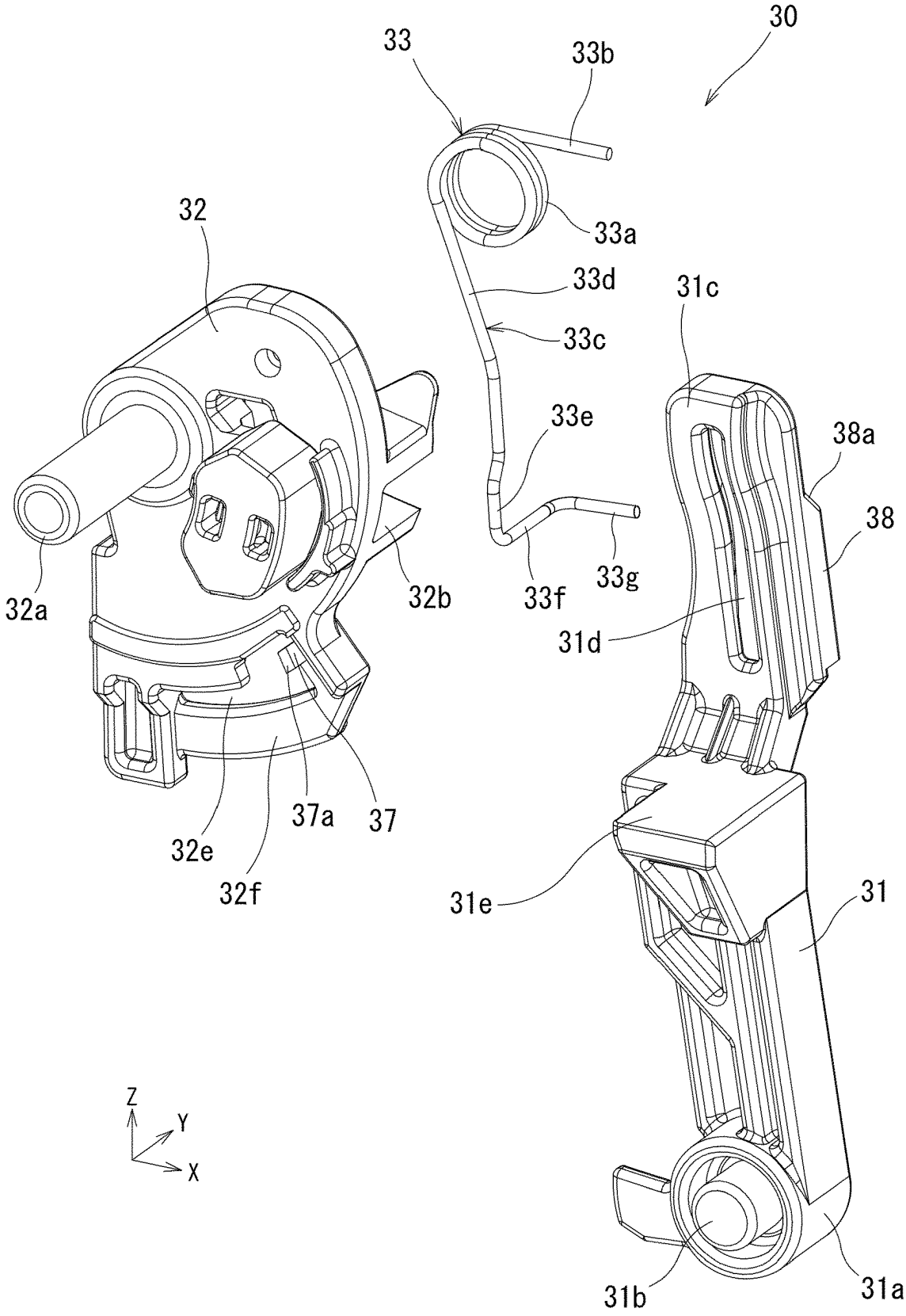
33
33a
33b
33c
33d
33e
33f
33g
34
34a
35
36
37
38
38a
41 (40)
41a
42 (40)
43
Y
Z
X

Fig. 4

Fig. 5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32a
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31e
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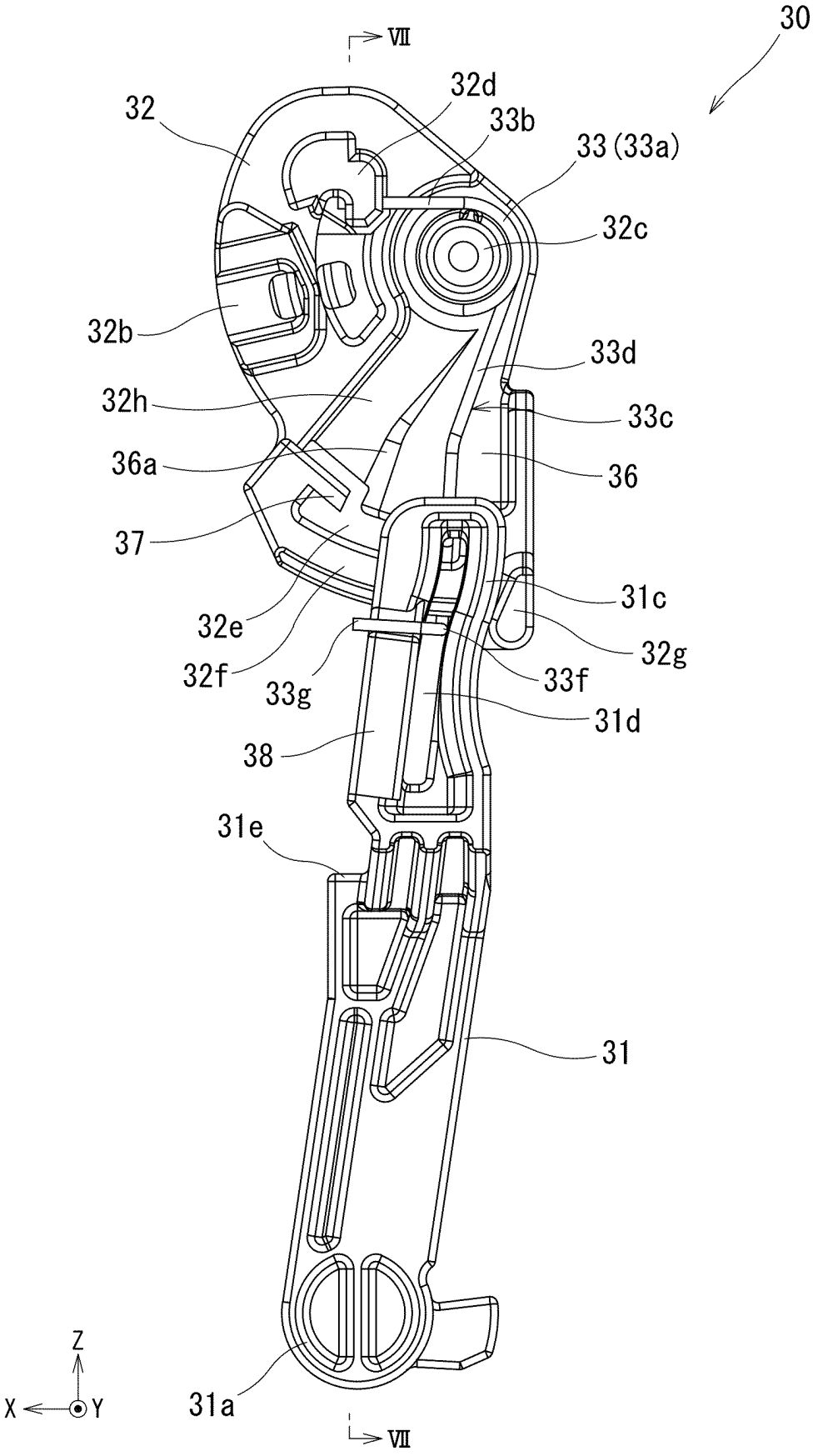
31b
31a
Z
Y
X

Fig. 6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VII
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32d
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32b
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33c
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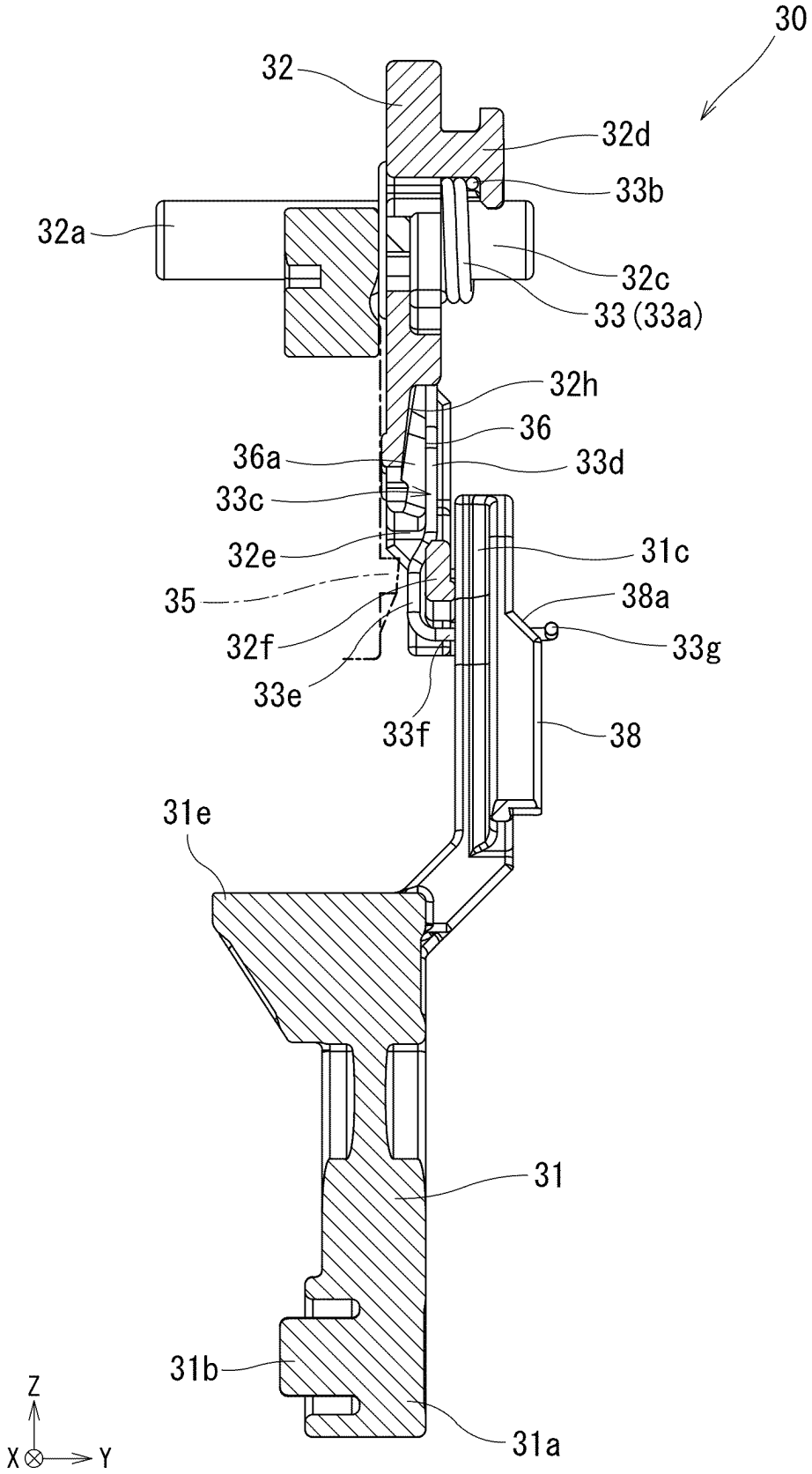
31
Z
X
Y
31a
VII

Fig. 7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32
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33 (33a)
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33c
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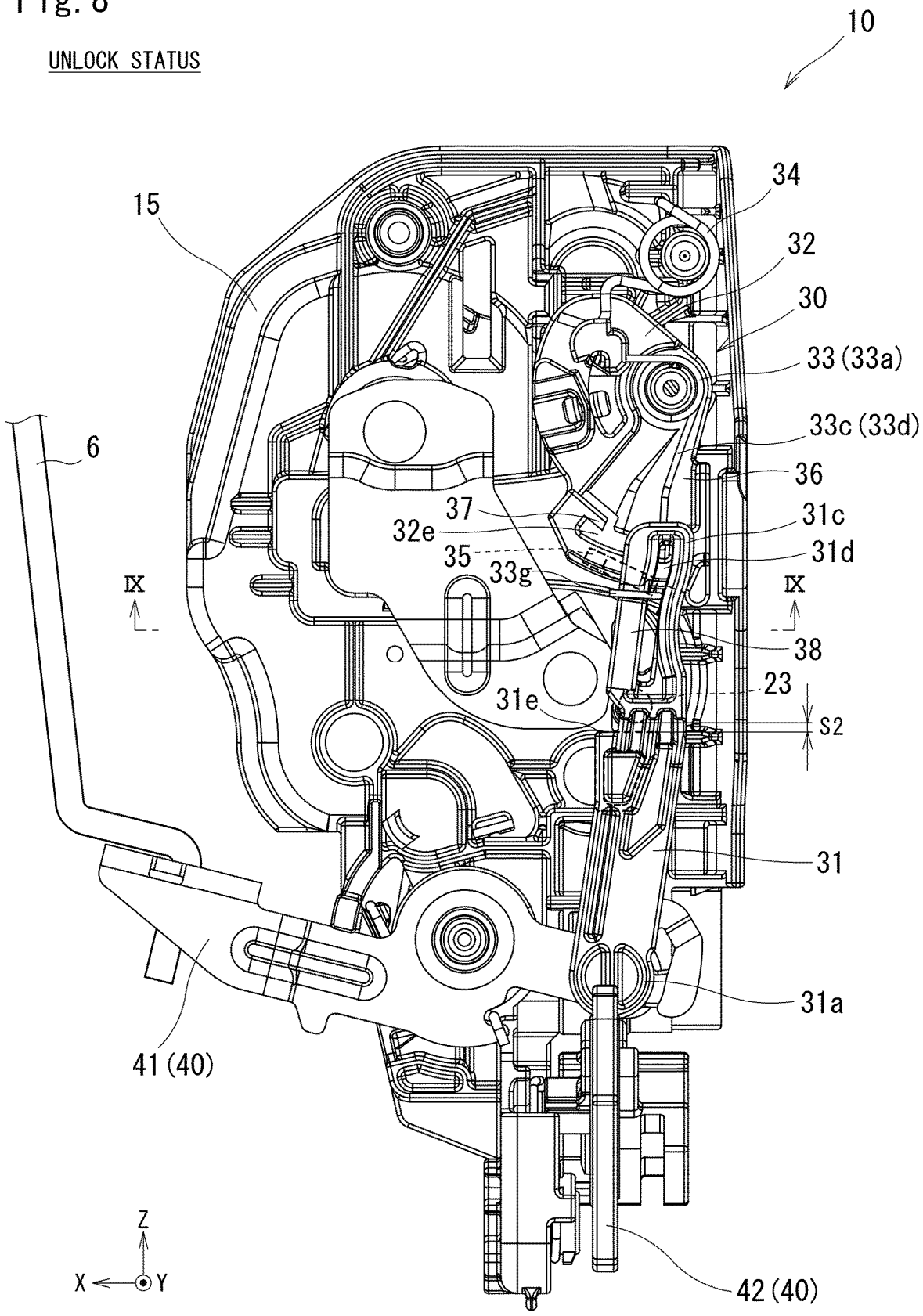
32f
33g
33e
33f
38
31e
31
31b
31a
Z
X
Y

Fig. 8


UNLOCK STATUS
10
15
34
32
30
33 (33a)
33c (33d)
6
36
37
31c
32e
35
31d
33g
IX
IX
38
23
31e
S2
31
31a
41 (40)
Z
X
Y
42 (40)

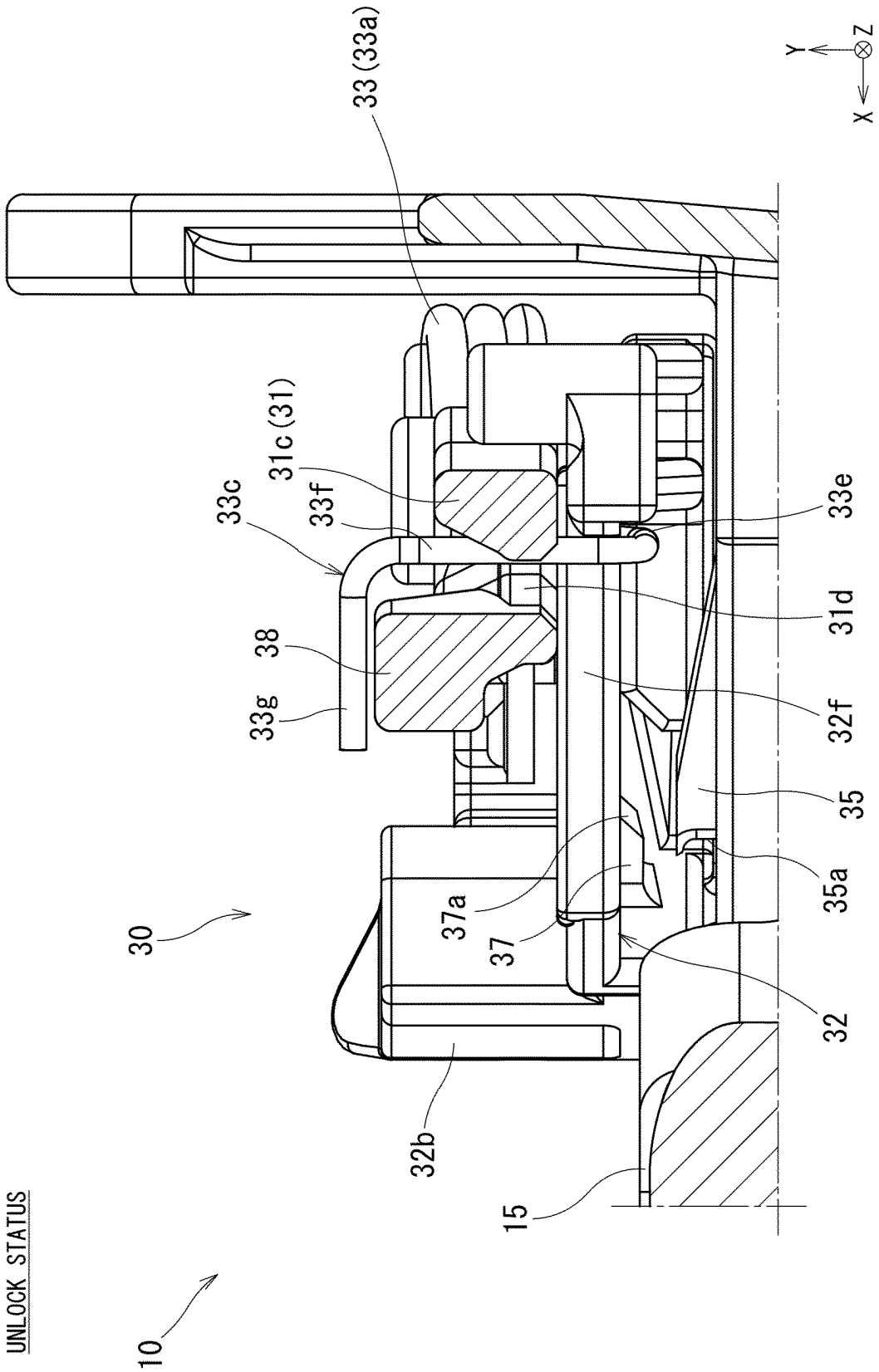

33 (33a)
Y
Z
X
31c (31)
33c
33f
33e
31d
38
33g
32f
35
35a
37a
37
32
30
32b
15
10
UNLOCK STATUS

Fig. 9

Fig. 10

OPEN OPERATION UNDER UNLOCK STATUS

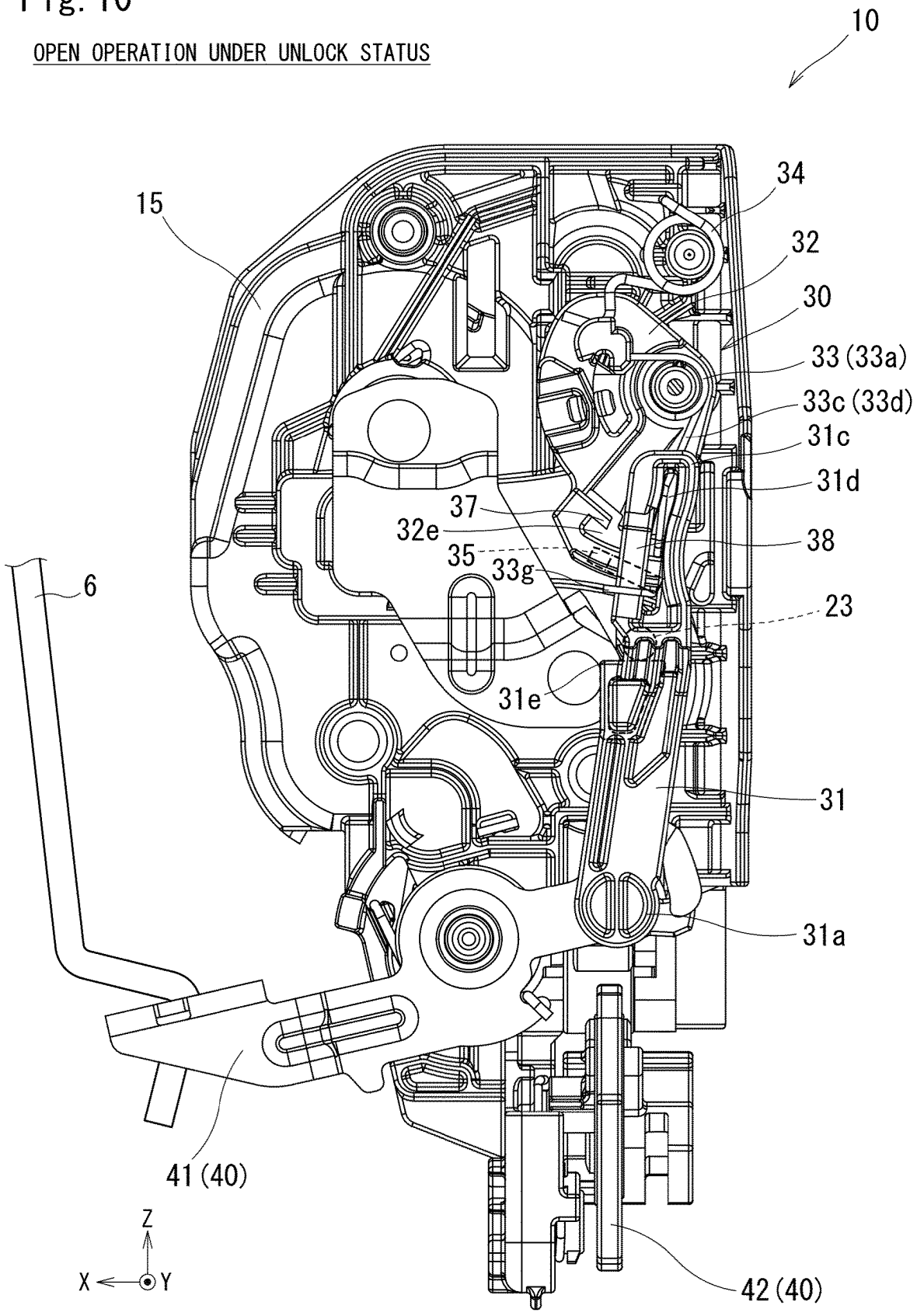
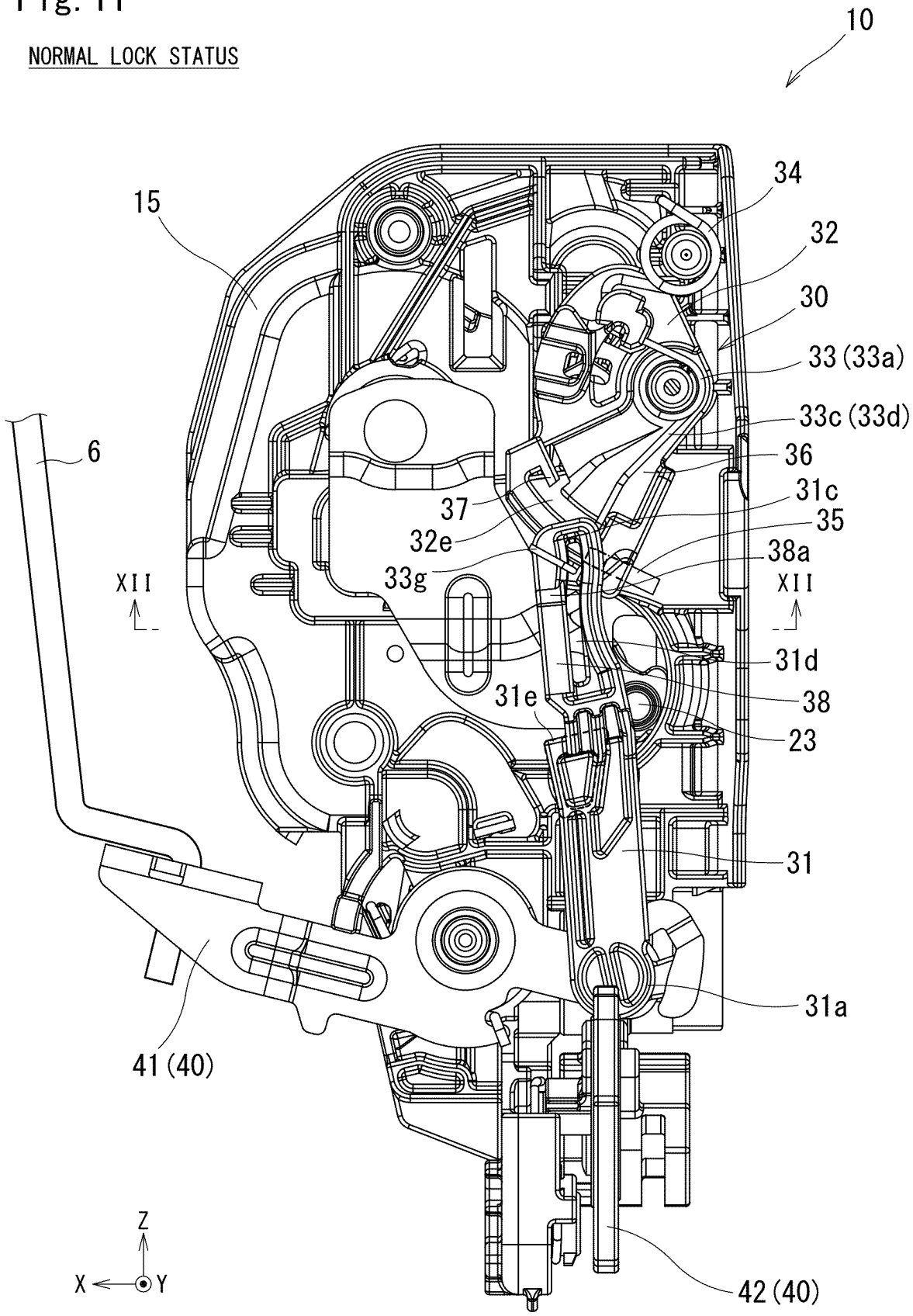
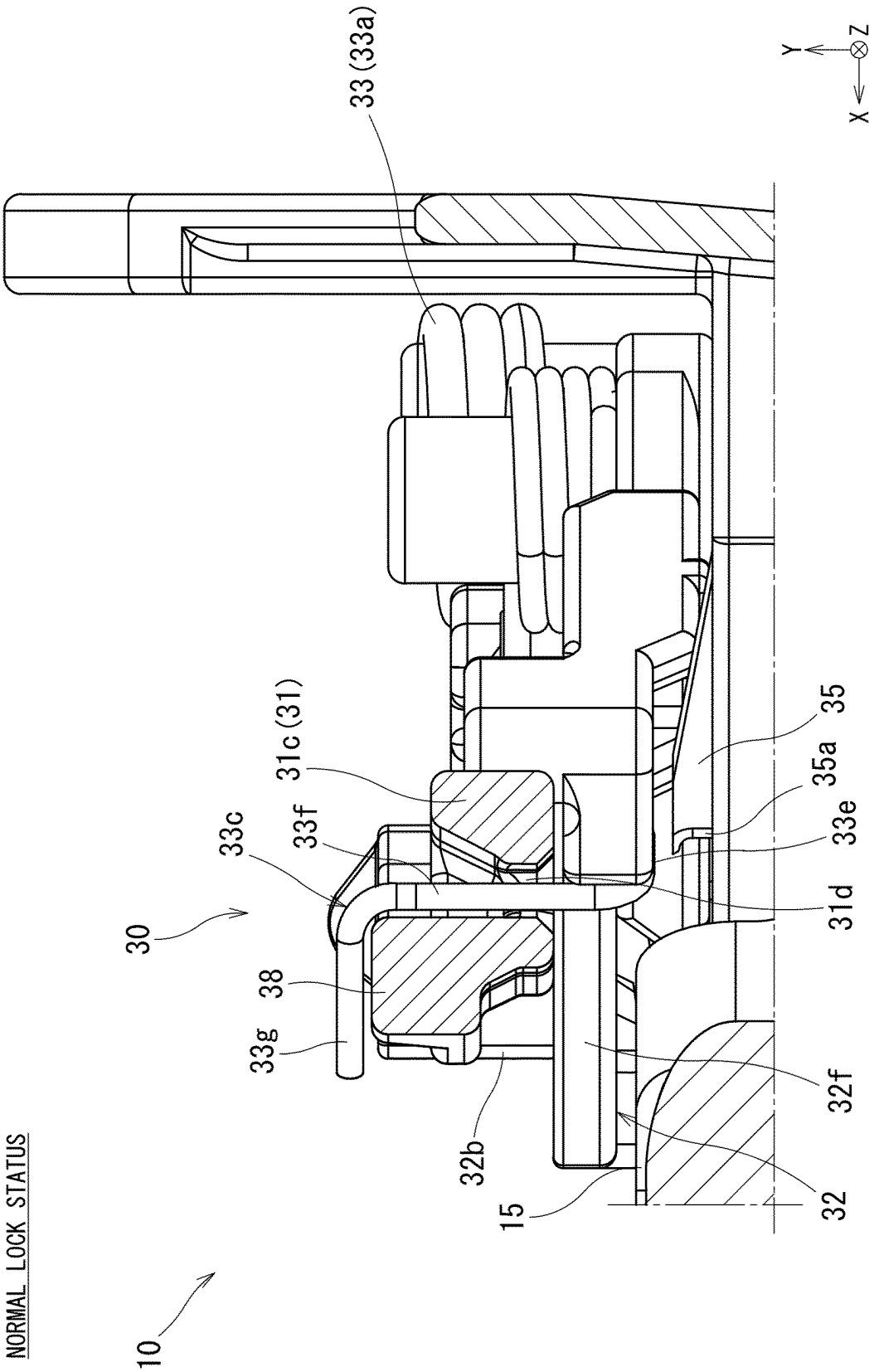


Fig. 11

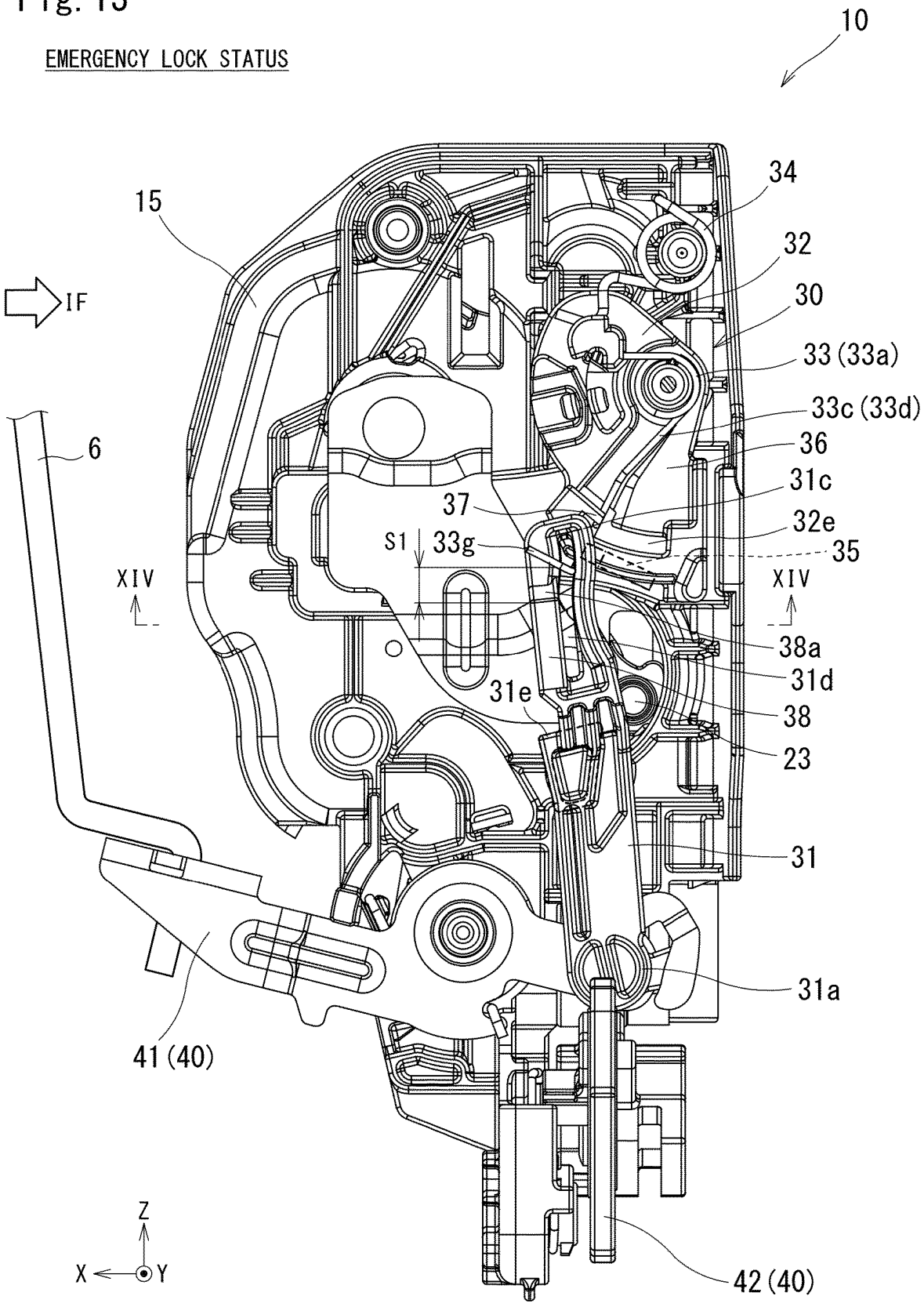

NORMAL LOCK STATUS
10
15
34
32
30
33 (33a)
33c (33d)
6
36
37
31c
35
32e
38a
33g
XII
XII
31d
31e
38
23
31
31a
41 (40)
42 (40)
Z
X
Y



NORMAL LOCK STATUS

Fig. 12

Fig. 13


EMERGENCY LOCK STATUS
10
15
34
32
30
33 (33a)
33c (33d)
36
31c
37
32e
S1
33g
35
IF
6
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31d
31e
38
23
31
31a
41 (40)
42 (40)
Z
X
Y

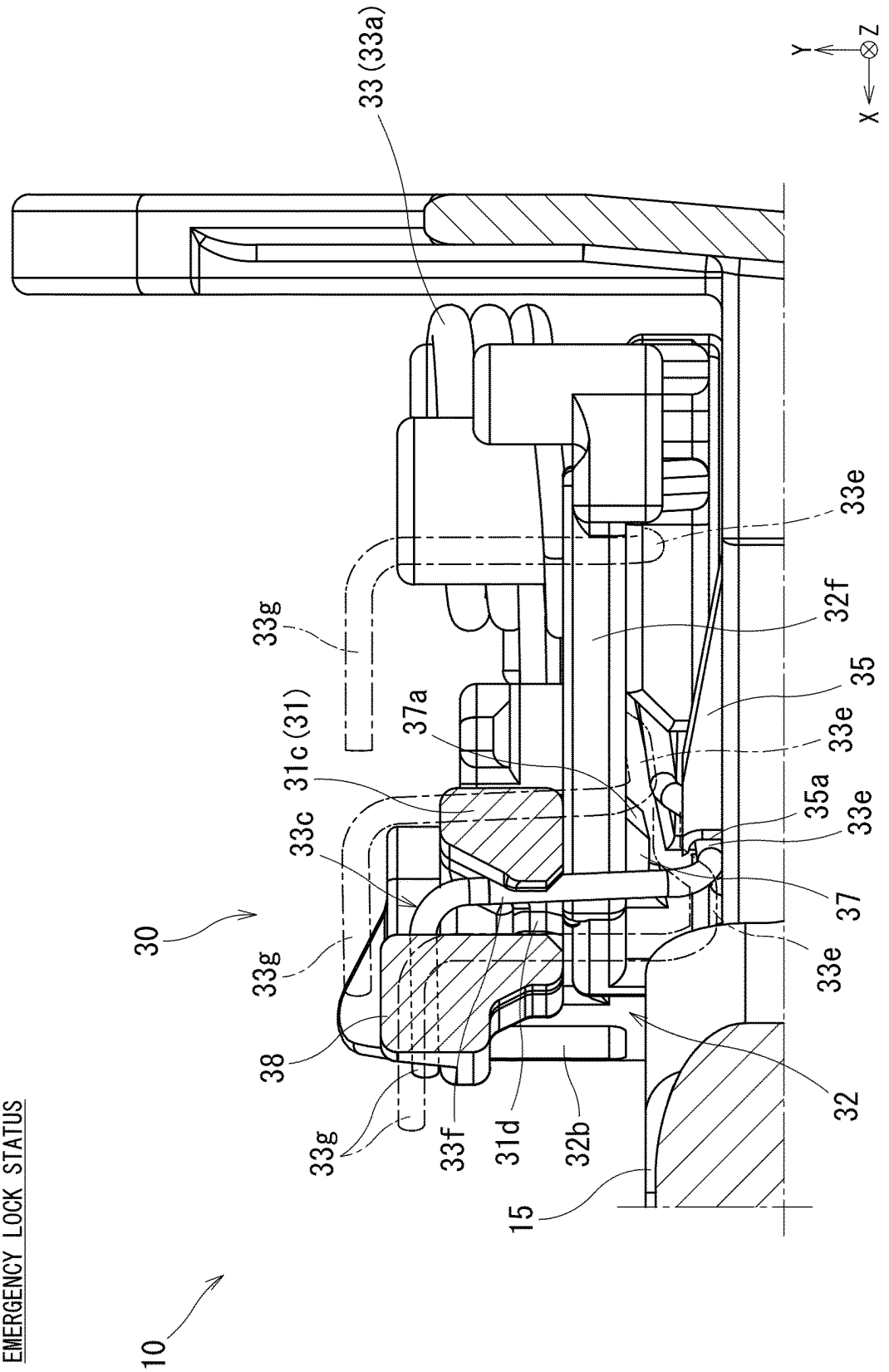


Fig. 14

EMERGENCY LOCK STATUS

Fig. 15

RELEASING OPERATION UNDER EMERGENCY LOCK STATUS

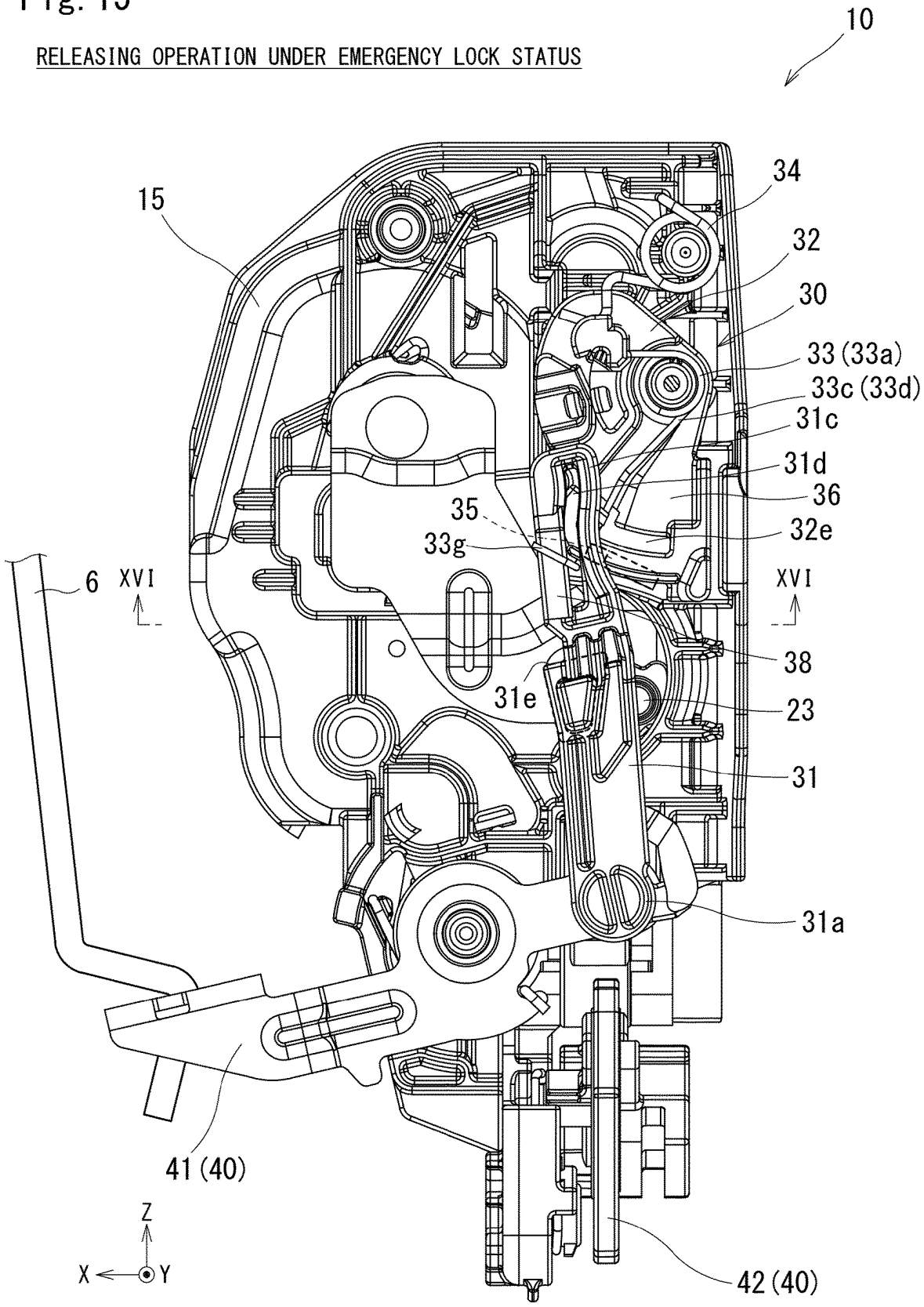
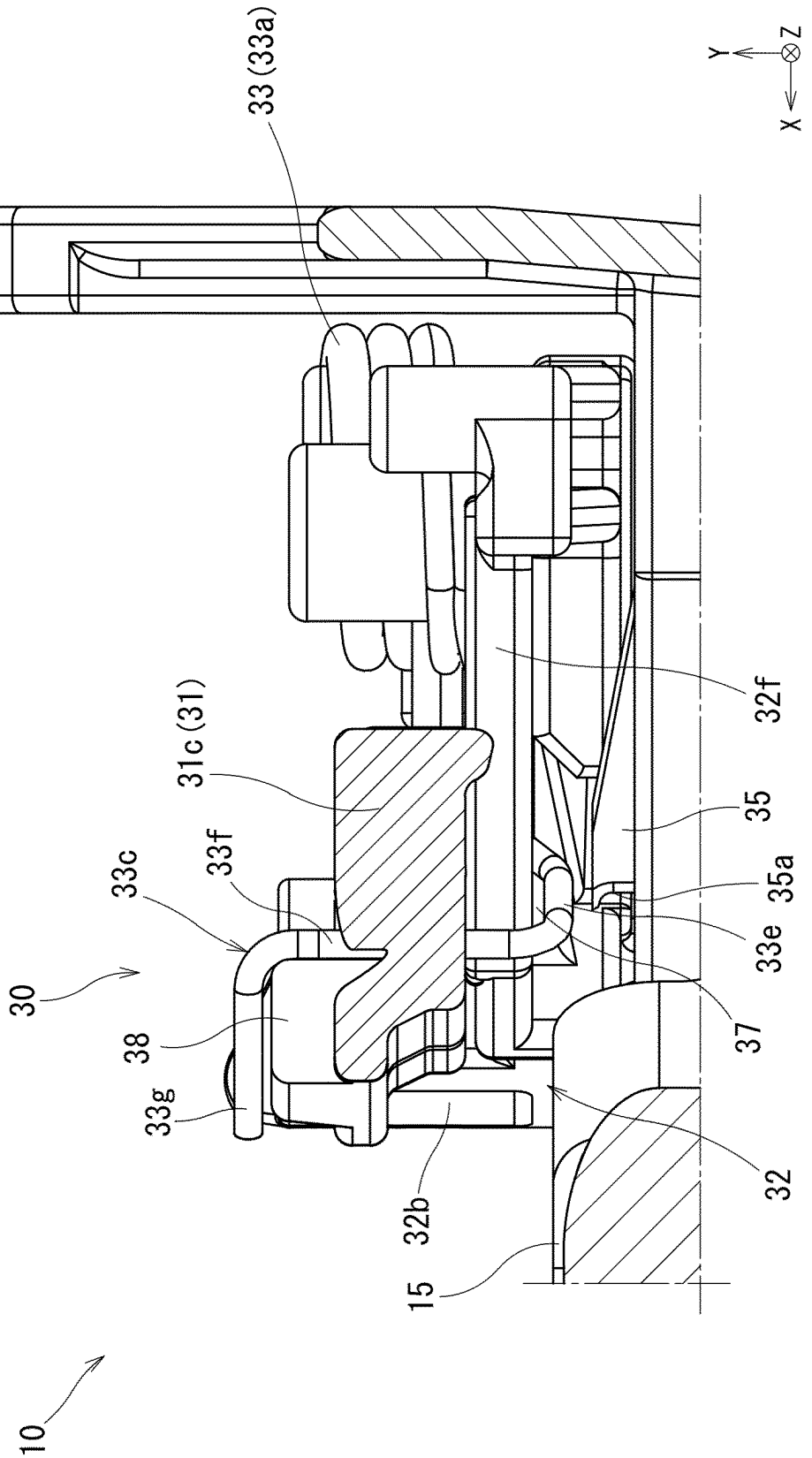


Fig. 16

RELEASING OPERATION UNDER EMERGENCY LOCK STATUS



DOOR LATCH DEVICE

BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates to a door latch device.

Description of Related Art

A door latch device that holds a door so as to be openable with respect to a vehicle body is attached to a door of a vehicle. A door latch device includes a latching mechanism that can be switched from a latch status to an unlatch status by an operation of a door handle, and a locking mechanism that can be switched between a lock status and an unlock status by an operation of a key or a knob. Switching from the latch status to the unlatch status is possible when the locking mechanism is in an unlock status and not possible when the locking mechanism is in a lock status. In the latch status, the claw lever holds the fork at a position where the fork is locked to the striker. In the unlatch status, the holding of the fork by the claw lever is released, and the fork is disengaged from the striker. The door can be opened by releasing the latch.

JP 2018-3305 A discloses a door latch device in which at the time of a collision, particularly a side collision, a locking mechanism is in an unlock status, and even when movement similar to the operation at the time of switching to an unlatch status occurs due to deformation of a door panel caused by a collision load input, a door is not opened. The locking mechanism of the door latch device includes a link for operating the latching mechanism, a lock lever that causes the link to swing between an unlock position and a lock position, and a spring member that attaches the link to the lock lever by engaging.

The link is made of a mass body movable to the lock position side against the biasing force of the spring member when the inertial force acts by the collision load input when the link is at the unlock position. The fence block in which the latching mechanism and the locking mechanism are arranged is provided with a restricting portion that locks the spring member that has moved integrally with the link by the action of the inertial force and restricts swinging of the link to the unlock position side. Accordingly, even when the link is moved to the lock position and held by the input of the collision load, and thereafter, the movement similar to the operation at the time of switching to the unlatch status occurs, the operation of the latching mechanism by the link is disabled, and the opening of the door can be prevented. In addition, the lock lever is provided with a restriction release portion in which the movement when the link at the unlock position is swung to the lock position releases the locking of the spring member with respect to the restricting portion and releases the swinging restriction of the link.

SUMMARY OF THE INVENTION

In the door latch device of JP 2018-3305 A, the door cannot be opened unless the locking mechanism is switched to the lock status by the operation of the key or the knob, the swinging restriction of the link by the restricting portion is released, and then the locking mechanism is further switched to the unlock status. That is, the door cannot be opened unless the switching operation of the locking mechanism is performed twice and then the door handle is operated to be opened. Therefore, in the door latch device of Patent Literature 1, there is room for improvement in operability at the time of releasing swinging restriction of a link by a restricting portion, to open a door.

An object of the present invention is to provide a door latch device capable of improving operability at the time of opening a door by releasing swinging restriction of a link by a restricting portion.

The present invention provides a door latch device including: a latching mechanism configured to engage with and disengage from a striker, the latching mechanism including an operation receiving portion that receives an operation for releasing an engagement with the striker; an open lever configured to rotate in conjunction with an operation of a door handle; a link configured to advance and retreat along a first direction between an advanced position moved to the operation receiving portion side by receiving a rotational force of the open lever and a retreated position separated from the operation receiving portion, and configured to swing along a second direction intersecting the first direction between an unlock position where a rotational force of the open lever is configured to be transmitted to the operation receiving portion and a lock position where a rotational force of the open lever is not configured to be transmitted to the operation receiving portion; a spring member configured to bias the link from the lock position side to the unlock position side and to allow swinging of the link from the unlock position to the lock position side when an inertial force equal to or greater than a set value acts on the link; and a restricting portion configured to lock the spring member when the link swings to the lock position side against the biasing force of the spring member due to an action of the inertial force equal to or greater than the set value, the restricting portion configured to restrict swinging of the link to the unlock position side by the spring member. The link includes a restriction release portion that moves at least a part of the spring member to release locking to the restricting portion and to release swinging restriction of the link when swinging is restricted by the restricting portion and the link is moved from the retreated position to the advanced position by receiving a rotational force of the open lever.

When the collision load is input, the link at the unlock position swings toward the lock position against the biasing force of the spring member, and the swinging of the link toward the unlock position is restricted by the locking of the spring member to the restriction protrusion. In this state, even when the link advances, the rotational force of the open lever cannot be transmitted to the operation receiving portion of the latching mechanism. Therefore, even when the deformation of the door panel causes a movement similar to the operation at the time of switching the latching mechanism to the unlatch status, the opening of the door can be prevented.

When the swinging of the link is restricted by the restricting portion, and when the open lever is rotated by the operation of the door handle, the link is moved from the retreated position to the advanced position, and the restriction release portion of the link moves at least a part of the spring member. Accordingly, the locking between the spring member and the restricting portion can be released, and the swinging restriction of the link by the restricting portion can be released. Therefore, the link retreats to the retreated position and swings to the unlock position by the biasing force of the spring member. Therefore, when the operation of the door handle is stopped and the door handle is operated again, the link at the retreated position moves to the advanced position through the open lever, the operation

receiving portion of the latching mechanism is operated, and the engagement of the striker can be released.

As described above, since the swinging restriction of the link can be released by the first round of operation of the door handle, and the door can be opened by the second round of operation of the door handle, the operability when the door is opened can be improved. Moreover, since the restriction release operation of the link is the same operation of the door handle as when the door is opened, inconvenience such as an operation error and an erroneous operation does not occur.

In the present invention, it is possible to improve operability at the time of releasing swinging restriction of a link by a restricting portion, to open a door.

BRIEF DESCRIPTION OF THE DRAWINGS

The foregoing and the other features of the present invention will become apparent from the following description and drawings of an illustrative embodiment of the invention in which:

FIG. **1** is a perspective view of a door latch device assembled to a door;

FIG. **2** is a front view of a latching mechanism;

FIG. **3** is a perspective view of a locking mechanism in an unlock status;

FIG. **4** is an exploded perspective view of the locking mechanism;

FIG. **5** is an exploded perspective view of a lock lever, a return spring, and a link;

FIG. **6** is a front view of the lock lever, the return spring, and the link;

FIG. **7** is a cross-sectional view taken along line VII-VII in FIG. **6**;

FIG. **8** is a front view of the locking mechanism in the unlock status;

FIG. **9** is a cross-sectional view taken along line IX-IX in FIG. **8**;

FIG. **10** is a front view of the locking mechanism in which an outer lever is operated in an unlock status;

FIG. **11** is a front view of the locking mechanism in a normal lock status;

FIG. **12** is a cross-sectional view taken along line XII-XII in FIG. **11**;

FIG. **13** is a front view of the locking mechanism in an emergency lock status;

FIG. **14** is a cross-sectional view taken along line XIV-XIV in FIG. **13**;

FIG. **15** is a front view of the locking mechanism in an emergency unlocked operation state; and

FIG. **16** is a cross-sectional view taken along line XVI-XVI in FIG. **15**.

DETAILED DESCRIPTION OF EMBODIMENTS

Hereinafter, a preferred embodiment of the present invention will be described with reference to accompanying drawings.

The X direction in the accompanying drawings is a vehicle width direction, a direction indicated by an arrow is outward, and a direction opposite to the arrow is inward. The Y direction is a vehicle length direction, a direction indicated by an arrow is frontward, and a direction opposite to the arrow is rearward. The Z direction is a vehicle height direction, a direction indicated by an arrow is upward, and a direction opposite to the arrow is downward.

Referring to FIG. **1**, a door latch device **10** according to an embodiment of the present invention is disposed in a door **1** of a vehicle, and holds the door **1** in a closed state with respect to a vehicle body (not shown). The door latch device **10** can be switched between an unlock status in which the door **1** can be opened and a lock status in which the door **1** cannot be opened, with respect to the vehicle body. In the unlock status, the door **1** can be opened by operating a door handle (not shown), and in the lock status, the door **1** cannot be opened even when the door handle is operated.

The door **1** includes an outer panel **2** extending along the YZ plane, an inner panel **3** positioned inward in the vehicle width direction of the outer panel **2**, and an end panel **4** connected to a rear end in the vehicle length direction of each of the outer panel **2** and the inner panel **3** and extending along the XZ plane. The outer panel **2**, the inner panel **3**, and the end panel **4** define a closed space in which the door latch device **10** is disposed.

The door latch device **10** includes an L-shaped housing **12** as viewed in the vehicle height direction. Referring to FIGS. **2** and **3**, the door latch device **10** includes a latching mechanism **20**, a locking mechanism **30**, an opening mechanism **40**, and an actuation mechanism (not shown).

Referring to FIGS. **2** and **3**, the latching mechanism **20**, the locking mechanism **30**, and the opening mechanism **40** are all arranged in the fence block **15** as a base member, and are housed in the first housing portion **13** arranged along the end panel **4** in the housing **12** shown in FIG. **1**. Referring to FIG. **1**, the rear end in the vehicle length direction of the fence block **15** is covered with a metal cover **16**. The actuation mechanism is housed in the second housing portion **14** disposed along the inner panel **3** in the housing **12** shown in FIG. **1**.

Referring to FIGS. **1** and **2**, the latching mechanism **20** includes a fork **21** and a claw **22**, and is disposed on the rear side in the vehicle length direction of the fence block **15**. The fork **21** is biased by a spring (not shown) from an engagement position indicated by a broken line in FIG. **2** toward an opening position indicated by a solid line in FIG. **2**, and can engage and disengage the striker **5** having a U shape attached to the vehicle body. The claw **22** is biased by a spring (not shown) from a non-locking position indicated by a broken line in FIG. **2** toward a locking position indicated by a solid line in FIG. **2**, and locks the fork **21** rotated to the engagement position. Referring to FIG. **3**, the claw **22** includes a rod-shaped operation receiving portion **23** that penetrates the fence block **15** and protrudes frontward in the vehicle length direction to receive an operation for releasing the engagement of the striker **5** by the fork **21**.

Subsequently, referring to FIG. **3**, the locking mechanism **30** includes a link **31**, a lock lever **32**, and a return spring (spring member) **33**, and is disposed on the front side in the vehicle length direction of the fence block **15**. The locking mechanism **30** can be switched between the unlock status shown in FIG. **8** and the lock status shown in FIG. **11**, and this switching is performed by changing the attitude of the link **31** through the return spring **33** by the rotation of the lock lever **32**.

In the unlock status shown in FIG. **8**, the link **31** receives the operating force of the opening mechanism **40** to move from the retreated position shown in FIG. **8** to the advanced position shown in FIG. **10**, and operates the operation receiving portion **23** of the latching mechanism **20**. Accordingly, the door **1** can be opened by releasing the locking of the fork **21** by the claw **22** and releasing the engagement of the striker **5** by the fork **21**. In the lock status shown in FIG. **11**, the link **31** receives the operating force of the opening

mechanism **40** to advance in the vehicle height direction from the retreated position shown in FIG. **8**, but is idled without abutting on the operation receiving portion **23** of the latching mechanism **20**. Accordingly, since the locking of the fork **21** by the claw **22** cannot be released, and the engagement of the striker **5** by the fork **21** cannot be released, the door **1** cannot be opened. In any of the unlock status and the lock status, the link **31** moves from the advanced position to the retreated position when the transmission of the operating force from the opening mechanism **40** is stopped.

Referring to FIG. **3**, the opening mechanism **40** includes an outer lever **41** and an inner lever **42**, which are open levers, and is rotatably disposed below the fence block **15**. Referring to FIGS. **8** and **10**, the outer lever **41** rotates in conjunction with the operation of an outer door handle (not shown) connected through the rod **6**, and transmits the operating force of the outer door handle to the link **31**. The inner lever **42** rotates in conjunction with operation of an inner door handle (not shown) connected through a wire (not shown), and transmits the operating force of the inner door handle to the link **31**.

The actuation mechanism includes a motor as a drive source and a transmission mechanism made of a plurality of rotating members, and switches the locking mechanism **30** between an unlock status shown in FIG. **8** and a lock status shown in FIG. **11**. The transmission mechanism is mechanically connected to the motor, a knob (not shown) disposed on the vehicle interior side of the door **1**, and a key cylinder (not shown) disposed on the vehicle exterior side of the door **1**, and is mechanically connected to the lock lever **32** of the locking mechanism **30**. By transmitting the driving force of the motor, the operating force of the knob, and the operating force of the key cylinder, the lock lever **32** rotates to the unlock rotational position shown in FIG. **8** and the lock rotational position shown in FIG. **11**.

In the door latch device **10** thus configured, a collision load IF (see FIG. **13**) is applied to the door **1** due to side collision or the like, and deformation of the outer panel **2** allows the rod **6** to move downward. On this occasion, when the locking mechanism **30** is in the unlock status shown in FIG. **8**, the latching mechanism **20** in the latch status is switched to the unlatch status, and the door **1** can be opened. Thus, in the present preferred embodiment, when the collision load IF is input, the locking mechanism **30** can be switched to the emergency lock (inertia lock) state shown in FIG. **13** in which the latching mechanism **20** in the latch status cannot be switched to the unlatch status, and unintended opening of the door **1** is prevented.

Hereinafter, the locking mechanism **30** will be specifically described.

Referring to FIGS. **3** and **4**, the locking mechanism **30** includes a link **31** disposed at the lower portion of the fence block **15**, a lock lever **32** disposed at the upper portion of the fence block **15**, and a return spring **33** disposed on the front side in the vehicle length direction of the lock lever **32**. Among them, the return spring **33** is made of a kick spring including a winding portion **33***a*, a first arm portion **33***b*, and a second arm portion **33***c*.

Referring to FIGS. **8**, **10**, and **11**, at a normal time when there is no input of the collision load IF, the link **31** is biased inward in the vehicle width direction being the unlock position side by the return spring **33** with respect to the lock lever **32**, and is held at the initial position. Referring to FIGS. **8** and **11**, since the rotational force of the lock lever **32** rotated by the actuation mechanism is transmitted through the return spring **33**, the link **31** swings along the vehicle width direction (second direction) between the unlock position shown in FIG. **8** and the lock position shown in FIG. **11**. Referring to FIGS. **8** and **10**, by receiving the operating force of the outer lever **41** and the inner lever **42**, the link **31** advances and retreats along the vehicle height direction (first direction) between the retreated position shown in FIG. **8** and the advanced position shown in FIG. **10**.

Referring to FIG. **13**, in an emergency when the collision load IF is input, the locking mechanism **30** in the unlock status shown in FIG. **8** is switched to an emergency lock status shown in FIG. **13**. Referring to FIG. **15**, in the emergency lock status, the link **31** can advance from the retreated position in the vehicle height direction by receiving the operating force of the outer lever **41**, but is idled without abutting on the operation receiving portion **23** of the latching mechanism **20**. Accordingly, since the locking of the fork **21** by the claw **22** cannot be released, and the engagement of the striker **5** by the fork **21** cannot be released, the door **1** cannot be opened.

In order to enable switching from the unlock status shown in FIG. **8** to the emergency lock status shown in FIG. **13** in an emergency, in the locking mechanism **30** of the present preferred embodiment, the link **31** includes a mass body, and the fence block **15** is provided with a restriction protrusion (restricting portion) **35**.

The link **31** made of a mass body is made of a material having a specific gravity larger than that of a resin being a molding material of another member, and has a configuration capable of continuing to stay at a current position when an inertial force acts by the input of the collision load IF. That is, the link **31** can relatively swing outward in the vehicle width direction with respect to the lock lever **32** from the unlock position shown in FIG. **8** toward the restriction position (lock position side) shown in FIG. **13** against the biasing force of the return spring **33** by the action of the inertial force equal to or greater than the set value. In other words, the return spring **33** allows the movement of the link **31** from the unlock position shown in FIG. **8** to the restriction position shown in FIG. **13** by the action of the inertial force equal to or greater than the set value.

The set value for allowing movement of the link **31** outward in the vehicle width direction is determined by the impact force applied to the door **1**, the mass of the link **31**, and the biasing force of the return spring **33**. When the set value is too large, it is difficult to move the link **31** outward in the vehicle width direction when an impact is applied. When the set value is too small, the link **31** moves outward in the vehicle width direction even by an impact when the door **1** is opened and closed. That is, it is not preferable whether the set value is too large or too small. Thus, in the present preferred embodiment, the mass of the link **31** and the biasing force of the return spring **33** are set so that the link **31** relatively moves outward in the vehicle width direction when such an impact force as deforms the outer panel **4** is applied to the door **1**.

When the link **31** swings from the unlock position shown in FIG. **8** to the restriction position shown in FIG. **13** by the input of the collision load IF, the restriction protrusion **35** locks the second arm portion **33***c* of the return spring **33** that moves in conjunction with the swinging (see FIG. **14**). Accordingly, the restriction protrusion **35** restricts the swinging of the link **31** toward the initial position (unlock position) through the return spring **33**.

In order to prevent switching to the emergency lock status shown in FIG. **13** at the normal time, the lock lever **32** is provided with a holding portion **36** that holds the second arm

portion **33***c* of the return spring **33** at a position where it cannot be locked to the restriction protrusion **35**. In addition, the lock lever **32** is provided with a guide piece (guide portion) **37** that guides the second arm portion **33***c* to the restriction protrusion **35** in an emergency. In addition, the link **31** is provided with a projecting strip portion (restriction release portion) **38** for releasing the emergency lock status shown in FIG. **13**.

Hereinafter, the link **31**, the lock lever **32**, the return spring **33**, the restriction protrusion **35**, the guide piece **37**, the holding portion **36**, and the projecting strip portion **38** will be specifically described.

The link **31** is a plate body extending in the vehicle height direction, and includes an input portion **31***a* connected to the outer lever **41**, a coupled portion **31***c* coupled to the return spring **33**, and an operation portion **31***e* for operating the operation receiving portion **23** of the claw **22**. That is, the link **31** has a lower end side connected to the outer lever **41** and has an upper end side connected to the lock lever **32** through the return spring **33**, whereby the link is disposed in the fence block **15**. In addition, the link **31** is provided with a projecting strip portion **38** for releasing the locking of the second arm portion **33***c* of the return spring **33** by the restriction protrusion **35** and releasing the swinging restriction of the link **31**.

Referring to FIGS. **4** and **5**, the input portion **31***a* includes a shaft portion **31***b* protruding toward the fence block **15**. The shaft portion **31***b* is inserted into the shaft hole **41***a* of the outer lever **41** biased from the operation position shown in FIG. **10** to the non-operation position shown in FIG. **8** by the spring **43**. Accordingly, the link **31** is rotatably supported by the outer lever **41**, can swing between the unlock position shown in FIG. **8** and the lock position shown in FIG. **11**, and can advance and retreat along the vehicle height direction by receiving the rotational force of the outer lever **41**. The input portion **31***a* is disposed at the upper portion of the inner lever **42**, and is pushed upward by the rotation of the inner lever **42**. That is, the link **31** can advance and retreat along the vehicle height direction by receiving the rotational force of the inner lever **42**.

Referring to FIGS. **3** and **5**, the coupled portion **31***c* is disposed to overlap the front side in the vehicle length direction of the lock lever **32**. The coupled portion **31***c* is provided with a guide groove **31***d* into which the return spring **33** is inserted. The guide groove **31***d* extends in the vehicle height direction being the advancing and retreating direction of the link **31**, and allows the relative movement of the link **31** with respect to the lock lever **32**. The width of the guide groove **31***d* is set to a range in which swinging of the link **31** interlocked with the rotation of the lock lever **32** through the return spring **33** and advancing and retreating of the link **31** are not hindered.

The operation portion **31***e* protrudes from between the input portion **31***a* and the coupled portion **31***c* toward the fence block **15**. Referring to FIGS. **8** and **10**, when the link **31** is at the unlock position and the retreated position, the operation portion **31***e* is positioned on the lower side in the vehicle height direction of the operation receiving portion **23** of the claw **22**, and can operate the operation receiving portion **23** upward by the movement of the link **31** to the advanced position. When the link **31** is at the lock position shown in FIG. **11** and when the link **31** is at the emergency lock position shown in FIG. **13**, the operation portion **31***e* is positioned at an interval outward in the vehicle width direction with respect to the operation receiving portion **23**, and even when the link **31** moves from the retreated position to the advanced position, the operation receiving portion **23** cannot be operated (abutted). That is, the attitude of the link **31** in which the operation receiving portion **23** is positioned on the movement track of the operation portion **31***e* is set to the unlock position, and the attitude of the link **31** in which the operation receiving portion **23** is not positioned on the movement track of the operation portion **31***e* is set to the lock position and the emergency lock position.

The projecting strip portion **38** is provided in a portion on the outer side in the vehicle width direction of the guide groove **31***d* in the coupled portion **31***c*. A specific structure of the projecting strip portion **38** will be described in detail below.

Referring to FIGS. **4** and **5**, the lock lever **32** is a plate body disposed in the upper portion of the fence block **15**, and is rotated between the unlock rotational position shown in FIG. **8** and the lock rotational position shown in FIG. **11** by the actuation mechanism. In conjunction with the rotation of the lock lever **32**, the link **31** rotates to the unlock position and the lock position through the return spring **33**. The lock lever **32** is held at the unlock rotational position and the lock rotational position by the action spring **34** disposed in the fence block **15**.

Referring to FIGS. **4** and **5**, the lock lever **32** includes a shaft portion **32***a* and a connection portion **32***b*. By inserting the shaft portion **32***a* into the bearing portion **15***a*, the lock lever **32** is rotatably supported by the fence block **15**. By the mechanical connection of the transmission mechanism to the connection portion **32***b*, the lock lever **32** is rotated to the unlock rotational position and the lock rotational position.

Referring to FIGS. **4** and **6**, the lock lever **32** includes a protruding portion **32***c*, a locking portion **32***d*, an insertion groove **32***e*, and a restriction frame **32***f*, and these attach the return spring **33**. The protruding portion **32***c* is provided to protrude frontward in the vehicle length direction coaxially with the shaft portion **32***a*, and is disposed to be fitted to the winding portion **33***a* of the return spring **33**. The locking portion **32***d* is provided at an interval outward in the vehicle width direction with respect to the protruding portion **32***c*, and locks the first arm portion **33***b* of the return spring **33**. In addition, the projecting portion **34***a* of the action spring **34** is brought into pressure contact with the locking portion **32***d*, whereby the lock lever **32** is held at the unlock rotational position and the lock rotational position. The insertion groove **32***e* is provided on the lower side being the link **31** side of the protruding portion **32***c* and extends in the vehicle width direction. The insertion groove **32***e* is inserted with the second arm portion **33***c* of the return spring **33** to allow movement of the second arm portion **33***c* in the vehicle width direction. The restriction frame **32***f* is provided below the insertion groove **32***e* and extends in the vehicle width direction along the insertion groove **32***e*. The second arm portion **33***c* is movably disposed on the rear side in the vehicle length direction of the restriction frame **32***f*, and the coupled portion **31***c* of the link **31** is slidably disposed on a surface on the front side in the vehicle length direction of the restriction frame **32***f*.

Referring to FIG. **6**, the lock lever **32** includes a stopper portion **32***g* protruding frontward in the vehicle length direction. The stopper portion **32***g* positions the link **31** biased by the second arm portion **33***c* of the return spring **33** at the initial position.

The lock lever **32** is further provided with a holding portion **36** that holds the second arm portion **33***c* at a position where the second arm portion **33***c* cannot be locked to the restriction protrusion **35**, and a guide piece **37** that

guides the second arm portion **33***c* to the restriction protrusion **35**. The specific structures of these will be described in detail below.

Referring to FIGS. **5** and **6**, the return spring **33** includes a winding portion **33***a*, a first arm portion **33***b*, and a second arm portion **33***c*. The return spring **33** is attached to a surface on the front side in the vehicle length direction of the lock lever **32**, and biases the link **31** inward in the vehicle width direction toward the stopper portion **32***g*.

The winding portion **33***a* is fitted to the protruding portion **32***c*, and the first arm portion **33***b* is locked to the locking portion **32***d*. The winding portion **33***a* is contracted by movement of the second arm portion **33***c* outward in the vehicle width direction, and moves the second arm portion **33***c* inward in the vehicle width direction by extension.

Referring to FIGS. **5** to **7**, the second arm portion **33***c* detours from the front side to the rear side in the vehicle length direction of the lock lever **32** through the insertion groove **32***e*, and protrudes from the outer edge of the restriction frame **31***f* toward the link **31**. Since the second arm portion **33***c* moves inward in the vehicle width direction by the extension of the winding portion **33***a*, the link **31** is biased to the initial position (unlock position side) with respect to the lock lever **32**.

The second arm portion **33***c* includes a main body **33***d*, a locked portion **33***e*, an insertion portion **33***f*, and a receiving portion **33***g*.

The locked portion **33***e* is a portion positioned on the rear side in the vehicle length direction of the restriction frame **32***f*, in the second arm portion **33***c*. The locked portion **33***e* is bent rearward in the vehicle length direction from the lower end of the main body **33***d* connected to the winding portion **33***a* toward the fence block **15**, and then bent downward in the vehicle height direction toward the link **31** to extend in the vehicle height direction. At the normal time shown in FIG. **6** in which the main body **33***d* is held by the holding portion **36** of the lock lever **32**, the locked portion **33***e* is positioned at an interval on the front side in the vehicle length direction (third direction) with respect to the restriction protrusion **35** shown by a one-dot chain line in FIG. **7**. Therefore, in a state where the second arm portion **33***c* is held by the holding portion **36**, the locked portion **33***e* cannot be locked to the restriction protrusion **35**. Referring to FIGS. **13** and **14**, when the second arm portion **33***c* moves outward in the vehicle width direction with respect to the lock lever **32**, the holding of the main body **33***d* by the holding portion **36** is released. Accordingly, the locked portion **33***e* is allowed to move rearward in the vehicle length direction with respect to the lock lever **32**, and can be locked to the restriction protrusion **35**.

Referring to FIGS. **5** to **7**, the insertion portion **33***f* is connected to the lower end of the locked portion **33***e* and protrudes frontward in the vehicle length direction. By inserting the insertion portion **33***f* into the guide groove **31***d*, the link **31** is allowed to advance and retreat along the vehicle height direction with respect to the lock lever **32** and the return spring **33**. By the insertion portion **33***f* pressing the groove wall of the guide groove **31***d*, the link **31** is biased inward in the vehicle width direction. By the link **31** swinging outward in the vehicle width direction with respect to the lock lever **32**, the second arm portion **33***c* moves outward in the vehicle width direction in conjunction with the lock lever **32**. The total length in the vehicle length direction of the insertion portion **33***f* is longer than the thickness in the vehicle length direction of the coupled portion **31***c* excluding the projecting strip portion **38**.

The receiving portion **33***g* is connected to the front end in the vehicle length direction of the insertion portion **33***f* and protrudes outward in the vehicle width direction. That is, the receiving portion **33***g* protrudes toward the side where the projecting strip portion **38** is provided, in the coupled portion **31***c* of the link **31**. The length in the vehicle width direction of the receiving portion **33***g* is longer than the width in the vehicle width direction of the projecting strip portion **38**. When the link **31** is at the restriction position and the retreated position shown in FIG. **13**, the receiving portion **33***g* is positioned at an interval above the projecting strip portion **38**. When the link **31** is at the advanced position shown in FIG. **15**, the receiving portion **33***g* is positioned on the projecting strip portion **38**, that is, on the front side in the vehicle length direction of the projecting strip portion **38**. As described above, the receiving portion **33***g* is positioned on the movement track of the projecting strip portion **38** when the link **31** moves from the retreated position to the advanced position.

Referring to FIGS. **9** and **12**, at the normal time shown in FIGS. **8** and **11** when the main body **33***d* is held by the holding portion **36**, the receiving portion **33***g* is positioned at an interval on the front side in the vehicle length direction of the projecting strip portion **38**. Therefore, even when the link **31** at the retreated position moves to the advanced position in the unlock status shown in FIG. **8** and the lock status shown in FIG. **11**, the restriction protrusion **35** does not interfere with the receiving portion **33***g*. On the other hand, referring to FIGS. **13** and **14**, in an emergency in which the holding of the main body **33***d* by the holding portion **36** is released, the second arm portion **33***c* moves rearward in the vehicle length direction, and the locked portion **33***e* is locked to the restriction protrusion **35**. In this emergency lock status, the receiving portion **33***g* is positioned on the rear side in the vehicle length direction with respect to the surface on the front side in the vehicle length direction of the projecting strip portion **38**, and is positioned at an interval with respect to the coupled portion **31***c*. Therefore, as shown in FIGS. **15** and **16**, when the link **31** in the emergency lock status is moved from the retreated position to the advanced position, the receiving portion **33***g* is moved frontward in the vehicle length direction by the projecting strip portion **38** so that the locked portion **33***e* is separated from the restriction protrusion **35**.

Referring to FIG. **4**, the restriction protrusion **35** is provided on a surface on the front side in the vehicle length direction facing the lock lever **32** in the fence block **15**. The restriction protrusion **35** is made of a projecting strip protruding frontward in the vehicle length direction and extending in the vehicle width direction. Referring to FIGS. **9** and **14**, the height in the vehicle length direction of the restriction protrusion **35** is set to be larger than the diameter of the locked portion **33***e* of the return spring **33**, and dimensionally set to secure a gap with the locked portion **33***e* at the normal time shown in FIGS. **8** and **11** when the main body **33***d* of the second arm portion **33***c* is held in the holding portion **36**. An end portion on the outer side in the vehicle width direction of the restriction protrusion **35** is provided with a locking portion **35***a* for locking the locked portion **33***e*. The locking portion **35***a* has a claw shape having a locking pawl protruding outward in the vehicle width direction at the front end in the vehicle length direction.

The locked portion **33***e* is locked to the locking portion **35***a* by the main body **33***d* of the second arm portion **33***c* held by the holding portion **36** moving outward in the vehicle width direction and moving rearward in the vehicle length direction. As shown in FIGS. **13** and **14**, the swing

angular position of the link **33** when the locked portion **33***e* is locked to the locking portion **35***a* is the restriction position of the link **31**. When the link **31** is at the restriction position, the operation portion **31***e* of the link **31** is positioned at an interval outward in the vehicle width direction with respect to the operation receiving portion **23** of the claw **22**, and cannot abut on the operation receiving portion **23** even when the link **31** moves from the retreated position to the advanced position. That is, the position of the locking portion **35***a* in the vehicle width direction is set to a place other than the unlock position and the lock position where the operation receiving portion **23** cannot be operated by the operation portion **31***e* even when the link **31** at the retreated position moves to the advanced position. However, the restriction position and the lock position may be set to the same place.

With reference to the angular position of the link **31** at the unlock position and the retreated position shown in FIG. **8**, the swing angle of the link **31** at the restriction position and the retreated position shown in FIG. **13** is smaller than the swing angle of the link **31** at the lock position and the retreated position shown in FIG. **11**. That is, at the normal time, the link **31** swings from the unlock position to the lock position through the restriction position by the lock lever **32** through the return spring **33**. In addition, the link **31** swings from the lock position to the unlock position through the restriction position by the lock lever **32** through the return spring **33**. On this occasion, the main body **33***d* of the second arm portion **33***c* held by the holding portion **36** cannot move rearward in the vehicle length direction, and the locked portion **33***e* positioned at an interval with the restriction protrusion **35** is not locked to the locking portion **35***a*. On the other hand, in an emergency in which the collision load IF is input, as shown in FIGS. **13** and **14**, since the second arm portion **33***c* moves outward in the vehicle width direction with respect to the lock lever **32** in conjunction with the swinging of the link **31** and the holding of the main body **33***d* by the holding portion **36** is released, the locked portion **33***e* is locked to the locking portion **35***a*.

Referring to FIGS. **6** and **7**, the holding portion **36** is provided, in the lock lever **32**, between the protruding portion **32***c* and the insertion groove **32***e* and adjacent to the stopper portion **32***g*. The holding portion **36** bulges frontward in the vehicle length direction from the base surface **32***h* of the lock lever **32**, and a surface on the front side in the vehicle length direction is a flat surface. The thickness of the holding portion **36** to the surface on the front side in the vehicle length direction of the holding portion **36** from the base surface **32***h* is larger than the thickness in the vehicle length direction of the restriction protrusion **35**. Accordingly, in a state where the main body **33***d* of the second arm portion **33***c* is held by the holding portion **36**, the locked portion **33***e* cannot be locked to the restriction protrusion **35**, and when the holding of the second arm portion **33***c* by the holding portion **36** is released, the locked portion **33***e* can be locked to the restriction protrusion **35**.

An end portion on the outside in the vehicle width direction of the holding portion **36** is provided with an inclined portion **36***a* inclined to approach the base surface **32***h* as it goes outward in the vehicle width direction. The holding portion **36** including the inclined portion **36***a* also functions as a restriction release portion that releases the locking of the locked portion **33***e* by the restriction protrusion **35** and releases the swinging restriction of the link **31**. Specifically, referring to FIG. **13**, in the emergency lock status, the second arm portion **33***c* is released from the holding by the holding portion **36**, and is positioned on the base surface **32***h*. In this state, when the lock lever **32** at the unlock rotational position rotates counterclockwise toward the lock rotational position, the inclined portion **36***a* enters the rear side in the vehicle length direction of the main body **33***d* of the second arm portion **33***c*. Accordingly, the second arm portion **33***c* is moved frontward in the vehicle length direction by the inclined portion **36***a* and then held by the holding portion **36**. As a result, since the locking of the locked portion **33***e* that moves integrally with the main body **33***d* and the restriction protrusion **35** is released, the swinging restriction of the link **31** can be released.

Referring to FIGS. **5** and **6**, the guide piece **37** is provided in a portion positioned on the outside in the vehicle width direction of the insertion groove **32***e* and protrudes inward in the vehicle width direction. The guide piece **37** is provided with an inclined portion **37***a* inclined toward the rear side in the vehicle length direction, that is, in a direction approaching the restriction protrusion **35**, as it goes from the inside to the outside in the vehicle width direction. When the second arm portion **33***c* of the return spring **33** moves outward in the vehicle width direction through the link **31** by the input of the collision load IF, the second arm portion **33***c* can be guided rearward in the vehicle length direction toward the restriction protrusion **35** by the inclined portion **37***a*. Therefore, the locked portion **33***e* can be reliably locked to the restriction protrusion **35** by the input of the collision load IF.

Referring to FIGS. **4** and **6**, the projecting strip portion **38** is provided on the outside in the vehicle width direction of the guide groove **31***d* of the link **31**. The projecting strip portion **38** is made of a protrusion protruding from the coupled portion **31***c* toward the front side in the vehicle length direction, that is, toward a direction away from the restriction protrusion **35**. When the link **31** is in the emergency lock status shown in FIG. **13**, by the movement of the link **31** from the retreated position to the advanced position due to the rotation of the outer lever **41** or the inner lever **42**, the projecting strip portion **38** releases the locking of the locked portion **33***e* by the restriction protrusion **35** and releases the swinging restriction of the link **31**.

Specifically, when the link **31** is at the restriction position and the retreated position shown in FIG. **13**, the projecting strip portion **38** is positioned below the receiving portion **33***g* of the return spring **33** at an interval. In addition, when the link **31** is at the advanced position shown in FIG. **15**, the projecting strip portion **38** is positioned between the lock lever **32** and the receiving portion **33***g*, that is, on the rear side in the vehicle length direction of the receiving portion **33***g*. The projecting strip portion **38** is provided with an inclined portion **38***a* inclined in a direction away from the restriction protrusion **35** as it goes from the upper side to the lower side in the vehicle height direction. That is, the inclined portion **38***a* is inclined in a direction away from the restriction protrusion **35** from the advanced position side toward the retreated position side.

The height in the vehicle length direction of the projecting strip portion **38** is equal to or larger than the height in the vehicle length direction of the restriction protrusion **35**. A gap smaller than the height of the projecting strip portion **38** is secured between the coupled portion **31***c* and the receiving portion **33***g* positioned above the projecting strip portion **38**. Accordingly, when the link **31** at the retreated position moves to the advanced position, the upper end of the inclined portion **38***a* enters the gap between the coupled portion **31***c* and the receiving portion **33***g*, the receiving portion **33***g* is moved frontward in the vehicle length direction in accordance with the inclination of the inclined

portion **38***a*, and the locked portion **33***e* can be separated from the restriction protrusion **35** in conjunction with the above to be released from locking.

Referring to FIG. **13**, when the locking mechanism **30** is in the emergency lock status and the link **31** is at the retreated position, the interval being the shortest distance between the surface on the outside in the vehicle length direction farthest from the restriction protrusion **35** in the projecting strip portion **38** and the receiving portion **33***g* is S1. Referring to FIG. **8**, when the locking mechanism **30** is in the unlock status and the link **31** is at the retreated position, the interval between the operation portion **31***e* of the link **31** and the operation receiving portion **23** of the claw **22** is S2. Referring to FIGS. **8** and **13**, the interval S1 between the projecting strip portion **38** and the receiving portion **33***g* is larger than the interval S2 between the operation portion **31***e* and the operation receiving portion **23**. That is, the first stroke (interval S1) for releasing the swinging restriction of the link **31** by the restriction protrusion **35** by the movement to the advanced position side of the link **31** at the restriction position is longer than the second stroke (interval S2) in which the link **31** abuts on the operation receiving portion **23** by the movement to the advanced position side of the link **31** at the unlock position. Accordingly, immediately after the swinging restriction of the link **31** is released by the operation of the outer lever **41** or the inner lever **42**, the operation receiving portion **23** is prevented from being continuously operated by the link **31** returned to the initial position (unlock position) by the biasing force of the return spring **33**.

In the locking mechanism **30**, since the main body **33***d* of the second arm portion **33***c* of the return spring **33** is held by the holding portion **36** at a normal time when the collision load IF is not input, the locked portion **33***e* cannot be locked to the restriction protrusion **35**. Therefore, the locked portion **33***e* and the restriction protrusion **35** do not hinder, by interference, the actuation of rotating the lock lever **32** by the actuation mechanism and switching the locking mechanism **30** between the unlock status shown in FIG. **8** and the lock status shown in FIG. **11**.

On the other hand, when the locking mechanism **30** is in the unlock status shown in FIG. **8** and the collision load IF is input, the link **31** moves from the unlock position to the lock position by the action of the inertial force, and the second arm portion **33***c* of the return spring **33** also moves outward in the vehicle width direction in conjunction with this movement. On this occasion, as shown in FIGS. **13** and **14**, since the second arm portion **33***c* is moved outward in the vehicle width direction along the insertion groove **32***e* and then guided rearward in the vehicle length direction by the guide piece **37**, the locked portion **33***e* can be reliably locked to the restriction protrusion **35**. Accordingly, the link **31** into which the insertion portion **33***f* is inserted is restricted in the swinging toward the unlock position. Therefore, even when the rod **6** is moved downward due to the deformation of the outer panel **2** and the link **31** at the retreated position is moved to the advanced position, the operation portion **31***e* cannot operate the operation receiving portion **23**. Therefore, unintended opening of the door **1** can be reliably prevented.

When the locking mechanism **30** is in the emergency lock status shown in FIG. **13**, and when the link **31** is moved to the advanced position through the inner lever **42** or the outer lever **41** by the operation of the inner door handle or the outer door handle, the projecting strip portion **38** moves the receiving portion **33***g* of the return spring **33** frontward in the vehicle length direction as shown in FIGS. **15** and **16**. Accordingly, since the locked portion **33***e* is also moved frontward in the vehicle length direction, the locking to the restriction protrusion **35** is released, and the swinging restriction of the link **31** by the restriction protrusion **35** is released. Therefore, the link **31** swings to the unlock position shown in FIG. **8**. As a result, the door **1** can be opened by stopping the operation of the inner door handle or the outer door handle, and performing the operation once again.

The door latch device **10** thus configured has the following features.

When the collision load IF is input, the link **31** at the unlock position swings toward the lock position against the biasing force of the return spring **33**, and the swinging of the link **31** toward the unlock position is restricted by the locking of the return spring **33** to the restriction protrusion **35**. In this emergency lock status, even when the link **31** at the retreated position advances, the rotational force of the outer lever **41** cannot be transmitted to the operation receiving portion **23** of the latching mechanism **20**. Therefore, even when the deformation of the outer panel **2** causes a movement similar to the operation at the time of switching the latching mechanism **20** to the unlatch status, the opening of the door **1** can be prevented.

When the swinging of the link **31** is restricted by the restriction protrusion **35**, and when the outer lever **41** is rotated by the operation of the door handle, the link **31** is moved from the retreated position to the advanced position, and the projecting strip portion **38** of the link **31** moves a part of the return spring **33**. Accordingly, the locking between the return spring **33** and the restriction protrusion **35** can be released, and the swinging restriction of the link **31** by the restriction protrusion **35** can be released. Therefore, the link **31** retreats to the retreated position and swings to the unlock position by the biasing force of the return spring **33**. Therefore, when the operation of the door handle is stopped and the door handle is operated again, the link **31** at the retreated position moves to the advanced position through the outer lever **41**, the operation receiving portion **23** of the latching mechanism **20** is operated, and the engagement of the striker **5** can be released.

As described above, since the swinging restriction of the link **31** can be released by the first round of operation of the door handle, and the door **1** can be opened by the second round of operation of the door handle, the operability when the door **1** is opened can be improved. Moreover, since the restriction release operation of the link **31** is the same operation of the door handle as when the door **1** is opened, inconvenience such as an operation error and an erroneous operation does not occur.

The link **31** is swingable in conjunction with the movement of the lock lever **32** through the return spring **33**, and is positioned at a restriction position where the rotational force of the outer lever **41** cannot be transmitted to the operation receiving portion **23** when being swinging-restricted by the restriction protrusion **35**. Therefore, the door **1** can be reliably prevented from being opened by the input of the collision load IF.

The first stroke (S1) for releasing the swinging restriction of the link **31** by the restriction protrusion **35** is longer than the second stroke (S2) in which the link **31** abuts on the operation receiving portion **23**. Accordingly, for example, even when the movement similar to the operation at the time of switching to the unlatch status occurs by the input of the collision load IF, the locking of the return spring **33** is released by the advancement of the link **31**, and the swinging restriction of the link **31** is released, the operation of the operation receiving portion **23** of the latching mechanism **20**

by the link **31** cannot be continuously performed. Therefore, unintended opening of the door **1** due to the input of the collision load IF can be reliably prevented.

The return spring **33** includes a locked portion **33***e* that can be engaged with and disengaged from the restriction protrusion **35**, an insertion portion **33***f* inserted into the guide groove **31***d* of the link **31**, and a receiving portion **33***g* moved by the projecting strip portion **38**. Therefore, the swinging of the link **31** interlocked with the movement of the lock lever **32**, the swinging restriction of the link **31** at the time of input of the collision load IF, and the swinging restriction release of the link **31** by the projecting strip portion **38** can be achieved by one return spring **33**.

Since the restriction protrusion **35** is made of a projecting strip projecting in the vehicle length direction and extending in the vehicle width direction, the locked portion **33***e* of the return spring **33** can be reliably locked, and the swinging of the link **31** toward the unlock position can be restricted. Since the projecting strip portion **38** is made of the projection having the inclined portion **38***a* that moves the receiving portion **33***g*, the locking of the locked portion **33***e* to the restriction protrusion **35** can be reliably released, and the swinging restriction of the link **31** by the restriction protrusion **35** can be released.

The inclined portion **38***a* of the projecting strip portion **38** is inclined in a direction away from the restriction protrusion **35** from the advanced position side toward the retreated position side, and a gap into which the projecting strip portion **38** can be inserted is provided between the receiving portion **33***g* and the link **31**. Moreover, the height of the projecting strip portion **38** is equal to or larger than the height of the restriction protrusion **35**. Therefore, the locking of the locked portion **33***e* to the restriction protrusion **35** can be reliably released, and the swinging restriction of the link **31** by the restriction protrusion **35** can be released.

It should be noted that the present invention is not limited to the configuration of the above preferred embodiment, and various modifications are possible.

For example, the link **31** and the return spring **33** may be connected through another plate.

The restriction position of the link **31** by the restriction protrusion **35** may be the same angular position as the lock position, and has only to be a position where the operation receiving portion **23** of the latching mechanism **20** cannot be operated at the operation portion **31***e* due to the advance.

The spring member that biases the link **31** may be a leaf spring, and has only to be configured to bias the link **31** at the lock position to the unlock position.

What is claimed is:

1. A door latch device comprising:

a latching mechanism configured to engage with and disengage from a striker, the latching mechanism including an operation receiving portion that receives an operation for releasing an engagement with the striker;

an open lever configured to rotate in conjunction with an operation of a door handle;

a link configured to advance and retreat along a first direction between an advanced position moved toward the operation receiving portion by receiving a rotational force of the open lever and a retreated position separated from the operation receiving portion, and configured to swing along a second direction intersecting the first direction between an unlock position where a rotational force of the open lever is configured to be transmitted to the operation receiving portion and a lock position where a rotational force of the open lever is not configured to be transmitted to the operation receiving portion;

a spring member configured to bias the link from the lock position toward the unlock position and to allow swinging of the link from the unlock position toward the lock position when an inertial force equal to or greater than a set value acts on the link; and

a restricting portion configured to lock the spring member when the link swings toward the lock position against the biasing force of the spring member due to an action of the inertial force equal to or greater than the set value, the restricting portion configured to restrict swinging of the link toward the unlock position by the spring member, wherein

the link includes a restriction release portion that moves at least a part of the spring member to release locking to the restricting portion and to release swinging restriction of the link when swinging is restricted by the restricting portion and the link is moved from the retreated position to the advanced position by receiving a rotational force of the open lever,

the spring member is disposed in a lock lever configured to move,

the link is configured to swing in conjunction with movement of the lock lever through the spring member, and when the link is swinging-restricted by the restricting portion, the link is positioned at a restriction position where a rotational force of the open lever is not transmitted to the operation receiving portion,

the link includes a coupled portion provided with a guide groove extending along the first direction, and

the spring member includes:

a locked portion configured to engage with and disengage from the restricting portion by a movement in a third direction intersecting both the first direction and the second direction;

a receiving portion positioned on a movement track of the restriction release portion when the link at the restriction position moves from the retreated position to the advanced position, the receiving portion being moved in the third direction by the restriction release portion to allow the locked portion to be separated from the restricting portion; and

an insertion portion inserted into the guide groove to allow advance and retreat along the first direction of the link.

2. The door latch device according to claim **1**, wherein a first stroke for releasing swinging restriction of the link by the restricting portion by a movement toward the advancing position of the link at the restriction position is longer than a second stroke in which the link abuts on the operation receiving portion by a movement toward the advancing position of the link at the unlock position.

3. The door latch device according to claim **1**, wherein

the restricting portion is made of a projecting strip that projects in the third direction and extends in the second direction, and

the restriction release portion includes an inclined portion that moves the receiving portion, and is made of a protrusion that protrudes from the coupled portion in the third direction.

4. The door latch device according to claim **3**, wherein the inclined portion of the restriction release portion is inclined in a direction away from the restricting portion from the advanced position toward the retreated position.

5. The door latch device according to claim 3, wherein a gap that is smaller than a height of the restriction release portion in the third direction and into which the restriction release portion is configured to enter is provided between the receiving portion and the link.

6. The door latch device according to claim 5, wherein the height of the restriction release portion in the third direction is equal to or larger than a height of the restricting portion in the third direction.

7. The door latch device according to claim 3, wherein the height of the restriction release portion in the third direction is equal to or larger than a height of the restricting portion in the third direction.

8. The door latch device according to claim 4, wherein a gap that is smaller than a height of the restriction release portion in the third direction and into which the restriction release portion is configured to enter is provided between the receiving portion and the link.

9. The door latch device according to claim 4, wherein the height of the restriction release portion in the third direction is equal to or larger than a height of the restricting portion in the third direction.

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