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Tissue Dispenser Comprising Removable Sensor Housing

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Tissue Dispenser Comprising Removable Sensor housing

Abstract

A tissue dispenser features a main housing to removably receive tissue material and a sensor housing mounted via a specialized mechanism. This mechanism includes an actuating mechanism actuable in a locked and unlocked state to release the sensor housing. The sensor housing detects tissue depletion, unauthorized access, and operational status, sending relevant notifications. This ensures timely maintenance and security. The design allows for easy replacement of tissue material and the sensor housing, making it ideal for various environments. The system enhances convenience and operational efficiency, offering automated control and reducing manual intervention.

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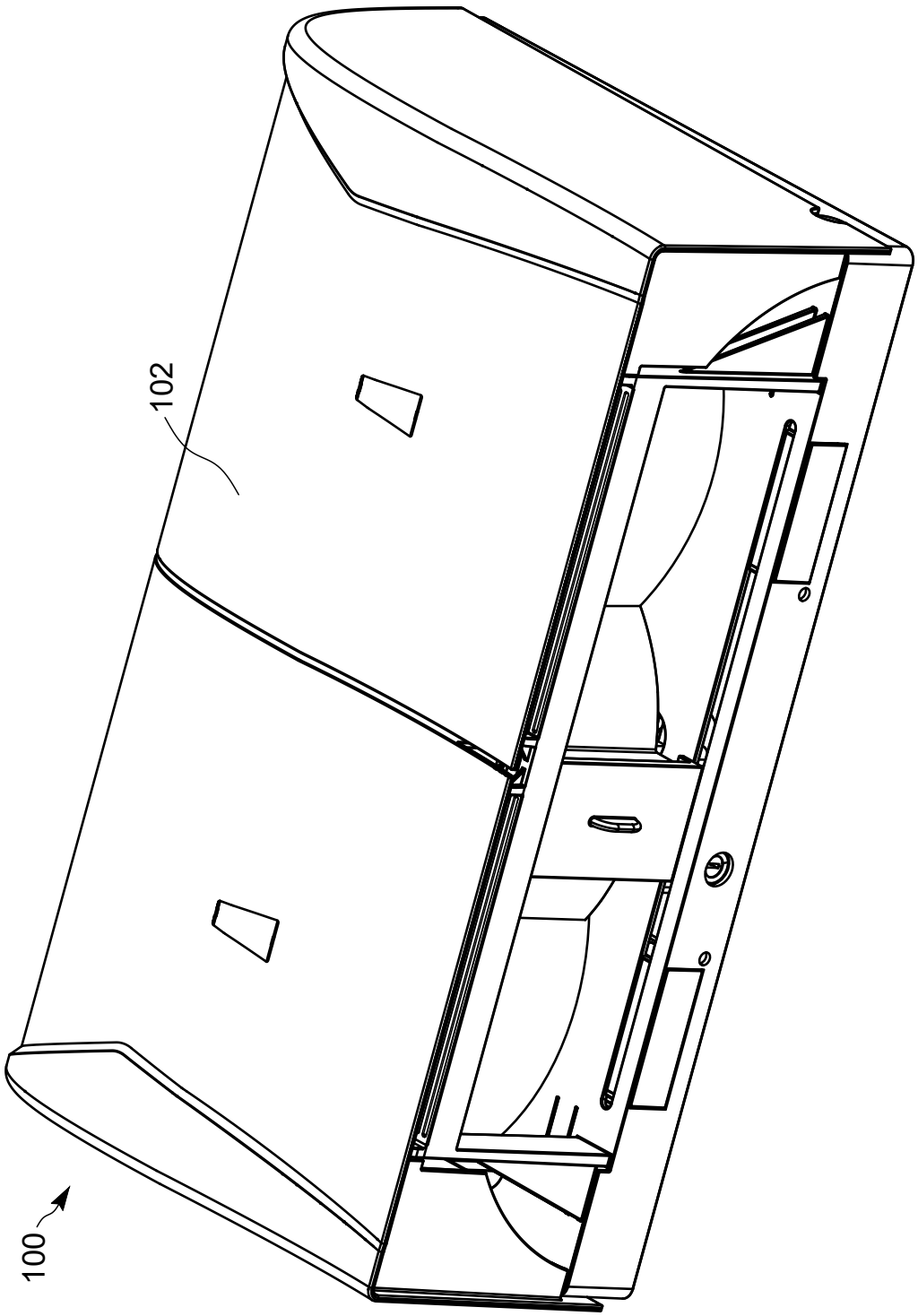

FIG. 1

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Tissue Dispenser Comprising Removable Sensor housing

Technical field

[0001] The present invention relates to a tissue dispenser comprising a housing and a sensor housing disposed on the housing using a mounting mechanism. The sensor housing is releasable from the housing through actuation of an actuating mechanism of the mounting mechanism.

Background

[0002] Containers designed to dispense consumable materials, such as paper towels, tissues and the like, play a crucial role in various environments including kitchens, toilets and public spaces. In many instances, it is essential to secure such containers to prevent unauthorized access and theft of their contents while ensuring controlled access for authorized personnel to refill them subsequent to completed usage thereof. Conventionally, such security has been achieved through locking mechanisms requiring a key, which poses challenges in environments where multiple individuals may need access or where keys are easily misplaced.

[0003] For smaller workplaces or private settings, the requirement to manage keys for refilling purposes can be cumbersome and impractical. Moreover, in scenarios where containers are used by different individuals or where frequent refilling is necessary, locking mechanisms can become restrictive. Additionally, attempts to integrate keys within the container may be associated with complications, particularly with self-locking mechanisms that could inadvertently lock the key inside upon closure, thereby rendering the container inaccessible.

[0004] In various public and commercial settings, the need for an efficient and secure tissue dispensing system is paramount. Traditional tissue dispensers often require frequent manual checks to ensure they are stocked, which can be time-consuming and inefficient. Moreover, these dispensers are susceptible to theft and tampering, particularly when equipped with valuable sensors that monitor tissue levels and usage.

[0005] Addressing the aforesaid challenges necessitates the development of innovative locking mechanisms specifically for dispensers of consumable materials like paper towels, tissues and the like. Such mechanisms must not only ensure the security and integrity of the contents of the container but also accommodate ease of use, hygiene considerations, safety requirements and regulatory compliance. Further, by overcoming these challenges, an improved locking mechanism can enhance the functionality and versatility of containers across a wide range of applications and environments.

[0006] To address these challenges, there is a need for a tissue dispenser that not only facilitates easy and timely replacement of tissue material but also offers enhanced security features to protect the sensor components. A robust locking mechanism is essential to prevent unauthorized access and theft, ensuring that the sensors remain functional and intact.

Summary

[0009] The invention relates to dispensers for consumable materials, specifically focusing on a tissue dispenser designed for use in kitchens, toilets and similar environments. Such dispensers accommodate rolls or stacks of tissue materials, ensuring efficient dispensing and easy replacement.

[0010] According to a first embodiment, the tissue dispenser comprises a housing capable of securely receiving and dispensing tissue materials. Integral to its design is a sensor housing positioned on the housing using a specialized mounting mechanism. This mounting mechanism features a actuating mechanism that is actuatable to enable transferring of movement of the actuating mechanism to other components of the mounting mechanism to facilitate the release of the sensor housing as needed.

[0011] The mounting mechanism further incorporates a connecting member and a slider unit connected to the sensor housing. The slider unit includes an elongate member aligned parallel to the sensor housing's axis, with a protrusion member located at its front end. Movement of an extension tip of the actuating mechanism causes dislodgement of the Protrusion member from an opening, thereby enabling the sensor housing's release from the mounting mechanism.

[0012] The tissue dispenser comprising the mounting mechanism addresses the need for secure and functional dispensers in environments where hygiene, ease of use and efficient maintenance. The integration of the robust mounting mechanism that facilitates linear movement enables the dispenser to ensure reliable operation and accessibility for replacing tissue materials, enhancing overall user experience and operational efficiency in diverse settings.

Brief description of figures

[0013] Notwithstanding any other forms which may fall within the scope of the present invention, preferred embodiments of the disclosure will now be described, by way of example only, with reference to the accompanying drawings in which: to the drawings, in which:

[0014] Fig. 1 shows a perspective view of a front side of a tissue dispenser, in accordance with an embodiment of the present disclosure;

[0015] Fig. 2 shows a view illustrating sensors placed in the sensor housing of the tissue dispenser;

[0016] Fig. 3 of the rear side of the sensor housing displaying the opening to hold the mounting mechanism;

[0017] Fig. 4 of the rear side of the tissue dispenser of Fig. 1, in accordance with an embodiment of the present disclosure;

[0018] Fig. 5a shows a sectional view of the housing illustrating a right side of the mounting mechanism, in accordance with an embodiment of the present disclosure; and

[0019] Fig. 5b shows a sectional view of the housing illustrating the right side view of the mounting mechanism, in accordance with another embodiment of the present disclosure.

[0020] Fig. 6 shows a sectional view of sensor housing partially removed from the housing

[0021] Fig. 7 shows second embodiment of the current invention with actuating mechanism comprising a latch in first position.

[0022] Fig. 8 shows second embodiment of the current invention with actuating mechanism comprising a latch in second position.

[0023] Fig. 9 shows third embodiment of the current invention with actuating mechanism in direct contact with sensor housing.

[0024] Fig. 10 shows third embodiment of the current invention with actuating mechanism in direct contact with sensor housing.

Detailed description of the embodiments

[0025] The example embodiments herein and the various features and advantageous details thereof are explained more fully with reference to the non-limiting embodiments that are illustrated in the accompanying drawings and detailed in the following description. Descriptions of well-known components and processing techniques are omitted to not unnecessarily obscure the embodiments herein. The description herein is intended merely to facilitate an understanding of ways in which the example embodiments herein can be practiced and to further enable those of skill in the art to practice the example embodiments herein. Accordingly, this disclosure should not be construed as limiting the scope of the example embodiments herein.

[0026] Referring to Fig. 1, there is shown a perspective view of a front side of a tissue dispenser 100, in accordance with an embodiment of the present disclosure. The tissue dispenser 100 enables dispensing of tissue material in a controlled manner. The tissue dispenser 100 comprises a housing 102 designed to removably receive at least one tissue material, such as, at least one roll or stack of tissues. The term “tissue material” as used throughout the present disclosure refers to any material used for tissue dispensing purposes, such as paper towels, facial tissues or other similar products. The term “housing” as used throughout the present disclosure refers to a structural casing that contains and supports the tissue material and other internal components of the dispenser. The housing 102 ensures secure placement of the tissue material and provides accessibility for dispensing operations while protecting the internal components. During use of the tissue dispenser 100, the housing 102 supports the tissue material and facilitates easy access to the tissue material. Users can replace the tissue material by removing the housing cover, ensuring minimal disruption to functionality of the dispenser 100.

[0027] Referring now to fig. 2a and 2b, a sensor housing 104 is illustrated. The sensor housing 104 accommodates sensors 103 within them. The term “sensor housing” as

used throughout the present disclosure relates to a component that stores one or more sensors and associated electrical components therein. The term “sensor” as used throughout the present disclosure refers to a component that detects environmental parameters or user actions, such as motion or proximity, to trigger the dispensing of tissue material. Optionally, the sensor refers to an electronic component that detects complete expenditure of tissue material, such as, an empty roll of tissue paper, thereby enabling a user to replace the depleted roll with a fresh roll of tissue paper. The sensor 104 provides automated or sensor-based control over the dispensing and/or replacement process, enhancing convenience and reducing manual intervention. Further, the term “mounting mechanism” as used throughout the present disclosure relates to a structural assembly that securely attaches and aligns the sensor housing 104 to the housing 102 while allowing for adjustment or removal of the sensor housing 104 from the housing 102.

[0028] In another embodiment, the sensor housing 104 can house one sensor unit 103 as well.

[0029] Referring now to fig. 3, the rear side view of the sensor housing 104 is illustrated. The sensor housing 104 comprises a through cut opening 104b used for holding the mounting mechanism (will discussed below in greater details).

[0030] Referring to Fig. 4, there is shown a view of the rear side of the tissue dispenser 100 of Fig. 1, in accordance with an embodiment of the present disclosure. As shown, the tissue dispenser 100 further comprises a sensor housing 104 having sensors 103 therein, such that the sensor housing 104 is disposed on the housing 102 using a mounting mechanism 106.

[0031] Referring to Fig. 5a, there is shown a sectional view of the housing 102 illustrating a right side of the mounting mechanism 106, in accordance with an embodiment of the present disclosure. The mounting mechanism 106 comprises an actuating mechanism 108 comprising an actuating mechanism moveable between a locked state and a second state. The term “actuating mechanism” as used throughout the present disclosure relates to a component that allow access to operation of other components of the tissue dispenser 100 through corresponding actuation of the actuating mechanism 108 (such as, by pressing). The actuating mechanism 108 is

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associated with a locked state in which the actuating mechanism 108 is not actuatable and an unlocked state in which the actuating mechanism 108 is actuatable. The actuating mechanism 108 can be transitioned between the locked state and the unlocked state. The term “locked state” as used throughout the present disclosure relates to a state of operation of the actuating mechanism 108 in which the actuating mechanism has not been used to actuate the actuating mechanism 108. Consequently, the actuating mechanism 108 cannot be utilized to enable operation of any other component of the tissue dispenser 100. Similarly, the term “unlocked state” as used throughout the present disclosure relates to a state of operation of the actuating mechanism 108 in which the actuating mechanism has been used to actuate the actuating mechanism108. Thus, the actuating mechanism 108 can be utilized to enable operation of other components of the tissue dispenser 100. The actuating mechanism 108 comprises an extension 109 which extends outwards when the actuating mechanism is pushed into an unlock position.

[0032] In one embodiment of the current invention, the actuating mechanism is a key member.

[0033] In another embodiment of the current invention, the actuating mechanism is a push button.

[0034] The mounting mechanism 106 further comprises a connecting member 110. The term “connecting member” as used throughout the present disclosure relates to a structural element that links different components of the mounting mechanism 106, enabling coordinated movement and positioning. The connecting member 110 enables the transfer of linear movements from the actuating mechanism 108 to the sensor housing 104. The connecting member 110 ensures stable and reliable positioning of the sensor housing 104 by transferring mechanical forces and maintaining alignment during operation. When the key slot in the actuating mechanism 108 is pushed, the extension tip is pushed outwards from the actuating mechanism 108, which pushes the connecting member 110 to transmits linear movements to the sensor housing 104, ensuring that the sensor housing 104 is pushed forwards and released from the housing 102 for removal of the sensor housing 104 from the housing 102. In normal operation of the tissue dispenser 100, the sensor housing 104 remains in a locked position corresponding to

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the actuating mechanism 108 being in the locked state, such as, through insertion of the key into the actuating mechanism 108 and rotation of the key to transition the actuating mechanism 108 to the locked state from the unlocked state. Further, when maintenance is required to be performed on the tissue dispenser 100, the key is inserted into the actuating mechanism 108 and rotated to unlock the actuating mechanism 108, thereby, transitioning the actuating mechanism from the locked state to the unlocked state. Subsequently, the actuating mechanism can be pushed to enable operation of other components of the tissue dispenser 100.

[0035] The mounting mechanism 106 additionally comprises a slider unit 112 connected to the connecting member 110 and disposed with the sensor housing 104. The term “slider unit” as used throughout the present disclosure relates to a component, movement of which that allows the linear movement of the sensor housing 104 along a defined path. The slider unit 112 enables the sensor housing 104 to move smoothly along the housing 102 for adjustment purposes. The slider unit 112 facilitates easy and precise linear movement of the sensor housing 104, enhancing the accuracy of its positioning and alignment.

[0036] Referring to Fig. 5b, there is shown a sectional view of the housing 102 illustrating the right side view of the mounting mechanism 106, in accordance with another embodiment of the present disclosure. The slider unit 112 comprises an elongate member 114 disposed parallely to an elongate axis MN of the sensor housing 104 and a Protrusion member 116 disposed at a front end of the elongate member 114. The term “elongate member” as used throughout the present disclosure refers to a component with an extended, rectangular shape that provides a stable path for movement. Further, the term “Protrusion member” as used throughout the present disclosure relates to a component with a T-shaped cross-section that engages with corresponding openings 104a provided in the sensor housing 104 for secure positioning. The elongate member 112 and Protrusion member 114 combination allows for accurate and stable positioning of the sensor housing 104, ensuring that the sensor housing 104 remains aligned and securely fixed during operation. A biasing member 115 such as a spring is also provided on the protrusion member 114 to move the slider unit 112 in the normal position.

[0037] As shown in fig. 5a-5b and fig. 6, the process of the removal of the sensor housing 104 from the housing 102 will be discussed. When a key is inserted in the key slot of the key member 108 and pushed, the extension tip 109 is linearly pushed with the movement of the keyslot. This linear movement is transferred to connecting member 110. The connecting member 110 further pushes the slider unit 112 which results in the removal of the protrusion member 116 out of the opening 104b. Once the protrusion member 116 is moved out from the opening 104b, the sensor housing 104 is free to move in a direction A perpendicular to the axis MN. When the force from the keyslot are removed, the biasing member 115 biases the slider mechanism 112 back in the normal position.

[0038] Referring now to fig. 7 and fig. 8 in another embodiment, the actuating mechanism 108 can include a rotational element such as a latch 108a. In this embodiment, the latch 108a rotates upon actuation to mate with the slider unit 112. The rotational movement of the latch 108a translates into a corresponding movement of the slider unit 112, which then causes the sensor housing 104 to be released from the housing 102. This rotational mechanism provides an alternative method of actuation, allowing for different design and operational configurations while maintaining the same functional purpose of securely holding and releasing the sensor housing 104.

[0039] Referring now to fig. 9 and fig. 10 in another embodiment, the actuating mechanism 108 can include a rotational element such as a protrusion 108b. In this embodiment, the protrusion 108b rotates upon actuation. Further the sensor housing 104 comprises protrusion 104b which acts as counterpart for protrusion 108b. The rotational movement of the protrusion 108b, results in unlocking of the protrusions which then causes, due to the gravity, the sensor housing 104 to be released from the housing 102. This rotational mechanism provides an alternative method of actuation, allowing for different design and operational configurations while maintaining the same functional purpose of securely holding and releasing the sensor housing 104.

[0040] The protrusion shown in fig.9 and fig. 10 are just for the illustrative purposes. All kind of mechanical locks can be used to lock the actuation mechanism 108 and sensor housing 104 together.

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[0041] In one embodiment, various locking mechanisms may be employed to secure and release the sensor housing. A cam lock can be utilized, where a cam rotates upon actuation, engaging or disengaging the locking mechanism to secure or release the sensor housing. In another embodiment, a bayonet lock may be implemented, incorporating a pin-and-slot mechanism in which the sensor housing is rotated to lock into place. Additionally, a latch lock could be used, wherein a spring-loaded latch holds the components in position and releases with rotational movement of the actuation mechanism.

[0042] A snap-fit lock may also be applied, whereby two mechanical protrusions snap together to lock and are released when a rotational force is applied. Alternatively, a detent mechanism can be incorporated, employing a spring-loaded ball that fits into a notch on the rotating protrusion, holding the housing in place until force is applied to release it. Another embodiment may use a twist lock, where two components twist together to lock or unlock the system.

[0043] Further, a pin-and-hole lock may be utilized, wherein a pin slides into a corresponding hole, securing the components until released through rotational movement. A screw thread lock may also be used, in which the housing locks by rotating onto screw-like threads, providing a secure attachment. In another embodiment, a magnetic lock may be incorporated, using magnetic attraction to hold the components together, with the rotational movement breaking the magnetic bond for release. Finally, a lever lock may be employed, where a small lever rotates into position to secure or release the sensor housing, providing an effective mechanical lock.

[0044] These locking mechanisms offer flexibility in design and operation while maintaining the primary functionality of securely holding and releasing the sensor housing.

[0045] During operation, the sensor housing 104 continuously monitors the level of tissue material within the tissue dispenser 100. When the sensor housing 104 detects that the tissue material is nearing depletion (e.g., when only a few tissues remain or the roll is empty), the sensor housing 104 sends a notification to the designated user responsible for maintaining the tissue dispenser 100. For instance, in a commercial

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building or public facility, janitor or maintenance personnel may be responsible for replacing the tissue material.

[0046] In one example, upon detecting low tissue levels, the sensor housing 104 sends a wireless notification to a smartphone of the janitor or another designated device via a network connection. This notification can be in the form of a message, alert or notification indicating that the tissue roll needs to be replaced. This ensures timely replenishment of tissue material, minimizing inconvenience for users.

[0047] Optionally, the sensor housing 104 is equipped with capabilities to detect unauthorized access or tampering with the tissue dispenser 100. For example, if the dispenser is removed from its mounting or if the housing is opened without authorization, the sensor detects such events.

[0048] Subsequently, the sensor can trigger an alert or alarm to notify security personnel. This alert may be sent via a wireless communication system, such as a cellular network or Wi-Fi, to a security monitoring center or directly to mobile devices of the security personnel. The notification includes information about the potential theft or tampering incident, such as the time and nature of the disturbance, allowing for prompt response and investigation.

[0049] Optionally, the sensor also has the capability to monitor its own operational status, including battery levels and potential faults. If the sensor detects a problem such as low battery power, faulty wiring, or other technical issues, the sensor generates a self-diagnostic report indicating the need for maintenance or replacement.

[0050] When such a condition is detected, the sensor sends a notification to a designated replacement personnel or maintenance team. This notification, which can be delivered via wireless communication, informs the recipient of the specific issue and provides guidance for addressing it. For example, the message may indicate that the sensor requires a battery replacement or technical repair. This ensures that any issues with the sensor are promptly addressed, maintaining the overall functionality of the tissue dispenser 100.

[0051] The extension tip enables transmission of movement of the actuating mechanism 108 to other components of the mounting mechanism 106, allowing for easy detachment of the sensor housing 104 when necessary. Further, due to the actuating mechanism 108 being in the unlocked state, the pushing movement of the actuating mechanism 108 is transmitted via the extension tip of the actuating mechanism 108 to the slider unit and subsequently to the elongate member 114 and the Protrusion member 116. Such pushing of the Protrusion member 116 from the opening causes release of the sensor housing 104, enabling subsequent removal thereof from the housing 102.

[0052] The foregoing description of the specific embodiments will so fully reveal the general nature of the embodiments herein that others can, by applying current knowledge, readily modify and/or adapt for various applications such specific embodiments without departing from the generic concept, and, therefore, such adaptations and modifications should and are intended to be comprehended within the meaning and range of equivalents of the disclosed embodiments. It is to be understood that the phraseology or terminology employed herein is for the purpose of description and not of limitation. Therefore, while the embodiments herein have been described in terms of embodiments, those skilled in the art will recognize that the embodiments herein can be practiced with modification within the spirit and scope of the embodiments as described herein.

[0053] The foregoing description and accompanying figures illustrate the principles, embodiments and modes of operation of the invention. However, the invention should not be construed as being limited to the particular embodiments discussed above. Additional variations of the embodiments discussed above will be appreciated by those skilled in the art.

[0054] Therefore, the above-described embodiments should be regarded as illustrative rather than restrictive. Accordingly, it should be appreciated that variations to those embodiments can be made by those skilled in the art without departing from the scope of the invention as defined by the following claims.

[0055] The terms “comprises”, “comprising”, “includes”, “including”, “having” and their conjugates mean “including but not limited to” and indicate that the components listed are included, but not generally to the exclusion of other components. Such terms encompass the terms “consisting of” and “consisting essentially of”.

[0056] The phrase “consisting essentially of” means that the composition or method may include additional ingredients and/or steps, but only if the additional ingredients and/or steps do not materially alter the basic and novel characteristics of the composition or method.

[0057] As used herein, the singular form “a”, “an” and “the” may include plural references unless the context clearly dictates otherwise. For example, the term “a compound” or “at least one compound” may include a plurality of compounds, including mixtures thereof.

[0058] The word “exemplary” is used herein to mean “serving as an example, instance or illustration”. Any embodiment described as “exemplary” is not necessarily to be construed as preferred or advantageous over other embodiments or to exclude the incorporation of features from other embodiments.

[0059] The word “optionally” is used herein to mean “is provided in some embodiments and not provided in other embodiments”. Any particular embodiment of the disclosure may include a plurality of “optional” features unless such features conflict.

[0060] It is appreciated that certain features of the disclosure, which are, for clarity, described in the context of separate embodiments, may also be provided in combination in a single embodiment. Conversely, various features of the disclosure, which are, for brevity, described in the context of a single embodiment, may also be provided separately or in any suitable sub-combination or as suitable in any other described embodiment of the disclosure. Certain features described in the context of various embodiments are not to be considered essential features of those embodiments, unless the embodiment is inoperative without those elements.

[0061] Although the disclosure has been described in conjunction with specific embodiments thereof, it is evident that many alternatives, modifications and variations will be apparent to those skilled in the art. Accordingly, it is intended to embrace all such alternatives, modifications and variations that fall within the spirit and broad scope of the disclosure.

[0062] All publications, patents and patent applications mentioned in this specification are herein incorporated in their entirety by reference into the specification, to the same extent as if each individual publication, patent or patent application was specifically and individually indicated to be incorporated herein by reference. In addition, citation or identification of any reference in this application shall not be construed as an admission that such reference is available as prior art to the present disclosure. To the extent that section headings are used, they should not be construed as necessarily limiting.

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Tissue Dispenser Comprising Removable Sensor housing

Claims

1. A tissue dispenser comprising:
   a main housing to removably receive at least one tissue material; and
   a sensor housing disposed in the main housing using a mounting mechanism, wherein the mounting mechanism comprises:
      an actuating mechanism;
   wherein actuation of the actuating mechanism from locked state to unlocked state results in release of the sensor housing from the main housing.
2. The tissue dispenser of claim 1, wherein a slider unit and a connecting member is placed between the actuation mechanism and sensor housing
3. The tissue dispenser of claim 1 and 2, wherein the slider unit comprises:
   an elongate member; and
   a protrusion member disposed at one end of the elongate member, wherein the protrusion member is received within an opening provided in the sensor housing.
4. The tissue dispenser of claim 1, wherein the actuating mechanism comprises;
   a locked state in which the actuating mechanism is not actuatable; and
   an unlocked state in which the actuating mechanism is actuatable, wherein the actuating mechanism can be transitioned between the locked state and the unlocked state;
5. The tissue dispenser of claim 1, wherein the actuating mechanism is detachably mounted on the housing.
6. The tissue dispenser of claim 1, wherein the actuating mechanism comprises an extension tip that extends outward when the actuating mechanism is transitioned to the unlocked state.
7. The tissue dispenser of claim 1, wherein the actuating mechanism comprises an actuating member to transition it from locked state to unlocked state.
8. The tissue dispenser of claim 1 and 5, the actuating member is a key member.
9. The tissue dispenser of claim 1 and 5, the actuating member is a push button.

10. The tissue dispenser of claim 1, the actuating member comprises a latch mechanism configured to mate with the slider unit of the sensor housing.
11. The tissue dispenser of claim 1, wherein the actuating mechanism includes a locking component, and the sensor housing comprises a corresponding counterpart, configured to engage with the locking component to secure the sensor housing to the actuating mechanism.
12. The apparatus of claim 10, wherein the actuating mechanism comprises any one of the following types of locks: a cam lock, a bayonet lock, a latch lock, a snap-fit lock, a detent mechanism, a twist lock, a pin-and-hole lock, a screw thread lock, a magnetic lock, or a lever lock, each configured to secure and release the sensor housing from the primary housing through rotational actuation.
13. The tissue dispenser of claim 1-3, a connecting member is provided between the actuation mechanism and slider unit, wherein the connecting member transfer the motion from the actuation mechanism to the slider unit.
14. The mounting mechanism of claim 1, further comprising a biasing member disposed on the protrusion member to move the slider unit back to its normal position.
15. A tissue dispenser comprising:

    a main housing to removably receive at least one tissue material; and

    a sensor housing disposed in the main housing using a mounting mechanism, wherein the mounting mechanism comprises:

        an actuating mechanism;

    wherein actuation of the actuating mechanism from locked state to unlocked state results in release of the sensor housing from the main housing.
16. The tissue dispenser of claim 15, wherein a slider unit and a connecting member is placed between the actuation mechanism and sensor housing
17. The tissue dispenser of claim 15 and 16, wherein the slider unit comprises:

    an elongate member; and

    a protrusion member disposed at one end of the elongate member, wherein the protrusion member is received within an opening provided in the sensor housing.
18. The tissue dispenser of claim 15, wherein the actuating mechanism comprises;

    a locked state in which the actuating mechanism is not actuatable; and

    an unlocked state in which the actuating mechanism is actuatable, wherein the actuating mechanism can be transitioned between the locked state and the unlocked state;

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19. The tissue dispenser of claim 15, wherein the actuating mechanism is detachably mounted on the housing.
20. The tissue dispenser of claim 15, wherein the actuating mechanism comprises an extension tip that extends outward when the actuating mechanism is transitioned to the unlocked state.
21. The tissue dispenser of claim 15, wherein the actuating mechanism comprises an actuating member to transition it from locked state to unlocked state.
22. The tissue dispenser of claim 15 and 19, the actuating member is a key member.
23. The tissue dispenser of claim 15 and 19, the actuating member is a push button.
24. The tissue dispenser of claim 15, the actuating member comprises a latch mechanism configured to mate with the slider unit of the sensor housing.
25. The tissue dispenser of claim 15, wherein the actuating mechanism includes a locking component, and the sensor housing comprises a corresponding counterpart, configured to engage with the locking component to secure the sensor housing to the actuating mechanism.
26. The apparatus of claim 25, wherein the actuating mechanism comprises any one of the following types of locks: a cam lock, a bayonet lock, a latch lock, a snap-fit lock, a detent mechanism, a twist lock, a pin-and-hole lock, a screw thread lock, a magnetic lock, or a lever lock, each configured to secure and release the sensor housing from the primary housing through rotational actuation.
27. The tissue dispenser of claim 15-17, a connecting member is provided between the actuation mechanism and slider unit, wherein the connecting member transfer the motion from the actuation mechanism to the slider unit.
28. The mounting mechanism of claim 15, further comprising a biasing member disposed on the protrusion member to move the slider unit back to its normal position.

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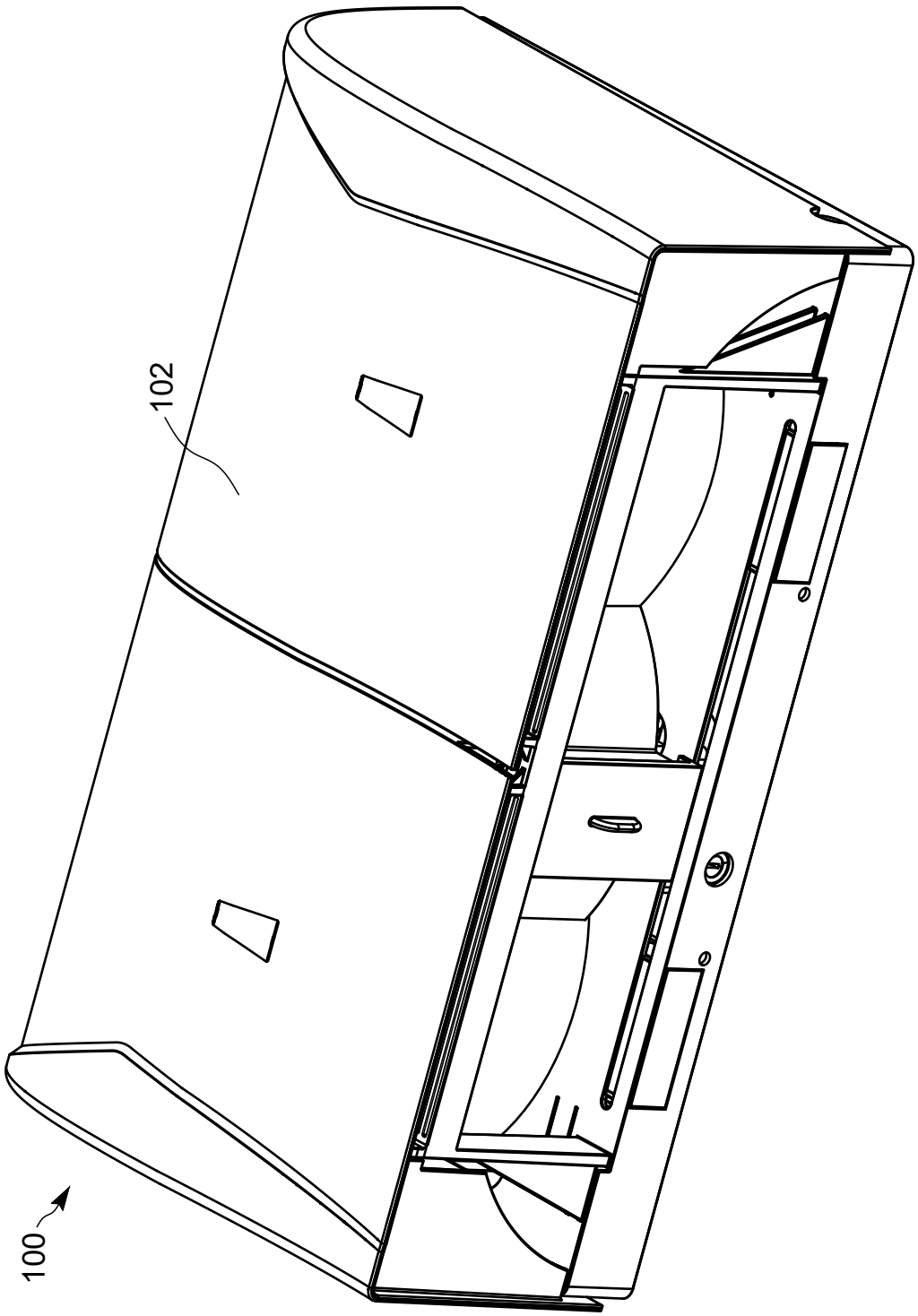

FIG. 1

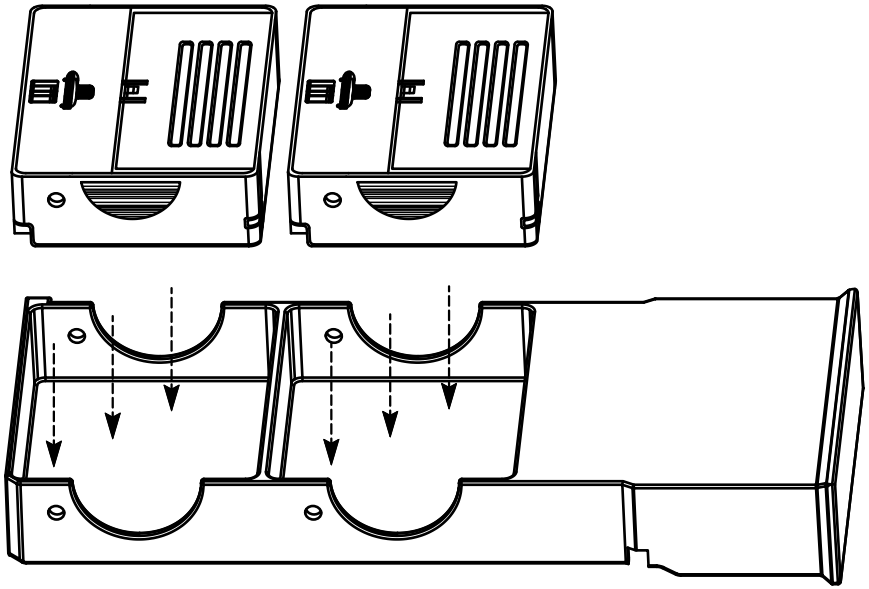

FIG. 2a

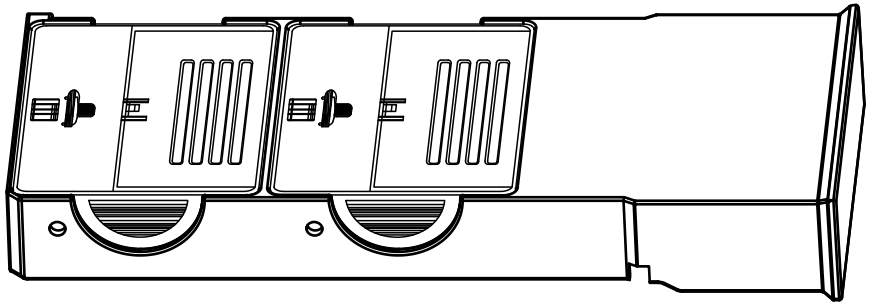

FIG. 2b

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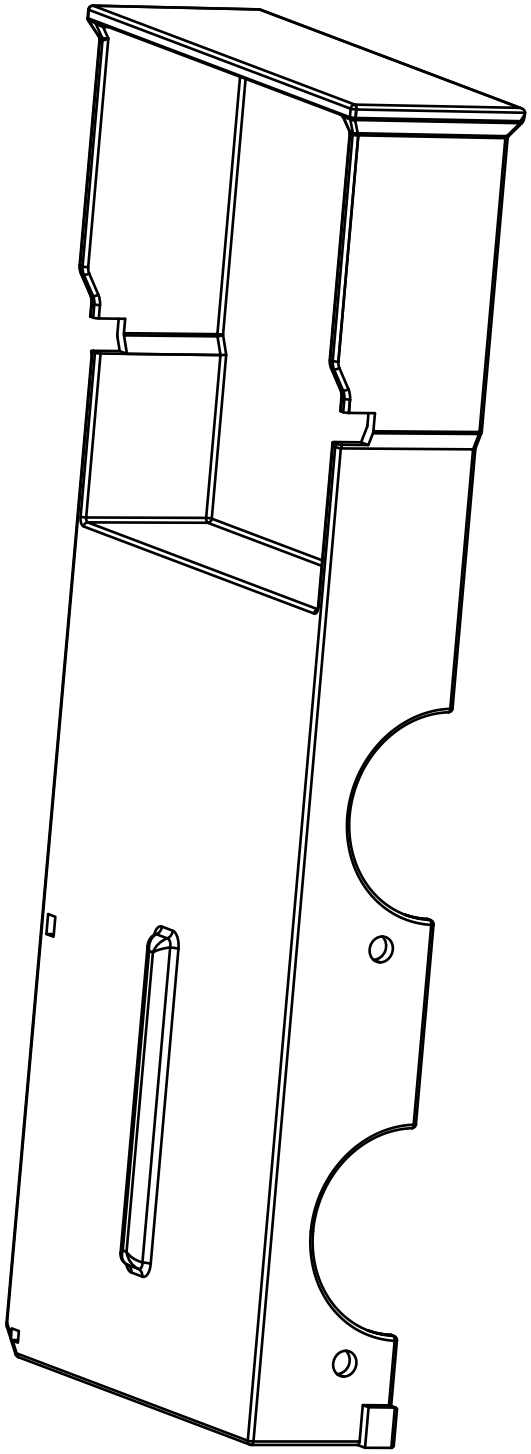

FIG. 3

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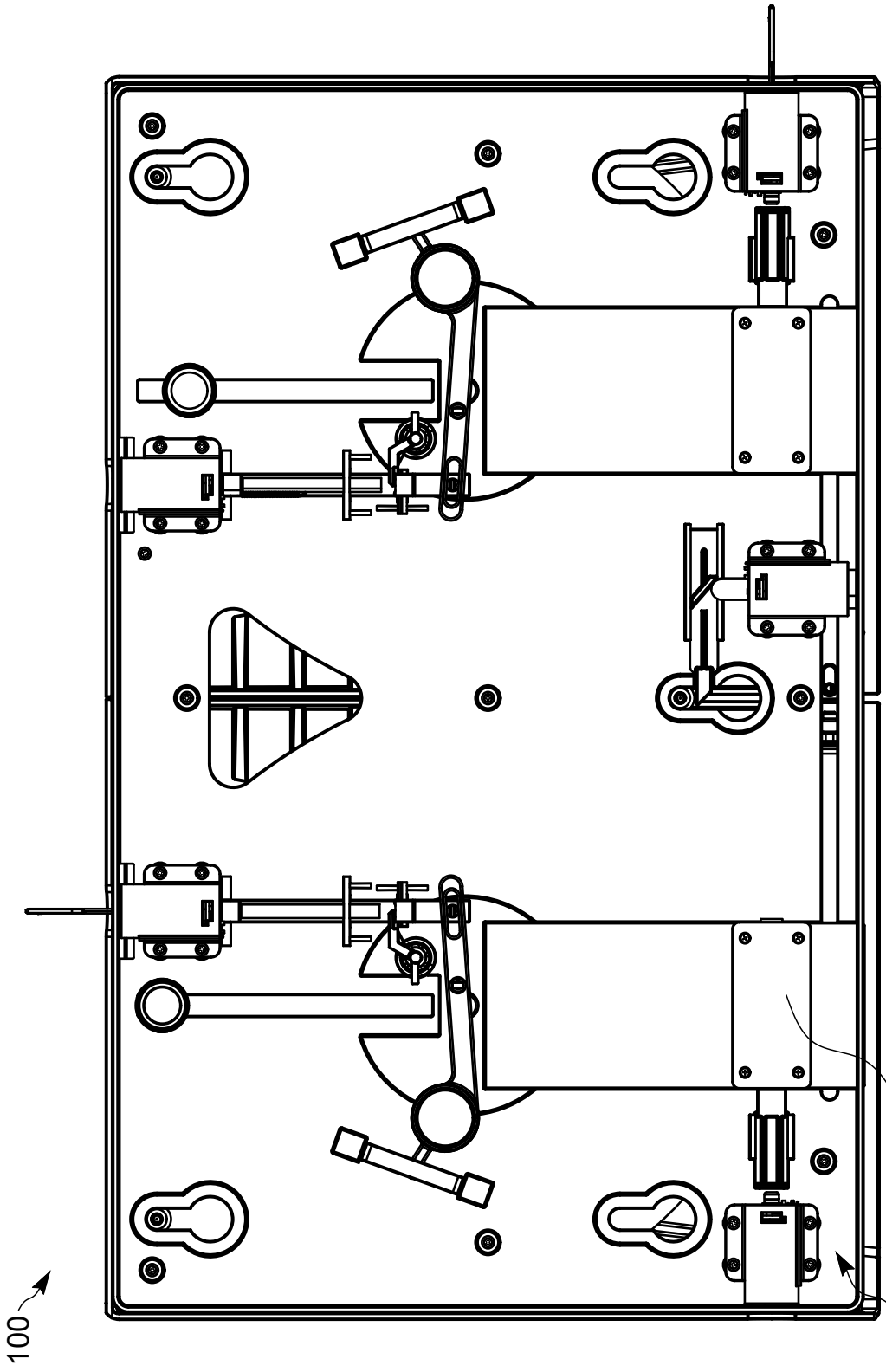

FIG. 4

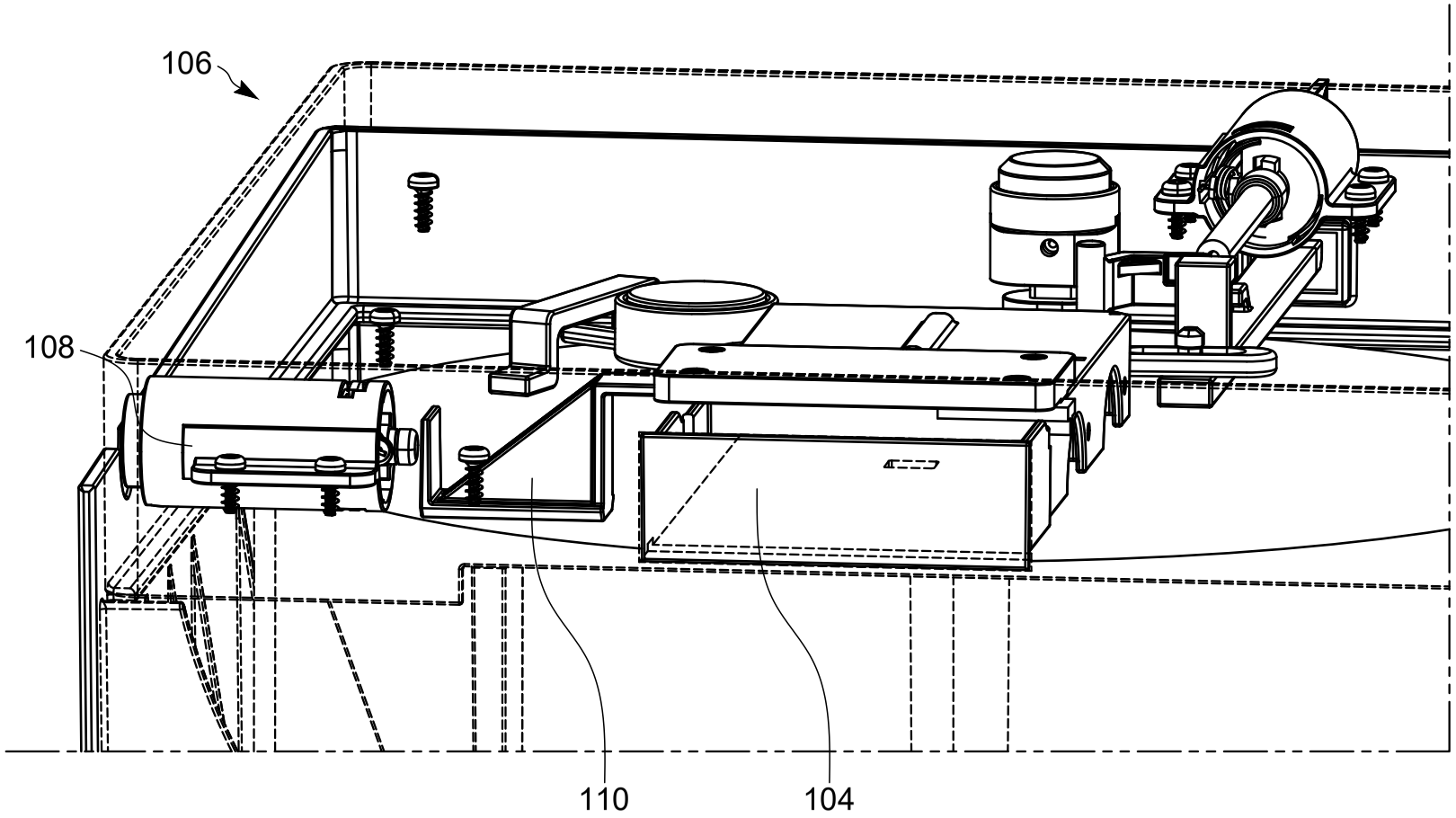

FIG. 5a

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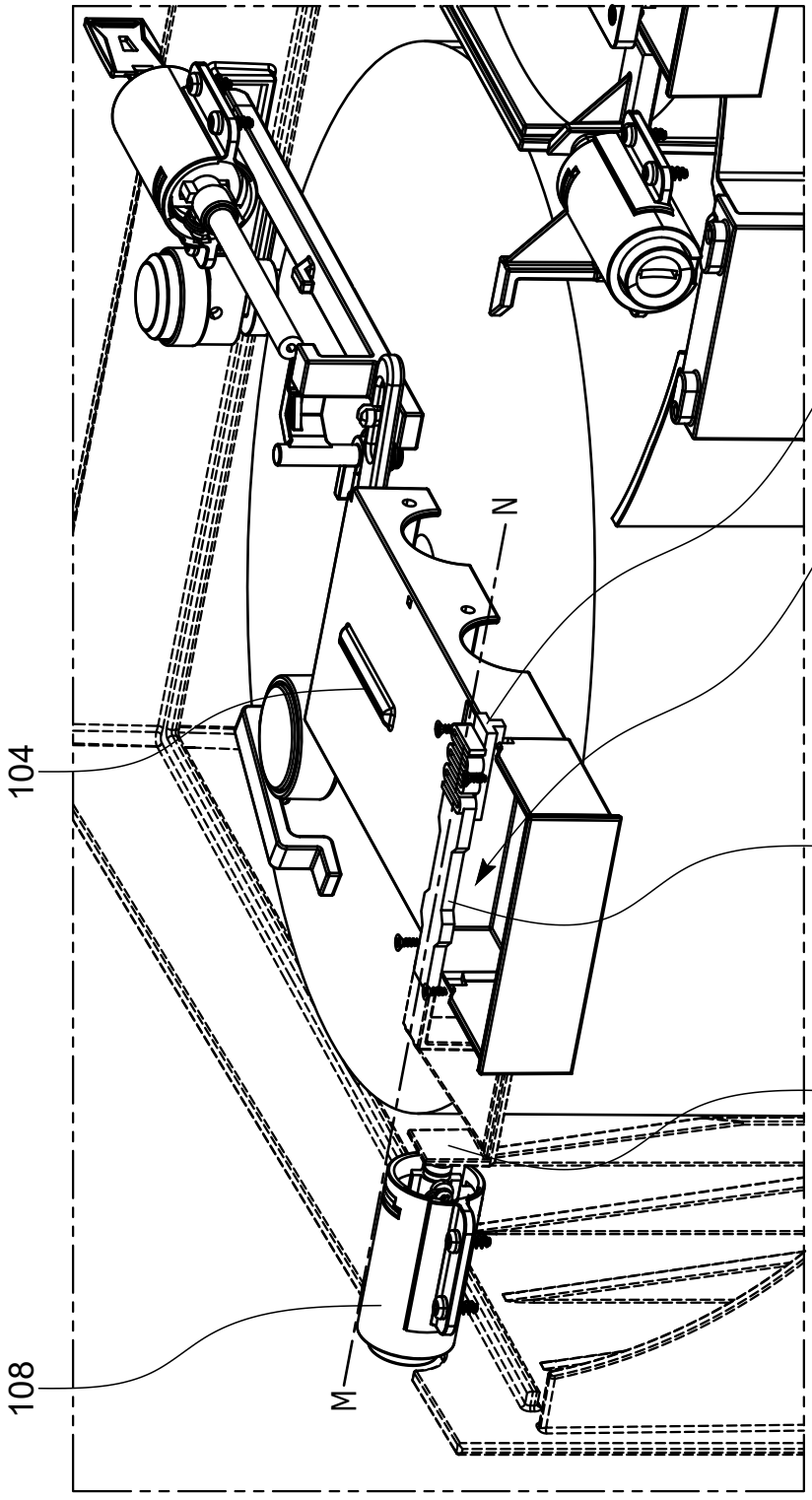

FIG. 5b

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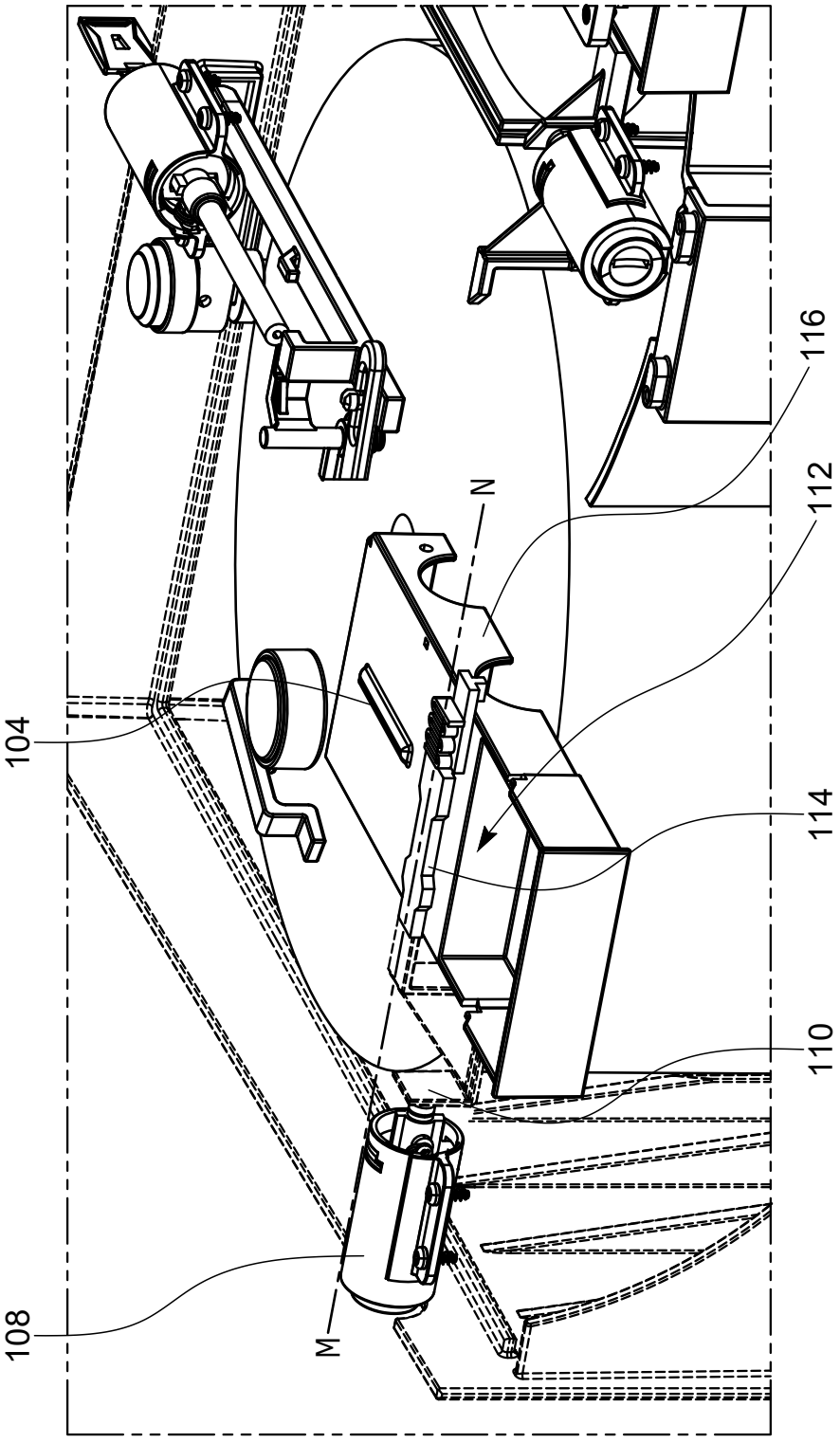

FIG. 6

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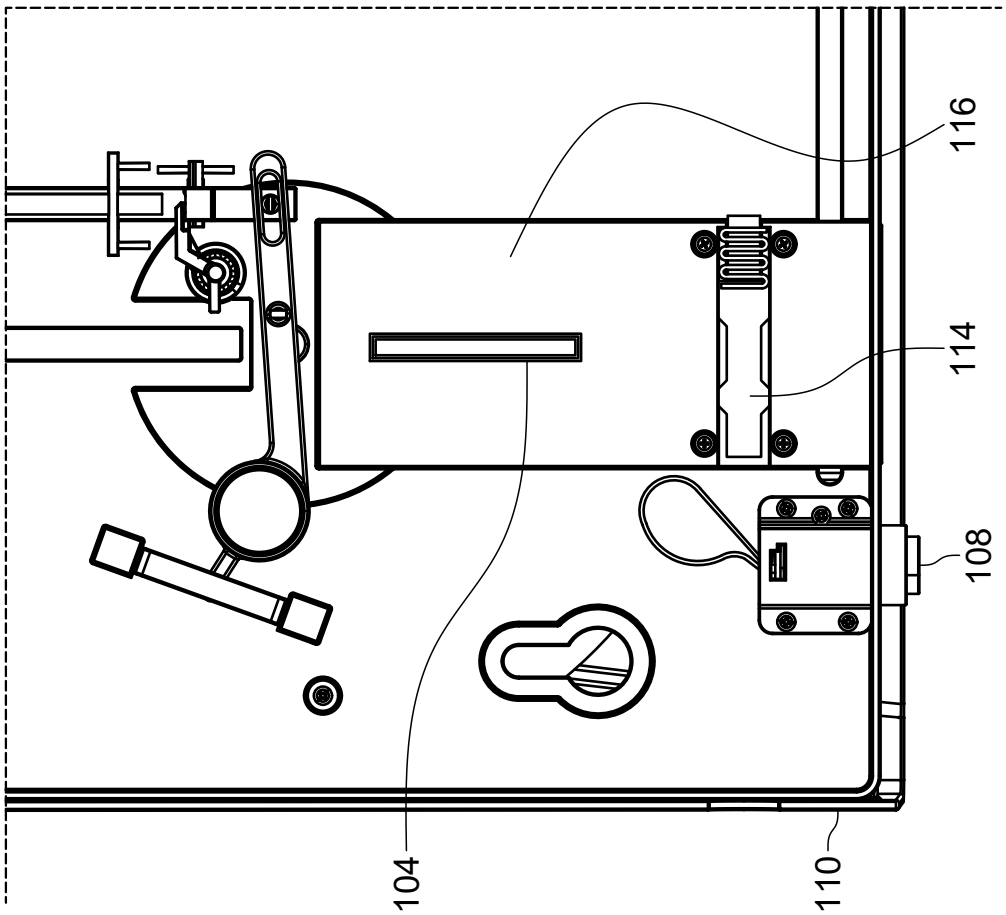

FIG. 7

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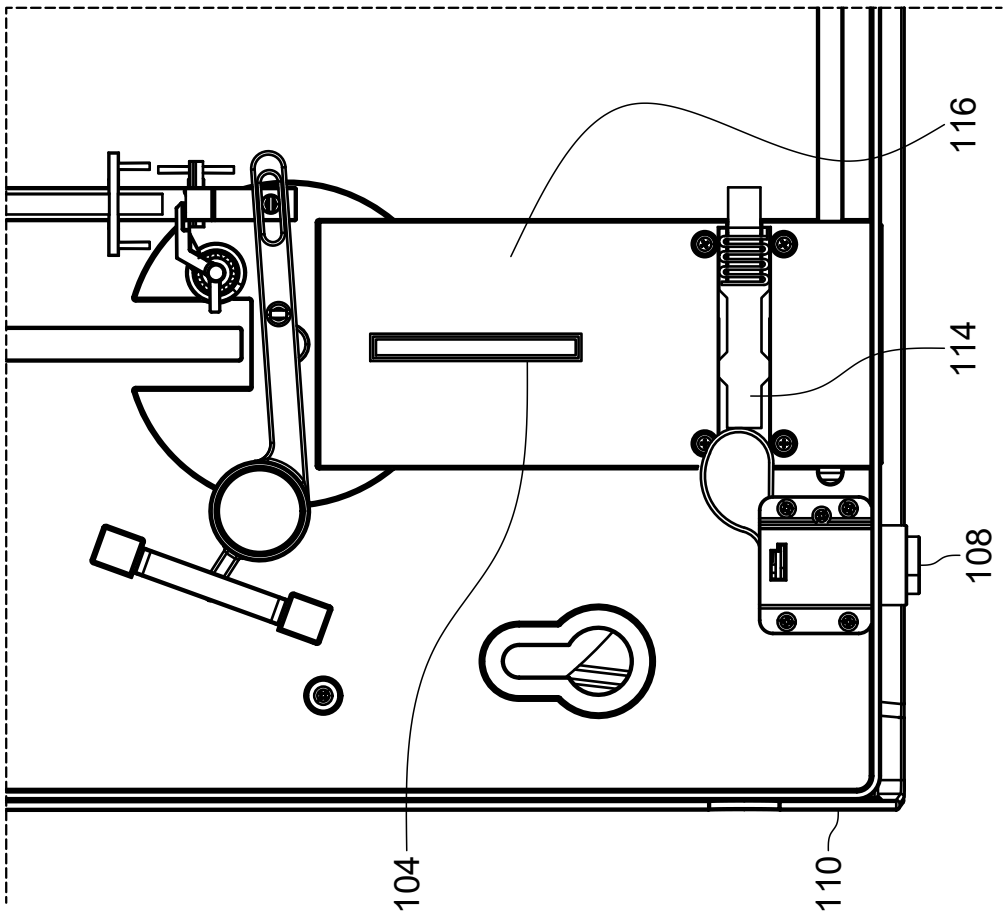

FIG. 8

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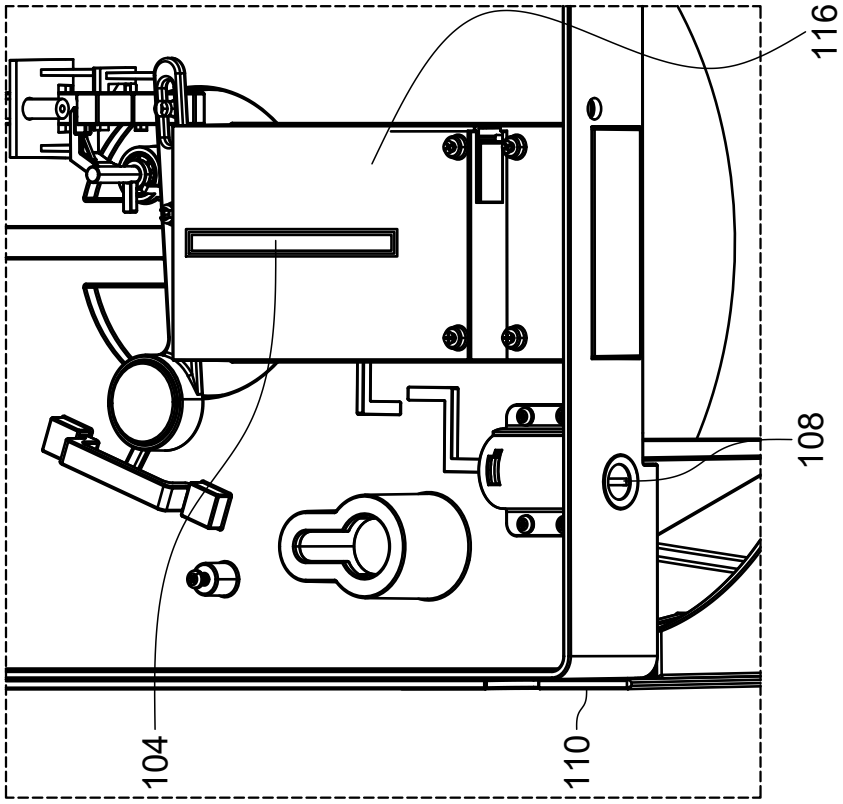

FIG. 9

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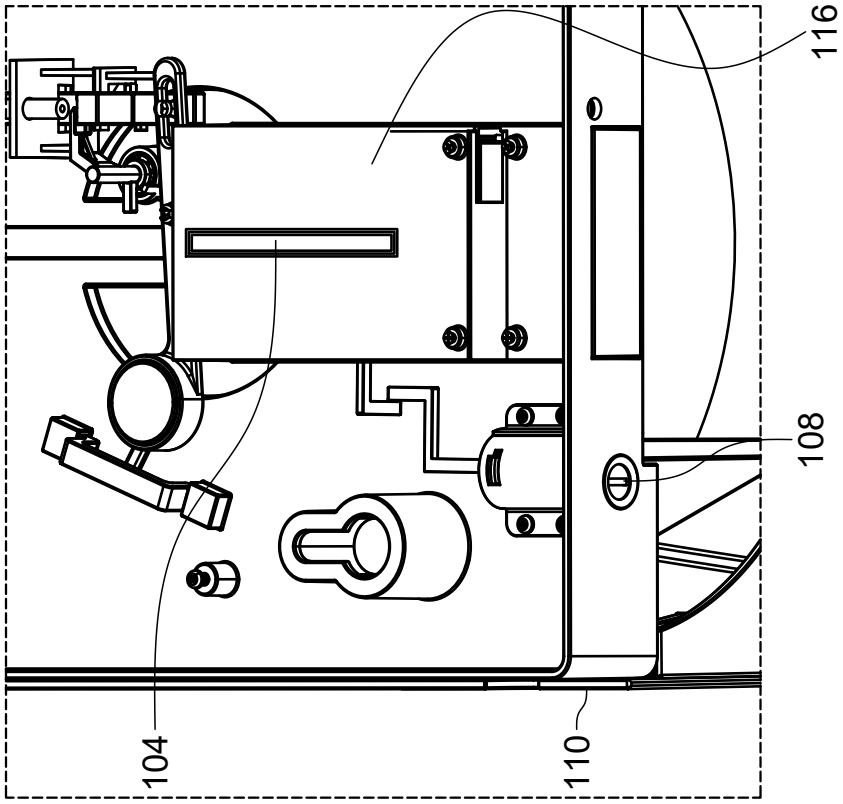

FIG. 10