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CARTOUCHE DE TRAITEMENT

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Description

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is a continuation application of PCT Patent Application No. PCT/CN2019/103820, filed on August 30, 2019, which claims the priority to Chinese patent application No. 201821557706.8, filed on September 21, 2018; No. 201920230183.4, filed on February 20, 2019; No. 201920419854.1, filed on March 29, 2019; No. 201920791621.4, filed on May 29, 2019; No. 201920811604.2, filed on May 31, 2019; and No. 201910547647.9, filed on June 24, 2019.

TECHNICAL FIELD

[0002] The present disclosure generally relates to the field of image forming technology and, more particularly, relates to a processing cartridge.

BACKGROUND ART

[0003] An electronic image forming device is a device that forms an image on a recording material by an electrophotographic image forming technique. Such device may include an electrophotographic copier, a laser printer, an electrophotographic printer, a facsimile machine, a word processor, and the like. The electronic image forming devices may include a monochrome electronic image forming device and a color electronic image forming device.

[0004] An existing electronic image forming device may include a main body and a processing cartridge detachably installed in the main body. Sidewalls may be included at both ends of the processing cartridge along its length direction. Rotating elements may be included inside the processing cartridge. The rotating elements may be one or more of a photosensitive element, a developing element, a charging element, a toner feeding element, and a gear element. The rotating elements may be connected to a force receiving element and may receive the driving force from the force receiving element. The force receiving element may be disposed at a sidewall of the processing cartridge to receive the driving force from the main body of the electronic image forming device.

[0005] When the processing cartridge does not perform the electronic image forming operation, in order to protect the developing element and the photo-sensitive element, both elements may be separated. That is, the developing element and the photo-sensitive element may not be in contact with each other when the electronic image forming is not performed.

[0006] In the existing technology (e.g., as in a Chinese patent application publication CN101963779A), as shown in FIGS. 1-2, the force receiving element may be disposed at the housing of the processing cartridge. For example, the processing cartridge may include a first housing 1101 and a second housing 1102, and the force receiving element may include a first force receiving element 1110 and a second force receiving element 1120. The first force receiving element 1110 may have two states: a standby position and a protruding position. At the standby position (the processing cartridge is not installed or in the position of the installation process), the first force receiving element 1110 may be disposed inside the first housing 1101 at this point; at the protruding position (the processing cartridge is at a working position after installation), the first force receiving element 1110 may be disposed by protruding from the first housing 1101 at this point (referring to FIGS. 1-2). The second force receiving element 1120 may receive a first pushing force from the electronic image forming device, and also push the first force receiving element 1110 to rotate to the position protruding the processing cartridge externally. When the electronic image forming device execute a printing job, the electronic image forming device may provide a second pushing force to act on the first force receiving element 1110, and also enable the first housing of the processing cartridge to rotate relative to the second housing of the processing cartridge. Referring to FIG. 2, in the existing technology, the first force receiving element 1110 may rotate around an axle after being pushed by the second force receiving element 1120, and the first force receiving element 1110 may automatically retract after the second force receiving element 1120 is no longer abutted against the first force receiving element 1110. An axis L1 is perpendicular to the length direction of the processing cartridge.

[0007] FIG. 6 illustrates an electronic image forming device 900, including a processing cartridge tray 910, a first force applying device 920, and a second force applying device 930. The first force applying device 920 may apply the pushing force onto the second force receiving element 1120, and the second force applying device 930 may apply the pushing force onto the first force receiving element 1110. When the processing cartridges are installed in the electronic image forming device, four different color cartridges may be sequentially installed on the processing cartridge tray 910. After the processing cartridge tray 910 is pushed into the electronic image forming device 900 and also when the electronic image forming device completes the installation operation to be in the standby state, the first force applying device 920 may act on the second force receiving element 1120, and then push the first force receiving element 1110 to be protruded through the second force receiving element 1120, thereby pressing the first force receiving element 1110 by the second force applying portion 930 and also enabling the first housing 1101 to rotate relative to the second housing 1102.

[0008] In the existing technology, during the process installing a toner cartridge on the processing cartridge tray 910 on the electronic image forming device 900, since the first force receiving element 1110 is disposed inside the first housing 1101 when the processing car-

tridge is not installed or in the position of the installation process, normal installation operations may not be affected. However, after the connecting part matching the first force receiving element 1110 is used for multiple times, it may cause that the first force receiving element 1110 is not accurately located in the first housing 1101. That is, it may cause the first force receiving element 1110 to protrude outside unexpectedly. Therefore, the processing cartridge tray 910 may be jammed which may not be normally pushed into the electronic image forming device 900, and normal electronica image forming operations may not be performed. Meanwhile, the second force receiving element 1120 and the first force receiving element 1110 may be connected in the existing technology, which may cause the problem that the processing cartridge may not be removed if the inside parts in the electronic image forming device 900 are jammed. Therefore, there is a need to design a new force receiving device to replace the original force receiving device. Document CN201837835 is a relevant prior art document and it discloses a process cartridge comprising a drum cartridge and a developer cartridge, wherein the drum cartridge and the developer cartridge are rotatablely connected via a pivot shaft, and a connecting spring for applying an acting force F1 to bring a photosensitive drum and a developing roller close to each other is disposed between the drum cartridge and the developer cartridge and further comprising a stressed member with a projecting portion, which projects out of the process cartridge and is rotatable about a rotation axis and a stop block for applying an acting force F2 on the stressed member to prevent the same from rotating and hold the same in an initial position.

DISCLOSURE OF THE INVENTION

[0009] The present invention is defined by the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010]

FIG. 1 illustrates a stereoscopic view of a processing cartridge (when the first force receiving element is in a protruding position) in the existing technology;

FIG. 2 illustrates a partial structural view of FIG. 1;

FIG. 3 illustrates a processing cartridge according to the embodiments of the present disclosure;

FIG. 4 illustrates a partial structural view of a processing cartridge according to the embodiments of the present disclosure;

FIG. 5 illustrates a cross-sectional view of a processing cartridge according to the embodiments of the present disclosure;

FIG. 6 illustrates a partial structural view of an electronic image forming device;

FIG. 7 illustrates a schematic of an installation process of a processing cartridge according to the embodiments of the present disclosure;

FIG. 8 illustrates a schematic of another installation process of a processing cartridge according to the embodiments of the present disclosure;

FIG. 9 illustrates a schematic of a working process of a force receiving device according to the embodiments of the present disclosure;

FIG. 10 illustrates a schematic of another working process of a force receiving device according to the embodiments of the present disclosure;

FIG. 11 illustrates a stereoscopic view of another processing cartridge;

FIG. 12 illustrates a structural view of another force receiving device according to the embodiments of the present disclosure;

FIG. 13 illustrates a structural view of another force receiving device according to the embodiments of the present disclosure;

FIG. 14a illustrates a state view of another force receiving device according to the embodiments of the present disclosure;

FIG. 14b illustrates another state view of another force receiving device according to the embodiments of the present disclosure;

FIG. 15 illustrates a cross-sectional view of a processing cartridge according to the embodiments of the present disclosure;

FIG. 16 illustrates a partial view of another processing cartridge according to the embodiments of the present disclosure;

FIG. 17 illustrates a state of a processing cartridge before being installed in an electronic image forming device in the fourth embodiment;

FIG. 18 illustrates a stereoscopic view of a second force receiving element in the fourth embodiment;

FIG. 19 illustrates a state where the second force receiving element interferes with an electronic image forming device when the processing cartridge is in-

stalled in the electronic image forming device in the fourth embodiment;

FIG. 20 illustrates a state where the door cover of an electronic image forming device is closed after the processing cartridge is installed in the electronic image forming device in the fourth embodiment;

FIG. 21 illustrates a state where a first force receiving element is normally ejected when the processing cartridge tray is removed from the electronic image forming device;

FIG. 22 illustrates a state where a first force receiving element is not normally ejected when the processing cartridge tray is removed from the electronic image forming device;

FIG. 23 illustrates a stereoscopic view of a processing cartridge in the fifth embodiment;

FIG. 24 illustrates a locally enlarged view of FIG. 23;

FIG. 25 illustrates an exploded view of a processing cartridge in the fifth embodiment;

FIG. 26 illustrates another exploded view of a processing cartridge in the fifth embodiment;

FIG. 27 illustrates another exploded view of a processing cartridge in the fifth embodiment;

FIG. 28 illustrates a schematic of a main working principle of a force receiving device of a processing cartridge in the fifth embodiment;

FIG. 29 illustrates another schematic of a main working principle of a force receiving device of a processing cartridge in the fifth embodiment;

FIG. 30 illustrates a stereoscopic view of a processing cartridge as viewed along a processing cartridge installation direction in the fifth embodiment;

FIG. 31 illustrates another stereoscopic view of a processing cartridge as viewed along a processing cartridge installation direction in the fifth embodiment;

FIG. 32 illustrates a top view of a processing cartridge as viewed along a plane parallel with a processing cartridge installation direction in the sixth embodiment;

FIG. 33 illustrates an exploded view of a positional relationship between a first force receiving element and a support frame in FIG. 32;

FIG. 34 illustrates a schematic of a working process of a force receiving device in the sixth embodiment;

FIG. 35 illustrates another schematic of a working process of a force receiving device in the sixth embodiment;

FIG. 36 illustrates another schematic of a working process of a force receiving device in the sixth embodiment;

FIG. 37 illustrates another schematic of a working process of a force receiving device in the sixth embodiment;

FIG. 38 illustrates a schematic of a positional relationship of a third limiting block and a first force receiving part in the sixth embodiment;

FIG. 39 illustrates a structural schematic of a processing cartridge in the eighth embodiment; and

FIG. 40 illustrates a structural schematic of a first force receiving element and a second force receiving element in the eighth embodiment.

BEST MODE FOR CARRYING OUT THE INVENTION

Embodiment 1

[0011] Referring to FIG. 3 and FIG. 4, a force receiving device is provided in one embodiment.

[0012] As shown in FIG. 3, the force receiving device of the processing cartridge may include a second force receiving element A120, a first force receiving element A110, and a first elastic element A140. The first elastic element A140 may be abutted against a component of the first force receiving element A110 which may be relatively fixed to the housings of the processing cartridge (including a first housing A101 and a second housing A102) or the processing cartridge itself. The first force receiving element A110 may be constantly maintained at the position outwardly protruding from the housing of the processing cartridge under the action of the elastic element, the second force receiving element A120 may rotate around an axis L2 along the direction of W1, and the rotating axis L2 may be in parallel with the length direction (a X direction) of the processing cartridge. The second force receiving element A120 may slide on the housing of the processing cartridge, and the sliding direction may be perpendicular to the length direction (the X direction) of the processing cartridge, that is, be perpendicular to the rotating axis of the first force receiving element A110. For example, as shown in FIG. 4, the first housing A101 and the second housing A102 of the processing cartridge may move relatively, and the force receiving device may be disposed on the first housing A101. Furthermore, the first elastic element A140 may

be a torsion spring, a tension spring, or a compression spring, where the torsion spring is the preferable form. When the first elastic element A140 is the torsion spring, one end of the first elastic element A140 may be abutted against a portion of the first force receiving element A110, and the other end of the first elastic element A140 may be abutted against at least a portion of the first housing A101 of the processing cartridge, or be abutted against other component disposed on the processing cartridge, such as an end cover disposed at an end portion of the processing cartridge along the length direction (the X direction). The second force receiving element A120 may be disposed on the second housing A102 and slide relative to the first housing A101. A second elastic element A130 may be disposed between the second force receiving element A120 and the second housing A102, which may enable the second force receiving element A120 to be rebounding. Obviously, the second elastic element A130 may also be disposed on a component, such as the end cover, of the second force receiving element A120 which is relatively fixed to the processing cartridge.

[0013] Furthermore, FIG. 5 illustrates a cross-sectional view of the processing cartridge along the direction perpendicular to the length direction (the X direction) of the processing cartridge. A developing element A160 may be disposed at the first housing A101, and a photosensitive element A170 may be disposed at the second housing A102. In one embodiment, the force receiving device may be disposed at the first housing A101. Obviously, the force receiving device may not be limited to be disposed at the first housing A101; and similarly, the force receiving device may also be disposed at the second housing A102.

[0014] Furthermore, during the process of the processing cartridge from installation to printing task execution, the cooperation process between the force receiving device and the electronic image forming device may refer to FIGS. 7-10.

[0015] For example, FIGS. 7-8 illustrate the installation process of the processing cartridge. One or more processing cartridges may be on an installing frame of the electronic image forming device. As shown in FIG. 7, when the processing cartridge is not pushed into the electronic image forming device, the first force receiving element A110 may be maintained at an initial position by the first elastic element A140, and the initial position may be a position protruding outwardly relative to the housing of the processing cartridge. At this point, no force is between the second force receiving element A120 and the first force receiving element A110. As shown in FIG. 8, when the processing cartridge is installed in the electronic image forming device along the arrow direction shown in FIG. 7, the first force receiving element A110 may contact a protruding portion 9101 disposed in the electronic image forming device. In addition, under the action of the protruding portion 9101, the first force receiving element A110 may rotate around the axis L2, and the portion of the first force receiving element A110 protruding outwardly from the processing cartridge may rotate toward the inside of the processing cartridge, that is, move toward a position close to the first housing A101 until the protruding portion 9101 of the electronic image forming device is avoided, thereby facilitating the processing cartridge installation. Obviously, when the protruding portion 9101 in the electronic image forming device does not apply force on the first force receiving element A110, the first force receiving element A110 may return to the initial position under the action of the first elastic element A140. Compared with the existing technology, in the installation process of the processing cartridge, the problem that the processing cartridge is jammed in the electronic image forming device due to the unexpected ejection of the first force receiving element A110 may not occur in the above-mentioned configuration manner.

[0016] As shown in FIG. 9, after the processing cartridge is installed, the door cover of the electronic image forming device may be closed, and a printing task may start. Before the electronic image forming device executes the printing task, the first force receiving element A110 may be in the initial position. When the electronic image forming device executes the printing task, the first force applying element 9201 at the first force applying device 920 disposed in the electronic image forming device may act on the second force receiving element A120, which may enable the second force receiving element A120 to slide relative to the first housing A101, and also enable an abutting element A1201 at the second force receiving element A120 to be abutted against the first force receiving element A110, thereby stabilizing the first force receiving element A110 at the initial position.

[0017] As shown in FIG. 10, when the processing cartridge does not perform the electronic image forming operation, the roller and drum (e.g., a developing roller and a photo-sensitive drum) separation operation may be required. The second force applying device 930 may also include a second force applying element 9301. The second force applying element 9301 may act on the left side of the first force receiving element A110 (relative to FIG. 10) along the direction perpendicular to the length direction (the X direction) of the processing cartridge, thereby enabling the first housing A101 to rotate relative to the second housing A102, and also enabling the developing element A160 and the photo-sensitive element A170 to move from a contact position to a separation position. At this point, a gap N may be formed between the surfaces of the developing element A160 and the photo-sensitive element A170, that is, the roller drum separation operation may be implemented.

Embodiment 2

[0018] In the first embodiment, if the first force receiving element A110 is relatively close to the inner top surface of the machine after the processing cartridge is installed in the processing cartridge tray 910 disposed in the electronic image forming device, during the process

of pulling the processing cartridge tray 910 out of the main body of the electronic image forming device, the first force receiving element A110 may not rotate along the direction close to the inside of the processing cartridge housing due to that the entering direction and the pulling direction of the processing cartridge tray 910 are opposite. As a result, the first force receiving element A110 may easily contact or interfere with the inner surface of the electronic image forming device.

[0019] One embodiment may be a further improved embodiment, referring to FIGS. 11-15 for the description of one embodiment. FIG. 11 illustrates a stereoscopic view of the processing cartridge provided in one embodiment, where, as shown in the view, the X direction is the length direction of the processing cartridge, and the Y and Z directions are directions perpendicular to the X direction, respectively. As shown in FIG. 11, the processing cartridge B10 may include a first housing B101 and a second housing B102. A force receiving device may be disposed on the processing cartridge B10. The force receiving device may include a first force receiving element B110 and a second force receiving element B120, which are respectively configured to cooperate with the first force applying element 9201 and the second force applying element 9301 disposed in the electronic image forming device.

[0020] For example, referring FIG. 12, the first force receiving element B110 and the second force receiving element B120 may be respectively disposed on a frame B140 which may be relatively fixed to the first housing B101 or the second housing B102, or may be disposed on the first housing B101 or the second housing B102.

[0021] The force receiving device may further include a first elastic element S1. The first elastic element S1 may optionally be a torsion spring component, and may also be a tension spring, or a compression spring, which may not be limited in detail according to the embodiments of the present disclosure. The first elastic element S1 may enable the first force receiving element B110 to be at the position protruding from the first housing B101 without being affected by other external forces.

[0022] As shown in FIG. 12, such position may optionally be a position of the portion of the first force receiving element B110 protruding outwardly from the processing cartridge housing. Referring to FIGS. 12-13, under the action of the first elastic element S1, the first force receiving element B110 may be in the position protruding outwardly from the processing cartridge housing. Meanwhile, the first force receiving element B110 may be configured to be capable of rotating around the axis L3, where the direction of the axis L3 may be in parallel with the length direction (the X direction) of the processing cartridge housing. When the processing cartridge tray 910 is installed along the direction perpendicular to the length direction of the processing cartridge (e.g., installed along the Y direction), the portion of the first force receiving element B110 protruding outwardly from the processing cartridge housing may rotate around the W2 direction when interfering with the portion inside the electronic image forming device. When the processing cartridge tray 910 is removed along the direction opposite to the Y direction, the first force receiving element B110 may also rotate around the direction opposite to the W2 direction due to the interference between the first force receiving element B110 and the portion inside the electronic image forming device. During the installation and removal process, the first force receiving element B110 may be closer to the first housing B101 compared with the position in FIGS. 12-13. Compared with the first embodiment, in the technical solution provided in the embodiments of the present disclosure, the problem that the first force receiving element B110 does not rotate oppositely along the direction close to the inside of the processing cartridge housing during the process of pulling the processing cartridge tray 910 out of the main body of the electronic image forming device may not occur. That is, the processing cartridge in the first embodiment may not implement the effect of being removed from the electronic image forming device; however, the processing cartridge of the present disclosure may not only implement the entrance into the electronic image forming device but also implement the effect of being removed from the electronic image forming device.

[0023] In one embodiment, the processing cartridge may include a locking member which is optionally the second force receiving element B120. Obviously, the locking member may also be other locking portion or a self-locking structure. The following describes the action of the second force receiving element B120 on the first force receiving element B110.

[0024] The second force receiving element B120 may be disposed on the processing cartridge along the Y direction and move along the Y direction under the action of an external force. The second force receiving element B120 may be configured to receive the force of the first force applying element 9201 in the electronic image forming device, such that the force may act on the first force receiving element B110 through the second force receiving element B120. In order to avoid the rigid contact between the second force receiving element B120 and the first force receiving element B110, a second elastic element S2 and a U-shaped structure may be disposed at the second force receiving element B120. The second elastic element S2 may be disposed in the U-shaped structure to enable the second force receiving element B120 to have a certain elasticity.

[0025] FIGS. 14a - 14b illustrate the interaction between the second force receiving element B120 and the first force receiving element B110. Referring to FIG. 14a, when the force of the first force applying member 9201 of the electronic image forming device is not be applied on the second force receiving element B120 at this point, the first force applying portion B120 may not be in contact with the first force receiving element B110; meanwhile, the first force receiving element B110 may be at the position protruding outwardly from the processing cartridge

housing under the action of the first elastic element S1 and may rotate around the axis L3 under the action of the external force. Referring to FIG. 14b, when a force F1 of the first force applying member 9201 of the electronic image forming device is applied on the second force receiving element B120, the first force receiving element B110 may slide along the Y direction; and the second force receiving element B120 may be in contact with the first force receiving element B110 and restrict the rotation of the first force receiving element B110, that is, the first force receiving element B110 may not rotate along the direction close to the second housing B102. Optionally, an end portion B121 of the second force receiving element B120 may be inserted into a trench portion B111 of the first force receiving element B110 to stabilize the first force receiving element B110 at the position protruding outwardly from the processing cartridge housing, such that there is no relative movement between the first force receiving element B110 and the first housing B101. At this point, the second force applying element 9301 may apply a second force F2 onto the first force receiving element B110 to rotate the first housing B101 of the processing cartridge relative to the second housing B102.

[0026] FIG. 15 illustrates the roller drum separation operation, that is, the developing roller B160 disposed at the first housing B101 and the photo-sensitive drum B170 disposed at the second housing B102 may be separated from each other. At this point, a gap N may be formed between the surfaces of the developing roller B160 and the photo-sensitive drum B170. The force receiving device may further include a third elastic element S3, such as a compression spring, optionally. The third elastic element S3 may be disposed between the second force receiving element B120 and the frame B140 or the first housing B101 of the processing cartridge. When the force F1 applied by the first force applying element 9201 is removed, the third elastic element S3 may be configured to reset the second force receiving element B120.

[0027] Furthermore, the trench portion B111 may also be disposed at the second force receiving element B120. Meanwhile, a protruding portion may be disposed at the first force receiving element B110 to match the trench portion B111, thereby stabilizing the first force receiving element B110 at the protruding position and locking the first force receiving element B110.

Embodiment 3

[0028] The present disclosure further provides another embodiment which may simplify the structure of the electronic image forming device.

[0029] The electronic image forming device in the existing technology may include a tray for disposing the processing cartridge and a door cover, where the door cover and the tray are connected with each other. After pushing the tray inside the electronic image forming device, the door cover of the electronic image forming device may be closed. The door cover may drive the tray to move, such that the tray may carry the processing cartridge disposed on the tray to move downwardly (along the direction opposite to the Z axis direction shown in FIG. 16) a certain distance to complete the installation, and also make the processing cartridge in the position to be operated.

[0030] Referring to FIG. 16, a second force receiving element C120 and a first force receiving element C110 may be disposed at a processing cartridge C10 provided by one embodiment. During the process of carrying the processing cartridge downwardly along the Z axis by the tray, the second force receiving element C120 may receive the force from an element 9203 inside the electronic image forming device, which may enable the second force receiving element C120 to move upwardly along the Z axis; and a rotating axis L4 of the first force receiving element C110 may rotate along the direction W3 by the action of the second force receiving element C120, thereby moving the first force receiving element C110 from a retracted position to a position protruding outwardly from the processing cartridge housing. At this point, the first force receiving element C110 may receive the force of the second force applying element 9301 disposed in the electronic image forming device, and the first housing 101 of the processing cartridge may move relative to the second housing 102, thereby separating the developing roller and the photo-sensitive drum. Meanwhile, a first elastic element may be disposed to be connected with the first force receiving element C110, and the first elastic element may be a tension spring or a spring. After the processing cartridge is lifted up along the direction of the Z axis, the second force receiving element C120 may not be affected by the element 9203 disposed in the electronic image forming device, and the first elastic element may reset the first force receiving element C110. Furthermore, the second force receiving element C120 and the first force receiving element C110 may also be configured as a linked action, where the first force receiving element C110 may be retracted when the second force receiving element is reset. Or, a second elastic element may be additionally configured to be connected with the second force receiving element C120, and the first force receiving element C110 may be reset by an elastic force.

Embodiment 4

[0031] The force receiving device in one embodiment of the present disclosure may be an improved version of the force receiving device in the second embodiment in combination with the third embodiment. In one embodiment, the installation direction of the processing cartridge may be from left to right in FIG. 17 and FIGS. 19-22. That is, after the processing cartridge is installed in the processing cartridge tray 910 of the electronic image forming device, the tray may carry the processing cartridge to be installed from left to right and to be removed from right to left.

[0032] Compared with the force receiving device in the second embodiment, the structure in one embodiment may have the following modifications.

[0033] In the second embodiment, as shown in FIG. 13, the first force receiving element B110 may rotate around the axis L3. In one embodiment, in order to further simplify the structure and reduce the cost of the production and assembly process, the rotating axis of the first force receiving element D110 in one embodiment may coincide with the rotating axis L3 of the first housing D101 which may rotate relative to the second housing D102 during the roller drum separation process. Optionally, the first force receiving element D110 may be directly disposed at an existing separation frame D999 in the existing technology to reduce the quantity of elements and save cost.

[0034] In the second embodiment, as shown in FIG. 13, the first force receiving element B110 may be connected to the first elastic element S1, and the first elastic element S1 may enable the first force receiving element B110 to be at a preset position without an external force, where the position may be protruding relative to the first housing D101.

[0035] As shown in FIGS. 17-22, in one embodiment, the first force receiving element D110 may still be connected to the tonner main body through a first elastic element (not shown in FIGS. 17-22), but the preset position may be closer to the first housing D101. As shown in FIG. 17, the preset position of a pushing rod D111, which is the portion of the first force receiving element D110 for being abutted against the electronic image forming device, may be closer to the first housing D101 relative to the vertical direction.

[0036] In the second embodiment, as shown in FIGS. 14a-14b, after receiving an external force, the second force receiving element B120 may act on the first force receiving element B110, such that the force may be received by the first force receiving element B110 to separate the roller and the drum. The second elastic element S2 and the third elastic element S3 may be disposed at the second force receiving element B120.

[0037] In one embodiment, as shown in FIGS. 17-18, the second force receiving element D120 may not be configured to directly contact the pushing pod D111 of the first force receiving element D110. The first force receiving element D110 may be an annular structure, and the center of the annular structure may be the rotating axis where the first housing D101 moves around the second housing D102 during the roller and drum separation. Two protrusions, which are the pushing rod D111 and an abutting element D112, may be disposed at the first force receiving element D110. The abutting element D112 may be configured to be abutted against an abutting end D121 of the second force receiving element D120, which may achieve the objective of restraining the first force receiving element D110 by the second force receiving element D120. The second force receiving element D120 may no longer receive the external force from the electronic image forming device, by relay on the gravity of the processing cartridge itself.

[0038] It should be understood that the second force receiving element D120 may be similar to the second force receiving element B120 in the second embodiment and may also be disposed at the first housing D101. Meanwhile, the second elastic element S2 and the third elastic element S3 may no longer be disposed at the second force receiving element D120, and the structure may be more explicit with the following description.

[0039] FIG. 17 illustrates the state of the processing cartridge before being installed in the electronic image forming device. The viewing angle may be obtained by observing from a sidewall adjacent to the force receiving device in two sidewalls along the length direction of the processing cartridge. As shown in FIG. 17, the first force receiving element D110 may swing freely relative to the rotating axis without being restrained by the second force receiving element D120, and the first force receiving element D110 may be protruding relative to the first housing D101 at this point.

[0040] Optionally, an arc-shaped swing restraining element D190 may be further disposed at the processing cartridge. The swing restraining element D190 may include a first end D191 and a second end D192. The first end D191 and the second end D192 may respectively contact the first force receiving element D110 to restrain the swing angle of the first force receiving element D110. Optionally, the swing restraining element D190 may be disposed at the first housing D101.

[0041] FIG. 18 illustrates the stereoscopic view of the second force receiving element D120. As shown in FIG. 18, the second force receiving element D120 may include the abutting end D121 which is abutted against the abutting element D112, a pushing end D122 at an opposite end of the abutting end D121, and a contacting end D123 which is in contact with the second elastic element (not shown). One end of the second elastic element may be abutted against the contacting end D123, and the other end may be abutted against the processing cartridge main body. The second elastic element, without an external force, may not generate an elastic force or generate an elastic force that moves the second force receiving element D120 away from the first force receiving element D110.

[0042] FIG. 19 illustrates the state where the first force receiving element D110 interferes with the electronic image forming device when the processing cartridge is installed in the electronic image forming device. At this point, the processing cartridge is installed on the tray along the direction that the first housing D101 is at the front and the second housing D102 is at the rear (e.g., the movement from left to right in FIG. 19). Since the second force receiving element D120 has not been pushed and/or not moved to the position restraining the first force receiving element D110, the first force receiving element D110 may freely swing, relatively. For example, the first force receiving element D110 may swing to the

position closer to the first housing D101, thereby smoothly installing the processing cartridge in the electronic image forming device. After the processing cartridge is installed in the electronic image forming device with the tray 910, the first elastic element may push the first force receiving element D110 to be reset to the state in FIG. 17.

[0043] FIG. 20 illustrates the state where the door cover of the electronic image forming device is closed after the processing cartridge is installed in the electronic image forming device, where the door cover is closed at this point. At the process of closing the door cover, the tray with the processing cartridge may be lowered along the vertical direction. At this point, the pushing end D122 of the second force receiving element D120 may gradually be abutted against the inside of the electronic image forming device; and under the pressure of the gravity of the processing cartridge, the second force receiving element D120 may move toward the direction of the first force receiving element D110 and compress the second elastic element. When the door cover of the electronic image forming device is completely closed and the tray is lowered to the appropriate position, the second force receiving element D120 may move to the position. At this point, the first force receiving element D110 may be restrained by the second force receiving element D120 as shown in FIG. 20. Therefore, the first force receiving element D110 may not swing freely along the counterclockwise direction shown in FIG. 20, that is, the pushing pod D111 may not move freely along the direction toward the second housing D102. Then, the electronic image forming device may apply a force on the pushing rod D111 along the direction toward the second housing D102, such that the first housing D101 may rotate relative to the second housing D102 to complete the roller and drum separation.

[0044] FIG. 21 illustrates the state that the second force receiving element D120 is normally ejected when the processing cartridge tray is removed from the electronic image forming device with the tray. FIG. 22 illustrates the state that the second force receiving element D120 is not normally ejected when the processing cartridge tray is removed from the electronic image forming device with the tray. In both states, the first force receiving element D110 may always be a protruding state relative to the first housing D101. At this point, the first force receiving element D110 may interfere with the electronic image forming device, the processing cartridge may swing along the clockwise direction (e.g., the direction where the pushing rod D111 moves toward the first housing D101), thereby being removed smoothly. Compared with the first embodiment, in the technical solution provided in the embodiments of the present disclosure, the problem that the first force receiving element D110 may not rotate oppositely along the direction close to the inside of the processing cartridge housing during the process of pulling the processing cartridge tray 910 out of the main body of the electronic image forming device may not occur. That is, the processing cartridge in the first embodiment may not implement the effect of being removed from the electronic image forming device; however, the processing cartridge of the present disclosure may not only implement the entrance into the electronic image forming device but also implement the effect of being removed from the electronic image forming device.

[0045] For the structures in the second embodiment or other similar structures, when the electronic image forming device is opened to remove the processing cartridge after the printing is completed or the life of the processing cartridge is reached, if the second force receiving element D120 is not normally pushed by the second elastic element to be reset to the original position without the external force (e.g., not ejected away from the processing cartridge), the first force receiving element D110 may not be able to swing normally during the process of removing the processing cartridge, such that the processing cartridge may be jammed and unable to be removed. However, in one embodiment as shown in FIG. 22, even if the second force receiving element D120 is not completely ejected, the processing cartridge may still be removed from the electronic image forming device with the tray. Meanwhile, when the faulty processing cartridge is reinstalled in the electronic image forming device, it is obvious that the processing cartridge, especially the first force receiving element D110, may no longer reach the position shown in FIG. 19 due to the interference, such that the processing cartridge may not be installed in the image forming device. Therefore, such design may implement the function of automatic fault detection. The function may prevent the problem in other cases that the electronic image forming device may not be used because the processing cartridge is not be installed or removed due to the malfunction in the electronic image forming device.

Embodiment 5

[0046] FIG. 23 illustrates a stereoscopic view of the processing cartridge in the fifth embodiment, and FIG. 24 illustrates a locally enlarged view of FIG. 23, where FIG. 24 is a right end portion in FIG. 23. In one embodiment, the force receiving device may be located on the right side of the processing cartridge relative to the installation direction of the processing cartridge and also be adjacent to the front of the installation direction. After being installed in the electronic image forming device, the force receiving device may be on the same side of the first force applying device 920 and the second force applying device 930 in the electronic image forming device. As shown in FIG. 24, the processing cartridge may include a second force receiving element 110, a first force receiving element 120, and a support frame 130 that supports the second force receiving element 110 and/or the first force receiving element 120. The second force receiving element 110 may contact and be pushed by the first force applying device 920 of the electronic image forming device, and the first force receiving element 120

may contact and be pushed by the second force applying device 930 of the electronic image forming device.

[0047] FIGS. 25-26 are exploded views, which may mainly illustrate how the first force receiving element 120 is fixed on the support frame 130. The first force receiving element 120 may include an elastic element 121. Optionally, the elastic element 121 may push the first force receiving element 120 to move away from the right end portion of the processing cartridge, such that the first force receiving element 120 may be at the position away from the right end portion of the processing cartridge without external force, as shown in FIG. 25. Obviously, the elastic element may also be disposed on the side of the first force receiving element 120 adjacent to the left end portion of the processing cartridge and may pull the first force receiving element 120 to move toward the left end portion. The first force receiving element 120 may further include a limiting part 122, such that the first force receiving element 120 may only translate along the length direction of the processing cartridge. Optionally, the limiting part 122 may be a cross protrusion, and the support frame 130 may include a cross trench 131. Through the engagement of the limiting part 122 and the cross trench 131, the first force receiving element 120 may only translate along the length direction of the processing cartridge, as shown in FIG. 26. Obviously, the quantity of the trenches and protrusions may be appropriately increased or decreased, or other existing technology in the mechanical field may be applied to keep the first force receiving element 120 moving only along the length direction of the processing cartridge. Only a preferred solution with a relatively simple process is introduced in one embodiment.

[0048] FIG. 27 is an exploded view, which may mainly illustrate how the second force receiving element 110 is fixed on the support frame 130. Through the engagement of the trench 132 and the second force receiving element 110, the second force receiving element 110 may only translate along the length direction of the processing cartridge.

[0049] FIGS. 28-29 illustrate schematics of the main working principle of the force receiving device of the processing cartridge. Optionally, the second force receiving element 110 may include a pushing block 112 which is a right triangle. The closer the right triangle to the front of the installation direction of the processing cartridge is, the narrower the width of the right triangle is. The hypotenuse of the pushing block 112 may face the position which is adjacent to the right end of the processing cartridge. The first force receiving element 120 may include a receiving block 123 which is a right triangle. The closer the right triangle to the front of the installation direction of the processing cartridge is, the wider the width of the right triangle is. The hypotenuse of the receiving block 123 may face the position which is adjacent to the left end of the processing cartridge. When the processing cartridge is not installed in the electronic image forming device, or when the processing cartridge is being installed in the electronic image forming device, the pushing block 112 may not push the receiving block 123, as shown in FIG. 28. When the processing cartridge has been installed in the electronic image forming device and after the door cover has been closed, the first force applying device 920 of the electronic image forming device may push a second force receiving element 111 at the second force receiving element 110, such that the entire second force receiving element 110 may translate along the installation direction of the processing cartridge and the hypotenuse of the pushing block 112 may be engaged with the hypotenuse of the receiving block 123, thereby pushing the first force receiving element 120 to move to the right end of the processing cartridge, as shown in FIG. 29. Finally, a first force receiving element 124 of the first force receiving element 120 may be in the position which may be pushed by the second force applying device 930 in the electronic image forming device. When the processing cartridge is used up and removed from the electronic image forming device, the second force receiving element 110 may not be pushed by a first pushing element after the door cover of the electronic image forming device is opened. Therefore, the elastic element 121 may push the first force receiving element 120 to move along the direction away from the right end of the processing cartridge, and also oppositely push the second force receiving element 110 to move toward the opposite direction of the installation direction of the processing cartridge through the abutting between hypotenuses of the receiving block 123 and the pushing block 112, thereby resetting to the state shown in FIG. 28. Optionally, a buffering element 113 may be also disposed at the second force receiving element 110 to prevent jamming during the operating process. Optionally, the buffering element 113 may be a U-shaped structure, and a spring may be disposed at the U-shaped structure to ensure certain space in the process of making the second force receiving element 110 to be pushed and translated under the action of the force.

[0050] Obviously, performing the pushing using the hypotenuse may only be a preferred solution in one embodiment, and there are a variety of other manners in the mechanical field of the existing technology, such as using hydraulic control or other various control manners, which may not be described in detail herein.

[0051] FIGS. 30-31 illustrates stereoscopic views of the processing cartridge as viewed along the processing cartridge installation direction. FIG. 30 corresponds to the state in FIG. 28, and in the process of installing the processing cartridge in the electronic image forming device, the interference between the first force receiving element 124 and the second force receiving element 930 may be effectively avoided and the interference collision during the installation process of the processing cartridge may be prevented.

[0052] FIG. 31 corresponds to the state in FIG. 29, and at this point, the processing cartridge has been installed and the door cover of the electronic image forming device

has been closed. If the roller drum separation is performed, the second force applying device 930 may push the first force receiving element 124 to move along the opposite direction of the installation direction of the processing cartridge, that is, the roller and the drum may be separated according to the leverage principle.

Embodiment 6

[0053] After the processing cartridge is installed in the electronic image forming device, the electronic image forming device may inspect the tonner first. During such process, the second force applying device 930 may move a certain distance along the installation direction of the processing cartridge. After the inspection is completed, if the processing cartridge is required to perform the roller drum separation operation, the second force applying device 930 may move along the direction opposite to the installation direction of the processing cartridge and also push the processing cartridge to perform the roller drum separation. A processing cartridge is provided in one embodiment, and the undescribed portions may be the same as the processing cartridge in the fifth embodiment.

[0054] FIG. 32 illustrates a top view of the processing cartridge as viewed along the plane in parallel with the installation direction of the processing cartridge. The processing cartridge in one embodiment may include a second force receiving element 210 which may be similar to the second force receiving element 110 in the first embodiment and only be translated along the installation direction and the opposite direction of the installation direction of the processing cartridge. The processing cartridge may further include a first force receiving element 220. In one embodiment, viewed from the top of the processing cartridge (a plane in parallel with both the length direction of the processing cartridge and the installation direction of the processing cartridge, that is, the viewing angle in FIG. 32), the first force receiving element 220 may rotate clockwise or counterclockwise. For simplicity, the clockwise and/or counterclockwise description of the first force receiving element 220 in one embodiment may both use the viewing angle in FIG. 32 as the standard. The processing cartridge may further include a support frame 230. The support frame 230 may include a protruding support axle 231 which may support the rotation of the first force receiving element 220 and may further optionally include a first limiting block 232 and a second limiting block 233 which limit the movement range of the first force receiving element 220.

[0055] FIG. 33 illustrates an exploded view of the positional relationship between the first force receiving element 220 and the support frame 230. An elastic element 221 may push the first force receiving element 220, such that the first force receiving element 220 may have a tendency to rotate counterclockwise. Optionally, the elastic element 221 may be a torsion spring, where one end of the elastic element 221 may be connected to the first force receiving element 220 and the other end may be connected to the processing cartridge main body or other element disposed at the processing cartridge. The torsion spring 221 and the first force receiving element 220 may both be sleeved on the support axle 231.

[0056] FIGS. 34-37 illustrate schematics of the working process of the force receiving device. Similar to the first embodiment, the second force receiving element 210 may include a second force receiving part 211 and a buffering element 213. A pushing block 212 may have a different shape from the pushing block 112 in the first embodiment; however, both pushing blocks may be configured to push the first force receiving element 220. The first force receiving element 220 may include a receiving block 223 which may contact and be pushed by the pushing block 212, and may further include a ring 222 sleeved on the support axle 231 and a first force receiving part 224 which may be in contact with the second force applying device 930.

[0057] FIG. 34 illustrates component states when the processing cartridge is not installed in the electronic image forming device and also when the processing cartridge is installed in the electronic image forming device. At this point, the second force receiving element 210 may not be in contact with the first force receiving element 220, and the first force receiving element 220 may have a tendency to rotate counterclockwise due to the action of the elastic element 221. However, a first limiting block 232 is abutted against the receiving block 223 and a second limiting block 233 is abutted against the first force receiving part 224, such that the first force receiving element 220 may not continue rotating counterclockwise. During the installation process, the first force receiving part 224 may not be in contact with the second force applying device 930, thereby effectively avoiding the interference.

[0058] FIG. 35 illustrates component states after the door cover of the electronic image forming device is closed. At this point, the second force receiving element 210 may be pushed to translate along the installation direction of the processing cartridge, and also push the first force receiving element 220. However, the position of the second force applying device 930 prevents the first force receiving element 220 from rotating clockwise, such that the first force receiving element 220 may not be completed rotated. At this point, the buffering element 213 at the second force receiving element 210 may function to be deformed, and the spring in the buffering element 213 may be compressed, thereby smoothly closing the door cover of the electronic image forming device.

[0059] FIG. 36 illustrates components states when the inspection is performed by the electronic image forming device. At this point, the second force applying device 930 may move along the installation direction of the processing cartridge, thereby avoiding the position where the first force receiving element 220 rotates clockwise, which may enable the first force receiving element 220 to be rotated to the position in FIG. 36. Next, if the roller drum separation is required, the electronic image

forming device may control the second force applying device 930 to move along the direction opposite to the installation direction of the processing cartridge, thereby pushing the first force receiving element 220 (the contacting position may be the first force receiving part 224) to separate the roller and the drum, as shown in FIG. 27.

[0060] Optionally, in order to make the position of the first force receiving element 220 as fixed as possible during the roller drum separation process and to reduce the incomplete separation of the roller and the drum caused by the insufficient space, a third limiting block 234 may further be disposed at the support frame 230. The third limiting block 234 may be configured to be abutted against the first force receiving part 224 (shown in FIG. 38) in the states shown in FIGS. 36-37 (e.g., the second force receiving element 210 may push the first force receiving element 220 to an extreme position), such that the applied force during the roller drum separation may be stabilized.

Embodiment 7

[0061] A modification may be made based on the sixth embodiment, that is, the first force receiving element 220 may be rotated counterclockwise. When the processing cartridge is not installed, the first force receiving part 224 may not point toward the front of the installation direction of the processing cartridge in the second embodiment, but toward the rear of the installation direction of the processing cartridge; the pushing block 212 and the receiving block 223 may both be disposed at the left side of the ring 222; and the position of the torsion spring of the elastic element 221 may be adjusted accordingly. That is, the mirror flip may be implemented to enable the first force receiving element 220 to rotate counterclockwise during the installation process.

[0062] Optionally, in order to dispose the limiting element of the third limiting block 234 in the sixth embodiment which may help stabilize the position during the roller drum separation process, a block translated along the length direction of the processing cartridge in the first embodiment may be combined to be abutted against the first force receiving part 224 from the rear of the installation direction; or the third limiting block 234 may be disposed which is retractable relative to the main body of the processing cartridge. Both the translational and retractable blocks may be pushed by the second force receiving element 210 during the movement process to be compressed, extended or translated.

Embodiment 8

[0063] A further modification may be made based on the sixth embodiment according to the actual situation of trial production.

[0064] FIG. 39 illustrates a structural schematic of the processing cartridge in one embodiment, where only the right portion used for the roller drum separation structure is shown. Similar to the sixth embodiment, the processing cartridge in one embodiment may include a second force receiving element 310 and a first force receiving element 320 on which the second force applying device 930 acts. A detachment preventing element 340 may be included in one embodiment, and at least a portion of the projection of the detachment preventing element 340 along the length direction of the processing cartridge may coincide with the first force receiving element 320. The detachment preventing element 340 may be configured to prevent the first force receiving element 320 from detaching during the rotation process. Optionally, the detachment preventing element 340 may be at the first housing 1101 and protrude from the first housing 1101 along the direction away from the processing cartridge.

[0065] FIG. 40 illustrates a structural schematic of the first force receiving element and the second force receiving element in one embodiment. As shown in FIG. 40, a new buffering element 313 may be provided in one embodiment. The buffering element 313 may have similar effect of the buffering element 213, except that the shape is slightly changed from an original 'C" type to an "S" type. Such design may enable the buffering element 313 to withstand a larger amount of deformation, thereby enabling the elements to be more stable during operation.

[0066] Finally, it should be noted that the above-mentioned embodiments may be merely used to describe the technical solution of the present disclosure, rather than limiting the present disclosure.

Claims

1. A processing cartridge (B10, C10), wherein the processing cartridge is detachably installed in an electronic image forming device which includes a first force applying element (9201), the processing cartridge comprising:

   a developing roller (B160) and a first housing (A101, B101) supporting the developing roller;
   a photo-sensitive drum (B170) and a second housing (A102, B102) supporting the photo-sensitive drum;
   a first force receiving element (A110, B110, C110, D110, 120, 220, 320), contactable with the first force applying element, and
   a first elastic element (A140, S1), wherein:

      the first force receiving element has a plurality of position states including a first position state and a second position state; and when being in the first position state, the first force receiving element protrudes relative to the first housing; wherein
      the processing cartridge has a length direction (X), and is configured to be installed in

the electronic image forming device along a direction perpendicular to the length direction;
when being in the second position state, the first force receiving element is closer to the first housing compared with the first position state; and
the first elastic element is configured to maintain the first force receiving element in the first position state,
the first force receiving element is configured to rotate around an axis (L2) which is in parallel with a length direction (X) of the processing cartridge, and
when the first force applying element pushes the first force receiving element to separate the developing roller from the photosensitive drum, the first force receiving element is in the first position state, wherein
the processing cartridge further includes:

a locking element (110, A120, B120, C120, D120, 210, 310), wherein when the developing roller being separated from the photo-sensitive drum in the processing cartridge, the locking element is configured to restrain a movement of the first force receiving element, the locking element being a second force receiving element (110, A120, B120, C120, D120, 210, 310), **characterized in that**
the processing cartridge further includes a second elastic element (A130, S2), configured to enable the second force receiving element to be separated from the first force receiving element.

2. The processing cartridge according to claim 1, wherein:
the electronic image forming device further includes a second force applying element (9301), and the second force receiving element is contactable with the second force applying element for enabling the second force receiving element to restrain movement of the first force receiving element.

Patentansprüche

1. Verarbeitungskartusche (B10, C10), wobei die Verarbeitungskartusche trennbar in einer elektronischen Bildgebungsvorrichtung installiert ist, die ein erstes kraftaufbringendes Element (9201) aufweist, die Verarbeitungskartusche aufweisend:

eine Entwicklungsrolle (B160) und ein erstes Gehäuse (A101, B101), das die Entwicklungsrolle trägt;
eine lichtempfindliche Trommel (B170) und ein zweites Gehäuse (A102, B102), das die lichtempfindliche Trommel trägt;
ein erstes kraftaufnehmendes Element (A110, B110, C110, D110, 120, 220, 320), das mit dem ersten kraftaufbringenden Element in Kontakt gebracht werden kann, und
ein erstes elastisches Element (A140, S1), wobei:

das erste kraftaufnehmende Element mehrere Positionszustände aufweist, zu denen ein erster Positionszustand und ein zweiter Positionszustand gehören; und
wobei das erste kraftaufnehmende Element, wenn es sich im ersten Positionszustand befindet, relativ zu dem ersten Gehäuse vorspringt; wobei
die Verarbeitungskartusche eine Längsrichtung (X) aufweist und eingerichtet ist, um in der elektronischen Bildgebungsvorrichtung in einer Richtung installiert zu sein, die rechtwinklig zur Längsrichtung verläuft;
wobei sich das erste kraftaufnehmende Element, wenn es sich im zweiten Positionszustand befindet, näher an dem ersten Gehäuse befindet als im ersten Positionszustand; und
das erste elastische Element eingerichtet ist, das erste kraftaufnehmende Element in dem ersten Positionszustand zu halten,
wobei das erste kraftaufnehmende Element eingerichtet ist, sich um eine Achse (L2) zu drehen, die parallel zu einer Längsrichtung (X) der Verarbeitungskartusche läuft, und
sich das erste kraftaufnehmende Element, wenn das kraftaufbringende Element auf das erste kraftaufnehmende Element drückt, um die Entwicklungsrolle von der lichtempfindlichen Trommel zu trennen, in dem ersten Positionszustand befindet, wobei
die Verarbeitungskartusche ferner aufweist:

ein Sperrelement (110, A120, B120, C120, D120, 210, 310), wobei das Sperrelement, wenn die Entwicklungsrolle von der lichtempfindlichen Trommel in der Verarbeitungskartusche getrennt wird, eingerichtet ist, eine Bewegung des ersten kraftaufnehmenden Elements zu beschränken, wobei das Sperrelement ein zweites kraftaufnehmendes Element (110, A120, B120, C120, D120, 210, 310) ist, **dadurch gekennzeichnet, dass**

die Verarbeitungskartusche ferner ein zweites elastisches Element (A130, S2) umfasst, das eingerichtet ist, das zweite kraftaufnehmende Element in die Lage zu versetzen, von dem ersten kraftaufnehmenden Element getrennt zu werden.

2. Verarbeitungskartusche nach Anspruch 1, wobei:
die elektronische Bildgebungsvorrichtung ferner ein zweites kraftaufbringendes Element (9301) aufweist, und das zweite kraftaufnehmende Element mit dem zweiten kraftaufbringenden Element in Kontakt gebracht werden kann, um das zweite kraftaufnehmende Element in die Lage zu versetzen, die Bewegung des ersten kraftaufnehmenden Elements zu beschränken.

Revendications

1. Cartouche de traitement (B10, C10), dans laquelle la cartouche de traitement est installée de façon détachable dans un dispositif de formation d'image électronique, lequel inclut un premier élément d'application de force (9201), la cartouche de traitement comprenant :

un rouleau de développement (B160) et un premier boîtier (A101, B101) supportant le rouleau de développement ;
un tambour photosensible (B170) et un deuxième boîtier (A102, B102) supportant le tambour photosensible ;
un premier élément de réception de force (A110, B110, C110, D110, 120, 220, 320), lequel peut être mis en contact avec le premier élément d'application de force, et
un premier élément élastique (A140, S1), dans laquelle :

le premier élément de réception de force présente une pluralité d'états de position, incluant un premier état de position et un deuxième état de position ; et
lorsqu'il se trouve dans le premier état de position, le premier élément de réception de force fait saillie par rapport au premier boîtier ; dans laquelle
la cartouche de traitement présente une direction longitudinale (X), et est configurée pour être installée dans le dispositif de formation d'image électronique, le long d'une direction perpendiculaire à la direction longitudinale ;
lorsqu'il se trouve dans le deuxième état de position, le premier élément de réception de force est plus proche du premier boîtier en comparaison avec le premier état de position ; et
le premier élément élastique est configuré pour maintenir le premier élément de réception de force dans le premier état de position,
le premier élément de réception de force est configuré pour tourner autour d'un axe (L2) parallèle à une direction longitudinale (X) de la cartouche de traitement, et
lorsque le premier élément d'application de force pousse le premier élément de réception de force de manière à séparer le rouleau de développement du tambour photosensible, le premier élément de réception de force est dans le premier état de position, dans laquelle
la cartouche de traitement inclut en outre :

un élément de verrouillage (110, A120, B120, C120, D120, 210, 310), dans laquelle, lorsque le rouleau de développement est séparé du tambour photosensible dans la cartouche de traitement, l'élément de verrouillage est configuré pour limiter un déplacement du premier élément de réception de force, l'élément de verrouillage étant un deuxième élément de réception de force (110, A120, B120, C120, D120, 210, 310), **caractérisée en ce que**
la cartouche de traitement inclut en outre un deuxième élément élastique (A130, S2), configuré pour permettre au deuxième élément de réception de force d'être séparé du premier élément de réception de force.

2. Cartouche de traitement selon la revendication 1, dans laquelle :
le dispositif de formation d'image électronique inclut en outre un deuxième élément d'application de force (9301), et le deuxième élément de réception de force peut être mis en contact avec le deuxième élément d'application de force pour permettre au deuxième élément de réception de force de limiter le déplacement du premier élément de réception de force.

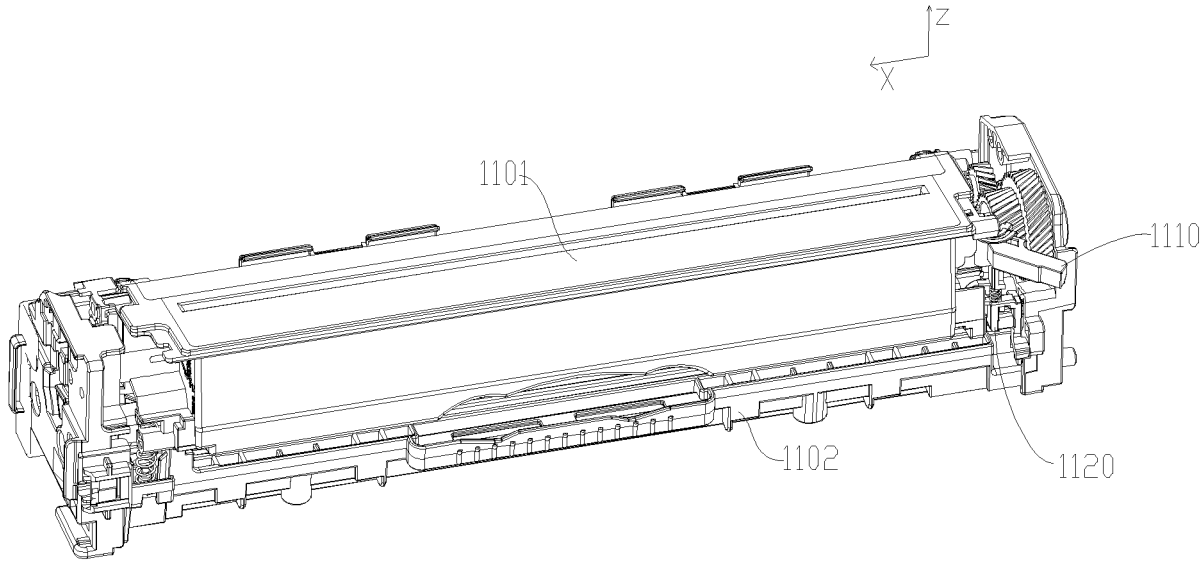

FIG. 1

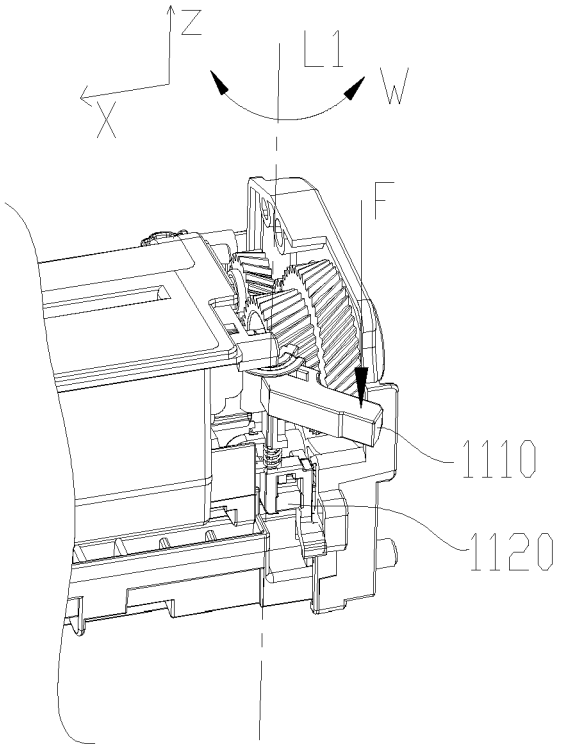

FIG. 2

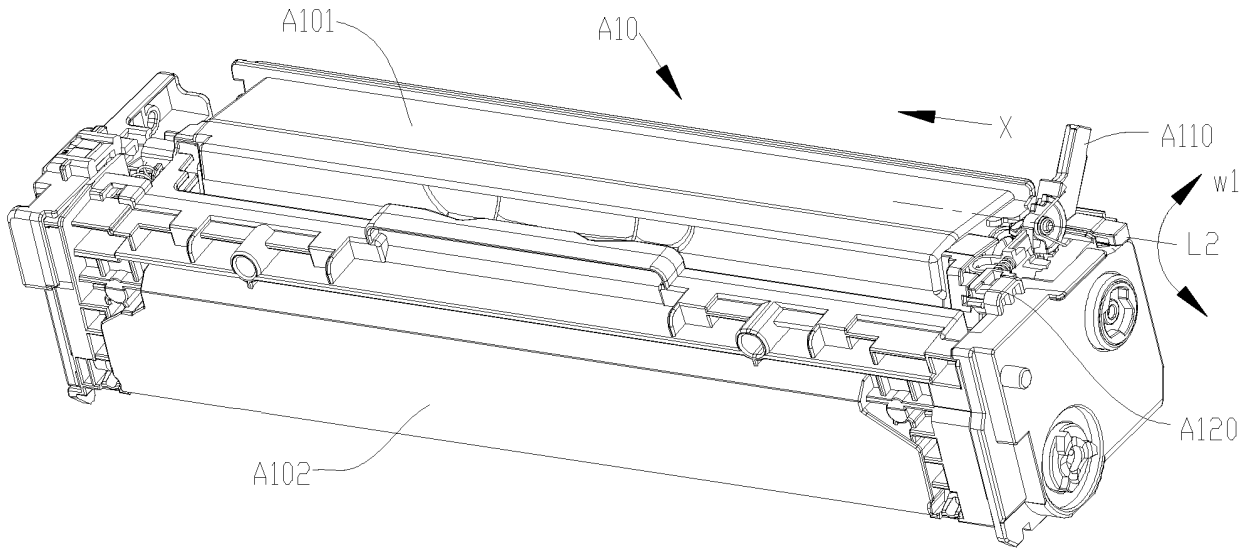
A101
A10
X
A110
w1
L2
A120
A102

FIG. 3

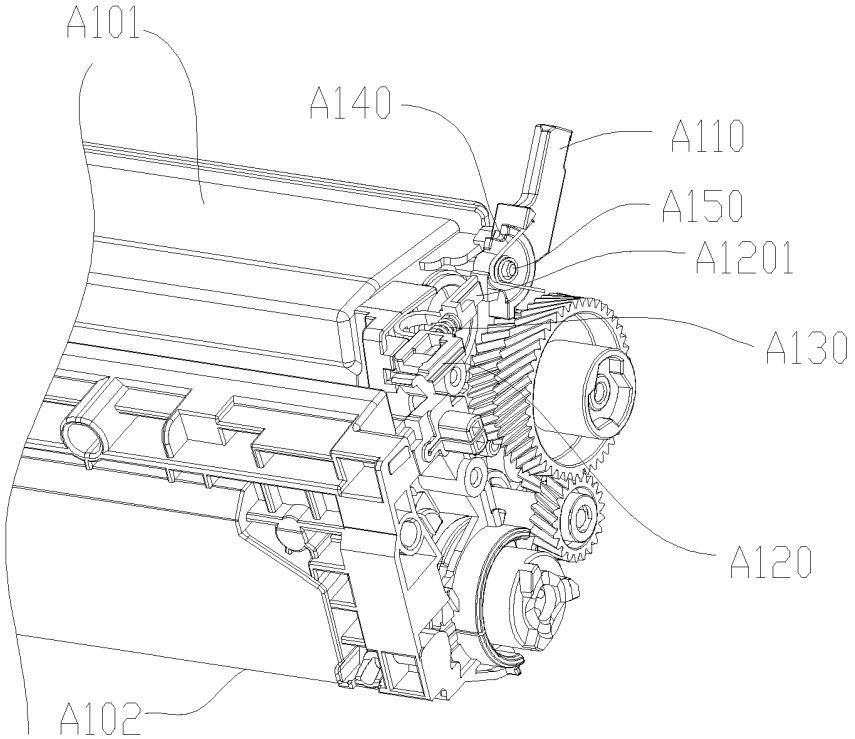
A101
A140
A110
A150
A1201
A130
A120
A102

FIG. 4

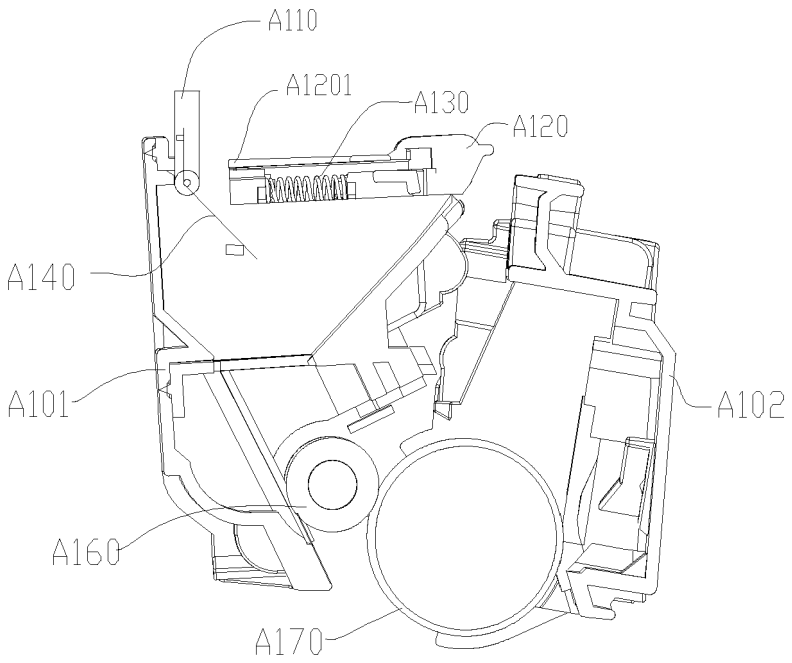

FIG. 5

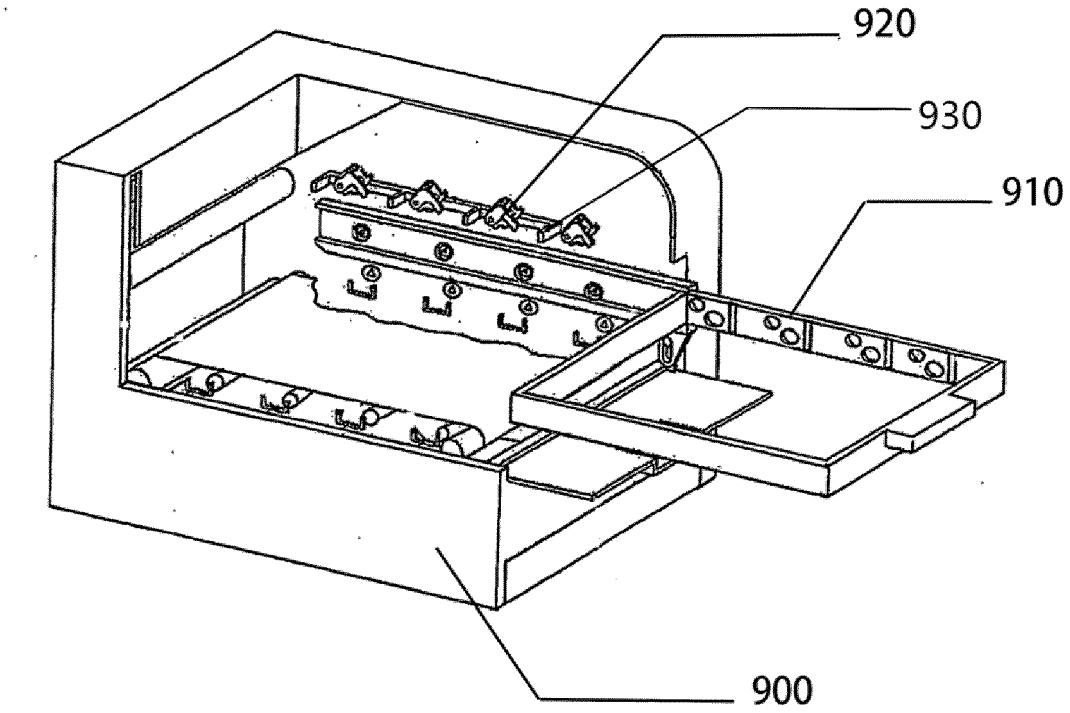

FIG. 6

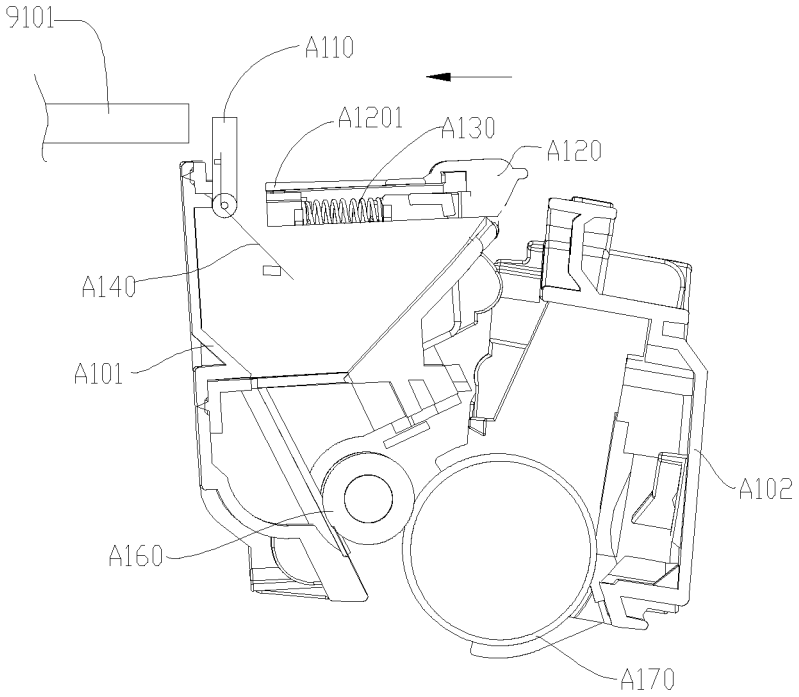
9101
A110
A1201
A130
A120
A140
A101
A102
A160
A170

FIG. 7

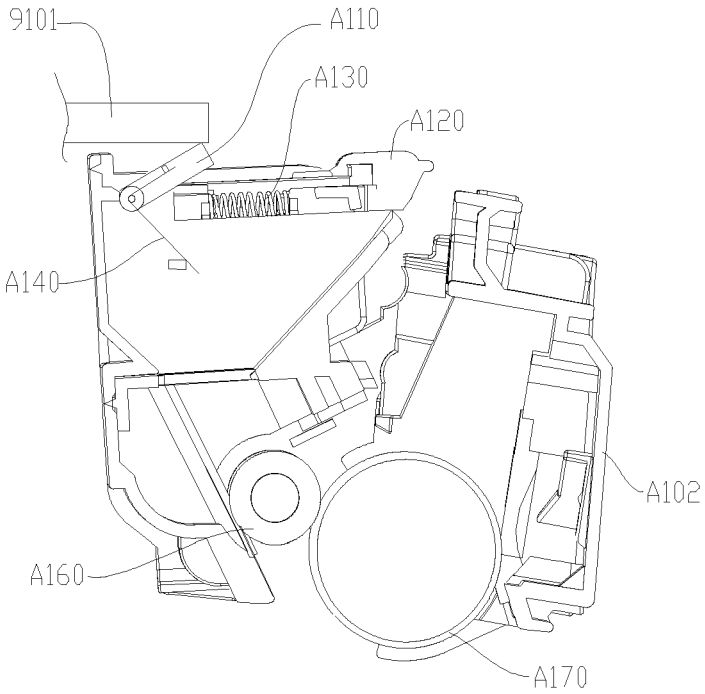
9101
A110
A130
A120
A140
A102
A160
A170

FIG. 8

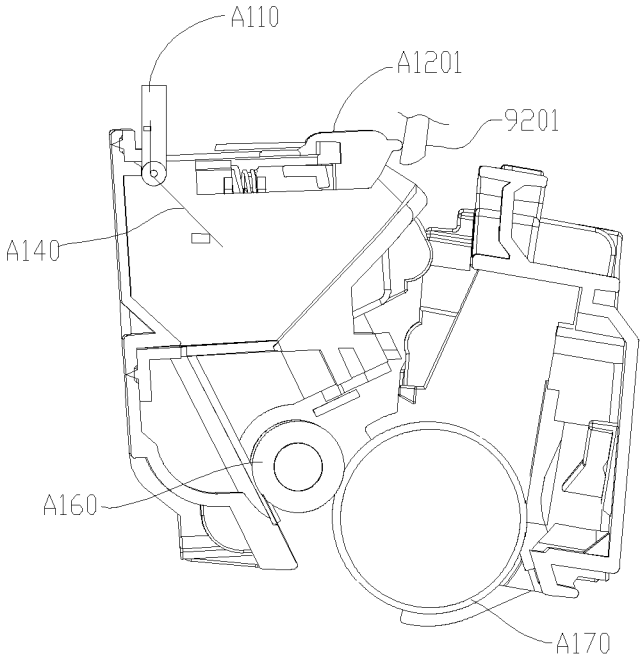
A110
A1201
9201
A140
A160
A170

FIG. 9

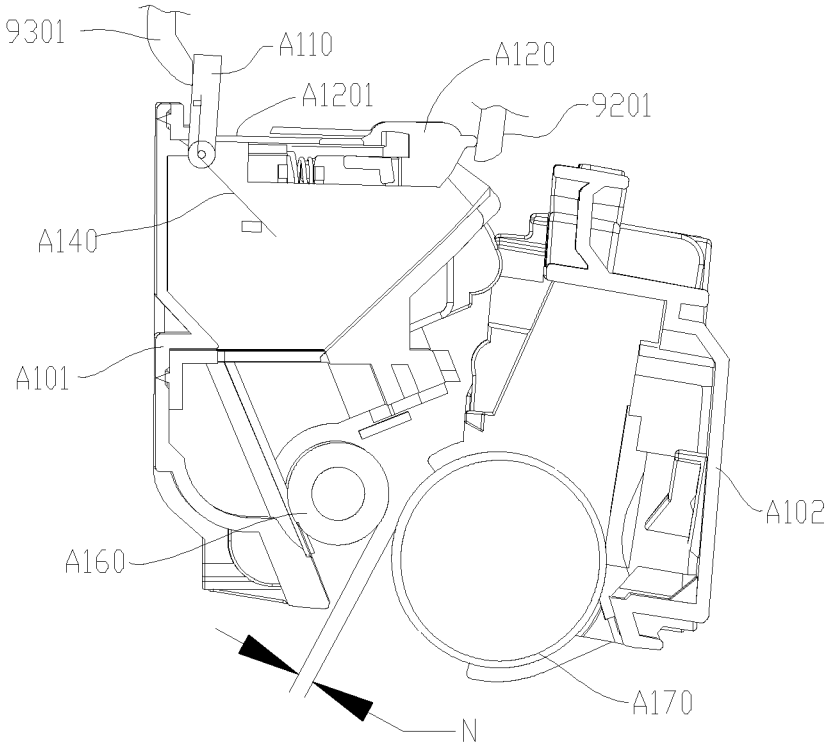
9301
A110
A120
A1201
9201
A140
A101
A102
A160
A170
N

FIG. 10

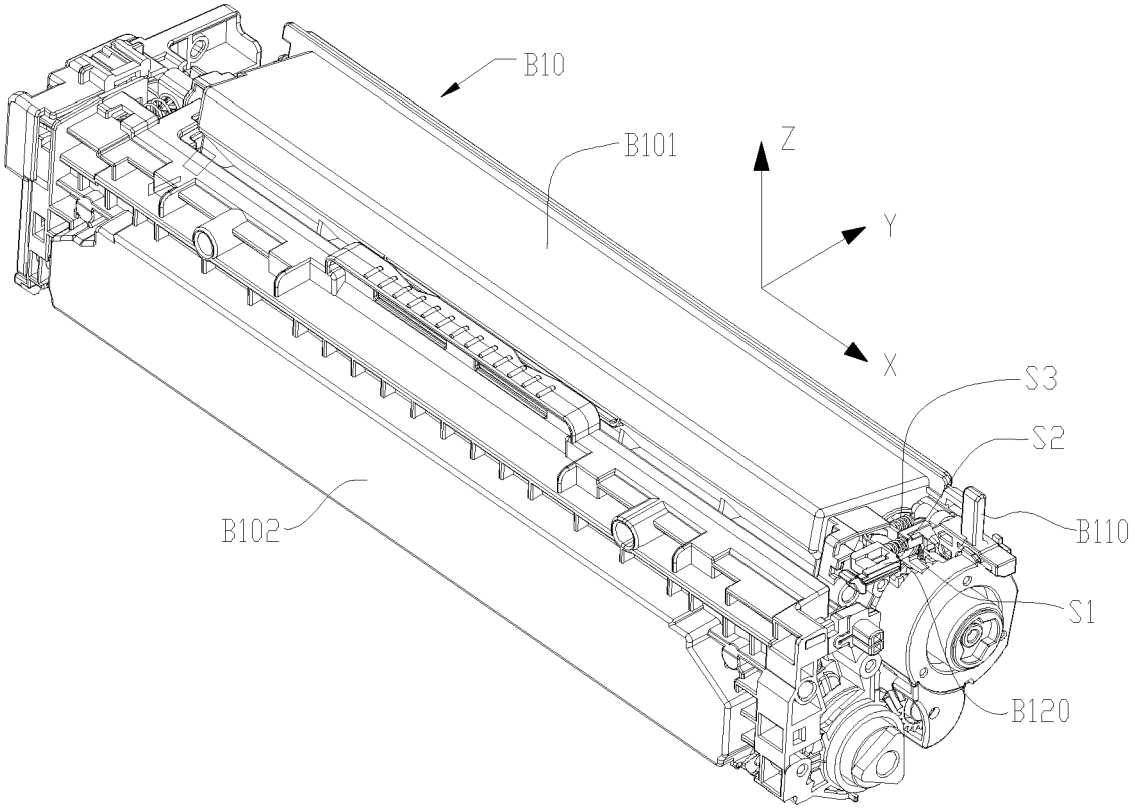

FIG. 11

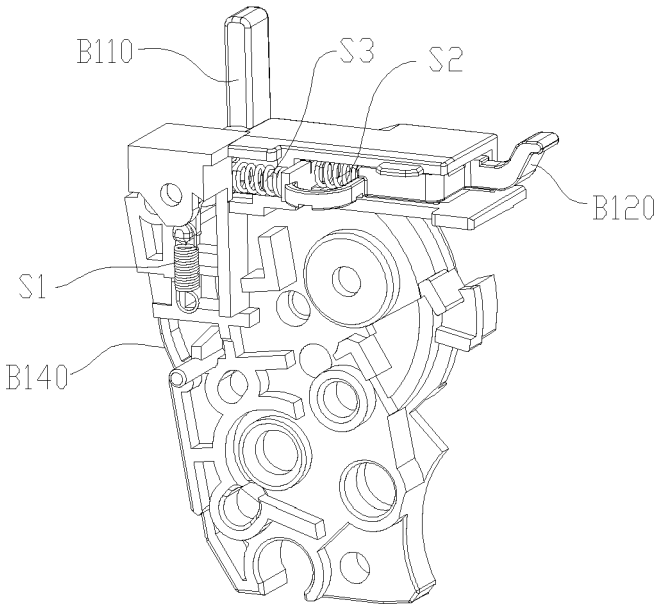

FIG. 12

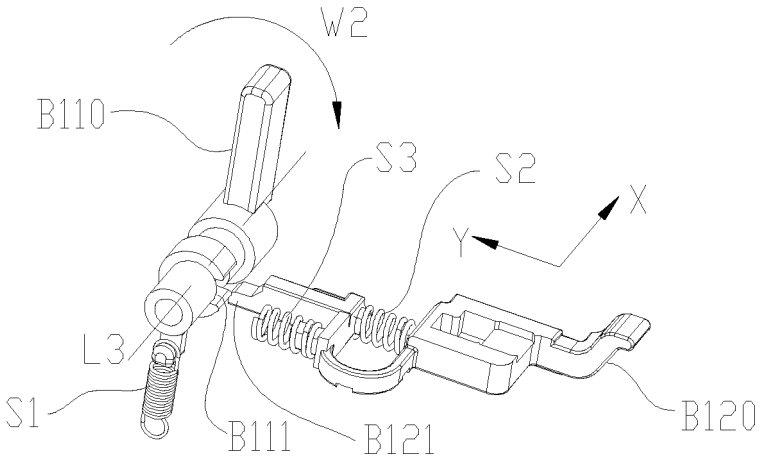

FIG. 13

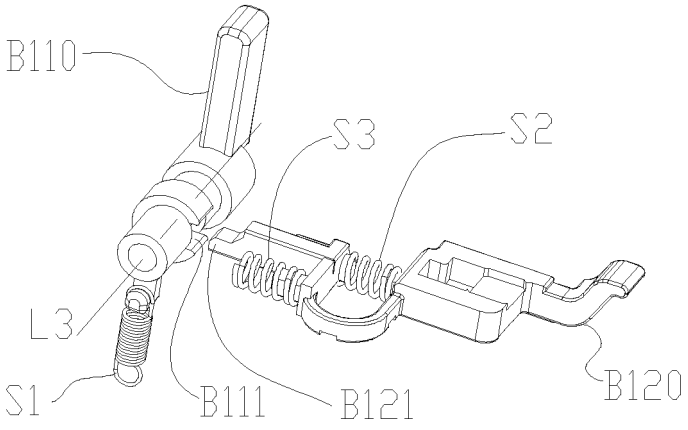

FIG. 14a

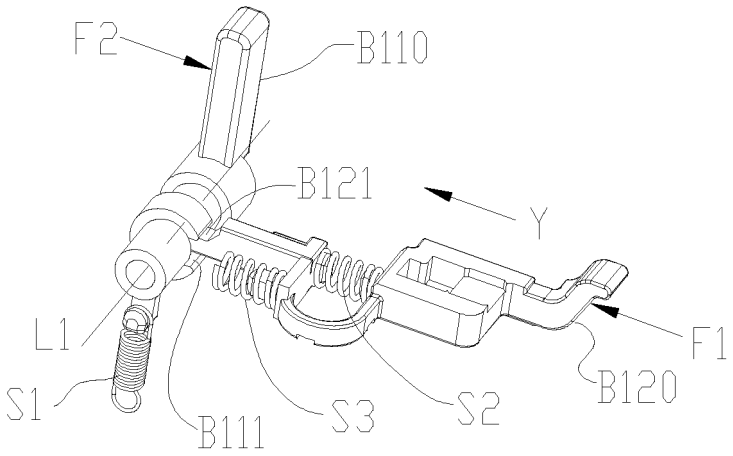

FIG. 14b

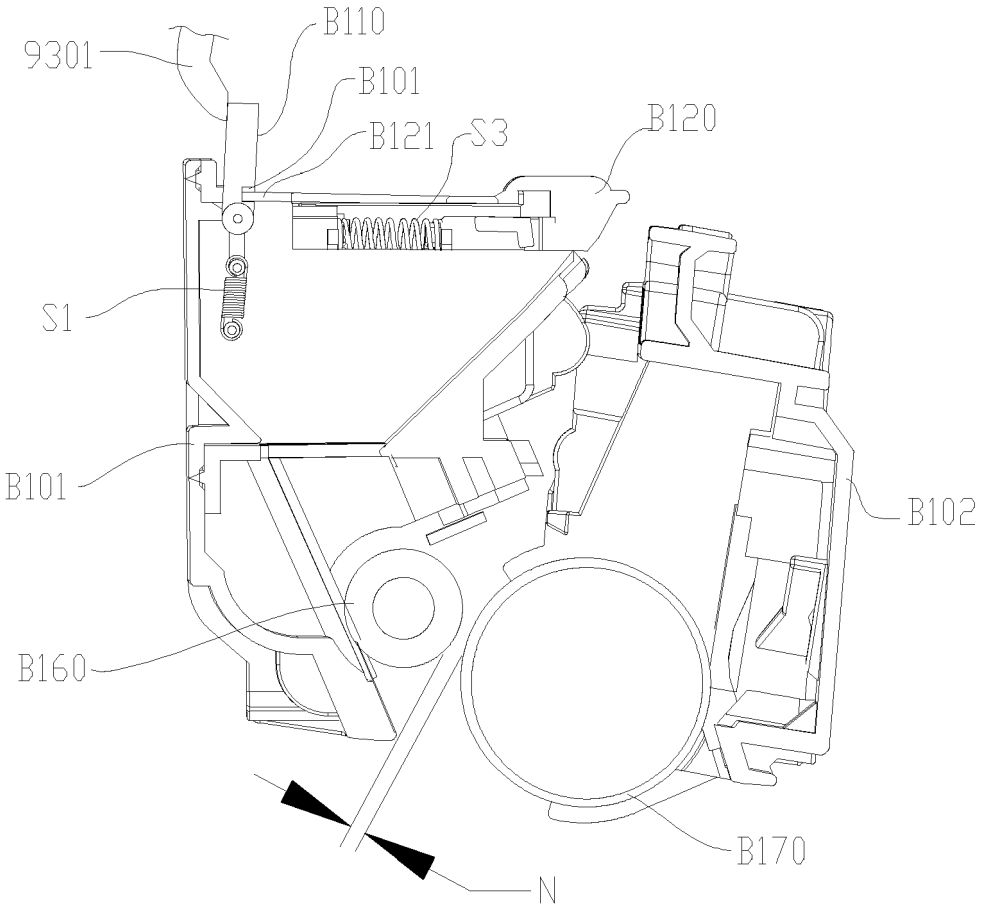

FIG. 15

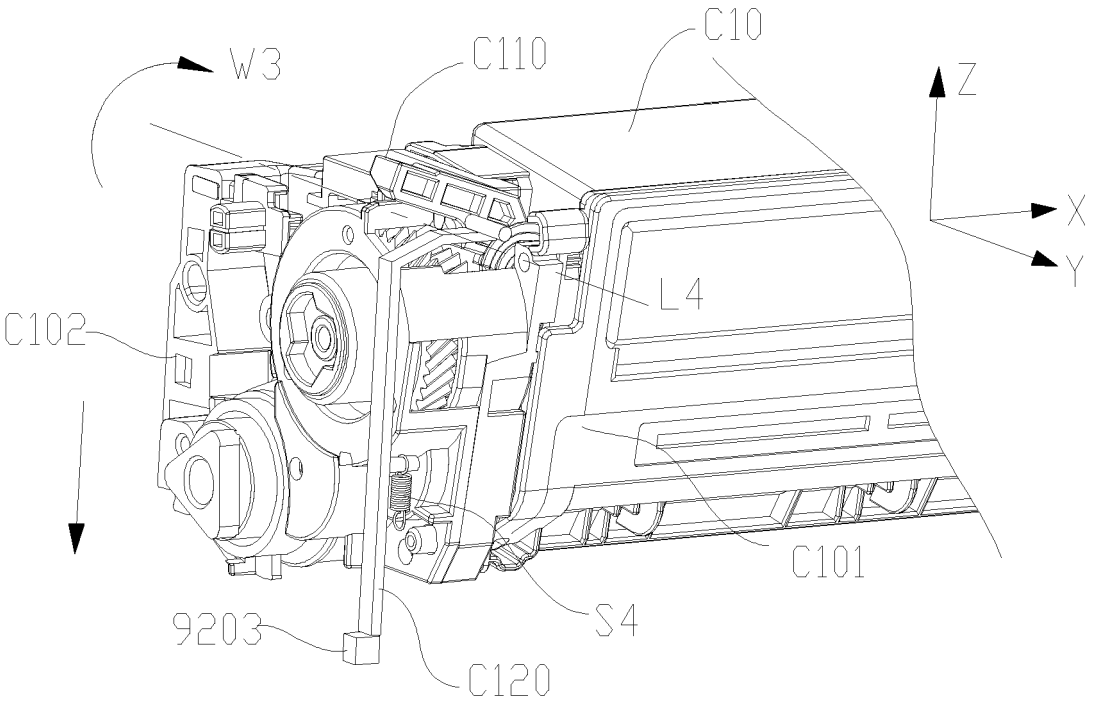
W3
C110
C10
Z
X
Y
L4
C102
C101
S4
9203
C120

FIG. 16

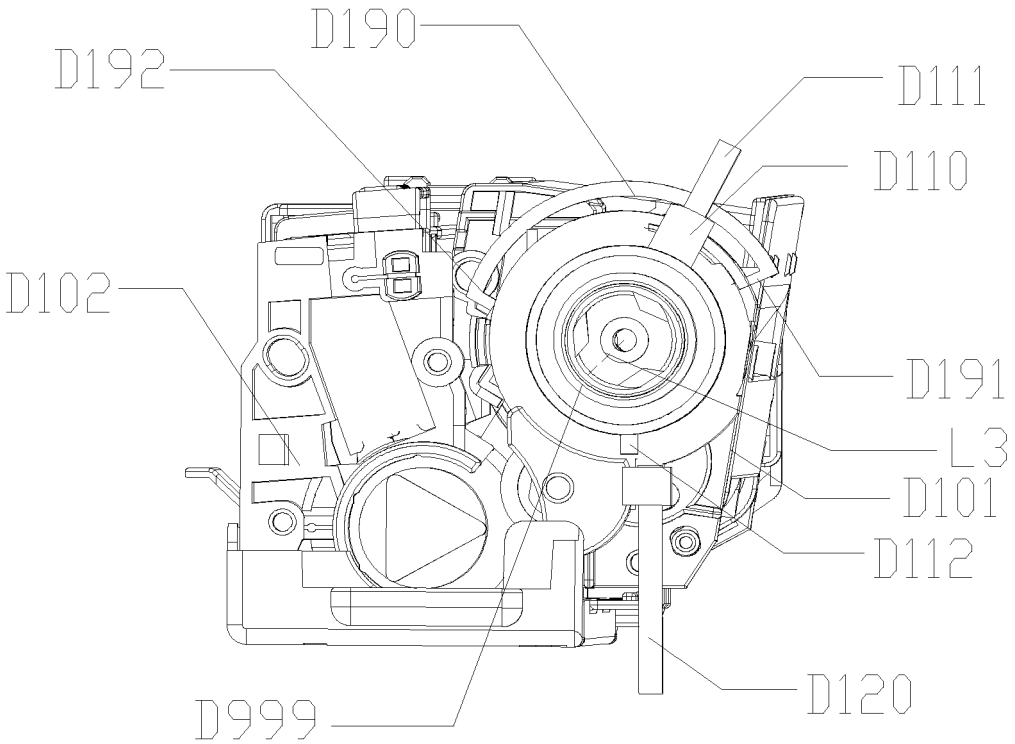
D190
D192
D111
D110
D102
D191
L3
D101
D112
D120
D999

FIG. 17

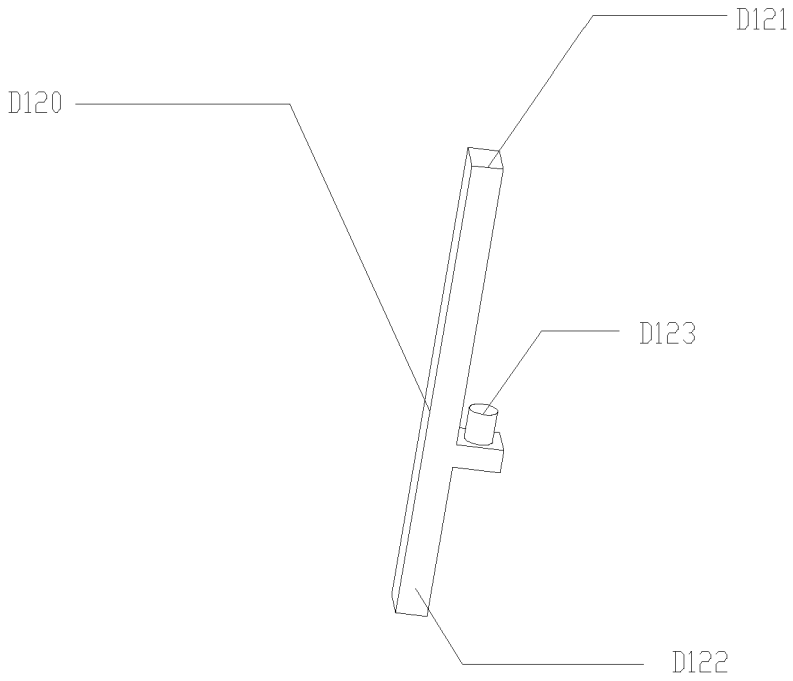

FIG. 18

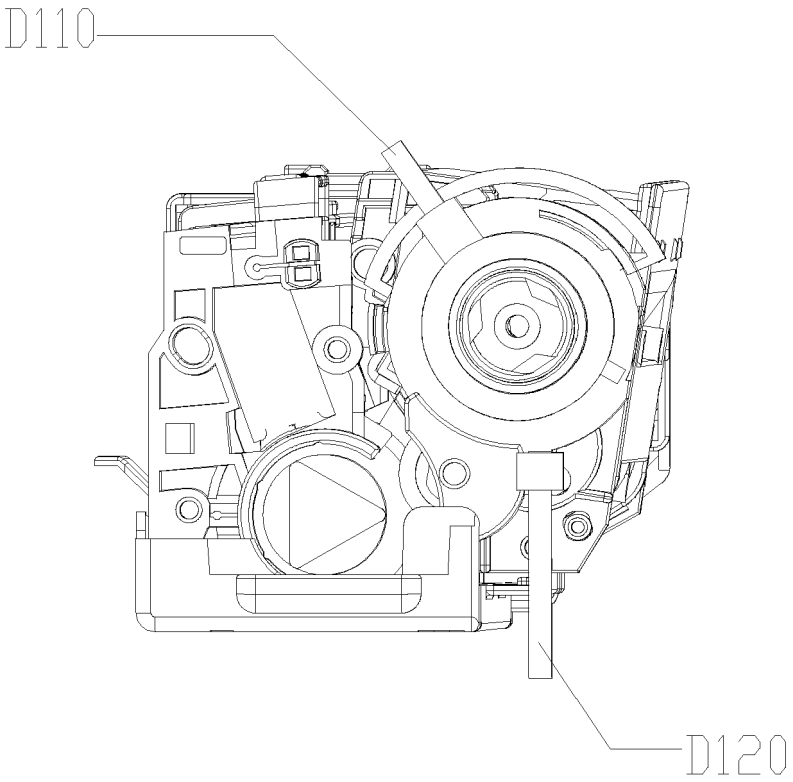

FIG. 19

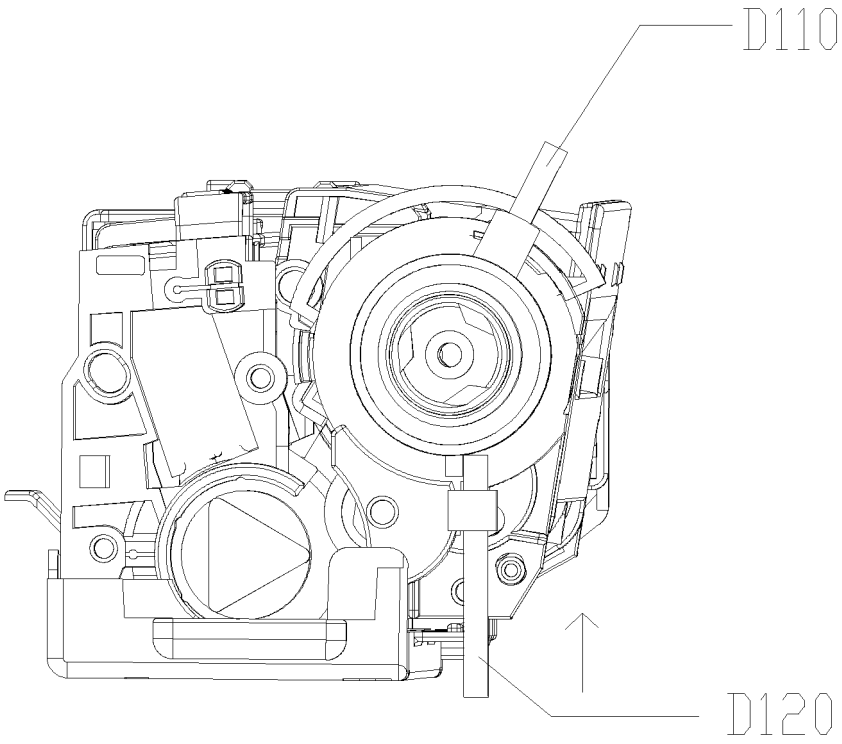

FIG. 20

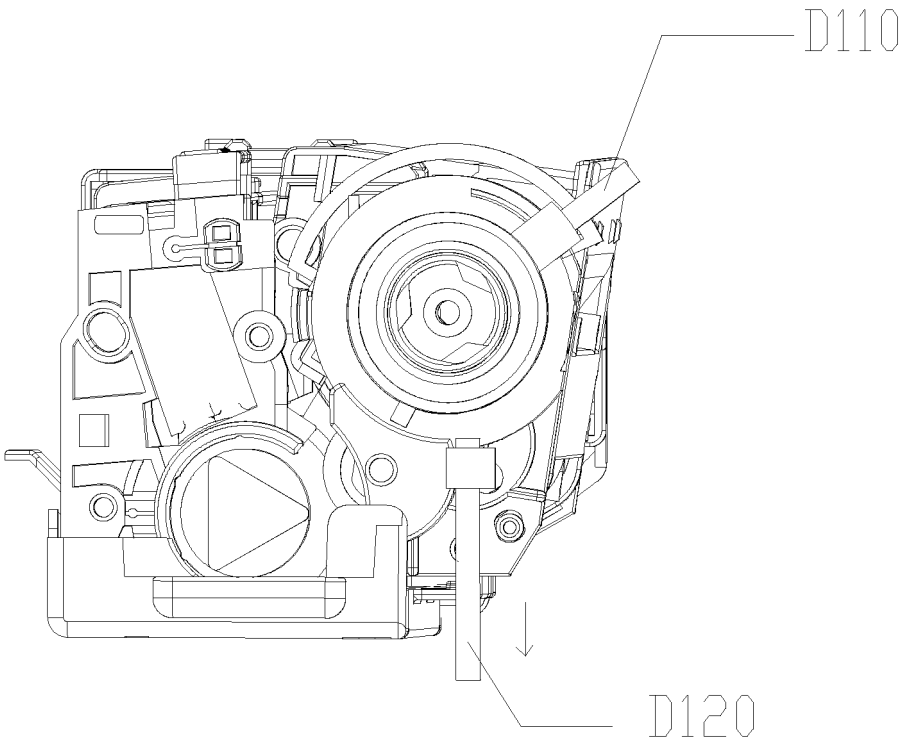

FIG. 21

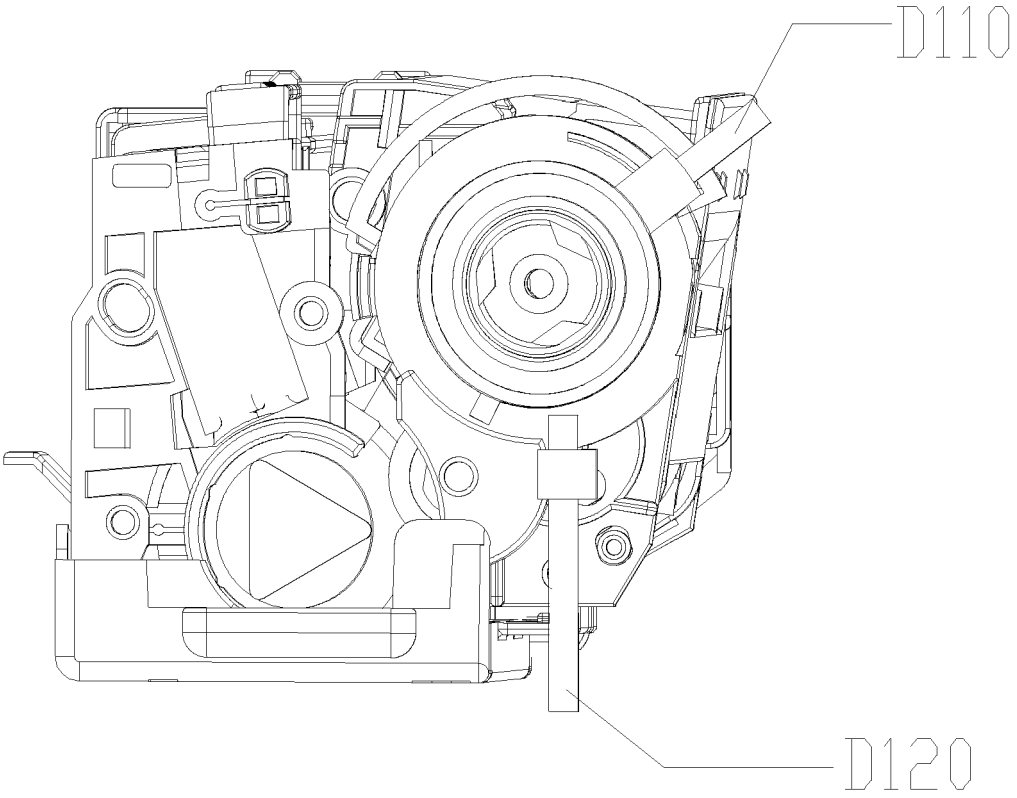

FIG. 22

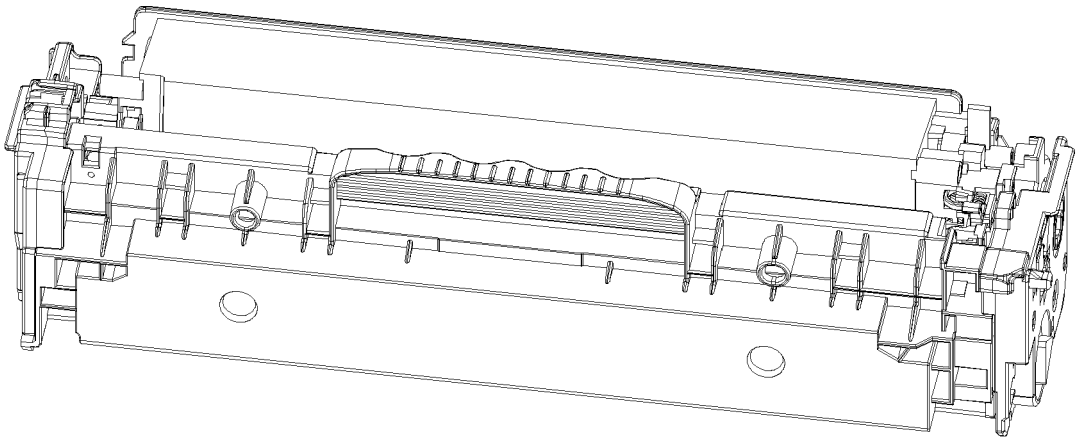

FIG. 23

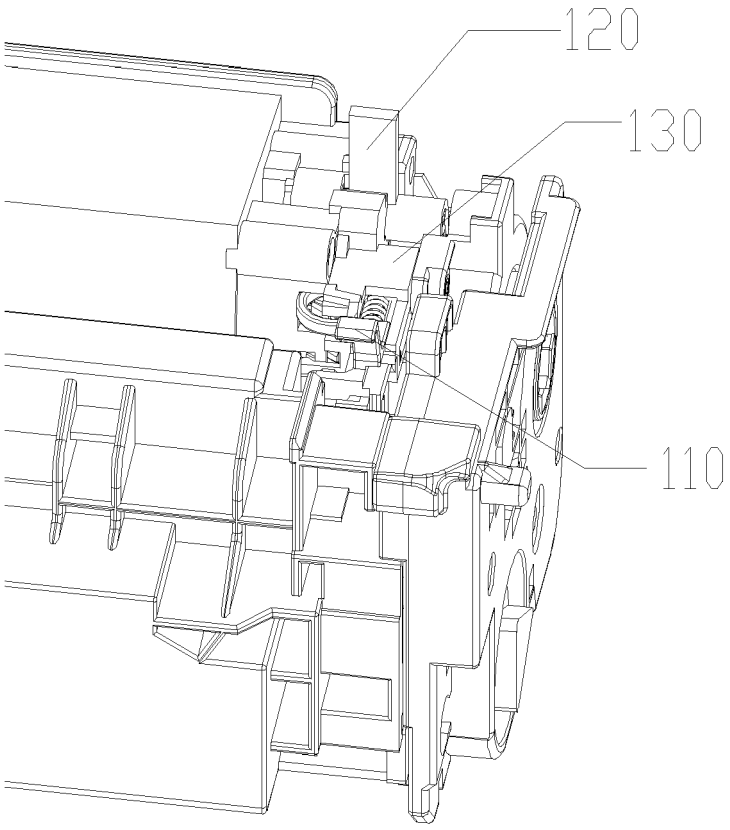

FIG. 24

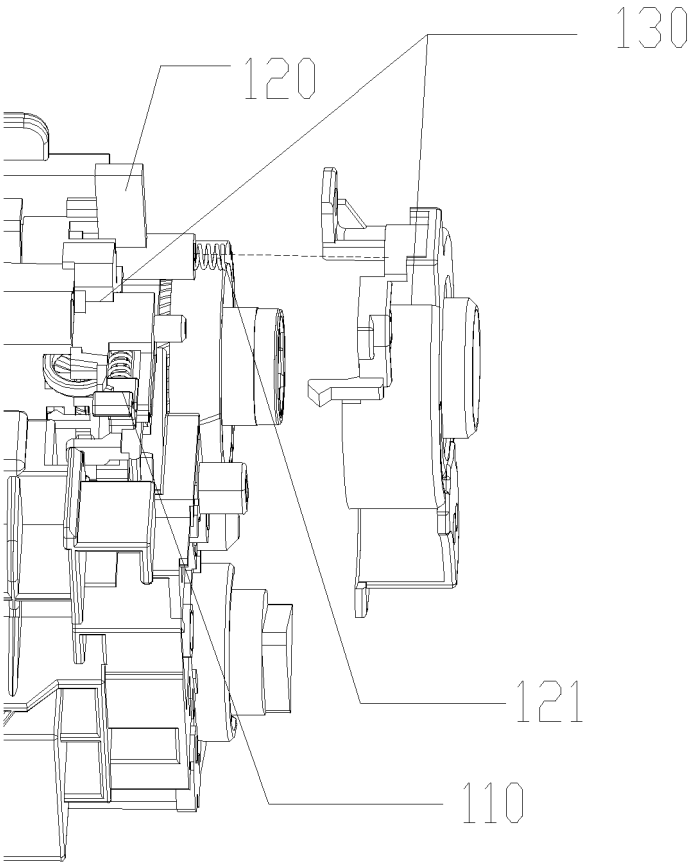

FIG. 25

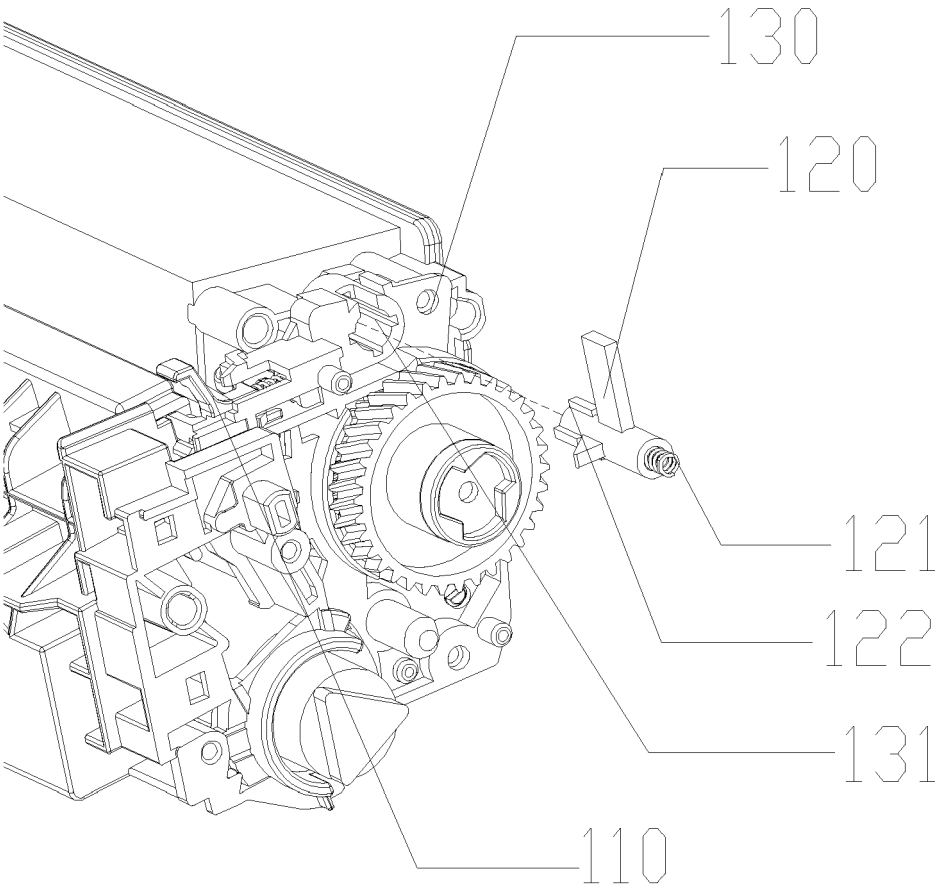

FIG. 26

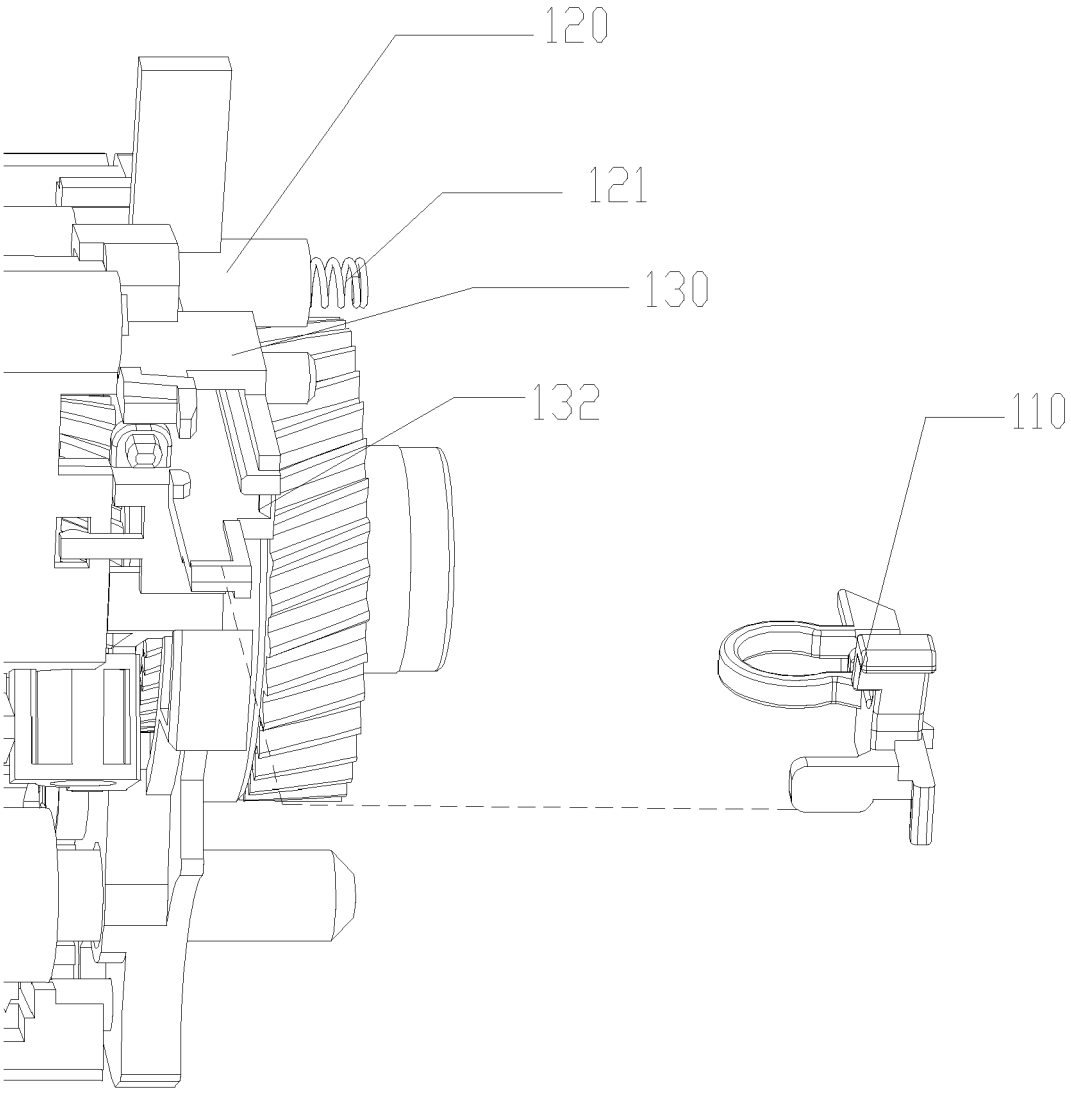

FIG. 27

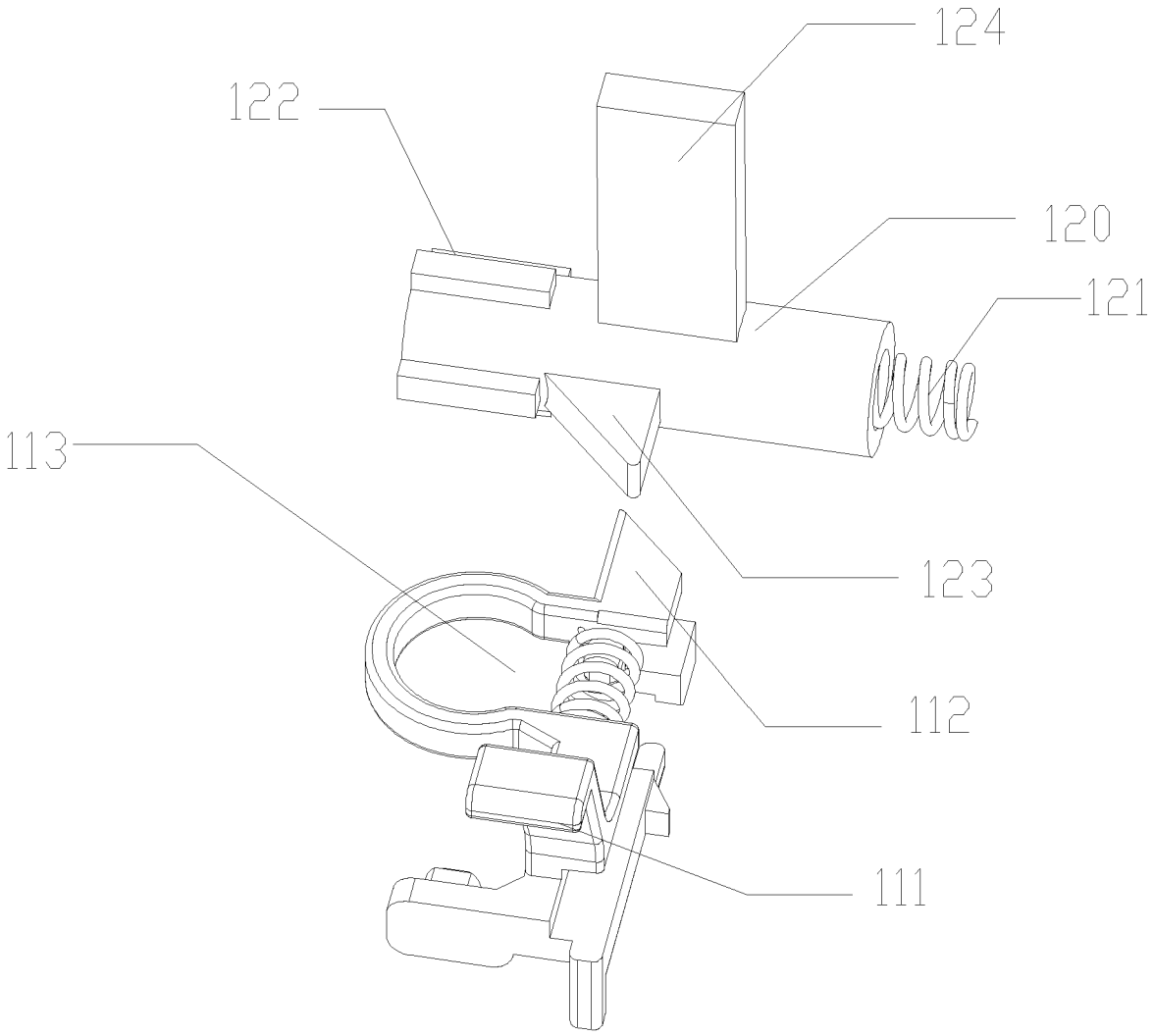

FIG. 28

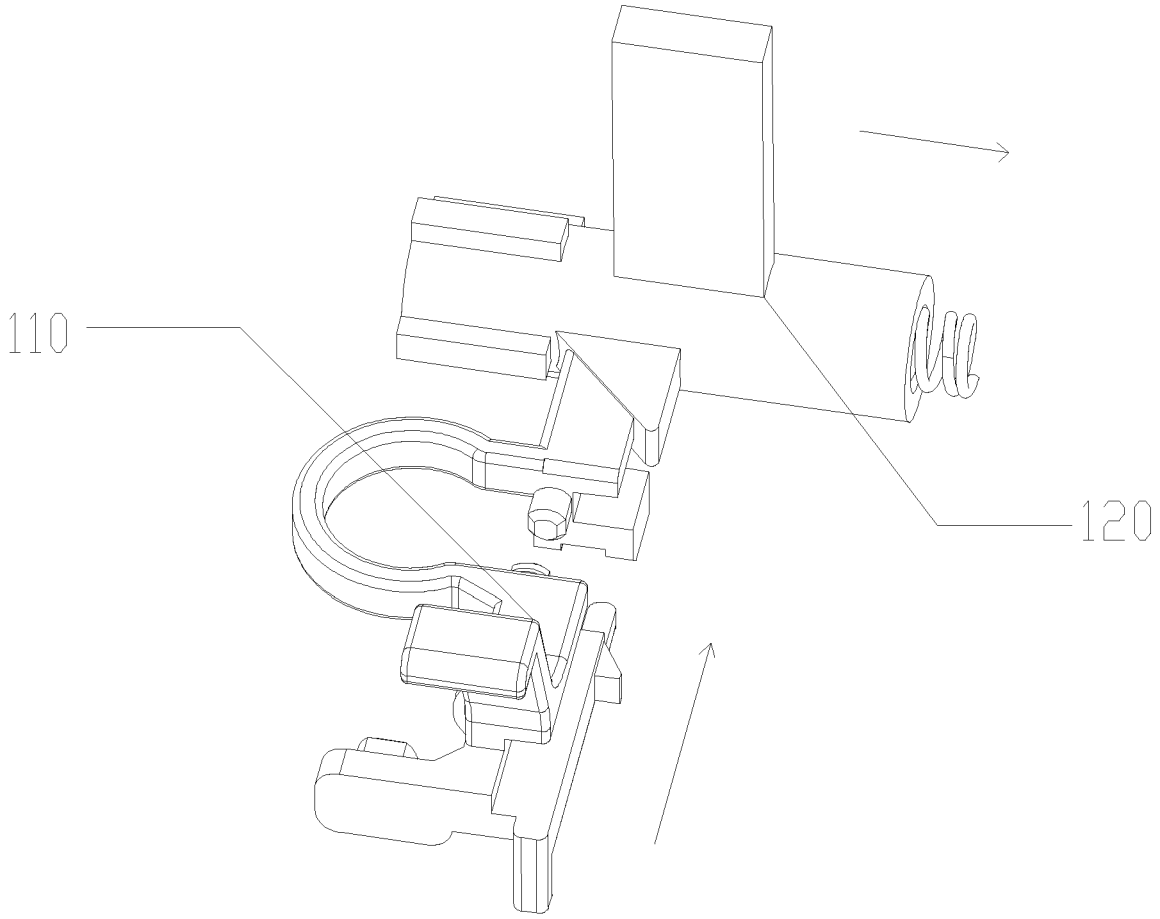

FIG. 29

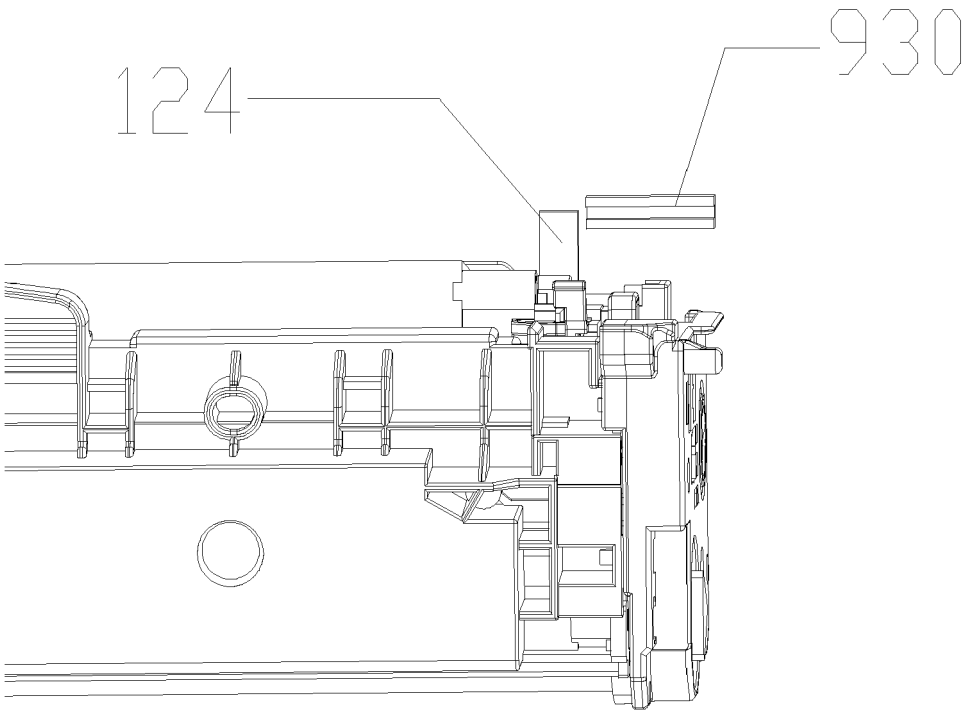

FIG. 30

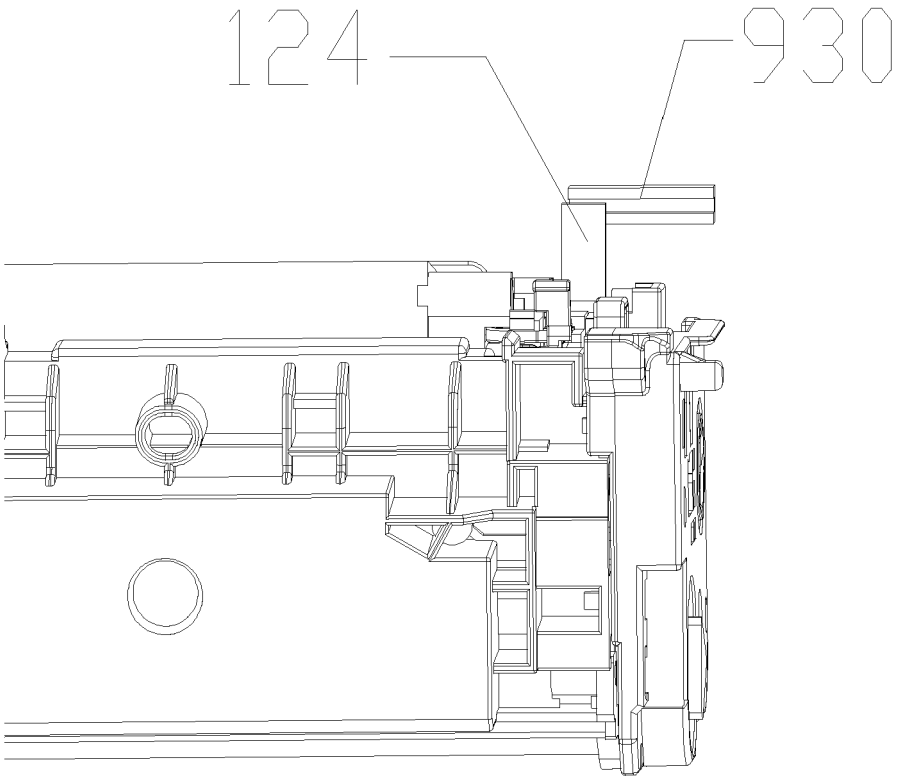

FIG. 31

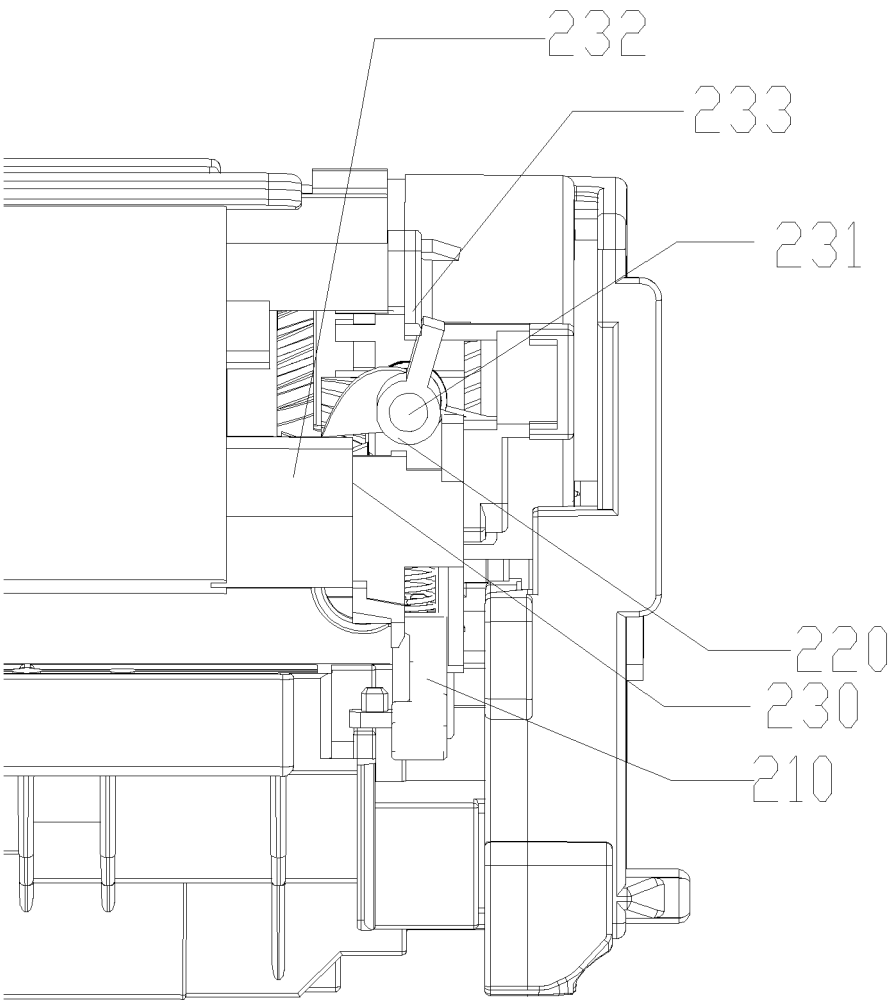

FIG. 32

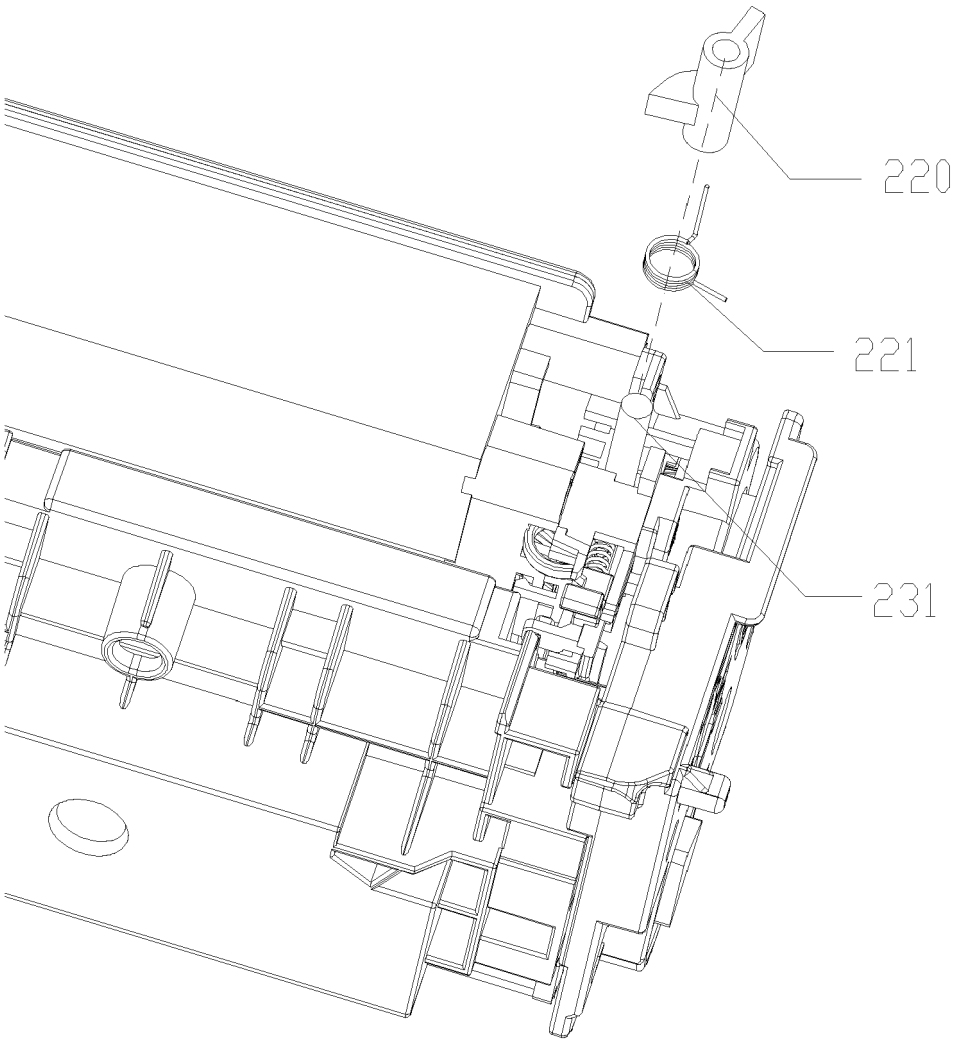

FIG. 33

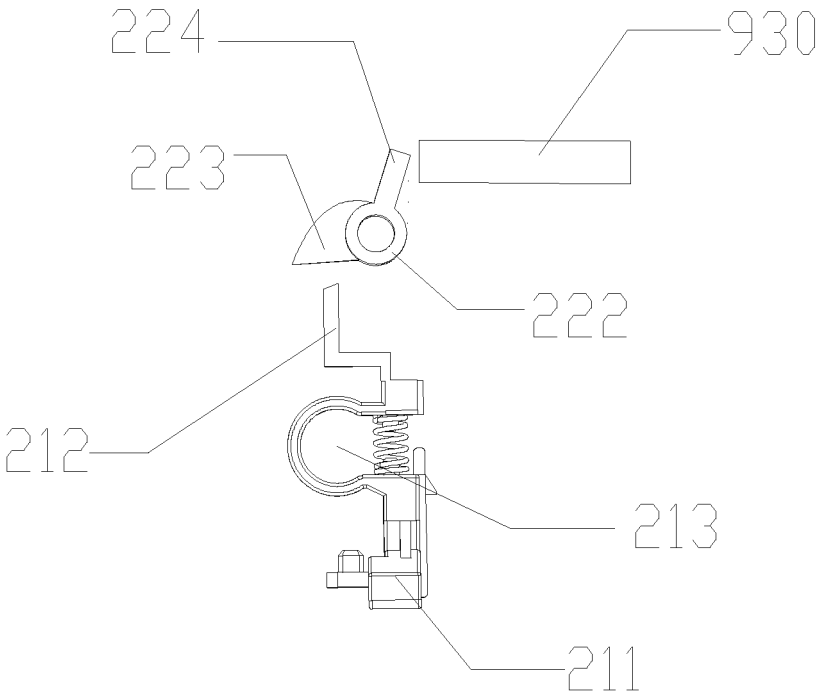

FIG. 34

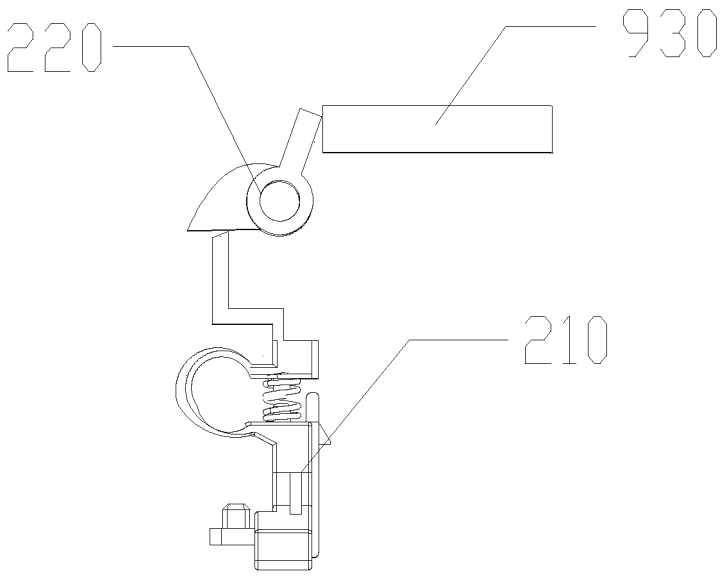

FIG. 35

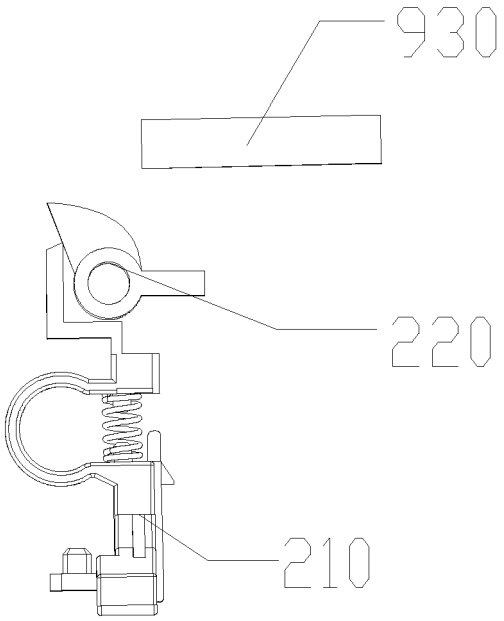

FIG. 36

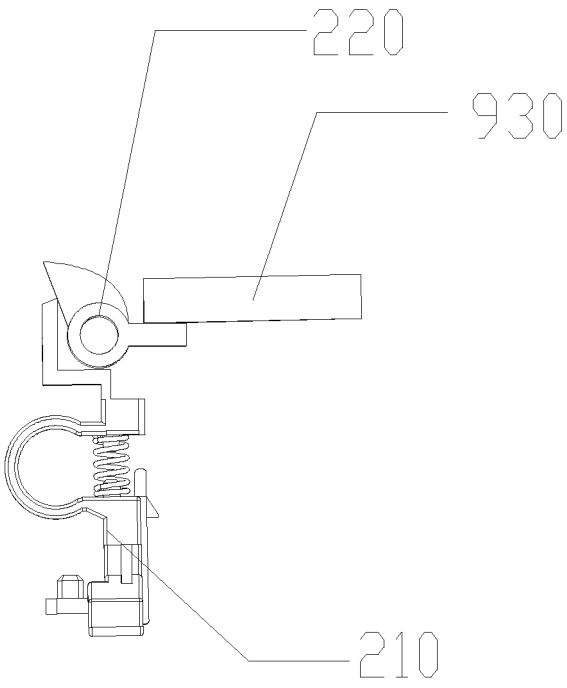

FIG. 37

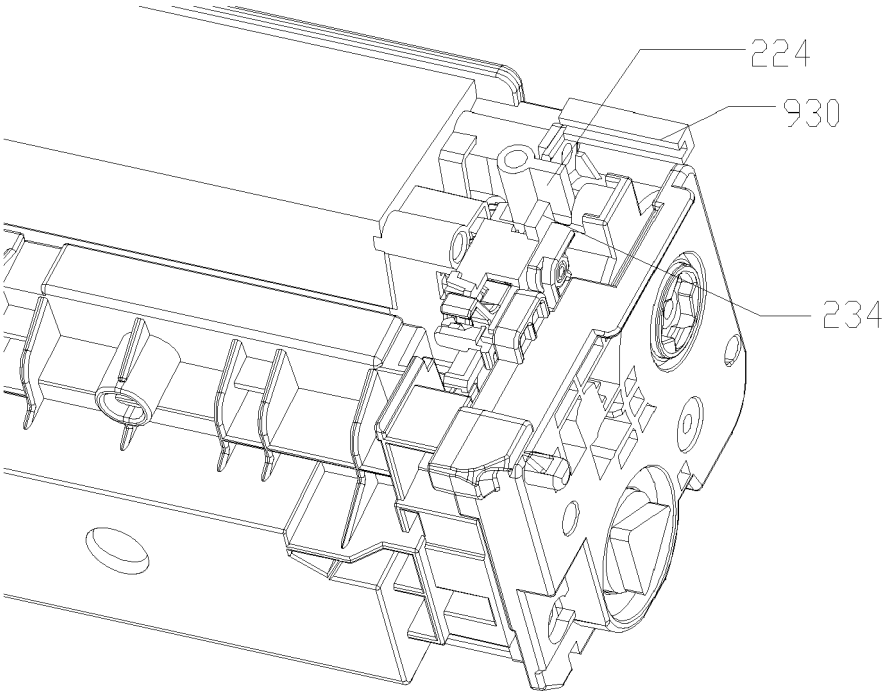

FIG. 38

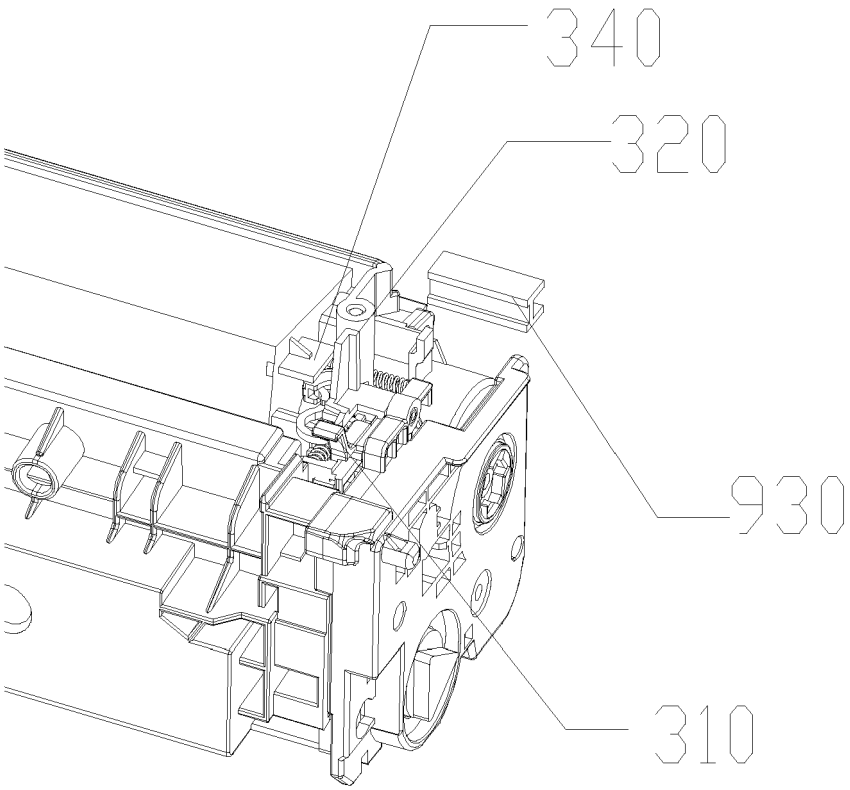

FIG. 39

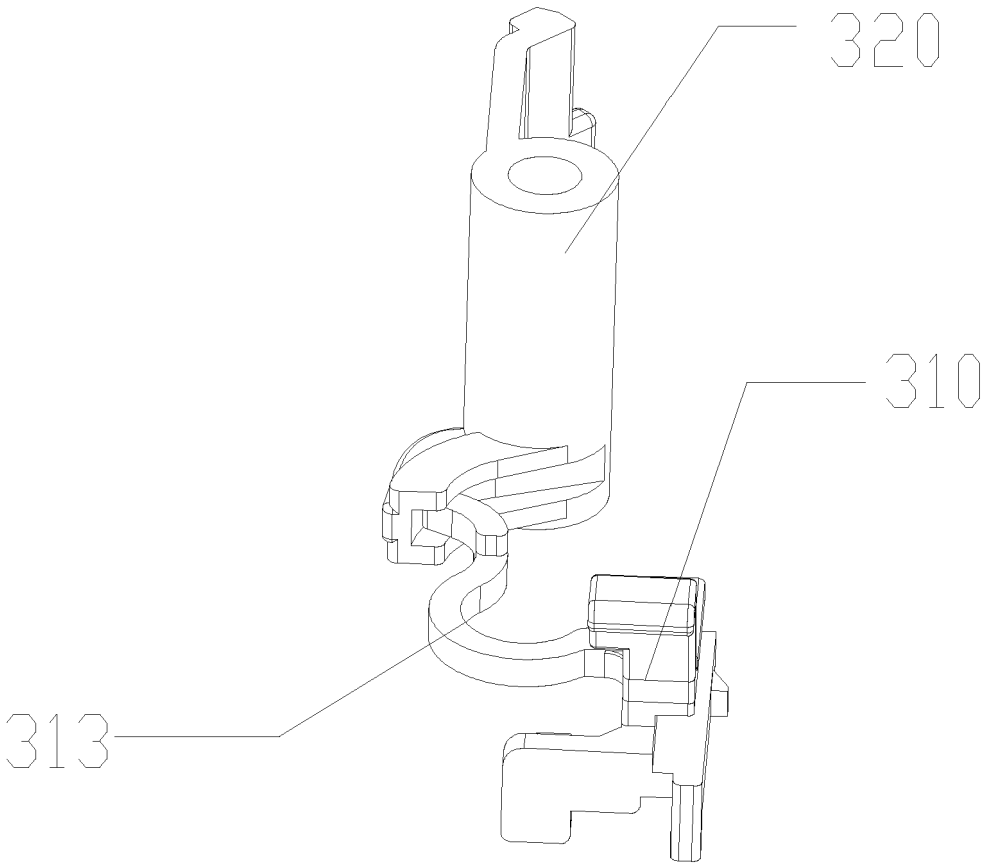

FIG. 40

REFERENCES CITED IN THE DESCRIPTION

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