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(54) **Title:** THEFT PREVENTION DEVICE FOR TWO-WHEELED VEHICLES

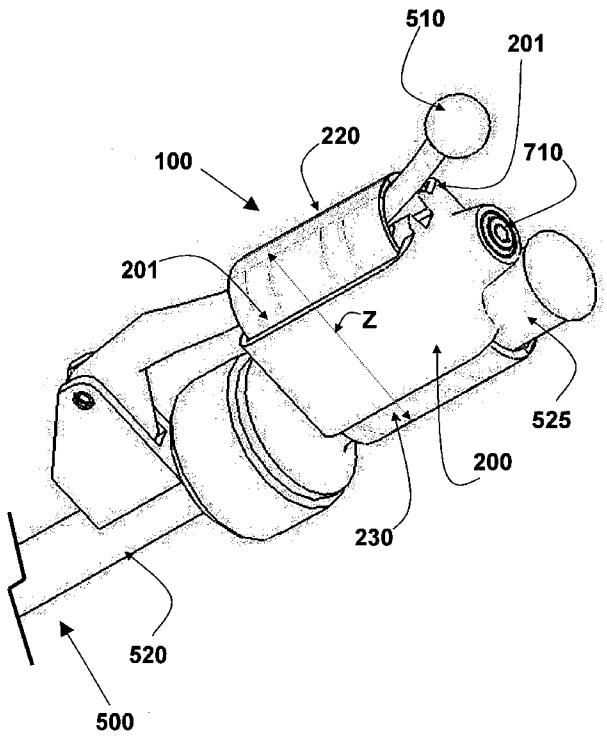


Figure 1

(57) **Abstract:** Theft prevention device for enabling to lock the handlebar grip and the brake-lever of a two-wheeled vehicle, where the brake-lever is movably connected to the handlebar, to prevent stealing of the vehicle. The device may comprise a housing comprising at least two openings; a handlebar cuff that enables slidably attaching to the housing through the openings and cuffing of the handlebar grip therein; a brake-lever cuff that enables slidably attaching to the housing through the openings and, cuffing of the brake-lever therein; and a lock assembly that is operatively associated with the cuffs. The lock assembly enables locking the cuffs in a position where the cuffs cuff the handlebar grip and the brake-lever. To install the theft prevention device the cuffs should be approximate to one another, and then the user may lock the cuffs in the approximated cuffing position, using the lock assembly.

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THEFT PREVENTION DEVICE FOR TWO-WHEELED VEHICLES

CROSS REFERENCE TO RELATED APPLICATION

[0001] This application claims the benefit of U.S. Provisional Patent Application No. 60/935,900, filed September 6, 2007, titled: "Theft Deterrent Device for a Motorbike", which is incorporated herein by reference in its entirety.

FIELD OF THE INVENTION

[0002] The present invention relates generally to the field of theft prevention devices and more particularly to the field of theft prevention devices for two-wheeled vehicles.

BACKGROUND OF THE INVENTION

[0003] Two-wheeled vehicles such as motorbikes, scooters and bicycles are stolen at twice the rate of automobiles, and less than half of those stolen are recovered. Therefore, deterring and preventing theft is an ongoing concern for motorbike owners.

[0004] The most commonly recommended theft deterrent and prevention method is to lock the bike to a stationary, secure object that cannot be easily dismantled or moved. Usually, a chain or cable is threaded through a wheel or a chain loop of the motorbike and around a fixed or difficult-to-move object, such as a tree, a signpost, an in-ground anchor, or a light pole, and the ends of the chain or cable are locked together. Such an arrangement is also conveniently moved from one motorbike to another, which is an advantage if, for example, one rides more than one motorbike.

[0005] However, if there is no suitable object available to which the chain or cable can be affixed, such a method is for less effective. Furthermore, the weight and bulk that makes a cable or chain sturdy enough to withstand tampering may also make

the cable or chain awkward to transport. And threading a chain or cable to a motorbike that is hot and dusty from recent use is simply inconvenient and uncomfortable.

[0006] Other locks intended to prevent or deter the theft of motor bikes are also known.

[0007] For example, a disc brake lock, a small, portable lock that fits on the disc of the brake of a motorbike, is more quickly engaged and disengaged than a chain or cable lock. However, users have two complaints regarding disc brake locks. Firstly, as a disc brake lock is small and unobtrusive and its location on the wheel is not obvious, it is easy for the user to forget that the disc brake lock is engaged. Secondly, and for the same reasons, a disc brake lock does not provide a clearly visible deterrent to would-be thieves.

[0008] There are also locks that may be integrated into one of the handlebar mounted controls, for holding the control in a position that prevents the operation of the motorbike. For example, JP2005349882 discloses a device installed on the clutch lever assembly for locking a clutch lever against the handlebar. Again, the location and size of this type of lock device may not provide a clearly visible deterrent to would-be thieves. Furthermore, the integrated nature of such devices makes their use with more than one motorbike impractical, and may even preclude their use with another motorbike.

[0009] Another group of locks is handlebar-mounted locks, which have an upper and a lower piece that join together to clasp the brake or clutch lever and the corresponding handlebar grip. Handlebar-mounted locks have a general configuration to hold a lever in a position that renders a motorbike inoperable, and can be easily mounted on a motorbike. However, in order to ensure a snug and secure fit, further alterations are often required to adapt an individual handlebar-mounted lock to a specific motorbike. Alterations such as adhering foam segments to the inner surface of the lock are often permanent; therefore, a specific handlebar-mounted lock becomes tailored for use with only a specific motorbike. Furthermore, a handlebar-mounted lock may be of an attention grabbing color so the user is unlikely to forget its presence; however, the small size of such devices is not likely to put off a would-be thief, nor does it inspire confidence in the user that the motorbike is well protected.

SUMMARY OF THE INVENTION

[0010] The present invention, in some embodiments thereof, provides a theft prevention device for enabling to lock a handlebar grip and a brake-lever of a two-wheeled vehicle such as a motorbike, a scooter or a bicycle, where the brake-lever is movably connected to the handlebar, to facilitate in preventing an unauthorized user from stealing said vehicle or using it.

[0011] According to some embodiments of the invention, the theft prevention device may comprise:

a housing comprising at least two openings;

a handlebar cuff that enables slidably attaching to said housing through said openings and, together with the housing, enables cuffing the handlebar grip therein;

a brake-lever cuff that enables slidably attaching to said housing through said openings and, together with the housing, enables cuffing the brake-lever therein; and

a lock assembly that is operatively associated with said cuffs, wherein said lock assembly enables locking the cuffs in a position where the cuffs are engaged so that they cuff the handlebar grip and the brake-lever.

[0012] According to some embodiments of the invention, the lock assembly may comprises at least one pin plate comprising at least one plate channel, which is perforated therein; at least one pin, movably connected to said plate, wherein each pin is movably connected to the plate through said plate channel, which enables the pin to move within the channel; and a lock button, operatively associated with said pin plate. According to these embodiments, the at least one plate channel may be angular, constructed of at least two integrally connected channels that create and angle therebetween to allow the pins to protrude from the plate once reaching one end of the plate channel and to withdraw inwardly once reaching the other end of the plate channel. Additionally, the plate may enable the pins to protrude outwardly from the

plate along a predefined "X" axis, when the plate is moved along a predefined "Y" axis in one direction and to withdraw inwardly towards the plate when the plate is moved in an opposite direction along the "Y" axis, where each of said handlebar cuff and brake-lever cuff comprises at least one serrated channel, enabling the pins to insert therethrough, once the pins are in a protruding position, and thereby locking the cuffs in a locked position cuffing the grip and brake-lever. The lock button may enable moving the pin plat back and forth along the "X" direction to lock and unlock the cuffs.

[0013] According to some embodiments of the invention, the lock assembly may further comprise a first core half and a second core half enabling to attach to one another while holding the pin plate and said at least one pin therein. Each of said core halves may comprise at least one niche enabling to create at least one perforation once the two halves are attached, through which the at least one pin protrudes in the locked position of said at least one pin.

[0014] According to some embodiments of the invention, the cuffs may further comprises at least one hole, positioned in such a location that enables each hole to be situated above said at least one pin enabling to lock the sliding movement of the cuffs along the "Z" axis by allowing each pin to be inserted through each hole in the pin's protruding position.

[0015] According to some embodiments of the invention, the "Z" axis may be substantially perpendicular to the "Y" axis, allowing the plate to be moved along a perpendicular axis to the movement axis of the cuffs.

[0016] According to some embodiments of the invention, the "Z" axis may be substantially perpendicular to the "X" axis, allowing the plate to be moved along a perpendicular axis to the protrusion movement axis of the pins.

[0017] According to some embodiments of the invention, the "Z" axis may be substantially perpendicular to the "Y" axis allowing the plate to be moved along a perpendicular axis to the movement axis of the cuffs, where the "Y" axis is substantially perpendicular to the "X" axis, allowing the plate to be moved along a perpendicular axis to the protrusion movement axis of the pins, wherein the "X" axis is also substantially perpendicular to the "Z" axis.

[0018] According to some embodiments of the invention, the lock button of the lock assembly may enable moving the pin plate along the "X" direction to lock and unlock the cuffs by moving along the same "X" axis, thereby pushing the pin plate when the lock button is pressed.

[0019] According to some embodiments of the invention, the lock assembly may further comprise a connecting member that is movably connected at one end to the lock button and at the other end to the pin plate, thereby enabling to transmit the pressing movement of the lock button to the movement of the plate, which in tern transmits the pressing movement to each pin to enable the pin to protrude from the plate.

[0020] According to some embodiments of the invention, pressing of the lock button along a predefined "Y" axis, may enable the connecting member to transmit the pressing movement of the lock button along the "Y" axis into the movement of the plate along a substantially perpendicular "X" axis. For that purpose, the connecting member may be L shaped.

[0021] According to some embodiments of the invention, the theft prevention device may further comprise at least one reinforcement strap, wherein said reinforcement strap is disposed within an inner wall of at least one of the cuff. The reinforcement strap may comprise at least one serrated channel adapted to fit the positioning of each of the cuffs' serrated channels to enable receiving of the at least one pin of the lock assembly therein, to lock the cuffs to the handlebar grip and brake-lever.

[0022] According to some embodiments of the invention, each pin may have two protruding ends enabling to connect to one another through a connector, wherein said connector is movably inserted through said plate channel, thereby allowing the pin to move along the plate channel.

[0023] According to some embodiments of the invention, the lock button may comprise an external cylinder and an internal cylinder, coaxially engaged therein.

[0024] According to some embodiments of the invention, at least a part of said lock assembly may be housed by the housing.

[0025] According to some embodiments of the invention, the theft prevention device may further comprise at least one holding member, which enables covering a part of the cuff that is held by the user, wherein said at least one holding member is attached to at least one of the cuffs. The holding member may be a piece of material of high friction situated at the external side of the cuff, so as to allow the user to grab this part when holding the cuff. The material may be, for instance, leather, cloth, rubber, etc.

[0026] According to some embodiments of the invention, the interior surface of at least one of the cuffs may be enhanced with a heavy-duty memory foam material, which provides protection against accidental scratching and marring of at least one of: the brake-lever and handlebar grip caused by the repeated installation of the theft prevention device.

[0027] According to some embodiments of the invention, the theft prevention device may further comprise at least one pulling-resistance mechanism, which facilitates in preventing an unauthorized person from removing the cuffs from their corresponding brake-lever and handlebar grip. The pulling-resistance mechanism may comprise at least one protruding member that protrudes from at least one of the housing's sides; at least one holder enabling to movably hold the protruding member; and at least one pivot movably connecting said protruding member to said holder. The housing may correspondently, comprise a pulling-resistance mechanism's opening enabling the protruding member to protrude therefrom, where the protruding member enables attaching to the surface of at least one of: the grip and the brake-lever, once the cuffs are cuffed to the brake-lever and handlebar grip, when a pulling force is applied on at least one of: the handlebar grip and the brake-lever.

[0028] According to some embodiments of the invention, the handlebar cuff and the brake-lever cuff may enable engaging with one another, in an interlocking manner once pressed against each other to lock the device, to form the locked position.

[0029] According to other embodiments of the invention, the handlebar cuff and the brake-lever cuff may enable engaging with one another, in a configuration in which one of said cuffs envelopes the other, to form the locked position.

[0030] According to some embodiments of the invention, the housing shape may create two sunken parts, where one of the parts is designed to receive the handlebar grip and the other part is designed to receive the brake-lever.

[0031] The present invention, in some non-limiting embodiments thereof, further provides a method of locking the handlebar grip and the brake-lever of a two-wheeled vehicle, using the theft prevention device. According to these embodiments, the method may comprise: (i) sliding the handlebar cuff over the handlebar grip so that the handlebar cuff encircles the grip; (ii) sliding the brake-lever cuff over the brake-lever so that the brake-lever cuff encircles the brake-lever; (iii)cuffing the handlebar grip and the brake-lever by approximating the cuffs to one another by sliding said cuffs through the openings of said housing along a predefined "Z" axis, thereby enabling the two cuffs to engage with one another; and (iv) pushing the lock button, thereby enabling to lock the cuffs in the approximated cuffing position.

BRIEF DESCRIPTION OF THE FIGURES

[0032] The subject matter regarded as the invention will become more clearly understood in light of the ensuing description of embodiments herein, given by way of example and for purposes of illustrative discussion of the present invention only, with reference to the accompanying figures, wherein

Figure 1 is an isometric view of a theft prevention device for a two-wheeled vehicle, according to some embodiments of the present invention, mounted on a motorbike;

Figure 2 is an isometric side view of a theft prevention device for a two-wheeled vehicle, according to some embodiments of the present invention;

Figure 3 is an isometric exploded view of a lock assembly of a theft prevention device, according to some embodiments of the present invention;

Figure 4 is an isometric exploded view of a theft prevention device for a two-wheeled vehicle, according to some embodiments of the present invention;

Figure 5 is an isometric view of a pin plate and the accompanying pins, which is a part of the lock assembly of the theft prevention device, according to some embodiments of the present invention;

Figure 6 is a perspective view of the theft prevention device for a two-wheeled vehicle, showing cuffs of the device in an exploded view, according to some embodiments of the present invention;

Figure 7 is a perspective view of the two halves that comprise a core of a theft prevention device for a two-wheeled vehicle, according to some embodiments of the present invention;

Figure 8 is a sectional view of the theft prevention device for a two-wheeled vehicle, where the pins are in a withdrawn position and the device is in an unlocked position, according to some embodiments of the present invention;

Figure 9 is a sectional view of a theft prevention device, where the pins are held in a semi-withdrawn position and the device is in semi-locked position, according to some embodiments of the present invention;

Figure 10 is a sectional view of a theft prevention device, where the pins are held in a protruding position and the device is in a locked position, according to some embodiments of the present invention;

Figures 11A and **11B** schematically illustrate a theft prevention device, according to other embodiments of the present invention;

Figure 12 is a schematic illustration of a lock assembly of the theft prevention device, according to the other embodiments of the present invention;

Figure 13 is a schematic illustration of a lock assembly and cuffs of the theft prevention device, according to the other embodiments of the present invention;

Figure 14 is a schematic illustration cuffs of the theft prevention device, according to the other embodiments of the present invention;

Figures 15A and **15B** schematically illustrate a housing of the theft prevention device in a side and isometric views, respectively, according to the other embodiments of the present invention; and

Figure 16 is a schematic illustration of a pulling-resistance mechanism of the theft prevention device, according to the other embodiments of the present invention.

[0033] The figures together with the description make apparent to those skilled in the art how the invention may be embodied in practice.

[0034] It will be appreciated that for simplicity and clarity of illustration, elements shown in the figures have not necessarily been drawn to scale. For example, the dimensions of some of the elements may be exaggerated relative to other elements for clarity. Further, where considered appropriate, reference numerals may be repeated among the figures to indicate corresponding or analogous elements.

DESCRIPTION OF SOME EMBODIMENTS OF THE INVENTION

[0035] It is to be understood that an embodiment is an example or implementation of the invention. The various appearances of "one embodiment," "an embodiment" or "some embodiments" do not necessarily all refer to the same embodiments.

[0036] Although various features of the invention may be described in the context of a single embodiment, the features may also be provided separately or in any suitable combination. Conversely, although the invention may be described herein in the context of separate embodiments for clarity, the invention may also be implemented in a single embodiment.

[0037] Reference in the specification to "one embodiment", "an embodiment", "some embodiments" or "other embodiments" means that a particular feature, structure, or characteristic described in connection with the embodiments is included in at least one embodiment, but not necessarily all embodiments, of the inventions.

[0038] It is understood that the phraseology and terminology employed herein is not to be construed as limiting and is for descriptive purpose only.

[0039] The principles and uses of the teachings of the present invention may be better understood with reference to the accompanying description, figures, and examples.

[0040] It is to be understood that the details set forth herein should not be construed as limiting any applications of the invention.

[0041] Furthermore, it is to be understood that the invention can be carried out or practiced in various ways and that the invention can be implemented in embodiments other than the ones outlined in the description below.

[0042] It is to be understood that the terms "including", "comprising", "consisting" and grammatical variants thereof do not preclude the addition of one or more components, features, steps, integers or groups thereof and that the terms are not to be construed as specifying components, features, steps or integers.

[0043] The phrase "consisting essentially of", and grammatical variants thereof, when used herein, is not to be construed as excluding additional components, steps, features, integers or groups thereof but rather that the additional features, integers, steps, components or groups thereof do not materially alter the basic and novel characteristics of the claimed composition, device or method.

[0044] If the specification or claims refer to "an additional" element, that does not preclude there being more than one of the additional element.

[0045] It is to be understood that where the claims or specification refer to "a" or "an" element, such reference is not to be construed as there being only one of that element.

[0046] It is to be understood that where the specification states that a component, feature, structure, or characteristic "may", "might", "can" or "could" be included, that particular component, feature, structure, or characteristic is not required to be included.

[0047] Where applicable, although state diagrams, flow diagrams or both may be used to describe embodiments, the invention is not limited to those diagrams or to the

corresponding descriptions. For example, flow need not move through each illustrated box or state, or in exactly the same order as illustrated and described.

[0048] The term "method" refers to manners, means, techniques and procedures for accomplishing a given task including, but is not limited to those manners, means, techniques and procedures either known to, or readily developed from known manners, means, techniques and procedures by practitioners of the art to which the invention belongs.

[0049] The descriptions, examples, methods, and materials presented in the claims and the specification are not to be construed as limiting but rather as illustrative only.

[0050] Meanings of technical and scientific terms used herein are to be commonly understood as by one of ordinary skill in the art to which the invention belongs, unless otherwise defined.

[0051] The present invention can be implemented in the testing or practice with methods and materials equivalent or similar to those described herein.

[0052] The terms "bottom", “below”, "top" and “above” as used herein do not necessarily indicate that a "bottom" component is below a "top" component, or that a component that is “below” is indeed “below” another component or that a component that is “above” is indeed “above” another component. As such, directions, components or both may be flipped, rotated, moved in space, placed in a diagonal orientation or position, placed horizontally or vertically, or similarly modified. Accordingly, it will be appreciated that the terms "bottom", “below”, "top" and “above” may be used herein for exemplary purposes only, to illustrate the relative positioning or placement of certain components, to indicate a first and a second component or to do both.

[0053] Any publications, including patents, patent applications and articles, referenced or mentioned in this specification are herein incorporated in their entirety into the specification, to the same extent as if each individual publication was specifically and individually indicated to be incorporated herein. In addition, citation or identification of any reference in the description of some embodiments of the invention shall not be construed as an admission that such reference is available as prior art to the present invention.

[0054] The present invention, in some non-limiting embodiments thereof, provides a theft prevention device **100** for a two-wheeled vehicle **500** such as a motorbike, a scooter or a bicycle, serving as a lock and a deterring element, by enabling to prevent the movement of the vehicle's **500** brake-lever **510** and possibly also of the handlebar grip **525** (if it is used as a gas handle). The theft prevention device **100** may facilitate in overcoming shortcomings of the above-mentioned, currently available locks.

[0055] A feature of the present invention is that it is versatile enough to use with different types of two-wheeled vehicles (e.g. different types of motorbikes, scooters or bicycles). A theft prevention device **100** for a two-wheeled vehicle **500** according to embodiments of the present invention may be readily moved from vehicle to vehicle, requiring neither permanent nor temporary alterations prior to use.

[0056] According to some embodiments of the invention, as illustrated in **Figures 1-2**, the theft prevention device **100** may be installed on a grip **525** of the vehicle's **500** handlebar **520** that is connected to a brake-lever **510** of the vehicle **500** (usually the right handlebar **520**).

[0057] The theft prevention device **100** may serve both as a deterring device and as a lock, preventing unauthorized people such as thieves from stealing the vehicle **500**.

[0058] The size of the components of the theft prevention device **100** and its components may be designed to fit standard handlebars **520** and brake-levers **510** of motorbikes, bicycles, or any other type of two-wheeled vehicle **500**.

[0059] The prominent location, on the handlebar grip **520**, and the considerable size, covering a significant portion of handlebar grip **520**, render embodiments of the present invention highly visible. Such high visibility not only create an unambiguous visual deterrent to would-be thieves but also provide a clear reminder to the user not to ride off with the device in place. Thus, embodiments of the present invention may provide the user with a sense of confidence that the two-wheeled vehicle **500** is well protected.

[0060] Embodiments of a theft prevention device **100** for a two-wheeled vehicle **500** according to the present invention offer a number of other advantages, including:

- Installation and removal of the present invention is simple and rapid, requiring no tools;
- Use of the present invention is practical and straightforward; theft prevention device **100** may be engaged by depressing a lock button **110**, and requires only a key to disengage the lock;
- Engaging the present invention moves the brakes to a closed, or braked, position and prevents right handlebar grip **520** from rotating;
- The present invention is quite portable, its size and weight making it convenient to store and transport when not being used; and
- The present invention will fit most types of two-wheeled vehicles **500** and can be transferred from one two-wheeled vehicle **500** to another without requiring any adjustments.

[0061] According to embodiments of the present invention, as illustrated in **Figures 1-3**, provide a theft prevention device **100** for a two-wheeled vehicle **500** that encircles the handlebar grip **520** and brake-lever **510** connected thereto, of the two-wheeled vehicle **500**.

[0062] According to these embodiments, the theft prevention device **100** may comprise:

- a housing **200** disposed between the handlebar **520** grip **525** and brake-lever **510** of the two-wheeled vehicle **500**;
- a handlebar cuff **230** that is slidably attached to the housing **200** and, together with the housing **200**, encircles the handlebar grip **525**;
- a brake-lever cuff **220** that is slidably attached to the housing **200** and, together with the housing **200**, encircles the brake-lever **510**; and
- a lock assembly **700** that is operatively associated with the cuffs **220** and **230** and is located in the housing **200**.

[0063] According to some embodiments of the invention, the lock assembly **700** may be housed by the housing **200**, which may also movably hold the cuffs **220** and **230** through openings **201**, enabling to the lock cuffs **220** and **230** onto the brake-lever **510** and the handlebar grip **525**, respectively, by approximating the cuffs **220** and **230** to the brake-lever **510** and handlebar grip **525** and then locking them in that approximated position, using the lock assembly **700**.

[0064] According to some embodiments of the invention, as illustrated in **Figures 1-3**, the cuffs **220** and **230** can open and lock by increasing and decreasing the space created between the circumference walls of the cuffs **220** and **230** and housing **200** of device **100**. To open or close the cuffs **220** and **230**, the cuffs **220** and **230** can be moved substantially along a predefined axis "Z", as shown in **Figures 1-2**. To lock the cuffs **230** and **220** onto the handlebar grip **525** and the brake lever **510**, respectively, the cuffs **220** and **230** may be moved along axis "Z" towards each other to decrease the space between each cuff **220** and **230** and the handlebar grip **525** and lever **510**, preventing one from sliding the cuffs **220** and **230** along the handle grip **525** and the lever **510**, whereas to unlock cuffs **230** and **220**, cuffs **230** and **220** may be moved away from each other along axis "Z" to increase the space between the cuffs' **230** and **220** walls and the grip **525** and lever **510** allowing an authorized user to remove the theft prevention device **100** from the handlebar **520** and from the lever **510** by sliding the unlocked cuffs **220** and **230** along their respective lever **510** and grip **525**.

[0065] The lock assembly **700** may allow holding the cuffs **220** and **230** in a locked position, where the handlebar cuff **220** tightly cuffs the handlebar grip **525** and the brake-lever cuff **230** tightly cuffs the brake-lever **510**, as illustrated in **Figures 1-2**.

[0066] According to some embodiments, the housing **200** may be further equipped with, for example, rubber material, seals, gaskets or other protective material that enable sealing the gaps around the openings where, inter alia, the brake-lever cuff **220** and the handlebar cuff **230** enter housing **200**. The shape of the housing **200**, together with such protective material may defend against tampering with the components contained within housing **200** as well as preventing water, dust, and other contaminants from entering housing **200**.

[0067] The lateral sides of the housing **200** may be configured to receive the corresponding brake-lever **510** and handlebar grip **520**.

[0068] According to embodiments, housing **200** of theft prevention device **100** may be constructed from sturdy, tamper-resistant material, such as, for example, hardened steel that is able to withstand theft attempts. It is understood that many other materials and configurations could also be used in order to provide a long-lasting and sturdy housing **200**.

[0069] According to some embodiments of the present invention, the interior surface of the brake-lever cuff **220** may be enhanced with, for example, heavy-duty memory foam material. This material may serve a twofold purpose. The material offers protection against the accidental scratching and marring of the brake-lever **510** during use. The material may also enhance the gripping power of brake-lever cuff **220** to grip brake-lever **510** because the flexible nature of such material allows the surface contact area to be increased as well as creating additional friction.

[0070] According to some embodiments, the material comprising the brake-lever cuff **220** may be a fiberglass and epoxy composite over steel. It is understood, however, that other materials may be used for in order to provide a robust and sturdy brake-lever cuff **220**.

[0071] According to some embodiments of the invention, as illustrated in **Figures 3-4**, the lock assembly **700** may comprise:

A lock button **710**, which may comprise two cylinders: an external cylinder **711** and an internal cylinder **712**, coaxially engaged;

A pin plate **240** having at least one plate channel **241** perforated there through;

At least one pin **250**, which is a protruding element movably connected to the plate **240**;

A first core half **300A**; and

A second core half **300B**;

where each of the cuffs **220** and **230** comprises at least one serrated channel **222** and **232** respectively, each channel enabling to receive a pin **250** there through to block the movement of the cuffs **220** and **230** along the Z axis, once the pins **250** are inserted through the serrated channels **222** and **232**.

[0072] As illustrated in **Figure 4**, the core halves **300A** and **300B**, are shaped to receive the pin plate **240** therein along with the pins **250** movably connected to the plate **240**. Each core half **300A** and **300B** may comprise niches **301** creating perforations when connecting the two halves **300A** and **300B,** where the perforations are adapted to receive the pins **250** there through, to allow the pins **250** to pop out and in of the perforations, according to the locking position.

[0073] According to some embodiments of the invention, as illustrated in **Figures 4-5**, once the lock button **110** is pushed inwards, it enables the plate **240** to move along a predefined "X" axis and thereby push the pins **250** outwardly in a perpendicular "Y" direction, enabling the pins **250** to pop out and therefore be inserted into the serrated channels **222** and **232** of the cuffs **220** and **230**, once the cuffs **220** and **230** are in a closed position after they are approximated towards each other in a perpendicular "Z" direction.

[0074] The core halves **300A** and **300B** may be attached to one another by any attachment means known in the art.

[0075] According to some embodiments of the invention, as illustrated in **Figure 7**, the core halves **300A** and **300B**, holding the plate **240** and pins **250** therein, may be held by and inside the housing **200**. Additionally, one side of each cuff **220** and **230** may be longer than the other, where the cuffs **220** and **230** may be held in the housing **200** in such a manner that enables the two cuffs **220** and **230** to engage one into another in an interlocking manner in the locked position.

[0076] According to some embodiments of the invention, as illustrated in **Figure 5**, the each pin **250** may be movably connected to a single plate channel **241** through a connector **251**, where each pin **250** has two protruding ends enabling to connect through the connector **251**. Each connector **251** may freely slide inside a plate channel **241** in which it is inserted.

[0077] Additionally, as illustrated in **Figures 4-5**, the plate channels **241** may be configured as angular perforated channels comprising a first channel **242** directed at a first direction and a second channel **243** integrally continuing the first channel **242**, which may be directed at a perpendicular direction to the movement direction of the plate **240** "X", which is marked in **Figure 4** as "Y", where "Y" is the axis and direction of the pins' **250** movement.

[0078] According to these embodiments, the angular configurations of the plate channels **241** enable the pins **250** to pop out by moving along the "Y" axis outwardly and away from the plate **240**, when the plate is moved in one direction along the "X" axis, where each pin **250** may eventually be positioned in the second channel **243** in the pop out locked position. Accordingly, to reach an unlocked or open position, where the pins **250** are in the far edges of their corresponding first channels **242**, the plate **240** may be moved in the opposite direction along the "X" axis.

[0079] The lock button **710** may enable pushing the plate **240** back and forth along the "X" axis to lock and unlock the cuffs **220** and **230** in an approximated position, by enabling to cause the pins **250** to pop out of the plate **240** and the attached core halves **300A** and **300B** ("the core **300**"), where they can be inserted through the cuffs' **220** and **230** serrated channels **222** and **232**, respectively.

[0080] According to some embodiments of the present invention, as illustrated in **figures 4-6**, the brake-lever cuff **220** and/or the handlebar cuff **230** may be further equipped with a reinforcing straps **224** and/or **234**, respectively, each strap **224** or **234** disposed within inner walls of the cuff **220** or **230** and fits over left core half **300A** or **300B**. Each strap **224** and **234** may comprise serrated channels **225** and **235** adapted to fit the positioning of the cuffs' **220** and **230** serrated channels **222** and **232** respectively and to receive the pins **250** in the locked position when the pins **250** are popping out of the core **300**.

[0081] The reinforcing straps **224** and **234** may be made from, for example, a steel reinforcing member used to provide additional strength and tamper resistance to the cuffs **220** and **230**.

[0082] **Figures 8-10** show section views of the theft prevention device **100** in unlocked, semi-locked and locked positioned, according to some embodiments of the invention.

[0083] In the unlocked position, as illustrated in **Figure 8**, the pins **250** are in a withdrawn position and do not reach the serrated channels **222, 232, 225** or **235** of the cuffs **220** and **230** and reinforcement straps **224** and **234**.

[0084] In the semi-locked position, as illustrated in **Figure 9**, the pins **250** are in a semi-withdrawn position, where the are inserted through the serrated channels **225** and **235** of the reinforcement straps **224** and **234**, yet do not reach the serrated channels **222** and **232** of the cuffs **220** and **230**.

[0085] In the locked position, as illustrated in **Figure 10**, the pins **250** are in a protruding position and are inserted through the serrated channels **222, 232, 225** and **235** of the cuffs **220** and **230** and reinforcement straps **224** and **234**.

[0086] According to some embodiments of the invention, the brake-lever cuff **220** is able to introduce sufficient compressive force on the brake-lever **510** to disable the use of the brake-lever **510**, which in turn, forces the front brake of the vehicle **500** to remain engaged. Accordingly, the handlebar cuff **230** is able to introduce sufficient compressive force on the handlebar grip **525** to prevent rotation of the throttle, if the vehicle **500** is a motor-based one in which the grip **525** serves as the gas handle.

[0087] When the brake-lever cuff **220** and the handlebar cuff **230** are suitably adjusted, the theft prevention device **100** may prevent normal operation of the two-wheeled vehicle **500** by, for example, applying sufficient pressure to substantially immobilize the brake-lever **510**, which holds the front brakes in a braked position, and to prevent the throttle on the handlebar grip **525** from rotating, as well as preventing the unauthorized user from clutching the brake-lever **510** towards the grip **525** by blocking it by the housing **200** situated between the cuffs **220** and **230**.

[0088] Reference is now made to **Figures 11A, 11B, 12, 13, 14, 15A, 15B** and **16**, which schematically illustrate a theft prevention device **100'** and some of its optional components, according to other embodiments of the invention.

[0089] According to these embodiments, as illustrated in **Figures 11A** and **11B**, where **Figure 11A** illustrates the device **100'** in an unlocked position and **Figure 11B** illustrates the device **100'** in a locked position the theft prevention device **100'** may comprise:

A brake-lever cuff **220'**;

A handlebar cuff **230'**;

A housing **200'**;

A lock assembly **700'**; and

A pulling-resistance mechanism **270'**.

[0090] According to these embodiments, a lock button **710'** of the lock assembly **700'** may be moved along a predefined axis "Y", which is perpendicular to the axis along which the pin plate **240'** is moved and parallel to the axis "X" along which the pins **250'** are moved.

[0091] As illustrated in **Figures 11A** and **11B**, to lock the device **100'**, the authorized user is required to insert the two-wheeled vehicle's **500** handlebar grip **525** through the handlebar cuff **230'**, the brake-lever **510** through the brake-lever cuff **220'**, approximate the cuffs **220'** and **230'** to one another by sliding the cuffs **220'** and **230'** along a predefined "Z" axis perpendicular to both "X" and "Y" axes through openings **201'** in the housing **200'** adapted to allow the cuffs **220'** and **230'** to slide in one another in an interlocking manner, as illustrated in **Figure 11B** and finally, when the cuffs **220'** and **230'** are approximated to cuff the brake-lever **510** and handlebar **520**, the lock button **710'** may be pressed to lock the cuffs **220'** and **230'** in the interlocking cuffing position.

[0092] According to some embodiments of the invention, as illustrated in **Figure 12**, the lock assembly **700'** of the theft prevention device **100'** may comprise similar components described in the previous set of embodiments:

At least one pin plate **240'**;

At least one pin **250'**;

A lock button **710'**; and

At least one connecting member **720'**.

[0093] According to some embodiments of the invention, as illustrated in **Figure 12**, the connecting member **720'** may be an L shaped member enabling to movably connect the pin plate **240'** and the lock button **710'** and transmit the vertical movement of the lock button parts **711'** and **712'** along the "Y" axis into a horizontal movement of the pin plate **240'** along the "X" axis. This means that when the lock button **710'** is pushed downwards, the connecting member **720'** enables pushing the pin plate **240'** to the left (according to the illustrated **Figure 12**) thereby enabling the pins **250'**, movably connected thereto to protrude outwardly from the plate **240'** moving along the "Y" axis, perpendicular to the pin plate **240'**.

[0094] Similarly to the former set of embodiments, the pin plate **240'** may comprise plate channels **241'** where each pin **250'** is movably connected to the plate **240'** through the channels **241'**. Each channel **241'** may have an angular shape where one of the sides of the shaped channel **241'** is parallel to the "X" axis, which is the movement direction of the plate **240'**. The pins **250'** may protrude the plate **240'** when they reach the parallel part of the channel **241'**. When the plate **240'** is moved along the "X" axis by the movement lock button **710'** and through the connecting member **720'**, the plate's **240'** movement pushes the pins **250'** inside their corresponding channels **241'** thereby allowing the pins **250'** to reach the parallel part and therefore protruding outwardly from the plate **240'** along the "Y" axis.

[0095] According to some embodiments of the invention, as illustrated in **Figure 12**, the inner cylinder **712'** of the lock button **710'** may be connected to one end of the connecting member **720'** through a hinge **721'**. Additionally, the other end of the connecting member **720'** may be movably connected to the pin plate **240'** through another hinge **721'**, where the hinge **721'** may be movably situated in another angular channel **247'** perforated in the pin plate **240'**.

[0096] As illustrated in **Figure 13**, the cuffs **220'** and **230'** are in a locked position, engaging each other in an enveloping manner, where one cuff's **230'** arms are envelope the arms of the other cuff **220'**. Once the cuffs **220'** and **230'** are cuffed to the vehicle's **500** lever **510** and handlebar **520**, the pins **250'** may be located in front

of the serrated channels **222'** of at least one of the cuffs **220'**, to allow protruding into the holes of the serrated channel **222'** to securely lock the device **100'**.

[0097] Additionally, the enveloping cuff **230'** may comprise one or more holes **238'** instead of serrated channels which are positioned in such a location that enables each hole **238'** to be situated above a part of the serrated channel **222'** of the inner cuff **220'** engaging the enveloping one, as illustrated in **Figure 13** and **Figure 14**.

[0098] Additionally at least one of the cuffs **230'**, may comprise at least one holding member **231'**, which may be a cover for the part of the cuff **230'** that is held by the user. The holding member **230'** may be made from any material or/and have the shape that increases the friction and facilitates in enhancing the grip of the user's hand in the cuff **230'**. For example, the holding member **231'** may be made of rubbery materials (rubber and/or polymeric materials that have the rubbery feel) having a non-uniform or an unsmooth surface.

[0099] **Figures 15A** and **Figure 15B** schematically illustrate the housing **200'** of the theft prevention device **100'**, according to the other embodiments of the invention. According to these embodiments, the housing **200'** may be made from at least two separate parts **210A** and **210B** that are attached to one another to house the plate **240'**, pins **250'** and other elements of the device **100'**. The housing **200'** may comprise two openings **201'** each enables two cuff arms (one of each cuff **220'** and **230'**) that are coupled to one another to be inserted through each opening **201'**.

[00100] The housing **200'** sides may have sunken parts **202'** at each side that faces each cuff **220'** and **230'**, where each sunken part **202'** may be designed to fit the diameter and/or shape of it's corresponding brake-lever **510** or handlebar grip **525**, to allow close engagement between each sunken part **202'** and lever/grip **510/525**.

[00101] Additionally, As illustrated in **Figures 15A, 15B** and **16**, the theft prevention device **100'** may further comprise at least one pulling-resistance mechanism **270'**, which may facilitate in preventing an unauthorized person (e.g. a thief) from removing the cuffs **220'** and **230'** from the corresponding brake-lever **510** and handlebar grip **525** of the vehicle **500**. The pulling-resistance mechanism **270'** may comprise (i) at least one protruding member **275'** that may protrude from at least one of the housing **200'** sides (see **Figure 15B**) such as from at least one of the

sunken parts **202'** of the housing **200'** (ii) at least one holder **271'** enabling to movably hold the protruding member **275'**; and (iii) a pivot **272'** movably connecting the protruding member **275'** to the holder **271'**. The housing **200'** may comprise a pulling-resistance mechanism's opening **203'** enabling the protruding member **275'** to protrude therefrom.

[00102] The protruding member **275'** may comprise a stopper **273'**, which may be integrally connected to the protruding member **275'**, enabling to block the rotation movement of the protruding member **275'** in one direction by enabling to be blocked by the housing **200'**. Therefore, once the cuffs **220'** and **230'** are cuffed to the lever **510** and handlebar grip **525**, if anyone tries to pull the device **100'** by trying to pull the cuffs **220'** and **230'** from their corresponding lever **510** and grip **525**, the protruding member **275'** of the pulling-resistance mechanism **270'** may further attach to the surface of the grip **525** and/or lever **510**, especially if the grip **525** and/or brake-lever **510** are covered by a material of high friction coefficient (such as rubber, sponge, soft elastic plastics and the like, as they usually do in the art) and/or if the protruding member **275'** is made of materials of substantially high friction such as rubber.

[00103] While the invention has been described with respect to a limited number of embodiments, these should not be construed as limitations on the scope of the invention, but rather as exemplifications of some of the embodiments. Those skilled in the art will envision other possible variations, modifications, and applications that are also within the scope of the invention. Accordingly, the scope of the invention should not be limited by what has thus far been described, but by the appended claims and their legal equivalents. Therefore, it is to be understood that alternatives, modifications, and variations of the present invention are to be construed as being within the scope and spirit of the appended claims.

What is claimed is:

1. A theft prevention device for enabling to lock a handlebar grip and a brake-lever of a two-wheeled vehicle, where the brake-lever is movably connected to the handlebar, to facilitate in preventing an unauthorized user from stealing said vehicle,

said theft prevention device comprising:

a housing comprising at least two openings;

a handlebar cuff that enables slidably attaching to said housing through said openings and, together with the housing, enables cuffing the handlebar grip therein;

a brake-lever cuff that enables slidably attaching to said housing through said openings and, together with the housing, enables cuffing the brake-lever therein; and

a lock assembly that is operatively associated with said cuffs, wherein said lock assembly enables locking the cuffs in a position where the cuffs are engaged so that they cuff the handlebar grip and the brake-lever.

2. The theft prevention device of claim 1, wherein the lock assembly comprises:

at least one pin plate comprising at least one plate channel, which is perforated therein;

at least one pin, movably connected to said plate, wherein each pin is movably connected to the plate through said plate channel, which enables the pin to move within the channel; and

a lock button, operatively associated with said pin plate,

wherein said at least one plate channel is angular, constructed of at least two integrally connected channels that create and angle therebetween to allow the pins to protrude from the plate once reaching one end of the plate channel and to withdraw inwardly once reaching the other end of the plate channel,

wherein said plate enables the pins to protrude outwardly from the plate along a predefined "X" axis, when the plate is moved along a predefined "Y" axis in one direction and to withdraw inwardly towards the plate when the plate is moved in an opposite direction along the "Y" axis,

wherein each of said handlebar cuff and brake-lever cuff comprises at least one serrated channel, enabling the pins to insert therethrough, once the pins are in a protruding position, and thereby locking the cuffs in a locked position cuffing the grip and brake-lever, and

wherein said lock button enables moving the pin plate along said "X" direction to lock and unlock the cuffs.

3. The theft prevention device of claim 2, wherein said lock assembly further comprises a first core half and a second core half enabling to attach to one another while holding the pin plate and said at least one pin therein,

wherein each of said core halves comprises at least one niche enabling to create at least one perforation through which the at least one pin protrudes in the locked position of said at least one pin.

4. The theft prevention device of claim 2, wherein at least one of said cuffs comprises at least one hole, positioned in such a location that enables each hole to be situated above said at least one pin enabling to lock the sliding movement of the cuffs along the "Z" axis by allowing the at least one pin to be inserted through said at least one hole in the pin's protruding position.

5. The theft prevention device of claim 2, wherein the "Z" axis is substantially perpendicular to the "Y" axis, allowing the plate to be moved along a perpendicular axis to the movement axis of the cuffs.

6. The theft prevention device of claim 2, wherein the "Y" axis is substantially perpendicular to the "X" axis, allowing the plate to be moved along a perpendicular axis to the protrusion movement axis of the pins.

7. The theft prevention device of claim 2, wherein the "Z" axis is substantially perpendicular to the "Y" axis allowing the plate to be moved along a perpendicular axis to the movement axis of the cuffs, and

wherein the "Y" axis is substantially perpendicular to the "X" axis, allowing the plate to be moved along a perpendicular axis to the protrusion movement axis of the pins, wherein the "X" axis is also substantially perpendicular to the "Z" axis.

8. The theft prevention device of claim 2, wherein said lock button enables moving the pin plate along said "X" direction to lock and unlock the cuffs by moving along the same "X" axis, thereby pushing the pin plate when the lock button is pressed.

9. The theft prevention device of claim 2, wherein said lock assembly further comprises a connecting member that is movably connected at one end to the lock button and at the other end to the pin plate, thereby enabling to transmit the pressing movement of the lock button to the movement of the plate, which in tern transmits the pressing movement to said at least one pin to enables said pin to protrude from said plate.

10. The theft prevention device of claim 10, wherein said pressing of the lock button is a movement along a predefined "Y" axis, wherein said connecting member enables transmitting the pressing movement of the lock button along the "Y" axis into the movement of the plate along a substantially perpendicular "X" axis.

11. The theft prevention device of claim 2, further comprising at least one reinforcement strap, wherein said reinforcement strap is disposed within inner walls of at least one of the cuff,

wherein said strap comprises at least one serrated channel adapted to fit the positioning of each of the cuffs' serrated channels to enable receiving of the at least one pin of the lock assembly therein to lock the cuffs to the handlebar grip and brake-lever.

12. The theft prevention device of claim 2, wherein said at least one pin has two protruding ends enabling to connect to one another through a connector, wherein

said connector is movably inserted through said plate channel, thereby allowing the pin to move along the plate channel.

13. The theft prevention device of claim 2, wherein said lock button comprises an external cylinder and an internal cylinder, coaxially engaged therein.

14. The theft prevention device of claim 1, wherein at least a part of said lock assembly is housed by said housing.

15. The theft prevention device of claim 1, further comprising at least one holding member, which enables covering a part of the cuff that is held by the user, wherein said at least one holding member is attached to at least one of the cuffs.

16. The theft prevention device of claim 1, wherein the interior surface of at least one of the cuffs is enhanced with a heavy-duty memory foam material, which provides protection against accidental scratching and marring of at least one of: the brake-lever and handlebar grip caused by the repeated installation of the theft prevention device.

17. The theft prevention device of claim 1, further comprising at least one pulling-resistance mechanism, which facilitates in preventing an unauthorized person from removing the cuffs from their corresponding brake-lever and handlebar grip,

said pulling-resistance mechanism comprising at least one protruding member that protrudes from at least one of the housing's sides; at least one holder enabling to movably hold the protruding member; and at least one pivot movably connecting said protruding member to said holder ,

wherein said housing comprises a pulling-resistance mechanism's opening enabling the protruding member to protrude therefrom, and

wherein said protruding member enables attaching to the surface of at least one of: the grip and the brake-lever, once the cuffs are cuffed to the brake-lever and handlebar grip, when a pulling force is applied on at least one of: the handlebar grip and the brake-lever.

18. The theft prevention device of claim 1, wherein the handlebar cuff and the brake-lever cuff enable engaging with one another, in an interlocking manner, to form the locked position.

19. The theft prevention device of claim 1, wherein the handlebar cuff and the brake-lever cuff enable engaging with one another, in a configuration in which one of said cuffs envelopes the other, to form the locked position.

20. The theft prevention device of claim 1, wherein the housing shape creates two sunken parts, wherein one of the parts is designed to receive the handlebar grip and the other part is designed to receive the brake-lever.

21. A method of locking a handlebar grip and a brake-lever of a two-wheeled vehicle preventing an unauthorized user from clutching the brake-lever towards the grip, where the brake-lever is movably connected to the handlebar, using a theft prevention device comprising a handlebar cuff, a brake-lever cuff and a housing operatively associated with said cuffs, and a lock assembly operatively associated with said cuffs and housing comprising a lock button, wherein said housing comprises at least two openings enabling the cuffs to slide therethrough,

said method comprising:

sliding the handlebar cuff over the handlebar grip so that the handlebar cuff encircles the grip;

sliding the brake-lever cuff over the brake-lever so that the brake-lever cuff encircles the brake-lever;

cuffing the handlebar grip and the brake-lever by approximating the cuffs to one another by sliding said cuffs through the openings of said housing along a predefined "Z" axis, thereby enabling the two cuffs to engage with one another;

pushing the lock button, thereby enabling to lock the cuffs in the approximated cuffing position.

22. A theft prevention device for enabling to lock a handlebar grip and a brake-lever of a two-wheeled vehicle, where the brake-lever is movably connected to the

handlebar, to facilitate in preventing an unauthorized user from stealing said vehicle,

said theft prevention device comprising a housing comprising at least two openings; a handlebar cuff that enables slidably attaching to said housing through said openings and, together with the housing, enables cuffing the handlebar grip therein; a brake-lever cuff that enables slidably attaching to said housing through said openings and, together with the housing, enables cuffing the brake-lever therein; and a lock assembly that is operatively associated with said cuffs, wherein said lock assembly enables locking the cuffs in a position where the cuffs cuff the handlebar grip and the brake-lever,

wherein said lock assembly comprises:

at least one pin plate comprising at least one plate channel, which is perforated therein;

at least one pin, movably connected to said plate, wherein each pin is movably connected to the plate through said plate channel, which enables the pin to move within the channel; and

a lock button, operatively associated with said pin plate,

wherein said at least one plate channel is angular, constructed of integrally connected channels that create and angle therebetween to allow the pins to protrude from the plate once reaching one end of the plate channel and to withdraw inwardly once reaching the other end of the plate channel,

wherein said plate enables the pins to protrude outwardly from the plate along a predefined "X" axis, when the plate is moved along a predefined "Y" axis in one direction and to withdraw inwardly towards the plate when the plate is moved in an opposite direction along the "Y" axis,

wherein at least one of said handlebar cuff and brake-lever cuff comprises at least one serrated channel, enabling the pins to insert therethrough, once the pins are in a protruding position, and thereby locking the cuffs in a locked position cuffing the grip and brake-lever, and

wherein said lock button enables moving the pin plate along said "X" direction to lock and unlock the cuffs.

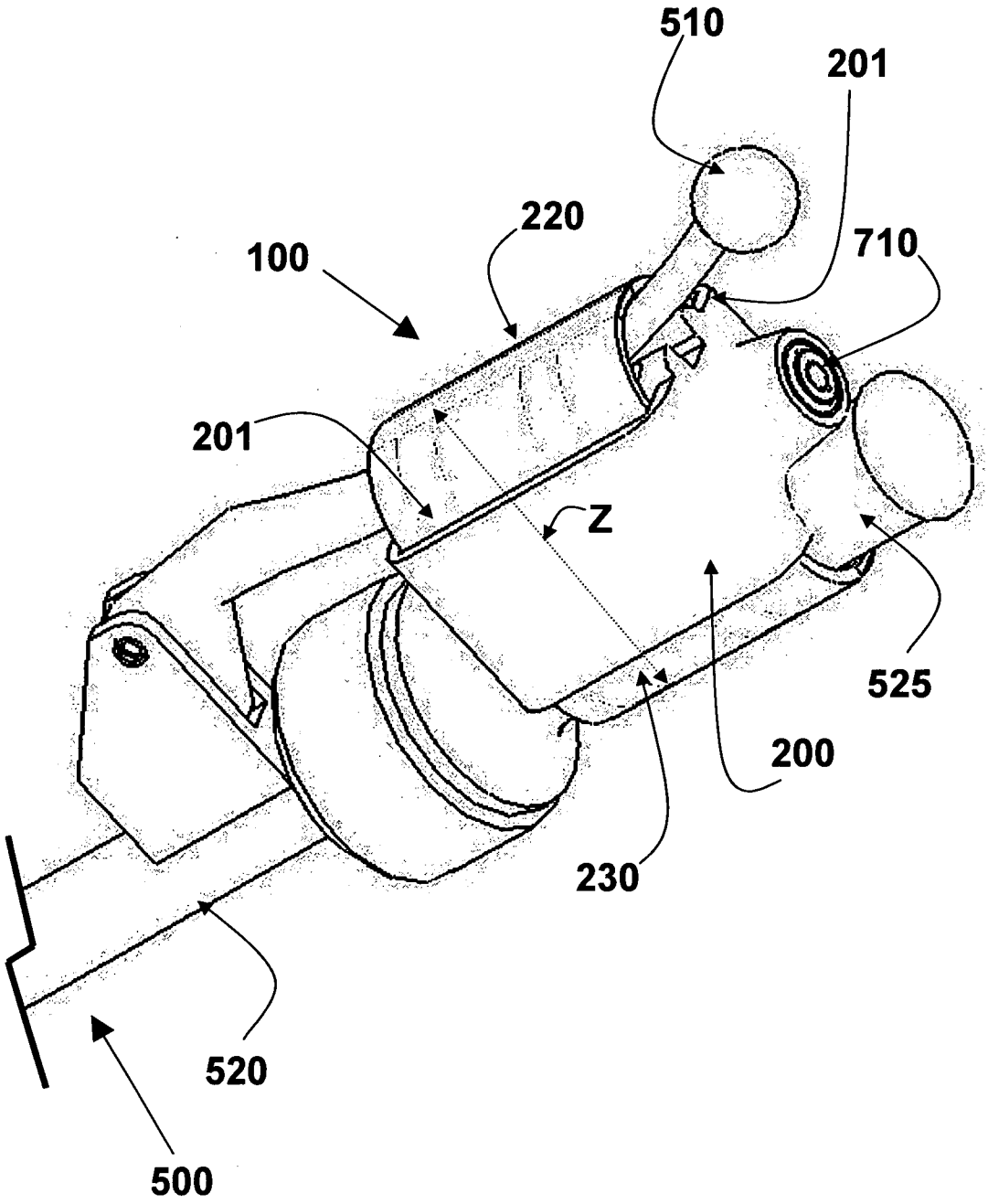


Figure 1

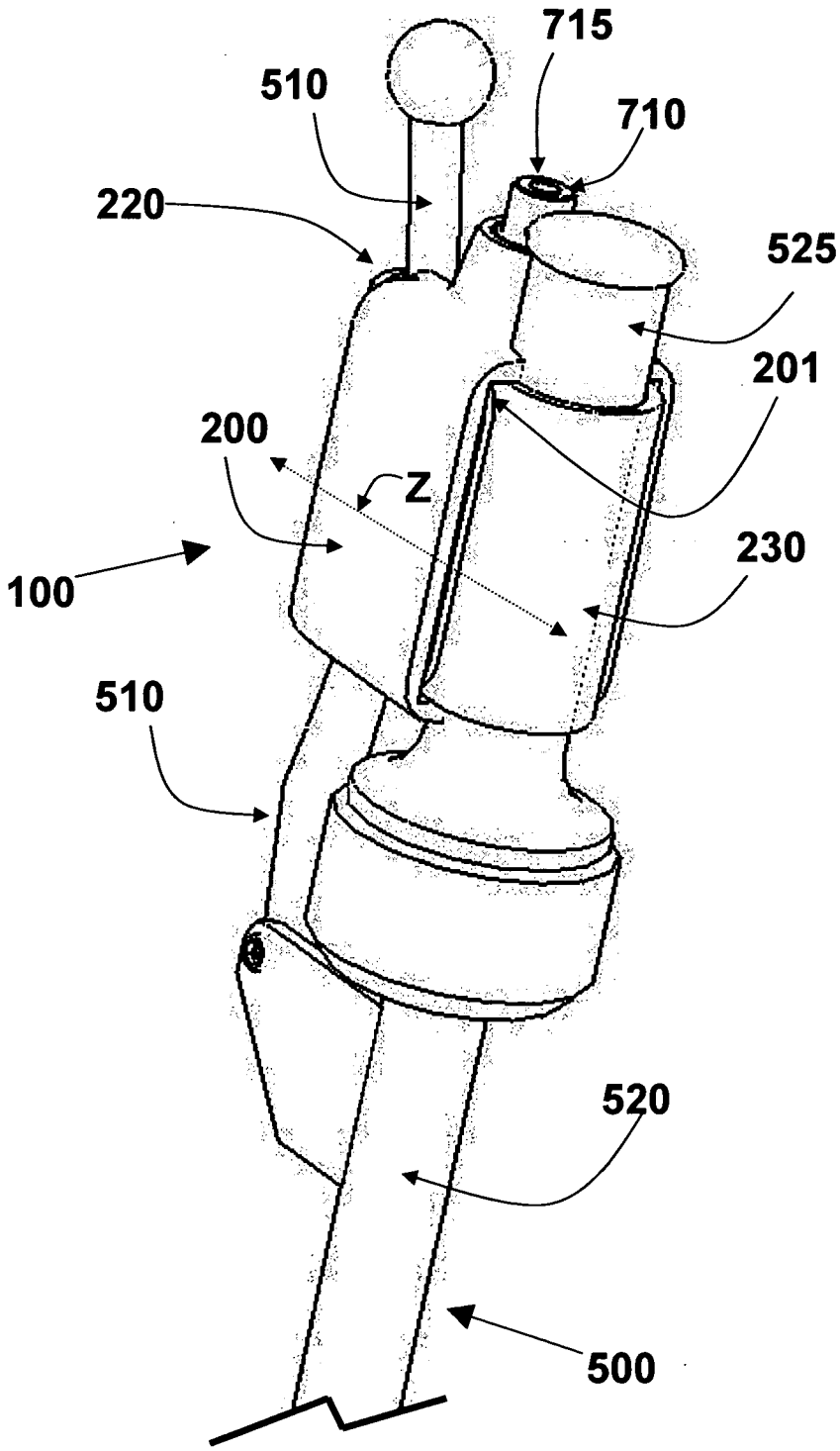


Figure 2

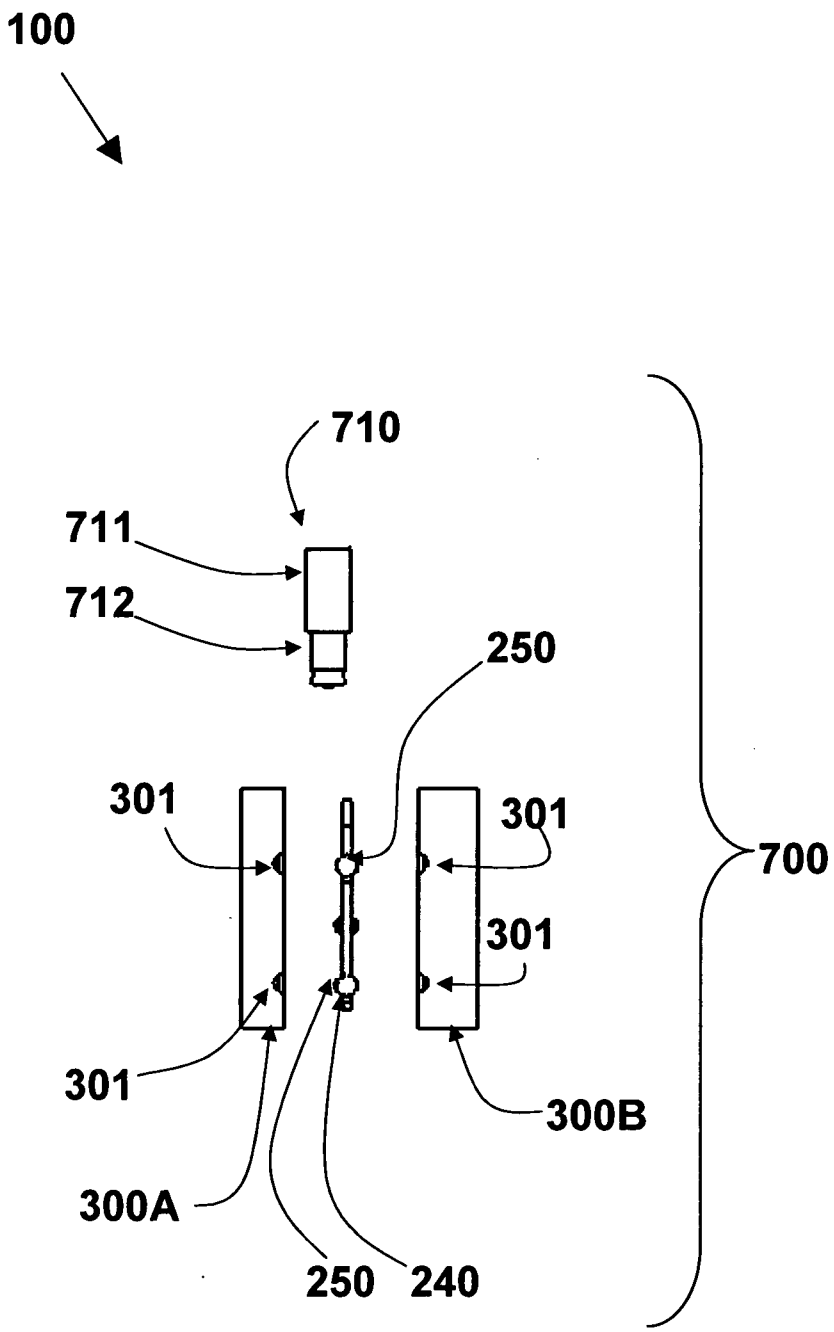


Figure 3

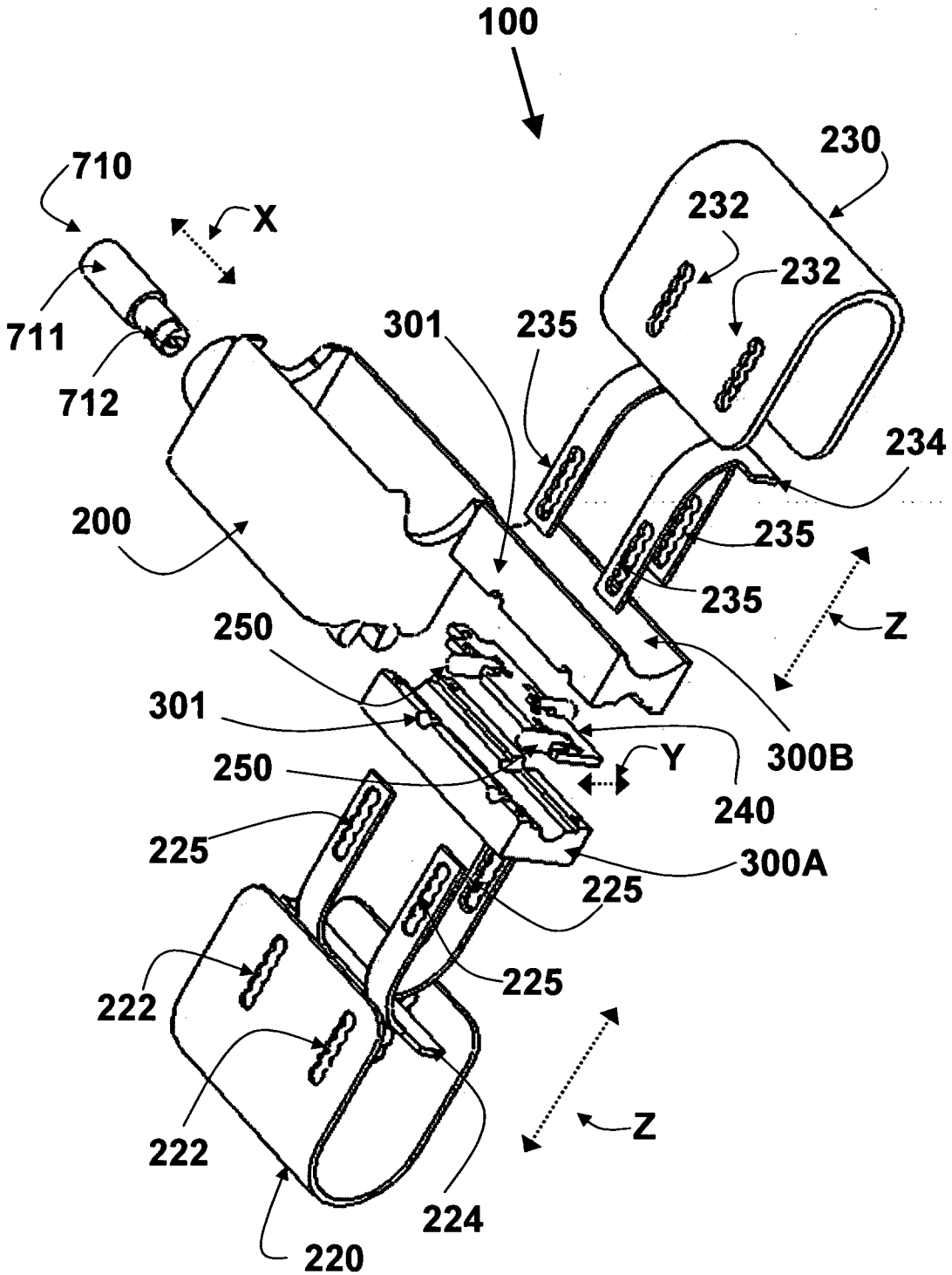

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Figure 4

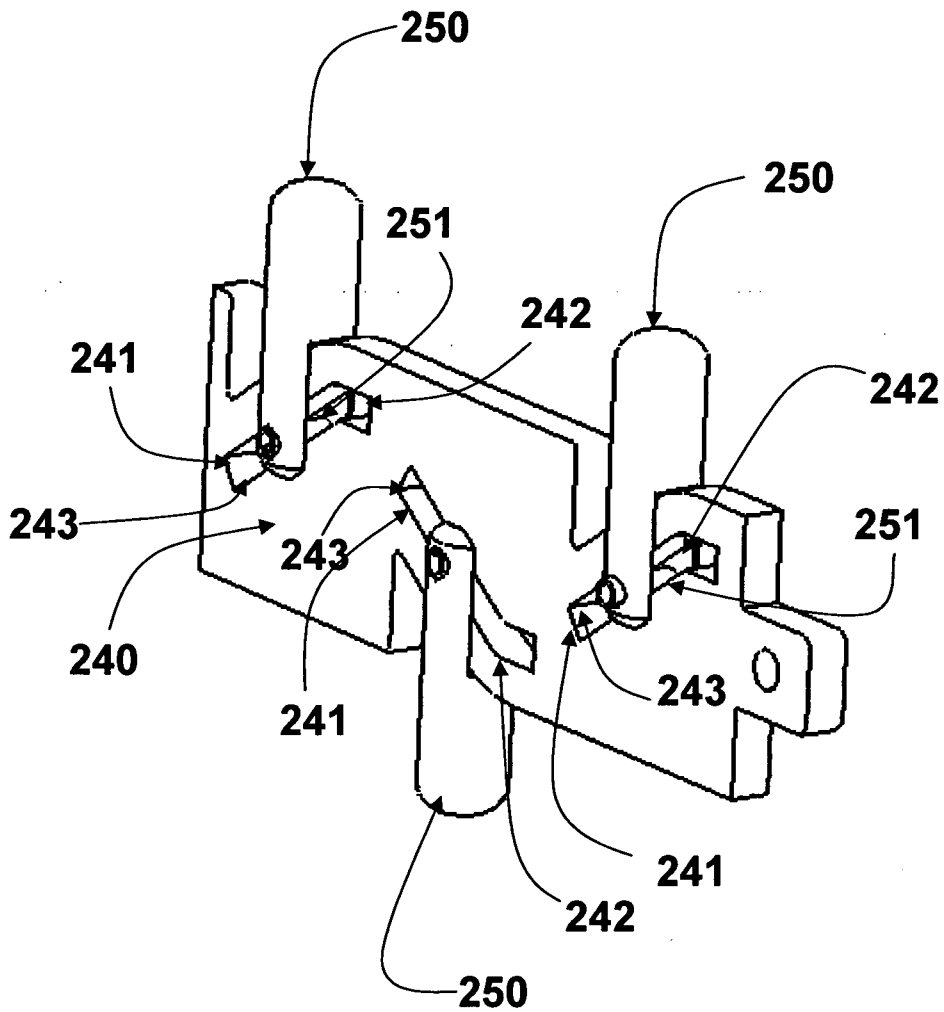


Figure 5

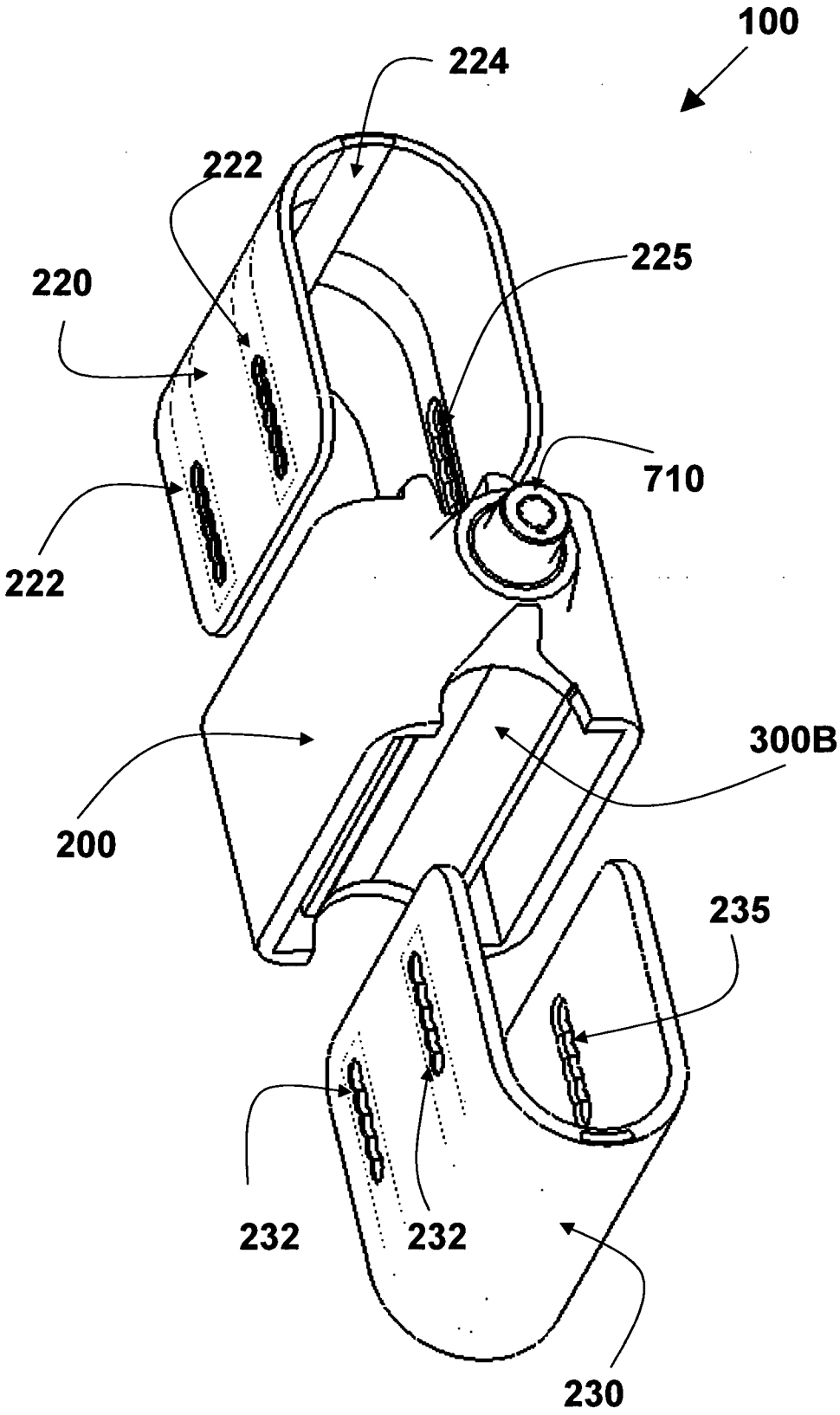


Figure 6

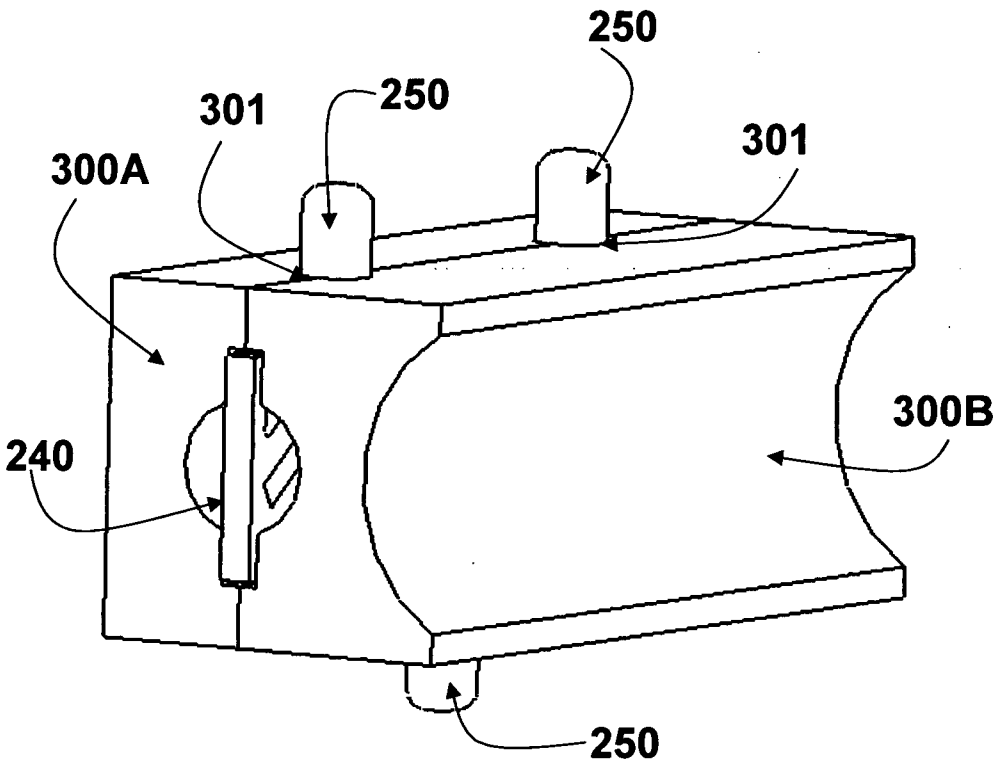


Figure 7

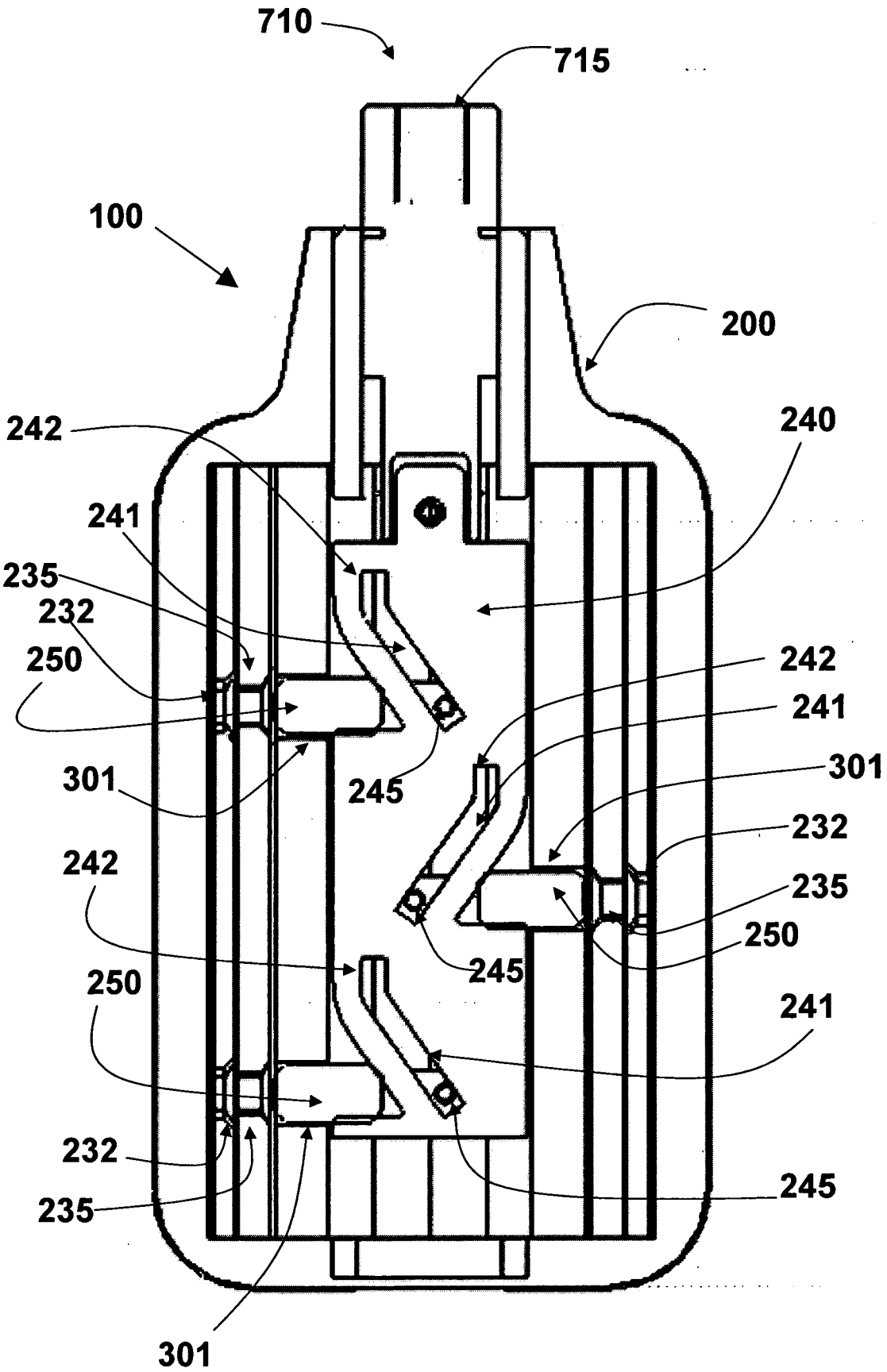

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Figure 8

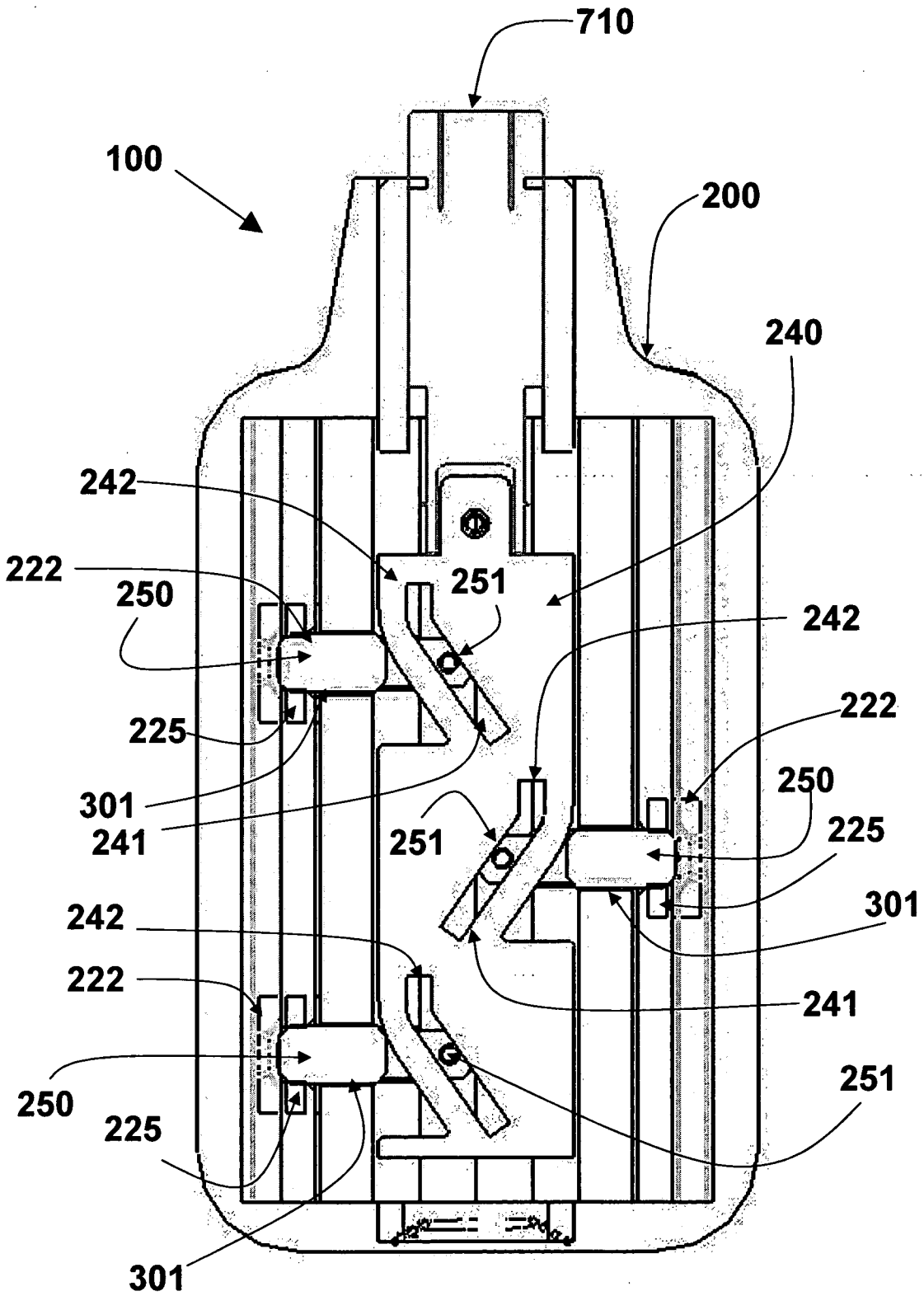

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Figure 9

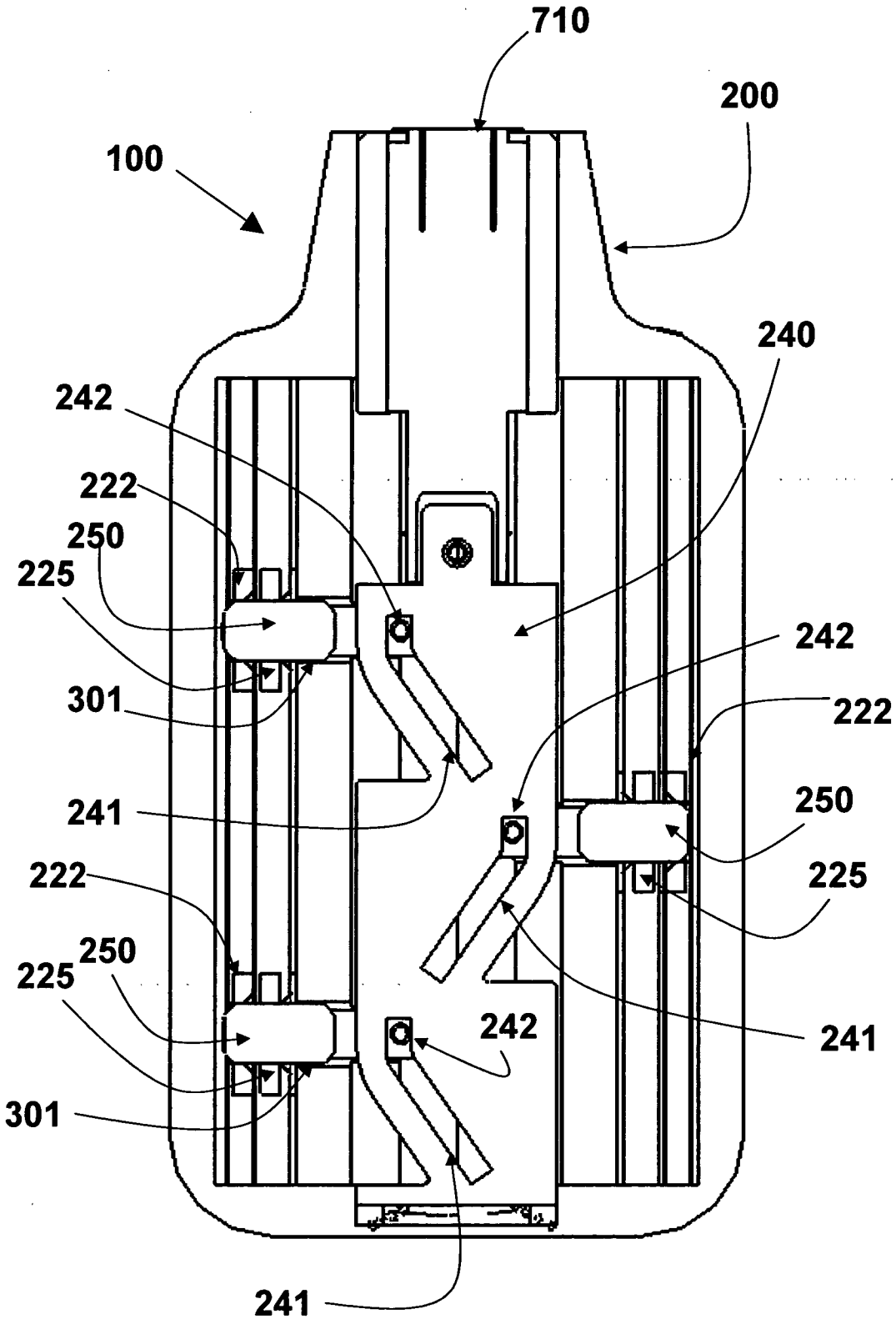

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241

Figure 10

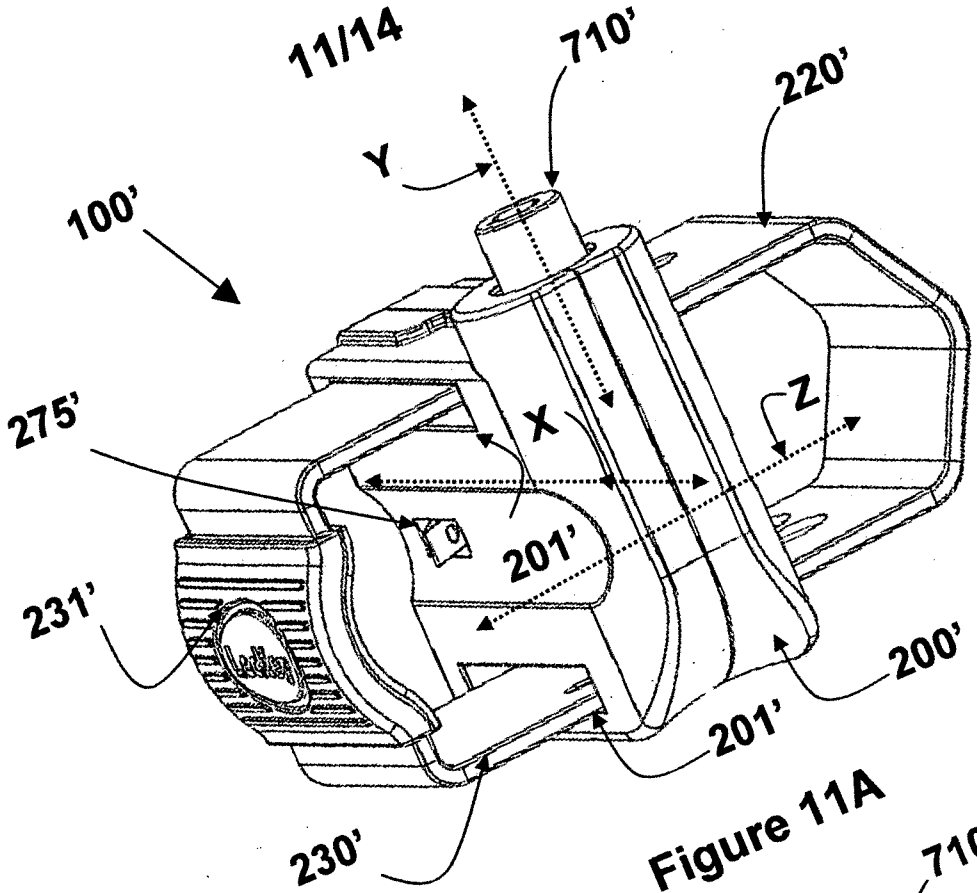


Figure 11A

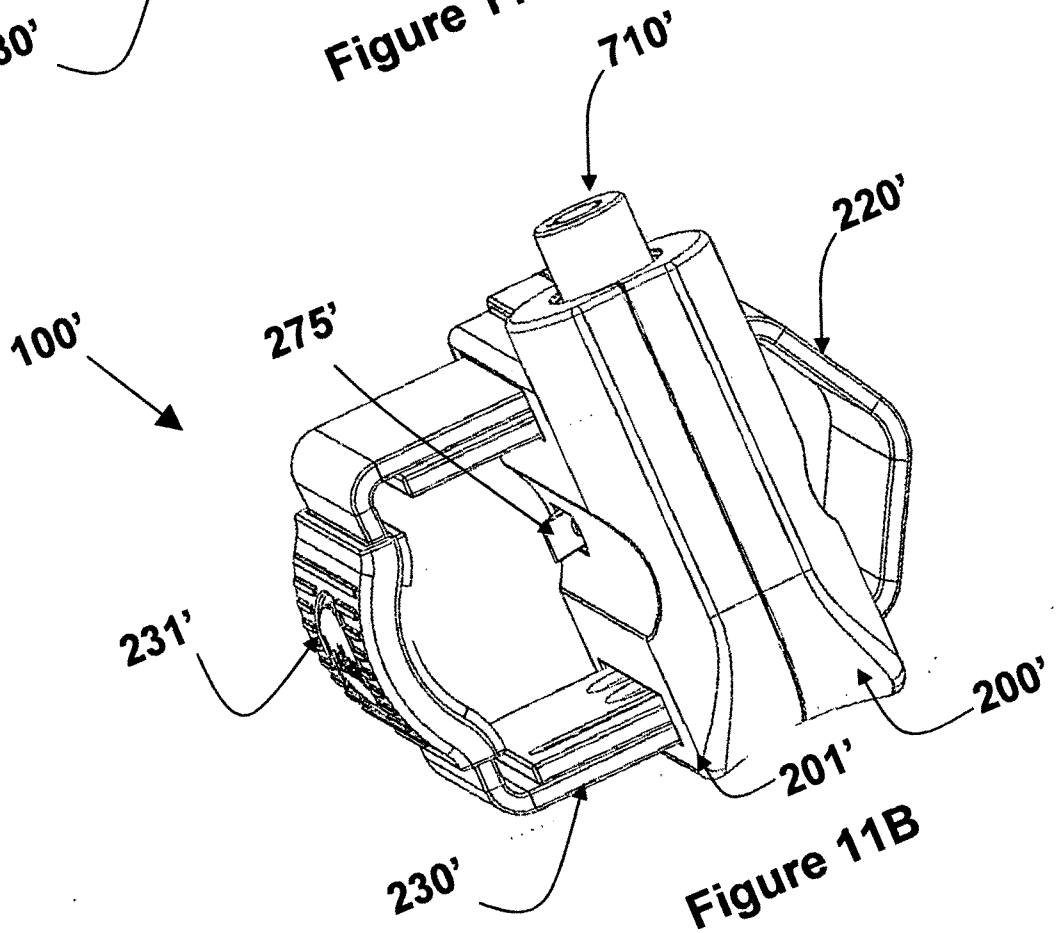


Figure 11B

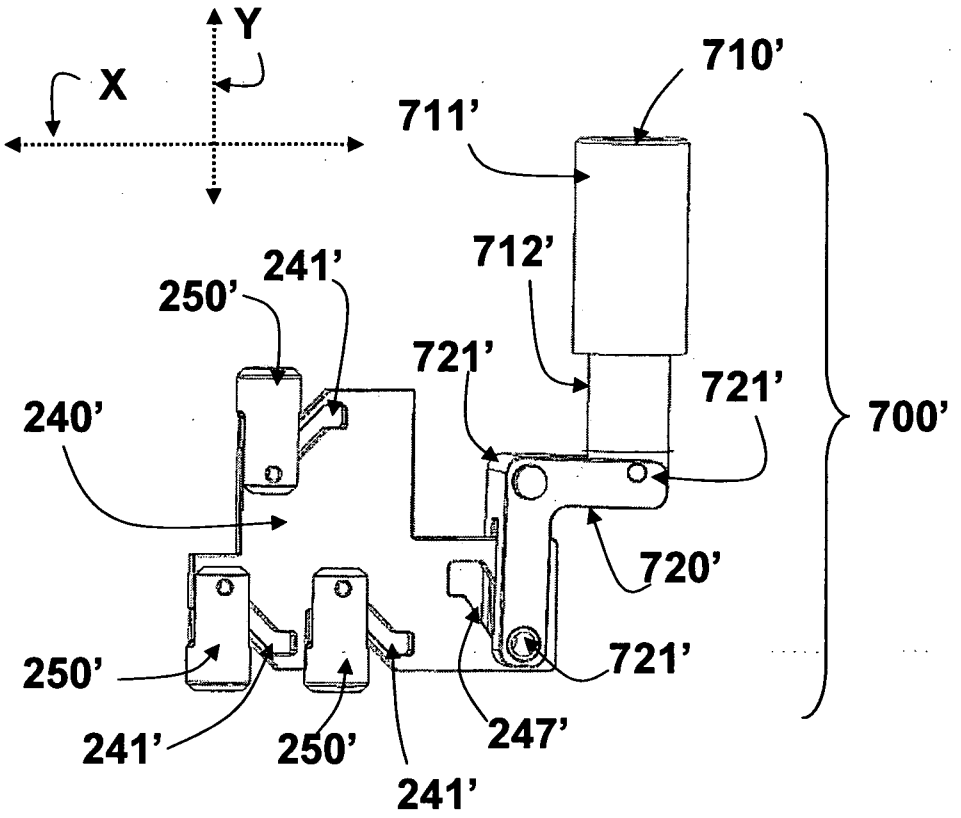


Figure 12

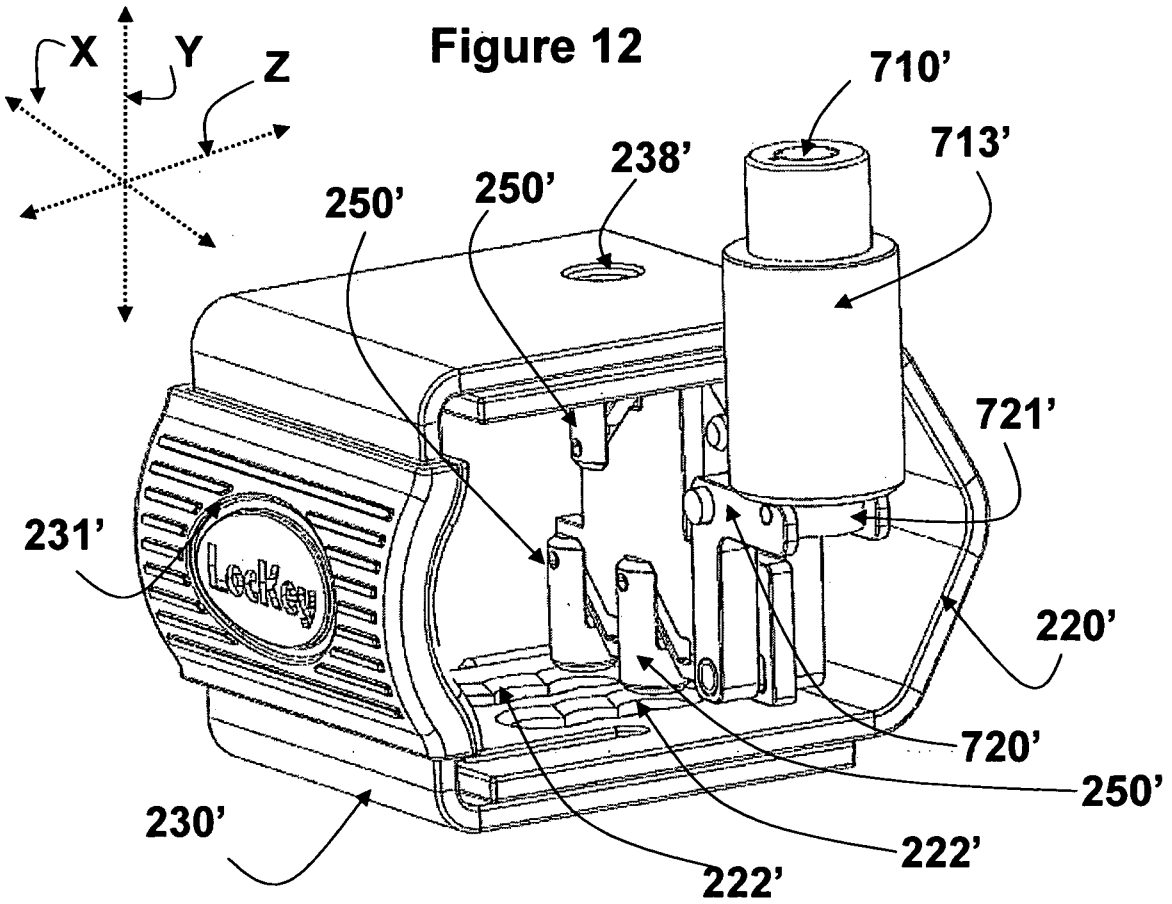


Figure 13

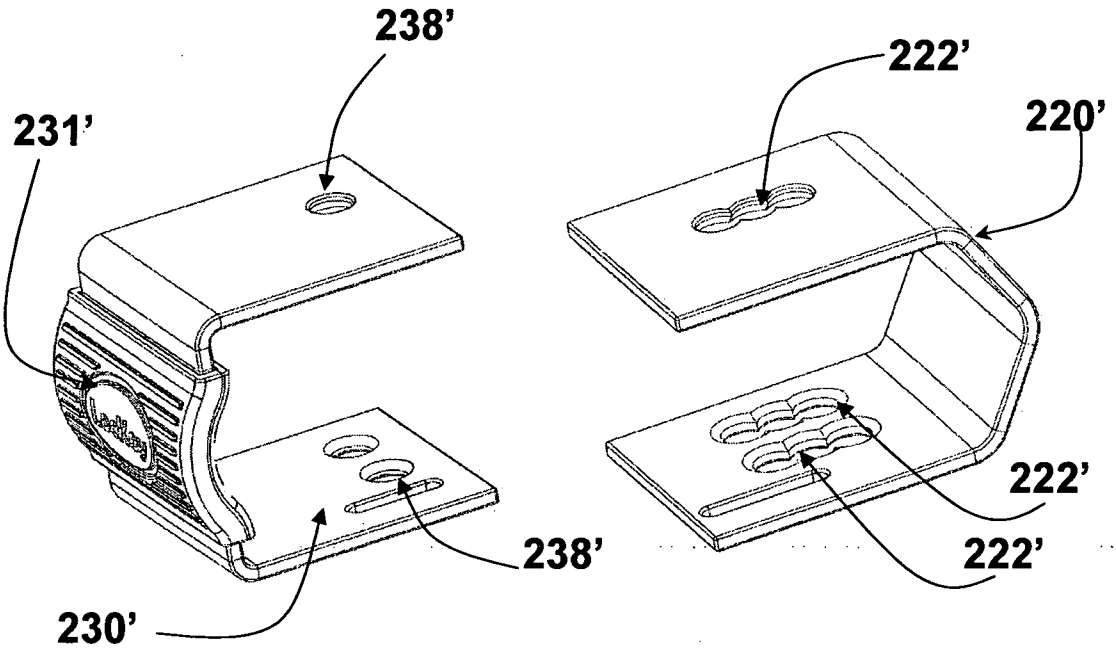


Figure 14

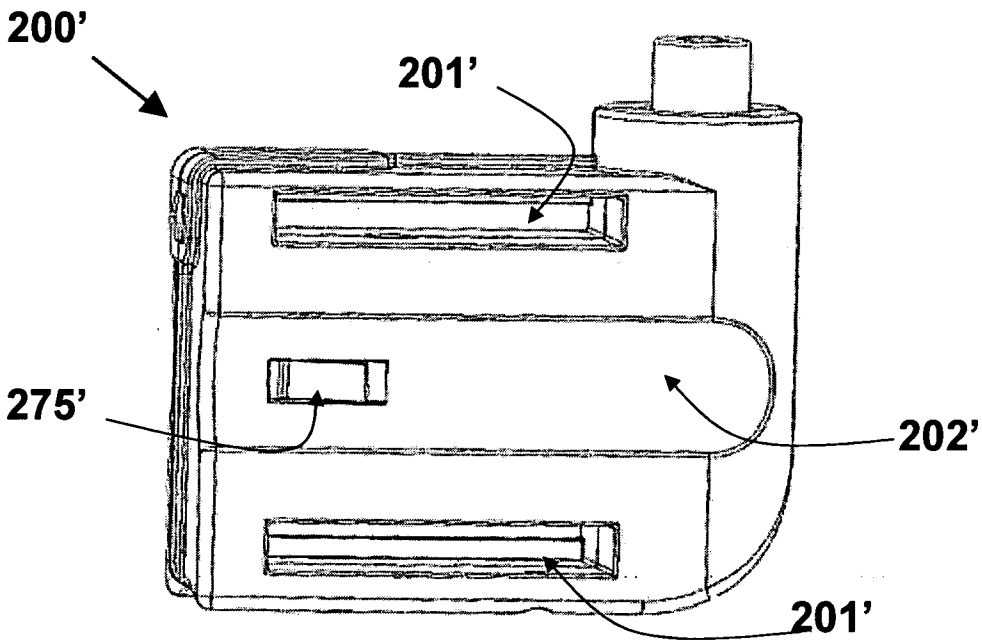


Figure 15A

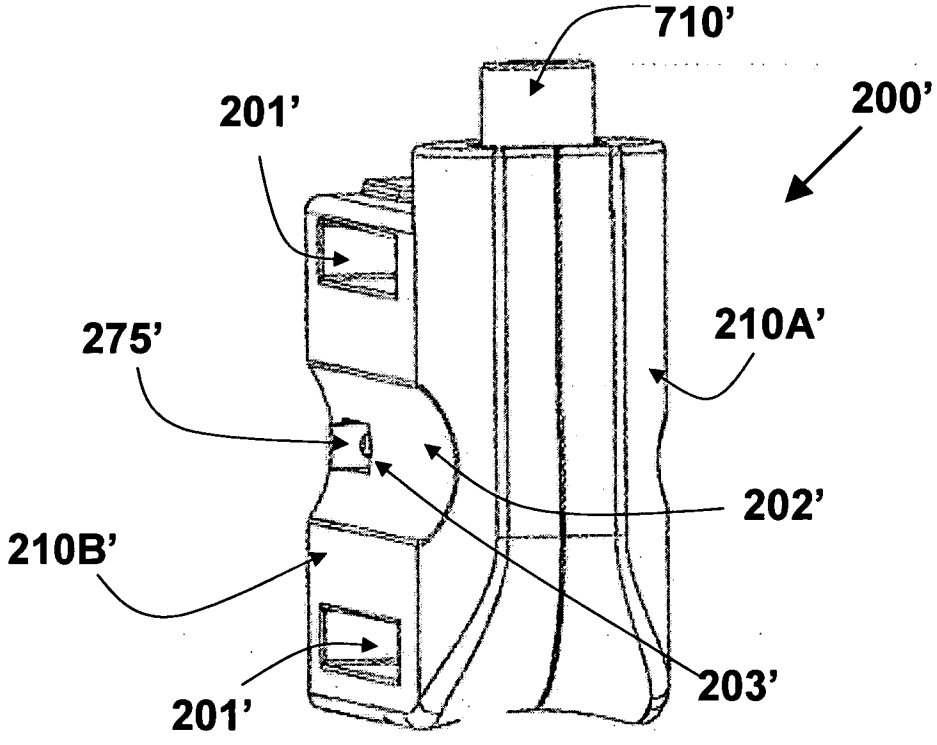


Figure 15B

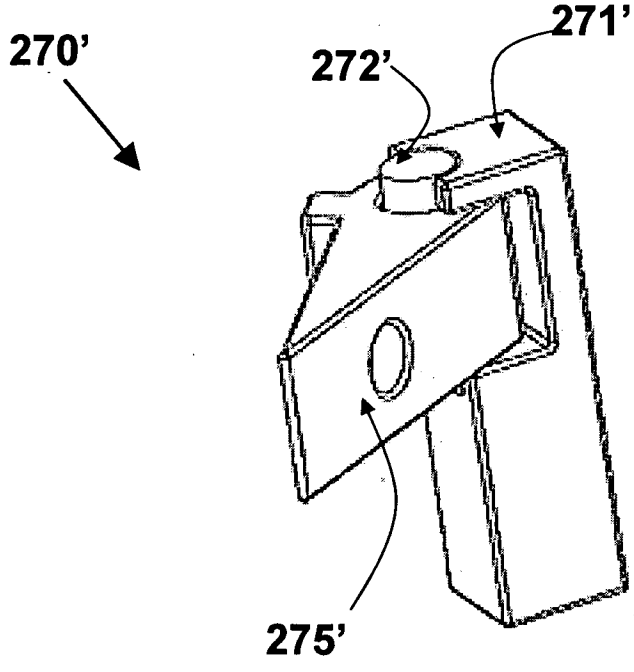


Figure 16