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Glenn

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(54) **MEAN DOG TRAILER THEFT DEFENDER LUNETTE LOCK**

(71) Applicant: **Rondoyle Glenn**, Hamtramck, MI (US)

(72) Inventor: **Rondoyle Glenn**, Hamtramck, MI (US)

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G01S 19/42	(2010.01)
B60D 1/04	(2006.01)

(52) **U.S. Cl.**

CPC ***B60D 1/60*** (2013.01); ***B60D 1/04*** (2013.01); ***G01S 19/42*** (2013.01)

(58) **Field of Classification Search**

CPC .. B60D 1/60; B60D 1/04; G01S 19/42; B60R 25/00

See application file for complete search history.

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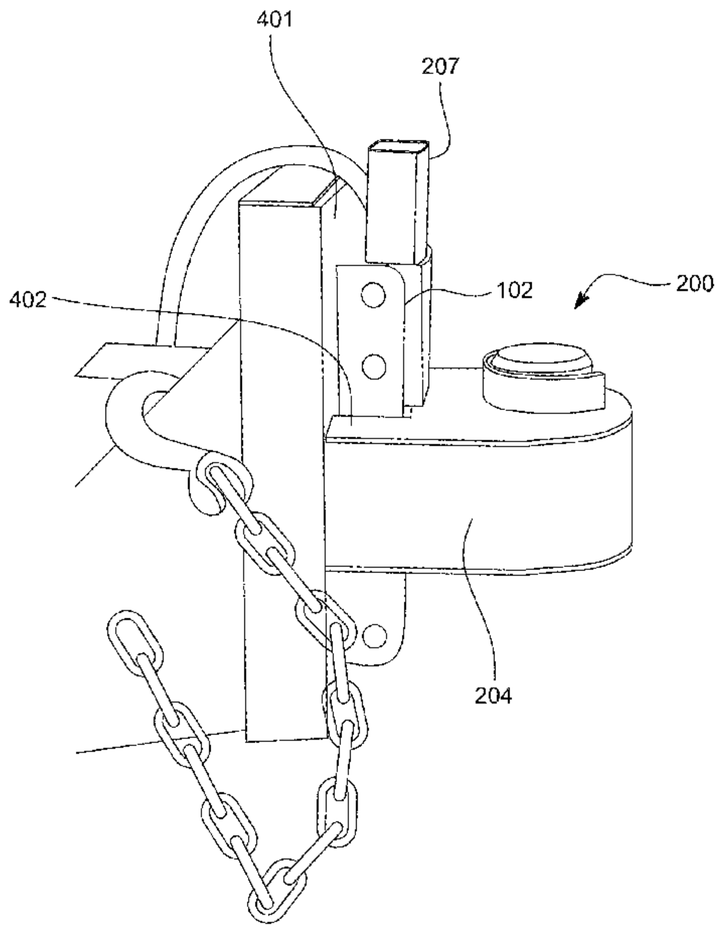
Primary Examiner — Kevin Hurley
Assistant Examiner — Michael R Stabley
(74) *Attorney, Agent, or Firm* — Gregson IP Law, LLC

(57) **ABSTRACT**

A lunette ring lock includes a lunette ring enclosure having a top plate coupled to a bottom plate by a pair of opposing side walls along a width and a front plate having a pair of long edges along its length and a pair of side edges, a pair of matching notches including a top notch in the top plate and a bottom notch the bottom plate centered along a back edge for surrounding a mounting plate to the lunette ring, a locking pin **202** for passing through a through hole in the top plate and a through hole in the bottom plate after passing through the lunette ring enclosure, and a rectangular blocking tube coupled to the top plate adjacent to the top notch extending upward from the top plate. The lock connecting top element engages a puck lock to retain the locking pin to the lunette ring lock between the through hole in the top plate and the through hole in the bottom plate. The front plate is coupled between the top place and bottom plates along the pair of long edges and coupled to the pair of opposing sidewalls along the side edges. the locking pin comprises a lock connecting top element, a bottom coupling surface element, and a central shaft element.

10 Claims, 10 Drawing Sheets



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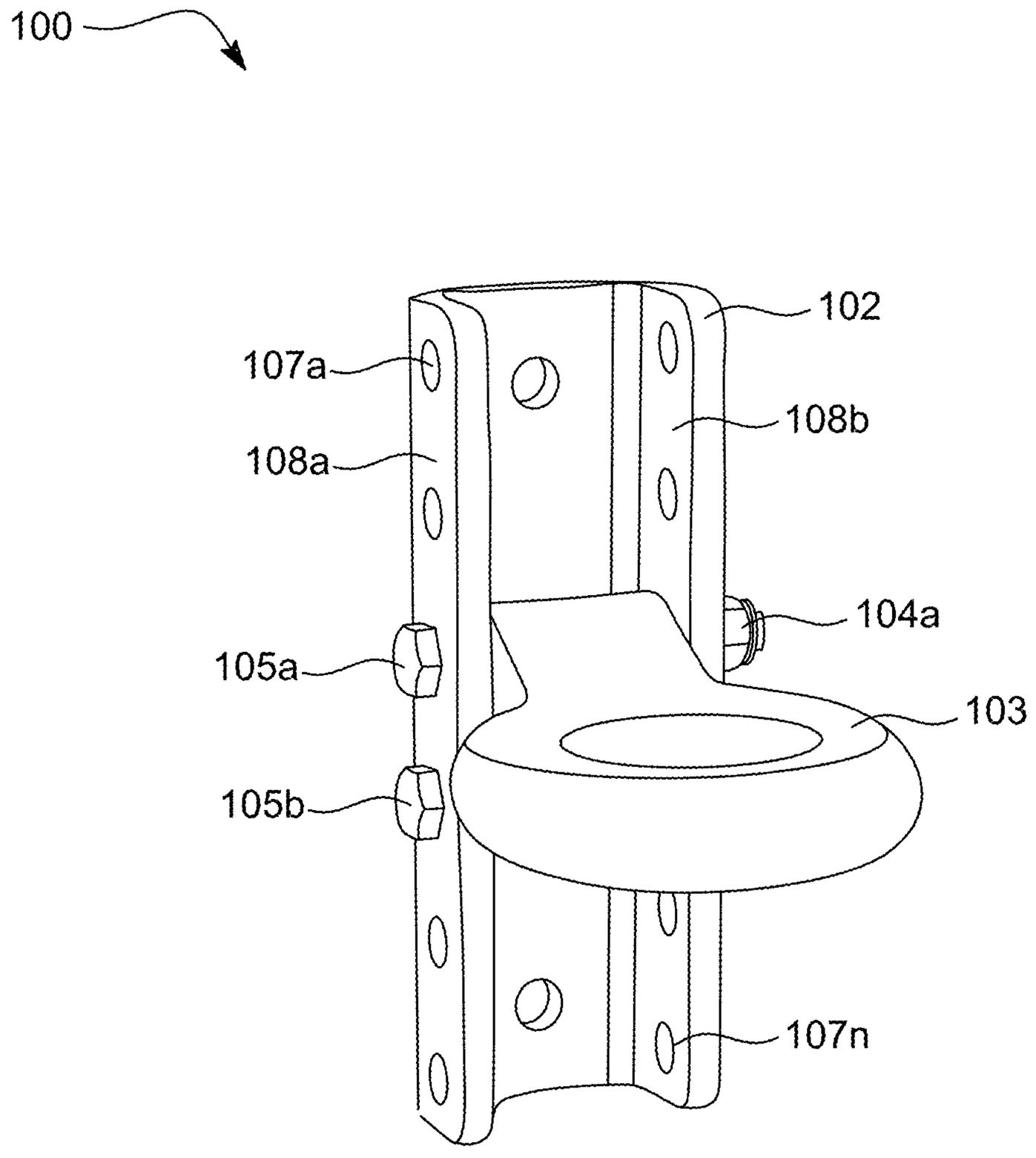

FIG. 1

(PRIOR ART)

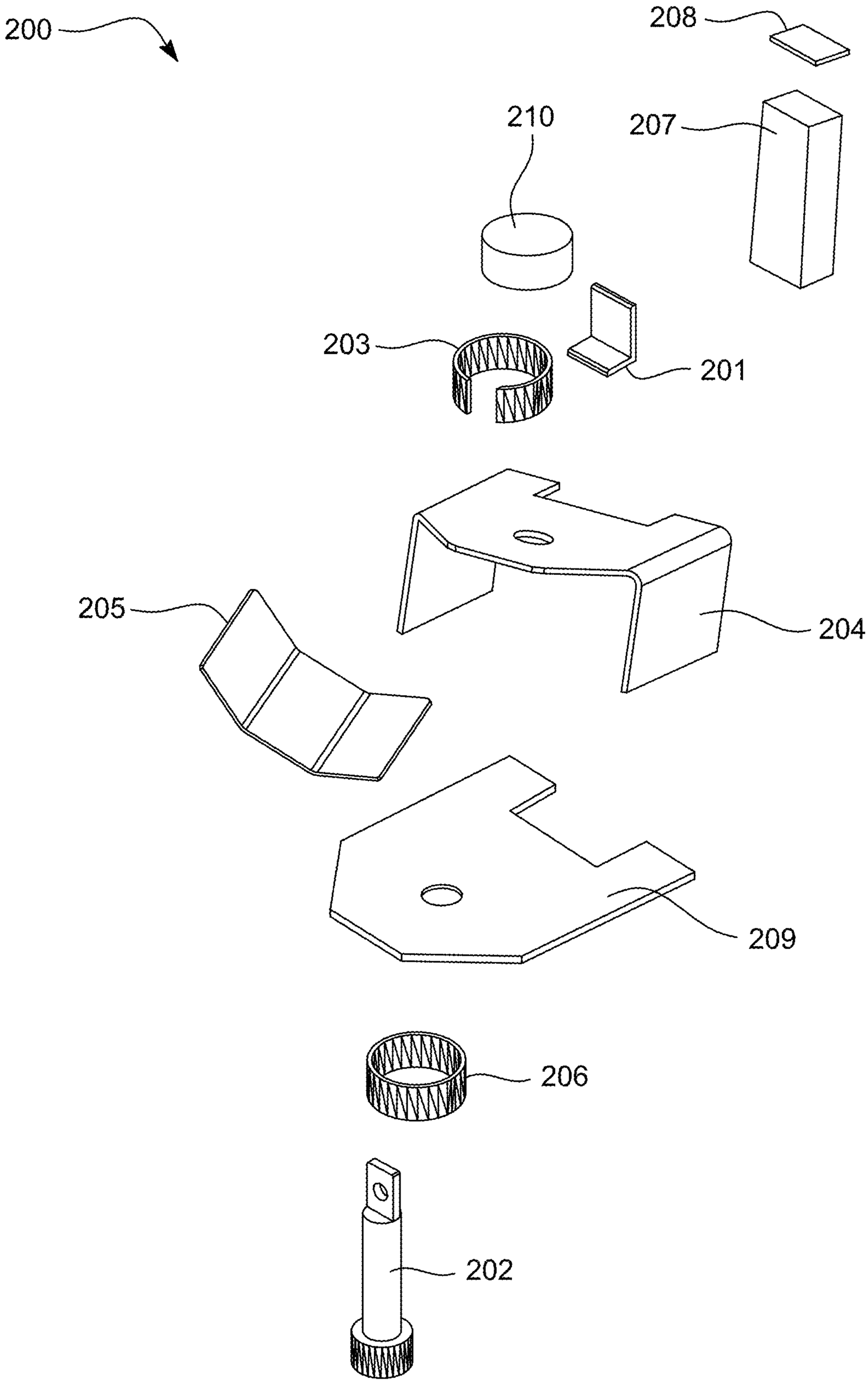

FIG. 2

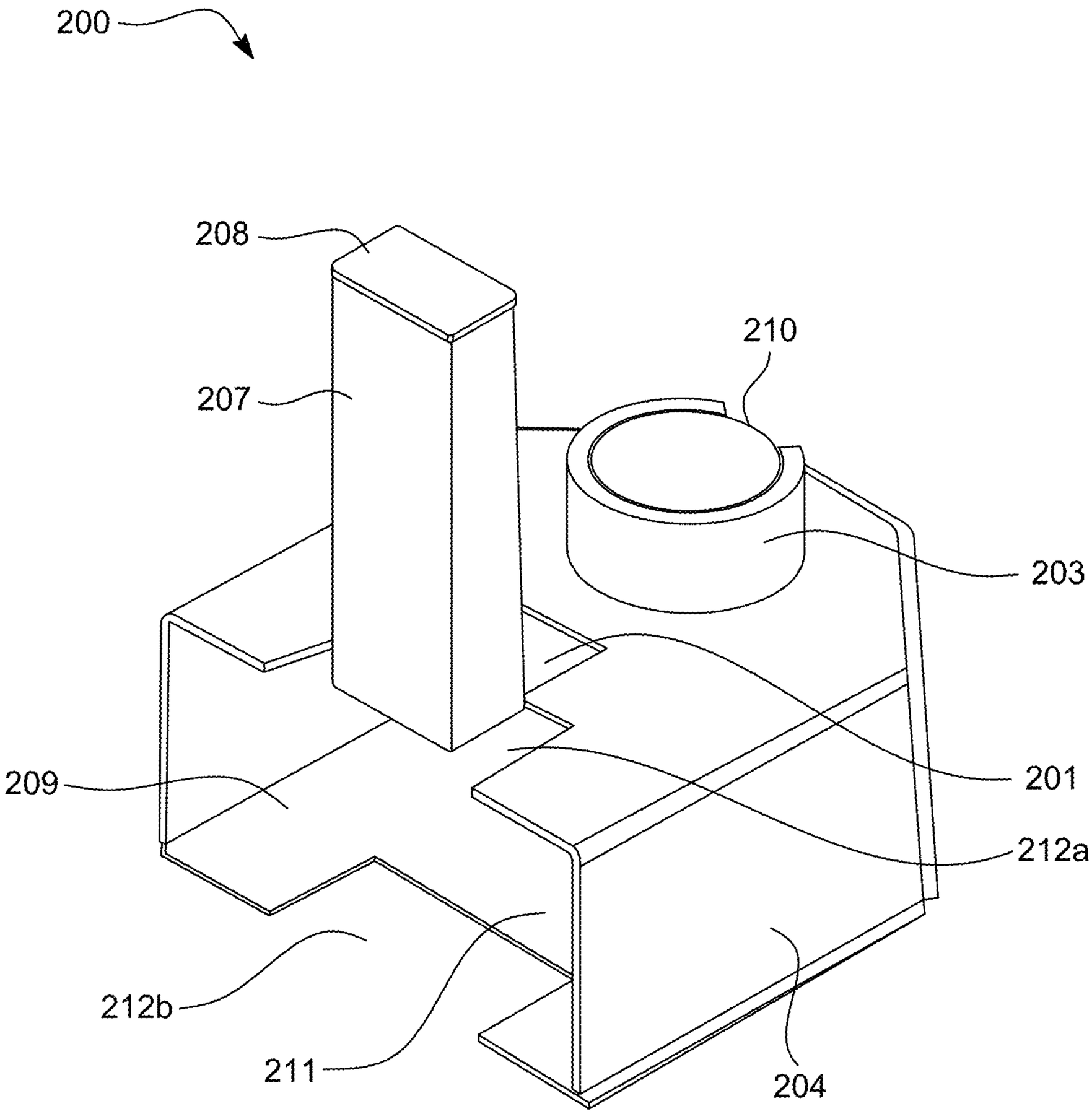

FIG. 3a

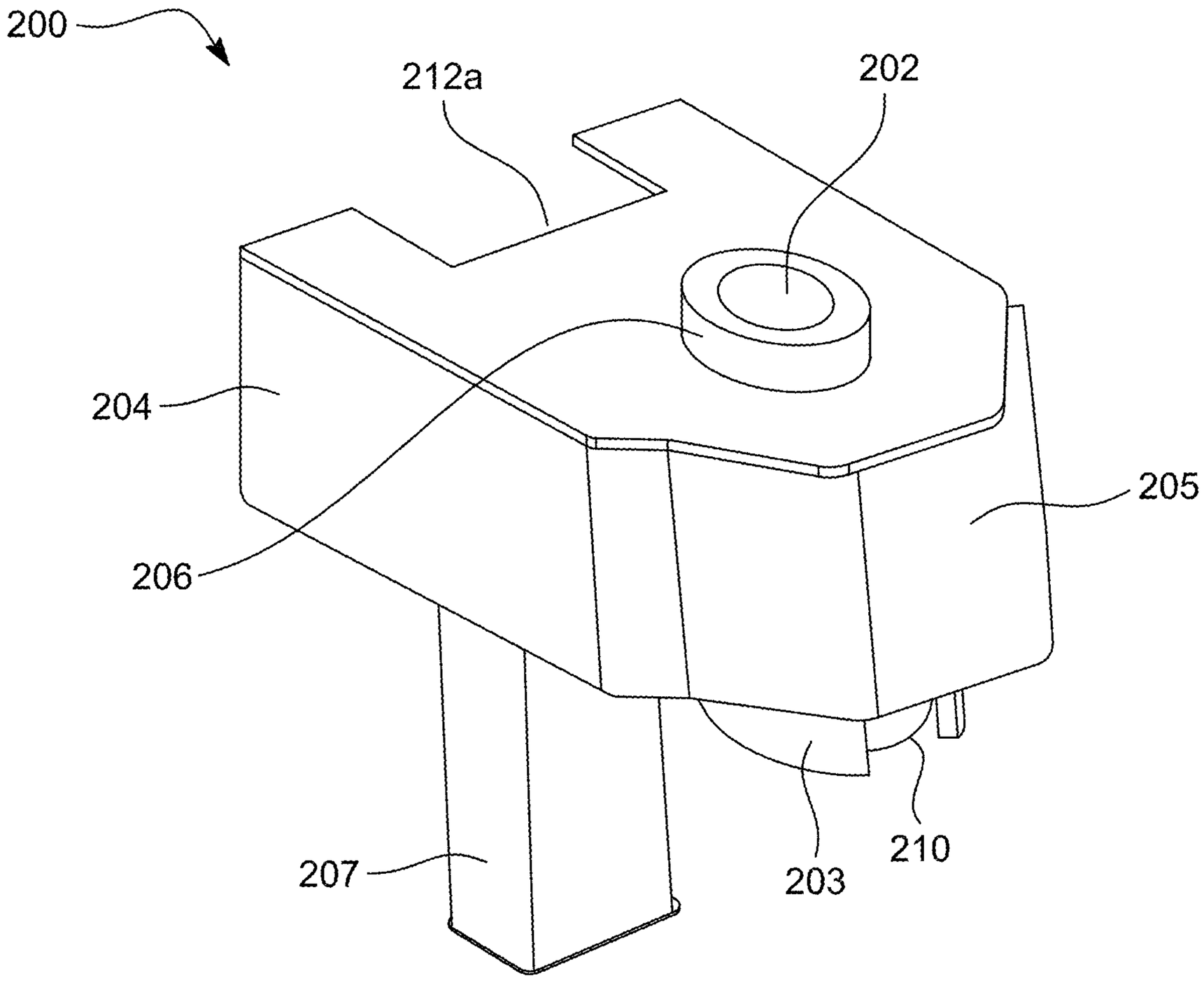

FIG. 3b

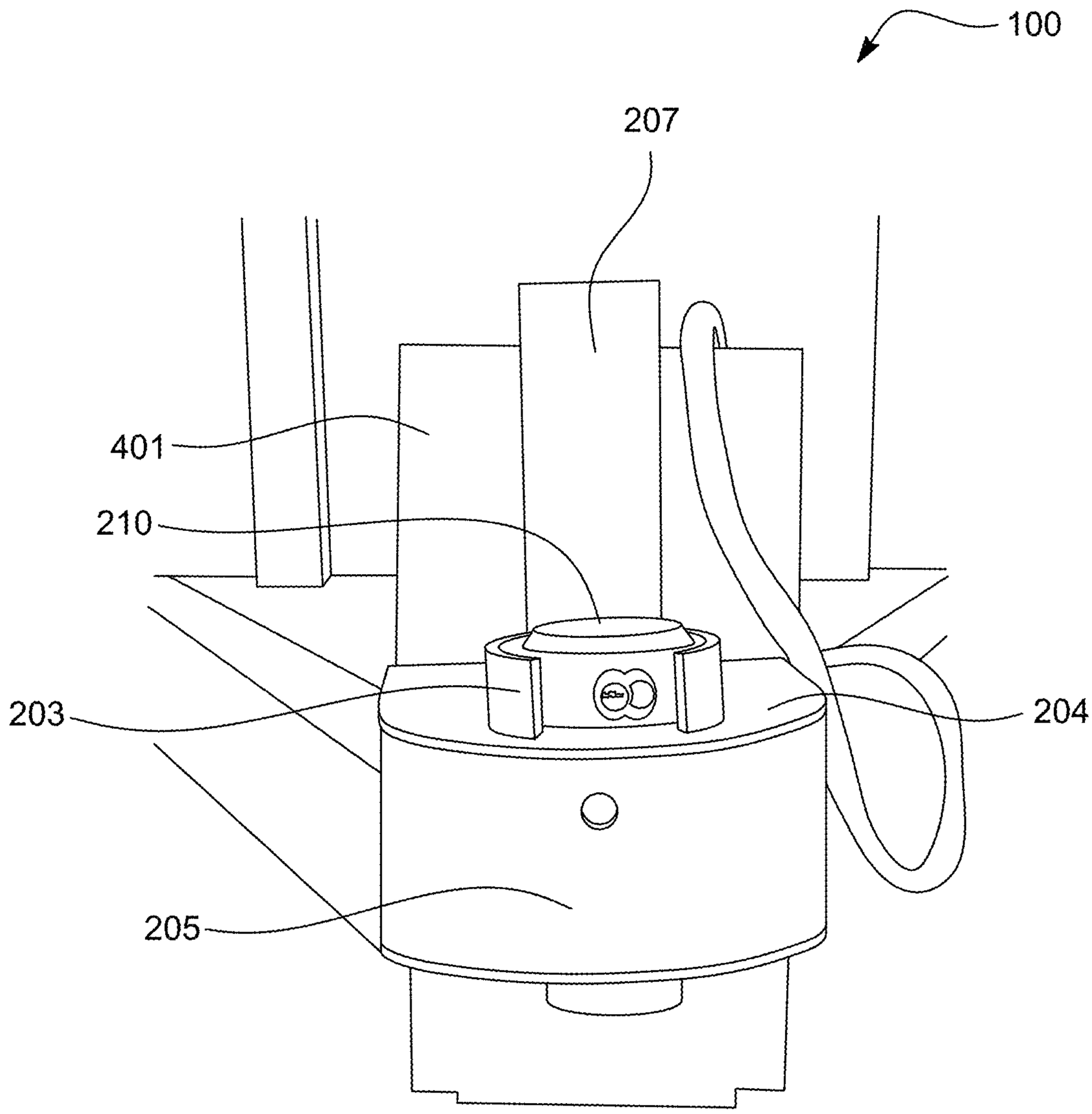

FIG. 4a

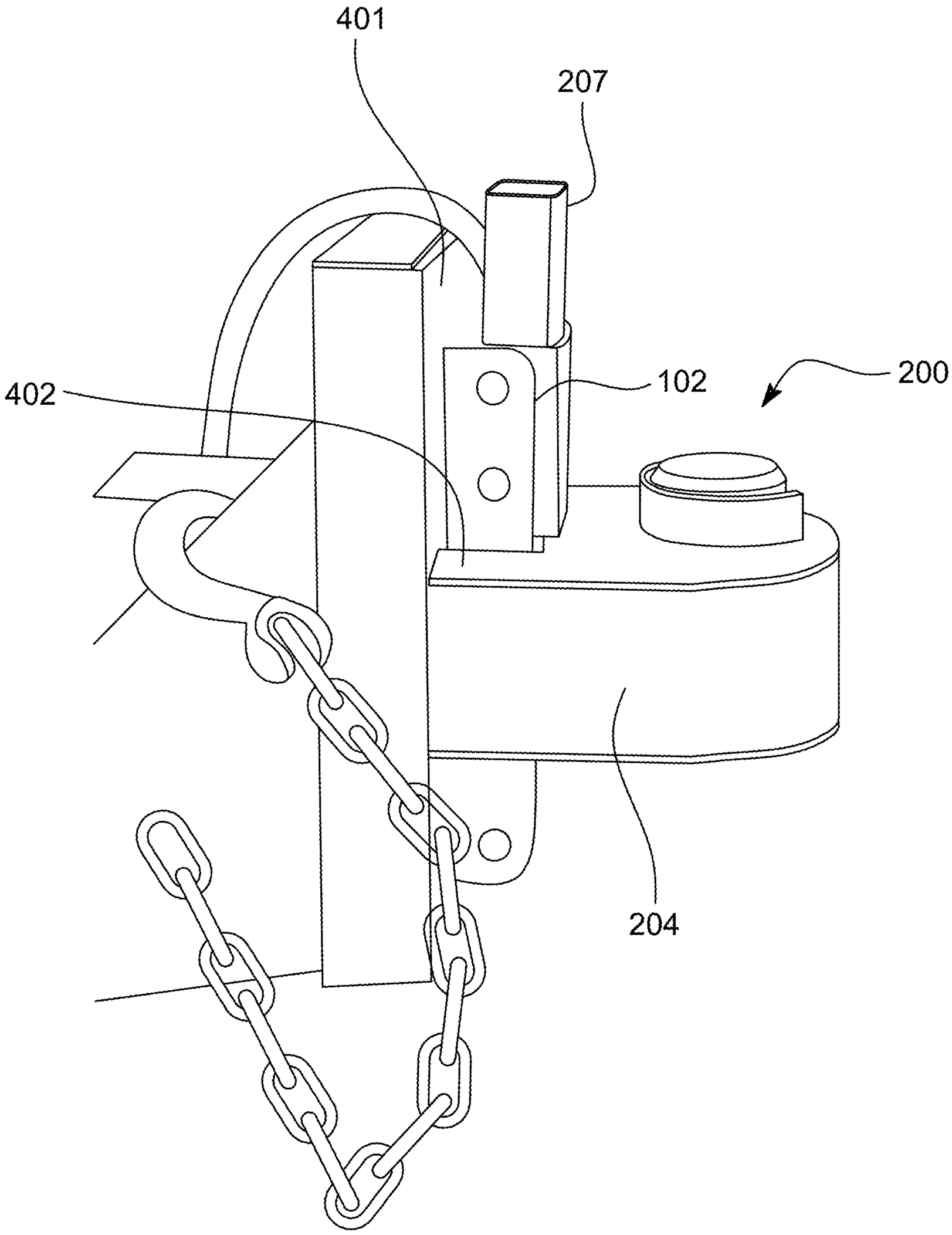

FIG. 4b

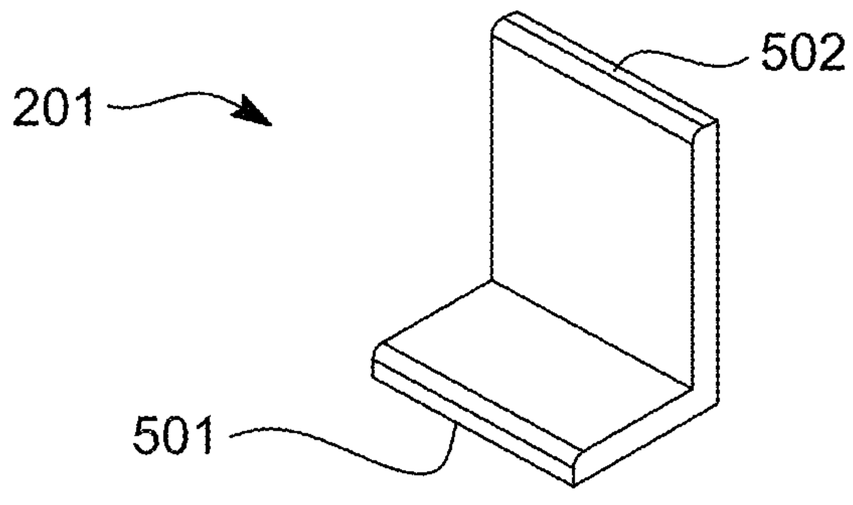

FIG. 5a

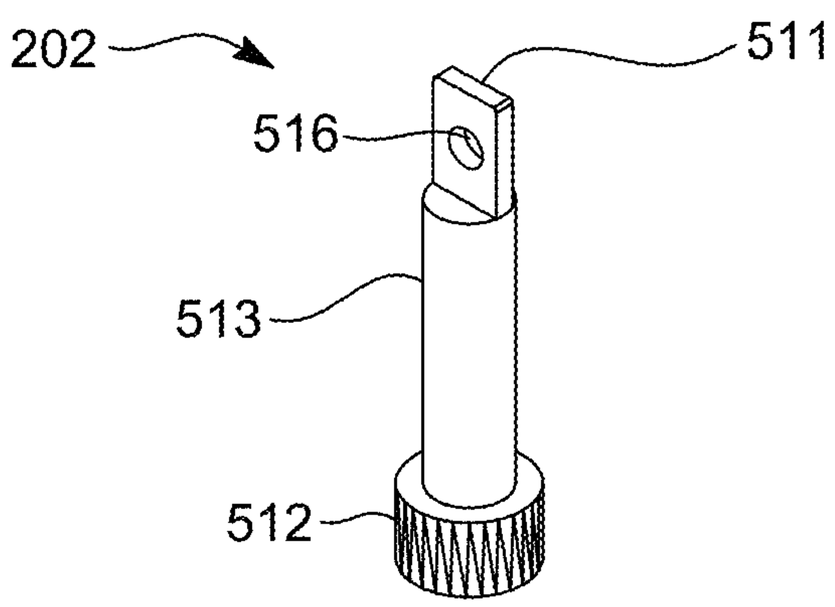

FIG. 5b

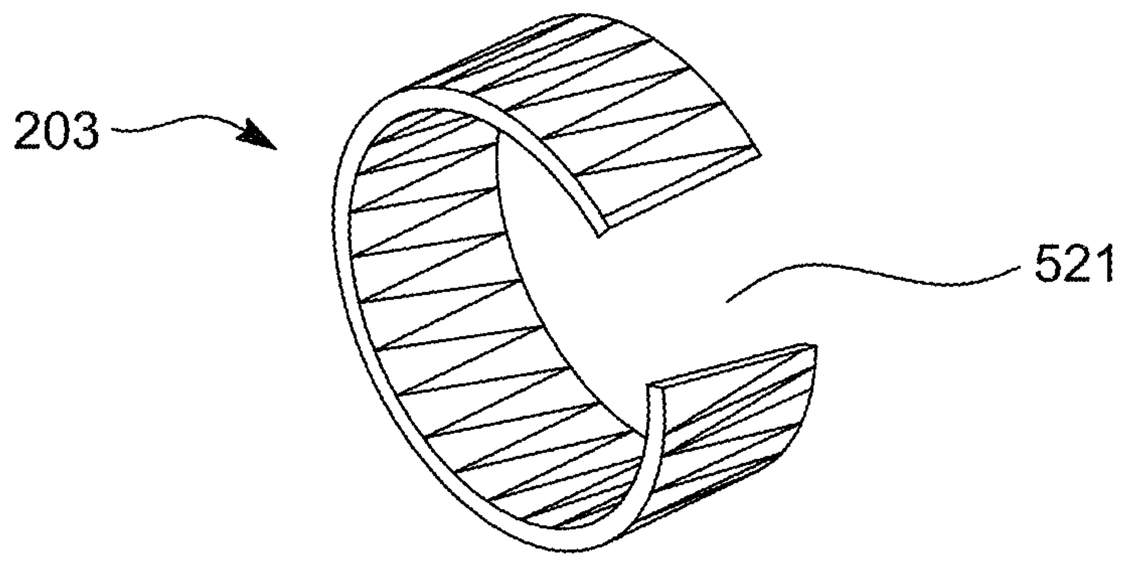

FIG. 5c

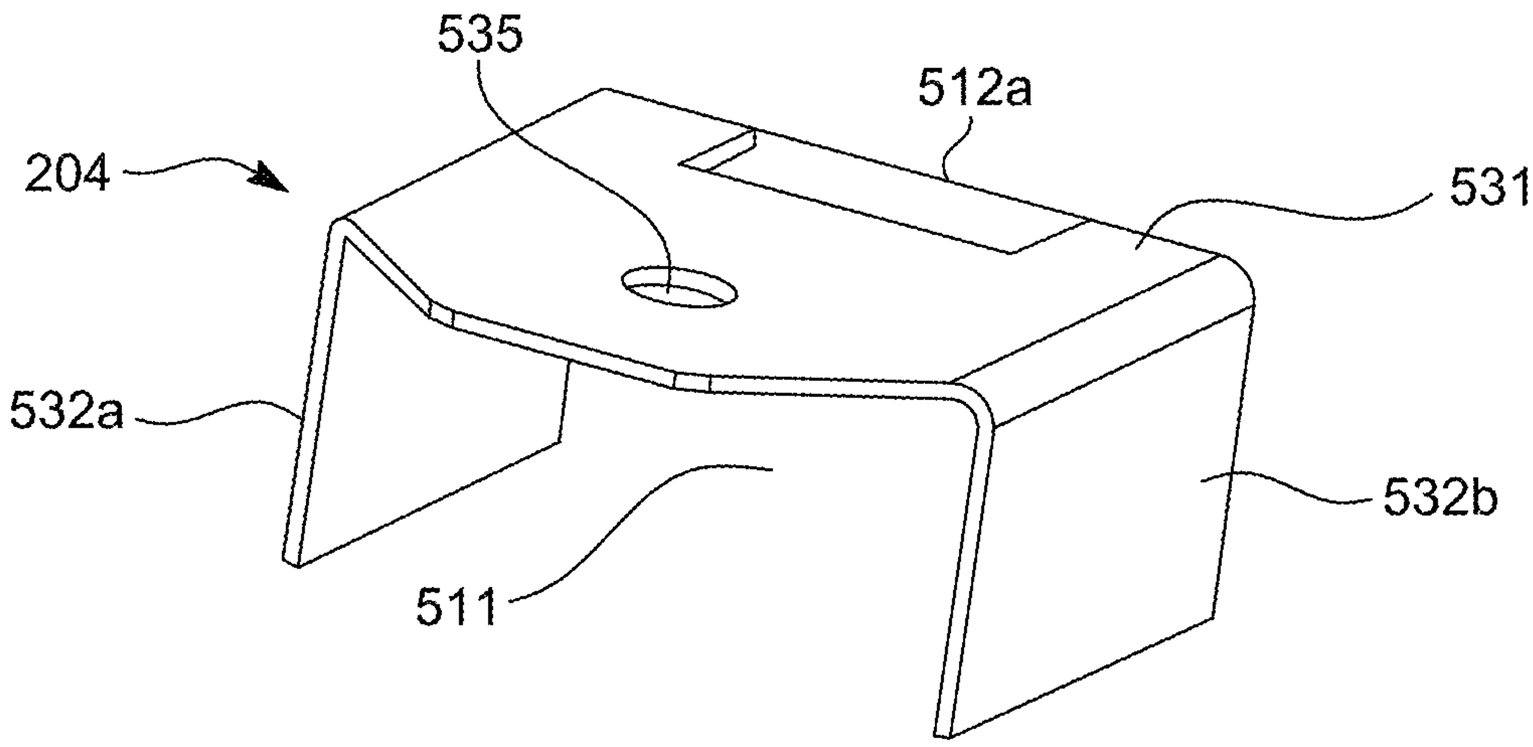

FIG. 5d

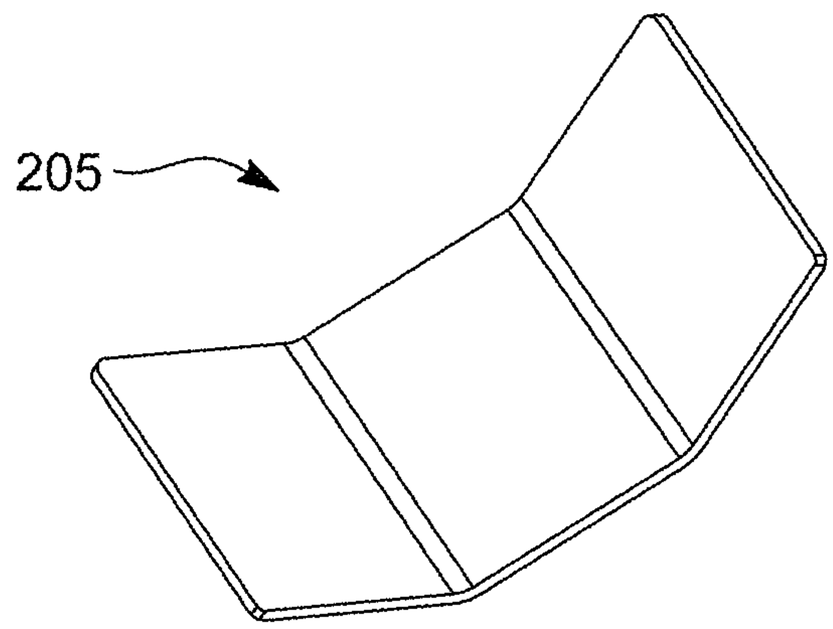

FIG. 5e

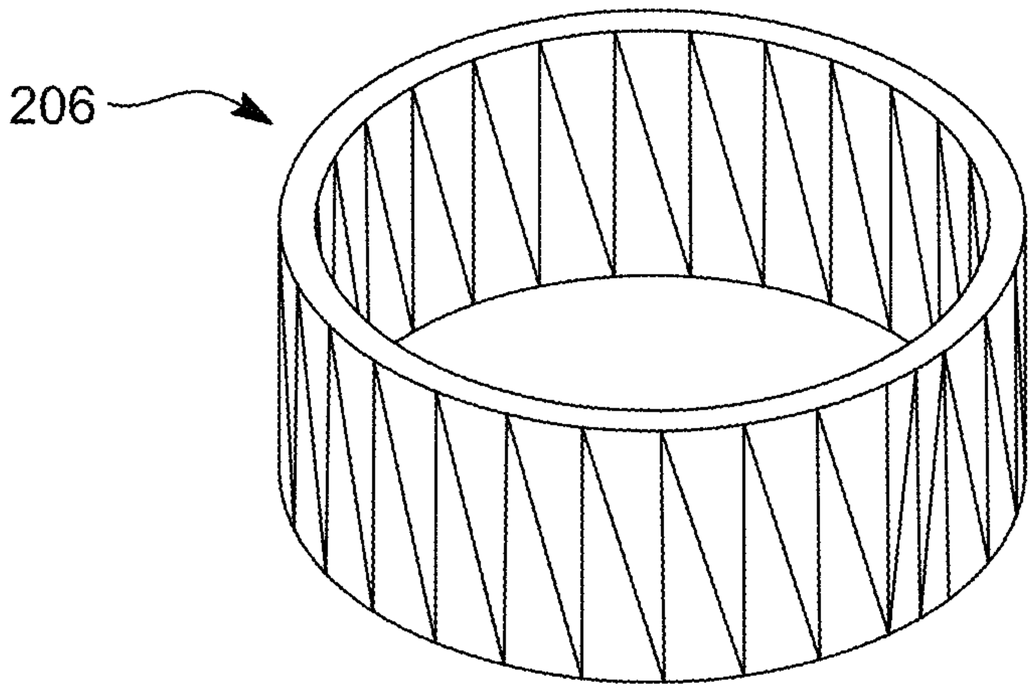

FIG. 5f

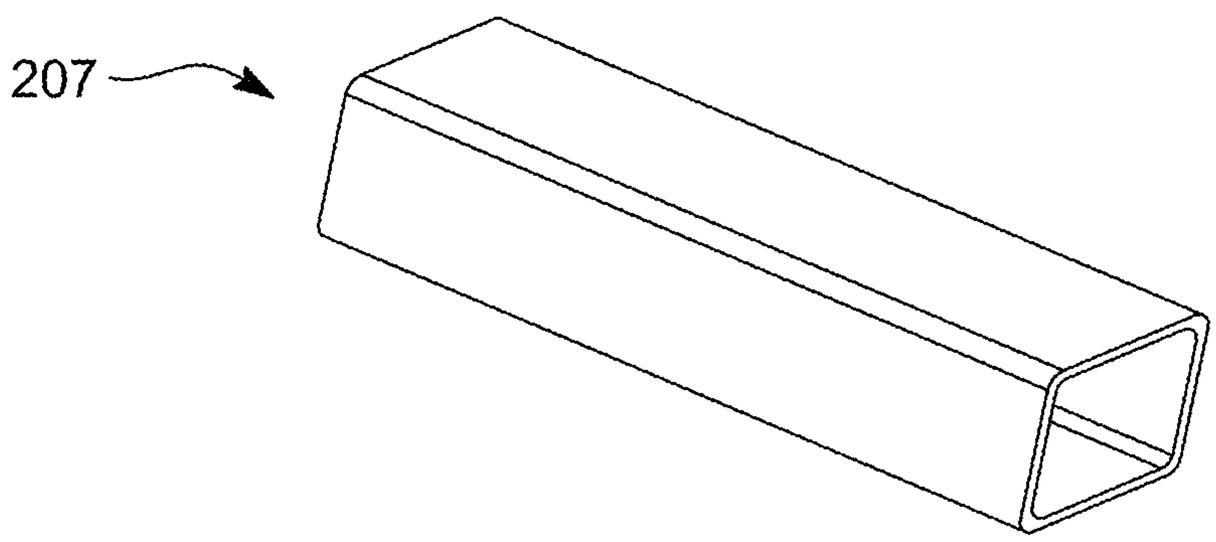

FIG. 5g

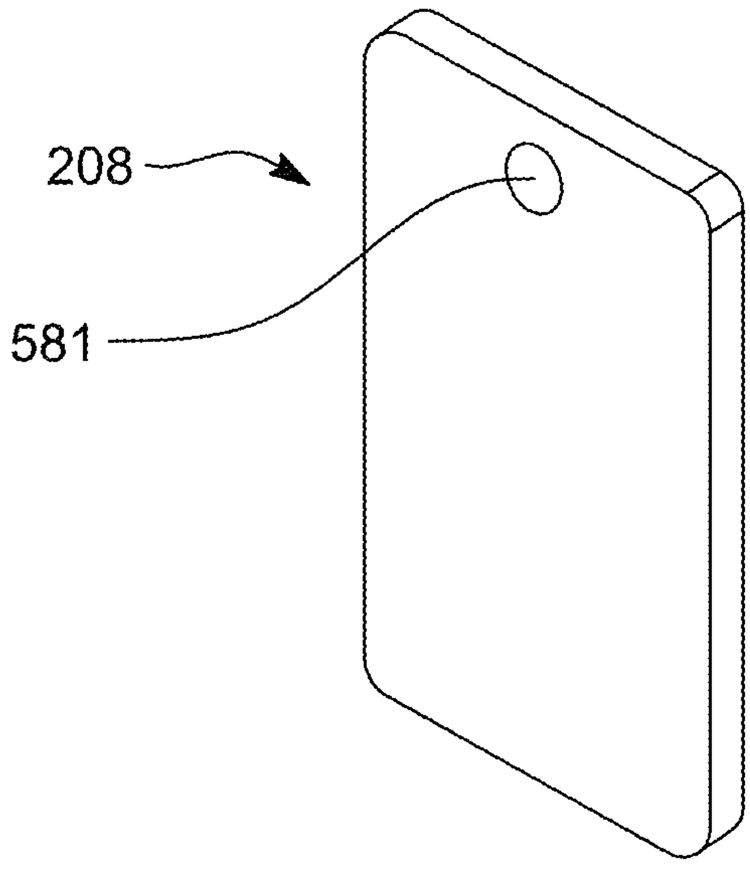

FIG. 5h

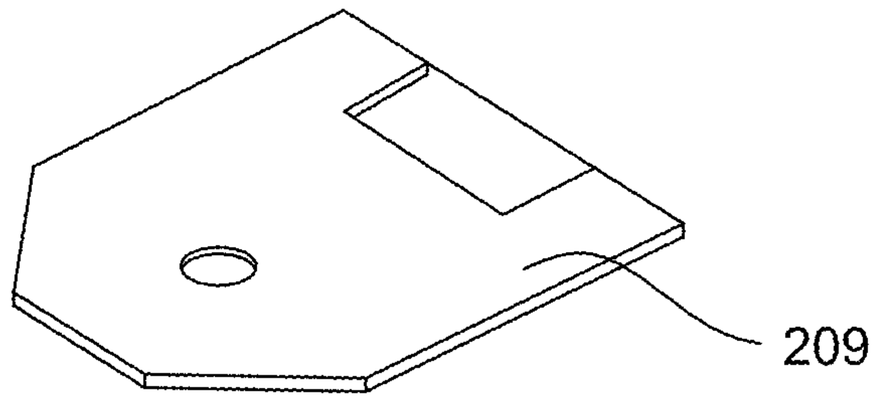

FIG. 5i

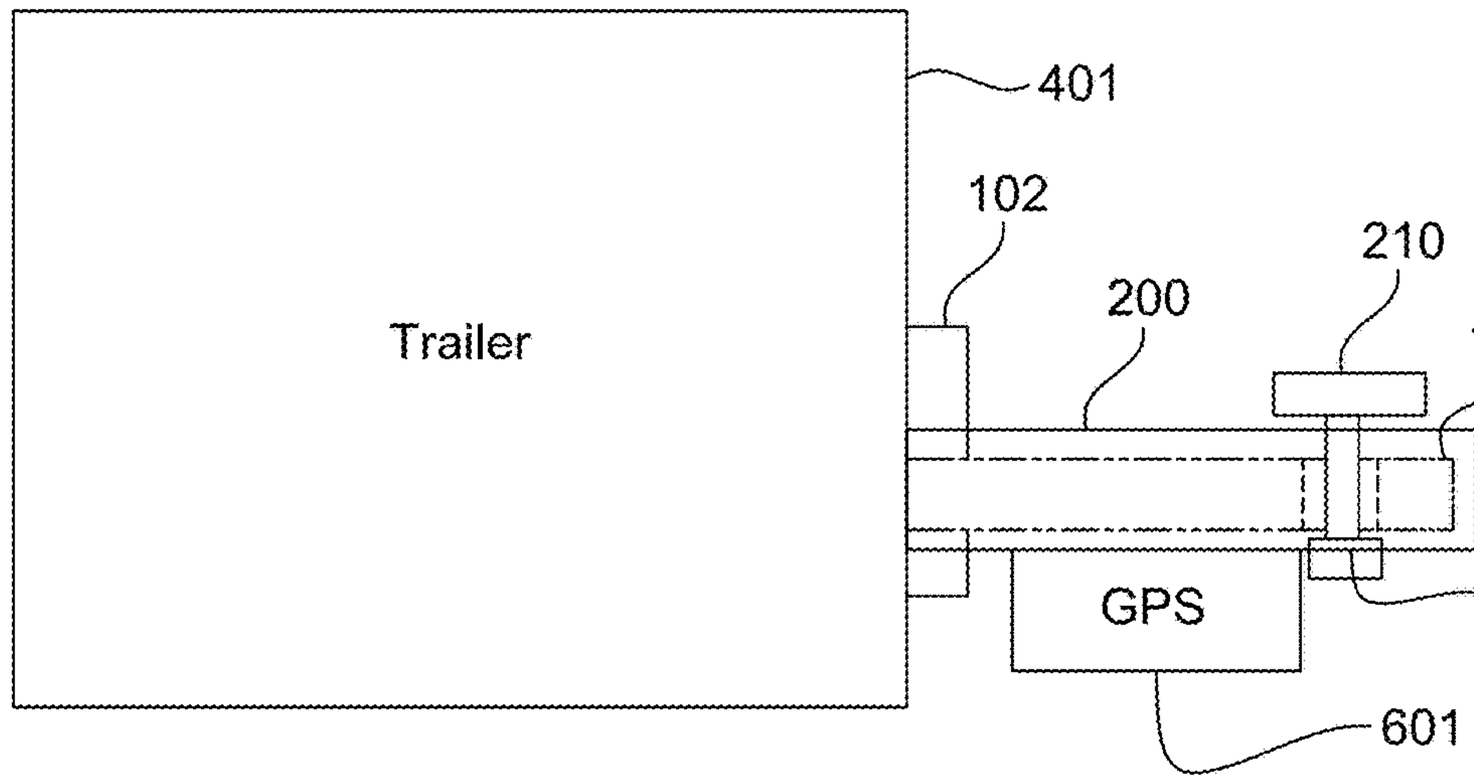
Trailer
401
102
200
210
103
GPS
203
601

FIG. 6a

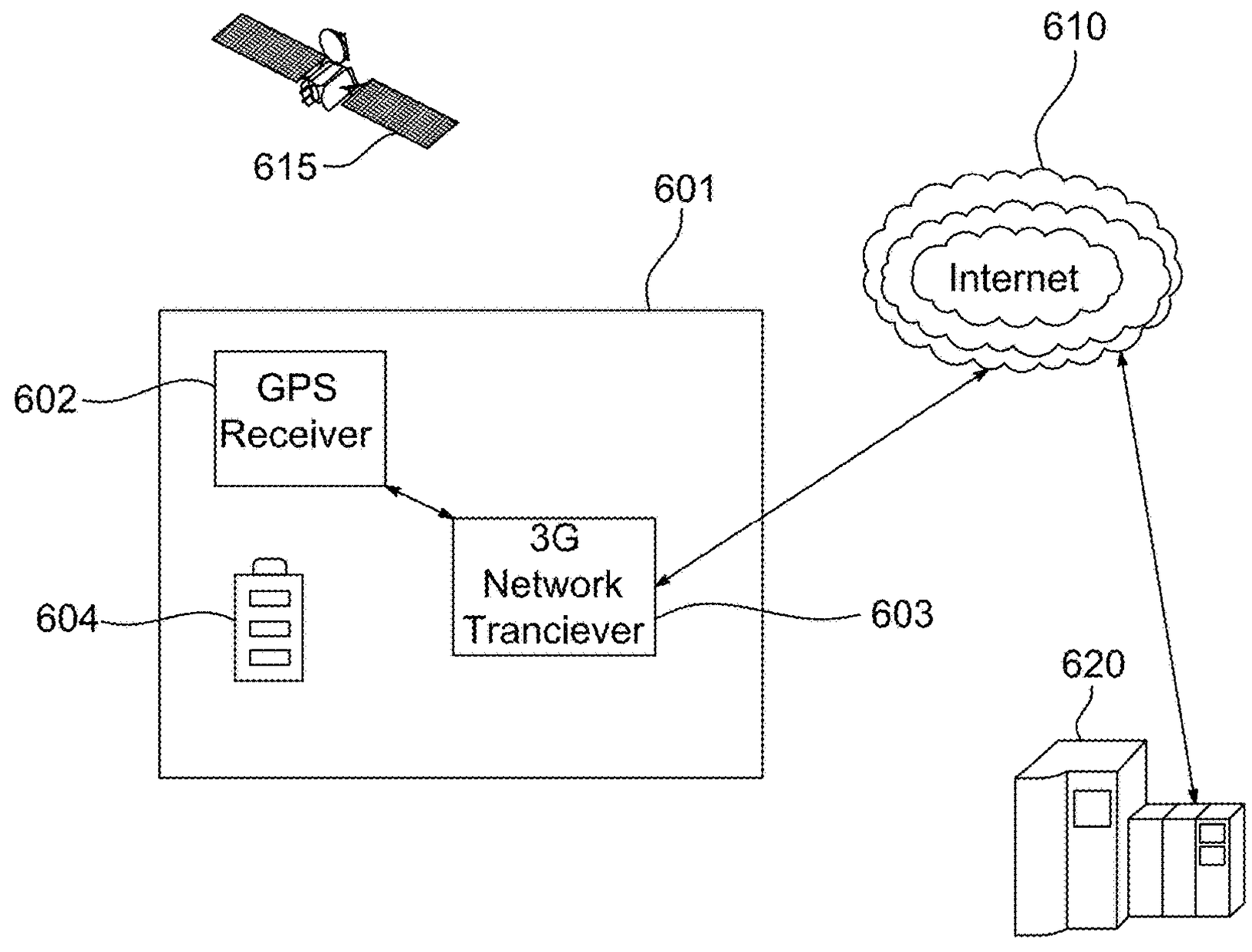
615
601
610
Internet
602
GPS
Receiver
3G
Network
Tranciever
604
603
620

FIG. 6b

MEAN DOG TRAILER THEFT DEFENDER LUNETTE LOCK

CROSS-REFERENCE TO RELATED APPLICATION

This application claims priority to U.S. Provisional Patent Application No. 62/961,312, titled "Mean Dog Eye Lock," and filed on Jan. 15, 2020. The entire application is incorporated herein by reference in its entirety.

TECHNICAL FIELD

This application relates in general to an article of manufacture for providing a trailer aid, and more specifically, to an article of manufacture providing a lunette ring trailer hitch lock.

BACKGROUND

Trailer thefts are on the rise. It's difficult to track stolen trailers, especially since some states don't require certain ones to be registered. More importantly, it takes minutes to back up a truck, unhitch an unprotected trailer and steal it and its contents. Authorities even report cases of "transloading" where thieves steal a trailer, drive it to another location, empty its contents into a legally owned trailer, and leave the stolen trailer behind. The total loss is often in the tens of thousands of dollars. Trailer hitch locks are a good deterrent, but current locks on the market are easy to work around.

All of the above is especially true of larger trailers that use a lunette ring trailer hitch to permit items such as chippers, generators, dumpsters, and similar trailered devices weighing between 25,000 lbs. and 50,000 lbs. to be towed from one location to another. These trailers and items are expensive and are typically left out onjobsites from time to time in which they may be unattended. To protect these trailers from theft, some people use a simple lunette ring lock that is secured within the lunette ring that connects to a hitch of a vehicle so that is may be towed. Unfortunately, lunette rings have additional weaknesses in the manner that the lunette rings are mounted to a trailer that permits additional rings to be attached to a mounting plate that bypasses the lunette ring having a lock. Alternatively, the mounting brackets are typically coupled to the trailer in a fashion that permits the entire mounting bracket to be removed and a new mounting bracket and replacement lunette ring installed in its place, all without removing the existing lunette ring locks. As such, the existing lunette ring locks do not provide adequate security to trailers on to which they are installed.

Therefore, a need exists for an article of manufacture for providing a lunette ring trailer hitch lock. The present invention attempts to address the limitations and deficiencies in prior solutions according to the principles and example embodiments disclosed herein.

SUMMARY

In accordance with the present invention, the above and other problems are solved by providing an article of manufacture for a lunette ring trailer hitch lock according to the principles and example embodiments disclosed herein.

In one embodiment, the present invention is an article of manufacture for providing a lunette ring trailer hitch lock. A lunette ring lock includes a lunette ring enclosure having a top plate coupled to a bottom plate by a pair of opposing side walls along a width and a front plate having a pair of long edges along its length and a pair of side edges, a pair of matching notches including a top notch in the top plate and a bottom notch the bottom plate centered along a back edge for surrounding a mounting plate to the lunette ring, a locking pin **202** for passing through a through hole in the top plate and a through hole in the bottom plate after passing through the lunette ring enclosure, and a rectangular blocking tube coupled to the top plate adjacent to the top notch extending upward from the top plate. The lock connecting top element engages a puck lock to retain the locking pin to the lunette ring lock between the through hole in the top plate and the through hole in the bottom plate. The front plate is coupled between the top place and bottom plates along the pair of long edges and coupled to the pair of opposing sidewalls along the side edges. the locking pin comprises a lock connecting top element, a bottom coupling surface element, and a central shaft element.

In another aspect of the present disclosure, the lunette ring lock further comprises a blocking tube mounting angle coupled to one side of the rectangular blocking tube at a lower end and coupled to the top plate adjacent to the top notch.

In another aspect of the present disclosure, the lunette ring lock further includes a pin head tube coupled to the bottom plate and centered around the through hole in the bottom plate to surround the bottom coupling surface element when the locking pin is installed, and a puck lock holder coupled to the top plate and centered around the through hole in the top plate to surround a puck lock coupled to the locking pin when installed.

In another aspect of the present disclosure, the front plate comprise a circular enclosing plate from matching shape of a front edge of the top plate and the bottom plate.

In another aspect of the present disclosure, the front plate comprise a multi-panel enclosing plate from matching shape of a front edge of the top plate and the bottom plate.

In another aspect of the present disclosure, the front plate. the top plate, and the bottom plate are welded together to form the lunette ring enclosure.

In another aspect of the present disclosure, the lunette ring lock is made of galvanized steel.

In another aspect of the present disclosure, the lunette ring lock is made of zinc-plated steel.

In another aspect of the present disclosure, the pair of opposing sidewalls to the lunette ring enclosure extend beyond the top notch and the bottom notch to enclose a portion of the mounting bracket supporting the lunette ring.

In another aspect of the present disclosure, the lunette ring lock further comprises a GPS locator communicatively connected to a communications network to provide a current position to a monitoring system.

The foregoing has outlined rather broadly the features and technical advantages of the present invention in order that the detailed description of the invention that follows may be better understood. Additional features and advantages of the invention will be described hereinafter that form the subject of the claims of the invention.

It should be appreciated by those skilled in the art that the conception and specific embodiment disclosed may be readily utilized as a basis for modifying or designing other structures for carrying out the same purposes of the present invention. It should also be realized by those skilled in the art that such equivalent constructions do not depart from the spirit and scope of the invention as set forth in the appended claims. The novel features that are believed to be characteristic of the invention, both as to its organization and method of operation, together with further objects and

advantages will be better understood from the following description when considered in connection with the accompanying figures. It is to be expressly understood, however, that each of the figures is provided for the purpose of illustration and description only and is not intended as a definition of the limits of the present invention.

BRIEF DESCRIPTION OF THE DRAWINGS

Referring now to the drawings in which like reference numbers represent corresponding parts throughout:

FIG. **1** illustrates a prior art example of a lunette ring trailer hitch coupled to a mounting bracket for use with the present invention.

FIG. **2** illustrates an example embodiment of an article of manufacture providing a lunette ring trailer hitch lock and its component parts according to the present invention.

FIGS. **3***a-b* illustrate top and bottom perspective views of an article of manufacture for providing a lunette ring trailer hitch lock according to the present invention

FIGS. **4***a-b* illustrate front and side views of the lunette lock installed onto a trailer hitch according to the present invention.

FIGS. **5***a-i* illustrate each of the components used within a lunette lock according to the present invention.

FIGS. **6***a-b* illustrate a lunette lock having a GPS tracking device according to the present invention.

DETAILED DESCRIPTION

This application relates in general to an article of manufacture for providing a trailer aid, and more specifically, to an article of manufacture for providing a lunette ring trailer hitch lock according to the present invention.

Various embodiments of the present invention will be described in detail with reference to the drawings, wherein like reference numerals represent like parts and assemblies throughout the several views. Reference to various embodiments does not limit the scope of the invention, which is limited only by the scope of the claims attached hereto. Additionally, any examples set forth in this specification are not intended to be limiting and merely set forth some of the many possible embodiments for the claimed invention.

In describing embodiments of the present invention, the following terminology will be used. The singular forms "a," "an," and "the" include plural referents unless the context clearly dictates otherwise. Thus, for example, reference to "a needle" includes reference to one or more of such needles and "etching" includes one or more of such steps. As used herein, a plurality of items, structural elements, compositional elements, and/or materials may be presented in a common list for convenience. However, these lists should be construed as though each member of the list is individually identified as a separate and unique member. Thus, no individual member of such list should be construed as a de facto equivalent of any other member of the same list solely based on their presentation in a common group without indications to the contrary. As used herein, the singular forms "a," "an," and "the" are intended to include the plural forms as well, unless the context clearly indicates otherwise.

It further will be understood that the terms "comprises," "comprising," "includes," and "including" specify the presence of stated features, steps or components, but do not preclude the presence or addition of one or more other features, steps or components. It also should be noted that in some alternative implementations, the functions and acts noted may occur out of the order noted in the figures. For example, two figures shown in succession may in fact be executed substantially concurrently or may sometimes be executed in the reverse order, depending upon the functionality and acts involved.

The terms "worker," and "user" refer to an entity, e.g., a human, using an article of manufacture for providing a lunette ring trailer hitch lock associated with the invention. The term used herein refers to one or more users.

The term "invention" or "present invention" refers to the invention being applied for via the patent application with the title "Mean Dog Trailer Theft Defender Lunette Lock." Invention may be used interchangeably with lock.

In general, the present disclosure relates to an article of manufacture for providing a lunette ring trailer hitch lock. To better understand the present invention, FIG. **1** illustrates a prior art example of a lunette ring trailer hitch coupled to a mounting bracket for use with the present invention. A lunette ring trailer hitch **100** attaches to larger trailers (not shown) to permit items such as chippers, generators, dumpsters, and similar trailered devices weighing between 25,000 lbs. and 50,000 lbs. to be towed from one location to another. A mounting bracket **102** attaches to a flat vertical surface on the trailer using screws, bolts, and similar mechanical coupling mechanisms through a base bracket element. The mounting bracket **102** has a series of parallel mounting holes **107***a-n* running along a pair of side bracket elements **108***a-b* that extend perpendicular to the base bracket element. A lunette ring **103** is placed between the pair of side bracket elements and aligns one or more through-holes in the lunette ring **103** with matching pairs of parallel mounting holes **107***a-b*. A bolt **105***a-b* passes through the pair of side bracket elements **108***a-b* and the through-holes in the lunette ring **103** to be secured by a nut **104***a-b* on an outer end of the bolts **105***a-b*. The lunette ring **103** may be coupled to a hitch (not shown) mounted onto a vehicle to tow the trailer.

As shown in FIG. **1**, the bolts **105***a-b* engage a sequential pair of parallel mounting holes **107***a-n* to place the lunette ring **103** at a desired height on the trailer. The lunette ring **103** may be located in a number of different positions by using the sequential pair of parallel mounting holds **107***a-n* at various locations within the mounting bracket **102**. For a lock to successfully protect a trailer having a lunette ring **103** of this type, the lunette ring **103** must be secured to prevent it from being mounted onto a hitch and towed away and the bolts **105***a-b* and mating nuts **104***a-b* used to attach the lunette ring **103** to the mounting bracket **102** must be protected. The lunette ring lock **200** of the present invention addresses both of these vulnerabilities in ways not addressed in prior solutions.

FIG. **2** illustrates an example embodiment of an article of manufacture for providing a lunette ring trailer hitch lock and its component parts according to the present invention. The lunette ring lock **200** is constructed using a set of component parts shown in FIG. **2***a*, including: a blocking tube mounting angle **201**, a locking pin **202**, a puck lock holder **203**, a top plate **204**, a front plate **205**, a pin head tube **206**, a rectangular blocking tube **207**, a rectangular blocking tube top plate **208**, and a bottom plate **209**. A commercially available puck lock **210** is used to secure the lunette ring lock **200** in place about a trailer as disclosed herein. Each of these components are described in more detail below in regard to FIGS. **5***a-h*.

FIGS. **3***a-b* illustrate top and bottom perspective views of an article of manufacture for providing a lunette ring trailer hitch lock according to the present invention. FIG. **3***a* shows a rear, top view of the lunette ring lock with all of the components combined into a single apparatus. In a preferred

embodiment, the components are made from galvanized steel that may be welded together to combine the parts of FIG. **2** into the lock shown in FIGS. **3***a-b*. As seen from the rear of the lunette ring lock **200**, the top plate **204** and bottom plate **209** are joined together to create a lunette ring enclosure **211** that may be placed upon the lunette ring **103**. In a preferred embodiment, the top plate **204** and bottom plate **209** are sized to enclose the lunette ring **103** while being closely positioned about the sides of the lunette ring **103**.

The lunette ring lock **200** slides onto a lunette ring **103** once connected to the mounting bracket **102**. The lunette ring enclosure **211** is large enough to permit the top plate **204** and the bottom plate **209** to cover the entire lunette ring **103** as these top and bottom plates slide backward until a pair of notches **212***a-n* in a rear edge of the top and bottom plates engage and surround the portions of the pair of side elements **108***a-n* of the mounting plate **102** including the pair of bolts **105***a-b* and nuts **104***a-b*.

The rectangular mounting tube **207** is coupled to the blocking tube mounting angle **201** that is itself coupled to an outside surface of the top plate **204**. The rectangular blocking tube **207** is configured to be positioned above the pair of notches **212***a-n* in the top plate **204** and the bottom plate **209** such that the rectangular blocking tube **207** extends upward and is configured to be positioned directly in front of the mounting bracket **102**. The rectangular blocking tube **207** is wide enough to prevent anyone from accessing screws or bolts (not shown) coupling the mounting bracket **102** to the trailer. The rectangular blocking tube **207** is shown extending away from the top plate **204** to block access within the mounting bracket **102** on one side of the lunette ring **103**. This arrangement with the top plate oriented on a top side of the lunette ring **103** allows the rectangular blocking tube **207** to block a top portion of the mounting bracket **102**. Such an arrangement is useful when the lunette ring **103** is coupled to the mounting bracket **102** closer to a bottom of the mounting bracket **102**. When the lunette ring **103** is coupled near the top of the mounting bracket **102**, the lunette ring lock **200** may be installed onto the lunette ring **103** in an opposite orientation that places the rectangular blocking tube **207** downward from the top plate **204** on an underside of the lunette ring **103**. Of course, one of ordinary skill in the art will recognize that a rectangular blocking tube **207** may be coupled to both the top plate **204** and the bottom plate **209** to have the rectangular blocking tube **207** extend in both directions from the lunette ring lock **200**.

The puck lock **210** is shown within the puck lock holder **203** when it is locked into place. In order for the puck lock **210** to be locked to the lunette ring lock **200**, the **201** locking pin **202** is inserted into through-holes **204***a*, **209***a* in the top plate **204** and bottom plate **209** when the lunette ring lock **200** has been placed over the lunette ring **103**. The locking pin **202** passes through the ring of the lunette ring **103** as it passes through the lunette ring lock **200** and a bottom surface of the locking pin **202** engages the bottom plate **209** about the through-hole **209***a* to prevent the locking pin **202** from passing all of the way through the lunette ring lock **200**. The puck lock **210** is coupled to a top hole within the locking pin **202** once the hole is located above the top plate **204**. The puck lock **210**, when coupled to the locking pin **202**, prevents the locking pin **202** from being removed, and as such, secures the lunette ring lock **200** to the lunette ring **103**. The puck lock **210** is placed onto the locking pin **202** such that an opening for a key that operates the puck lock **210**, may be accessed though a gap **203***a* within the puck lock holder **203**.

FIG. **3***b* shows bottom and front views of the lunette ring lock **200**. The pair of notches **212***a-b* are seen in the bottom plate **209** and a bottom end of the locking pin **202** is seen installed into the lunette ring lock **200** to engage the puck lock **210** on the opposite side of the top plate **204**. A pin head tube **206** is coupled to an outside surface of the bottom plate **209** surrounding the bottom end of the locking pin **202**. The rectangular blocking tube **207** is shown extending downward behind the lunette ring lock **200**. A front plate **205** is shown along a front surface of the lunette ring lock **200** connecting the front edge of the bottom plate **209** to the front edge of the top plate **204**. The addition of the front plate **205** completes the lunette ring enclosure **211** that surrounds the lunette ring **103** when the lunette ring lock **200** is installed.

FIGS. **4***a-b* illustrate front and side views of the lunette lock installed onto a trailer hitch according to the present invention. FIG. **4***a* shows a lunette ring lock **200** installed upon a trailer **400**. The mounting bracket **102** is coupled to the trailer flat vertical mounting surface **401** and the lunette ring lock **200** has been placed about the lunette ring **103**. The front plate **205** is seen below the top plate **204**. The puck lock holder **203** is coupled to the top plate **204** with the opening **203***a* exposing a keyhole to the puck lock **210**. The rectangular blocking tube **207** is shown positioned in front of the mounting bracket **102** preventing access to mounting bolts or screws to the mounting bracket **102**.

FIG. **4***b* shows a side view of the lunette ring lock **200** when installed onto a trailer **400** and about the lunette ring **103**. One side of the top plate **204** is visible with the rear edge of the top plate **204** surrounding a portion **402** of the mounting bracket **102**. As such, the nut **104***a-b* and bolt **105***a-b* that are used to couple the lunette ring **103** to the mounting bracket **102** are not accessible when the lunette ring lock **200** is installed. The top plate **204** surrounds the mounting bracket **102** as the pair of notches **212***a-n* allow the pair of side bracket elements **108***a-b* to extend into the lunette ring enclosure **211** pair of notches **212***a-n* as the top plate **204** encloses the mounting bracket **102**, nuts **104***a-b*, and bolts **105***a-b*.

FIGS. **5***a-h* illustrate each of the components used within a lunette lock according to the present invention. The components of FIG. **5***a-h* illustrate the shape and dimensions of the components within a preferred embodiment. Of course, the dimensions of these components may be scaled upward and downward as needed to enclose different sized lunette rings **103**. These dimensions are shown for example purposes and the present invention is intended to be defined solely within the limitations recited within the attached claims appended hereto.

FIG. Sa shows the blocking tube mounting angle **201** is an L-shaped bracket having a bottom surface member **501** and a side surface member **502**. The bottom surface member **501** is coupled to the outside surface of the top plate **204** and is positioned adjacent to the notch **212***a* in the top plate **204**. The side surface member **502** is coupled to the rectangular blocking tube **207** about one of the ends.

The bottom surface member **501** is 1.5 inches by 2.0 inches is size. The side surface member **502** is 2.0 inches by 2.5 inches tall. Both of these components are 0.25 inches thick. These components are made of galvanized steel and may be welded together. In other embodiments, the lunette ring lock **200** may be made of zinc-plated steel, as well as other similar metal materials.

FIG. Sb shows the locking pin **202** with three components: a lock connecting top element **511**, a bottom coupling surface element **512**, and a central shaft element **513**. The lock connecting top element **511** includes a protruding

surface **515** extending upward from the central shaft element **513** and a through-hole **516** for engaging the puck lock **210**. The lock connecting top element **511** extends above the top plate **204** within the puck lock holder **203** when the locking pin **202** is inserted into the lunette ring lock **200**. The puck lock **210** is placed onto the locking pin **202** with the puck lock **210** engaging the through-hole **516** to lock the locking pin **202** into place. The lock connecting top element **511** 1.5 inches tall by 1.25 inches wide and 0.25 inches thick. The through hole **516** is centered in the lock connecting top element **511** having a diameter of 0.5 inches.

The bottom coupling surface element **512** provides a flat surface extending outward from the central shaft element **213** to engage the bottom plate **209** when the locking pin **202** is inserted into the lunette ring lock **200**. The central shaft element **513** is sized to match the diameter of the locking holes **535** in the top plate **204** and the locking hole **591** in the bottom plate **209**. As such the flat surface of the coupling surface element **512** extending around the central shaft element **513** engages the bottom plate **209** about the locking hole **595** to hold the locking pin **202** in place. The coupling surface element **512** is enclosed by the pin head tube **206** that is coupled to the bottom plate **209** around the through-hole **595**.

The bottom coupling surface element **512** includes a round base having a diameter of 1.63 inches and a height of 1.0 inches. The central shaft element **513** is a 1.0 in diameter cylindrical shaft centered in the round base of the bottom coupling surface element **512**. The remaining 0.63 inch provides a 0.315 inch coupling surface about the central shaft element **513** to engage the bottom plate **209** about its through hole **595**.

The central shaft element **513** connects the lock connecting top element **511** to the bottom coupling surface element **512** as it passes through the lunette ring enclosure **211** of the lunette ring lock **200** and the ring of the lunette ring **103**. The central shaft element **513** is sized to place the through-hole **516** of the locking pin **202** within the puck lock holder **203** at a height that permits the through-hole **516** to engage the puck lock **210** when the bottom coupling surface element **512** is in contact with the bottom plate **209** within the pin head tube **206**. The central shaft element **513** a 1.0 inch in diameter cylindrical shaft having a length of 4.75 inches.

FIG. Sc shows that the puck lock holder **203** provides a lunette ring enclosure **211** about the puck lock **210** when coupled to the locking pin **202**. The puck lock holder **203** has an opening **521** on one side to permit access to a keyhole in the puck lock **210** to lock and unlock the puck lock **210**. The puck lock holder **203** is sized to surround the puck lock **210** to prevent access except through the opening **521** and is tall enough to cover the depth of the puck lock **210**. The puck lock holder **203** is made of galvanized steel that may be welded to the top plate **204**. The puck lock holder **203** is a 0.25 inch thick circular wall that is 1.5 inches tall having an inside diameter of 3.0 inches. The opening **521** provides a 1.60 inch opening on one side of the puck lock holder **203** that provides a 54° gap in the circular shape of the puck lock holder **203**.

FIG. **5***d* shows that the top plate **204** has a top surface **531**, a pair of opposing sides **532***a-b*, a notch **212***a* about a back edge and the through-hole **535**. The top surface **531** and the pair of opposing sides **532***a-b* may be made from a single piece of galvanized steel that contains a pair of parallel bends to create the pair of opposing sides **532***a-b*. The top plate **204** is sized to completely surround the lunette ring **103** when the lunette ring lock **200** is installed, and thus the top plate **204** is sized to match the dimensions of the lunette ring **103**. The front edge of the top plate **204** is shaped to surround an outward end of the lunette ring **103** and to mate with the front plate **205**. The front surface of the top plate **204** is shown having three flat surfaces that match three flat surfaces of the front plate **205**. Of course, the front surface may also be round to match the shape of the lunette ring **103** and its outer edge in other embodiments. The pair of opposing sides **532***a-b* are long enough to create the lunette ring enclosure **211** when the top plate **204** and bottom plate **209** are coupled together. The notch **212***a* is sized to match the mounting bracket **102** and tightly enclose about the mounting bracket **102**.

The top plate **204** has the top surface **531** having an overall length of 9.0 inches and a width 8.0 inches. The pair of opposing sides **532***a-b* are 6.5 inches wide by 4.0 inches tall extending downward from the bend in the top plate **204** that forms the pair of opposing sides **532***a-b* from the top surface **531**. The pair of opposing sides **532***a-b* begin along the back edge of the top surface **531** extending forward to a point where the top surface **301** begins to turn toward the opposing side. In FIG. **5***d*, the front edge of the top plate **204** is shown to have three straight lines that define an attachment edge to connect to the corresponding three flat surfaces of front plate **205**. As shown in FIGS. **4***a-b*, the front edge of the top plate **204** and the corresponding front plate **205** may also be round in shape to connect the two sides of the top surface **531** to the front plate **205** between the pair of opposing sides **532***a-b*. The combination of the top surface **531**, the pair of opposing sides **532***a-b*, and the front plate **205** on three of its sides and the bottom plate **209** on the final side creates the lunette ring enclosure **211** that surrounds the lunette ring **103** when the lunette lock **200** is installed. The notch **212***a* that engages the mounting bracket **102** is a 2.0 inch deep by 4.0 inch wide rectangular notch centered along the back edge of the top surface **531**. The through hole **535** is a 1.25 inch diameter hole through the top surface having a center point 6.13 inches from the back edge of the top surface **531** along a centerline running parallel between the pair of opposing sides **532***a-b*.

FIG. Se shows the front plate **205** for coupling to the front edge of the top plate **204** with a top end of the front plate **205** welded to the front edge of the top surface **531** of the top plate **204** and a pair of side edges welded to the opposing sides **532***a-n* of the top plate **204**. A bottom edge of the front plate **205** is welded to the bottom plate **209** to completely enclose a front side of the lunette ring lock **200** and create the lunette ring enclosure **211** that accepts the lunette ring **103** when the lunette ring lock **200** is installed. The front plate **205** has a length of 8.0 inches to match the front shape of the top plate **204** and the bottom plate **209**. The front plate **205** extends outward a width of 2.42 inches from is back edges. In FIG. Se, it is shown to have three rectangular panels having a center panel 1.84 inches wide. The pair of side panels extend back to the rear edge at a 45° angle.

FIG. Sf shows that the pin head tube **206** provides an enclosing barrier about the locking hole **595** of the bottom plate **209**. The pin head tube **206** is sized to accept the locking pin **202** and completely surround the bottom coupling surface element **512** when it engages the bottom plate **209**. The pin head tube **206** is made of galvanized steel that may be welded to the bottom plate **209**. The pin head tube **206** is a 0.25 inch thick circular wall that is 1.5 inches tall having an inside diameter of 3.0 inches.

FIG. **5***g* shows the rectangular blocking tube **207** that is placed in front of the mounting bracket **102** when the lunette ring lock **200** is installed. The rectangular blocking tube **207** is coupled to the blocking tube mounting angle **201** at one

end that attaches to the top plate **204**. The opposite end of the rectangular blocking tube **207** extends outward from the top plate **204** to cover the front of the mounting bracket **102**. The rectangular blocking tube **207** is placed adjacent to the notch **212***a* in the top plate **204** such that the rectangular blocking tube **207** may be positioned adjacent to the pair of side bracket elements **108***a-b* of the mounting bracket **102**. An identical rectangular blocking tube **207** may be attached to the bottom plate **209** adjacent to its notch **212***b* using a similar blocking tube mounting angle **201** should the mounting bracket **102** be blocked both above and below the lunette ring lock **200**.

FIG. Sh shows that the rectangular blocking tube top plate **208** is a top plate coupled to the opposite end of the rectangular blocking tube **207** that is away from the top plate **204**. The rectangular blocking tube top plate **208** is sized to match the dimensions of the rectangular blocking tube **207** and is welded to the end of the rectangular blocking tube **207** to prevent access within the rectangular blocking tube **207**. A drain hole **281** may be located within the rectangular blocking tube top plate **208** to permit material and fluids to be drained from within the rectangular blocking tube **207** during both manufacture and use. The rectangular blocking tube **207** is a 7.25 inch long by 2.5 inch tall by 1.5 inch wide rectangular tube having a hollow center. The walls of the rectangular blocking tube **207** are 0.125 inches thick.

FIG. Si shows that the bottom plate **209** is an identical plate to the top surface **531** of the top plate **204**. The bottom plate **209** has an overall length of 9.0 inches and a width 8.0 inches. The pair of opposing sides **532***a-b* are coupled to the sides of the bottom plat **209** to form the lunette ring enclosure **211** about the lunette ring **103**. Similar to the front edge of the top plate **204**, the bottom plate **209** is shown to have three straight lines that define an attachment edge to connect to the corresponding three flat surfaces of front plate **205** as shown in FIG. Si. As shown in FIGS. **4***a-b*, the front edge of the bottom plate **209** and the corresponding front plate **205** may also be round in shape to connect the two sides of bottom plate **209** between the pair of opposing sides **532***a-b*. The matching notch **212***b* that engages the mounting bracket **102** is a 2.0 inch deep by 4.0 inch wide rectangular notch centered along the back edge of the top surface **531**. The through hole **535** is a 1.25 inch diameter hole through the top surface having a center point 6.13 inches from the back edge of the top surface **531** along a centerline running parallel between the pair of opposing sides **532***a-b*.

FIGS. **6***a-b* illustrate a lunette lock having a GPS tracking device according to the present invention. FIG. **6***a* shows a lunette ring lock **200** installed upon a lunette ring **103** that is coupled to a mounting bracket **102** of the trailer **401**. The locking pin **203** is installed through the lunette ring enclosure **211** and is coupled to a puck lock **210**. In order to provide additional security to the trailer and its contents, the lunette ring lock **200** also includes a GPS tracking device **601** to provide an ability of determine a current location of the trailer **401** and the lunette ring lock **200**. The GPS tracking device **601** is shown coupled to an underside of the lunette ring **200**. The GPS tracking device **601** may also be located within the lunette ring **200** to reduce an ability to discover its presence. The GPS tracking device **601** may be separately installed within the trailer **401** itself as well.

FIG. **6***b* shows the GPS tracking device **601** connectors to a monitoring system **620**. The GPS tracking device **601** includes a GPS receiver **602**, a 3G network transceiver **603**, and a battery **604**. The GPS receiver **602** is a self-contained GPS receiver circuit that receives position information from one or more GPS satellites **615** and outputs the position data to a network receiver. The 3G network transceiver **603** communicates with a wide area wireless communications network to connect to a monitoring computing system **620** over the Internet **610**. A 3G communications network transceiver **603** may be utilized as the amount of data needed to communicate a current position to the monitoring computer system **620** is low. Additionally, the 3G network transceiver **603** may communicate with the network at a reduced number of connections per minute to reduce power consumption of the GPS tracking device **601**. All of these components may be powered by an internal battery **604** which may include a rechargeable or a replaceable battery depending upon the usage of the tracking device. The monitoring computing system **620** may attempt to periodically check for the location of the GPS tracking device **601** or may await an operator initiated command to attempt to locate the trailer **401** in order to initiate communications with the GPS tracking device **601** to further reduce power consumption.

Even though particular combinations of features are recited in the present application, these combinations are not intended to limit the disclosure of the invention. In fact, many of these features may be combined in ways not specifically recited in this application. In other words, any of the features mentioned in this application may be included to this new invention in any combination or combinations to allow the functionality required for the desired operations.

No element, act, or instruction used in the present application should be construed as critical or essential to the invention unless explicitly described as such. Further, the phrase "based on" is intended to mean "based, at least in part, on" unless explicitly stated otherwise.

What is claimed is:

1. An article of manufacture for providing a lunette ring lock for surrounding a lunette ring hitch, the lunette ring coupling to a mounting bracket on a trailer, the lunette ring lock comprises:

a lunette ring enclosure having a top plate coupled to a bottom plate by a pair of opposing side walls along a width and a front plate having a pair of long edges along its length and a pair of side edges, the front plate is coupled between the top place and bottom plates along the pair of long edges and coupled to the pair of opposing sidewalls along the side edges;

a pair of matching notches including a top notch in the top plate and a bottom notch the bottom plate centered along a back edge for surrounding a mounting plate to the lunette ring;

a locking pin for passing through a through hole in the top plate and a through hole in the bottom plate after passing through the lunette ring enclosure, the locking pin comprises a lock connecting top element, a bottom coupling surface element, and a central shaft element; and

a rectangular blocking tube coupled to the top plate adjacent to the top notch extending upward from the top plate;

wherein the lock connecting top element engages a puck lock to retain the locking pin to the lunette ring lock between the through hole in the top plate and the through hole in the bottom plate.

2. The lunette ring lock according to claim **1**, wherein the lunette ring lock further comprises a blocking tube mounting angle coupled to one side of the rectangular blocking tube at a lower end and coupled to the top plate adjacent to the top notch.

3. The lunette ring lock according to claim 1, wherein the lunette ring lock further comprises

a pin head tube coupled to the bottom plate and centered around the through hole in the bottom plate to surround the bottom coupling surface element when the locking pin is installed; and

a puck lock holder coupled to the top plate and centered around the through hole in the top plate to surround a puck lock coupled to the locking pin when installed.

4. The lunette ring lock according to claim 1, wherein the front plate comprises a multi-panel enclosing plate of matching shape to a front edge of the top plate and the bottom plate.

5. The lunette ring lock according to claim 1, wherein the front plate comprises a circular enclosing plate of matching shape to a front edge of the top plate and the bottom plate.

6. The lunette ring lock according to claim 5, wherein the front plate, the top plate, and the bottom plate are welded together to form the lunette ring enclosure.

7. The lunette ring lock according to claim 1, wherein the lunette ring lock is made of galvanized steel.

8. The lunette ring lock according to claim 1, wherein the lunette ring lock is made of zinc-plated steel.

9. The lunette ring lock according to claim 1, wherein the pair of opposing sidewalls of the lunette ring enclosure extend beyond the top notch and the bottom notch to enclose a portion of the mounting bracket supporting the lunette ring.

10. The lunette ring lock according to claim 1, wherein the lunette ring lock further comprises a GPS locator communicatively connected to a communications network to provide a current position to a monitoring system.

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