



- (51) **International Patent Classification:**
E01H 1/12 (2006.01) *B25G 1/10* (2006.01)
- (21) **International Application Number:**
PCT/US2017/030419
- (22) **International Filing Date:**
1 May 2017 (01.05.2017)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
15/058,279 2 March 2016 (02.03.2016) US
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- (81) **Designated States** (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KH, KN,

KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

- (84) **Designated States** (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— *of inventorship (Rule 4.17(iv))*

Published:

— *with international search report (Art. 21(3))*

— *the filing date of the international application is within two months from the date of expiration of the priority period (Rule 26bis.3)*

(54) **Title:** ANIMAL WASTE HANDLING SYSTEM

(57) **Abstract:** A system for facilitating removal of an object, such as animal waste, may include an elongated shaft having a first end and a second opposing end, a handle associated with the first end, a collection device associated with the second end, an actuator associated with the handle and operably coupled to the collection device. A method for removal of animal waste may include using a system for facilitating removal of animal waste.



ANIMAL WASTE HANDLING SYSTEM

BACKGROUND

1. Field of the Disclosure

[0001] The present disclosure relates generally to a system for facilitating removal of animal waste material and associated methods.

2. Description of Related Art

[0002] Devices to collect and dispose of animal wastes are well known. It should be understood that municipal regulations require that animal feces be removed by the owner; a process that can be rather revolting to some. As such, there exist various devices that assist the owner in the cleanup process.

[0003] According to one common method, the owner will utilize a portable shovel to dispose of the feces. This solution has significant limitations and problems, such as the burden of carrying the shovel, e.g., during a walk with the animal, and while the shovel is soiled from the animal waste. In another known method, the owner will carry a number of bags to pick up and dispose of the feces. This solution also causes problems as the user is required to come in close contact with the feces. In yet another known method, a scooping device may be used to collect the feces and place it into a bag. The scooping device may overcome some of the problems associated with merely collecting the feces with a bag or shovel; however, the scooping device may not maintain the bag in a closed condition upon receipt of the feces, which in turn results in the bag not containing the unpleasant smell.

[0004] Although great strides have been made in the area of animal waste handling devices, some shortcomings remain.

SUMMARY OF THE INVENTION

[0005] One aspects of the embodiments relate to a system for facilitating removal of an object, such as animal waste, may include an elongated shaft having a first end and a second opposing end, a handle associated with the first end, a collection device associated with the second end, an actuator associated with the handle and operably coupled to the collection device. The system may further include a latching device associated with the handle and operably coupled to the actuator. The actuator may be configured to actuate the collection device, and the collection device may be configured to facilitate collection of animal waste, while the latching device is configured to retain the collection device in a closed position. According to another aspect, the system may further include a cable coupled to the actuator and coupled to the collection device, wherein the cable extends substantially the length of the elongated shaft. The elongated shaft may also include a first shaft section removably coupled to a second shaft section. The elongated shaft may also be configured to be selectively extended and retracted telescopically. According to another aspect, the handle may include an aperture configured to receive a portion of the actuator therethrough, wherein the latching device is configured to engage with the portion of the actuator extending through the aperture. The actuator may also include a ridge configured to cooperate with the latching device to maintain the actuator in a fixed position.

[0006] In another aspect of the embodiments, the latching device may be pivotally coupled relative to the handle. The system may further include a housing coupled to the second end of the elongated shaft and to the collection device, wherein the housing is rotatable relative to the elongated shaft. According to another aspect, the collection device may include a first arm and a second arm, wherein at least one of the first arm and the second arm is configured to pivot relative to one another, and wherein the first arm is configured to convey animal waste towards the second arm. The system may further include a cable coupled to the actuator and associated with the collection device, wherein the actuator is configured to cause the at least one of the first arm and the second arm to pivot via the cable. The first arm may also include a plurality of ribs, and the second arm may define an opening. The at least one of the first arm and the second

arm may also include at least one bag attachment member configured to secure a detachable bag to the collection device. The at least one bag attachment member may extend from an outer surface of the first arm. The system may further include a detachable bag, and the detachable bag may include at least one hole configured to receive the bag attachment member. The at least one bag attachment member may also include a shaft and a retainer, and wherein the at least one hole is configured to be placed over the retainer and around the shaft. The first arm may also include a plurality of attachment members, the second arm may also include a plurality of attachment members, and the detachable bag may also include a plurality of holes configured to receive at least two attachment members from each of the first arm and the second arm.

[0007] In another aspect of the embodiments, the system may further include a retractable leash device, wherein the handle and the retractable leash device are configured to be secured to one another. The elongated shaft may also include a key extending from an outer surface thereof.

[0008] In yet another aspect of the embodiments, a system for facilitating removal of an object, such as animal waste, may include an elongated shaft having a first end and a second opposing end, a handle associated with the first end, and a collection device associated with the second end. The collection device may include a first arm, a second arm forming an opening, an actuator associated with the handle, and at least one bag attachment member extending from an outer surface of the first arm. The actuator may be configured to actuate the collection device, such that animal waste is moved by the first arm into the opening of the second arm. According to another aspect, the system may further include a housing and a rod slidingly engaged within the housing and configured to pivot the first arm and the second arm relative to one another.

[0009] According to yet another aspect of the embodiments, a method for removal of animal waste may include providing a system for facilitating removal of animal waste, and providing a disposable bag to be secured to at least one bag attachment member, wherein an opening of the disposable bag at least partially corresponds to the opening

of the second arm. The method may further include moving the animal waste, with the first arm, through the opening of the second arm into the disposable bag. The method may further include locking the first arm relative to the second arm. The method may also include opening and closing the collection device with an actuator.

[0010] According to still a further aspect of the embodiments, a method for removal of animal waste may include using a system for facilitating removal of animal waste. The system may include a handle and a collection device associated with the handle. The collection device may include a first arm, a second arm forming an opening, and at least one bag attachment member extending from an outer surface of at least one of the first arm and second arm. The method may include providing a detachable bag configured to be attached to the collection device. The detachable bag may include at least one hole configured to cooperate with the at least one bag attachment member. The method may further include attaching the detachable bag to the collection device by placing the at least one hole around the at least one attachment member. The method may further include engaging animal waste with the first arm, and moving the first arm toward the second arm, such that the animal waste is conveyed through the opening in the second arm. According to another aspect, the detachable bag may be attached to the second arm such that an opening of the detachable bag corresponds to the opening of the second arm, and the method may further include moving the first arm toward the second arm, such that the animal waste is conveyed through the opening in the second arm and into the detachable bag.

[0011] Aspects and advantages of embodiments of present disclosure will be given in the following descriptions, become apparent from the following descriptions, or be learned from the practice of the embodiments of the present disclosure.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] FIGS. 1 and 2 are perspective views of an exemplary embodiment of a system for removal of animal waste;

[0013] FIGS. 3A and 3B are partial front views of a portion of the exemplary system of FIG. 1;

[0014] FIGS. 4A and 4B are partial side views of the exemplary system of FIG. 1;

[0015] FIG. 5 is a side view of the exemplary system of FIG. 1 with additional exemplary features;

[0016] FIGS. 6A, 6B, 6C, and 6D are partial views of a portion of the exemplary system of FIG. 1 used according to an exemplary method;

[0017] FIG. 7 is a perspective view of another exemplary embodiment of a system for facilitating removal of animal waste;

[0018] FIGS. 8A and 8B are side views of another exemplary embodiment of a system for facilitating removal of animal waste;

[0019] FIGS. 9A and 9B are side views of another exemplary embodiment of a system for facilitating removal of animal waste;

[0020] FIGS. 10A and 10B are side views of another exemplary embodiment of a system for facilitating removal of animal waste used with an additional exemplary feature;

[0021] FIG. 11 is a side view of another exemplary embodiment of a system for facilitating removal of animal waste used with an additional exemplary feature; and

[0022] FIGS. 12 and 13 are cross-sectional views of portions of the exemplary embodiment shown in FIG. 11;

[0023] FIGS. 14 and 15 are oblique views of another exemplary embodiment of a system for facilitating removal of animal waste;

[0024] FIGS. 16A and 16B are oblique views of a claw of the system of FIG. 14;

[0025] FIGS. 17A and 17B are side cross-sectional views of the handle of the system of FIG. 14;

[0026] FIG. 18 is a folded side view of the system of FIG. 14;

[0027] FIGS. 19A-19C are oblique views of the claw of FIG. 14;

[0028] FIG. 20 is an oblique view of a bag dispenser of FIG. 14;

[0029] FIG. 21 is an oblique side view of the system of FIG. 14;

[0030] FIGS. 22 and 23 are oblique views of another exemplary embodiment of a system for facilitating removal of animal waste;

[0031] FIG. 24 is a folded side view of the system of FIG. 22;

[0032] FIGS. 25A and 25B are front views of the claw of FIG. 22;

[0033] FIGS. 26A-26C are front views of the claw of FIG. 25A; and

[0034] FIG. 27 is a side view of the system of FIG. 22

DETAILED DESCRIPTION OF EXEMPLARY EMBODIMENTS

[0035] The aforementioned and other aspects, solutions, and advantages of the presently claimed subject matter will become apparent from the following descriptions and corresponding drawings. The embodiments further clarify the presently claimed subject matter and shall not be construed to limit the scope of the present claimed subject matter.

[0036] In the following detailed description, terms of orientation such as "top," "bottom," "upper," "lower," "front," "rear," and "end" are used herein to simplify the description of the context of the exemplary embodiments. Likewise, terms of sequence, such as "first" and "second," are used to simplify the description of the exemplary embodiments. Other orientations and sequences are possible.

[0037] Also, although various embodiments disclosed in the following detailed description are addressed to collection and removal of animal waste, a person with ordinary skill in the art will appreciate that these embodiments are perfectly suited for other applications not limited to removal of animal waste.

[0038] According to the exemplary embodiment shown in FIGS. 1 and 2, a system 101 for facilitating removal of animal waste may include an elongated shaft 103 associated with a handle 105 at one end and a collection device 107 at an opposing second end. During operation, the user may grab handle 105 and squeeze an actuator 109 to manually activate collection device 107. As will be explained more fully below, a biasing member (e.g., a spring) may be used to cause the collection device 107 to open and close.

[0039] In the exemplary embodiment shown in FIGS. 1 and 2, actuator 109 is pivotally attached to handle 105 about a pivot rod 111 carried by handle 105 at one end and slidingly engaged with and extending through an aperture 113 passing through the thickness of handle 105 at a second opposing end 115.

[0040] According to some embodiments, system 101 may include a latching device 117. For example, as shown in FIGS. 1 and 2, latching device 117 is associated with

handle 105 and is configured to retain actuator 109 in a locked position. In the exemplary embodiment shown, latching device 117 includes a locking arm 119 that pivotally engages with handle 105 about a pivot joint 121 carried on a top surface 123 of handle 105 to move in a direction represented by arrow D1 in FIG. 1.

[0041] According to some embodiments, the latching device may allow the user to retain the actuator in a locked position, which, in turn, may secure the collection device in a closed position, thereby reducing the smell and likelihood of spilling the waste material during transit.

[0042] According to some embodiments, the latching device may be associated with the top surface of the handle, and the actuator may extend through an aperture of the handle; however, alternative embodiments of latching device are also contemplated, for example, wherein the actuator is locked in position with one or more different types of release arms. For example, the release arm can be slidably positioned on surface 123 and/or any location on the handle that can retain the actuator in a locked position.

[0043] Exemplary collection device 107 shown in FIGS. 1 and 2 includes a housing 125 secured to shaft 103 and pivotally engaged with a first arm 127 and a second arm 129. As shown, the exemplary first arm 127 is configured to pivot into and out of an opening 131 formed by exemplary second arm 129. This exemplary feature may permit the user to scoop up the animal waste material and deposit it into opening 131.

[0044] In the exemplary embodiment shown, arm 127 includes a plurality of ribs 133 secured in position via a transverse cross bar 135. The ribs 133 may facilitate effective sweeping, grabbing, and/or scooping of animal waste in places such as, for example, grassy areas.

[0045] In the exemplary embodiment shown, collection device 107 is further provided with one or more disposable bag attachment members 137 configured to secure a bag 601 to arms 127, 129. In the exemplary embodiment shown, two attachment members 137 are secured to each arm and include a retainer 139 (e.g., a spherical knob) extending from an outer surface of the arms via a shaft 141.

[0046] According to some embodiments, system 101 may be provided with a fastening device 143, for example, having a body 145 configured to be secured to shaft 103. In the exemplary embodiment shown, body 145 is a cylindrical sleeve that snugly fits around the periphery of shaft 103. For example, as shown in FIG. 5, fastening device 143 may be configured to carry a roll of plastic bags 501 via an elongated shaft 147 that runs relatively parallel to shaft 103, and/or a flashlight 503 via a clip 149. According to some embodiments, both shaft 147 and clip 149 are rigidly secured to body 145.

[0047] Referring now to FIGS. 3A and 3B, exemplary housing 125 is configured to be coupled to a portion of arms 127, 129 via a hollow chamber 300. Housing 125 receives an elongated shaft 301, for example, having a hollow chamber 302 configured to fit within shaft 103 and to secure housing 125 to shaft 103 in a relatively fixed position.

[0048] According to the exemplary embodiment shown, a rod 303 is configured to slidably engage within chamber 302 and is rigidly attached to a biasing member 305 (e.g., a compression spring) disposed within chamber 302. A cable 307 extends through the shaft 103 and connects rod 303 to actuator 109. As depicted, arms 127, 129 open and close as cable 307 is pulled through shaft 103 via actuator 109, as represented with arrow D2. To achieve the opening and closing feature, rod 303 includes a plurality of teeth 308 in cooperation with a plurality of teeth 309 at an end section 311 of arm 127, and with a plurality of teeth 313 and an end section 315 of arm 129.

[0049] To achieve the arm pivoting feature, a first pivot pin 317 is carried within housing 125 and secured to arm 127 and likewise, a second pivot pin 319 is carried within housing 125 and secured to arm 129. During the exemplary operation shown in FIGS. 3A and 3B, the cable 307 is pulled through shaft 103, the rod 303 slides within housing 302, the biasing member 305 compresses, and the arms 127, 129 pivot about the respective pins 317, 319.

[0050] Side views of exemplary system 101 are shown in FIGS. 4A and 4B to further illustrate exemplary features of latching device 117. As discussed above, exemplary latching device 117 includes a locking arm 119 that pivotally moves with respect to handle 105 about a pivot joint 121 on surface 123 between latched and unlatched

positions. As further illustrated in FIGS. 4A and 4B, the actuator end 115 is configured to extend through aperture 113 and includes a ridge 401 that engages with arm 119 to hold the collection device 107 in a closed position. It should be understood that biasing member 305 exerts a force in direction D3 against the actuator 109 via cable 307 extending through shaft 103. As such, a biasing force (e.g., a spring-loaded force) is exerted against ridge 401 to engage with arm 119 while in the latched position. To unlatch actuator 109, the user merely squeezes the actuator 109 in direction D4, which in turn allows arm 119 to pivot about pin 121, as depicted in FIG. 4B.

[0051] FIG. 5 is a side view of an exemplary embodiment of system 101 and depicts an optional roll of plastic bags 501 and an optional flashlight 503 secured to the shaft 103 via fastening device 143. System 101 can also include a hole 505 extending through the thickness of handle 105 and configured to receive a fastening device, such as, for example, a carabiner 507 or other suitable quick-release device.

[0052] FIGS. 6A-6D illustrate partial views of an exemplary system 101 operably associated with a detachable bag 601 configured to be releasably attached to collection device 107, for example, via one or more holes 603 adapted to engage with attachment members 137. In the exemplary embodiment shown, bag 601 is composed of an elastomeric material, which may be biodegradable and/or scented.

[0053] According to one exemplary method, the method to secure bag 601 to collection device 107 includes securing the bag 601 to both arms 127, 129 by placing the holes 603 over the attachment members 137, as shown in FIGS. 6A-6D. Only two holes 603 of bag 601 are shown in FIGS. 6A-6B for the sake of clarity. Thereafter, the bag 601 is passed through opening 131 of arm 129, as shown in FIG. 6C and indicated by arrow D5. In FIG. 6D, bag 601 is shown passing through opening 131 and ready for use. In this exemplary configuration, the animal waste material (not shown) can be scooped via arm 127 and passed through opening 131, so that it is received within a cavity 605 formed by bag 601. As discussed above, the arms may be closed and locked in a closed position thereafter via the latching device. Finally, bag 601 may be

quickly and easily disengaged from attachment members 137 to dispose of the animal waste material and bag 601.

[0054] In the exemplary embodiment shown, bag 601 simply includes four holes that extend through the thickness of the bag material and are selectively dimensioned and sized to fit around retainer 139. Although contemplated using holes and an attachment member to secure the bag to the collection device, it should be appreciated that alternative embodiments could utilize other means to secure the bag to the collection device, including, clips, snaps, buttons, hook-loop, and other suitable fastening systems.

[0055] In FIG. 7, an alternative embodiment of system 101 is shown. As depicted, the collection device 107 may be configured to rotate in the directions D6 in either a fixed or an interchangeable position. This feature may provide the user with a better view of the cleanup process as the arms are manipulated to collect the animal waste.

[0056] In FIGS. 8A and 8B, an alternative embodiment of system 101 is shown. In the exemplary embodiment shown, system 101 includes a telescoping shaft 801, which in turn, allows the user to selectively choose the overall length of the shaft, as depicted with arrow D7. This feature accommodates users of different heights. For example, a shorter shaft may be more desirable to shorter users, and a longer shaft may be more desirable for taller users.

[0057] In FIGS. 9A and 9B, an alternative embodiment of system 101 is shown. In the exemplary embodiment shown, system 101 includes a shaft 901 having two members 903 and 905 pivotally secured to each other about connection 145. This feature allows the user to reduce the overall length of shaft 901, which may be desirable during transit and storage. For example, when folded, exemplary system 101 may fit in a small backpack or a carrying case.

[0058] In FIGS. 10A and 10B, an alternative embodiment of system 101 is shown. In the exemplary embodiment shown, system 101 may be coupled to a retractable leash device 1001 to removably attach to handle 105. In the exemplary embodiment shown,

device 1001 includes a housing 1003 having a spool therein (not shown) for playing out and retracting leash 1005. A base portion 1007 may be attached to housing 1003 and configured to secure housing 1003 to handle 105. In the exemplary embodiment shown, base 1007 slidingly engages with handle 105 and may be secured to the handle 105 via one or more different types of fasteners (not shown). During use, the user may pull leash 1005 from housing 1003, which in turn will allow leash 1005 to play out from the self-winding spool.

[0059] Referring now to FIGS 11-13, an alternative embodiment of system 101 is depicted. It should be understood that according to some embodiments having two shafts 903, 905, shafts 903, 905 may tend to twist relative to one another during use. As such, according to some embodiments, system 101 may be provided with a key 1101 that may extend at least a portion of the longitudinal length of either one or both of shafts 903, 905 and is received within a keyway 1103 extending partially within the thickness of connection 145, handle 105, and/or housing 125. It will be appreciated that according to some embodiments, the key may provide effective means to prevent the undesired twisting effect of the shaft during use.

[0060] Referring now to FIGS. 14-21 in the drawings, an alternative system to facilitate removal of waste material is disclosed. It will be appreciated that system 1401 is substantially similar in form and function to one or more embodiments discussed above.

[0061] In the preferred embodiment, system 1401 is provided with one or more of a handle 1403 at a first end of an elongated shaft 1405 and a claw 1407 at an opposing second end of the shaft 1405. During use, the user will manipulate the handle 1403 for scooping the waste material with claw 1407.

[0062] The handle 1403 includes a grip 1409 that fits the palm of the user's hand and a lever 1411 that is gripped and manipulated with the fingers of the user's hand. In the exemplary embodiment, the lever 1411 pivotally attaches to a body 1400 via a pivot joint 1413. During use, the lever 1411 pivots within a hollow cavity section of body 1400 rigidly attached to grip 1409.

[0063] Elongated shaft 1405 includes a first section 1415 removably attached to a second section 1417 via an attachment device 1419. In the contemplated embodiment, the first section 1415 pivotally attaches second section 1417 via a joint 1421.

[0064] The system 1401 is further provided with a bag device 1404 configured to receive and store a plurality of bags 2001 (see, e.g., FIG. 20). The bag device 1404 includes a shaft 1406 that extends from a body 1402, which in turn secures to the first section 1405. The bag device 1404 is further provided with a clip 1408 rigidly attached to body 1402 and spring-loaded against the outer surface of first section 1415. Further detailed description of bag device 1404 is discussed below with respect to FIG. 20.

[0065] The claw 1407 includes one or more of a housing 1423 secured to second section 1417. As depicted in FIGS. 16A and 16B, the housing forms a cavity configured to carry components associated with manipulating the claw members. Further detailed description of these features are discussed below. The claw 1407 includes a body 1425 having two articulated members 1501 and 1505 adapted to pivot relative to each other and configured to scoop the waste material within an opening created therebetween. A cylindrical member 1427 is rigidly attached to the housing 1423 and is in communication with the opening created by the members 1501, 1505. A removable bag fastening ring 1429 is configured to removably engage with the member 1427.

[0066] During use, the user scoops the waste material within the opening 1406 created by the members 1501, 1505, which in turn passes through the member 1427 into a bag 1905. These features are discussed more fully below.

[0067] In FIG. 15, the two claw members 1501, 1505 are shown having a plurality of gripping edges 1503, 1507, respectively. The gripping edges enable the user to grasp and scoop waste material in grass and/or other surfaces when such uses are necessary.

[0068] Referring now to FIGS. 16A and 16B, detailed features of housing 1423 are shown during use. Specifically, it is contemplated having a housing 1423 with a body 1601 that forms a cavity 1600 wherein an actuator 1603 extends therethrough. The

actuator 1605 is spring-loaded with a spring 1607 and attached to a cable 1605 that extends through the entire length of the elongated shaft 1405. A threaded rod 1609 is rigidly attached to the actuator 1603 and is configured to engage with treaded ends 1611, 1613 of respective claw members 1505, 1501. During use, the user pulls lever 1411 towards grip 1409, which in turn causes tension on the cable 1605 and causes a traverse movement of the actuator 1603 and an opening and closing of the claw members 1501, 1505.

[0069] In FIGS. 17A and 17B, the inner chamber 1700 of body 1400 is shown along with the components disposed therein. In the contemplated embodiment, the system 1401 includes a pulley assembly 1701 having a pulley 1703 carried on lever 1411 and engaged with the cable 1605 extending through a hollow area 1707 of the shaft 1405. The cable 1705 secures to a stop 1709 at one end and secures to actuator 1603 at an opposing second end.

[0070] In FIG. 18, the system 1401 is shown in a partial folded position, wherein a clip 1801 is released and pivot joint 1421 enables the first member 1415 and the second member 1417 to pivot relative to each other.

[0071] In FIGS. 19A-19C, the assembly of the bag 1905 to cylindrical member 1427 is shown. The process includes removing ring 1429 from member 1427 and passing a bag 1905 through an opening therethrough. The next step includes folding the bag over ring 1429 as depicted in FIG. 19B. Finally, the ring is reattached to member 1427 via a plurality of fasteners 1901 extending from an outer surface of the ring 1429. When assembled, the bag 1905 is sandwiched between the ring 1429 and the member 1427 as depicted in FIG. 19C.

[0072] In FIGS. 21 and 22, the bag device 1404 is shown associated with a plurality of bags 2001 and attached to first member 1415. During use, the bags 2001 are rotatably attached to shaft 1406 and secured in position via clip 1408, as depicted. It will be appreciated that a flashlight clip 2003 could be secured to the shaft via a cylindrical body 2002 that rigidly attaches to both clips, 1801, 1408. During use, the clip 2003 is contoured to removably secure a flashlight 2005 to the shaft.

[0073] Referring now to FIGS. 22-27, an alternative embodiment of the systems discussed herein are shown. It will be appreciated that system 2201 is substantially similar in form and function to one or more embodiments discussed above.

[0074] In the preferred embodiment, system 2201 is provided with one or more of a handle 2203 at a first end of an elongated shaft 2205 and a claw 2207 at an opposing second end of the shaft 2205. During use, the user will manipulate the handle 2203 for scooping the waste material with claw 2207.

[0075] The handle 2203 includes a grip 2209 that fits the palm of the user's hand and a lever 2211 that is gripped and manipulated with the fingers of the user's hand. In the exemplary embodiment, the lever 2211 pivotally attaches to a body 2200 via a pivot joint 2213. During use, the lever 2211 pivots within a hollow cavity section of body 2200 rigidly attached to grip 2209.

[0076] Elongated shaft 2205 includes a first section 2215 removably attached to a second section 2217 via an attachment device 2219. In the contemplated embodiment, the first section 2215 pivotally attaches second section 2217 via a joint 2221.

[0077] The system 2201 is further provided with a bag device 2204 configured to receive and store a plurality of bags 2701 (see, e.g., FIG. 27). The bag device 2204 includes a shaft 2206 that extends from a body 2202, which in turn secures to the first section 2205. The bag device 2204 is further provided with a clip 2208 rigidly attached to body 2202 and spring-loaded against the outer surface of first section 2215.

[0078] The claw 2207 includes a first claw arm 2229 and a second claw arm 2231 having respective grip ends 2233, 2235 for gripping waste material from ground surfaces such as grass, rocks, and the like. The second claw arm forms an opening 2237 for a bag to extend therethrough, as discussed more fully below. To secured the bag to the claw arms, it is contemplated having a plurality of attachment devices associated with each arm. In the preferred embodiment, the attachment devices are levers 2239, 2243 pivotally attached to arm 2229 and levers 2241, 2245 pivotally attached to arm 2231.

[0079] In FIG. 24, a partial folded position of system 2201 is shown. During use, the user unlatches clip 2401, which in turn allows the two members 2215, 2217 to pivot relative to each other about pivot joint 2221.

[0080] Referring now to FIGS. 25A and 25B, detailed features of housing 2210 are shown during use. Specifically, it is contemplated having a housing 2210 with a body 2501 that forms a cavity 2500 wherein an actuator 2503 extends therethrough. The actuator 2505 is spring-loaded with a spring 2507 and attached to a cable 2505 that extends through the entire length of the elongated shaft 2205. A threaded rod 2509 is rigidly attached to the actuator 2503 and is configured to engage with treaded ends 2511, 2513 of respective claw members 1505, 1501. During use, the user pulls lever 2211 towards grip 2209, which in turn causes tension on the cable 2505 and causes a traverse movement of the actuator 2503 and an opening and closing of the claw arms 2231, 2229.

[0081] In FIGS. 26A-26C, the assembly of bag 2601 to the claw arms 2231, 2229 are shown. In one embodiment, a plurality of protrusions 2603, 2605 extends from respective arms 2231, 2229 and are adapted to engage with levers 2245, 2241. It will be appreciated that the protrusions securely fasten the bag 2601 to the arms.

[0082] As depicted in FIGS. 26A and 26B, the bag 2601 is secured to the protrusions 2603, 2605 and levers 2245, 2241. It should be understood that the process is also done with the two levers not shown, specifically, levers 2239, 2243. After the bag 2601 is attached to the levers, the bag is extended through opening 2237 formed by arm 2231.

[0083] In the preceding specification, the claimed subject matter has been described with reference to specific exemplary embodiments. It will, however, be evident that various modifications and changes may be made without departing from the broader spirit and scope of the claimed subject matter as set forth in the claims that follow. The specification and drawings are accordingly to be regarded as illustrative rather than restrictive. Other embodiments of the claimed subject matter may be apparent to those

skilled in the art from consideration of the specification and practice of the claimed subject matter disclosed herein.

What is claimed is:

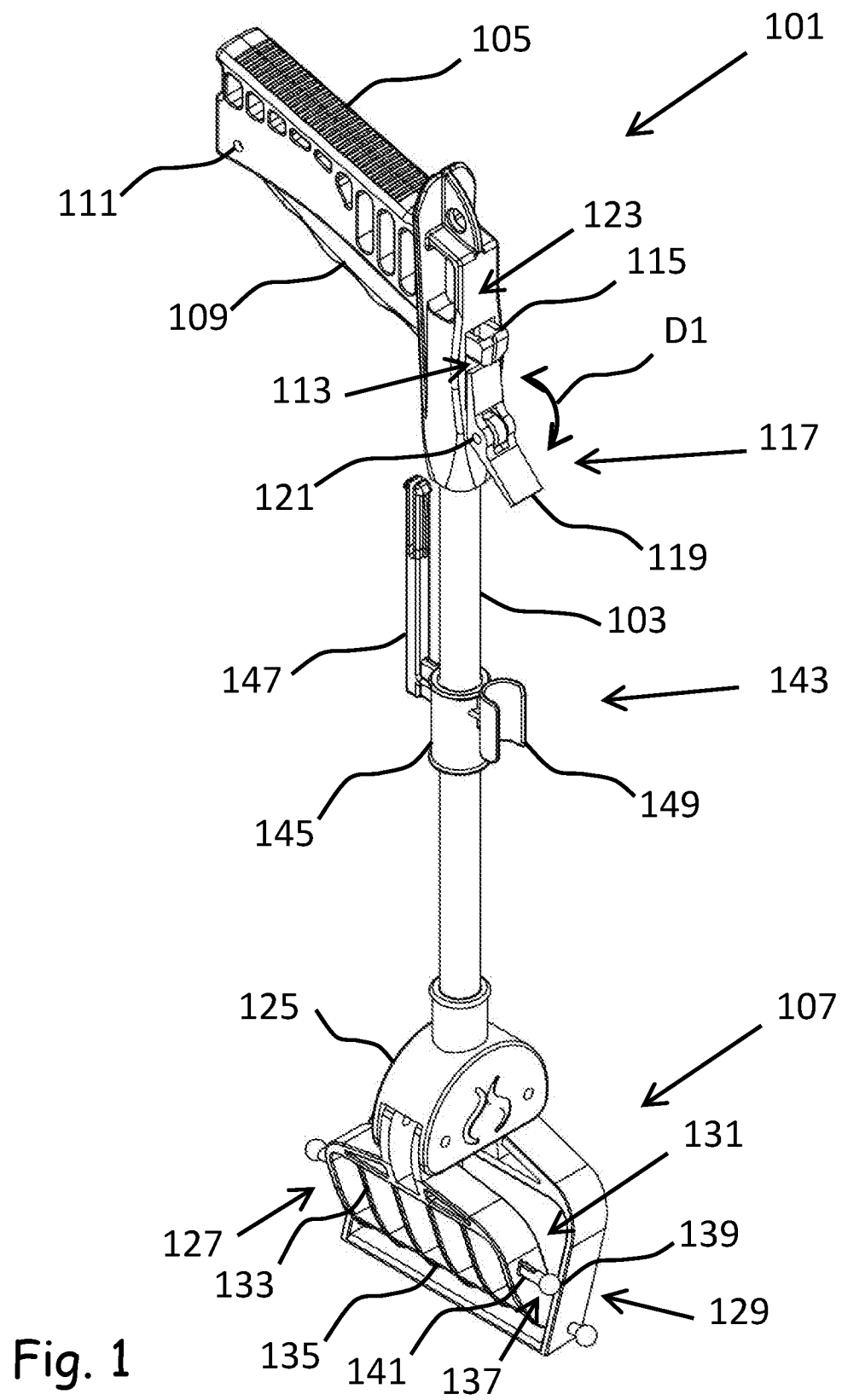
1. A system for facilitating removal of animal waste, the system comprising:
 - an elongated shaft having a first end and a second end;
 - a handle associated with the first end, the handle having:
 - a body forming an opening;
 - a grip rigidly attached to the body; and
 - a lever extending through the opening of the body and pivotally attached to a joint attached to the body;
 - a collection device associated with the second end, the collection device being configured to collect animal waste;
 - an actuator associated with the handle and operably coupled with the collection device, the actuator is configured to actuate the collection device into at least one of an opening position prior to an animal waste collection and a closed position that substantially enclose animal waste in the collection device.
2. The system of claim 1, further comprising:
 - a pulley mechanism disposed within the opening of the body of the handle, the pulley mechanism having:
 - a pulley rotatably secured to the lever, the pulley is configured to receive a cable extending through the elongated shaft.
3. The system of claim 1, the elongated shaft comprising:
 - a first shaft member removably attached to a second shaft member.
4. The system of claim 3, wherein the first shaft member pivotally attaches to the second shaft member via a pivot joint.
5. The system of claim 4, further comprising:
 - a clip secured to the first shaft member and configured to engage with the second shaft member.

6. The system of claim 1, wherein the latching device is pivotally coupled relative to the handle.
7. The system of claim 1, further comprising a cable coupled to an actuator and coupled to the collection device, wherein the cable extends substantially the length of the elongated shaft.
8. The system of claim 1, wherein the collection device comprises a first arm and a second arm, wherein at least one of the first arm and the second arm is configured to pivot relative to each other, and wherein the first arm is configured to convey animal waste towards the second arm.
9. The system of claim 8, further comprising a cable coupled to an actuator and associated with the collection device, wherein the actuator is configured to cause the at least one of the first arm and the second arm to pivot via the cable.
10. The system of claim 9, wherein the first arm comprises a plurality of ribs, and the second arm defines an opening.
11. The system of claim 9, wherein the at least one of the first arm and the second arm comprises at least one bag attachment device configured to secure a detachable bag to the collection device.
12. The system of claim 11, wherein the at least one bag attachment member extends from an outer surface of the first arm.
13. The system of claim 12, wherein the at least one bag attachment member pivotally attaches to the outer surface of the first arm.

14. A system for facilitating removal of animal waste, the system comprising:
an elongated shaft having a first end and a second opposing end;
a handle associated with the first end;
an actuator associated with the handle; and
a collection device associated with the second end, the collection device comprising:
a first arm; and
a second arm forming an opening; and
at least one bag attachment member pivotally attached to an outer surface of the first arm,
wherein the actuator is configured to actuate the collection device, such that animal waste is moved by the first arm into the opening of the second arm.
15. The system of claim 14, the elongated shaft comprising:
a first shaft member removably attached to a second shaft member.
16. The system of claim 15, wherein the first shaft member pivotally attaches to the second shaft member via a pivot joint.
17. The system of claim 14, further comprising:
a bag device secured to the elongated shaft, the bag device having:
a body configured to secure to an outer surface of the shaft;
a clip that engages with the outer surface of the shaft; and
a shaft that extends relatively parallel to the elongated shaft;
wherein the shaft is configured to receive a roll of a plurality of bags; and
wherein the clip is configured to sandwich the bag against the outer surface of the elongated shaft.
18. The system of claim 14, further comprising:
a pulley mechanism disposed within an opening of the body of the handle, the pulley mechanism having:

a pulley rotatably secured to a lever of the handle, the pulley is configured to receive a cable extending through the elongated shaft.

19. A system for facilitating removal of animal waste, the system comprising:
an elongated shaft having a first end and a second opposing end;
a handle associated with the first end;
an actuator associated with the handle;
a collection device associated with the second end, the collection device comprising:
a housing secured to the second end of the elongated shaft;
a first curved arm pivotally attached to the housing;
a second curved arm pivotally attached to the housing; and
a bag ring removably attached to the housing; and
a bag secured to the bag ring;
wherein the actuator is configured to actuate the collection device, such that animal waste is moved by the first curved arm and the second curved arm into the opening of the bag ring.
20. The system of claim 19, further comprising:
a bag device secured to the elongated shaft, the bag device having:
a body configured to secure to an outer surface of the shaft;
a clip that engages with the outer surface of the shaft; and
a shaft that extends relatively parallel to the elongated shaft;
wherein the shaft is configured to receive a roll of a plurality of bags; and
wherein the clip is configured to sandwich the bag against the outer surface of the elongated shaft.



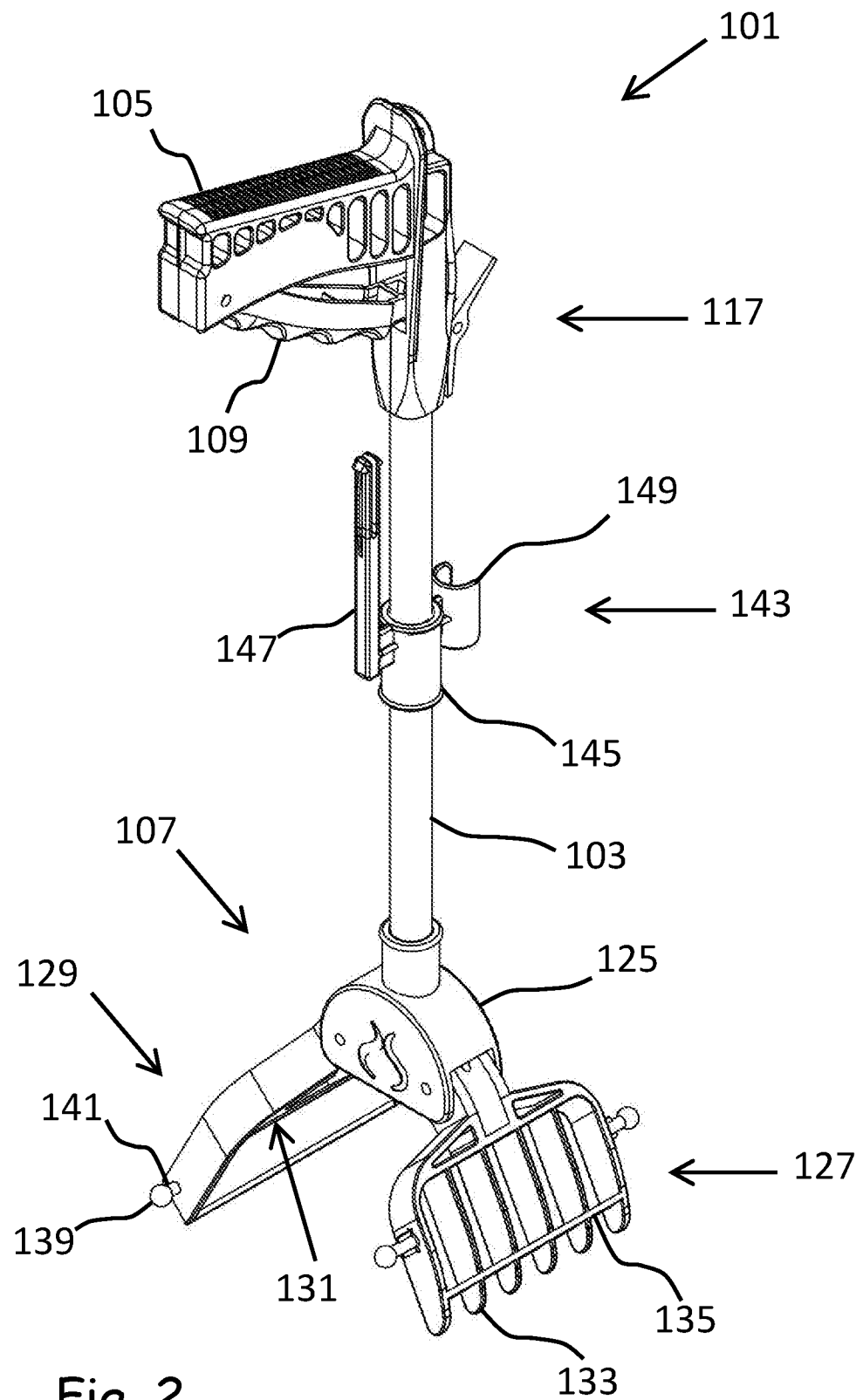


Fig. 2

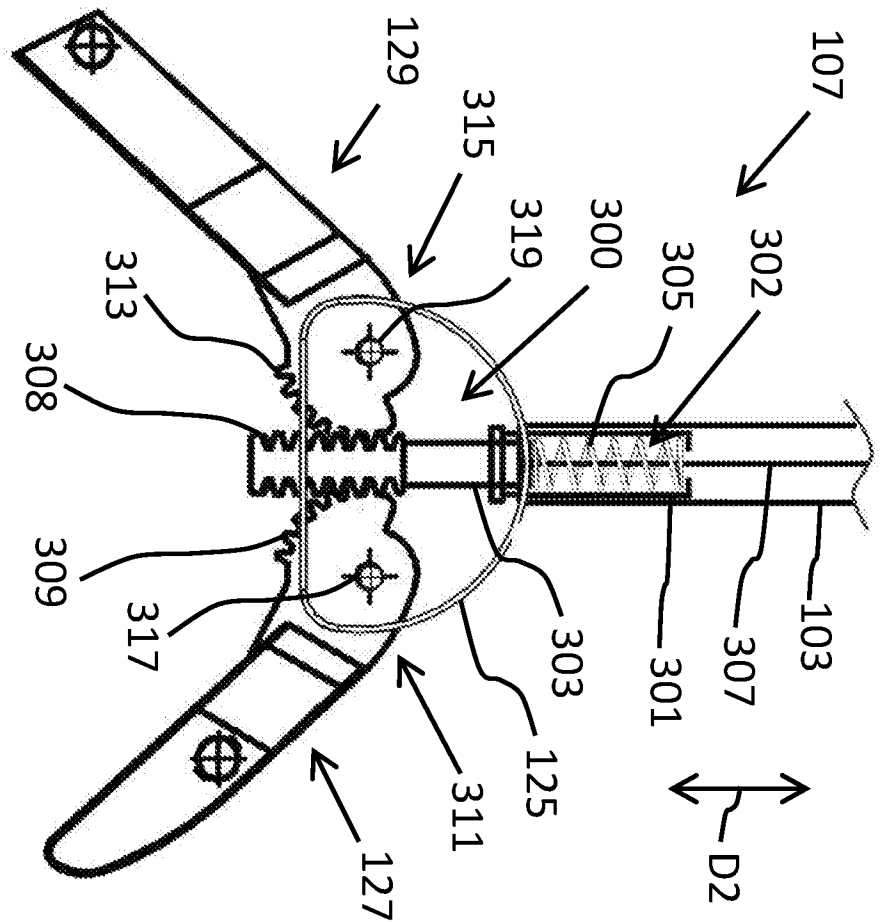


Fig. 3A

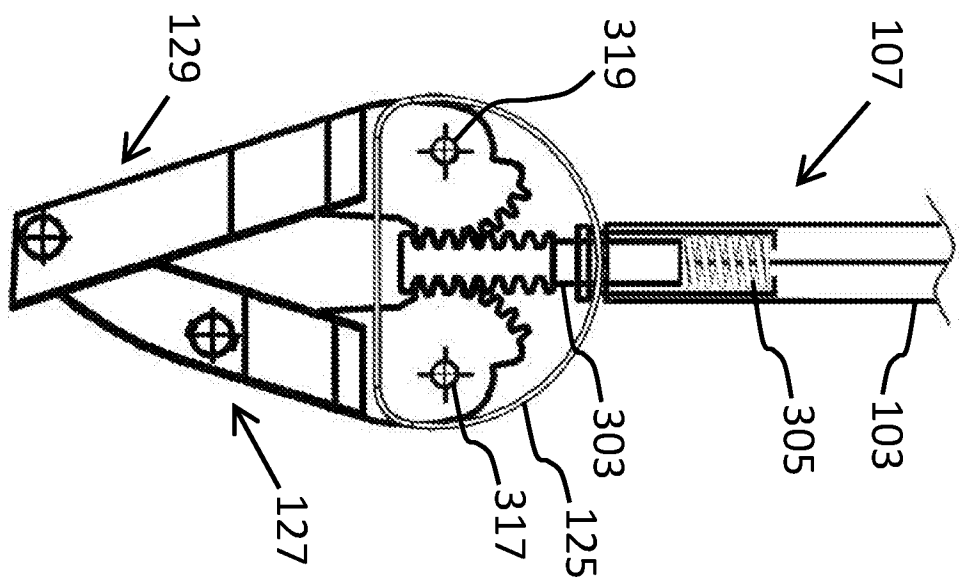
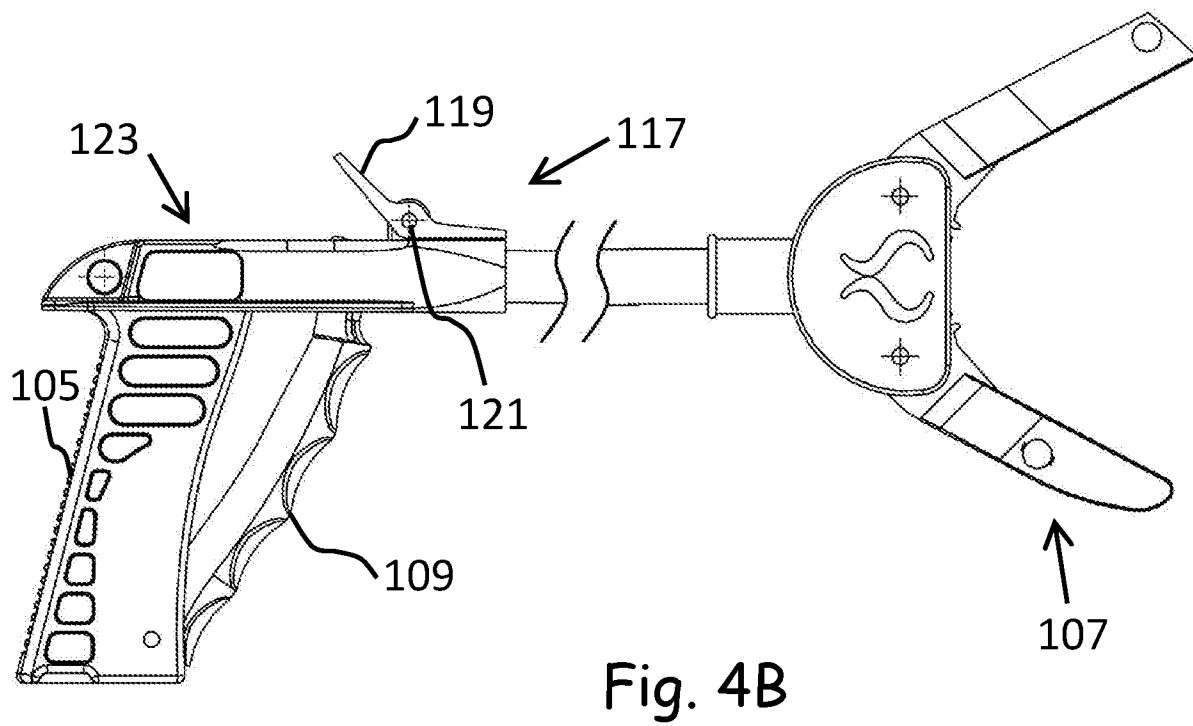
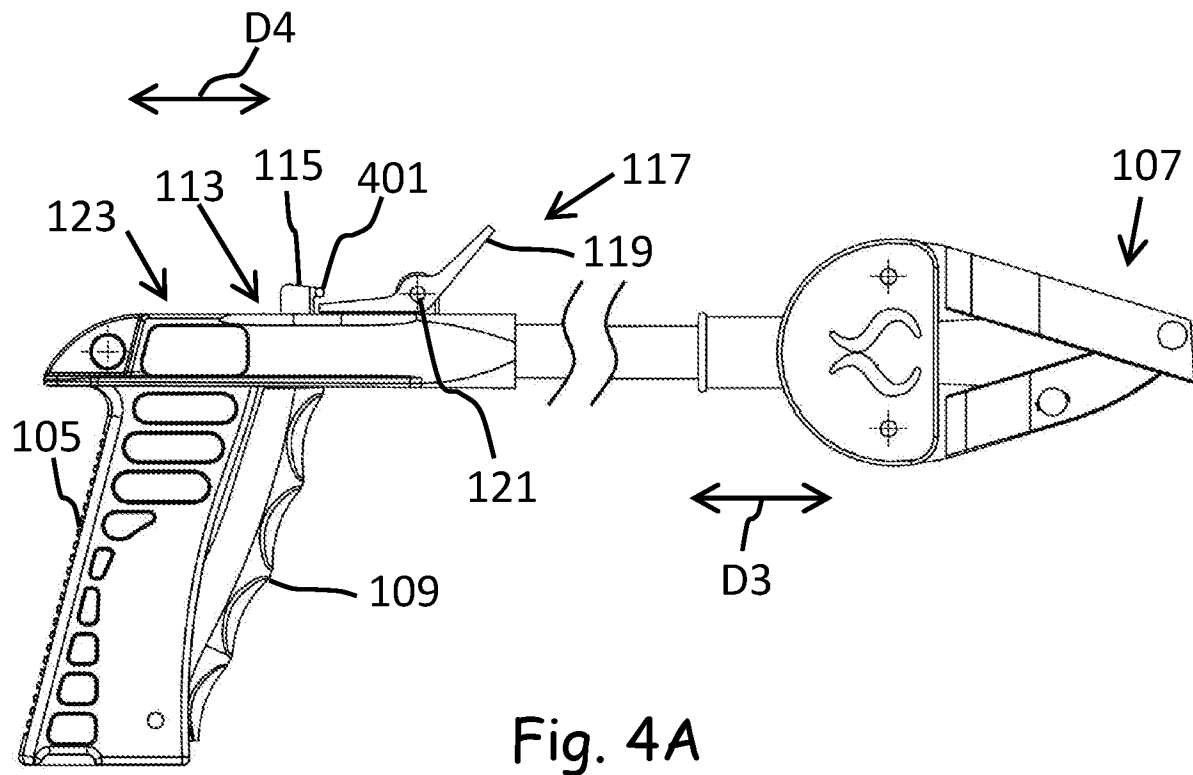
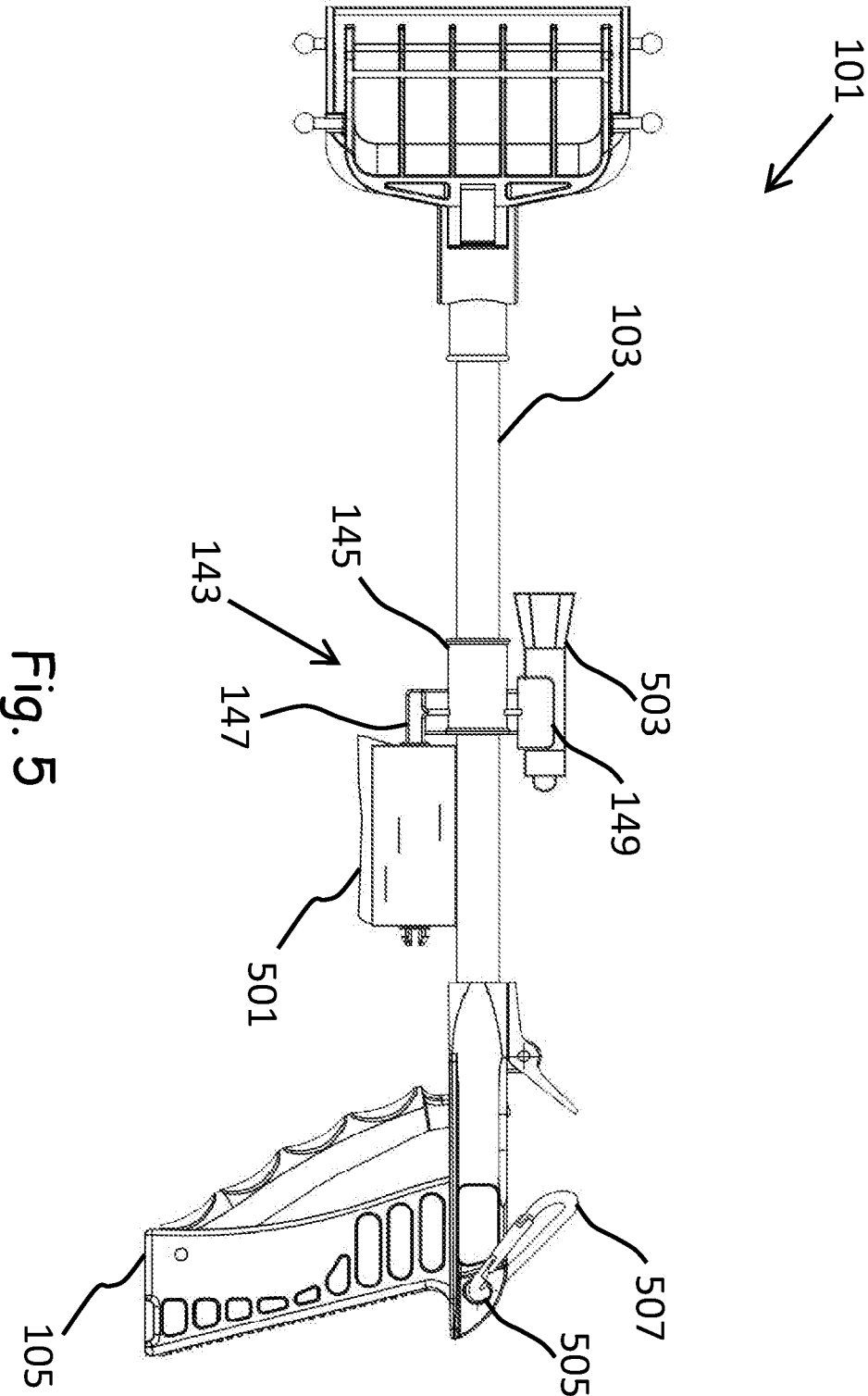
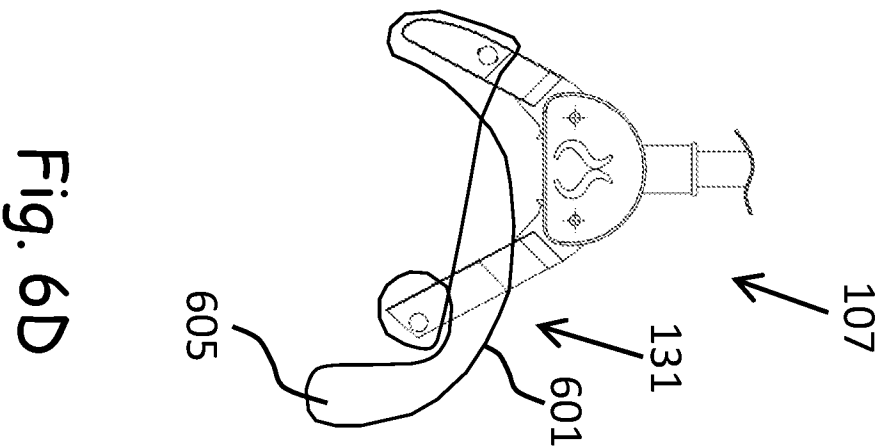
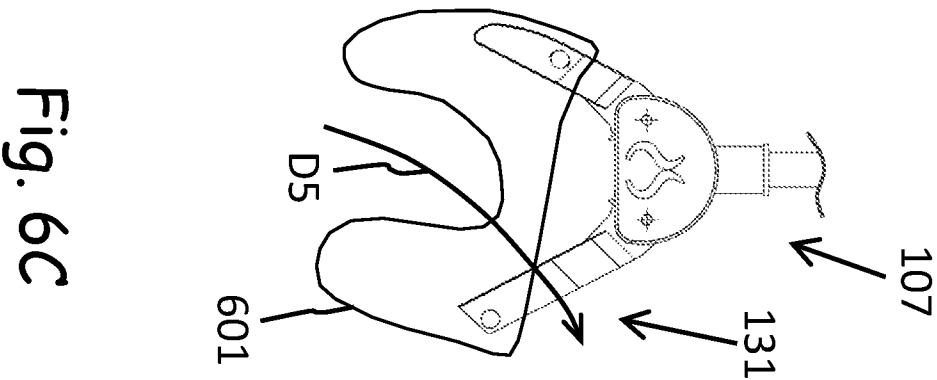
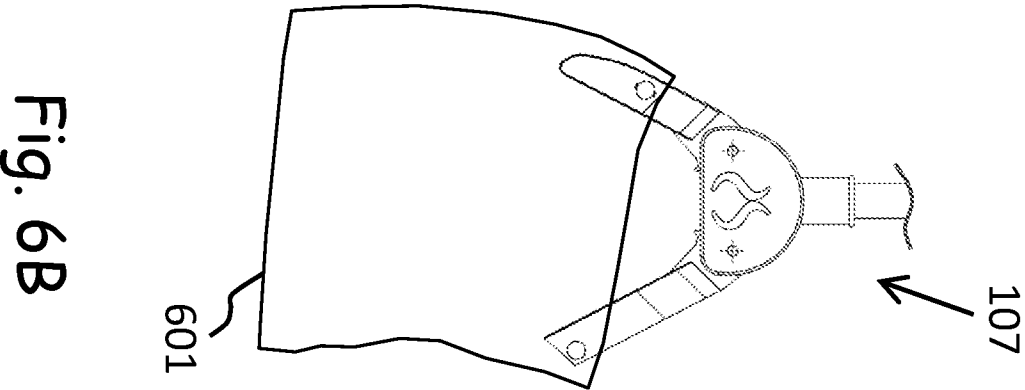
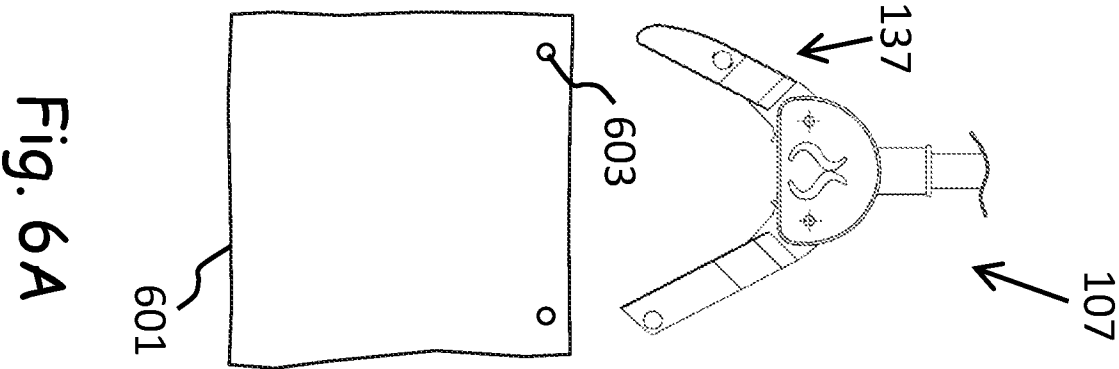


Fig. 3B







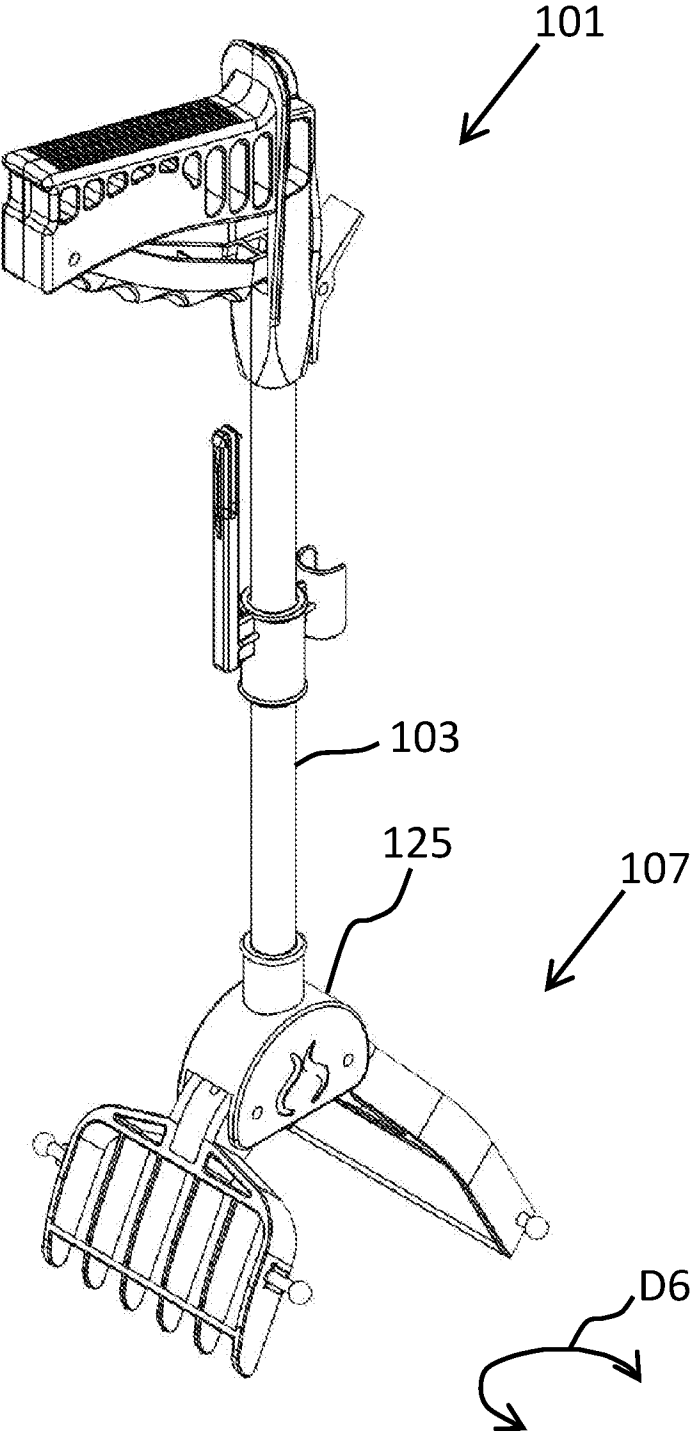
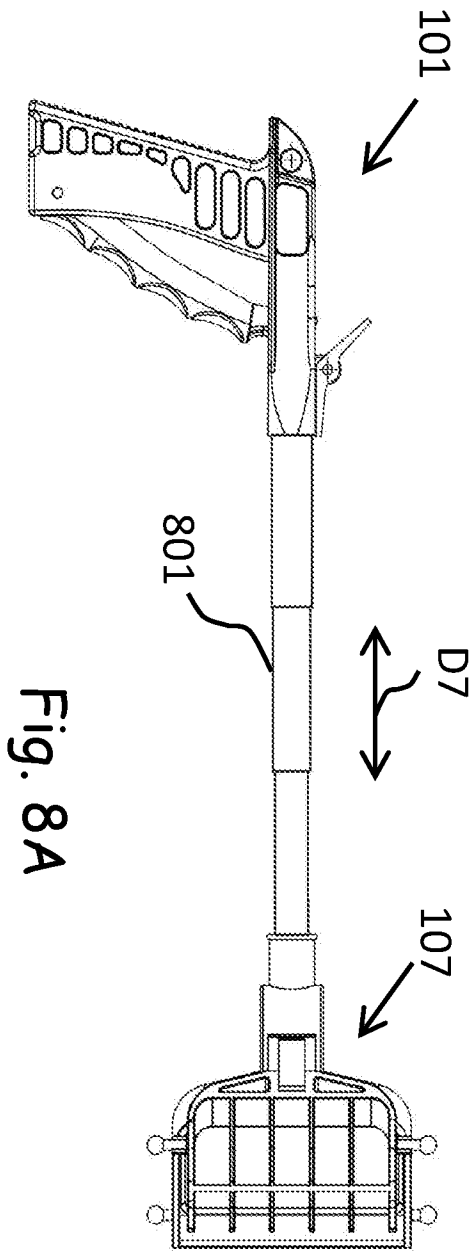
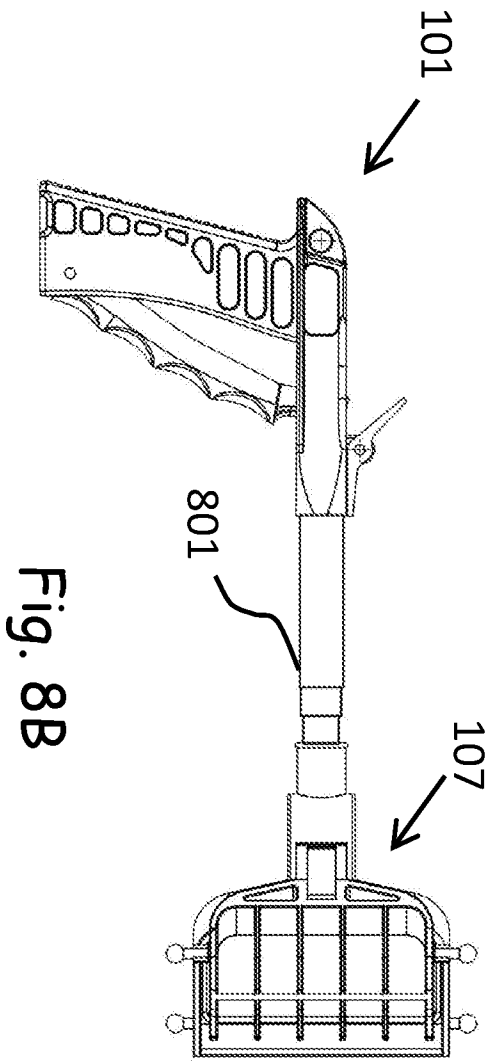
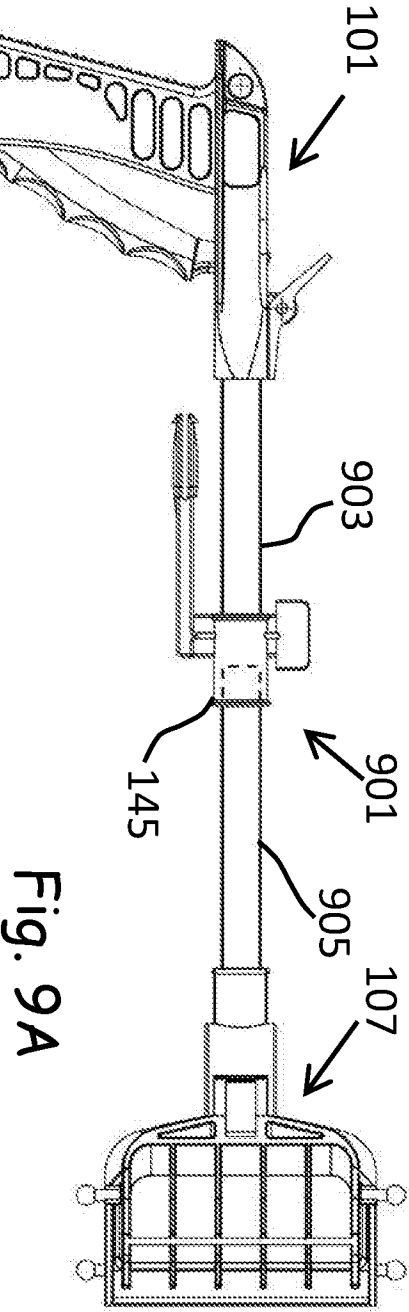
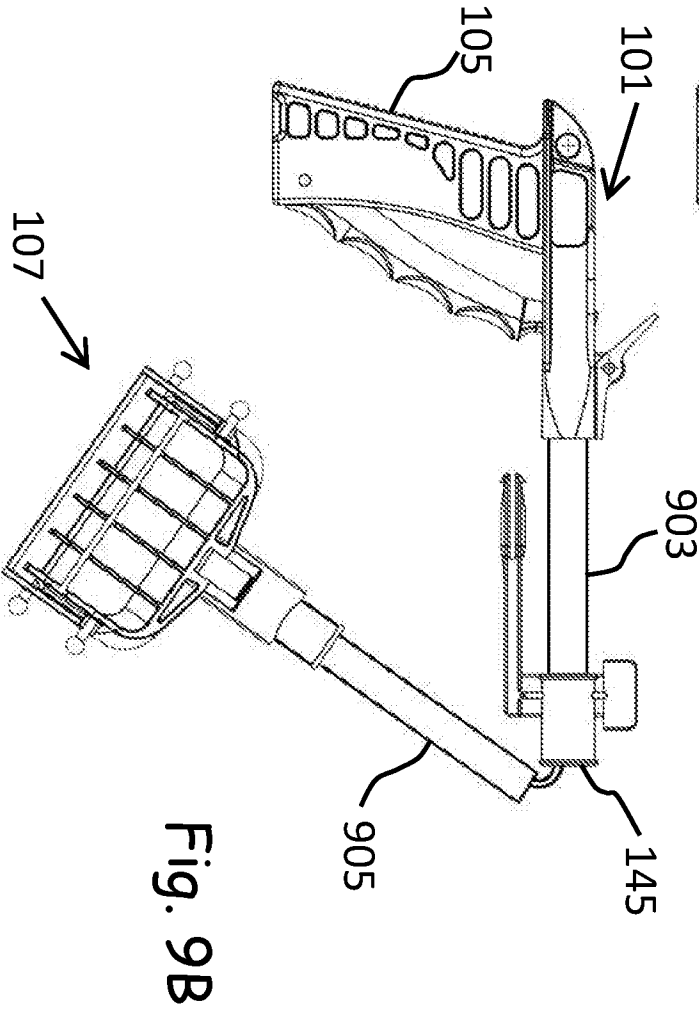


Fig. 7





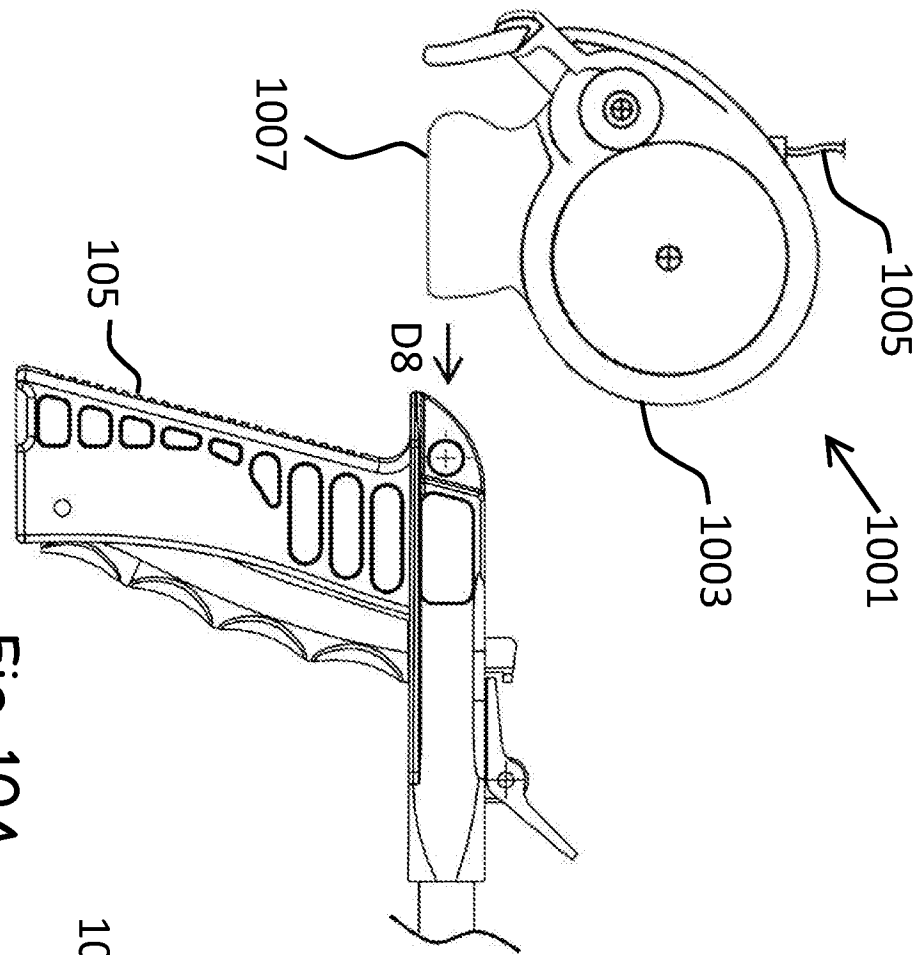


Fig. 10A

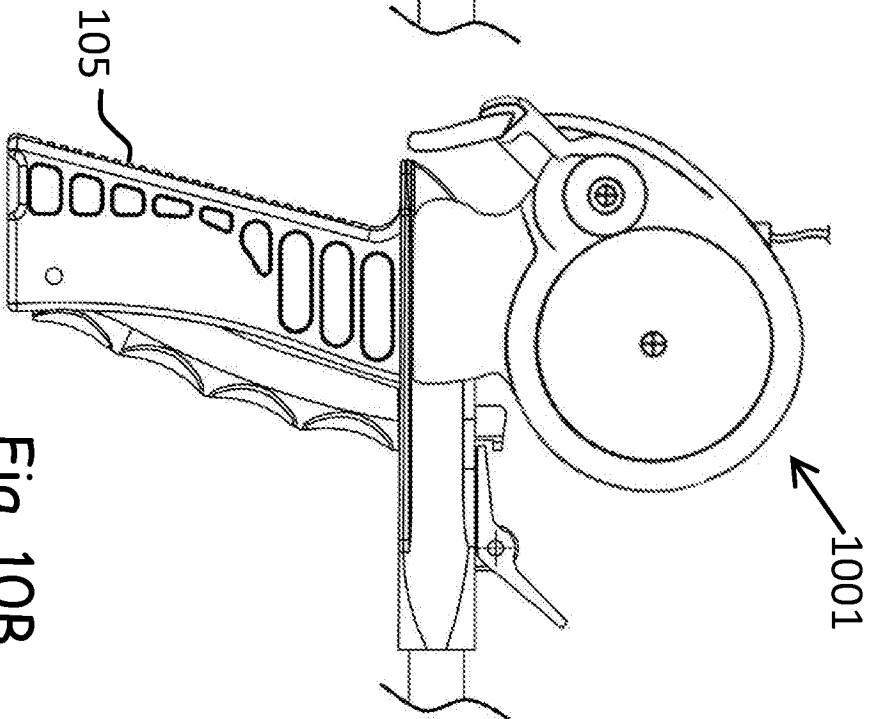


Fig. 10B

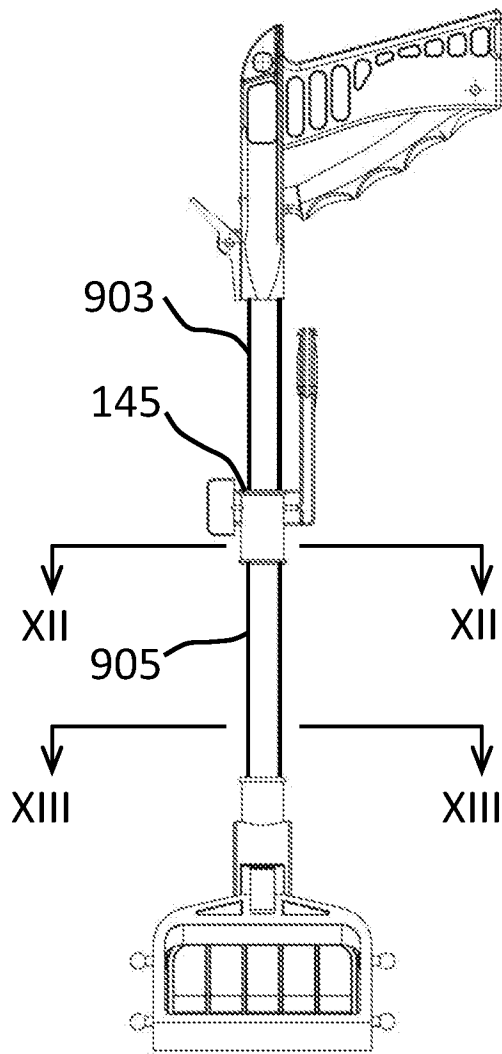


Fig. 11

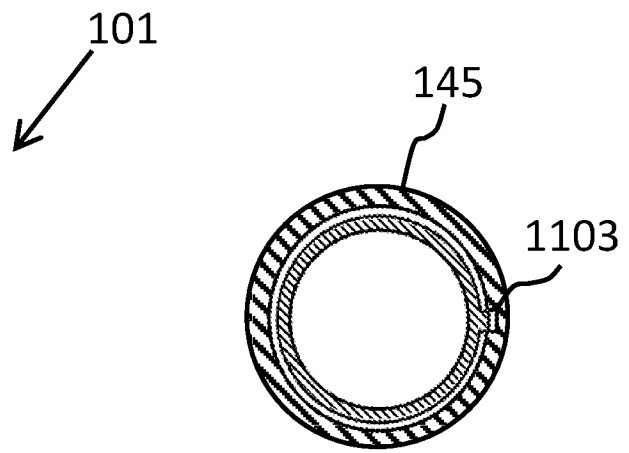


Fig. 12

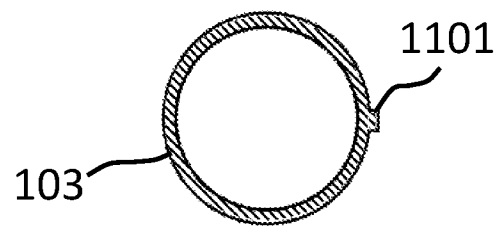


Fig. 13

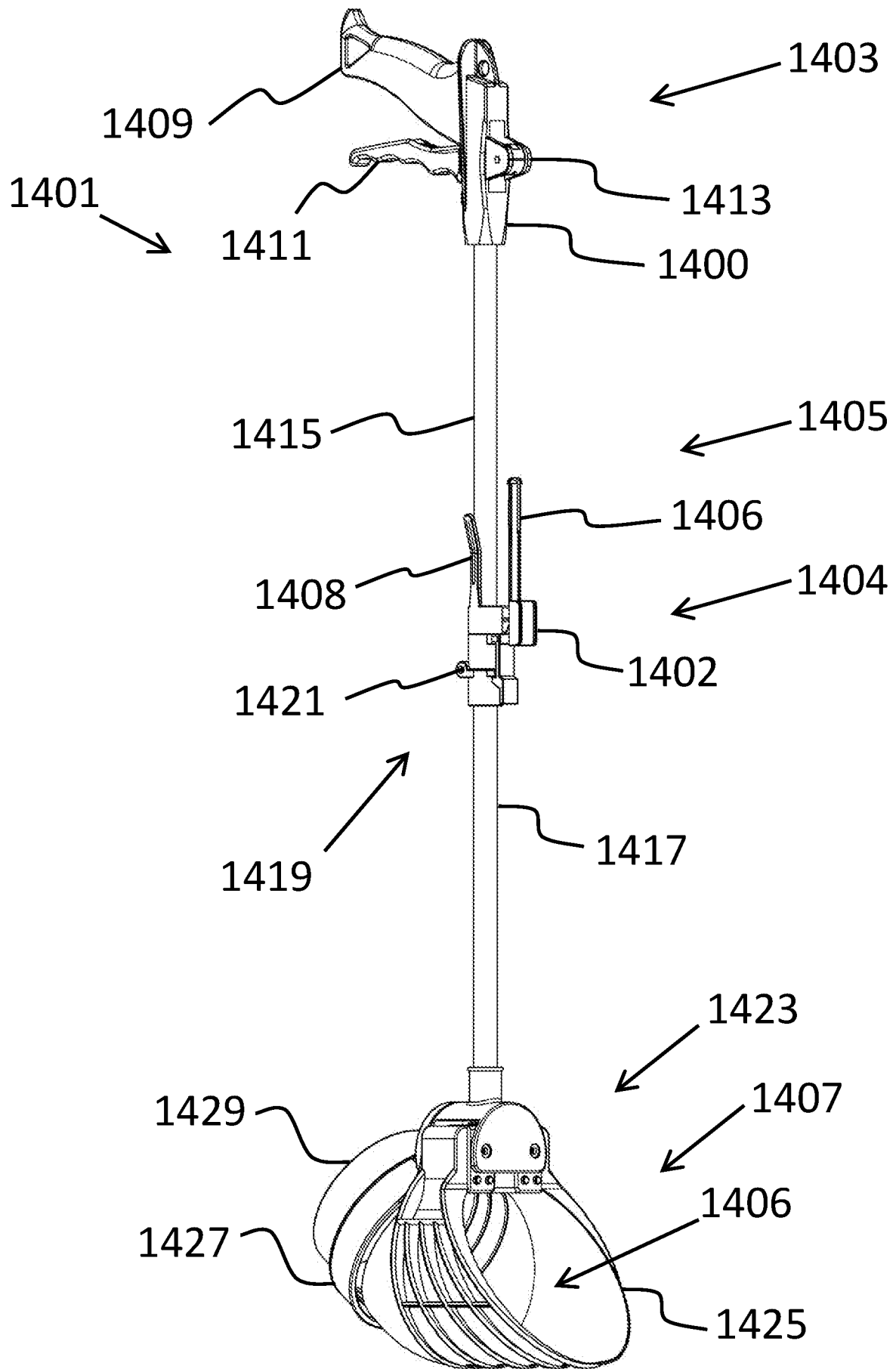


Fig. 14

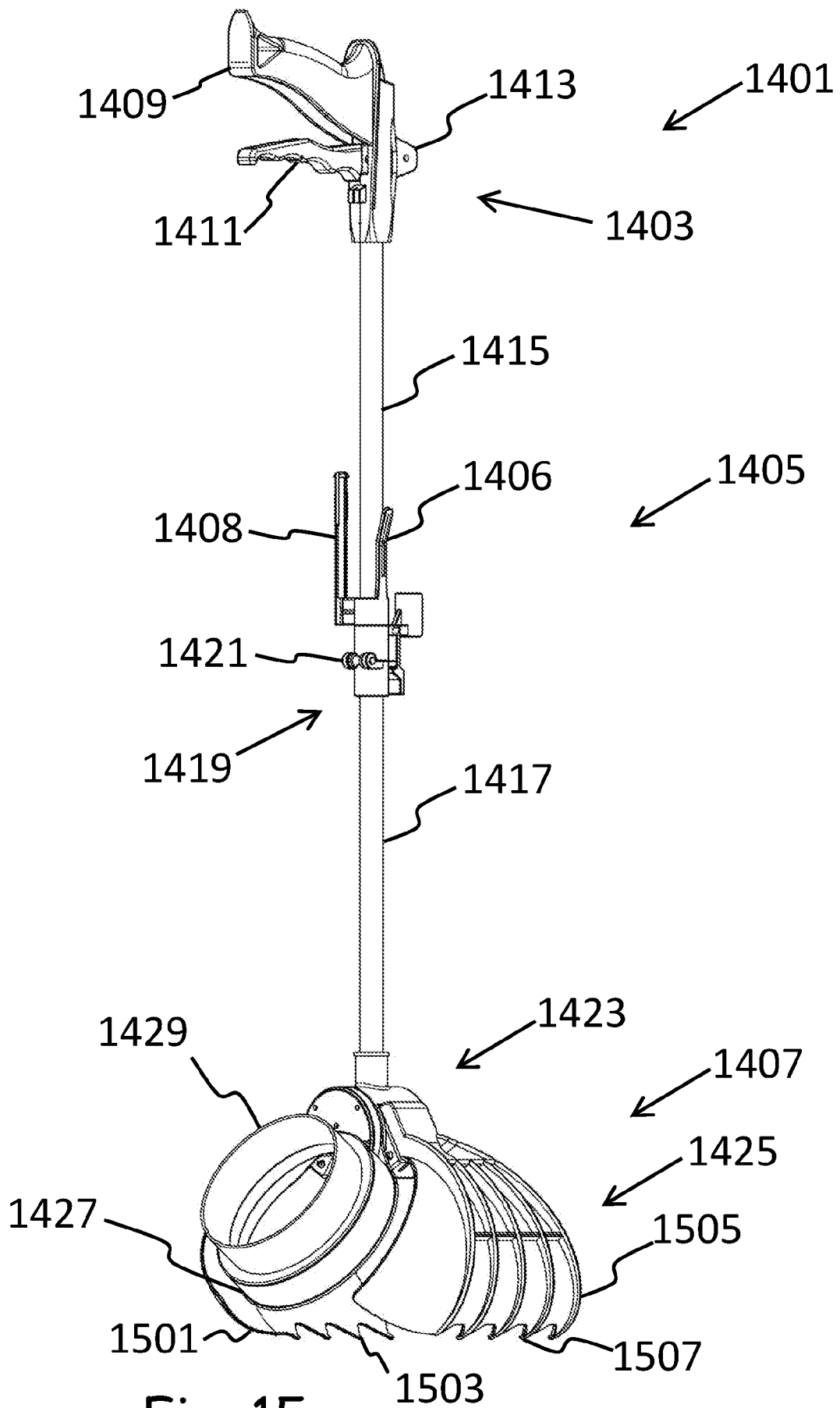


Fig. 15

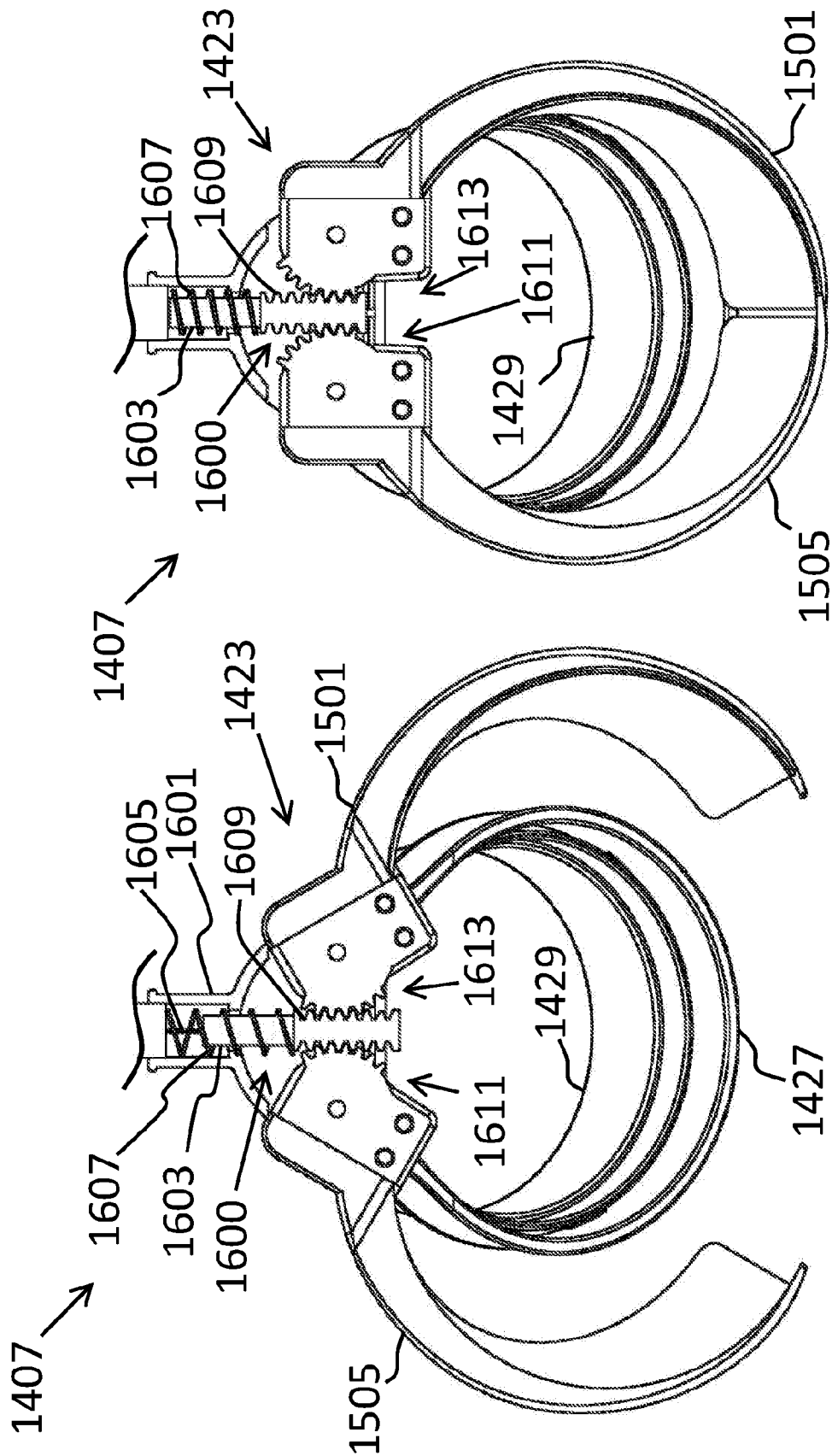


Fig. 16B

Fig. 16A

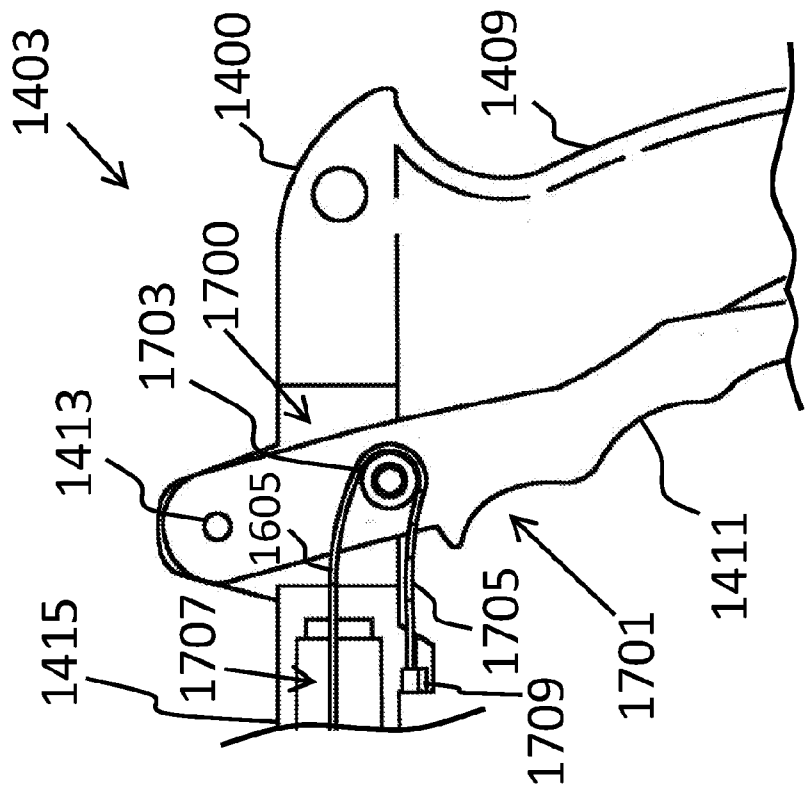


Fig. 17B

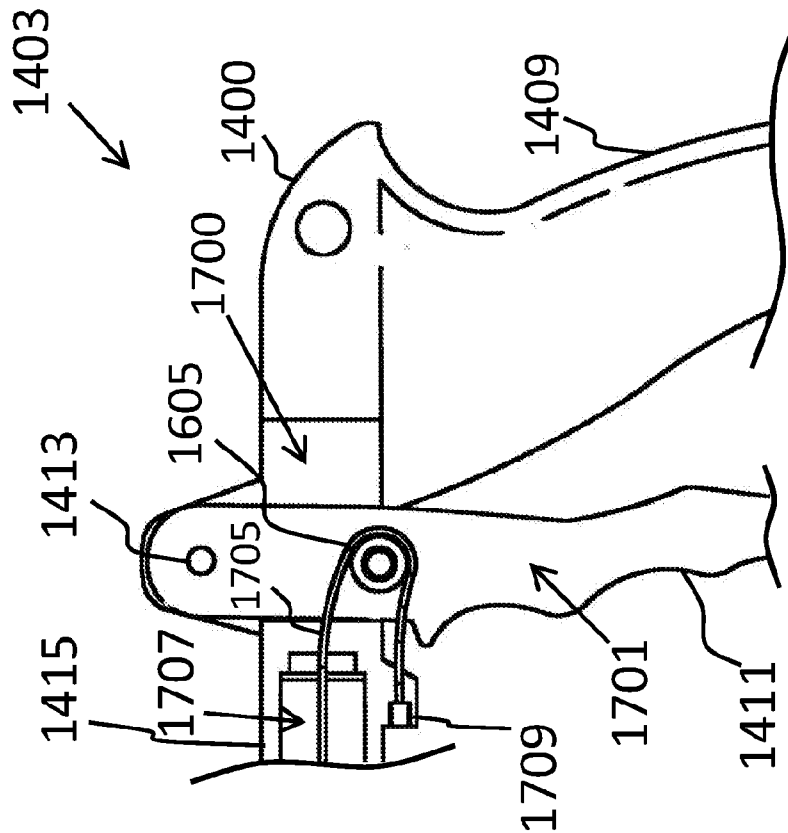


Fig. 17A

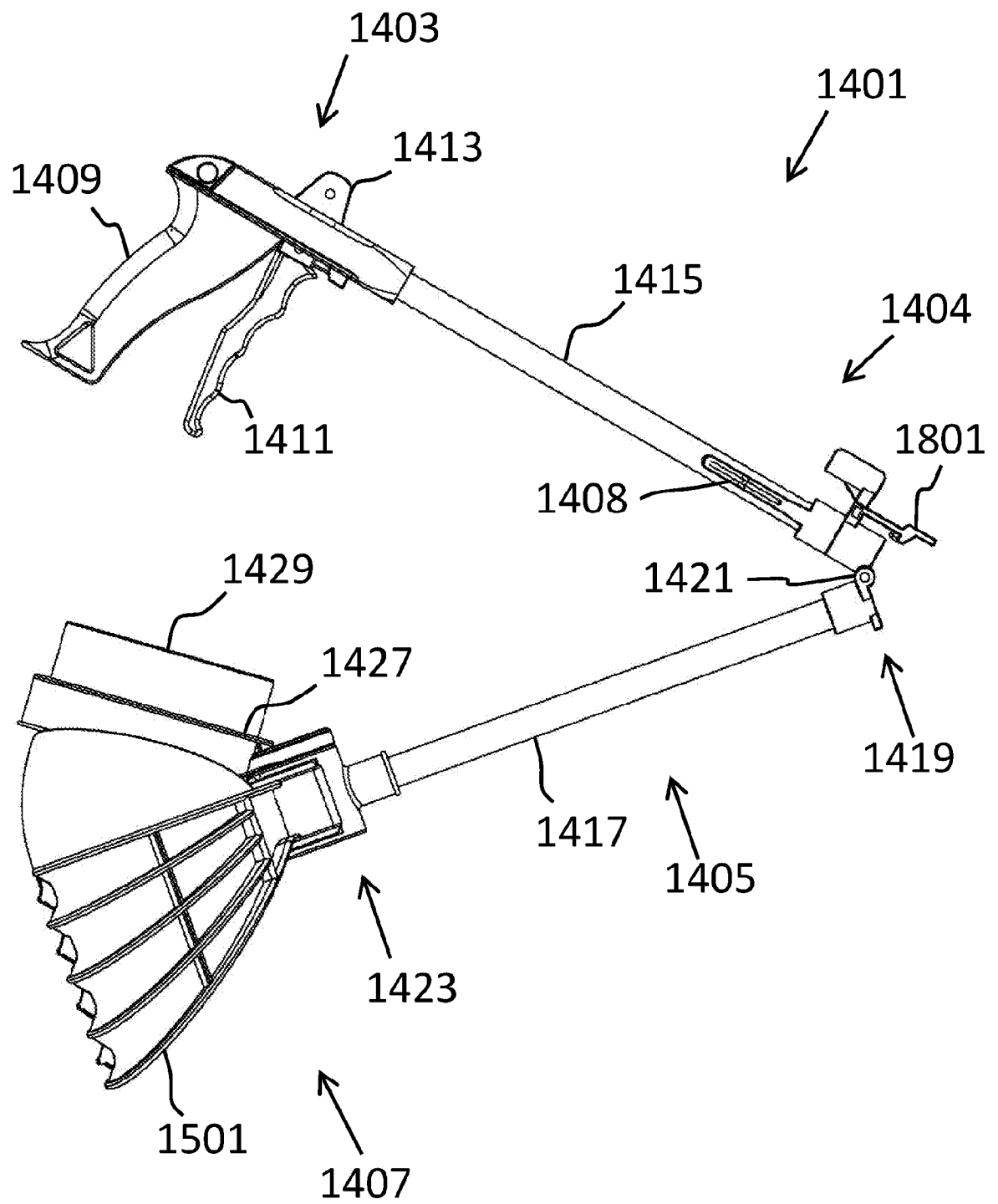
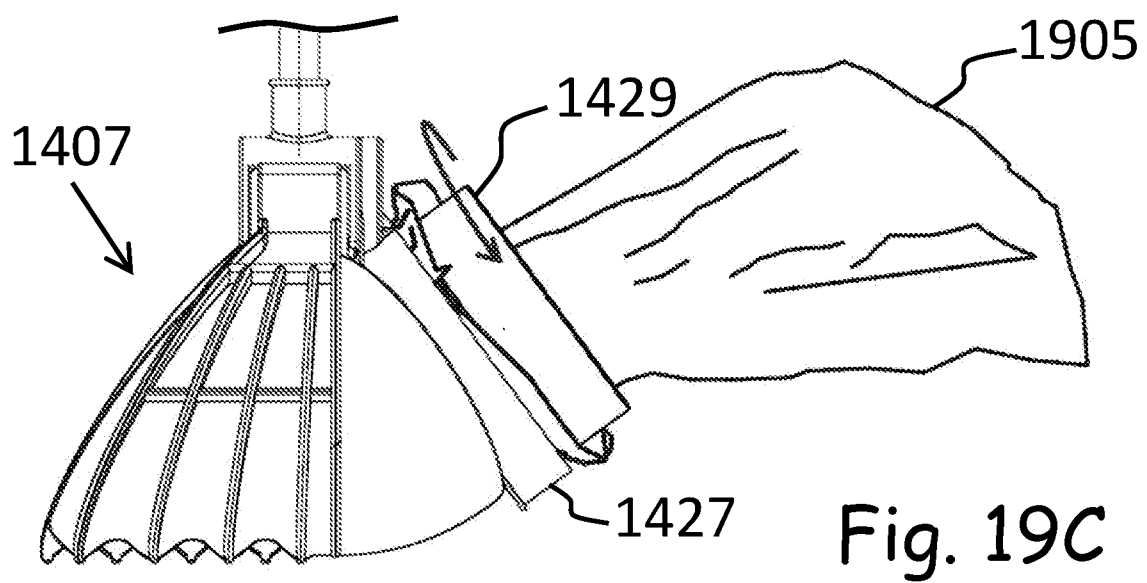
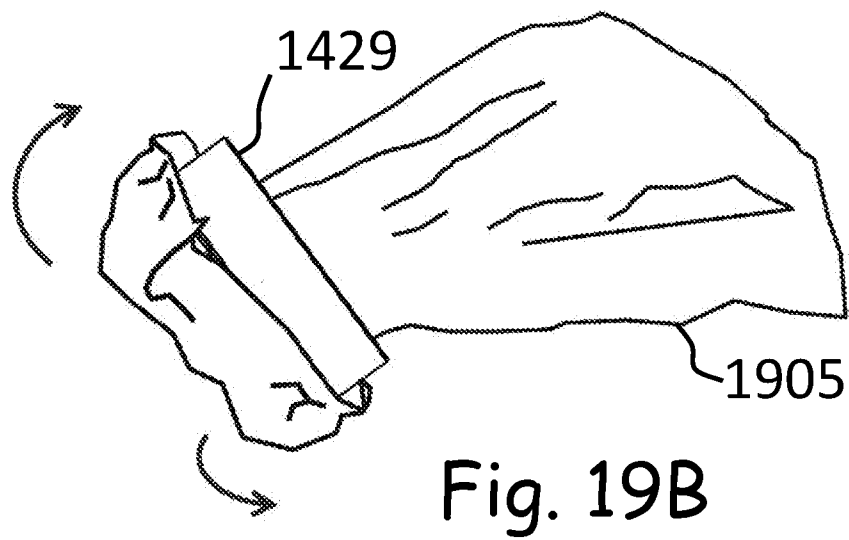
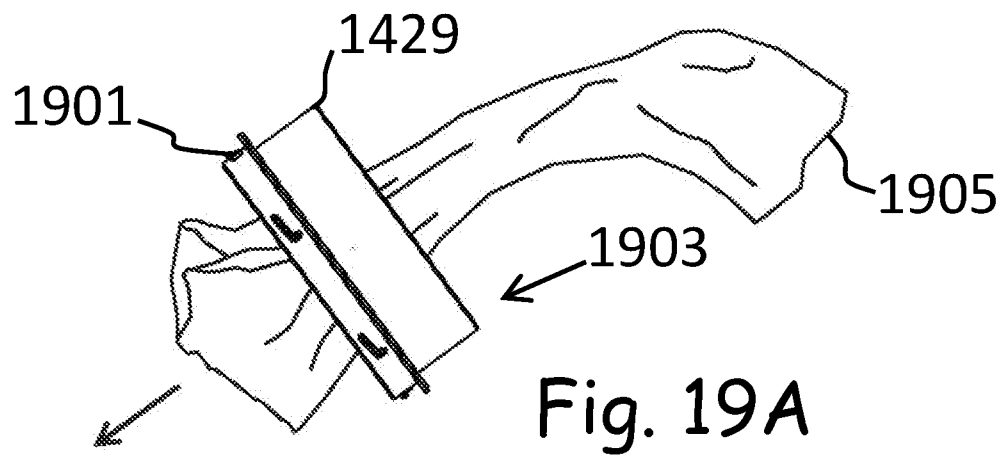
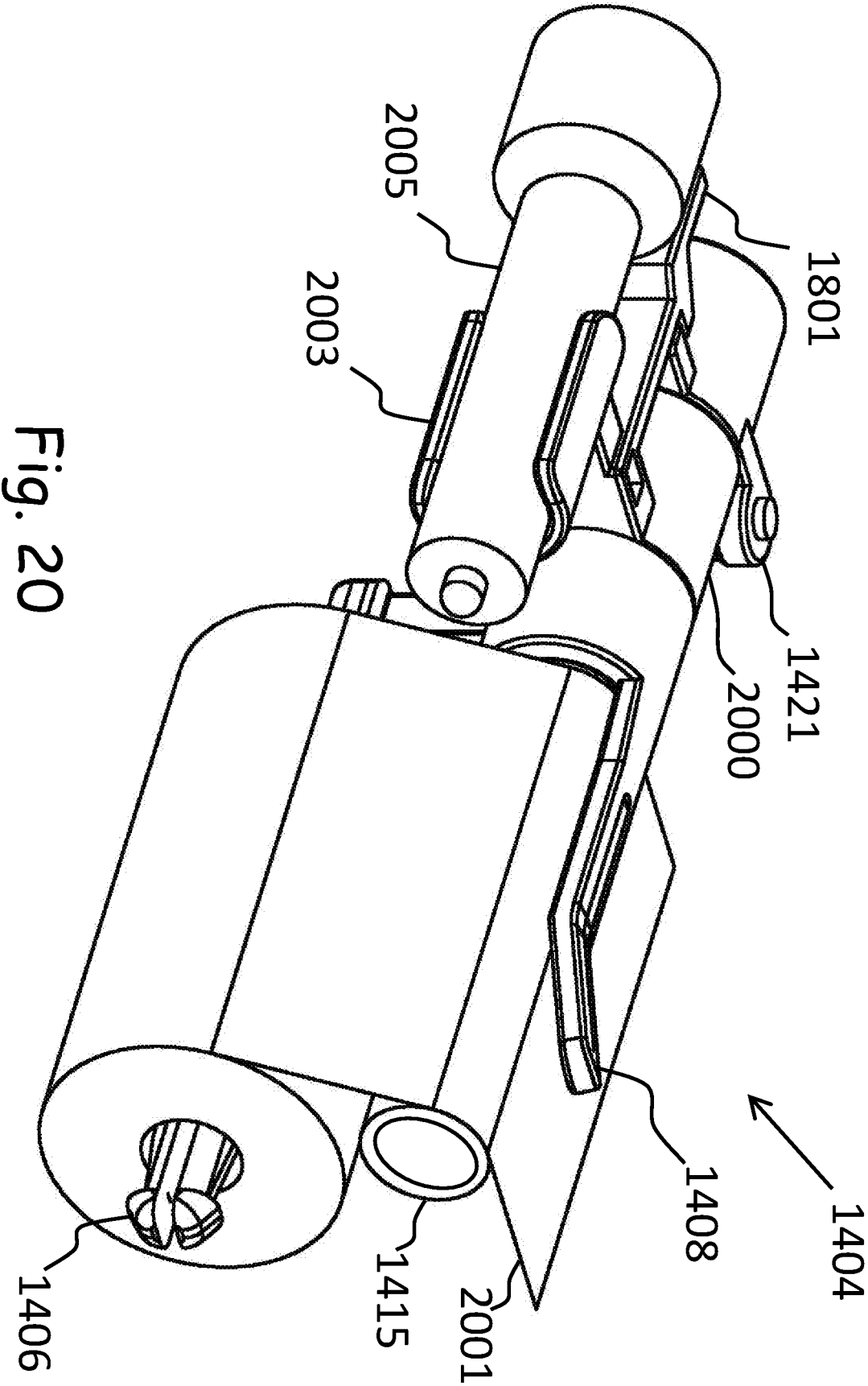


Fig. 18





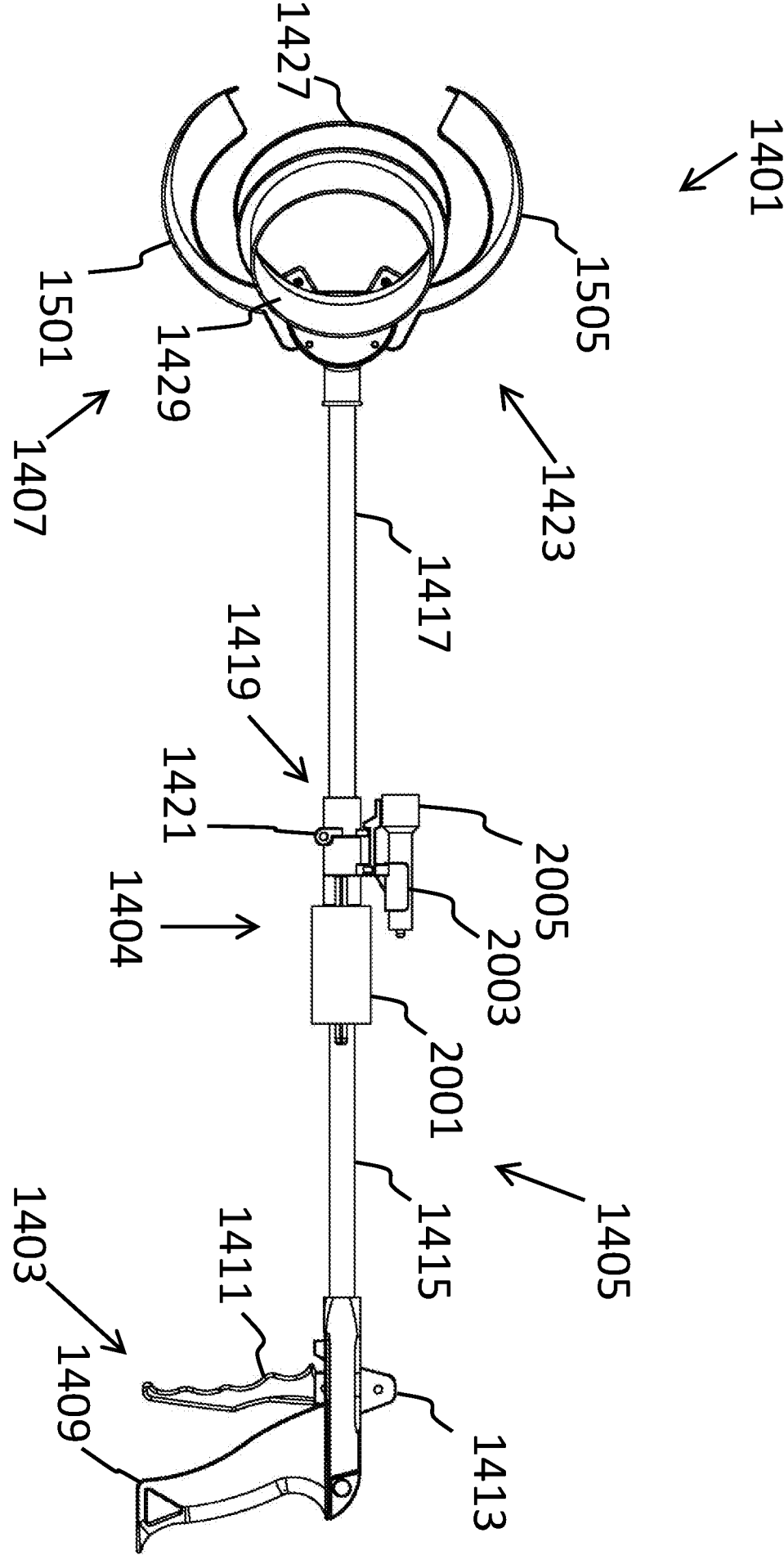


Fig. 21

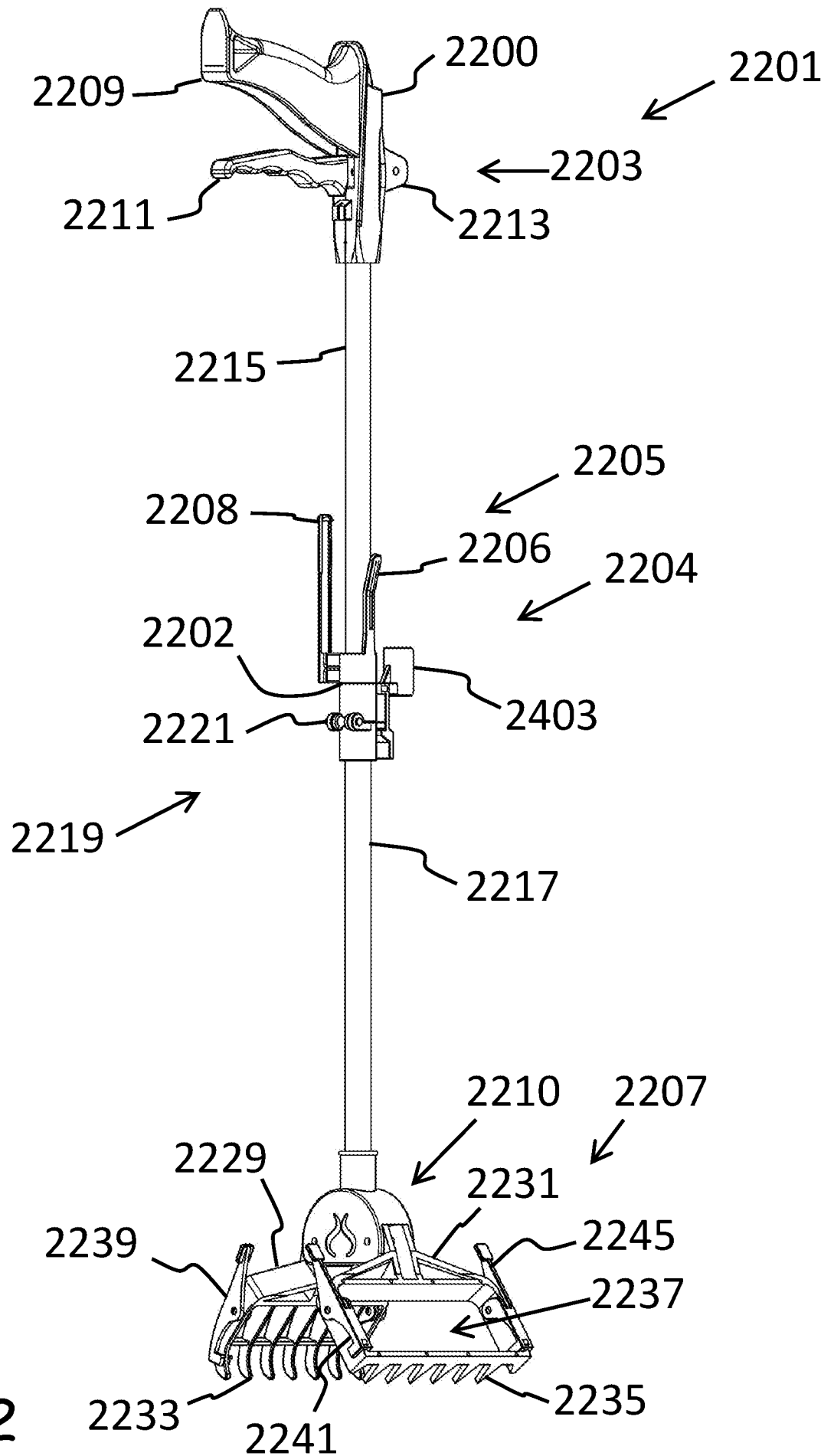


Fig. 22

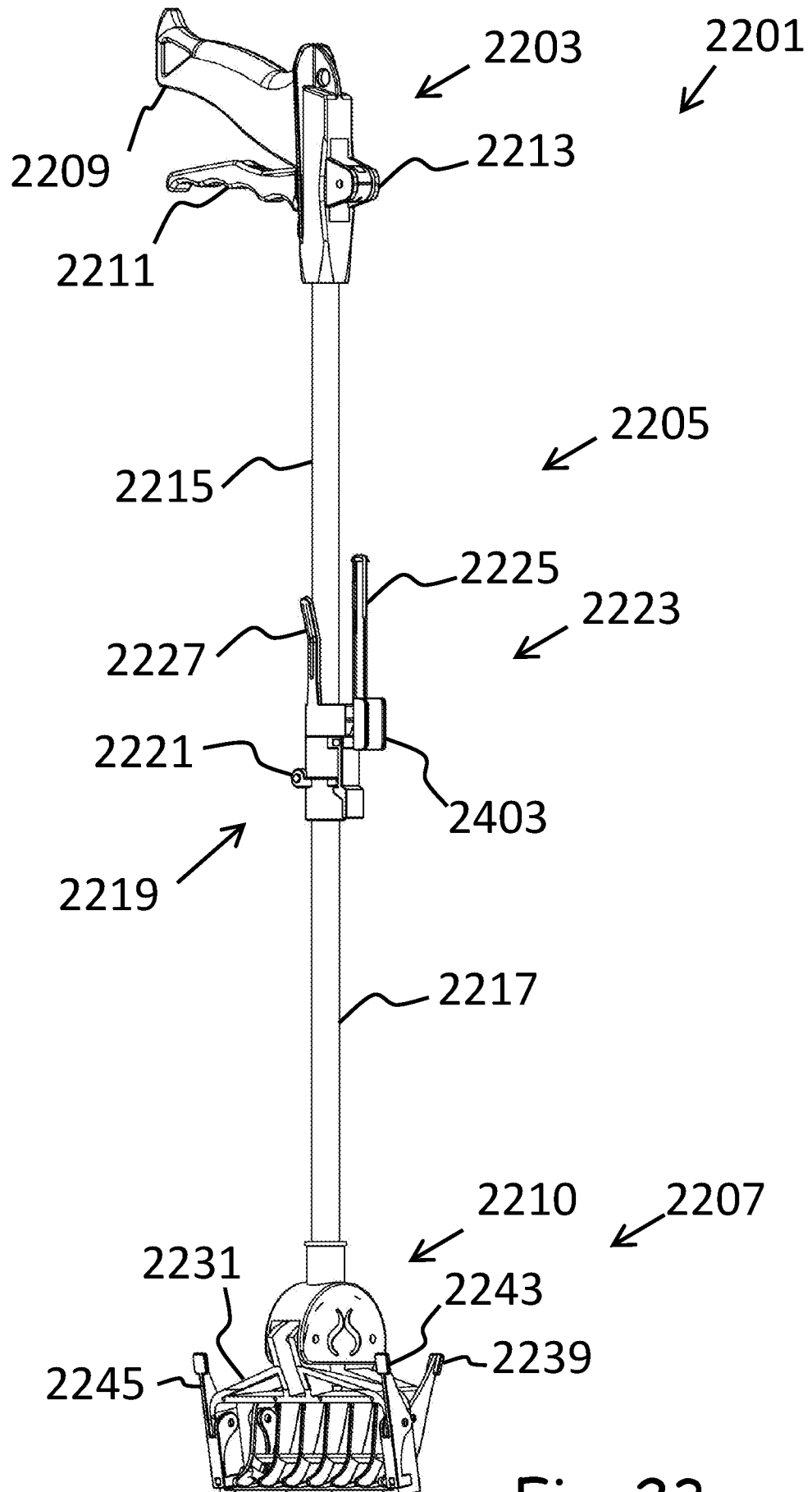


Fig. 23

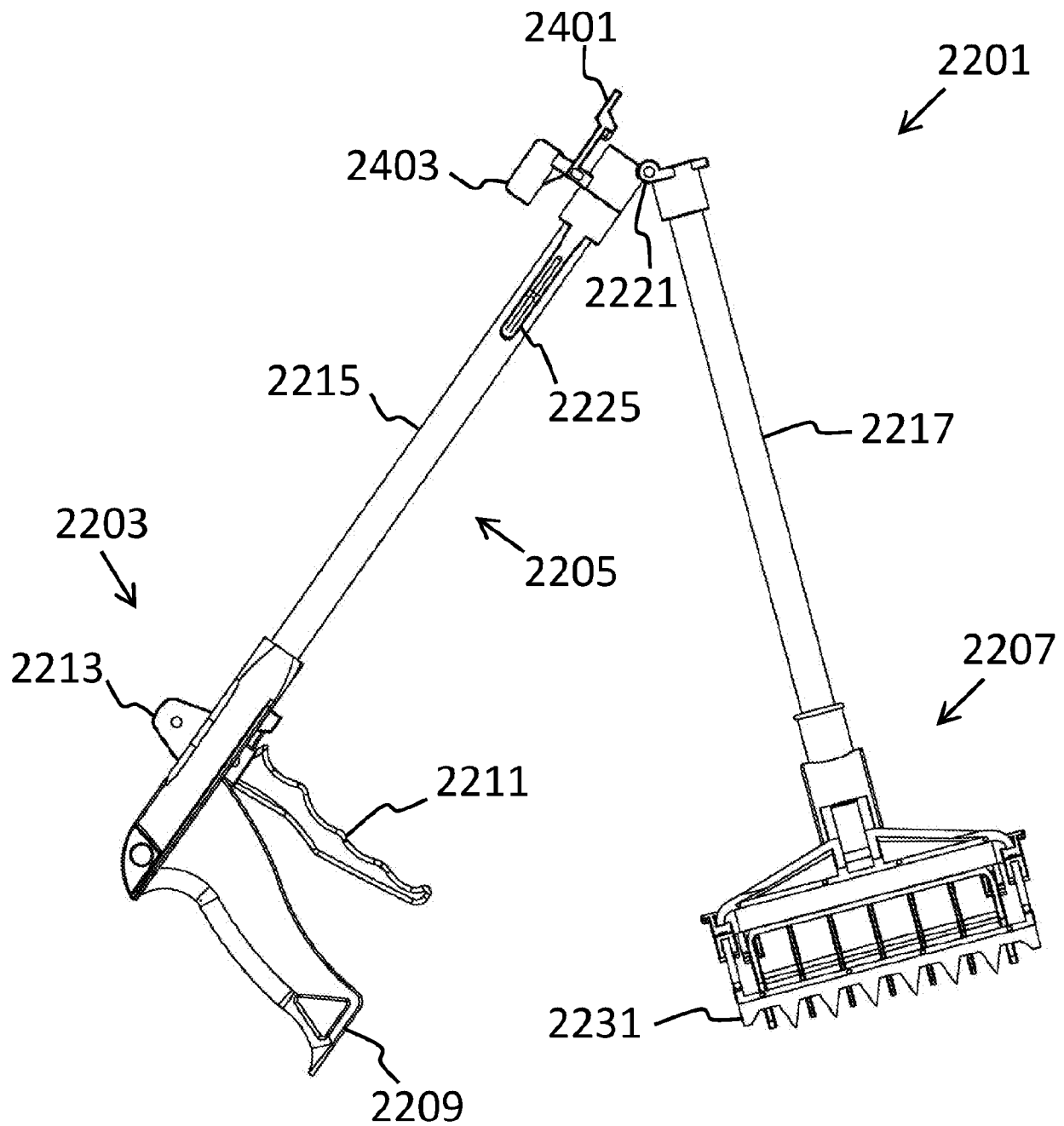


Fig. 24

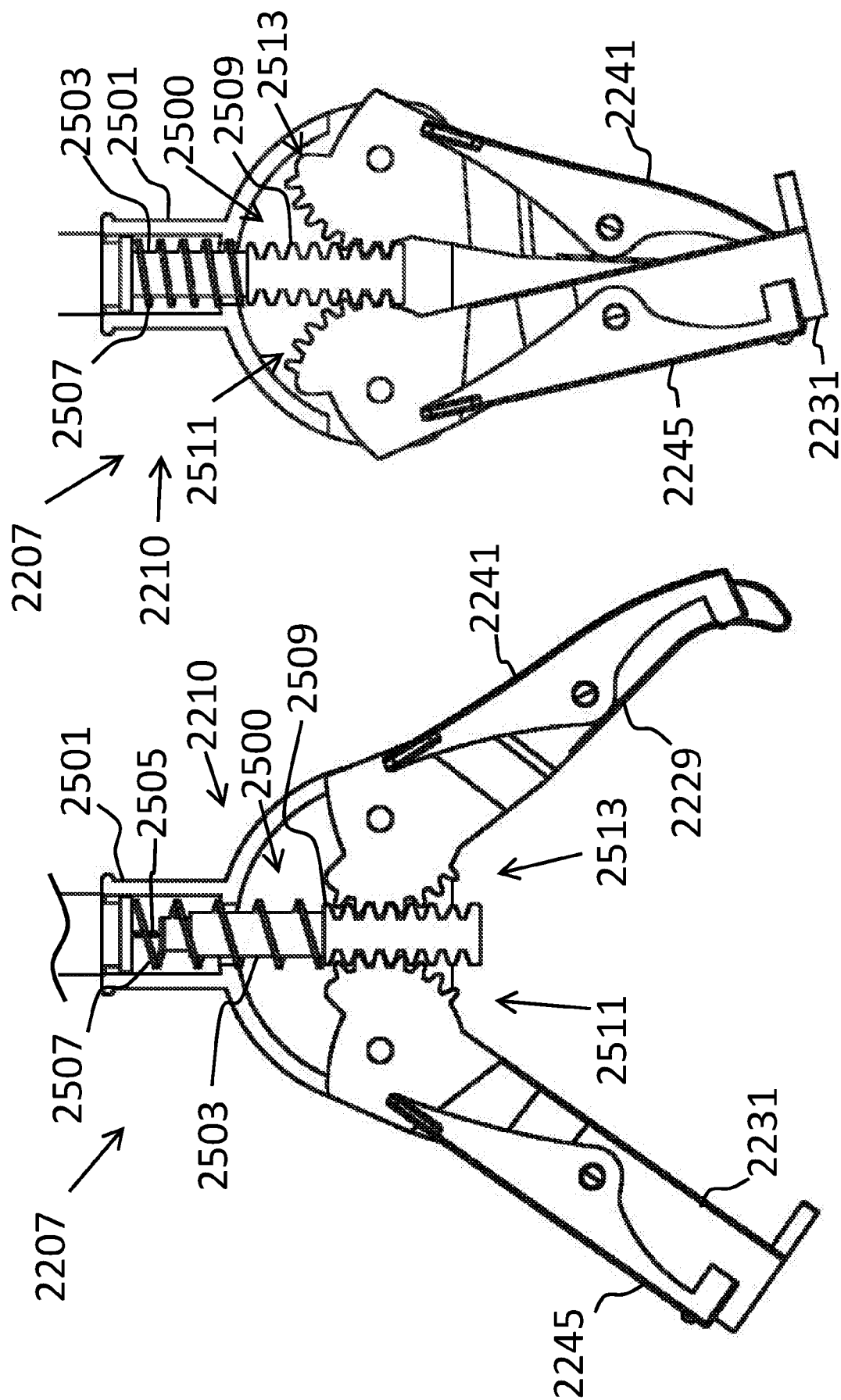


Fig. 25A

Fig. 25B

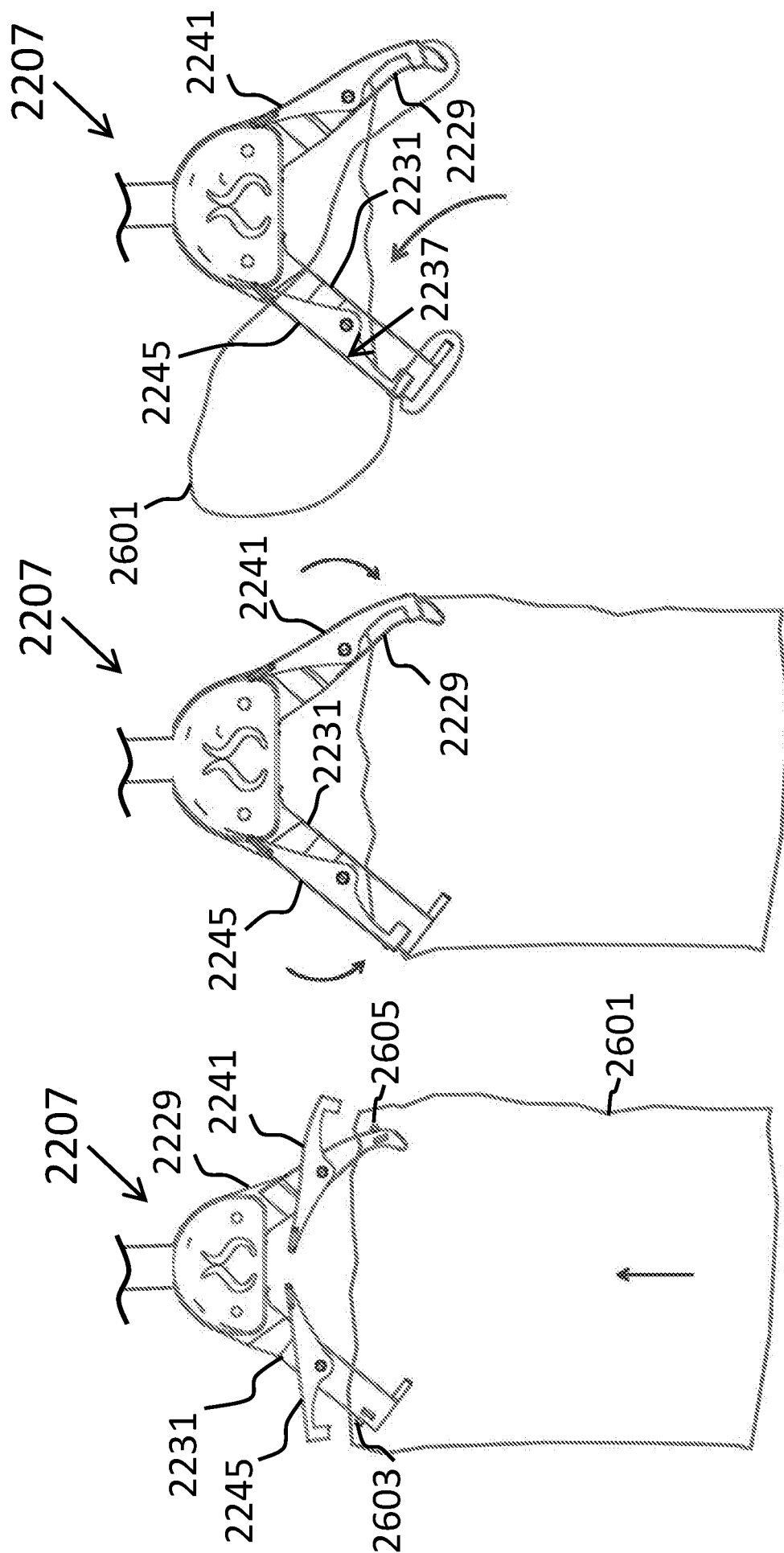


Fig. 26C

Fig. 26B

Fig. 26A

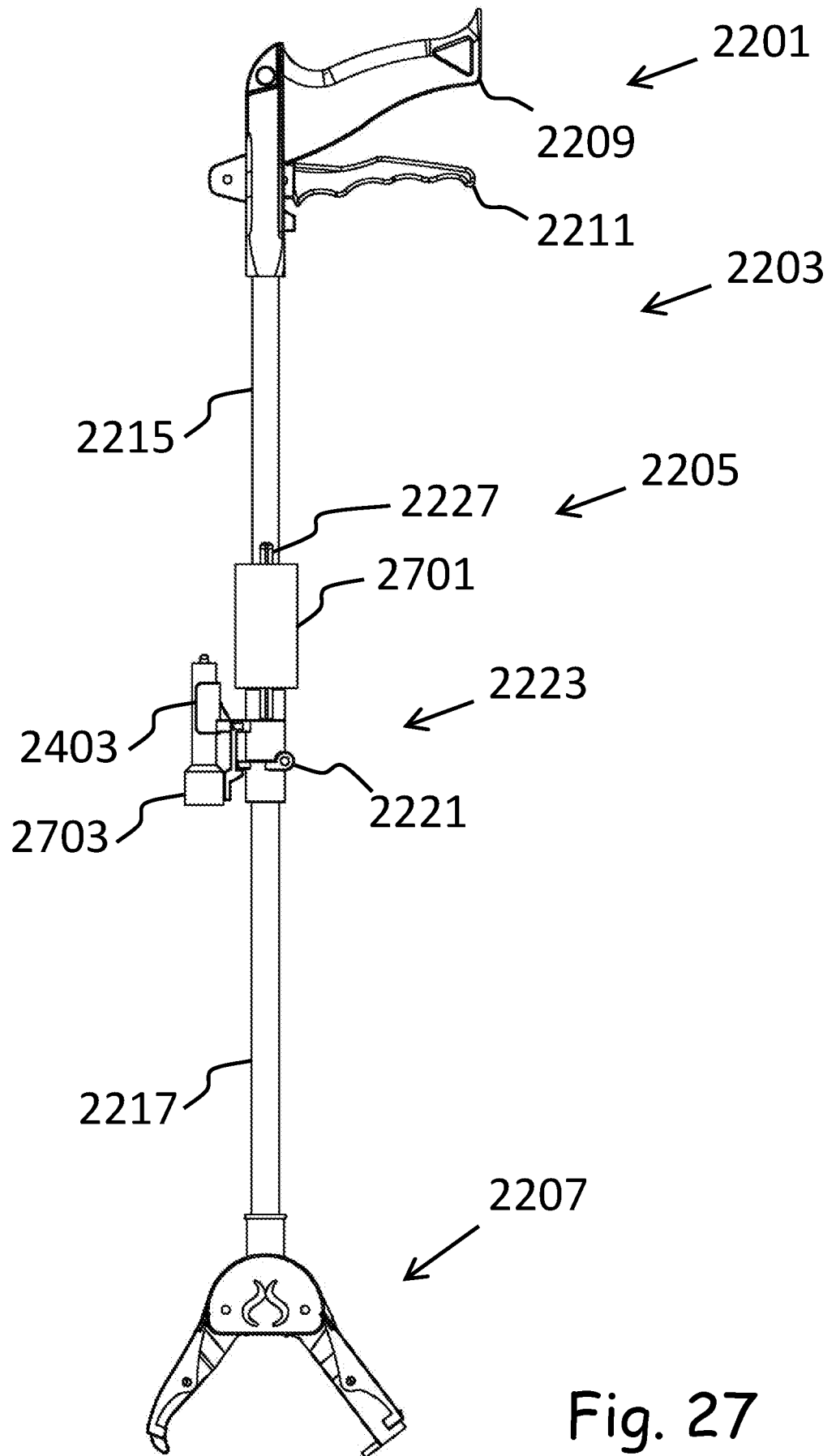


Fig. 27

INTERNATIONAL SEARCH REPORT		International application No. PCT/US17/30419		
A. CLASSIFICATION OF SUBJECT MATTER IPC: E01H 1/12(2006.01);B25G 1/10(2006.01) CPC: E01H 1/1206 According to International Patent Classification (IPC) or to both national classification and IPC				
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) CPC : E01H 1/1206; E01H 2001/128; E01H 2001/1293; E01H 2001/122; E01H 2001/1226; B25G 1/102 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched USPC: 294/1.4 Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)				
C. DOCUMENTS CONSIDERED TO BE RELEVANT				
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
X	US 7,686,361 B1 (FLINN) 30 March 2010 (30.03.2010), entire document.	1, 3-5 and 7-11		
Y	US 8,939,481 B1 (QI) 27 January 2015 (27.01.2015), entire document.	1, 3 and 6-12 ----- 2, 4, 13-16 and 18		
Y	US 7,744,136 B2 (WALTZ) 29 June 2010 (29.06.2010), entire document.	2, 4, 13-16 and 18		
Y	GB 2 322 297 A (DIGBY, A.) 26 August 1998 (26.08.1998), entire document.	2 and 18		
A	US 5,540,470 A (LU) 30 July 1996 (30.07.1996), entire document.	17, 19 and 20		
☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.				
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> * Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed </td> <td style="width: 50%; vertical-align: top;"> "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family </td> </tr> </table>			* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family			
Date of the actual completion of the international search 26 May 2017 (26.05.2017)		Date of mailing of the international search report 30 MAY 2017		
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-8300		Authorized officer John Nguyen Telephone No. (571) 272-4300		