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Yamasaki

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(54) **ENGAGING MECHANISM FOR MOVABLE PANEL IN IMAGE FORMING APPARATUS**

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(30) **Foreign Application Priority Data**

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(51) **Int. Cl.**
G03G 21/00 (2006.01)
G03G 21/16 (2006.01)

(52) **U.S. Cl.**
CPC . ***G03G 21/1633*** (2013.01); *G03G 2221/1687* (2013.01)

(58) **Field of Classification Search**
CPC G03G 21/1633; G03G 21/1647; G03G 2221/1654; G03G 2221/1687; G03G 2221/169; Y10T 292/10; Y10T 292/1002; E05C 19/02; E05C 19/063
USPC 399/110; 49/394; 312/215, 222; 292/295, 296, 297, 298
See application file for complete search history.

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(57) **ABSTRACT**

An image forming apparatus includes: an open/close member supported so as to be movable between an open position at which an inside of an apparatus body is exposed and a closed position at which the apparatus body is closed; an engaged portion provided on the apparatus body; an engaging member having an engaging portion that is engageable with the engaged portion and a lever portion that contacts the engaged portion to guide the engaging portion to the engaged portion when the open/close member is moved from the open position to the closed position, the engaging member being provided on the open/close member and being rotatable forward and in reverse; and an urging member that urges the engaging member. The urging direction of the urging member is changeable between fixing and releasing directions in which the engaging member is drawn into and moved away from the engaged portion, respectively.

10 Claims, 9 Drawing Sheets

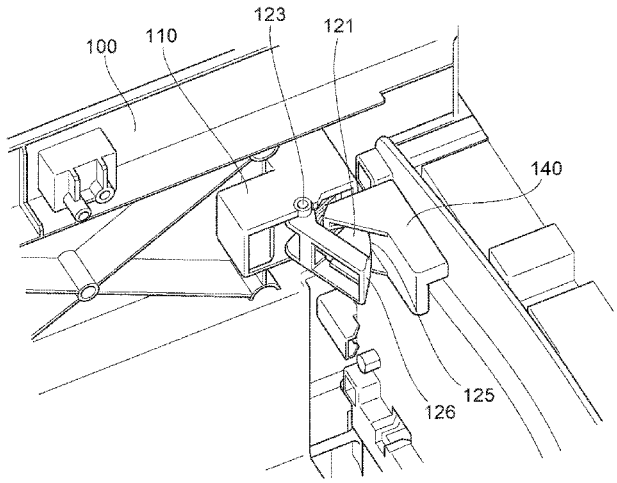
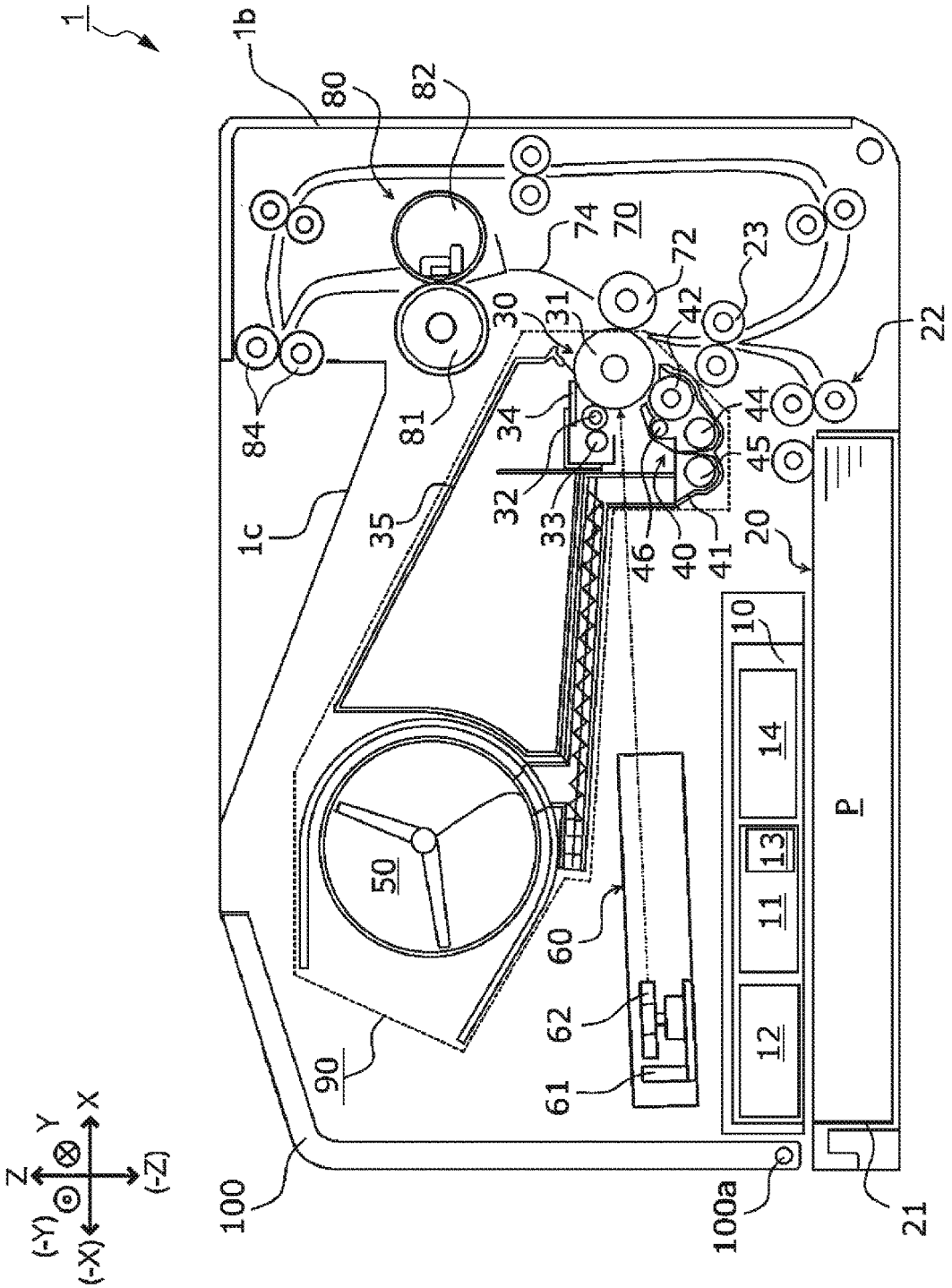


FIG. 1


1
1b
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74
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31
42
22
84
81
34
44
45
1c
35
32
33
46
40
41
20
10
14
13
11
12
P
50
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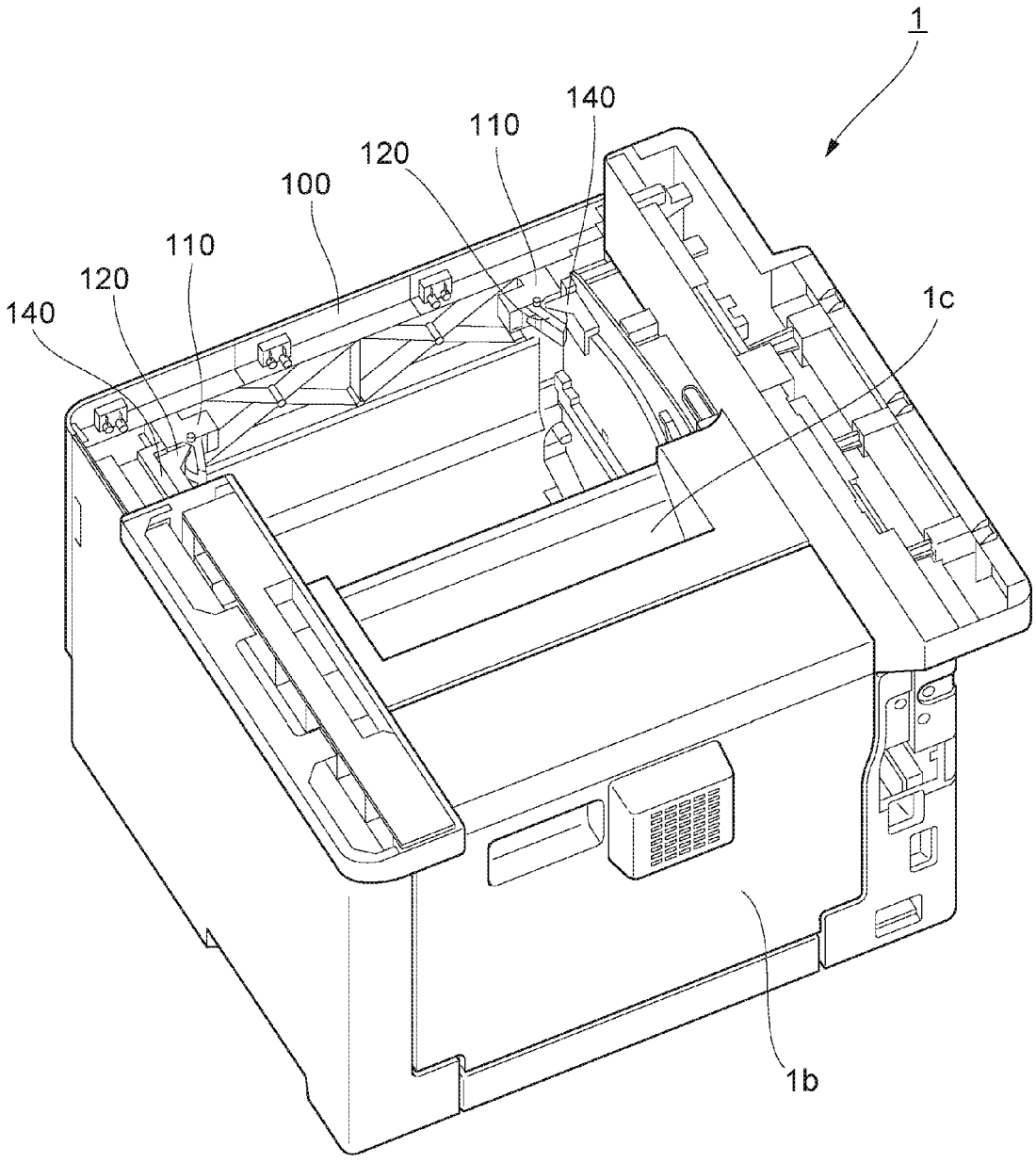
62
61
90
100
100a
21
Y
X
Z
(-Z)
(-Y)
(-X)

FIG. 2



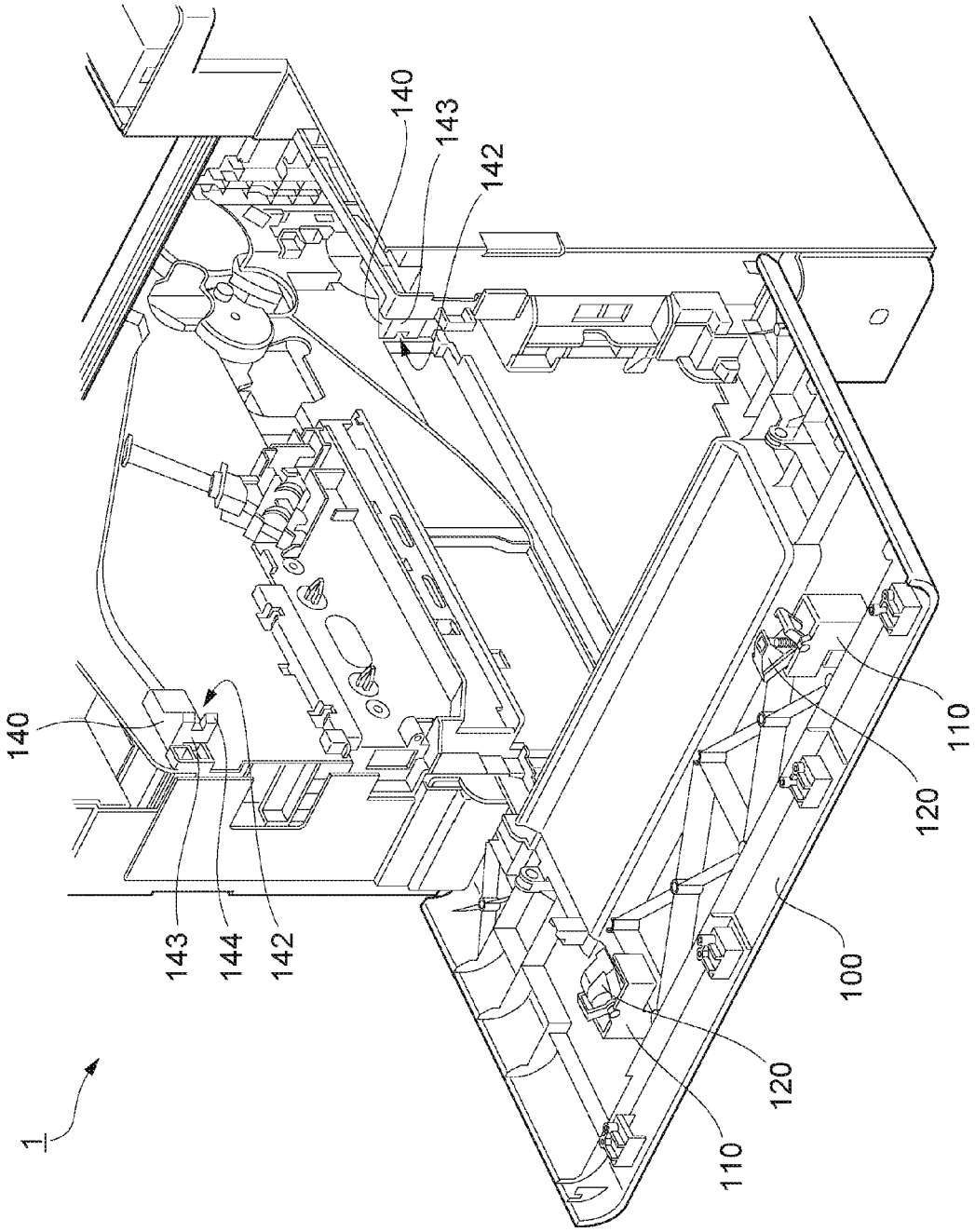


FIG. 3

FIG. 4A

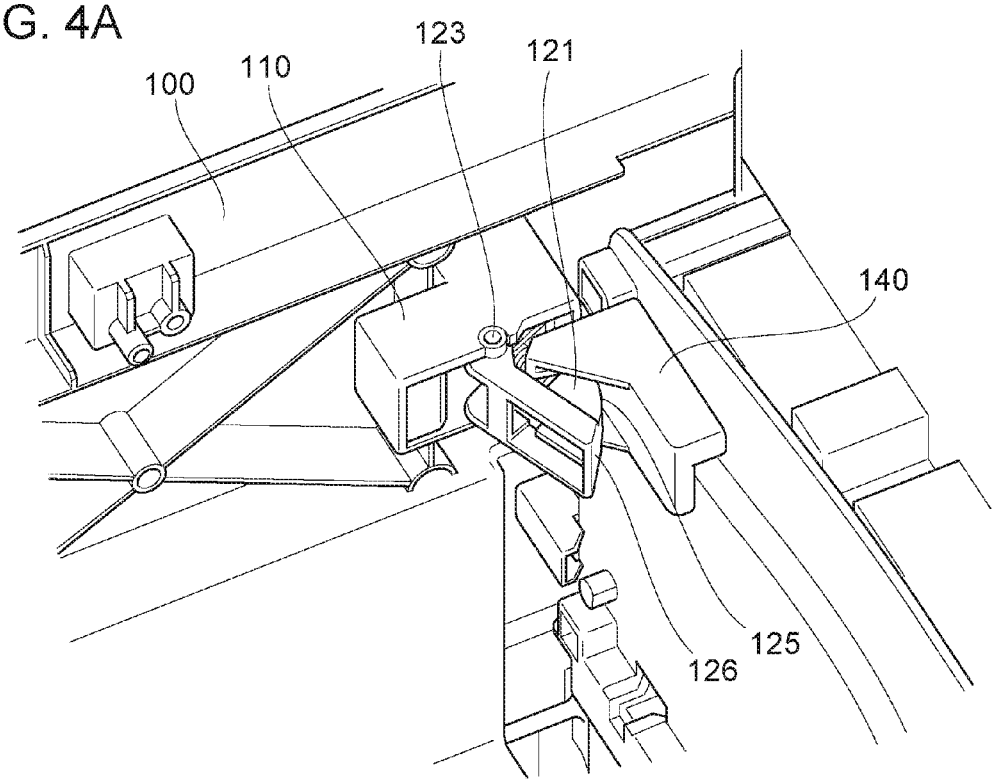


FIG. 4B

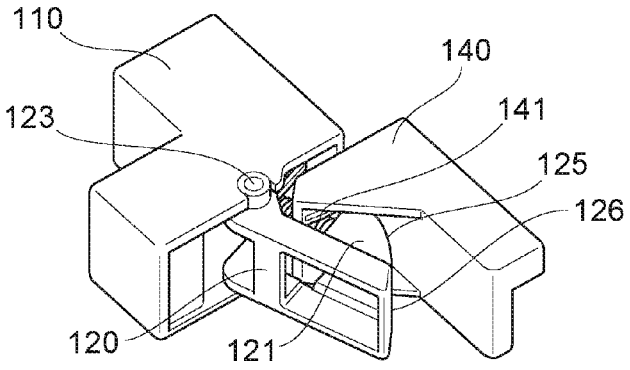


FIG. 4C

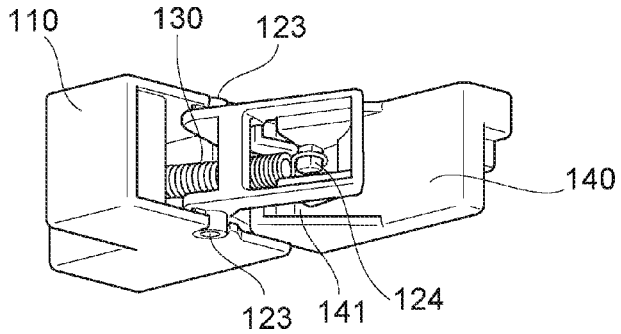


FIG. 5A

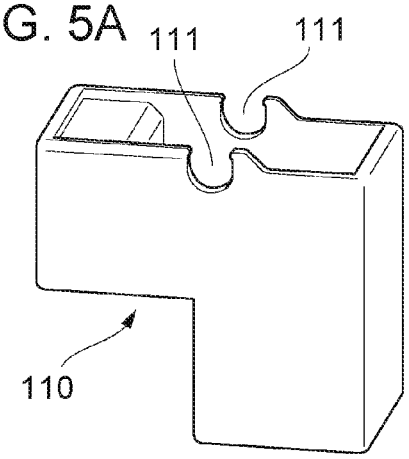


FIG. 5B

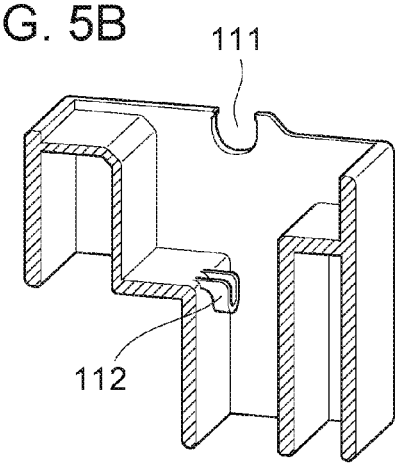


FIG. 5C

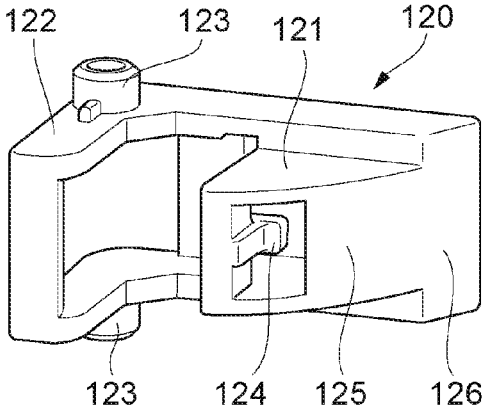


FIG. 5D

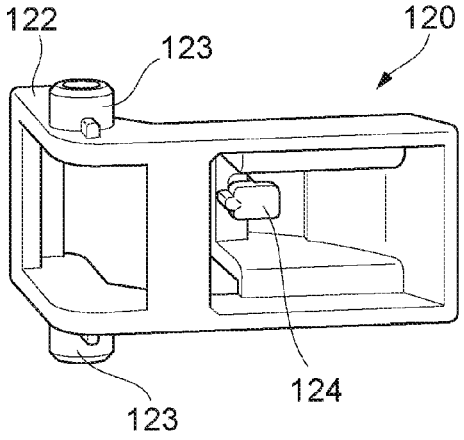


FIG. 5E

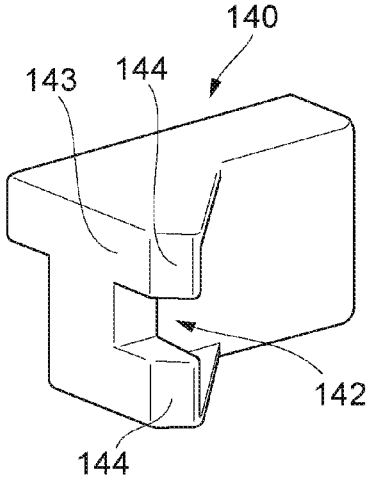


FIG. 5F

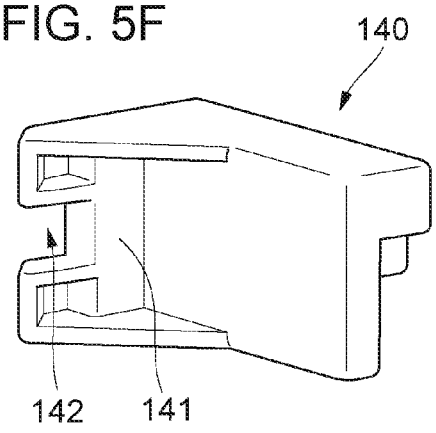
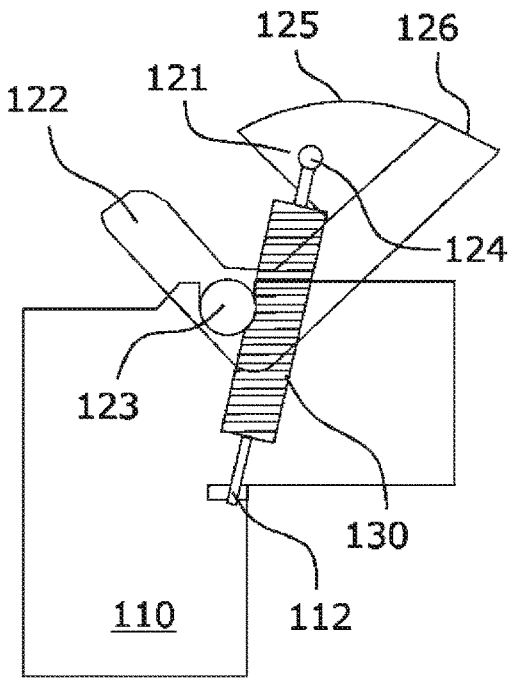


FIG. 6A


125
126
121
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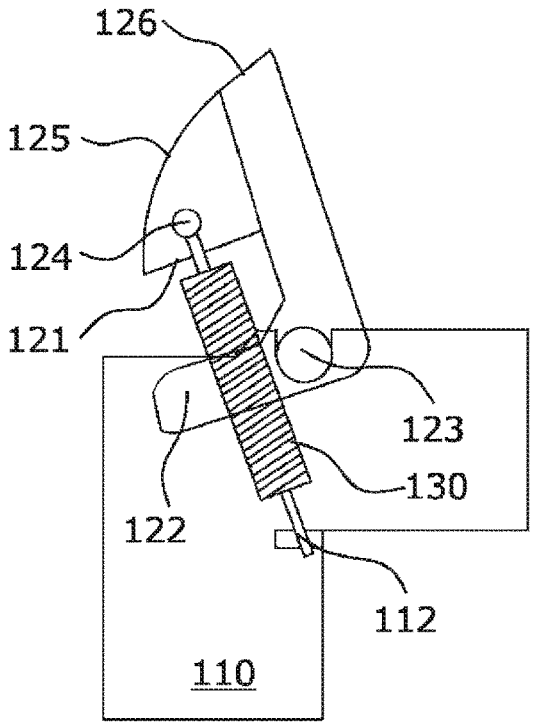
124
123
130
110
112

FIG. 6B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112
110

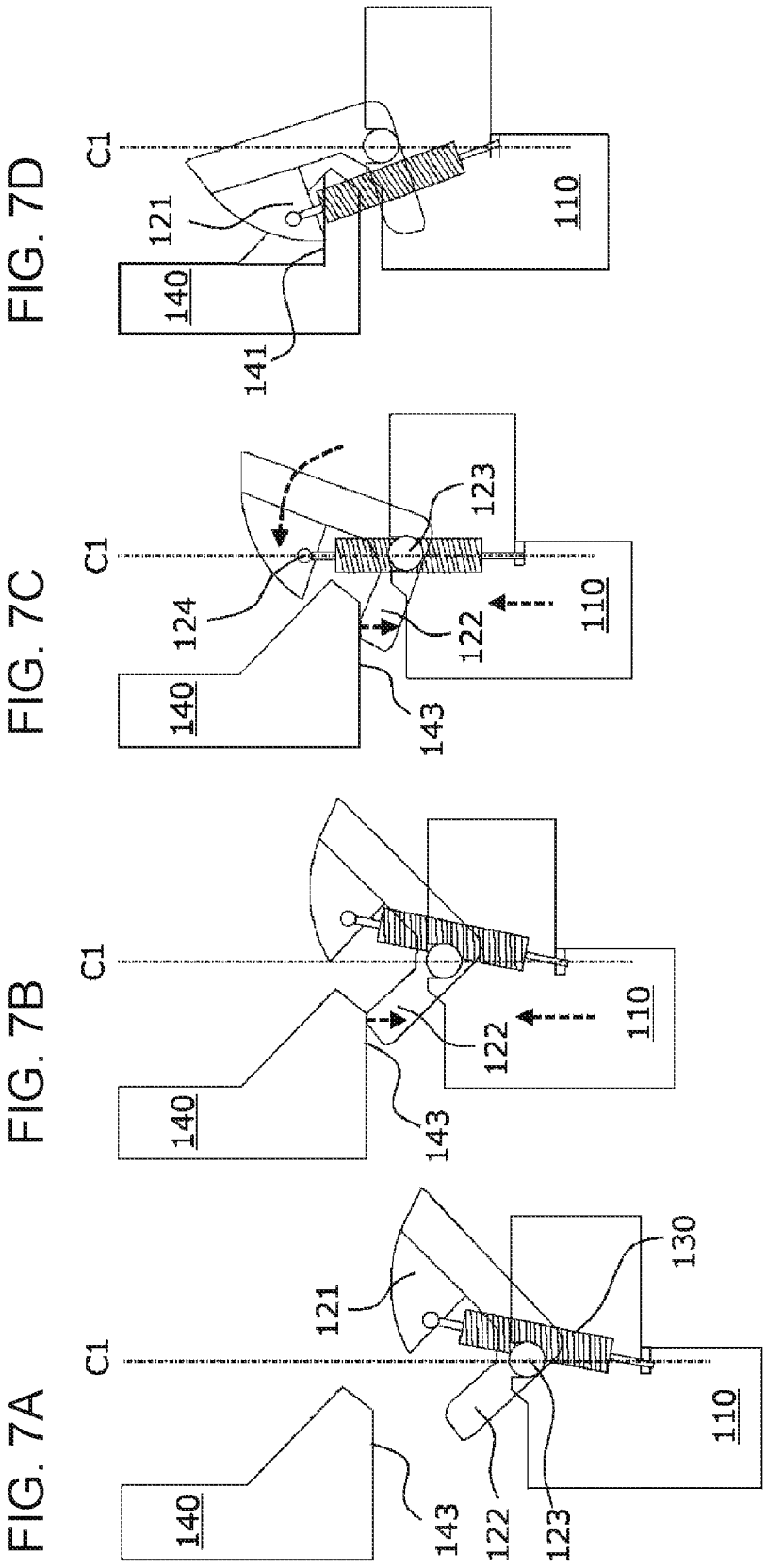


FIG. 7D

FIG. 7C

FIG. 7B

FIG. 7A

FIG. 8A

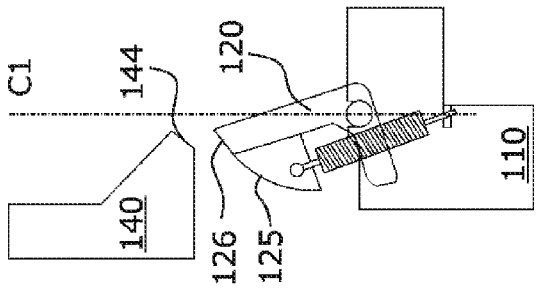


FIG. 8B

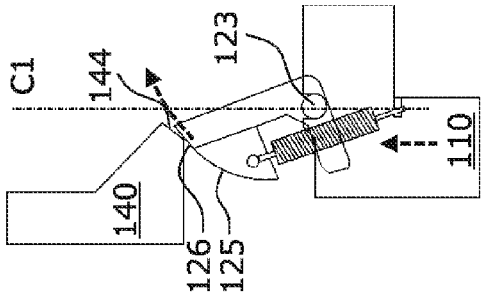


FIG. 8C

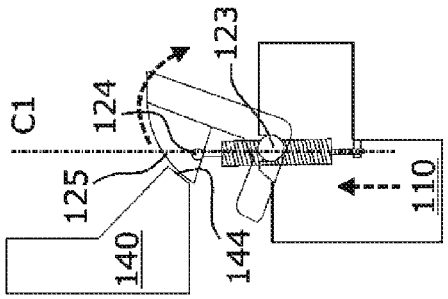


FIG. 8D

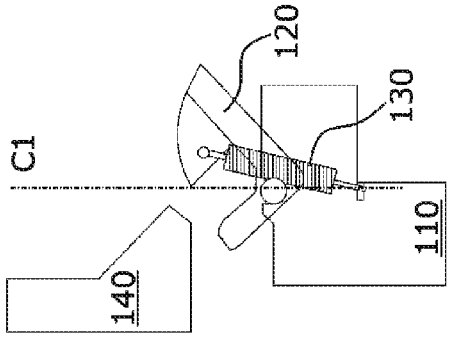


FIG. 8E

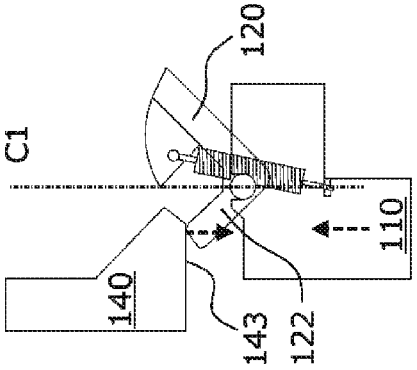


FIG. 8F

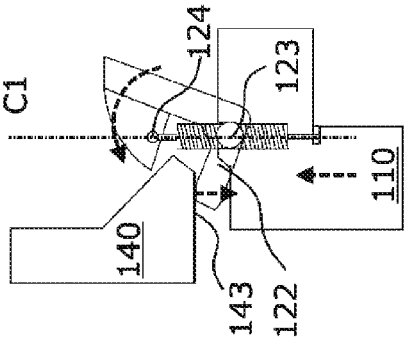


FIG. 8G

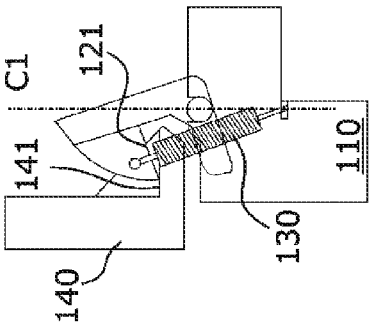


FIG. 9A

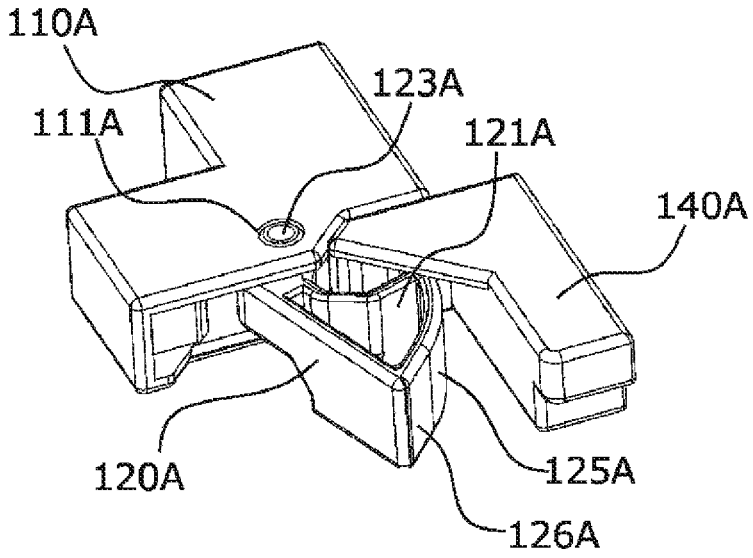
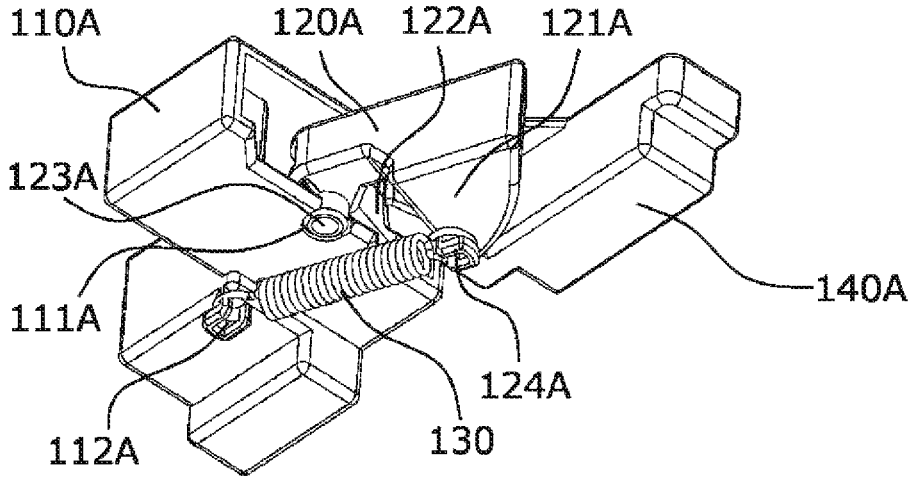

110A
123A
111A
121A
140A
120A
125A
126A

FIG. 9B


110A
120A
122A
121A
123A
140A
111A
124A
112A
130

ENGAGING MECHANISM FOR MOVABLE PANEL IN IMAGE FORMING APPARATUS

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is based on and claims priority under 35 USC 119 from Japanese Patent Application No. 2016-036537 filed Feb. 28, 2016.

BACKGROUND

Technical Field

The present invention relates to an image forming apparatus.

SUMMARY

According to an aspect of the present invention, there is provided an image forming apparatus including: an open/close member supported so as to be movable between an open position at which an inside of an apparatus body is exposed and a closed position at which the inside of the apparatus body is covered; an engaged portion provided on one of the apparatus body and the open/close member; an engaging member having an engaging portion that is engageable with the engaged portion and a lever portion that contacts the engaged portion to guide the engaging portion to the engaged portion when the open/close member is moved from the open position to the closed position, the engaging member being provided on the other of the apparatus body and the open/close member and being rotatable forward and in reverse; and an urging member that urges the engaging member, an urging direction of the urging member being changeable between two urging directions including a fixing direction in which the engaging member is drawn into the engaged portion and a releasing direction in which the engaging member is moved away from the engaged portion.

BRIEF DESCRIPTION OF THE DRAWINGS

An exemplary embodiment of the present invention will be described in detail based on the following figures, wherein:

FIG. **1** is a schematic sectional view illustrating the internal configuration of an image forming apparatus **1**;

FIG. **2** is a perspective view illustrating a state in which an open/close member **100** of the image forming apparatus **1** is at a closed position and engaged with an apparatus body with internal constituent members omitted;

FIG. **3** is a perspective view illustrating a state in which the open/close member **100** of the image forming apparatus **1** is positioned at an open position with internal constituent members omitted;

FIG. **4**A is a partial perspective view illustrating a state in which an engaging member **120** is engaged with an engaged portion **140** of the apparatus body;

FIGS. **4**B and **4**C are each a partial perspective view illustrating the state of engagement between the engaging member **120** and the engaged portion **140**;

FIGS. **5**A and **5**B are each a perspective view of a support member **110**;

FIGS. **5**C and **5**D are each a perspective view of the engaging member **120**;

FIGS. **5**E and **5**F are each a perspective view of the engaged portion **140**;

FIG. **6**A is a schematic sectional view illustrating the engaging member **120** at an initial position;

FIG. **6**B is a schematic sectional view illustrating the engaging member **120** at a drawn position;

FIGS. **7**A to **7**D are each a schematic view illustrating a process in which the engaging member **120** is engaged with the engaged portion **140** when the open/close member **100** is moved from the open position to the closed position;

FIGS. **8**A to **8**G are each a schematic view illustrating a process in which the engaging member **120** is engaged with the engaged portion **140** when the open/close member **100** is moved from the open position to the closed position with the engaging member **120** rotated in a fixing direction; and

FIGS. **9**A and **9**B are each a partial perspective view illustrating the state of engagement between an engaging member **120**A and an engaged portion **140**A according to a modification.

DETAILED DESCRIPTION

An exemplary embodiment and a specific example of the present invention will be described in detail below with reference to the drawings. The present invention is not limited to the following exemplary embodiment and specific example.

It should be noted that, in the following description of the drawings, the drawings are schematic and the ratio of dimensions etc. may be different from the actual value, and that members other than those required to describe the present invention may not be illustrated as appropriate for ease of understanding.

In the drawings, in order to facilitate understanding of the following description, the front-rear direction is defined as the X-axis direction, the left-right direction is defined as the Y-axis direction, and the up-down direction is defined as the Z-axis direction.

(1) Overall Configuration and Operation of Image Forming Apparatus

FIG. **1** is a schematic vertical sectional view illustrating the internal configuration of an image forming apparatus **1** according to an exemplary embodiment.

The overall configuration and operation of the image forming apparatus **1** will be described below with reference to the drawing.

The image forming apparatus **1** includes a control device **10**, a paper transport device **20**, a photosensitive unit **30**, a developing device **40**, a toner cartridge **50**, an exposure device **60**, a transfer device **70**, and a fixing device **80**.

An open/close member **100** is rotatably supported on the front surface of the image forming apparatus **1**. The open/close member **100** is opened forward (−X direction) to expose the inside of the image forming apparatus **1** for replacement of consumables etc.

A rear cover **1***b* is rotatably supported on the rear surface of the image forming apparatus **1**. The rear cover **1***b* is opened to expose the inside of the image forming apparatus **1** for an internal check for a paper jam etc.

An upper cover **1***c*, which also serves as an ejection tray for ejection and storage of paper on which an image has been recorded, is formed on the upper surface (Z direction) of the image forming apparatus **1**.

The control device **10** includes an image forming apparatus control section **11**, a controller section **12**, an exposure control section **13**, a power source device **14**, and so forth. The image forming apparatus control section **11** controls operation of the image forming apparatus **1**. The controller section **12** prepares image data according to a printing

process request. The exposure control section **13** controls lighting of a light source of the exposure device **60**. The power source device **14** applies a voltage to a charging roller **32**, a developing roller **42**, a transfer roller **72**, and so forth to be discussed later, and supplies power to the exposure device **60**.

The controller section **12** converts image data input from an image reading device (not illustrated) and printing information input from an external information transmission device (such as a personal computer, for example) into image information for latent image formation, and outputs a drive signal to the exposure control section **13** at a timing set in advance.

The paper transport device **20** is provided at the bottom portion of the image forming apparatus **1**. The paper transport device **20** includes a paper cassette **21**. A large number of sheets of paper P, which serve as a recording medium, are loaded on the upper surface of the paper cassette **21**. The paper P, the position of which in the width direction is determined by restriction plates (not illustrated), is drawn rearward (X direction) from above, one sheet at a time, by a paper drawing portion **22**, and thereafter transported to a contact portion of a registration roller pair **23**.

The photosensitive unit **30** is provided above the paper transport device **20**, and includes a photosensitive drum **31** provided in a unit housing **35** and rotationally driven. The charging roller **32**, the developing device **40**, the transfer roller **72**, and a cleaning blade **34** are disposed along the rotational direction of the photosensitive drum **31**. A cleaning roller **33** is disposed to face and contact the charging roller **32** to clean the surface of the charging roller **32**.

The developing device **40** includes a developing housing **41** that stores a developer inside. The developing roller **42** and a pair of augers **44** and **45** are disposed in the developing housing **41**. The developing roller **42** is disposed to face the photosensitive drum **31**. The augers **44** and **45** are provided obliquely below and on the back side of the developing roller **42** to agitate and transport the developer toward the developing roller **42**. A layer restriction roller **46** is disposed in proximity to the developing roller **42** to restrict the layer thickness of the developer.

The photosensitive unit **30** and the developing device **40** are constituted integrally as a process cartridge **90**. The process cartridge **90** is removably mounted to the body of the image forming apparatus **1**. As illustrated in FIG. **1**, the process cartridge **90** may be replaced by opening and closing the open/close member **100** which is provided on the body of the image forming apparatus **1** so as to be openable and closable in the case where the photosensitive drum **31** reaches its end of life or the like.

The toner cartridge **50** is removably mounted to an end portion of the process cartridge **90** on the side opposite to an end portion to which the photosensitive unit **30** is mounted. The toner cartridge **50** may be mounted to and removed from the process cartridge **90** with the process cartridge **90** mounted to the body of the image forming apparatus **1**.

The exposure device **60** includes a laser beam output unit **61** that is usable as a light source, and a rotary multi-faceted mirror (polygon mirror) **62** that deflects a laser beam LB from the laser beam output unit **61**, and scans a surface of the photosensitive drum **31** with the laser beam LB which has been modulated in accordance with image data to be formed.

The surface of the photosensitive drum **31** which is rotatable is charged by the charging roller **32**. An electrostatic latent image is formed on the surface of the photosensitive drum **31** by the exposure device **60**. The electrostatic latent image formed on the photosensitive drum **31** is developed as a toner image by the developing roller **42**.

The transfer device **70** is composed of the rear cover **1***b* and the transfer roller **72**. The rear cover **1***b* supports the transfer roller **72** so that the transfer roller **72** comes into and out of contact with the photosensitive drum **31**. The transfer roller **72** forms a nip together with the photosensitive drum **31**. A transfer voltage is applied to the transfer roller **72** from the power source device **14** which is controlled by the image forming apparatus control section **11**. The toner image on the photosensitive drum **31** is transferred to the paper P which passes between the photosensitive drum **31** and the transfer roller **72**.

Residual toner remaining on the surface of the photosensitive drum **31** is removed by the cleaning blade **34**, and recovered into the unit housing **35** which supports the photosensitive drum **31**. After that, the surface of the photosensitive drum **31** is recharged by the charging roller **32**. The residue that is not removed by the cleaning blade **34** but attached to the charging roller **32** is captured by the surface of the cleaning roller **33** which rotates in contact with the charging roller **32**, and thereafter discharged onto the photosensitive drum **31** again by way of the charging roller **32**.

The fixing device **80** includes a pair of a heating module **81** and a pressurizing module **82**. A press contact region between the heating module **81** and the pressurizing module **82** forms a fixing nip portion (fixing region).

The paper P to which the toner image has been transferred by the transfer roller **72** is transported to the fixing device **80** by way of a transport guide **74** with the toner image unfixed. When the paper P is transported to the fixing device **80**, the toner image is fixed by the pair of the heating module **81** and the pressurizing module **82** by the action of pressure bonding and heating. After the toner image is fixed, the paper P is ejected by an ejection roller pair **84** to the upper cover **1***c* on the upper surface of the image forming apparatus **1**.

(2) Open/Close Structure

FIG. **2** is a perspective view illustrating a state in which the open/close member **100** of the image forming apparatus **1** is at a closed position and engaged with the apparatus body with internal constituent members omitted. FIG. **3** is a perspective view illustrating a state in which the open/close member **100** of the image forming apparatus **1** is positioned at an open position with internal constituent members omitted. FIG. **4**A is a partial perspective view illustrating a state in which the engaging member **120** is engaged with the engaged portion **140** of the apparatus body. FIGS. **4**B and **4**C are each a partial perspective view illustrating the state of engagement between the engaging member **120** and the engaged portion **140**. FIGS. **5**A and **5**B are each a perspective view of a support member **110**. FIGS. **5**C and **5**D are each a perspective view of the engaging member **120**. FIGS. **5**E and **5**F are each a perspective view of the engaged portion **140**. FIG. **6**A is a schematic sectional view illustrating the engaging member **120** at a release position. FIG. **6**B is a schematic sectional view illustrating the engaging member **120** at a fixing position. The open/close structure of the image forming apparatus **1** according to the exemplary embodiment will be described below with reference to the drawings.

(2.1) Overall Configuration of Open/Close Structure

In FIGS. **1** and **3**, the open/close member **100**, which is rotatably supported on the left side of the image forming apparatus **1**, is supported so as to be movable between the open position at which the inside of the apparatus body is exposed and the closed position at which the inside of the apparatus body is covered.

A center of rotation **100***a* is formed at the lower end portion of the open/close member **100**. The open/close member **100** is supported on the apparatus body so as to be rotatable about the center of rotation **100***a*.

The engaging member **120** is rotatably supported by the support member **110** on the inner surface side of the open/close member **100**. The engaged portion **140** is fixed on the apparatus body side.

When the open/close member **100** is rotationally moved from the open position to the closed position, the engaging member **120** is engaged with the engaged portion **140** on the apparatus body side while rotating so that the open/close member **100** closes the apparatus body.

To open the apparatus body, engagement between the engaging member **120** and the engaged portion **140** on the apparatus body side is canceled by performing a drawing operation on the open/close member **100** to rotationally move the open/close member **100** to the open position.

In the exemplary embodiment, the engaging member **120** is provided on the open/close member **100**, and the engaged portion **140** is provided on the apparatus body side. However, the present invention is not limited thereto. The engaging member **120** may be provided on the apparatus body side, and the engaged portion **140** may be provided on the open/close member **100**.

(2.2) Support Member

As illustrated in FIGS. **5**A and **5**B, the support member **110** has a box shape as a whole, and has shaft receiving portions **111** that rotatably support rotary shaft portions **123** of the engaging member **120**. In addition, a hook portion **112** for attachment of one end of an urging member **130** is formed on the inner surface side of the support member **110**.

The support member **110** is fixed on the inner surface side of the open/close member **100**, and rotatably supports the engaging member **120**.

(2.3) Engaging Member

As illustrated in FIGS. **5**C and **5**D, the engaging member **120** has an engaging portion **121** to be engaged with the engaged portion **140**, a lever portion **122** that contacts the engaged portion **140** to guide the engaging portion **121** to the engaged portion **140** when the open/close member **100** is moved from the open position to the closed position, and the rotary shaft portions **123**, and have a hook shape as a whole.

An arcuate shape portion **125** and an inclined surface portion **126** are formed on the outer side of the engaging portion **121** as seen from the rotary shaft portions **123**. In addition, a hook portion **124** for attachment of the other end of the urging member **130** is formed on the inner surface side of the engaging portion **121**.

The engaging member **120** is urged with respect to the support member **110** by the urging member **130** with the rotary shaft portions **123** rotationally supported by the shaft receiving portions **111** of the support member **110**. As a result, the engaging member **120** is rotatably supported on the inner surface side of the open/close member **100**.

(2.4) Engaged Portion

As illustrated in FIGS. **5**E and **5**F, the engaged portion **140** has an engaged surface **141** that receives the engaging portion **121** of the engaging member **120**. A notched portion **142** is provided at the middle portion of the engaged surface **141**. The urging member **130**, one end and the other end of which are fixed to the support member **110** and the engaging member **120**, respectively, is housed in the notched portion **142** when the engaging member **120** is rotated in the fixing direction.

The thus configured engaging member **120** is rotatably supported on the open/close member **100** via the support member **110** while being urged to be rotatable forward and in reverse, with the rotary shaft portions **123** serving as the center of rotation, by the urging member **130**, the urging direction of which is changeable between two directions, namely a fixing direction (fixing position), in which the engaging member **120** is drawn into the engaged portion **140** as illustrated in FIG. **6**A, and a releasing direction (release position), which is opposite to the fixing direction and in which the engaging member **120** is moved away from the engaged portion **140**.

Specifically, in the case where the hook portion **124** of the engaging member **120**, to which the other end of the urging member **130** is attached, is positioned on the engaged portion **140** side with respect to an axis C**1** that connects the hook portion **112** of the support member **110**, to which one end of the urging member **130** is attached, and the rotary shaft portions **123** of the engaging member **120** to each other, the engaging member **120** is drawn toward the fixing position by the urging force of the urging member **130**.

In the case where the hook portion **124** of the engaging member **120**, to which the other end of the urging member **130** is attached, is positioned on the left side with respect to the axis C**1**, the engaging member **120** is urged in the direction opposite to the fixing direction by the urging force of the urging member **130** to be returned to the release position.

[Modification]

FIGS. **9**A and **9**B illustrate the state of engagement between an engaging member **120**A and an engaged portion **140**A according to a modification.

The engaging member **120**A has an engaging portion **121**A to be engaged with the engaged portion **140**A, a lever portion **122**A that contacts the engaged portion **140**A to guide the engaging portion **121**A to the engaged portion **140**A when the open/close member **100** is moved from the open position to the closed position, and rotary shaft portions **123**A, and have a hook shape as a whole.

An arcuate shape portion **125**A and an inclined surface portion **126**A are formed on the outer side of the engaging portion **121**A as seen from the rotary shaft portions **123**A. In addition, a hook portion **124**A for attachment of the other end of the urging member **130** is formed on the outer surface side of the engaging portion **121**A.

As illustrated in FIGS. **9**A and **9**B, a support member **110**A has a box shape as a whole, and has shaft receiving portions **111**A that rotatably support the rotary shaft portions **123**A of the engaging member **120**A. In addition, a hook portion **112**A for attachment of one end of the urging member **130** is formed on the outer surface side of the support member **110**A.

The support member **110**A is fixed on the inner surface side of the open/close member **100**, and rotatably supports the engaging member **120**A.

With the support member **110**A and the engaging member **120**A according to the modification, the urging member **130** which urges the engaging member **120**A in two directions, namely the fixing direction in which the engaging member **120**A is drawn into the engaged portion **140**A and the releasing direction which is opposite to the fixing direction and in which the engaging member **120**A is moved away from the engaged portion **140**A, may be easily attached from the outer side.

(3) Opening/Closing Operation of Open/Close Member

FIGS. **7**A to **7**D are each a schematic view illustrating a process in which the engaging member **120** is engaged with the engaged portion **140** when the open/close member **100** is moved from the open position to the closed position.

FIGS. **8**A to **8**G are each a schematic view illustrating a process in which the engaging member **120** is engaged with the engaged portion **140** when the open/close member **100** is moved from the open position to the closed position with the engaging member **120** rotated in the fixing direction.

The opening/closing operation of the open/close member **100** according to the exemplary embodiment will be described below with reference to the drawings.

(3.1) In Case where Engaging Member **120** is at Initial Position

As illustrated in FIG. **7**A, when the open/close member **100** is at the open position, the engaging member **120** is urged in the releasing direction (at the release position) by the urging force of the urging member **130**. In the case where the open/close member **100** in such a state is subjected to a closing operation, the lever portion **122** of the engaging member **120** first contacts a front surface **143** of the engaged portion **140** along with rotational movement of the open/close member **100** (see FIG. **7**B).

When the closing operation on the open/close member **100** is further continued, the lever portion **122** of the engaging member **120** receives a rotational force from the front surface **143** of the engaged portion **140**, the engaging member **120** is rotated toward the engaged portion **140** from the release position, and the hook portion **124** of the engaging member **120** reaches a position on the axis C**1** (neutral position; see FIG. **7**C).

When the open/close member **100** is further rotationally moved, the engaging member **120** is drawn toward the engaged surface **141** of the engaged portion **140** by the urging force of the urging member **130** into the fixing position to be engaged with the engaged portion **140**, and the open/close member **100** is positioned at the closed position (see FIG. **7**D).

With the open/close structure according to the exemplary embodiment, when the lever portion **122** contacts one surface of the engaged portion **140** on the apparatus body side along with the closing operation of the open/close member **100**, the lever portion **122** is rotated toward the engaged portion **140**. When the hook portion **124** of the engaging member **120** is moved past the neutral position, the hook portion **124** is drawn toward the engaged surface **141** of the engaged portion **140** by the urging force of the urging member **130**.

To expose the inside of the apparatus body, the engaging member **120** is rotated away from the engaged portion **140** in the releasing direction, which is opposite to the fixing direction, by just performing a drawing operation on the open/close member **100** to rotationally move the open/close member **100** to the open position. When the hook portion **124** of the engaging member **120** is moved past the neutral position, the engaging member **120** is drawn back to the release position by the urging force of the urging member **130** to cancel engagement between the engaging member **120** and the engaged portion **140** on the apparatus body side.

(3.2) In Case where Engaging Member **120** is at Fixing Position

As illustrated in FIG. **8**A, in the case where the open/close member **100** is subjected to a closing operation from a state in which the engaging member **120** is urged in the fixing direction (at the drawn position) by the urging force of the urging member **130**, the inclined surface portion **126** of the engaging member **120** first contacts an inclined surface portion **144** of the engaged portion **140** along with rotational movement of the open/close member **100** (see FIG. **8**B).

When the closing operation on the open/close member **100** is further continued, the arcuate shape portion **125** of the engaging member **120** receives a rotational force while sliding over the inclined surface portion **144** of the engaged portion **140**, the engaging member **120** is rotated in the direction opposite to the fixing direction, and the hook portion **124** of the engaging member **120** reaches a position on the axis C**1** (neutral position; see FIG. **8**C).

When the open/close member **100** is further rotationally moved, the engaging member **120** is returned to the release position by the urging force of the urging member **130** (see FIG. **8**D).

When the closing operation on the open/close member **100** is further continued, the lever portion **122** of the engaging member **120** contacts the front surface **143** of the engaged portion **140** (see FIG. **8**E) to receive a rotational force from the front surface **143** of the engaged portion **140**, the engaging member **120** is rotated toward the engaged portion **140** from the release position, and the hook portion **124** of the engaging member **120** reaches a position on the axis C**1** (neutral position; see FIG. **8**F).

When the open/close member **100** is rotationally moved, the engaging member **120** is drawn toward the engaged surface **141** of the engaged portion **140** by the urging force of the urging member **130** to be engaged with the engaged portion **140**, and the open/close member **100** is positioned at the closed position (see FIG. **8**G).

With the open/close structure according to the exemplary embodiment, even in the case where the engaging member **120** is positioned at the fixing position, the engaging member **120** is rotated in the direction opposite to the fixing direction to be returned to the release position with the arcuate shape portion **125** of the engaging member **120** receiving a rotational force while sliding as the arcuate shape portion **125** contacts the front surface **143** of the engaged portion **140** along with the closing operation performed on the open/close member **100**.

The foregoing description of the exemplary embodiment of the present invention has been provided for the purposes of illustration and description. It is not intended to be exhaustive or to limit the invention to the precise forms disclosed. Obviously, many modifications and variations will be apparent to practitioners skilled in the art. The embodiment was chosen and described in order to best explain the principles of the invention and its practical applications, thereby enabling others skilled in the art to understand the invention for various embodiments and with the various modifications as are suited to the particular use contemplated. It is intended that the scope of the invention be defined by the following claims and their equivalents.

What is claimed is:

1. An image forming apparatus comprising:

an open/close member supported so as to be movable between an open position at which an inside of an apparatus body is exposed and a closed position at which the inside of the apparatus body is covered;

an engaged portion provided on one of the apparatus body and the open/close member;

an engaging member having an engaging portion that is engageable with the engaged portion and a lever portion that contacts the engaged portion before the engaging portion contacts the engaged portion in response to moving the open/close member from the open position to the closed position, to guide the engaging portion to the engaged portion when the open/close member is moved from the open position to the closed position, the engaging member being provided on the other of the apparatus body and the open/close member and

being rotatable about an axis in both a clockwise and counter-clockwise direction; and

an urging member that urges the engaging member, an urging direction of the urging member being changeable between two urging directions including a fixing direction in which the engaging member is drawn into the engaged portion and a releasing direction in which the engaging member is moved away from the engaged portion.

2. The image forming apparatus according to claim **1**, wherein the engaging member has an arcuate shape portion on an outer side of the engaging portion, and, when the open/close member is moved from the open position to the closed position, the arcuate shape portion is rotated in the releasing direction while contacting the engaged portion.

3. The image forming apparatus according to claim **1**, wherein the engaged portion has a notched portion provided in an engaged surface that receives the engaging portion of the engaging member, and the urging member is housed in the notched portion when the engaging member is rotated in the fixing direction with a first end and a second end of the urging member fixed to the open/close member and the engaging member, respectively.

4. The image forming apparatus according to claim **2**, wherein the engaged portion has a notched portion provided in an engaged surface that receives the engaging portion of the engaging member, and the urging member is housed in the notched portion when the engaging member is rotated in the fixing direction with a first end and a second end of the urging member fixed to the open/close member and the engaging member, respectively.

5. The image forming apparatus according to claim **1**, wherein a first end and a second end of the urging member are fixed to the open/close member and one outer surface of the engaging member, respectively.

6. The image forming apparatus according to claim **2**, wherein a first end and a second end of the urging member are fixed to the open/close member and one outer surface of the engaging member, respectively.

7. The image forming apparatus according to claim **1**, wherein the lever is provided on an end of the engaging member opposite the engaging portion.

8. An image forming apparatus comprising:

an open/close member supported so as to be movable between an open position at which an inside of an apparatus body is exposed and a closed position at which the apparatus body is closed;

an engaged portion provided on one of the apparatus body and the open/close member; and

an engaging member provided on the other of the apparatus body and the open/close member, the engaging member being switchable between a fixing position at which the engaging member is engaged with the engaged portion and a release position at which the engaging member is moved away from the engaged portion,

wherein, when the engaging member is at the fixing position in a case where the open/close member is moved from the open position to the closed position, the engaged portion moves the engaging member to the release position away from the fixing position, and thereafter the engaged portion contacts a lever portion of the engaging member contacting the engaged portion before the engaging portion contacts the engaged portion to switch the engaging member to the fixing position.

9. The image forming apparatus according to claim **8**, wherein the lever is provided on an end of the engaging member opposite the engaging portion.

10. An image forming apparatus comprising:

an open/close member supported so as to be movable between an open position at which an inside of an apparatus body is exposed and a closed position at which the inside of the apparatus body is covered;

an engaged portion provided on one of the apparatus body and the open/close member;

an engaging member having an engaging portion that is engageable with the engaged portion and a lever portion that contacts the engaged portion to guide the engaging portion to the engaged portion when the open/close member is moved from the open position to the closed position, the engaging member being provided on the other of the apparatus body and the open/close member and being rotatable about an axis in both a clockwise and counter-clockwise direction; and

an urging member that urges the engaging member, an urging direction of the urging member being changeable between two urging directions including a fixing direction in which the engaging member is drawn into the engaged portion and a releasing direction in which the engaging member is moved away from the engaged portion,

wherein the engaged portion has a notched portion provided in an engaged surface that receives the engaging portion of the engaging member, and the urging member is housed in the notched portion when the engaging member is rotated in the fixing direction with a first end and a second end of the urging member fixed to the open/close member and the engaging member, respectively.

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