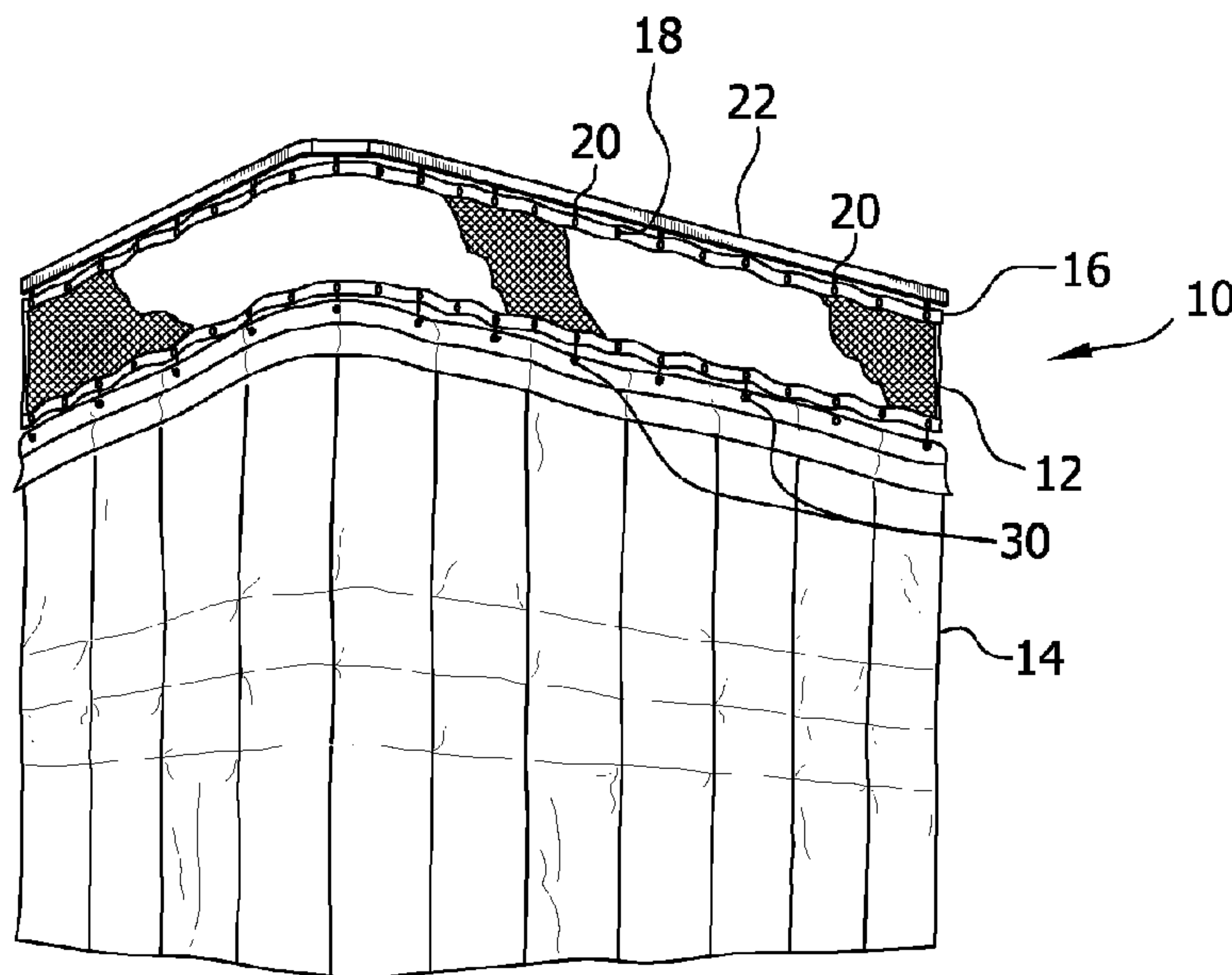




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(57) Abrégé/Abstract:

A curtain system is described which includes a curtain having a plurality of rod engaging members attached thereto, a plurality of rods each having a first end, and a curtain release mechanism attached to the rod at the first end thereof. The rod engaging members each includes a stem having a first end and a second end and a yoke extending from the first end of the stem. The curtain release mechanisms have a slot formed therein and extending therethrough and also include a user operable mechanism for retention of the yoke upon insertion into the slot. The user operable mechanism is further operable for substantially simultaneous release of the yokes and therefore the curtain from the curtain release mechanisms.



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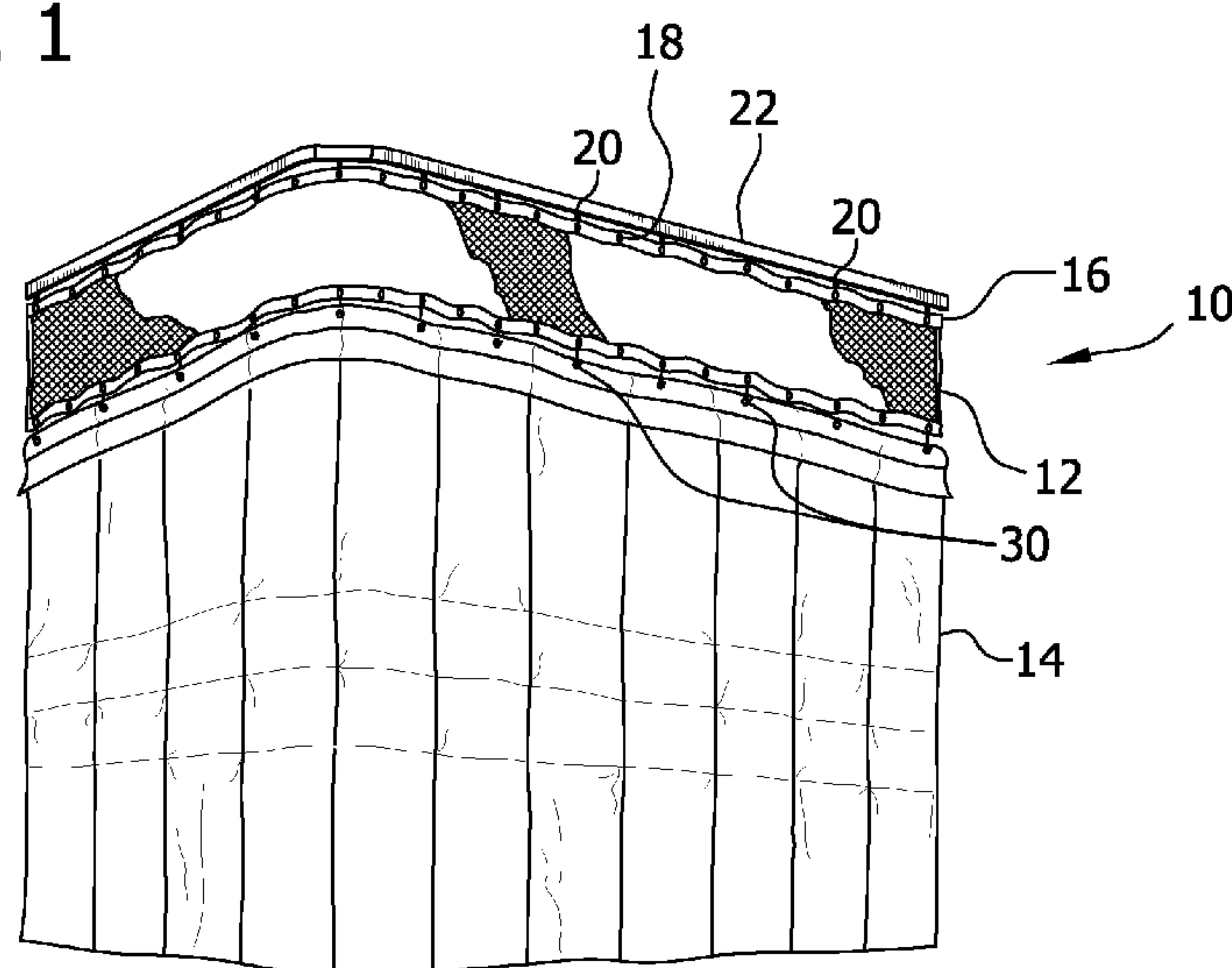
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FIG. 1



(57) Abstract: A curtain system is described which includes a curtain having a plurality of rod engaging members attached thereto, a plurality of rods each having a first end, and a curtain release mechanism attached to the rod at the first end thereof. The rod engaging members each includes a stem having a first end and a second end and a yoke extending from the first end of the stem. The curtain release mechanisms have a slot formed therein and extending therethrough and also include a user operable mechanism for retention of the yoke upon insertion into the slot. The user operable mechanism is further operable for substantially simultaneous release of the yokes and therefore the curtain from the curtain release mechanisms.

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## METHODS AND SYSTEMS FOR DEPLOYMENT OF CURTAINS

### BACKGROUND OF THE INVENTION

[0001] This invention relates generally to curtains, and more specifically, to methods and systems for deployment of curtains.

[0002] Curtains, and more specifically disposable or washable curtains, have long been used, in hospitals for example, to provide privacy, room division, and to a lesser extent, to cover storage areas. Generally, these curtains are suspended from a track on a ceiling for operation. For example, the curtains can be operated to substantially surround a patient's bed for privacy, and retracted at other times when privacy is not an issue.

[0003] Most of these curtains have two portions, namely, an upper mesh component and a lower opaque component. The upper mesh component is typically above eye level so the privacy function is not compromised. This mesh component is not necessarily required, however, the opaque portion cannot extend to the ceiling. Generally, the opaque portion cannot extend to the ceiling because if it did, it is possible that it would interfere with ceiling mounted sprinklers in the event of a fire because the water from the sprinklers cannot easily pass through the opaque material. Other reasons that mesh portions are generally incorporated are that they ensure that the opaque portion of the curtain does not interfere with lighting and/or air circulation.

[0004] In the hospital application, the curtains become soiled and can collect one or more of bacteria, molds, and viruses (collectively contaminants) during use. This can be a source of cross-contamination, for example, from one patient to one or more of another patient, a health care provider or other staff, and a visitor to the hospital. Unfortunately, hospital curtains are also typically difficult to change and/or wash. Generally, if the curtain is provided in a single, combined mesh portion/opaque portion embodiment, someone has to gain access to the ceiling level

of the room to change the curtain. This is difficult, labor intensive, and generally requires that a ladder of some type be used.

[0005] There are some known two piece curtains. Generally, the opaque portion is separated from the mesh portion and a new opaque portion is attached to the existing mesh portion. While this may address the need for a ladder, it is still labor intensive and does not address the possibility that the mesh portion retains one or more of the above described contaminants. With respect to the labor required for replacement, the person making the replacement with this type of curtain has to make a plurality of attachments between the opaque and mesh portions while holding the replacement opaque portion of the curtain, or has to operate a zipper or similar device that extends the entire length of the curtain. At least one of the problems with this type of arrangement is that the mesh portion or similar mechanism is generally not in a fixed position, adding to the difficulty of curtain replacement.

#### BRIEF DESCRIPTION OF THE INVENTION

[0006] In one aspect, a curtain system is provided. The curtain system includes a curtain having a plurality of rod engaging members attached thereto. The rod engaging members each include a stem having a first end and a second end, and further include a yoke extending from the first end of the stem. The curtain system further includes a plurality of rods each having a first end and a curtain release mechanism attached to each rod at the first end. The curtain release mechanisms have a slot formed therein and extending therethrough and each includes a user operable mechanism for retention of the yoke upon insertion into the slot. The user operable mechanism is further operable for substantially simultaneous release of yokes and therefore the curtain from the curtain release mechanisms.

[0007] In another aspect, a curtain suspension system is provided that includes a plurality of rods each having a first end and a second end, a plurality of curtain release mechanisms, and a plurality of ceiling track engaging components. Individual curtain release mechanisms are attached to a first end of a respective rod. Curtain release mechanisms include a slot formed therein and extending therethrough.

The curtain release mechanisms also include a user operable mechanism for retaining of a yoke upon insertion of the yoke into the slot. The user operable mechanism is further operable for release of the yoke. Individual ceiling track engaging components are attached to the second end of a respective rod.

[0008] In still another aspect, a curtain release mechanism is provided that includes a first body half and a second body half configured to attach to the first body half to form an enclosure that includes a slot for insertion of a yoke. the curtain release mechanism also includes a user operable mechanism substantially within the enclosure and accessible from outside the enclosure. The user operable mechanism is operable to retain the yoke upon insertion of the yoke into the slot of the curtain release mechanism. The user operable mechanism is further operable to cause a release of the yoke from the slot of the curtain release mechanism.

[0009] In yet another aspect, a curtain is provided that includes a curtain body and a plurality of rod engaging members attached to the curtain body. The rod engaging members each include a stem having a first end and a second end, a yoke extending from the first end of the stem, a portion of said yoke operable for engaging a curtain release mechanism, a first curtain engaging piece extending from the second end of the stem, and a second curtain engaging piece configured for snap fit engagement with the first curtain engaging piece with a portion of the curtain body therebetween.

[0010] In one aspect, a privacy curtain system is provided that includes a curtain having a plurality of curtain release mechanisms attached thereto, each including a rod engaging member extending therefrom. The system also includes a plurality of rods each having a lower hooking member configured to engage one of the rod engaging members. The curtain release mechanisms are operable to cause a portion of each rod engaging member to release from the respective curtain release mechanism.

[0011] In another aspect, a privacy curtain is provided that includes a curtain body and a plurality of curtain release mechanisms attached to the curtain

body. The curtain release mechanisms each include a tumbler and a rod engaging member attached to the curtain release mechanism. Operation of the tumbler causes a portion of the rod engaging member to disengage from the curtain release mechanism, causing the curtain body to be released from a structure.

[0012] In still another aspect, a privacy curtain system is provided that includes a curtain having a plurality of curtain release mechanisms attached thereto and a plurality of rods. The curtain release mechanisms each include a rod engaging member extending therefrom. The plurality of rods each includes a lower hooking member configured to engage one of the rod engaging members, an upper track engagement member configured for attachment to a ceiling mounted track system, and an elongated central member extending between the upper track engagement member and the lower hooking member. The curtain release mechanisms are operable to cause a portion of each respective rod engaging member to disengage from the curtain release mechanism.

[0013] In yet another aspect, a privacy curtain system is provided that includes a curtain comprising a plurality of curtain release mechanisms attached thereto each curtain release mechanism having a rod engaging member extending therefrom, and a plurality of rods each comprising a lower hooking member. Each lower hooking member is configured to engage one of the rod engaging members, and the curtain release mechanisms are operable to cause a portion of each rod engaging member to release from the respective curtain release mechanism.

[0014] A privacy curtain is also provided that includes a curtain body and a plurality of curtain release mechanisms attached to the curtain body. The curtain release mechanisms each include a tumbler and a rod engaging member attached to the curtain release mechanism. Operation of the tumbler causes a portion of the rod engaging member to disengage from the curtain release mechanism, causing the curtain body to be released from a structure.

[0015] In one aspect, a privacy curtain system is provided that includes a curtain having a plurality of curtain release mechanisms attached thereto, each curtain release mechanism having a rod engaging member extending therefrom, and a plurality of rods. Each rod includes a lower hooking member configured to engage one of the rod engaging members, an upper track engagement member configured for attachment to a ceiling mounted track system, and an elongated central member extending between the upper track engagement member and the lower hooking member. The curtain release mechanisms are operable to cause a portion of each respective rod engaging member to disengage from the curtain release mechanism.

[0016] In another aspect, a privacy curtain system is provided that includes a curtain having a plurality of rod engaging members extending therefrom, a curtain gathering cord slidably engaged with the curtain, and a plurality of rods each comprising a lower hooking member configured to engage one of the rod engaging members. The curtain gathering cord is operable to cause the rod engaging members to release from respective lower hooking members.

[0017] In still another aspect, a privacy curtain is provided that includes a curtain main portion, and a plurality of rod engaging members comprising a first end and a second end. The second ends are attached to the curtain main portion, and the first ends are releasably attached to the curtain main portion.

[0018] In yet another aspect, a system for the deployment of privacy curtains is provided that includes a track system, and a plurality of rods each having a lower hooking member configured to engage the privacy curtain, an upper track engagement member configured for attachment to the track system, an elongated central member extending from the upper track engagement member, and a lower nestable member. The lower nestable member is between the lower hooking member and the elongated central member. The lower

nestable member includes at least one magnet encased therein. The magnets are oriented such that when the plurality of rods are substantially adjacent one another for the changing of a privacy curtain, the magnets operate to maintain the substantially adjacent positioning.

[0019] In yet another aspect, a privacy curtain system is provided that includes a curtain comprising a plurality of rod engaging members extending therefrom, a curtain gathering cord slidably engaged with the curtain, and a plurality of rods. Each rod includes a lower hooking member configured to engage one of the rod engaging members, an upper track engagement member configured for attachment to a ceiling mounted track system, and an elongated central member extending between the upper track engagement member and the lower hooking member. The curtain gathering cord is operable to release the rod engaging members from respective lower hooking members.

#### BRIEF DESCRIPTION OF THE DRAWINGS

[0020] Figure 1 is an illustration of a known privacy curtain system.

[0021] Figure 2 is an illustration of a hanger assembly from which a privacy curtain is suspended.

[0022] Figure 3 is an illustration of one embodiment of a curtain system that incorporates a gathering cord for removal of the curtain from a plurality of rods.

[0023] Figures 4A – 4D illustrate a rod engaging member utilized to attach a curtain to a rod suspended from a ceiling track, along with operation of the rod engaging members.

[0024] Figure 5 illustrates operation of the ribbon loop and the binding cord with respect to the attachment of a curtain to a rod.

[0025] Figure 6 illustrates utilization of the gathering cord to release a curtain from a plurality of rods through operation of a plurality of rod engaging members.

[0026] Figure 7 is a schematic view of a curtain that incorporates integrally formed rod engaging members.

[0027] Figure 8 is a side view of one embodiment of a rod that may be utilized to hang a curtain from a ceiling mounted track system.

[0028] Figure 9 is a front view of the rod of Figure 8.

[0029] Figure 10 is a perspective view of several of the rods described with respect to Figures 8 and 9 in a substantially adjacent position.

[0030] Figure 11 is an exploded view of a curtain release mechanism.

[0031] Figures 12A and 12B are perspective views of a curtain using a key and the curtain release mechanism of Figure 11.

[0032] Figure 13 is a perspective view of several curtain portions that each include a curtain release mechanism and are folded together in preparation of being released by a key.

[0033] Figure 14 is a perspective view of an alternative embodiment of a hanger assembly from which a curtain can be suspended.

[0034] Figure 15 is an illustration of a ceiling track engaging component having a curtain rod extending therefrom.

[0035] Figure 16 is a side view of a curtain release mechanism attached to the rod illustrated in Figure 14.

[0036] Figure 17 is a side view of an alternative embodiment of a rod engaging member engaging the curtain release mechanism of Figure 16.

[0037] Figure 18 is an exploded view of the curtain release mechanism of Figure 16.

[0038] Figure 19 is a perspective view of several curtain portions that each include a rod engaging member extending therefrom, the rod engaging members engaging respective curtain release mechanisms, a key extending through the curtain release mechanisms in preparation of releasing the rod engaging members therefrom.

[0039] Figure 20 is an exploded view of a ceiling track engaging component that incorporates a linkage.

[0040] Figure 21 is a diagram that illustrates an embodiment of a curtain release mechanism useful in locations with lower ceilings

[0041] Figure 22 is a perspective view of another curtain installation and removal configuration.

[0042] Figure 23 is a front view of a user operable mechanism for attaching and releasing curtains.

[0043] Figure 24 is a detailed view of the user operable mechanism of Figure 23.

[0044] Figure 25 illustrates a track engaging assembly for attachment to a rod.

[0045] Figure 26 is an illustration of another embodiment of curtain release mechanism contemplated for utilization with a rod and a rod engaging member.

[0046] Figure 27 is a front view of certain components associated with the curtain release mechanism of Figure 26.

[0047] Figure 28 illustrates a curtain suspension system incorporating the components described with respect to Figures 22-25.

[0048] Figure 29 illustrates removal of a curtain from a curtain suspension system that incorporates the components described with respect to Figures 22-25.

#### DETAILED DESCRIPTION OF THE INVENTION

[0049] Figure 1 is a perspective view of a known privacy curtain 10. Curtain 10 includes an upper mesh portion 12 and a lower opaque portion 14 that is suspended from the upper mesh portion 12. The lower opaque portion 14 is removable from the upper mesh portion 12. As described above, the upper mesh portion is constructed in part from a mesh material to allow for lighting, air circulation, and the operation of fire sprinklers. The lower opaque portion is constructed from an opaque material to provide privacy when the curtain 10 is in an extended position. The curtain 10 is suspended from a track 20 attached to a ceiling 22 as is well known. In this example, the upper mesh portion 12 of curtain 10 and the lower opaque portion 14 include a series of mating fasteners 30. The mating fasteners 30 are provided to removably suspend the lower opaque portion 14 from the upper mesh portion 12. The upper mesh portion 12 is configured with reinforced holes 18 which are engaged by hooks (not shown) hanging from track 20.

[0050] As discussed above, conventional privacy curtains tend to become soiled and are prone to contamination with one or more bacteria, mold, and viruses. To address this issue, the lower opaque portion 14 may be disposable, and can be changed as often as necessary to address the issues noted above. Since the lower opaque portion 14 provides the privacy function, the upper mesh portion 12 is suspended near the ceiling and is, therefore, not in a position where it is less likely to present the cross-contamination risk associated with the lower opaque portion 14. Therefore, the upper mesh portion 12 need not be changed nearly as frequently as the lower opaque portion 14.

[0051] While the configuration of Figure 1 addresses many known problems, some still exist. One, it cannot be assured that the upper mesh portion 12 is free from the contamination described above. Two, while the fasteners 30 may be at a

comfortable work level, it is still difficult for personnel to attach a replacement lower opaque portion 14 to the upper mesh portion 12. This difficulty is due to the fact that the area of upper mesh portion 12 where the fasteners 30 are located is prone to movement as it is distant from the engagement of the upper mesh portion 12 with the track 20.

[0052] At least one other privacy curtain system incorporates a series of rods between the ceiling and the curtain. This system provides the lighting and fire sprinkler considerations mentioned above, while still addressing the contamination issue. Examples of these systems are shown in Figure 2.

[0053] Referring to Figure 2, a hanger assembly 50 is illustrated that is configured for the suspending of a curtain 52 similar to the lower opaque portion 14 shown in Figure 1. A plurality of rods 54 extend down from a track 60 that is attached to a ceiling 62. While the assembly of Figure 2 has several features, one feature that is common with the curtain system of Figure 1 is that a lower end 70 of the rods 54 is relatively free to move with respect to a user, as it can essentially pivot about its upper end 72. In addition, the rods 54, especially at the lower end 70 are free to move with respect to each other. This freedom of movement causes difficulty for the person removing an old curtain 52 and installing a new curtain 52 at the lower end.

[0054] Another issue with the system of Figure 2 is that curtain 52 has to be removed from each rod 54 individually, and a new curtain 52 has to be attached to each rod 54 individually as individual hooks 80, engaged with the lower end 70 of rods 54 are utilized to attach curtain 52 to rods 54. Generally, when a person replaces one of curtains 10 and 52, they have to gather up the curtain in their arms to control the bulk of the curtain while they detach the curtain from the rod or upper mesh portion. While it may never be possible to completely eliminate personnel contact with soiled and/or contaminated curtains, it is possible to reduce the amount of contact between the two as further explained herein.

[0055] The following descriptions, and accompanying figures, are related to embodiments that address some of the issues described above with respect to the removal of old curtains, and the subsequent attachment of new curtains.

[0056] More specifically, Figure 3 is an illustration of one embodiment of a curtain system 100. Curtain system 100 includes a curtain 102, and a plurality of rods 104 that extend from tracked hooks 106 which are located within a track 110 of the type that is attached to a ceiling (not shown). The tracked hooks 106 are capable of lateral movement within the track 110 for the purpose of opening and closing the curtain 102. When the curtain 102 is open, the rods 104 are in a position substantially adjacent one another, as further addressed below. This position may also be referred to as having the curtain 102 in a gathered position. When the curtain 102 is closed the rods 104 are moved from the substantially adjacent position to a configuration where they are substantially spread out along the length of the track 110. This position may also be referred to as having the curtain 102 in a deployed position. In one embodiment, a binding cord 112 extends between the rods 104 and is secured to each of the rods 104. As it is secured to each of the rods 104, binding cord 112 operates to dictate a maximum distance between the individual rods 104. As addressed in detail below, rod engaging members 120 are secured within the curtain 102 and are configured to engage a lower end 122 of the rods 104. The engagement between a rod engaging member 120 and a respective lower end 122 may be any type of mechanical configuration, several of which are described below.

[0057] In the illustrated embodiment, the curtain 102 is also configured with a curtain gathering cord 130. While curtain gathering cord 130 may be operative to gather the curtain 102, as further illustrated in the following figures, curtain gathering cord 130 is further operative to release the curtain 102 from the rods 104. In the illustrated embodiment, and in other embodiments described hereafter, the curtains are fabricated from either a disposable material or a material that may be reused after a cleaning process.

[0058] Figures 4A through 4D illustrate one embodiment of a rod engaging member 150 that can be utilized with a curtain of the type described with respect to Figure 3. The embodiment of rod engaging member 150 shown in Figures 4A-4D may sometimes be referred to as a looped ribbon. As illustrated in Figure 4A, the rod engaging member 150 is elongated and has a loop 152 formed in a first end 154, and a slot 156 therethrough formed near a second end 158. The rod engaging member 150 is fabricated from a material, and the loop 152 is sized so that when the rod engaging member 150 is bent into a substantially circular configuration, at least a portion of the first end 154 containing the loop 152 will pass through the slot 156 formed near the second end 158. As shown in Figure 4C, once a portion of the loop 152 is extending through slot 156, a gathering cord 160 can be passed through the loop 152, retaining a position of the loop 152 with respect to the slot 156. A completed configuration shown in Figure 4D as the engagement of the first end 154 with the second end 158 forms a hoop which can engage a rod as further described with respect to Figure 5. As further described, gathering cord 160 can be grasped and pulled by a user such that the cord is no longer within the loop 152, the loop is then free to move away from the slot 156. When a plurality of such rod engaging members 150 are deployed with a curtain, removal of the gathering cord 160 from the rod engaging members 150 will operate to release the curtain from the apparatus from which it hung. This operation is described in further detail herein. An optional end ring 162 may be attached to the gathering cord 160 to allow a user to more easily pull the gathering cord 160 through, and from, a curtain. As shown in subsequent figures, and as mentioned above, operation of the gathering cord 160 allows a user to easily remove a curtain from a plurality of the rods 104 described above with respect to Figure 3.

[0059] Figure 5 illustrates one of the rod engaging members 150 (ribbon loops) from Figure 4, where the second end 158 is attached to a curtain 170. The first end 154 passes through slot 156 and at least a portion of the surface of the curtain 170. Gathering cord 160 is secured within a channel 172 formed in the curtain material that is formed during the fabrication process associated with curtain 170.

The fabrication process may include attaching the second ends 158 of the rod engaging members 150 to the curtain material through, for example, a stitching process or through a heat activated attachment process. The channel 172 may be formed through the stitching process, the heat treatment process or through another process. In any event, when the curtain fabrication process is complete, the gathering cord 160 is slidably engaged with the curtain 170 and the gathering cord 160 passes through the loops 152 of the rod engaging members 150 to form the ribbon loops as shown in Figure 4D. Such a configuration allows the curtain 170 to be hung from a plurality of rods 104. After the utilization of curtain 170 is complete, and as can be seen in Figure 5, when the gathering cord 160 is pulled from engagement with the curtain 170, loop 152 will release from slot 156, and gravity will cause the curtain 170 and attached rod engaging members 150 to fall away from the lower ends 122 of a plurality of rods 104. In one embodiment, the gathering cord 160 may include a second end 164 that is utilized for gathering the curtain 170 when the gathering cord is operated. In one embodiment, the second end 164 is simply attached to the curtain material during the curtain fabrication process to enable this operation. This attachment is easily overcome to enable the removal of curtain 170 from the rods 104 as described.

[0060] Figure 6 provides further illustration utilizing an alternative embodiment of rod 190 and rod lower end 192. In Figure 6, pulling the end ring 162 of gathering cord 160 causes the curtain 170 to gather. Pulling further on the end ring 162, and thus gathering cord 160, causes the rod engaging members 150 to release the curtain 170 from the rods 190 as shown. The release from the curtain 170 happens as the gathering cord 160 is removed from engagement with the individual rod engaging members 150, causing the separation of loop 152 and slot 156 as shown in Figures 4A-4D and Figure 5. The benefit of such a configuration is that the curtain 170 is gathered and all of the interfaces between curtain 170 and rods 190 are released relatively close to simultaneously, and the curtain 170 can fall onto the floor or into a container. In one contemplated embodiment, packaging for the replacement curtain 170 includes a container for the disposal of the curtain 170 that is being replaced. The

person changing the curtain does not have to personally gather and hold the curtain 170 and therefore their exposure to germs and the like is thought to be reduced as they, at most, have to carefully remove the curtain 170 being replaced from the floor, rather than essentially hugging the entire curtain 170 as is currently done when removing a curtain 170.

[0061] In a practical application, the curtain 170 is provided in packaging that is operable to expose the rod engaging members 150 such that they can be engaged with the rods 190 prior to the exposure of a remainder of the curtain 170 from the packaging. In one embodiment, the curtain 170 is sterilized and the packaging maintains the sterilization until it is opened.

[0062] Figure 7 is an illustration of an alternative embodiment of a curtain 200 which incorporates integrally formed rod engaging members 202 in a one-piece configuration. In such a configuration, material is cut away from the curtain 200 in the fabrication process to form the rod engaging members 202. One example of such a fabrication process is a die cutting process. Rod engaging members 202 are elongated and each has a loop 204 formed in a first end 206, and a second end 208 that adjacent to the main portion 210 of the curtain 200. As curtains 200 and rod engaging members 202 are in a one-piece configuration, the rod engaging members 202 are fabricated from the same material as the remainder of the curtain 200. The first end 206, which includes loop 204, is sized so that when the rod engaging member 202 is bent into a substantially circular configuration, at least a portion of the first end 206 containing the loop 204 will pass through a slot 212, formed in the main portion 210 of the curtain, near an intersection with the second end 208. As illustrated, curtain 200 includes two end portions 220, which are folded over and attached to the main portion 210 of the curtain 200 to provide reinforcement for the sides 222 of the curtain 200.

[0063] Like the above described embodiment, curtain 200 may be utilized with a gathering cord (not shown) that can be passed through the loop 204, retaining a position of the loop 204 with respect to the slot 212. In a practical

application, the curtain 200 is provided in packaging that is operable to expose the rod engaging members 202 such that they can be engaged with the rods 104 prior to the exposure of a remainder of said curtain.

[0064] Figures 8 and 9 illustrate one embodiment of a rod 300 that may be utilized to hang the curtains 170 and 200 (shown in Figures 6 and 7 respectively) from a ceiling mounted track system. Specifically, rod 300 includes a lower hooking member 302 for engaging the rod engaging members 150 and 202, and elongated central member 304, and an upper track engagement member 306 that is utilized to attach the rod 300 to a ceiling mounted tracking system of the type previously described herein. The elongated central member 304 extends between the upper track engagement member 306 and the lower hooking member 302.

[0065] Rod 300 is configured to address the problems present in known curtain attachment systems by incorporating mechanisms that retain multiple rods in a substantially adjacent orientation for the removal of old curtains and attachment of new curtains. Specifically, and in the illustrated embodiment, an upper nestable member 310 is included between the upper track engagement member 306 and the elongated central member 304 and a lower nestable member 312 is included between the lower hooking member 302 and the elongated central member 304.

[0066] In one embodiment, both the upper nestable member 310 and the lower nestable member 312 incorporate a series of magnets 320, 322, 324, and 326 encased therein. The upper nestable member 310 is formed to include both a side wall indentation 330 in a first side wall 332 and a side wall protrusion 334 in a second side wall 336 that is opposite the first side wall 332. Likewise, the lower nestable member 312 is formed to include both a side wall indentation 340 in a first side wall 342 and a side wall protrusion 344 in a second side wall 346 that is opposite the first side wall 342. The configurations of the upper nestable member 310 and the lower nestable member 312 may be different than the embodiment illustrated in Figures 8 and 9, but all are common in that they each incorporate at least one magnet that is

oriented such that it helps to maintain multiple rods 300 in a position substantially adjacent one another when changing a curtain.

[0067] In addition, multiple configurations are possible for side wall protrusions and indentations. The configurations are common in that they provide simple keyed surfaces and a non-binding shape to help maintain the substantial adjacent positioning, and make the encased magnets that much more effective for maintaining the described substantially adjacent positioning for the rods 300.

[0068] A specific embodiment for lower hooking member 302 is illustrated in Figure 8. Specifically, a curtain engaging portion 350 of lower hooking member 302 is configured with a cross-section that is somewhat J-shaped. Extending from the side walls 342 and 346 is a semi-circular member 352 which terminates in a curtain retention member 354 that extends from the semi-circular member 352 at substantially a right angle. The result is a slot 360 formed between the curtain retention member 354 and the remainder of the lower hooking member 302. The rod engaging members associated with a curtain are passed through slot 360 for attachment of a curtain to the rods 300. In one embodiment, a barb 362 protrudes from the curtain engaging portion 350 towards the curtain retention member 354 further narrowing slot 360. Slot 360 opens to an enlarged opening 364 within which the rod engaging members are deployed upon passing through slot 360. The resulting configuration is such that a rod engaging member easily passes through slot 360 since the rod engaging member is fabricated from a flexible material. However, the barb 362 and the curtain retention member 354 are shaped such that slot 360 gradually narrows until such point as the slot 360 interfaces with the enlarged opening 364. This configuration operates to reduce a likelihood of a rod engaging member of a curtain from passing back through slot 360 from the enlarged opening 364.

[0069] Figure 10 is a perspective view of several rods 300 in the substantially adjacent position. Each of the rods 300 incorporates the features described with respect to Figures 8 and 9. In one aspect, curtain 200 operates to dictate a maximum distance between any two rods 300 when they are separated from

one another. In other words, when a user provides a force that overcomes the force provided by the encased magnets, such as would be applied by a user to deploy a curtain, the curtain 200 operates to constrain how far apart the rods may be positioned.

[0070] More importantly, however, incorporation of the various magnet embodiments described with respect to Figure 9 within the rods 300 provide a much needed help to a user when installing a new curtain. Specifically, and as shown in Figure 10, by maintaining the plurality of rods 300 substantially adjacent to one another, it is much easier for the user to place the individual rod engaging members (rod engaging members 202 are shown in Figure 10) onto the lower hooking members 302 of the rods 300. The ease is provided because the rods are not free to pivot with respect to one another and slide along a track with respect to one another as they are in certain known curtain configurations.

[0071] Figure 11 is an exploded view of an embodiment of a curtain release mechanism 400 for a curtain system. The curtain release mechanism 400 includes a front cover 402, a tumbler 404, an eye front 406, and a back cover 408. Tumbler 404 is configured to nest rotatably within eye front 406. Front cover 402 includes protrusions 410 that are configured to pass through holes 411 in both eye front 406 and back cover 408. The protrusions 410 are configured to engage the holes 411 formed in back cover 408 by a snap-fit configuration after passing through back cover 408, to fabricate the curtain release mechanism 400, with tumbler 404 still free to rotate with respect to the eye front 406.

[0072] Eye front 406 includes a rod engaging member in the form of a strap 412 extending therefrom which is used for hanging the curtain. Strap 412 includes a first end 413 attached to eye front 406 and a second end to which is attached a release mechanism engaging member 414. When the curtain release mechanism 400 is assembled, a gap 417 is formed between the front cover 402 and eye front 406. The release mechanism engaging member 414 and a portion of strap 412 pass through the gap 417 such that the release mechanism engaging member 414

can be secured to tumbler 404 by a notch 415 formed therein. As further described below, when tumbler 404 is rotated, a position of notch 415 is changed thereby releasing the release mechanism engaging member 414 from the curtain release mechanism 400. In alternative embodiments, the first end 413 of strap 412 is attached to the back cover 408 or front cover 402 instead of the eye front 406.

[0073] A key aperture 416 is formed when the front cover 402, tumbler 404, eye front 406, and back cover 408 are properly assembled. The key aperture 416 is formed by holes through the center of the front cover 402, tumbler 404, eye front 406, and back cover 408. The hole through the tumbler 404 is shaped differently than the holes in the front cover 402, eye front 406, and back cover 408. Because of the differently shaped hole in the tumbler 404, the curtain release device 400 is configured such that when a key (described below) is inserted and rotated in key aperture 416, only tumbler 404 is rotated, while the front cover 402, eye front 406, and back cover 408 do not rotate, enabling the retention and release of release mechanism engaging member 414, and therefore strap 412, described above.

[0074] Figures 12A and 12B demonstrate the use of a key 502 to release a curtain 500 from a hook 504, when the curtain 500 incorporates the curtain release mechanism 400. The curtain release mechanism 400 may be attached to the curtain material through, for example, a mechanical attachment process. In one embodiment, the curtain 500 is positioned between eye front 406 and back cover 408 when the curtain release mechanism 400 is assembled. When the curtain 500 is hanging from hook 504, as shown in Figure 12A, it is the strap 412 that is engaged by hook 504. To release the strap 412 from the hook 504, key 502 is inserted into the key aperture 416 of the curtain release mechanism 400 (shown in Figure 11). Then, as shown in Figure 12B, key 502 is rotated about its axis to rotate the tumbler 404 and cause release of the release mechanism engaging member 414 from the notch 415 in the tumbler 404. After release mechanism engaging member 414 is released, curtain 500 is free to fall from hook 504, due to the disengagement of strap 412 from hook 504.

[0075] Figure 13 is an illustration of a curtain 600 that incorporates multiple curtain release mechanisms 400. In operation, and similar to embodiments described above, sections of curtain 600 are able to be bunched together and simultaneously released via the operations described above. In the illustrated embodiment, the curtain 600 is gathered and key 502 is inserted through all the curtain release mechanisms 400 attached to the curtain 600. Turning of the key releases the individual release mechanism engaging members 414 substantially simultaneously. The result is that all straps 412 are free to disengage from hooks 504. The benefit of such a configuration is that the curtain 600 is gathered and all of the interfaces between the curtain sections and hooks 602 are released relatively simultaneously, and the curtain 600 can fall onto the floor or into a container.

[0076] Figure 14 is a perspective view of an alternative embodiment of a hanger assembly 700 from which a curtain can be suspended. Hanger assembly 700 may also sometimes be referred to as a curtain suspension system. Hanger assembly 700 includes a curtain rod 702, a ceiling track engaging component 704 configured for engagement with a first end 706 of rod 702, and a curtain release mechanism 708 configured for engagement with a second end 710 of rod 702. As will be explained with respect to the following figures, hanger assembly 700 differs from the assemblies described above in that a key is inserted through the curtain release mechanisms 708 to release a curtain rather than through a rod engaging member as in the embodiments described above. As is easily understood, to form an operable hanger assembly 700, a plurality of rods 702 and associated components are utilized. To that end, in one embodiment rods 702 are hollow and may include one or magnets 720 disposed near the bottom 722 thereof. As is described further, the presence of these magnets 720 is helpful in maintaining a substantially adjacent and parallel orientation for a plurality of rods 702 when a curtain is being removed from the rods 702 and associated curtain release mechanisms 708 or installed onto same.

[0077] Figure 15 is an illustration of a ceiling track engaging component 704 having a curtain rod 702 extending therefrom as mentioned above. As shown in Figure 15, ceiling track engaging component 704 includes at least two

rollers 732 that extend from an engaging component body 734 and engage (roll along) respective channels 736 within a ceiling track component 738. Rollers 732 are rotatable with respect to their attachment to engaging component body 734 to allow ceiling track engaging component 704 to move along the channels 736 of the ceiling track component 738. In the illustrated embodiment, axles 740 and 742 extend from the engaging component body 734 and are configured such that rollers 732 can attach thereto in a snap fit arrangement while still being rotatable with respect to the engaging component body 734.

[0078] Extending from engaging component body 734 such that it is positioned between the channels 736 is a rod suspending chain 750 that is attached to the engaging component body 734. At the bottom of chain 750 is a loop 752. As is well understood, loop 752 is rotatable with respect to the remainder of chain 750 and engaging component body 734. As shown in the figure, rod 702 includes two slots 760 formed therein that extend downward from the first end 706 of the rod 702. A sleeve 762 includes two matching slots 764 which extend for a distance in a vertical direction, then for an additional distance in the horizontal direction. Slots 764 are essentially configured so that a second chain 766 (sometimes referred to herein as a linkage) can be passed through the loop 752 and into the slots 760. To complete this subassembly, the sleeve 672 further engages the second chain 766 and the first end 706 of the rod 702. The sleeve 762 is maneuvered so that the chain 766 engages the vertical portion of the slots 764. The sleeve 762 can then be rotated so that the second chain 766 is positioned within the horizontal portion of the slots 764. The effect is a locking of the chain 766 in a particular position with respect to rod 702. Benefits of utilizing chain 766 are presented below. In operation, a user moving rod 702 effectively rolls ceiling track engaging component 704 along the channels 736 of the ceiling track component 738. At certain times, a curtain is attached to the rod as discussed extensively herein.

[0079] Figure 16 is a perspective view of the curtain release mechanism 708 attached to the second end 710 of rod 702. Curtain release mechanism 708 includes a first body half 770 and a second body half 772 that engage

one another in a snap fit arrangement to house a rotatable tumbler 774. A key 776 is utilized to rotate tumbler 774 to release a rod engaging member 800 (shown in Figure 17). In the illustrated embodiment, and as further described below, curtain release mechanism 708 includes two indicators that work somewhat in tandem. A tumbler position indicator 780 and a locking mechanism indicator 782 are shown in the illustrated embodiment and are further described below.

[0080] Figure 17 is a side view of an alternative embodiment of a rod engaging member 800 configured to engage the curtain release mechanism 708 of Figure 16. Rod engaging member 800 includes a release mechanism engaging member 802 extending from a first end 804 of a stem 806 which also has a second end 808 that is attached to a first curtain engaging piece 810. In one embodiment, release mechanism engaging member 802, stem 806, and first curtain engaging piece 810 are formed as a single item from injection molded plastic. In the illustrated embodiment, release mechanism engaging member 802 is substantially spherical, but other shapes are contemplated as long as the rotatable tumbler of the curtain release mechanism 708 is configured to engage such a shape. A second curtain engaging piece 820 is configured for snap fit engagement with first curtain engaging piece 810 with a portion of a curtain therebetween. The first curtain engaging piece 810 and the second curtain engaging piece 812 are both configured with a keyway 822 therethrough such that when press fit together, the key 776 (shown in Figure 16) may extend therethrough.

[0081] Generally, a curtain (not shown in Figure 17) is fabricated to include a plurality of the described rod engaging members 800. A user may insert the key 776 through the multiple keyways 822 of a bundled curtain to provide support when installing the multiple rod engaging members 800 into the corresponding curtain release mechanisms 708 (shown in Figure 16).

[0082] Figure 18 is an exploded view of the curtain release mechanism 708 of Figure 16 which illustrates in further detail the above mentioned rotatable tumbler 774. The rotatable tumbler 774 as described above includes a keyed

member 850 that is configured for rotation between the first body half 770 and the second body half 772 of the curtain release mechanism 708. The rotatable tumbler 774 includes the lock state indicator 780 described above. The keyed member 850 includes a flat surface 852 on the outside diameter 854 of the keyed portion 856 that engages a first end 860 of a flexible latch 862 that is held in place between the first body half 770 and the second body half 772 by laterally extending tabs 864 and 866 proximate a second end 868 of the flexible latch 862. The flexible latch includes a tang (not shown) proximate a mid-section 872 of the flexible latch 862.

[0083] A pivoting member 880 is also held in place between the first body half 770 and the second body half 772 by laterally extending posts 882 and 884 proximate a mid-section 886 of the pivoting member 880. A forked end 890 of the pivoting member 880 is configured to engage the release mechanism engaging member 802 and a tang engaging member 892 is configured to engage the tang in the flexible latch 862. The locking mechanism indicator 782 extends through a window formed in the first body half 770 and the second body half 772.

[0084] When the keyed member 850 is turned, the flat surface 852 changes position, causing the flexible latch 862 to flex, thereby releasing the tang from the tang engaging member 892. This release allows the pivoting member 880 to pivot so that the release mechanism engaging member 802 can fall away from the forked end 890 of the pivoting member 880, releasing the curtain. When a release mechanism engaging member 802 and corresponding stem 806 are then inserted into the curtain release mechanism 708, the release mechanism engaging member 802 will push against the tang engaging member 892 so that the pivoting member 880 pivots into a position where the tang engaging member 892 reengages the tang. This reengagement also causes the position of the forked end 890 to move to a position such that the release mechanism engaging member 802 is not able to pass through the forked end 890 of the pivoting member 880.

[0085] With respect to the indicators 780 and 782, indicator 780 is visible and generally indicates the tumbler 774 is locked and that a rod engaging

member 800 is being held by the tumbler 774. When the lock state indicator 780 is not visible and the locking mechanism indicator 782 is visible, it is generally an indication that the rod engaging member 800 has been released. For insertion, and subsequent locking in place of a replacement rod engaging member 800, the curtain release mechanism must be armed, which entails turning the tumbler 774 back to the original position, with the lock state indicator 780 again visible. The locking mechanism indicator 782 is also visible at this time. When a replacement rod engaging member 800 is inserted into an armed curtain release mechanism 708, the release mechanism engaging member 802 engages the flexible latch 862, causing the pivoting member 880 to rotate somewhat, and lock in place. Upon completion of this step, locking mechanism indicator 782 is retracted back into the curtain release mechanism, and is no longer visible.

[0086] Figure 19 is a perspective view of several curtain portions that each include a rod engaging member 800 extending therefrom, the rod engaging members 800 engaging respective curtain release mechanisms 708, a key 776 extending through the curtain release mechanisms 708 in preparation of releasing the rod engaging members 800 therefrom.

[0087] Figure 20 is an exploded view of an alternative embodiment of a ceiling track engaging component 900 which incorporates a linkage 902 that extends the width of the above described curtains. In one embodiment, ceiling track engaging component 900 and linkage 902 are configured to be utilized with, for example, ceiling track component 738 (shown in Figure 15) and rods 702. More specifically, the linkage 902, as is easily understood, engages each of the rods 702 of a curtain system to restrain individual rod 702 movement with respect to the other rods 702 of the curtain system. Specifically, the linkage 902 operates to dictate a maximum spacing between upper ends 706 of adjacent rods 702. Dictating a maximum spacing between upper ends 706 of adjacent rods 702 has been found useful in the operation of such a curtain system, for example, in the pulling of the curtain around a curve in the ceiling track, such as may be found in a hospital room having multiple beds.

[0088] Ceiling track engaging component 900 includes a truck 910 to which wheels 912 are rotatably attached and spaced to engage a ceiling track as described above. The truck 910 includes a centrally located bore 914 through which a portion of a linkage engaging component 920 can be inserted. Specifically, the linkage engaging component 920 includes a linkage engaging opening 922 formed at a first end of the linkage engaging component 920 and an enlarged end 924 opposite the linkage engaging opening 922.

[0089] The linkage engaging opening 922 portion of the linkage engaging component 920 can be inserted through the bore 914 and the enlarged end 924 engages the truck. As illustrated, the linkage 902 passes through the opening 922. In one embodiment, the enlarged end 924 is oblong in shape thereby preventing reducing possible rotation of the rod 702 to substantially less than 180 degrees as the enlarged end 924 will engage a portion of the truck 910.

[0090] A series of sleeves are utilized in the illustrated embodiment of ceiling track engaging component 900 to attach the linkage 902 and linking engaging component 922 to the first end 706 of the rod 702. A first sleeve 930 has slots 932 formed therein such that the linkage 902 can extend therethrough as the linking engaging component 922 is inserted into the first sleeve 930. A stem 934 forms a portion of the first sleeve 934 and is sized to fit snugly within a bore 936 associated with the hollow rod 702.

[0091] A second sleeve 940 is configured for insertion of the first sleeve 930, the linkages 902 and the linking engaging component 922. The second sleeve 940 has two matching slots 942 which extend for a distance in a vertical direction, then for an additional distance in the horizontal direction. Slots 942 are essentially configured so that the linkage 902 can be slid down the vertical portion of the slots 942. The second sleeve 940 can then be rotated so that the linkage 902 is positioned within the horizontal portion of the slots 942. The effect is a locking of the linkage 902 in a particular position, and retention of the linkage within the first sleeve 930 and second sleeve 940 combination. A lip (not shown) may be formed at a

bottom 944 of the second sleeve 940 which engages a ledge 946 which results from the narrowing of stem 934, Engagement between the lip and the ledge 946 operates to prevent the second sleeve 940 from being easily removed from the completed assembly.

[0092] The linkage 902 has been found to be helpful in other ways when incorporated across a plurality of rods such as rod 702. For example and in certain applications, the rods 702 may have a tendency to rotate, which has the potential for making alignment of the rods for the key driven curtain release described herein difficult. However, a user generally only has to provide a slight pull on the linkage to realign the rods 702 for the curtain removal and installation operation. Once the linkage is utilized to “realign” the rods 702, the magnets 720 (shown in Figures 14, 16 and 19) are of sufficient strength to maintain such alignment.

[0093] Figure 21 is a diagram that illustrates an alternative embodiment of a curtain release mechanism 1000 which may be useful in locations with lower ceilings, or in locations where ventilation and fire safety requirements described above may not apply. In one practical example, the embodiment illustrated in Figure 21 may be utilized in front of a closet or pantry.

[0094] The illustrated embodiment still provides an ability to replace curtains as described throughout this document, but does not incorporate the above described rods 702. Instead, the curtain release mechanisms 1000 each include a ceiling track engaging component 1002 extending directly therefrom. In the illustrated embodiment, the ceiling track engaging component 1002 is a “T” shaped component, the top 1004 of which is configured to extend across and slidably engage a ceiling track 1010. Embodiments that incorporate rollers as described above are also contemplated. One main difference between the embodiments described with respect to Figure 20 and the embodiments which incorporate the rods 702 is length. As a non limiting example, the ceiling track engaging component 1002 is generally less than six inches in length while the above described rods 702 are generally in

excess of twelve inches in length. Of course embodiments of each are contemplated that are outside of these general guidelines.

[0095] The ceiling track engaging component 1002 may also incorporate magnets 1020. With the exception of the length generally associated with the ceiling track engaging component 1002, operation of curtain release mechanism 100 is otherwise identical to that of the above described curtain release mechanism 708 (shown in Figure 18).

[0096] The above described embodiments address several of the known problems related to the installation and removal of curtains that are attached to a ceiling mechanism. In one aspect, the ease of removal and installation of the curtain is increased as compared to known products. In another aspect, the described operation with respect to installation and removal reduces the exposure of personnel to any contaminants that may be embedded within such curtains.

[0097] This written description uses examples to disclose the invention, including the best mode, and also to enable any person skilled in the art to practice the invention, including making and using any devices or systems and performing any incorporated methods. The patentable scope of the invention is defined by the claims, and may include other examples that occur to those skilled in the art. Such other examples are intended to be within the scope of the claims if they have structural elements that do not differ from the literal language of the claims, or if they include equivalent structural elements with insubstantial differences from the literal languages of the claims.

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CLAIMS:

1. A curtain system comprising:

a curtain comprising a plurality of rod engaging members attached thereto, said rod engaging members each comprising:

5 a stem comprising a first end and a second end; and

a yoke extending from said first end of said stem;

a plurality of rods each comprising a first end; and

a curtain release mechanism attached to each said rod at said first end thereof, said curtain release mechanisms comprising a slot formed therein and extending therethrough, said curtain release mechanisms each comprising a user operable mechanism for retention of  
10 said yoke upon insertion into said slot, said user operable mechanism further operable for substantially simultaneous release of said yokes and therefore said curtain from said curtain release mechanisms.

2. A curtain system according to Claim 1 wherein each of said plurality of curtain release mechanisms comprises a first body half, and a second body half, said user operable mechanism held therebetween and further comprising a key aperture therethrough, said first body half and said second body half each comprising a hole formed therein for alignment with said key aperture.  
15

3. A curtain system according to Claim 2 wherein:

20 said first body half comprises a bottom portion, a portion of said slot formed in said first body half bottom portion; and

said second body half comprises a bottom portion, a portion of said slot formed in said second body half bottom portion.

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4. A curtain system according to Claim 2 wherein each of said user operable mechanisms comprise:

a tumbler configured for rotation, and positioned between, said first body half and said second body half, said tumbler comprising said key aperture;

5 a spring latch maintained in position between said first body half and said second body half; and

a toggling member maintained in position between said first body half and said second body half and comprising a yoke engaging slot formed therein, said spring latch configured to engage said toggling member and maintain said toggling member in a first position when said tumbler is in a first position operating to retaining said yoke and disengage from said toggling member when said tumbler is in a second position operating to release said yoke.

5. A curtain system according to Claim 4 wherein when said toggling member is in the first position, said yoke engaging slot is substantially perpendicular with a slot formed in said first body half and said second body half for retention of said yoke by said curtain release mechanism.

6. A curtain system according to Claim 4 wherein said key aperture is formed in said tumbler, said key aperture aligned with said holes formed in said first body half and said second body half.

20 7. A curtain system according to Claim 1 wherein said yoke comprises:

a U-shaped member; and

a cylindrical member extending across an opening associated with said U-shaped member, said cylindrical member configured to engage said user operable mechanism.

8. A curtain system according to Claim 1 wherein said rod engaging members  
25 each comprise:

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a first curtain engaging piece extending from said second end of said stem; and

a second curtain engaging piece configured for snap fit engagement with said first curtain engaging piece with a portion of said curtain therebetween.

9. A curtain system according to Claim 1 wherein said plurality of rods each  
5 comprise a second end, said curtain system further comprising a track engaging assembly attached to said second end of said rods.

10. A curtain system according to Claim 9 wherein said track engaging assembly comprises:

10 a truck configured to movably engage a ceiling mounted track device, said truck comprising a bore therethrough configured for substantially coaxial alignment with a respective said rod; and

a swiveling member comprising an enlarged end and a rod engagement end, said swiveling member operable to maintain an engagement between said truck and the respective said rod.

15 11. A curtain system according to Claim 10 wherein to maintain the engagement between said truck and the respective said rod, said rod engagement end configured to pass through said bore in said truck and attach to the respective said rod, said enlarged end engaging a perimeter defined by said bore.

20 12. A curtain system according to Claim 10 wherein said rod engagement end of said swiveling member comprises a rod engagement fork further comprising an open end, said open end of said rod engagement fork operable for insertion into a corresponding bore formed in said second end of said rod, said rod engagement fork further operable for engagement with said second end of said rod to maintain a position of said swiveling member with respect to said rod.

25 13. A curtain system according to Claim 12 wherein said rod engagement fork further comprises:

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a closed end between said open end and said enlarged end; and

a slot extending from said closed end towards said enlarged end, said slot configured to engage a chain that extends between the plurality of said rods, engagement between said swiveling member and a respective said rod operable to main a placement of the chain.

14. A curtain system according to Claim 10 wherein said truck comprises at least one of:

a plurality of wheels rotatably affixed to a main body of said truck, said wheels operable to roll within a ceiling mounted track; and

10 a plurality of appendages extending from the main body of said truck, said appendages operable for slidable engagement with the ceiling mounted track.

15. A curtain system according to Claim 1 wherein said curtain release mechanism comprises a first body half and a second body half enclosing at least a portion of said user operable mechanism, said user operable mechanism further comprising:

15 an elongated actuator extending through said first body half and said second body half, said elongated actuator comprising a push button end, a push button engaging end, and a conical member disposed therebetween;

a return spring maintained in a rotatable position between said first body half and said second body half, said return spring comprising a lever disposed thereon, said lever positioned for sliding engagement with said conical member; and

a toggling member maintained in a rotatable position between said first body half and said second body half and comprising a yoke engaging slot formed therein, said return spring mechanically engaged with said toggling member to maintain said toggling member in a first position to retain said yoke when said elongated actuator is in a first position, and allow said toggling member to rotate thereby also allowing said yoke to disengage from said toggling member when said elongated actuator is in a second position.

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16. A curtain system according to Claim 15 wherein moving the elongated actuator from said first position to said second position causes movement of said conical member in a lateral direction, engagement between said conical member and said lever thereby causing said return spring to rotate from a first position to a second position, said first position of said return spring preventing rotation of said toggling member thereby retaining said yoke engaged therewith, said second position of said return spring allowing rotation of said toggling member, and subsequent disengagement of said yoke engaged therewith.

17. A curtain system according to Claim 16 wherein a pressure applied to said push button is operable to move said elongated actuator from the first position to the second position, said curtain release mechanism comprising at least one spring component which operates to cause said elongated actuator and said return spring to return to their respective first position when pressure is released from said push button.

18. A curtain system according to Claim 17 wherein said at least one spring component comprises an appendage formed in at least one of said first body half and said second body half, said appendage engaged by said return spring when said return spring is moved from the first position to the second position, said return spring comprising a material which causes said return spring to tend to return to the first position in the absence of an external force other than that applied by said appendage.

19. A curtain system according to Claim 15 wherein said push button engaging end is configured to engage the push button of an adjacent curtain release mechanism, to allow substantially simultaneous release of multiple rod engaging members from respective adjacent curtain release mechanisms.

20. A curtain system according to Claim 1 wherein said curtain release mechanism comprises a magnet retained therein, said magnet operable to maintain said rods and said curtain release mechanisms in a substantially adjacent orientation when attaching or removing said rod engaging members to or from said curtain release mechanisms.

21. A curtain suspension system comprising:

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a plurality of rods each comprising a first end and a second end;

a plurality of curtain release mechanisms, individual curtain release mechanisms attached to said first end of a respective said rod, said curtain release mechanisms comprising a slot formed therein and extending therethrough, said curtain release mechanisms  
5 each comprising a user operable mechanism for retention of a yoke upon insertion of the yoke into said slot, said user operable mechanism further operable for release of the yoke; and

a plurality of ceiling track engaging components, individual ceiling track engaging components attached to said second end of a respective said rod.

22. A curtain suspension system according to Claim 21 wherein said user operable  
10 mechanisms each comprise a key aperture therethrough, and wherein said curtain release mechanisms each comprise:

a first body half comprising a bottom portion, a portion of said slot formed in said first body half bottom portion, said first body half further comprising a hole formed therein operable for alignment with said key aperture; and

15 a second body half comprising a bottom portion, a portion of said slot formed in said second body half bottom portion, said second body half further comprising a hole formed therein operable for alignment with said key aperture, said user operable mechanism maintained between said first body half and said second body half.

23. A curtain suspension system according to Claim 22 wherein said user operable  
20 mechanisms each comprise:

a tumbler comprising said key aperture, said tumbler configured for rotation between said first body half and said second body half;

a spring latch maintained in position between said first body half and said second body half; and

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a toggling member maintained in position between said first body half and said second body half and comprising a yoke engaging slot formed therein, said spring latch configured to engage said toggling member and maintain said toggling member in a first position when said tumbler is in a first position operating to retain said yoke and disengage  
 5 from said toggling member when said tumbler is in a second position operating to release the yoke.

24. A curtain suspension system according to Claim 23 wherein when said toggling member is in the first position, said yoke engaging slot is substantially perpendicular with said slot formed in said first body half and said second body half for retention of the  
 10 yoke by said curtain release mechanism.

25. A curtain suspension system according to Claim 21 wherein said ceiling track engaging components each comprise:

a truck configured to movably engage a ceiling mounted track device, said truck comprising a bore therethrough configured for substantially coaxial alignment with a  
 15 respective said rod; and

a swiveling member comprising an enlarged end and a rod engagement end, said swiveling member operable to maintain a rotatable engagement between said truck and the respective said rod.

26. A curtain suspension system according to Claim 25 wherein to maintain the  
 20 engagement between said truck and the respective said rod, said rod engagement end is configured to pass through said bore in said truck and then attach to the respective said rod, said enlarged end engaging a perimeter defined by said bore in said truck.

27. A curtain suspension system according to Claim 25 wherein said rod engagement end of said swiveling member comprises a rod engagement fork further  
 25 comprising an open end, said open end of said rod engagement fork operable for insertion into a corresponding bore formed in said second end of said rod, said rod engagement fork further

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operable for engagement with said second end of said rod to maintain a position of said swiveling member with respect to said rod.

28. A curtain suspension system according to Claim 25 further comprising a chain interconnecting said ceiling track engaging components, said swiveling member comprising a  
5 chain engaging interface.

29. A curtain suspension system according to Claim 27 wherein said rod engagement fork further comprises a closed end between said open end and said enlarged end, said chain engaging interface comprising a slot extending from said closed end towards said enlarged end, engagement between said swiveling members and respective said rods operable  
10 to main a placement of said chain.

30. A curtain suspension system according to Claim 25 wherein said truck comprises at least one of:

a plurality of wheels rotatably affixed to a main body of said truck, said wheels operable to roll within a ceiling mounted track; and

15 a plurality of appendages extending from the main body of said truck, said appendages operable for slidable engagement with the ceiling mounted track.

31. A curtain suspension system according to Claim 21 wherein said curtain release mechanisms each comprise a first body half and a second body half enclosing at least a portion of said user operable mechanism, said user operable mechanism further comprising:

20 an elongated actuator extending through said first body half and said second body half, said elongated actuator comprising a push button end, a push button engaging end, and a conical member disposed therebetween;

a return spring maintained in a rotatable position between said first body half and said second body half, said return spring comprising a lever disposed thereon, said lever  
25 positioned for sliding engagement with said conical member; and

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a toggling member maintained in a rotatable position between said first body half and said second body half and comprising a yoke engaging slot formed therein, said return spring mechanically engaged with said toggling member to maintain said toggling member in a first position to retain the yoke when said elongated actuator is in a first position,  
 5 and allow said toggling member to rotate thereby also allowing the yoke to disengage from said toggling member when said elongated actuator is in a second position.

32. A curtain suspension system according to Claim 31 wherein moving the elongated actuator from said first position to said second position causes movement of said conical member in a lateral direction, engagement between said conical member and said  
 10 lever thereby causing said return spring to rotate from a first position to a second position, said first position of said return spring preventing rotation of said toggling member thereby retaining said yoke engaged therewith, said second position of said return spring allowing rotation of said toggling member, and subsequent disengagement of said yoke engaged therewith.

15 33. A curtain suspension system according to Claim 32 wherein a pressure applied to said push button is operable to move said elongated actuator from the first position to the second position, said curtain release mechanism comprising at least one spring component which operates to cause said elongated actuator and said return spring to return to their respective first position when pressure is released from said push button.

20 34. A curtain suspension system according to Claim 33 wherein said at least one spring component comprises an appendage formed in at least one of said first body half and said second body half, said appendage engaged by said return spring when said return spring is moved from the first position to the second position, said return spring comprising a material which causes said return spring to tend to return to the first position in the absence of  
 25 an external force maintaining the return spring against said appendage.

35. A curtain suspension system according to Claim 31 wherein said push button engaging end is configured to engage the push button of an adjacent said curtain release

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mechanism, to allow substantially simultaneous release of multiple rod engaging members from respective adjacent curtain release mechanisms.

36. A curtain suspension system according to Claim 21 further comprising a chain interconnecting said ceiling track engaging components, said chain extending across said plurality of rods and attached to said rods proximate said second end, said chain operable, when said rods are proximate one another, to maintain an alignment between adjacent said rods such that said curtain release mechanisms are aligned for ease in releasing rod engaging members therefrom, and for ease in insertion of rod engaging members therein.

37. A curtain suspensions system according to Claim 21 wherein said curtain release mechanism comprises a magnet retained therein, said magnet operable to maintain said rods and said curtain release mechanisms in a substantially adjacent orientation when attaching or removing rod engaging members to or from said curtain release mechanisms.

38. A curtain release mechanism comprising:

a first body half;

a second body half configured to attach to said first body half to form an enclosure that includes a slot for insertion of a yoke; and

a user operable mechanism substantially within the enclosure and accessible from outside the enclosure, said user operable mechanism operable to retain the yoke upon insertion of the yoke into the slot of said curtain release mechanism, said user operable mechanism further operable to cause a release of the yoke from the slot of said curtain release mechanism.

39. A curtain system comprising:

a curtain comprising a plurality of rod engaging members attached thereto; and

a plurality of rods each comprising a curtain release mechanism attached at an end thereof, said rod engaging members configured to engage respective curtain release

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mechanisms, said curtain release mechanisms each comprising a user operable mechanism for retention of and subsequent substantially simultaneous release of said rod engaging members from said curtain release mechanisms.

40. A curtain system according to Claim 39 further comprising a key, said key  
5 configured to engage said user operable mechanism, operation of said key with said curtain release mechanisms operable to cause respective said rod engaging members to disengage from respective said curtain release mechanisms.

41. A curtain system according to Claim 39 wherein:  
  
each of said plurality of curtain release mechanisms comprises a first body  
10 half, a second body half, and said user operable mechanism held therebetween and further comprising a key aperture therethrough; and

each of said plurality of rod engaging members comprises a release mechanism  
engaging member, said user operable mechanism in a first position operating said curtain  
release mechanism to secure said release mechanism engaging member within said curtain  
15 release mechanism, and said user operable mechanism in a second position operating said curtain release mechanism to release said release mechanism engaging member from said curtain release mechanism.

42. A curtain system according to Claim 41 wherein each of said user operable mechanisms comprise:

20 a keyed tumbler configured for rotation, and positioned between, said first body half and said second body half;

a flexible latch maintained in position between said first body half and said  
second body half; and

a pivoting member maintained in position between said first body half and said  
25 second body half, rotation of said keyed tumbler operable in a first position to flex said flexible latch such that said pivoting member is free to pivot, and operable in a second

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position to release said flexible latch such that it maintains a position of said pivoting member.

43. A curtain system according to Claim 42 wherein said pivoting member comprises a forked end, said forked end configured to engage said release mechanism  
5 engaging member in the second position.

44. A curtain system according to Claim 41 wherein said first body half and said second body half are configured for assembly utilizing a snap-fit configuration.

45. A curtain system according to Claim 39 wherein said rod engaging members each comprise:

10 a stem comprising a first end and a second end;

a release mechanism engaging member extending from said first end of said stem;

a first curtain engaging piece extending from said second end of said stem; and

15 a second curtain engaging piece configured for snap fit engagement with said first curtain engaging piece with a portion of said curtain therebetween.

46. A curtain system according to Claim 45 further comprising a key, and wherein said first curtain engaging piece and said second curtain engaging piece are configured with a keyway therethrough such that when press fit together, said key may be inserted through the keyway.

20 47. A curtain system according to Claim 39 wherein said curtain is provided in a package.

48. A curtain system according to Claim 39 wherein said curtain is provided in a package, said package operable to expose said rod engaging members such that they can be

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engaged with respective said curtain release mechanisms prior to the exposure of a remainder of said curtain.

49. A curtain system according to Claim 39 wherein said plurality of rods each comprises a ceiling track engaging component at an opposite end thereof.

5 50. A curtain system according to Claim 49 wherein said ceiling track engaging component comprises:

a ceiling track engagement truck;

a plurality of rollers rotatably attached to said ceiling track engagement truck;

10 a linkage engaging component configured for at least a limited rotatable engagement with said ceiling track engagement truck; and

at least one sleeve operable to attach a linkage and said linking engaging component to a first end of a said rod.

51. A curtain system according to Claim 50 wherein said at least one sleeve comprises:

15 a first sleeve comprising slots formed therein for engagement of the linkage and a stem configured for engagement with a bore in said rod; and

20 a second sleeve comprising two matching slots which extend for a distance in a vertical direction, then for an additional distance in a horizontal direction for engagement of the linkage, said second sleeve rotatable with respect to said first sleeve so that the linkage can be positioned within a horizontal portion of said slots.

52. A curtain system according to Claim 39 wherein said plurality of rods are hollow and comprise at least one magnet therein, said at least one magnet proximate said curtain release mechanism.

53. A curtain system comprising:

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a curtain comprising a plurality of rod engaging members attached thereto;

a plurality of rods each comprising:

an elongated central member comprising a first end and a second end;

an attachment device attached to said first end; and

5 a curtain release mechanism attached to said second end, said rod engaging members configured to engage respective curtain release mechanisms, said curtain release mechanism comprising a user operable mechanism for retention of and subsequent substantially simultaneous release of said rod engaging members from said curtain release mechanisms; and

10 a ceiling track engaging component configured for engagement with said attachment device.

54. A curtain system according to Claim 53 wherein said ceiling track engaging component comprises at least two rollers configured to engage a ceiling mounted track component.

15 55. A curtain system according to Claim 53 further comprising a key, said key configured to engage said plurality of curtain release mechanisms, operation of said key and said curtain release mechanisms operable to cause each said rod engaging member to disengage from the respective said curtain release mechanism.

56. A curtain system according to Claim 53 wherein:

20 each of said plurality of curtain release mechanisms comprises a first body half, a second body half, said user operable mechanism held therebetween and further comprising a key aperture therethrough; and

each of said plurality of rod engaging members comprises a release mechanism engaging member, said user operable mechanism in a first position operating said curtain

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release mechanism to secure said release mechanism engaging member within said curtain release mechanism, and said user operable mechanism in a second position operating said curtain release mechanism to release said release mechanism engaging member from said curtain release mechanism.

5 57. A curtain system according to Claim 56 wherein each of said user operable mechanisms comprise:

a keyed tumbler configured for rotation, and positioned between, said first body half and said second body half;

10 a flexible latch maintained in position between said first body half and said second body half; and

a pivoting member maintained in position between said first body half and said second body half, rotation of said keyed tumbler operable in a first position to flex said flexible latch such that said pivoting member is free to pivot, and operable in a second position to release said flexible latch such that it maintains a position of said pivoting member.

58. A curtain system according to Claim 57 wherein said pivoting member comprises a forked end, said forked end configured to engage said release mechanism engaging member in the second position.

59. A curtain system according to Claim 53 wherein said rod engaging members  
20 each comprise:

a stem comprising a first end and a second end;

a release mechanism engaging member extending from said first end of said stem;

a first curtain engaging piece extending from said second end of said stem; and

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a second curtain engaging piece configured for snap fit engagement with said first curtain engaging piece with a portion of said curtain therebetween.

60. A curtain system according to Claim 59 wherein said first curtain engaging piece and said second curtain engaging piece are configured with a keyway therethrough  
5 when press fit together.

61. A curtain system according to Claim 59 wherein said plurality of rods are hollow and comprise at least one magnet therein, proximate said curtain release mechanism.

62. A curtain suspension system comprising:

a plurality of rods each comprising a first end and a second end;

10 a curtain release mechanism attached at said first end of each of said rods, said curtain release mechanism comprising a user operable mechanism for retention of and subsequent substantially simultaneous release of rod engaging members from said curtain release mechanisms;

a ceiling track engaging component at said second end of each of said rods;

15 and

a linkage extending across said plurality of rods and attached to said rods proximate said second end, said linkage operable, when said rods are proximate one another, to maintain an alignment between adjacent said rods such that said curtain release mechanisms are aligned for ease in inserting a key therethrough.

20 63. A curtain suspension system according to Claim 62 wherein said linkage is operable to restrain movement of an individual said rod with respect to adjacent said rods of said curtain suspension system by dictating a maximum spacing between said second ends of adjacent said rods.

64. A curtain suspension system according to Claim 62 wherein said ceiling track  
25 engaging component comprises:

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a ceiling track engagement truck comprising a bore therethrough; and

a linkage engaging component configured for attachment to said second end of said rod, said linkage engaging component comprising:

a linkage engaging opening configured for insertion through said bore; and

5 an enlarged end configured to rotatably engage said ceiling track engagement truck.

65. A curtain suspension system according to Claim 64 wherein said enlarged end comprises an oblong shape, said oblong shape operable to limit a rotation of said linkage engaging component and therefore said rod due to engagement between said enlarged end and  
10 a portion of said ceiling track engagement truck.

66. A curtain release mechanism comprising:

a ceiling track engaging component; and

a user operable mechanism extending from said ceiling track engaging component, said user operable mechanism for retention of and subsequent release of a rod  
15 engaging member from said curtain release mechanism.

67. A curtain release mechanism according to Claim 66 wherein said user operable mechanism comprises:

a first body half;

a second body half;

20 a keyed tumbler configured for rotation, and positioned between, said first body half and said second body half;

a flexible latch maintained in position between said first body half and said second body half; and

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a pivoting member maintained in position between said first body half and said second body half, rotation of said keyed tumbler operable in a first position to flex said flexible latch such that said pivoting member is free to pivot, and operable in a second position to release said flexible latch such that it maintains a position of said pivoting

5 member.

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FIG. 1

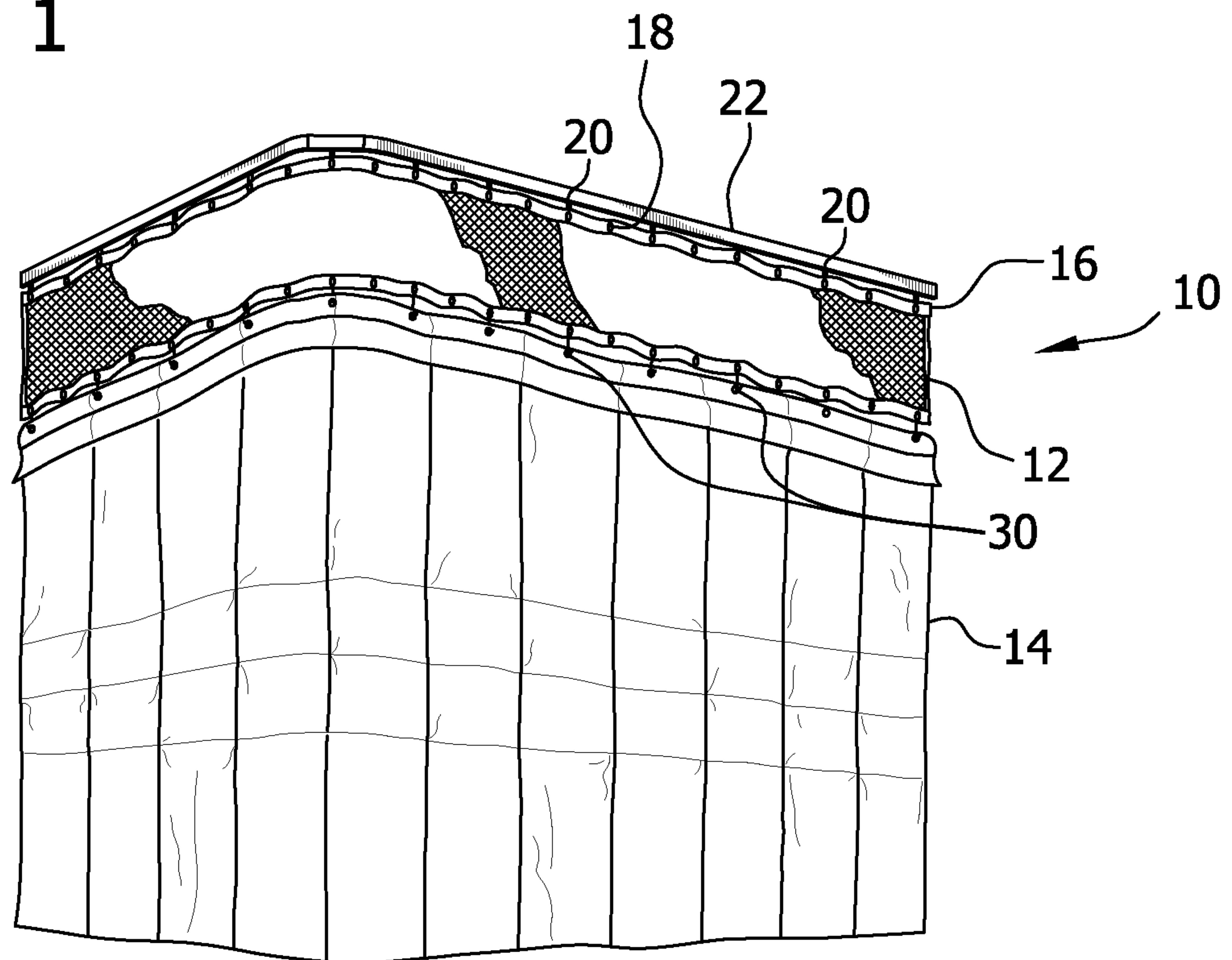
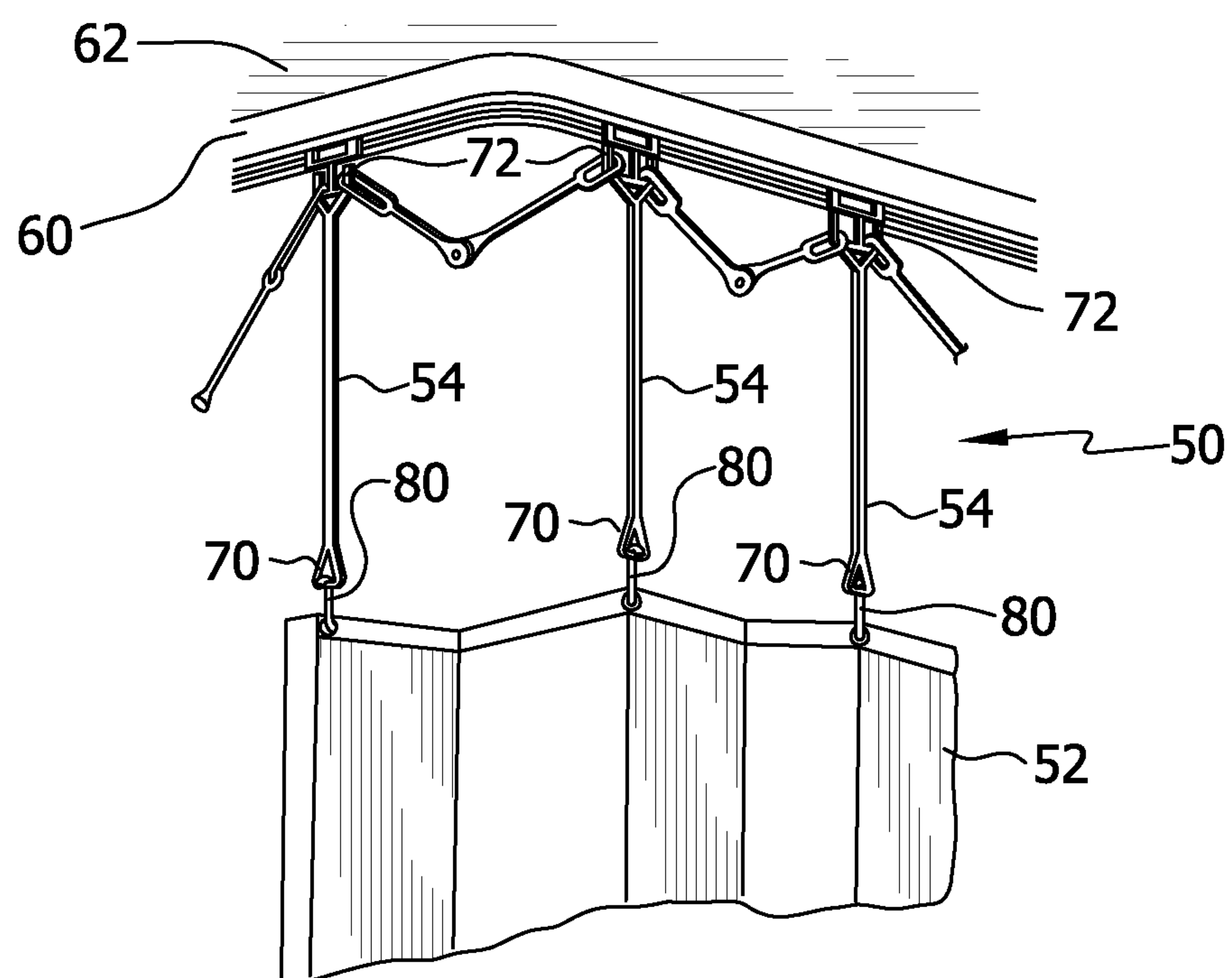
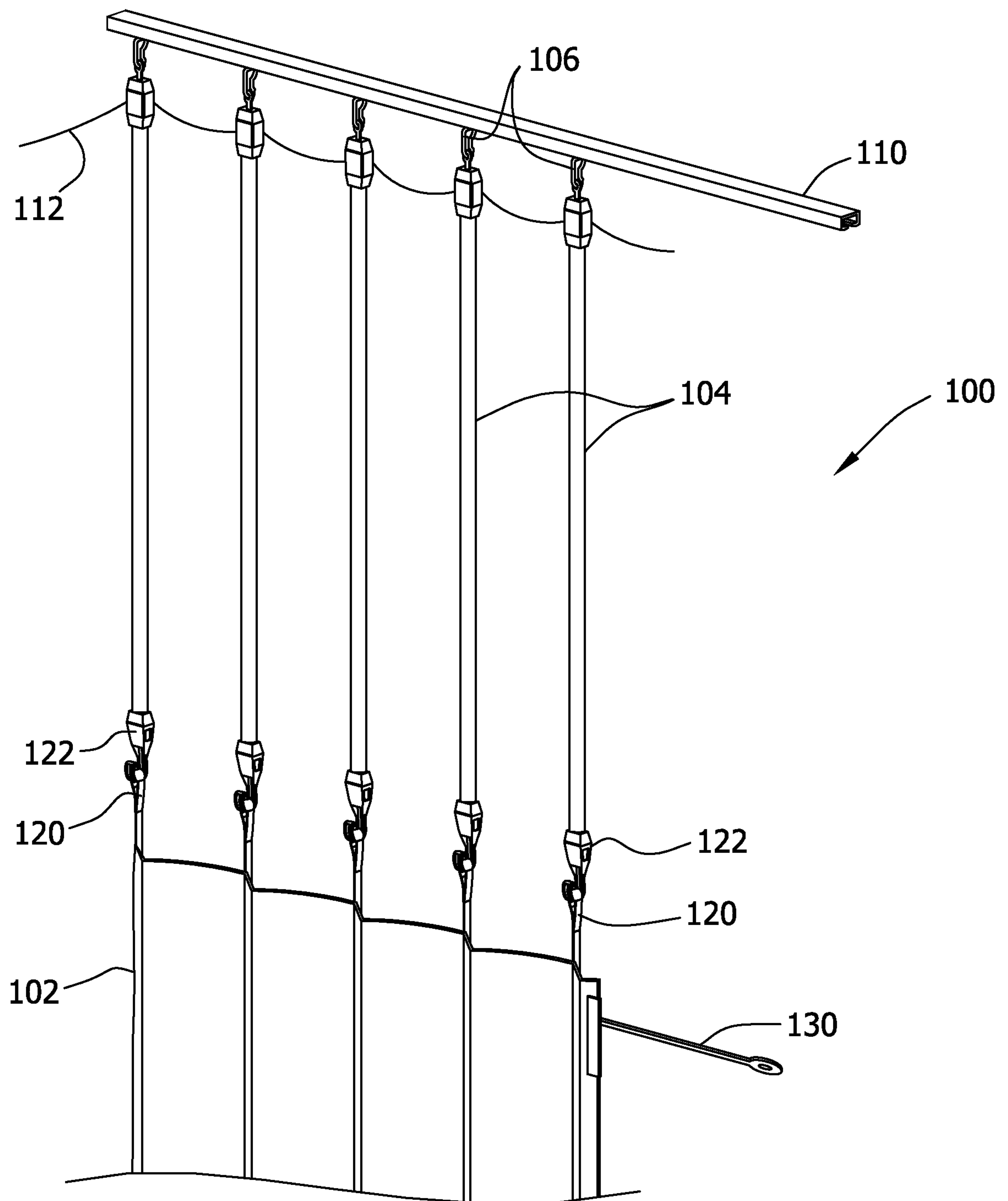


FIG. 2



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FIG. 3



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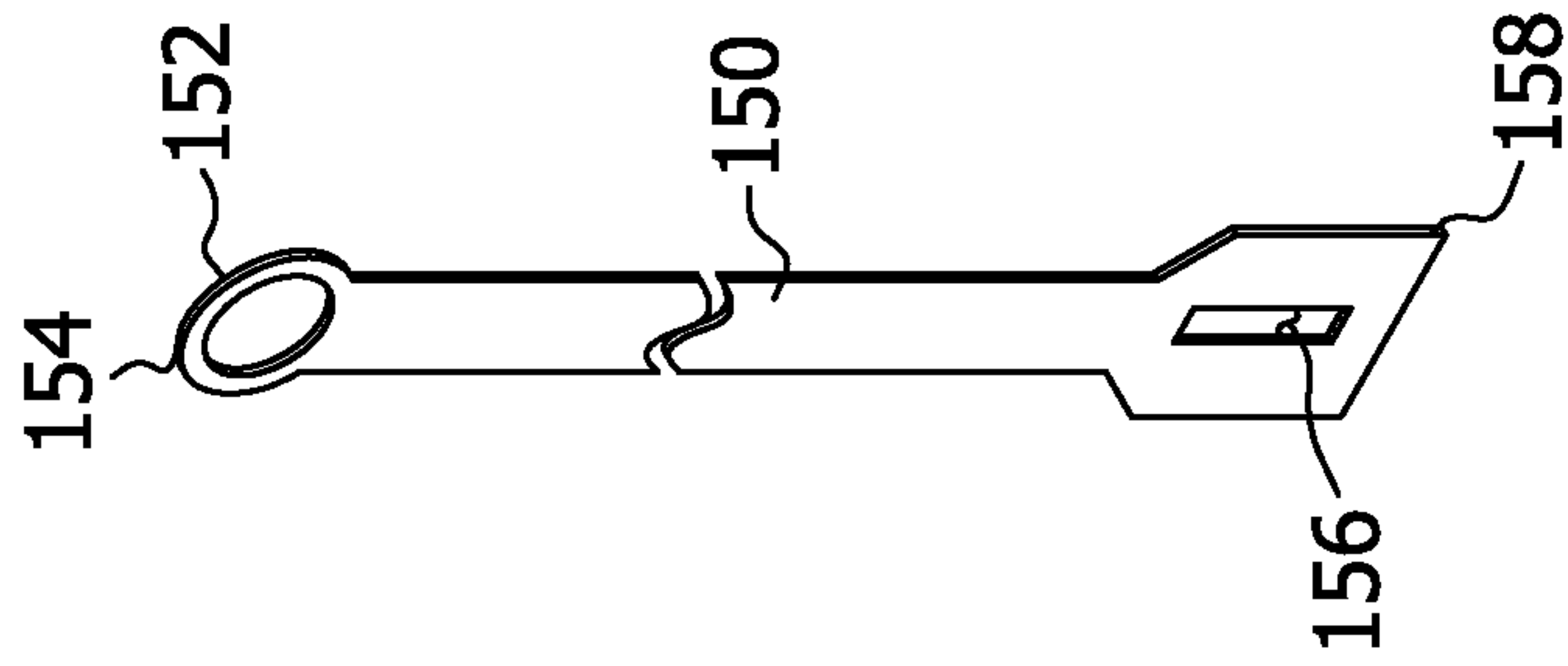


FIG. 4A

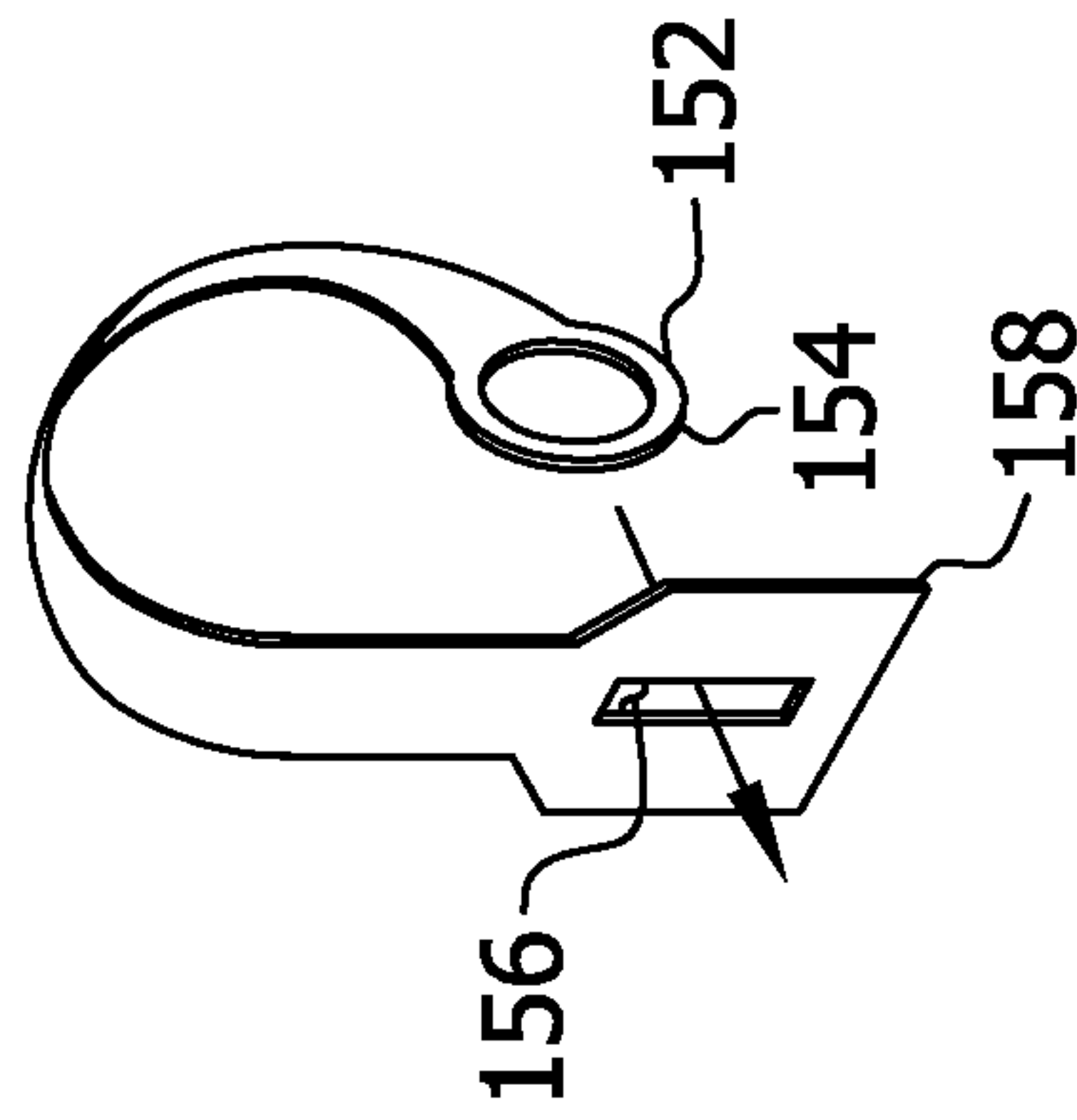


FIG. 4B

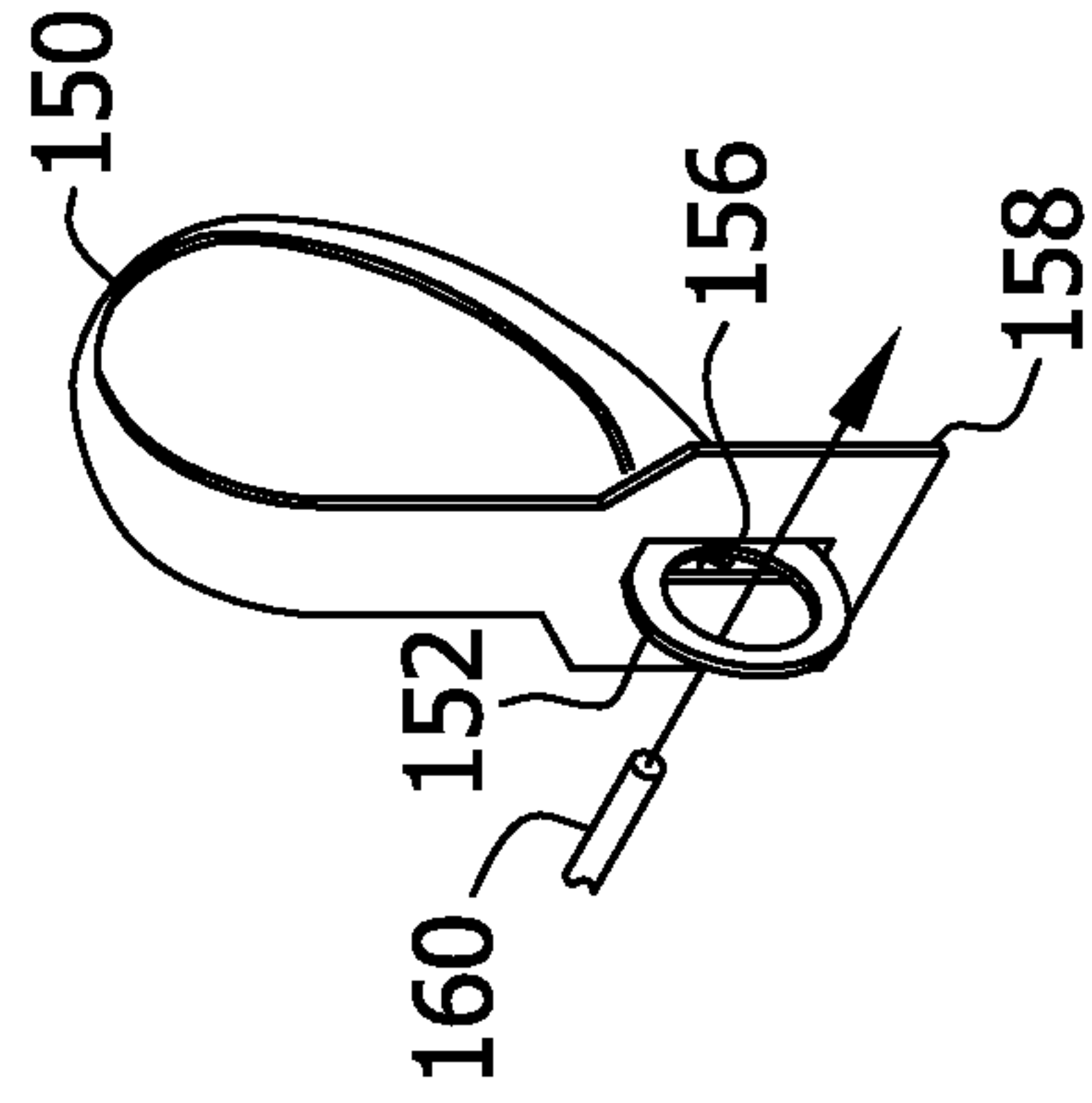


FIG. 4C

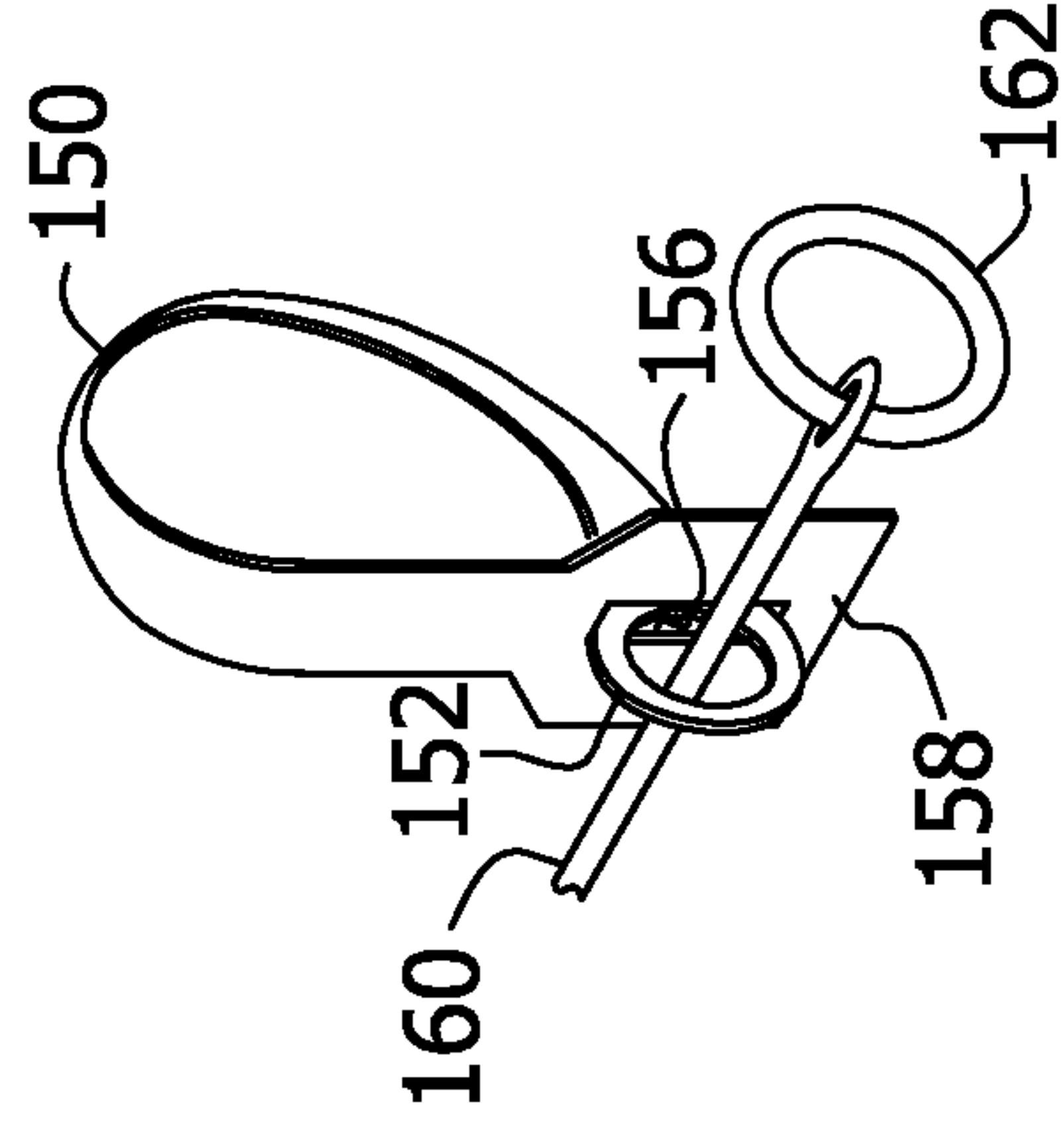
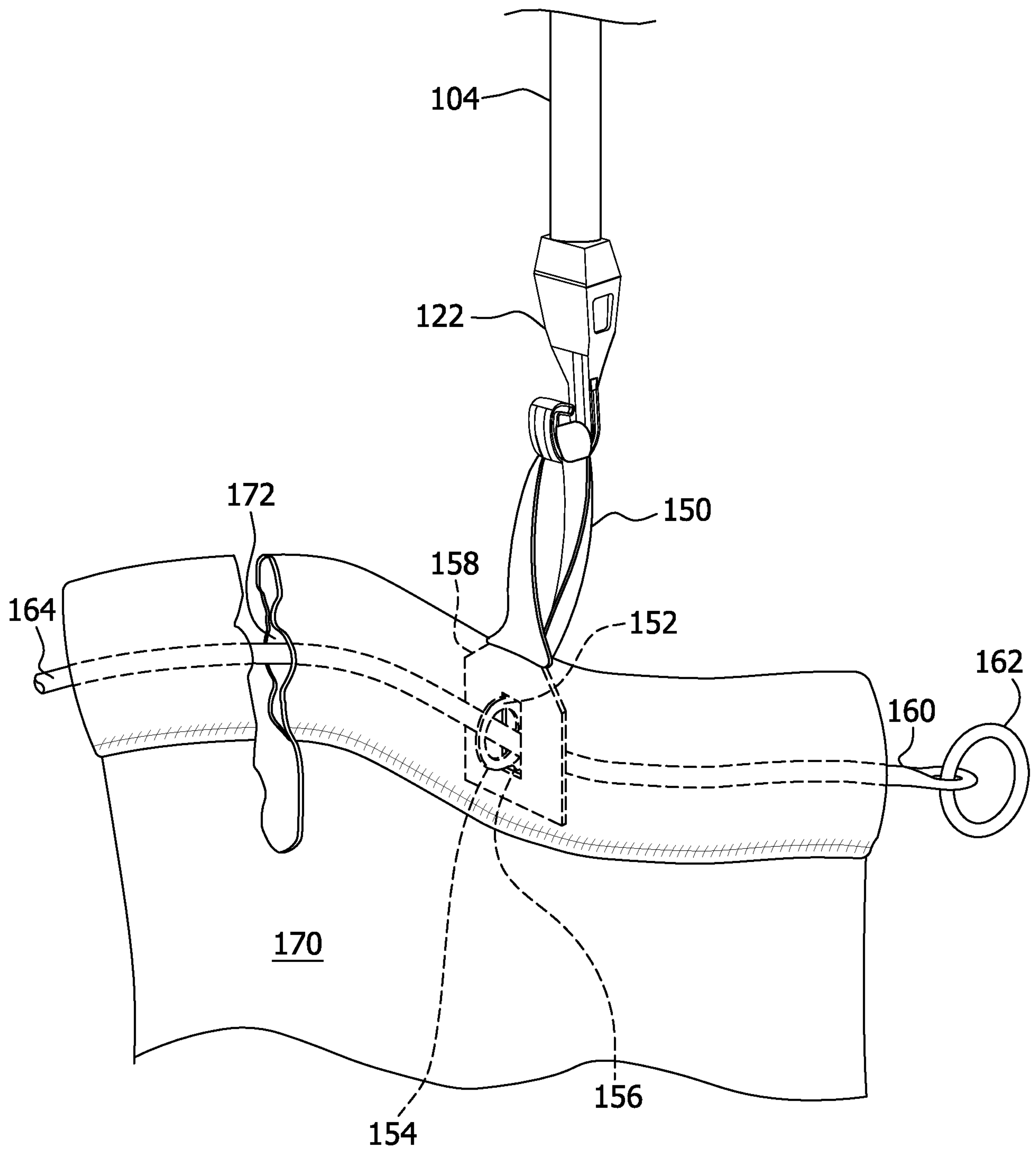


FIG. 4D

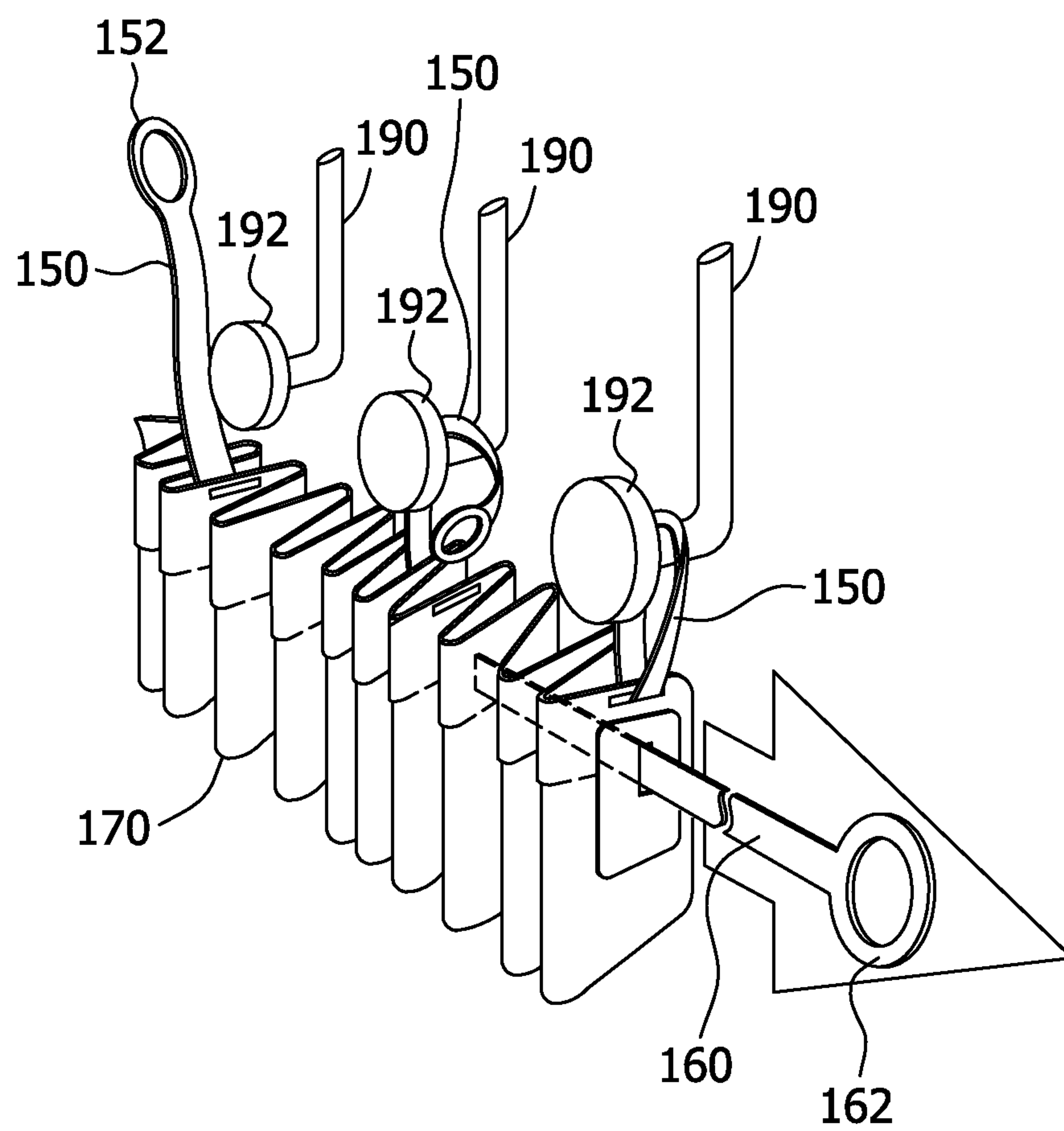
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FIG. 5



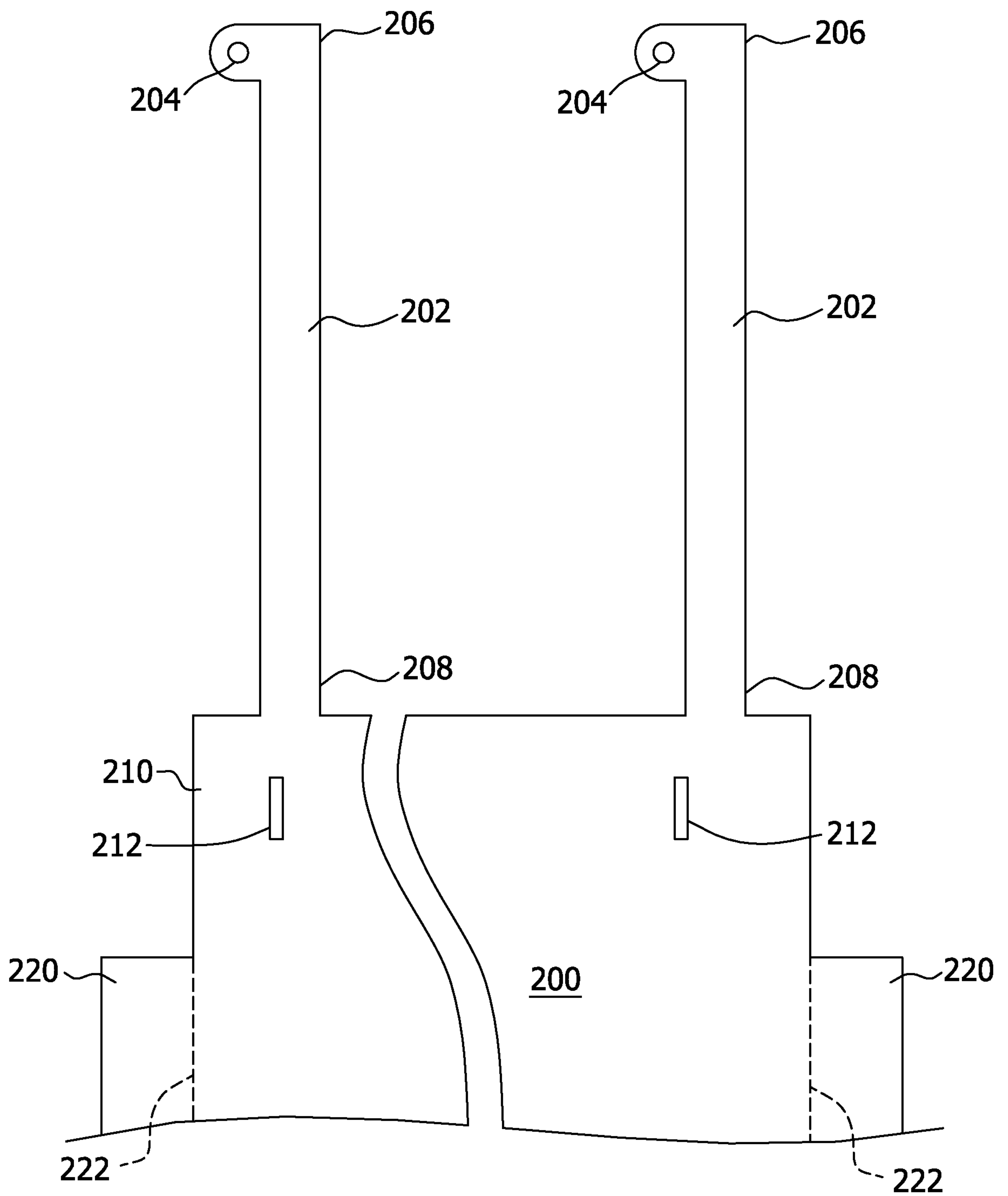
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FIG. 6



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FIG. 7



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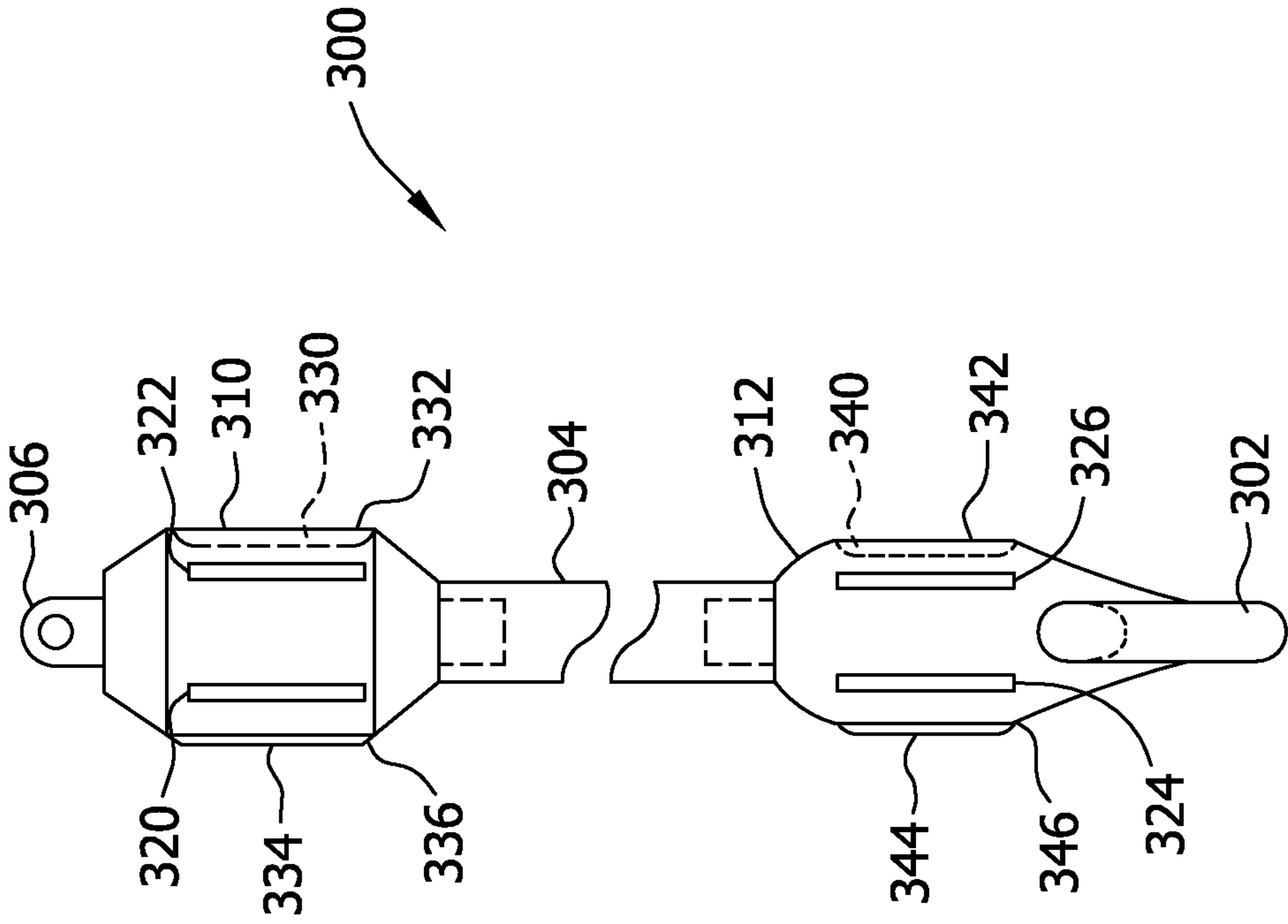


FIG. 9

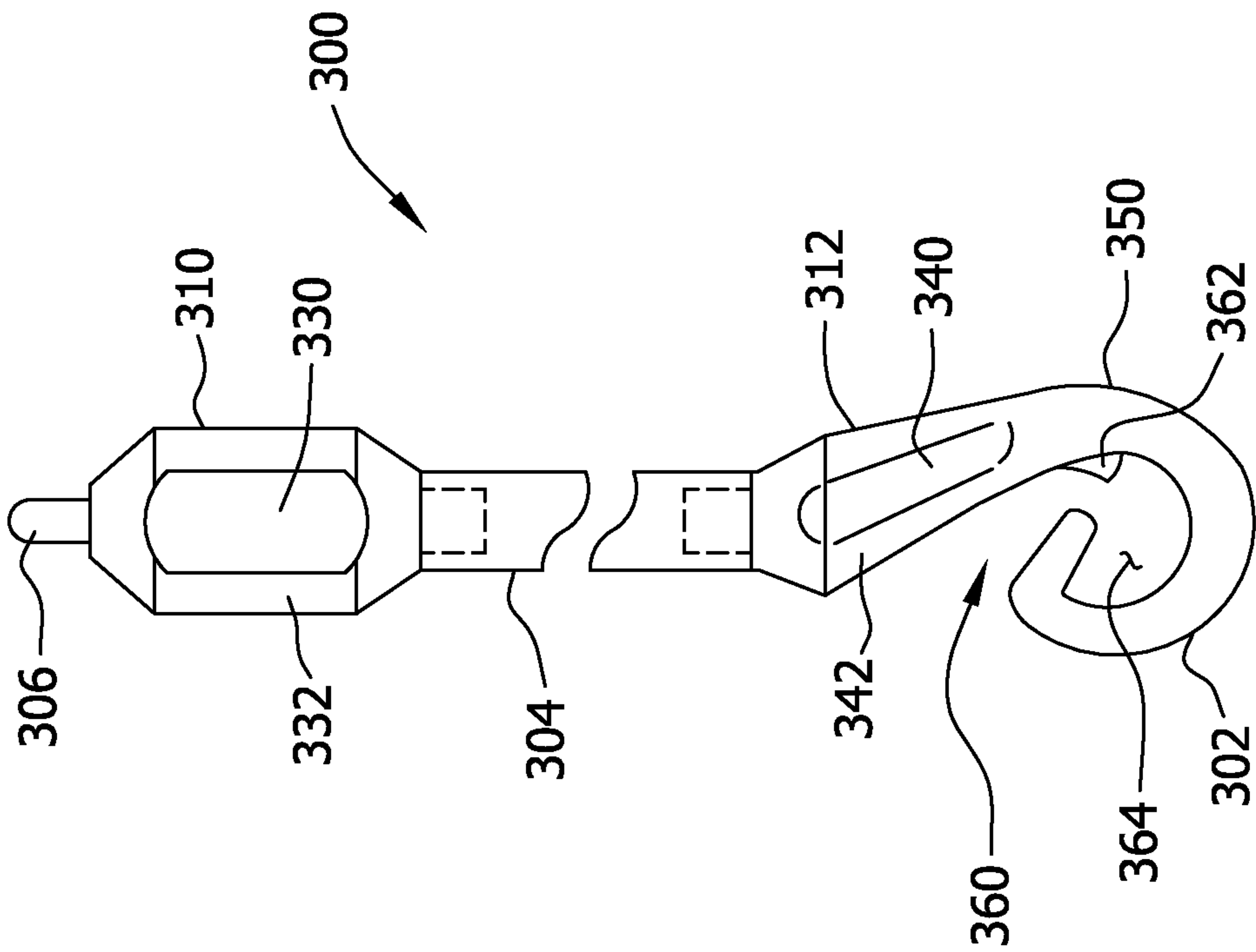
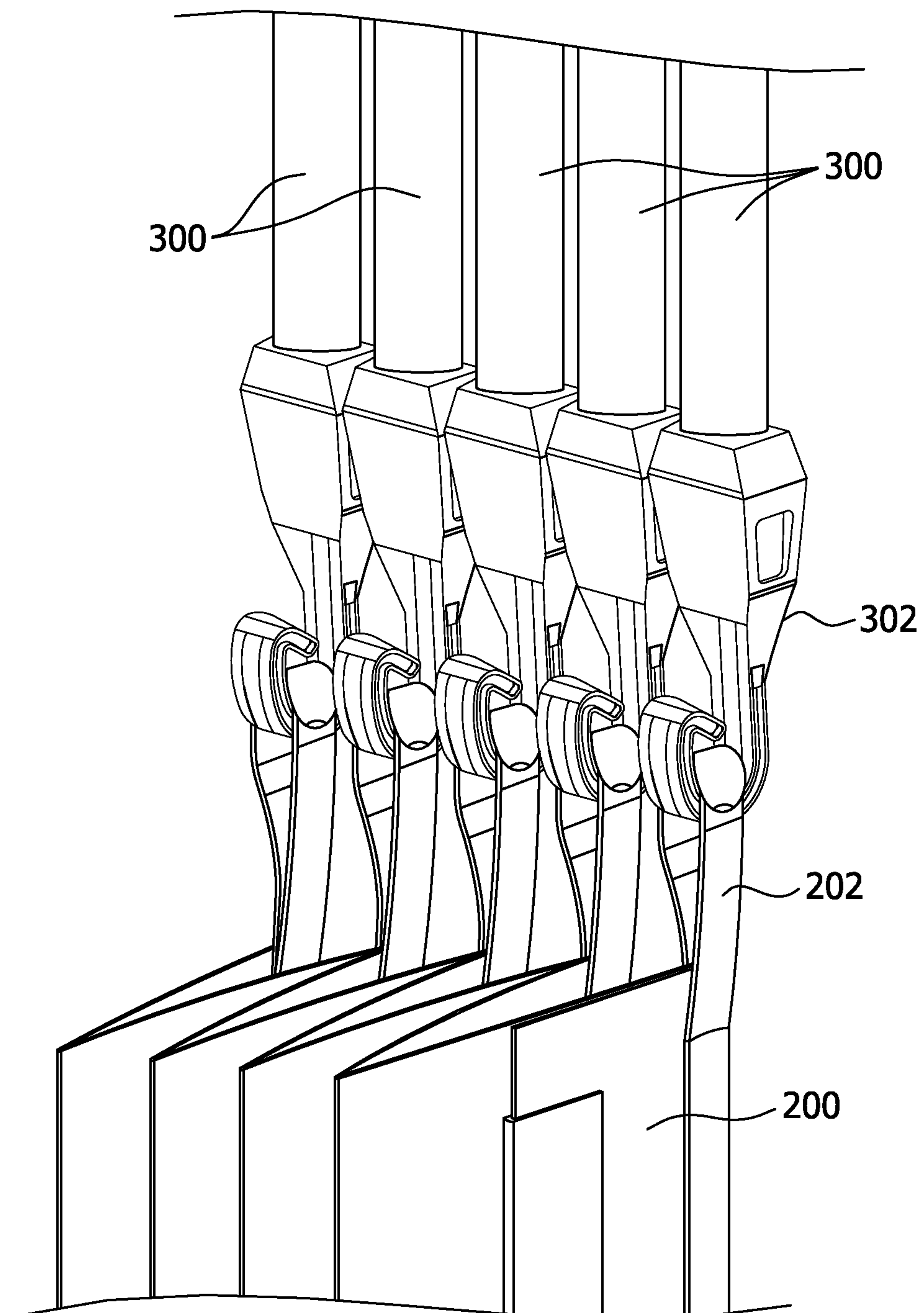


FIG. 8

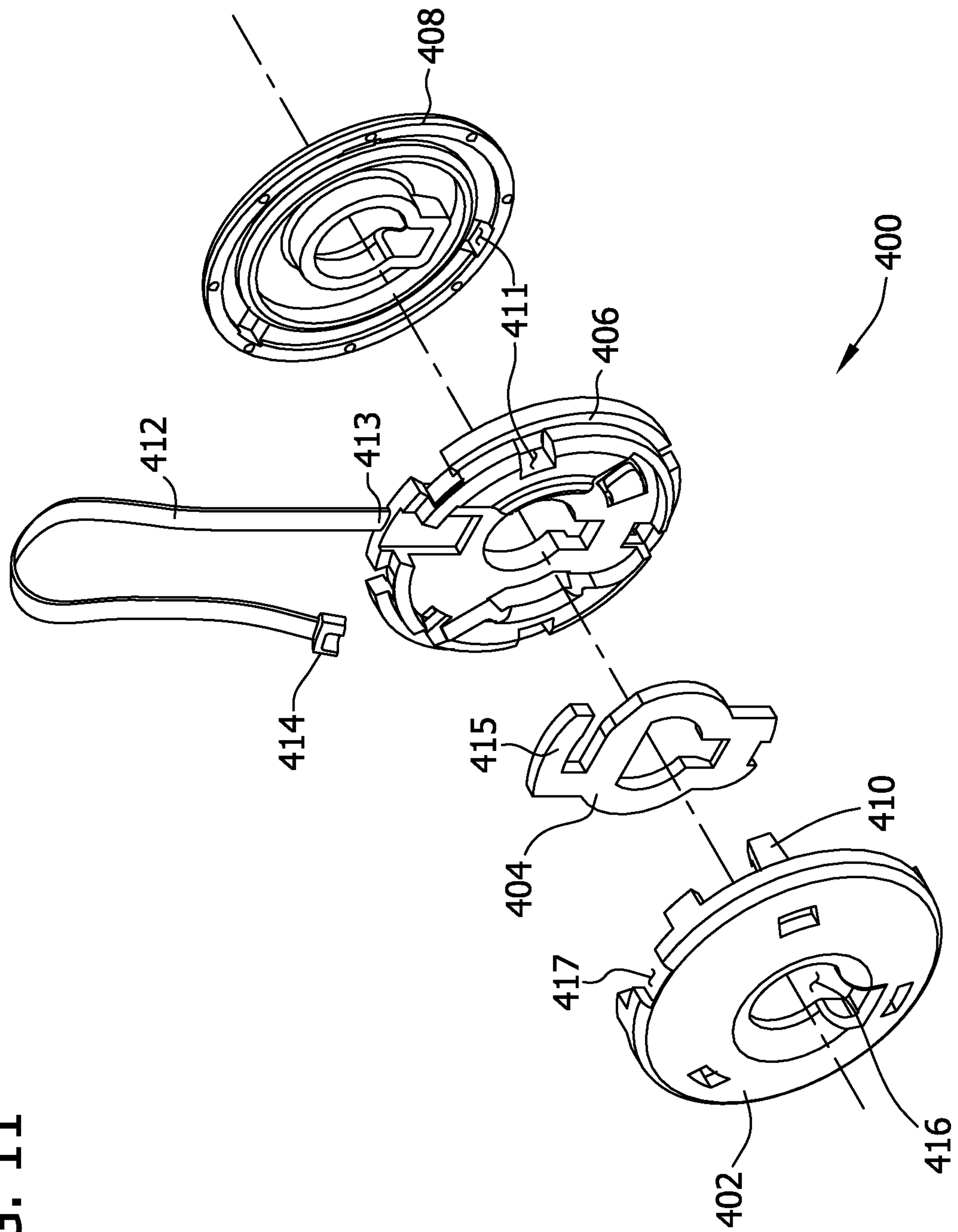
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FIG. 10



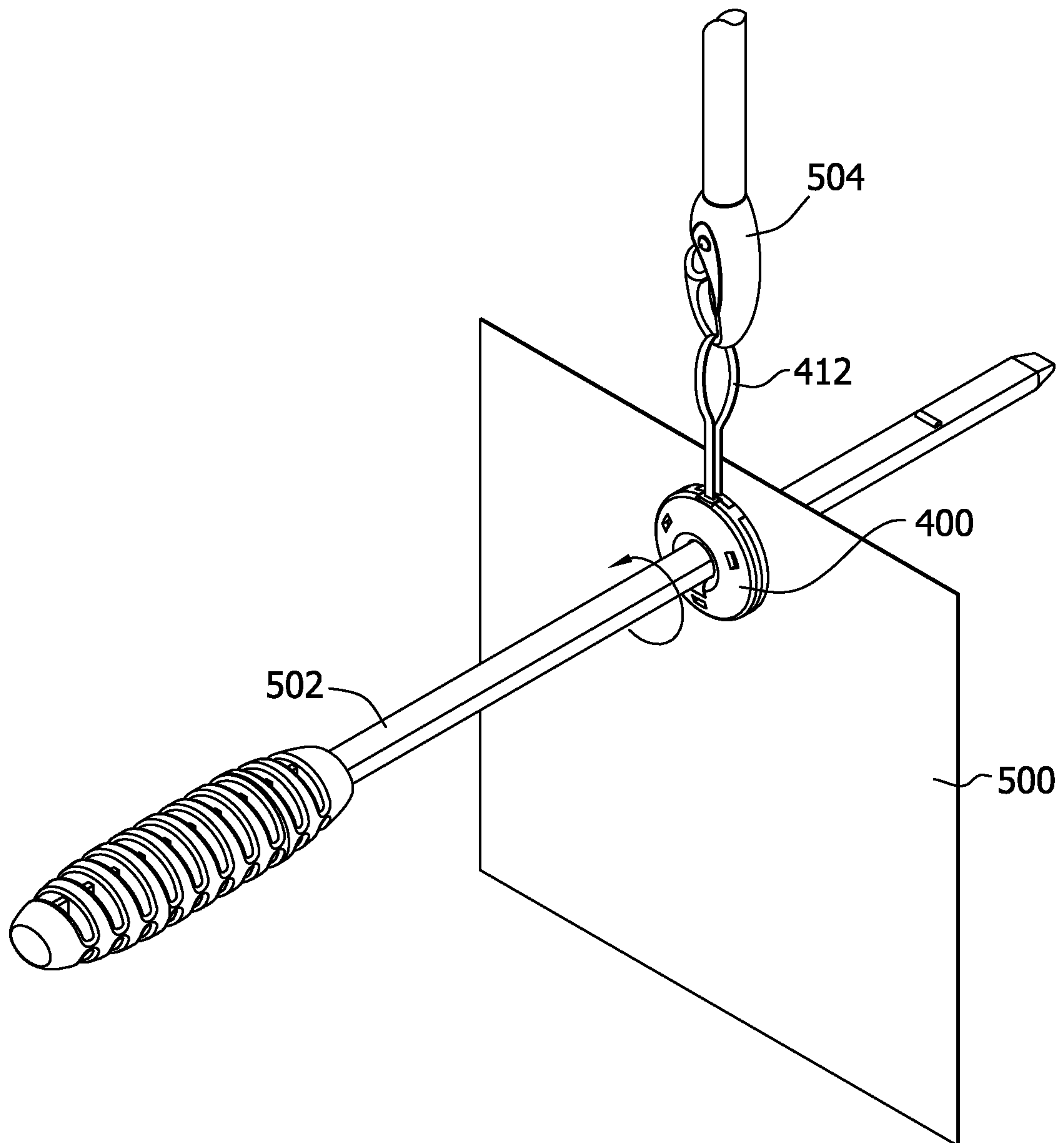
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FIG. 11



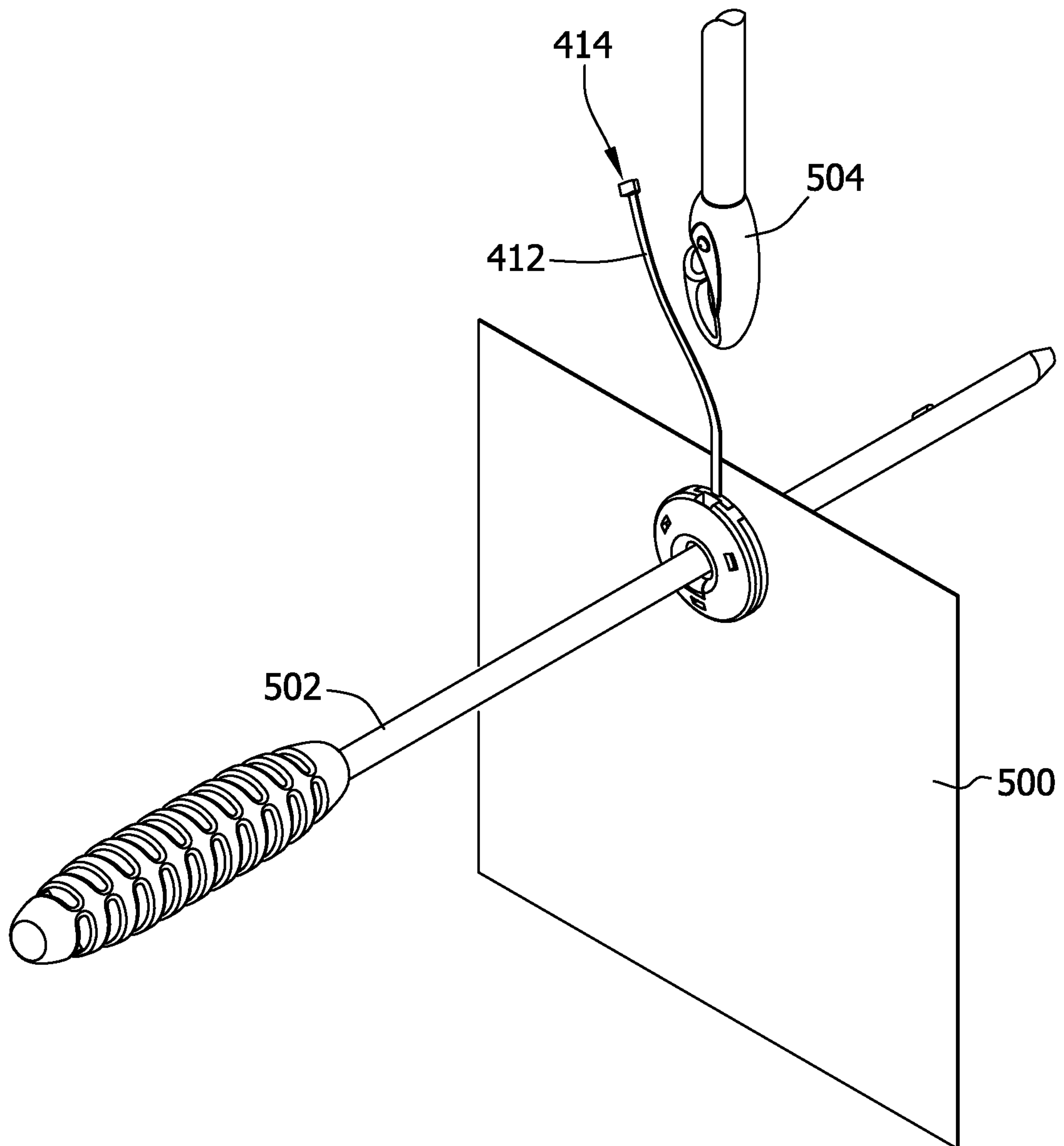
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FIG. 12A



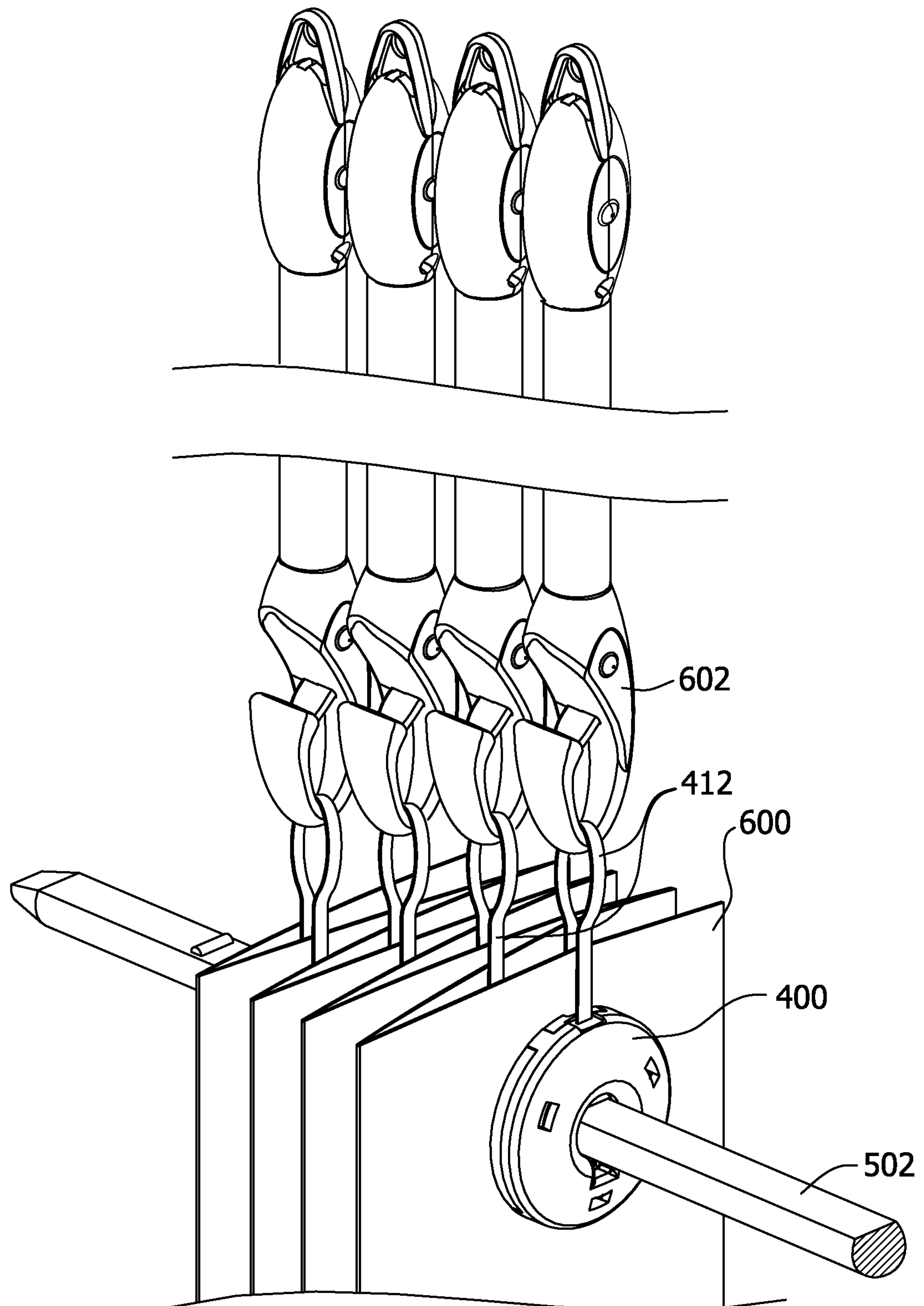
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FIG. 12B



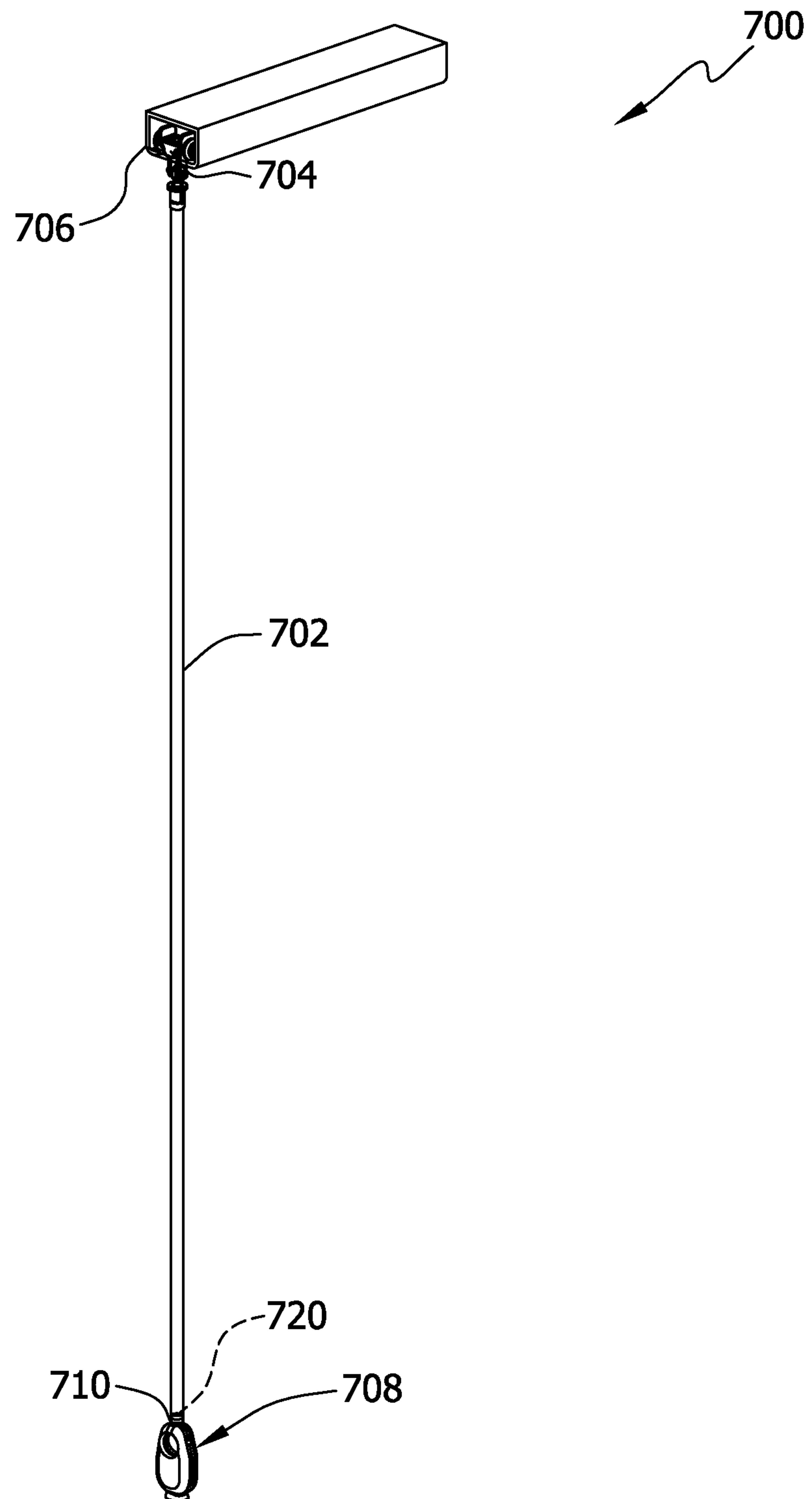
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FIG. 13



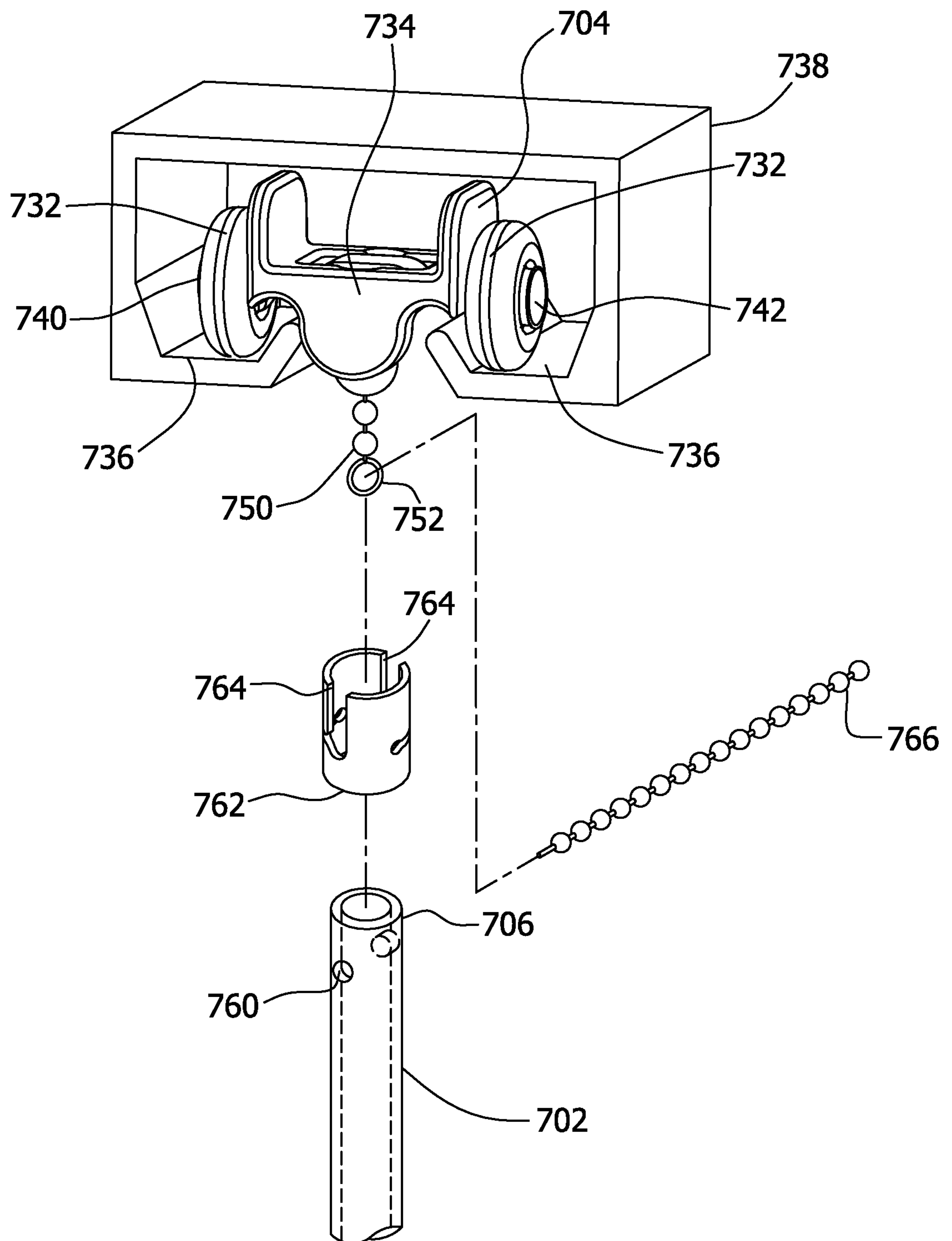
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FIG. 14



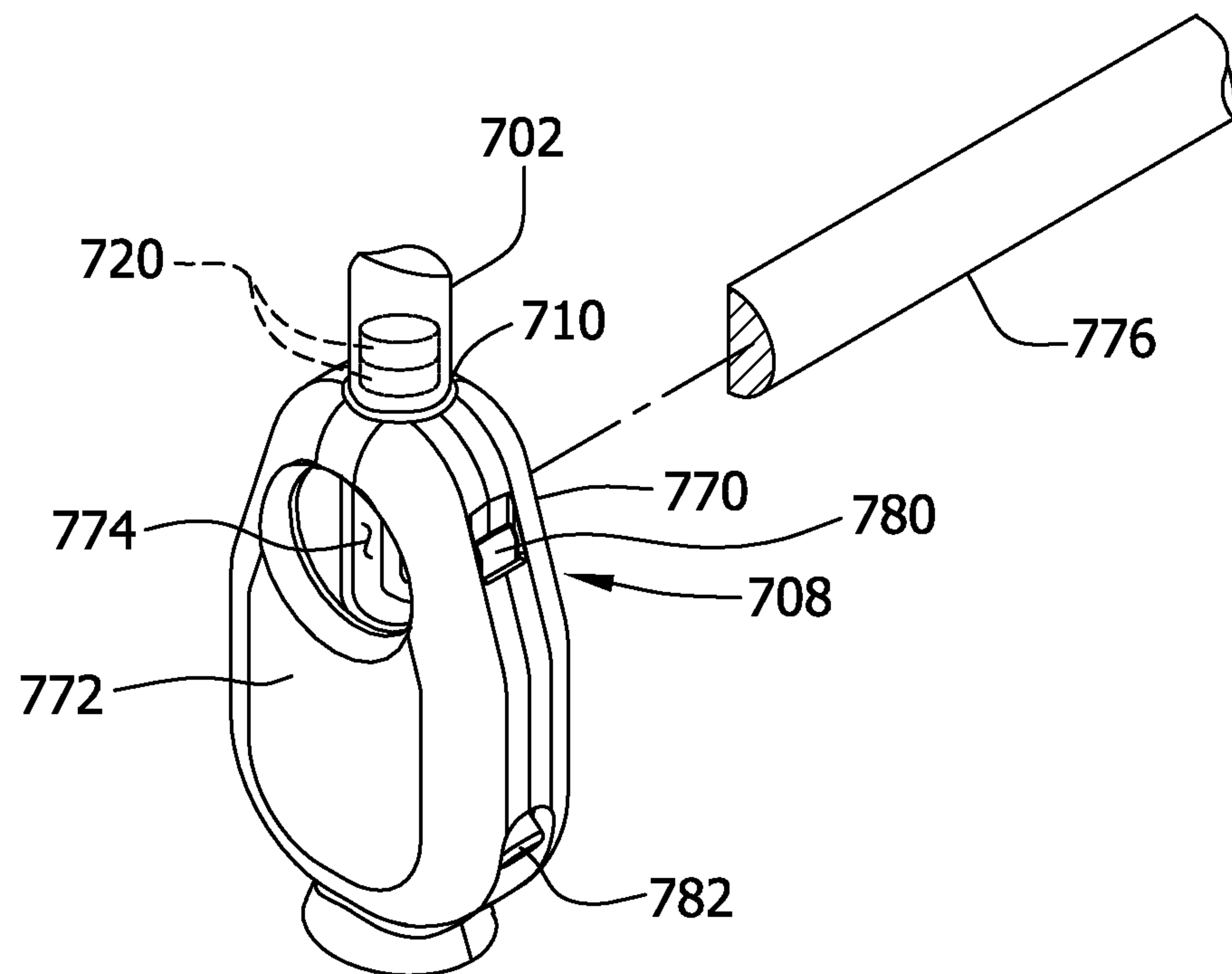
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FIG. 15



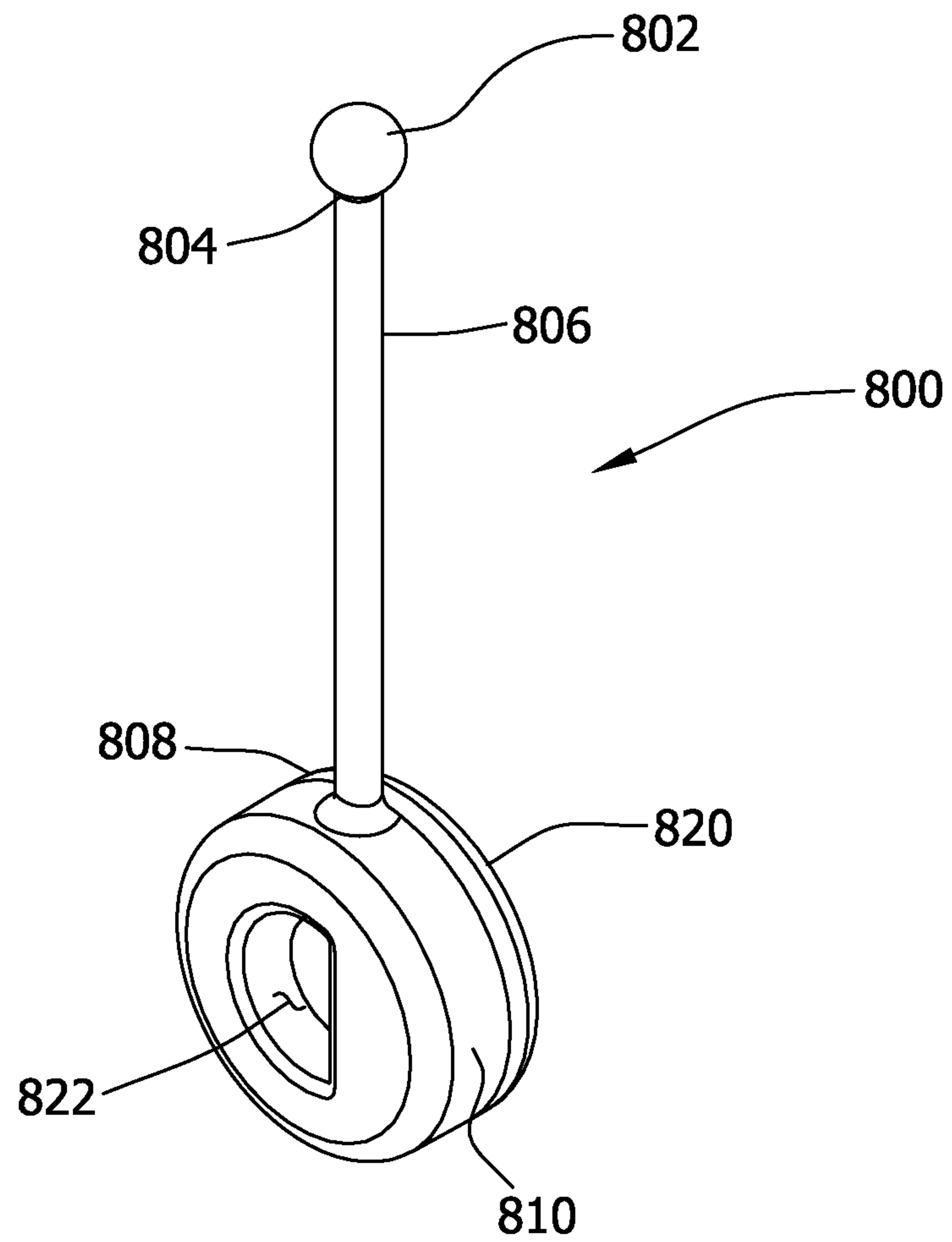
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FIG. 16



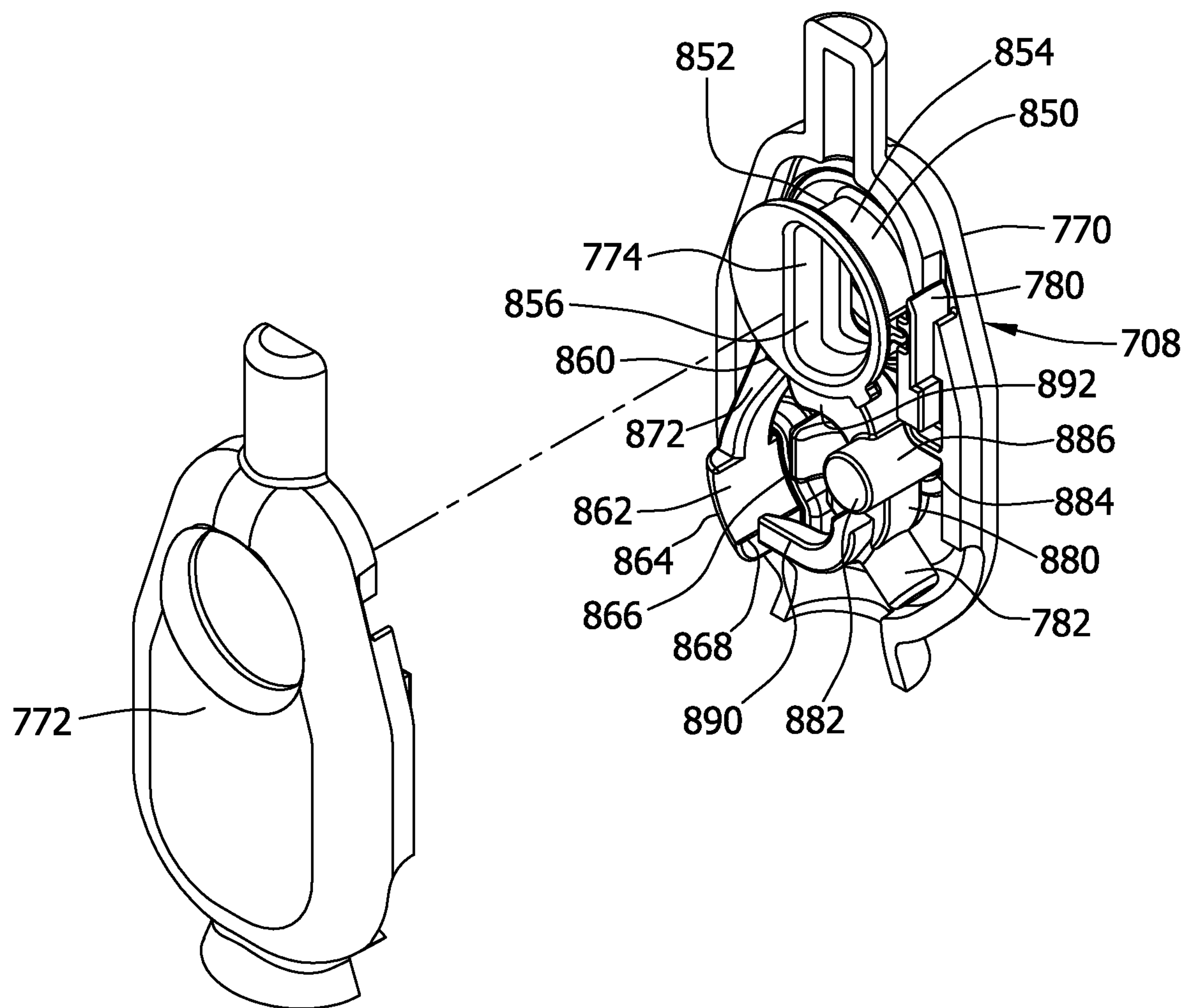
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FIG. 17



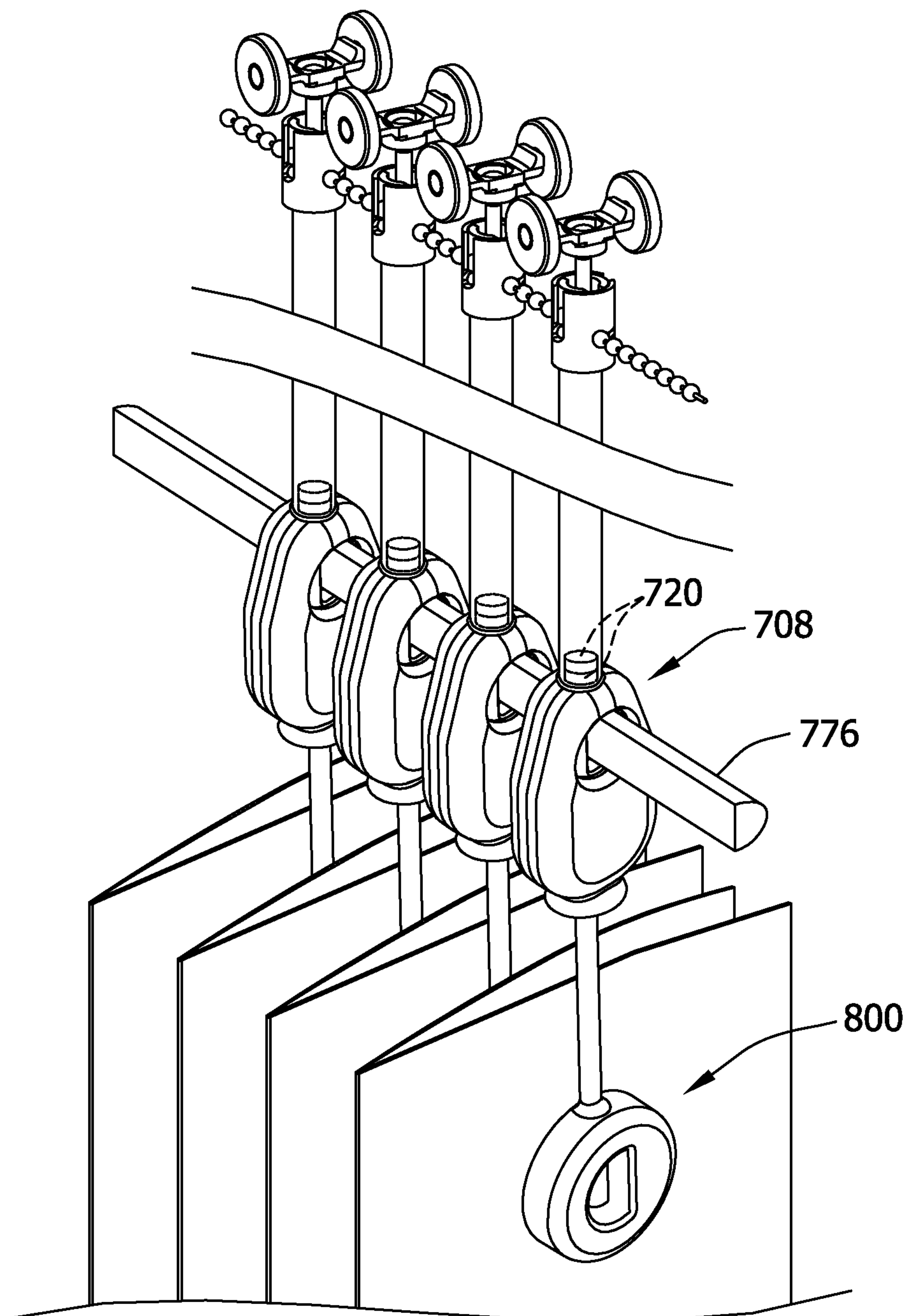
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FIG. 18



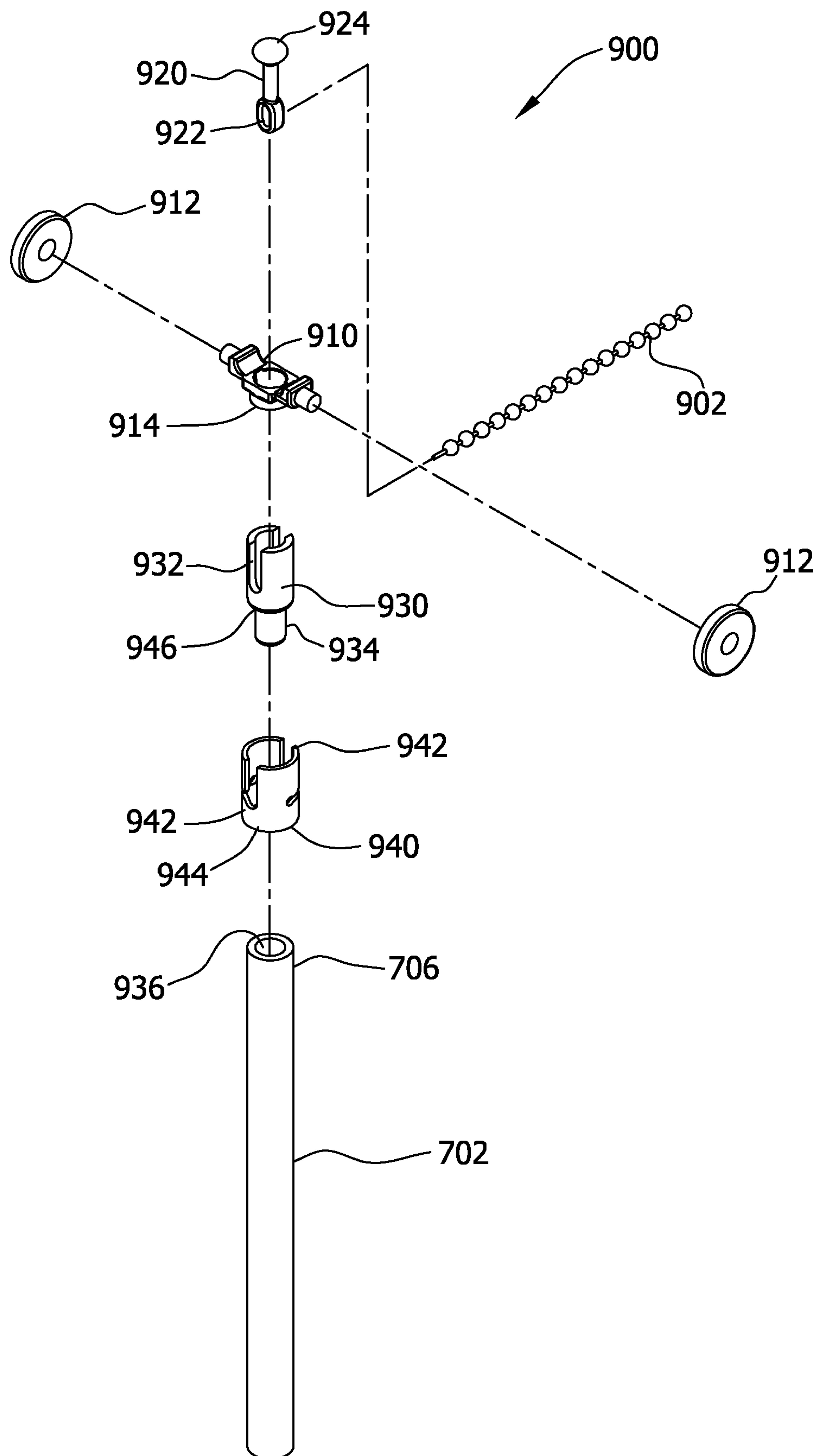
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FIG. 19



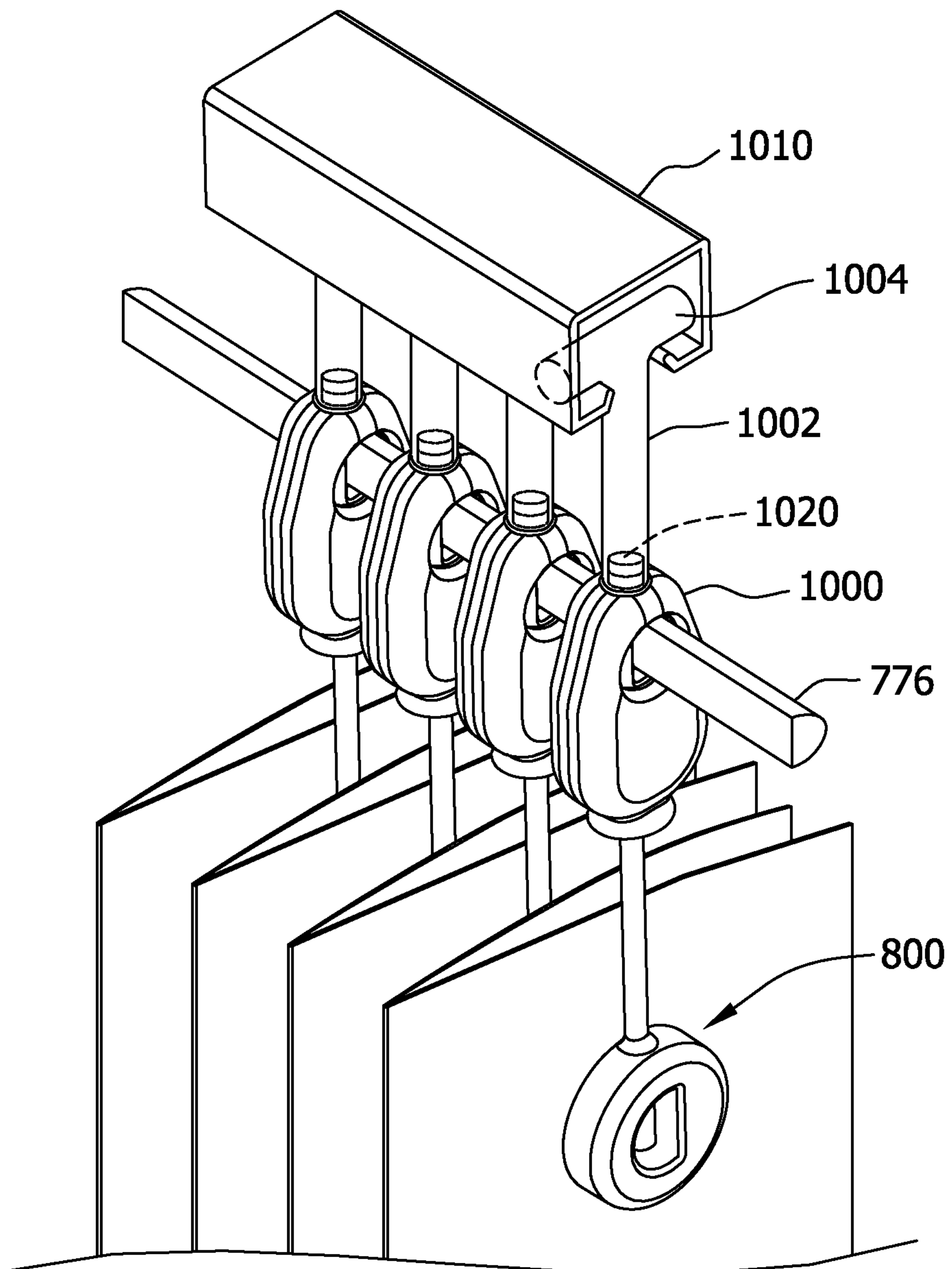
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FIG. 20



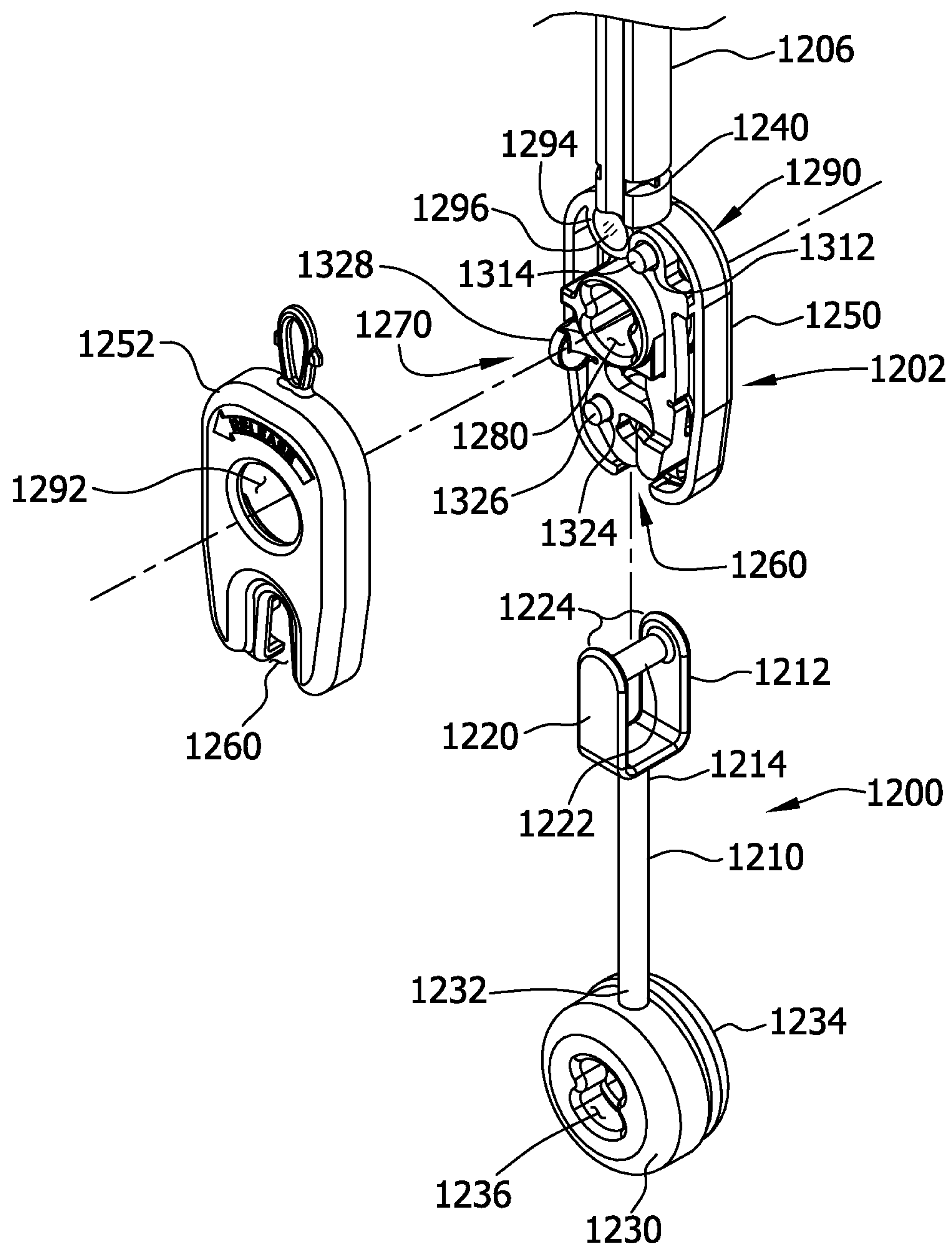
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FIG. 21



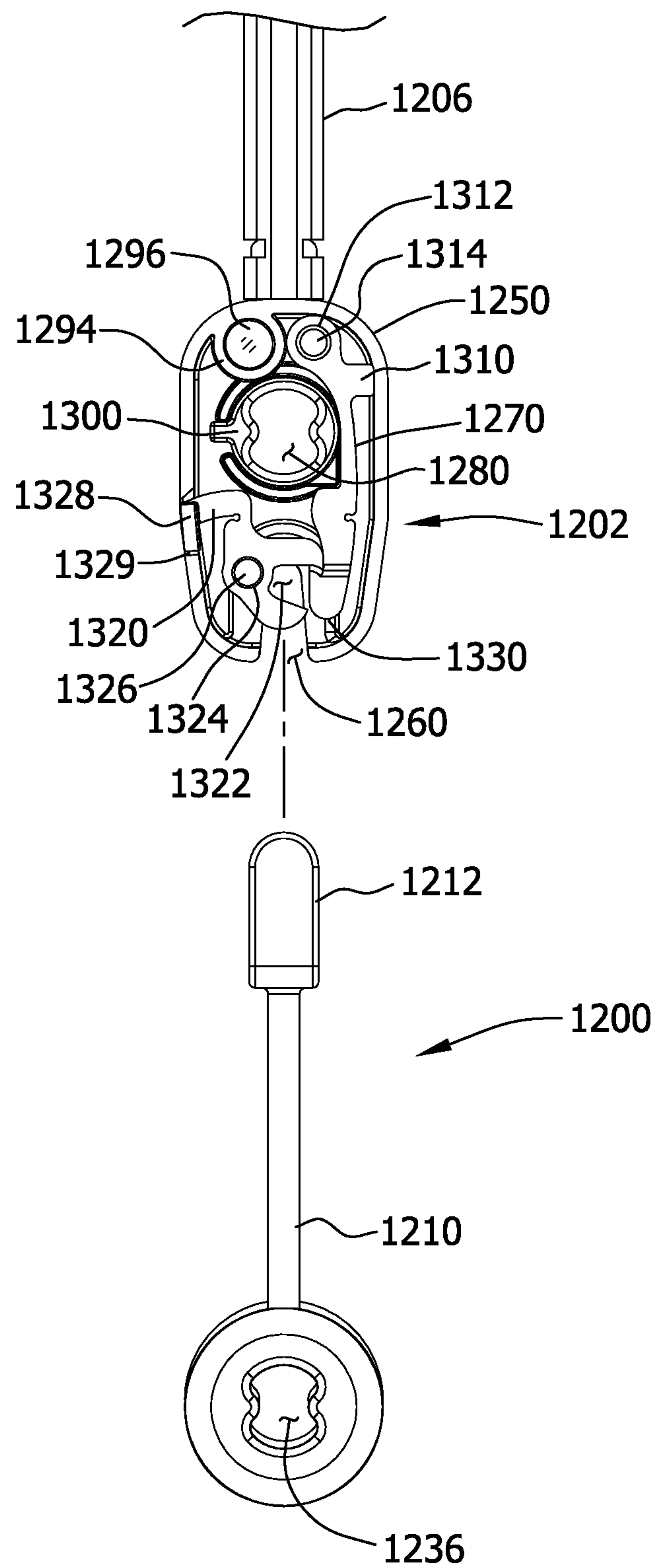
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FIG. 22



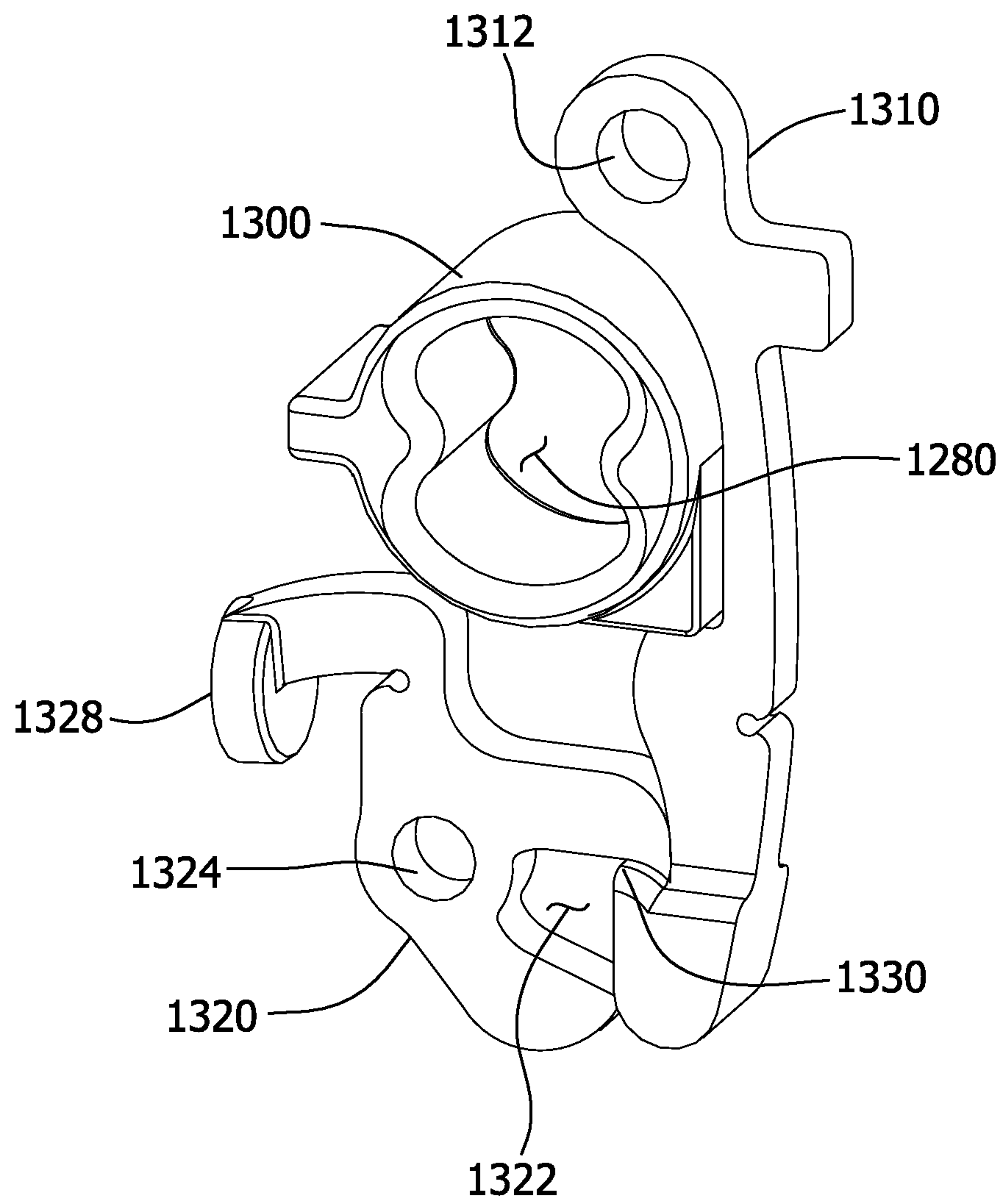
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FIG. 23



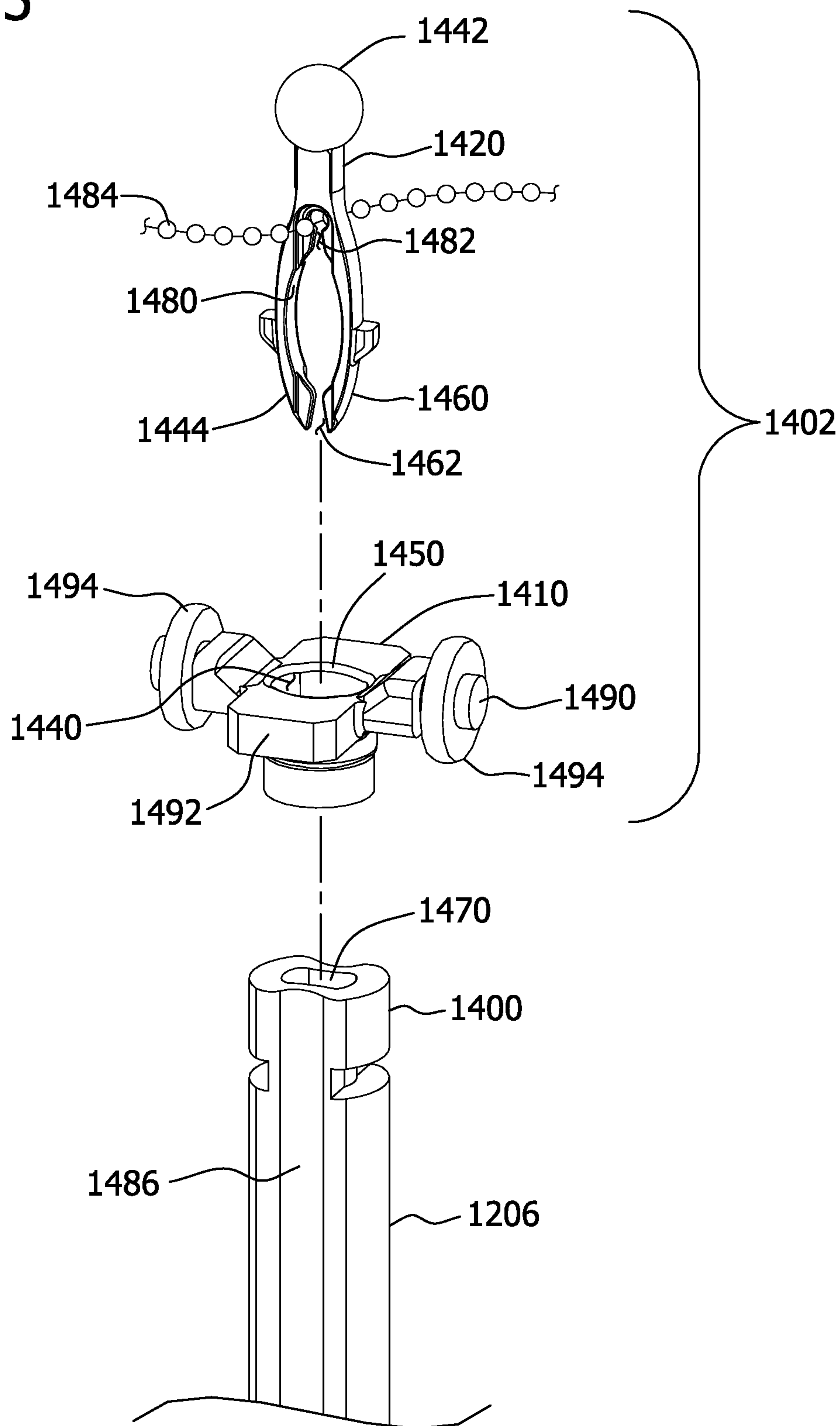
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FIG. 24



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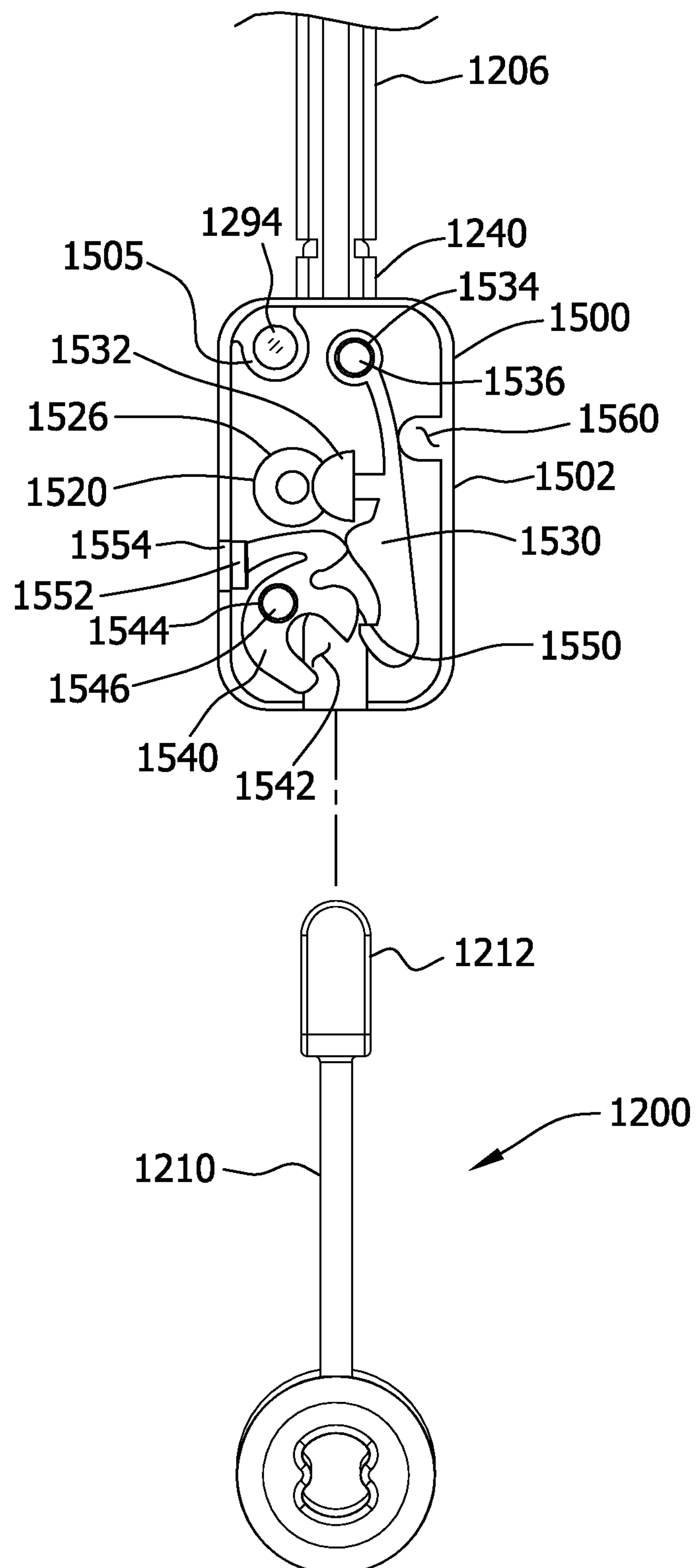
FIG. 25





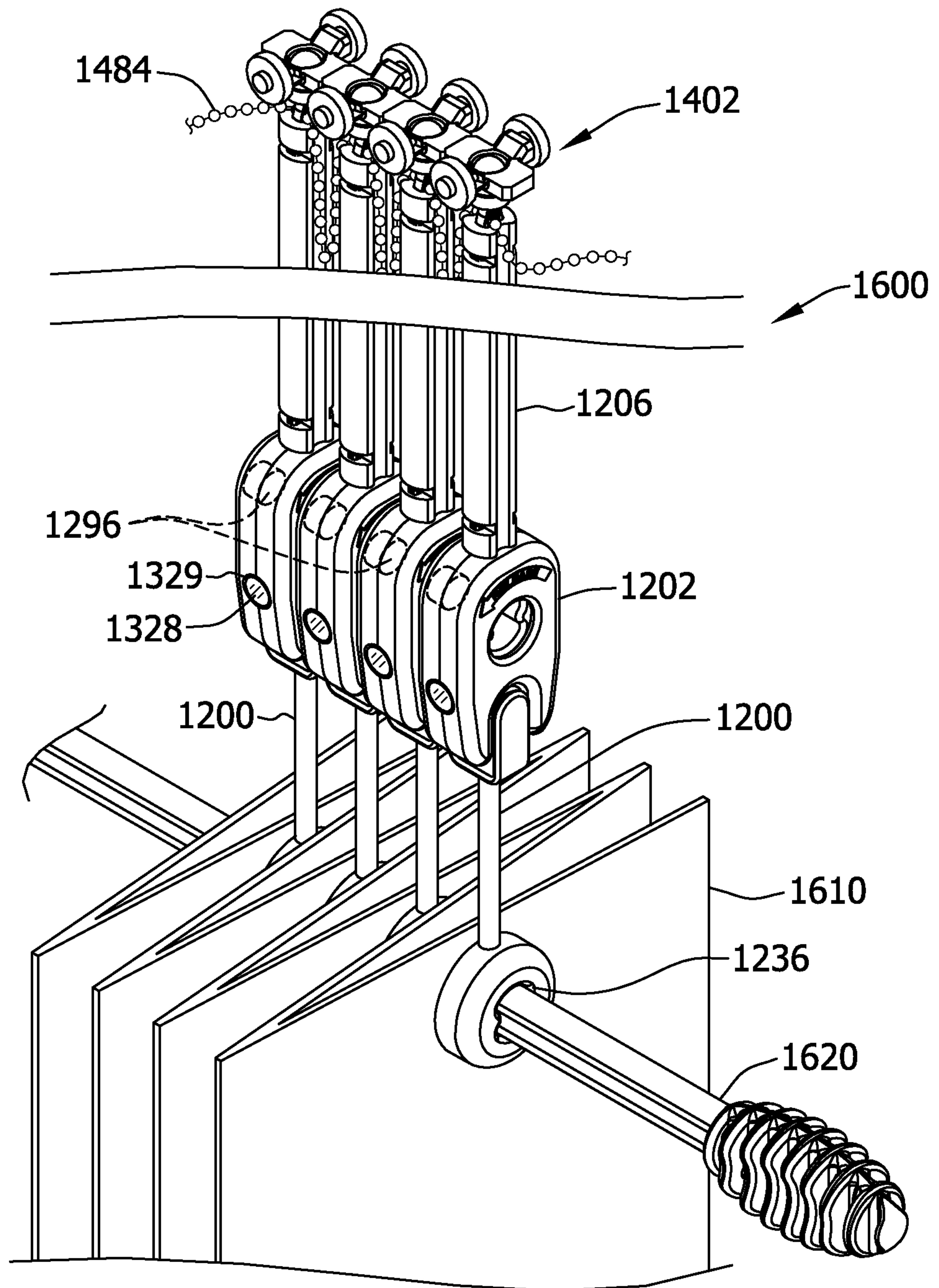
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FIG. 27



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FIG. 28



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FIG. 29

