

(19)



(11)

**EP 2 873 789 A1**

(12)

**EUROPEAN PATENT APPLICATION**

(43) Date of publication:  
**20.05.2015 Bulletin 2015/21**

(51) Int Cl.:  
*E05B 53/00* (2006.01)      *E05B 63/24* (2006.01)  
*E05B 65/00* (2006.01)      *E05F 1/06* (2006.01)  
*E06B 11/08* (2006.01)      *E05D 7/04* (2006.01)

(21) Application number: **14192900.0**

(22) Date of filing: **12.11.2014**

(84) Designated Contracting States:  
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB  
 GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO  
 PL PT RO RS SE SI SK SM TR**  
 Designated Extension States:  
**BA ME**

(71) Applicant: **G.A. O'Neill Engineering Limited  
County Wicklow (IE)**

(72) Inventor: **O'Neill, Gerard  
County Wicklow (IE)**

(30) Priority: **13.11.2013 EP 13192730**

(74) Representative: **MacLachlan & Donaldson  
 2b Clonskeagh Square  
 Clonskeagh Road  
 Dublin 14 (IE)**

**(54) Improvements to gates and gate opening and latching mechanisms**

(57) Gate (200) comprises frame (202), upper pivot member (210), lower pivot member (220), gate opening and latching mechanism (230), means for closing the gate and mounting channel (300) for the upper pivot member (210) and the lower pivot member (220). Upper pivot member has collar (202) having cam upper surface (213) on which movable collar (214) having roller (215) moves over when elongate element (216) of the frame rotates about its longitudinal axis during opening and closing of the gate. The lower pivot member is collar (221) about which heel (205) of the elongate element (216)

rotates allowing the gate to pivot into opened and closed positions. The gate opening and latching mechanism (230) controls the movement of locking bolt (223) relative to latch (250) mounted on a support and it comprises locking handle (232) movable vertically between open and closed positions. The mounting channel (300) has means for securing the channel to gate support structure (A) and for adjusting its vertical orientation, so that the mounting channel is vertical and allows the gate to be hung plumb.

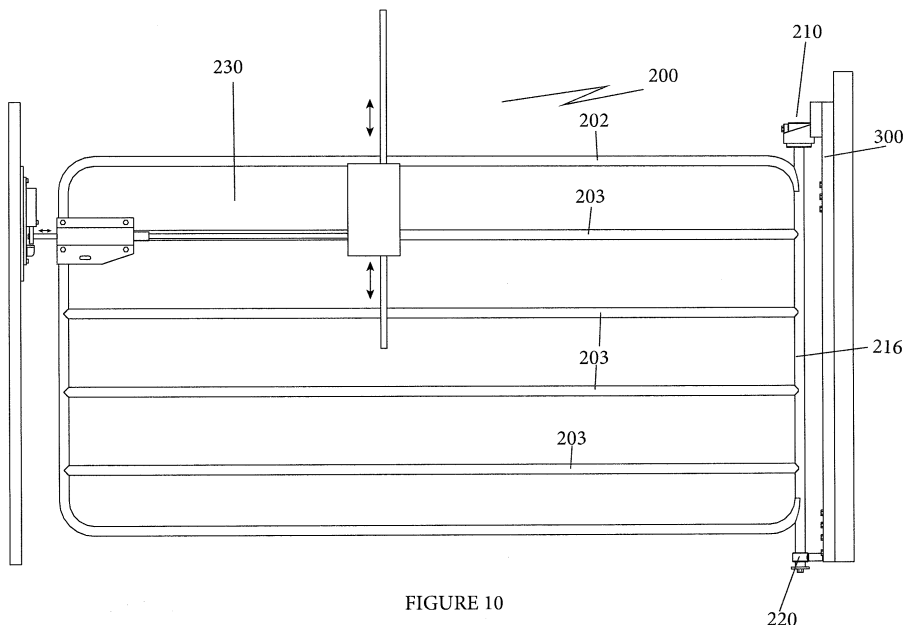


FIGURE 10

**EP 2 873 789 A1**

## Description

**[0001]** The present invention relates to gates and gate opening and latching mechanisms.

**[0002]** The present invention provides a gate which comprises a frame, an upper pivot member, a lower pivot member, a gate opening and latching mechanism and means for closing the gate without manual assistance and a mounting channel for the upper pivot member and the lower pivot member;

the upper pivot member comprises a bracket secured to the mounting channel, a collar having a cam upper surface on which a movable collar having a roller moves over when an elongate element of the frame rotates about its longitudinal axis during the opening and closing movements of the gate, wherein during the opening movement, the roller rolls upwardly on the cam surface until the gate is in a fully opened position and the gate is released, the gate closes itself under its own weight and the roller moves downwardly on the cam surface;

the lower pivot member is a collar about which the lower end or heel of the elongate element rotates allowing the gate to pivot into an opened and closed position;

the lower pivot member being fixed to the mounting channel;

a locking and securing collar is used to secure the upper pivot member in position;

the gate opening and latching mechanism is used to control the movement of a locking bolt relative to a latch mounted on a support and it comprises a locking handle movable vertically between an open position and a closed position, wherein the mounting channel has means for securing the channel to a gate support structure, the securing means including means for adjusting the vertical orientation of the mounting channel relative to the support structure, so that the mounting channel is vertical and allows the gate to be hung plumb.

**[0003]** Ideally, the mounting channel comprises a U-shaped channel, one or more upper adjuster blocks, one or more lower adjuster blocks and a plurality of screws engageable in the adjuster blocks against the gate support structure.

**[0004]** Advantageously, the frame is formed from rolled tubular or box section steel and a panel member is secured to the frame by welding, rivets or other fixing means.

**[0005]** Ideally, the gate opening and latching includes a cable, a cable tensioner and a pulley all contained within a cover element.

**[0006]** Conveniently, the cable is secured to the handle by a fixing and to the upper end of the locking bolt, when lateral movement of the handle causes the bolt to be raised out of engagement of the locking orifice to allow the gate to be unlocked and opened as required, and the gate will be locked when the bolt falls under its own weight into the locking orifice.

**[0007]** In another aspect of the invention, the gate comprises a frame, an upper pivot member, a lower pivot

member, a gate opening and latching mechanism and means for closing the gate without manual assistance.

**[0008]** Preferably, the frame comprises a plurality of horizontal bars and a plurality of vertical bars contained within the frame.

**[0009]** Advantageously, the upper pivot member comprises a bracket for securing to a support structure, a collar having a cam upper surface on which a movable collar having a roller moves over when an elongate element of the frame rotates about its longitudinal axis during the opening and closing movements of the gate, wherein during the opening movement, the roller rolls upwardly on the cam surface until the gate is in a fully opened position and the gate is released, the gate closes itself under its own weight and the roller moves downwardly on the cam surface.

**[0010]** Conveniently, the lower pivot member is a collar about which the lower end of the elongate element rotates allowing the gate to pivot into an opened and closed position.

**[0011]** Ideally, a bracket enables the lower pivot member to be fixed to the support structure.

**[0012]** Preferably, a locking and securing collar is used to secure the upper pivot member in position.

**[0013]** Conveniently, the gate opening and latching mechanism is used to control the movement of the locking bolt relative to the latch mounted on a support and it comprises a locking handle movable vertically between an open position and a closed position. Advantageously, the handle is connected to a cable movable about a pulley contained within a cover or box, the cable is adjustable by a tensioner and is secured to the locking bolt by a fixing.

**[0014]** Ideally, the locking bolt is tensioned by means of a spring mounted in a bracket and a locking plate is fixed to the bracket to allow the bracket to be mounted on the gate.

**[0015]** Ideally, the latch comprises a pair of pivotably mounted swivel plates and which swivel one direction only to allow the locking bolt to move into a locked position from either side while preventing the bolt from moving into an unlocked position by pivoting movement of the gate by means of a stop member wherein the bolt can only be released by axial movement generated by the operation of the handle.

**[0016]** Conveniently, the latch also includes a locking plate with a locking orifice for the receipt of a suitable lock.

**[0017]** The invention will hereinafter be more particularly described with reference to the accompanying drawings, which show by way of example only, two embodiments according to the invention. In the drawings:

Figure 1 is a front view of a first embodiment of a gate according to the invention (a pedestrian/hunting gate);

Figure 2 is an enlarged view of the base pivot section of the pedestrian/hunting gate indicated as B in Fig-

ure 1;

Figure 3 is an enlarged view of the upper pivot section of the pedestrian/hunting gate indicated as A in Figure 1;

Figure 4 is a large perspective view of an opening and latching mechanism of the pedestrian hunting gate indicated as C in Figure 1;

Figure 5 is a further enlarged perspective view of the handle portion of the opening and latching mechanism as shown in Figure 4;

Figure 6 is a further enlarged perspective view of the middle section of the opening and latching mechanism as shown in Figure 4;

Figure 7 is a further enlarged perspective view of a further section of the opening and latching mechanism as shown in Figure 4;

Figure 8 is an enlarged perspective view of the pivot section mechanism as shown in Figure 2;

Figure 8A is a modification of Figure 8 showing an arrangement where a cover is provided on the pivot mechanism;

Figure 9 is a further enlarged perspective view of the lower portion of the mechanism as shown in Figure 8;

Figure 10 is a front view of a second embodiment of a gate according to the invention (a farm gate);

Figure 11 is a plan view of the gate shown in Figure 10 with the opening positions shown in detailed view;

Figure 12 is an enlarged view of the pivotable end of the gate attached to a mounting gate post using a mounting channel;

Figures 13 and 14 are two side views of the mounting channel illustrating how it can be adjusted on a mounting gate post;

Figure 15 is a perspective view of the mounting channel;

Figures 16 and 17 are enlarged views of the upper portion of the pivot mechanism;

Figure 18 and 19 are cross-sectional views of the latching mechanism prior to and after engagement respectively;

Figure 20 is a front view of the latching mechanism;

Figure 21 is a truncated perspective view of the pivot mechanism of the farm gate in the opened gate position;

Figure 22 is a truncated perspective view of the pivot mechanism of the farm gate in the closed gate position;

Figure 23 is an exploded perspective view of the upper pivot mechanism of the mechanism as shown in Figures 21 and 22;

Figure 24 is an enlarged perspective view of the opening and latching mechanism of the farm gate as shown in Figure 10;

Figure 25 is a further enlarged perspective view of the operating handle mechanism of the opening and latching mechanism as shown in Figure 24;

Figure 26 is a further enlarged perspective view of the mid-section of the opening and latching mechanism;

Figure 27 is further enlarged perspective view of the latch of the opening and latching mechanism; and

Figure 28 is a partially cut away perspective view of the latch as shown in Figure 27.

**[0018]** Referring to the drawings and initially to Figures 1 to 9, the first embodiment of the gate according to the invention is a pedestrian/hunting gate 100 which comprises a frame 102, a panel member 103, an upper pivot member 110, a lower pivot and locking member 120 and a gate opening and latching mechanism 130.

**[0019]** The frame 102 is formed from rolled tubular steel and the panel member is secured to the frame 102 by welding, rivets or other fixing means. The upper pivot member 110, as shown in Figure 3 comprises a bracket 111 for securing to a support structure, a collar 112 having a cam upper surface 113 on which a movable collar 114 having a roller 115 moves over when the elongate bar 116 rotates about its longitudinal axis during opening and closing movements of the gate 100. During the opening movement, the roller 115 rolls upwardly on the cam surface until the gate is in a fully opened position. When the gate is released, the gate closes itself under its own weight, and the roller 115 moves downwardly on the cam surface 113. Although not shown in the drawings, a plastics boot and/or a metal guard is placed about the upper pivot member 110 and are removable for lubrication and inspection purposes.

**[0020]** The lower pivot member 120 is shown in greater detail in Figures 2, 8 and 9. The lower pivot member 120 allows the gate 100 to pivot in an opening or closing movement and provides the means by which the gate is locked and unlocked. It comprises a fixed plate 121 and

a movable plate 122 through which the elongate bar 116 extends. A locking bolt 123 extends through the movable plate 122 and when in the correct orientation engages in locking orifice 124 provided in the fixed plate 121.

**[0021]** A rubber buffer 125 is provided between the fixed plate 121 and the movable plate 122 and facilitates ease of movement.

**[0022]** The gate opening and latching mechanism 130 is used to control the movement of the locking bolt 123 relative to the locking orifice 124 and comprises an operating handle 132 movable laterally between two positions as shown in Figures 4 and 5, a cable 134, a cable tensioner 135 and a pulley 136 all contained within a cover element 137. The cable 134 is secured to the handle 132 by a fixing 138 and to the upper end of the locking bolt 123. Lateral movement of the handle 132 causes the bolt 123 to be raised out of engagement of the locking orifice 124 to allow the gate to be unlocked and opened as required. The gate will be locked when the bolt 123 falls under its own weight into the locking orifice 124.

**[0023]** In a modification shown in Figure 8A, a shield 128 is fixed to the plate 122 and in use extends over the fixed plate 121 and prevents loose material and access to the lower pivot member 120. This facilitates the smooth operation of the mechanism and provides for its safe operation.

**[0024]** Referring now to Figures 10 to 28, the second embodiment of the gate according to the invention is a farm gate 200 which comprises an outer frame 202, four horizontal bars 203 contained within the frame 202. The farm gate 200 also includes an upper pivot member 210, a lower pivot member 220 and a gate opening and latching mechanism 230.

**[0025]** The upper pivot member 210 comprises a bracket 211 for securing to a mounting channel 300 which is attached to a support structure such as a post A, a collar 212 having a cam upper surface 213 on which a movable collar 214 having a roller 215 moves over when the elongate bar 216 rotates about its longitudinal axis during the opening and closing movements of the gate 200. During the opening movement, the roller 215 rolls upwardly on the cam surface 213 until the gate is in a fully opened position. When the gate 200 is released, the gate closes itself under its own weight. The lower pivot member 220 is a collar 221 fixed to the mounting channel 300 and about which the lower end of the bar 216 rotates allowing the gate to pivot into an opened and closed position. A locking and securing collar 217 is used to secure the upper pivot member 210 in position. Although not shown completely in the drawings, a plastics boot and/or a metal guard is placed about the upper pivot member 210 and are removable for lubrication and inspection purposes.

**[0026]** The mounting channel 300 is shown in greater detail in Figures 12 to 15 and comprises a U-shaped channel member 301, two upper adjuster blocks 302 and two lower adjuster blocks 303. Separate set screws 305 which engage in the adjuster blocks 302 and 303 are

used to adjust the mounting channel 301 so that it is as close to vertical as possible and therefore allows the gate to hang plumb and open about a proper vertical axis.

**[0027]** Located at heel 205 of gate 200 is a stop member 206 which comprises a washer 207 and a bolt 208 securing the washer into the heel 205. The stop member 206 prevents the gate 200 from being lifted out of the lower pivot member 200, such as could happen if an animal gets its head or a foot under the gate.

**[0028]** When mounting the gate in position, the locking assembly can be adjusted for setting the height of the latch and the centre of the two pivot points of the gate.

**[0029]** The gate opening and latching mechanism 230 is shown in Figures 14 to 18 and is used to control the movement of the locking bolt 223 relative to the latch 250 mounted on pillar B. It comprises a locking handle 232 movable vertically between an open position and a closed position. The handle 232 is connected to a cable 234 movable about a pulley 236 contained within a cover or box 237. The cable 234 is adjustable by a tensioner 235. The cable 234 is secured to the locking bolt 223 by a fixing 238. The locking bolt 223 is tensioned by means of a spring 239 mounted in a bracket 240. A locking plate 241 is fixed to the bracket 240 to allow the bracket to be mounted on the gate 223.

**[0030]** The height of the handle 232 may be adjusted by the user to facilitate the operation by a user while seated on a horse or in a quad vehicle. The handle can be adjusted by loosening grub screws on bosses 245 and 246, moving the handle up or down and tightening the grub screws.

**[0031]** The latch 250 comprises a pair of pivotably mounted swivel plates 251 and 252 which swivel one direction only to allow the locking bolt 223 to move into a locked position from either side while preventing the bolt from moving into an unlocked position by pivoting movement of the gate by means of the stop member 253. The bolt 223 can only be released by axial movement generated by the operation of the handle 232. The latch 250 also includes a locking plate 254 with a locking orifice 255 for the receipt of a suitable lock (not shown).

**[0032]** The gate 200 can easily be opened by a person seated on a horse or on a quad and will close and latch itself using the above mechanism.

**[0033]** It is to be understood that the invention is not limited to the specific details described herein which are given by way of example only and that various modifications and alterations are possible without departing from the scope of the invention as defined in the appended claims.

## Claims

1. A gate (200) comprising a frame (202), an upper pivot member (210), a lower pivot member (220), a gate opening and latching mechanism (230), means for closing the gate without manual assistance and a

- mounting channel (300) for the upper pivot member (210) and the lower pivot member (220);  
the upper pivot member comprises a bracket (211) secured to the mounting channel (300), a collar (202) having a cam upper surface (213) on which a movable collar (214) having a roller (215) moves over when an elongate element (216) of the frame rotates about its longitudinal axis during the opening and closing movements of the gate, wherein during the opening movement, the roller (215) rolls upwardly on the cam surface (213) until the gate is in a fully opened position and the gate is released, the gate closes itself under its own weight and the roller moves downwardly on the cam surface;  
the lower pivot member is a collar (221) about which a lower end or heel (205) of the elongate element (216) rotates allowing the gate to pivot into an opened and closed position;  
the lower pivot member (220) being fixed to the mounting channel (300);  
a locking and securing collar (217) is used to secure the upper pivot member in position;  
the gate opening and latching mechanism (230) is used to control the movement of a locking bolt (223) relative to a latch (250) mounted on a support and it comprises a locking handle (232) movable vertically between an open position and a closed position wherein the mounting channel (300) has means for securing the channel to a gate support structure (A), the securing means including means (302) for adjusting the vertical orientation of the mounting channel relative to the support structure, so that the mounting channel is vertical and allows the gate to be hung plumb.
2. A gate as claimed in Claim 1, in which the mounting channel (300) comprises a U-shaped channel (301), one or more upper adjuster blocks (302), one or more lower adjuster blocks and a plurality of screws engageable in the adjuster blocks against the gate support structure (A).
  3. A gate as claimed in Claim 1 or Claim 2, in which the handle is connected to a cable movable about a pulley contained within a cover or box, the cable is adjustable by a tensioner and is secured to the locking bolt by a fixing.
  4. A gate as claimed in any one of the preceding claims, in which the locking bolt is tensioned by means of a spring mounted in a bracket and a locking plate is fixed to the bracket to allow the bracket to be mounted on the gate and return the bolt to its locking position.
  5. A gate as claimed in any one of the preceding claims, in which the latch comprises a pair of pivotably mounted swivel plates and which swivel one direction only to allow the locking bolt to move into a locked position from either side while preventing the bolt from moving into an unlocked position by pivoting movement of the gate by means of a stop member wherein the bolt can only be released by axial movement generated by the operation of the handle.
  6. A gate as claimed in Claim 5, in which the latch also includes a locking plate with a locking orifice for the receipt of a suitable lock.
  7. A gate as claimed in any one of the preceding claims in which the gate includes a heel member engageable in the lower pivot member and a stop member is provided in the heel to prevent lifting of the gate.
  8. A gate as claimed in Claim 7 in which the stop member comprises a circular washer and bolt screwed axially into the heel of the gate.
  9. A gate (100) comprising a frame (102), an upper pivot member (110), a lower pivot and locking member (110), a gate opening and latching mechanism (130) and means for closing the gate without manual assistance;  
the upper pivot member (110) comprises a bracket for securing to a support structure, a collar (112) having a cam upper surface (113) on which a movable collar (114) having a roller (115) moves over when an elongate element of the frame rotates about its longitudinal axis during opening and closing movements of the gate wherein during the opening movement, the roller (115) rolls upwardly on the cam surface (113) until the gate is in a fully opened position, whereby when the gate is released, the gate closes itself under its own weight, and the roller (115) moves downwardly on the cam surface; **characterised in that**  
the lower pivot member (110) allows the gate to pivot in an opening or closing movement and provides locking and unlocking means by which the gate is locked and unlocked;  
the locking and unlocking means comprises a fixed plate (121) and a movable plate (122) through which the elongate bar (116) extends, with a locking bolt (123) extending through the movable plate and when in the correct orientation engages in a locking orifice (124) provided in the fixed plate (121); and  
the gate opening and latching mechanism is used to control the movement of the locking bolt (123) relative to the locking orifice (124) and comprises an operating handle (132) movable laterally between two positions.
  10. A gate as claimed in Claim 9, in which a cable is secured to the handle by a fixing and to the upper end of the locking bolt, whereby lateral movement of the handle causes the bolt to be raised out of en-

gagement of the locking orifice to allow the gate to be unlocked and opened as required, and the gate will be locked when the bolt falls under its own weight into the locking orifice.

5

10

15

20

25

30

35

40

45

50

55

6

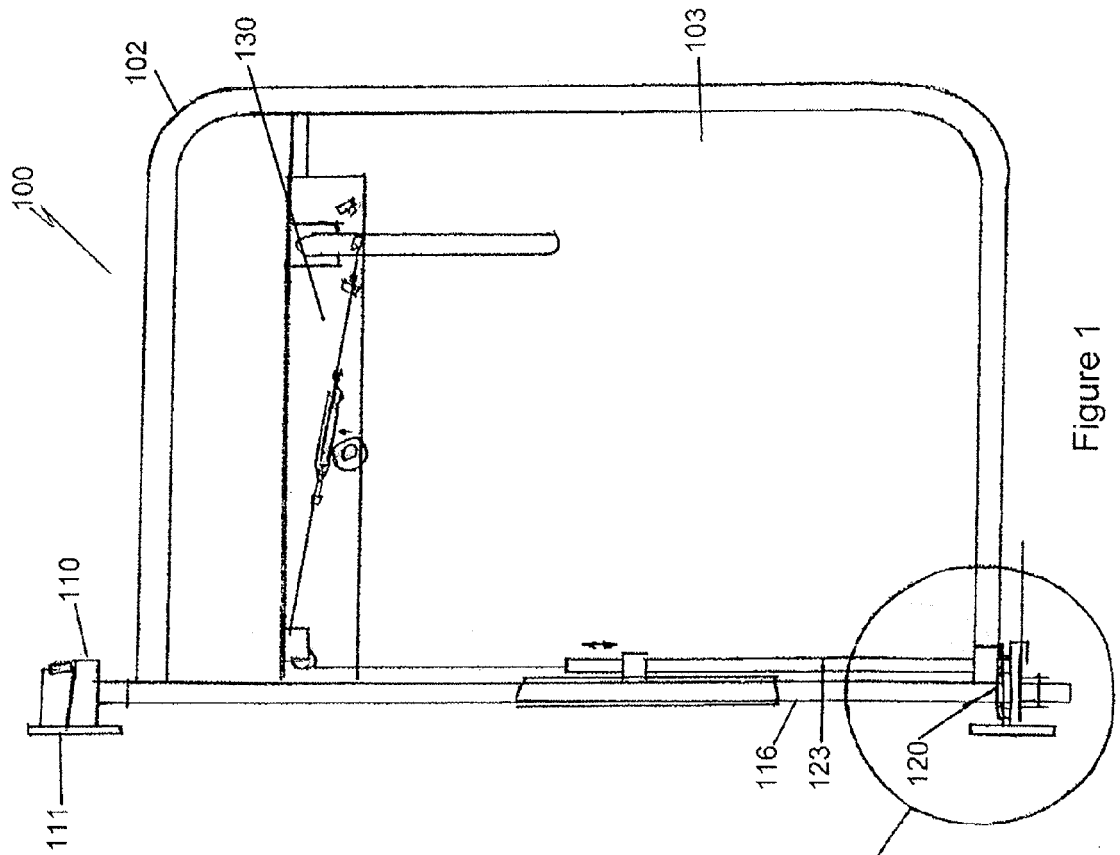


Figure 1

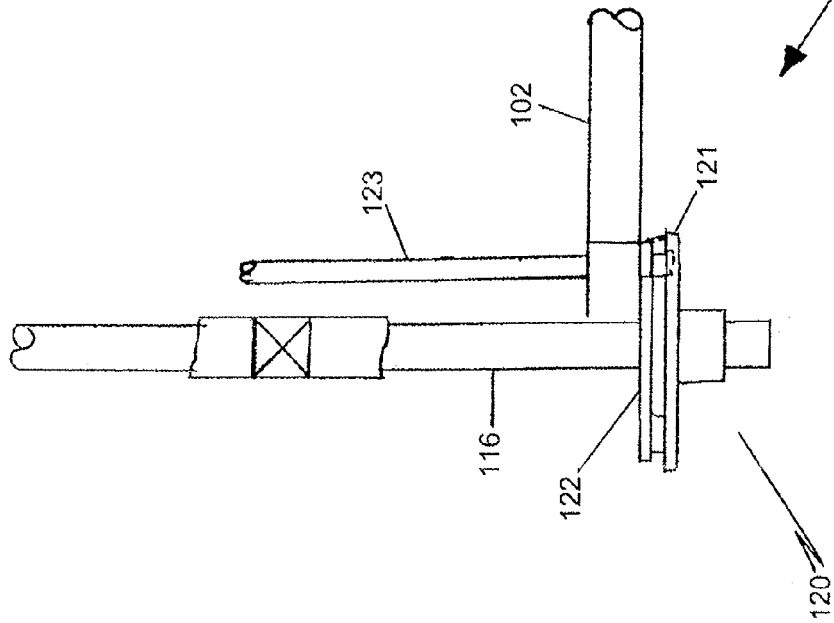


Figure 2

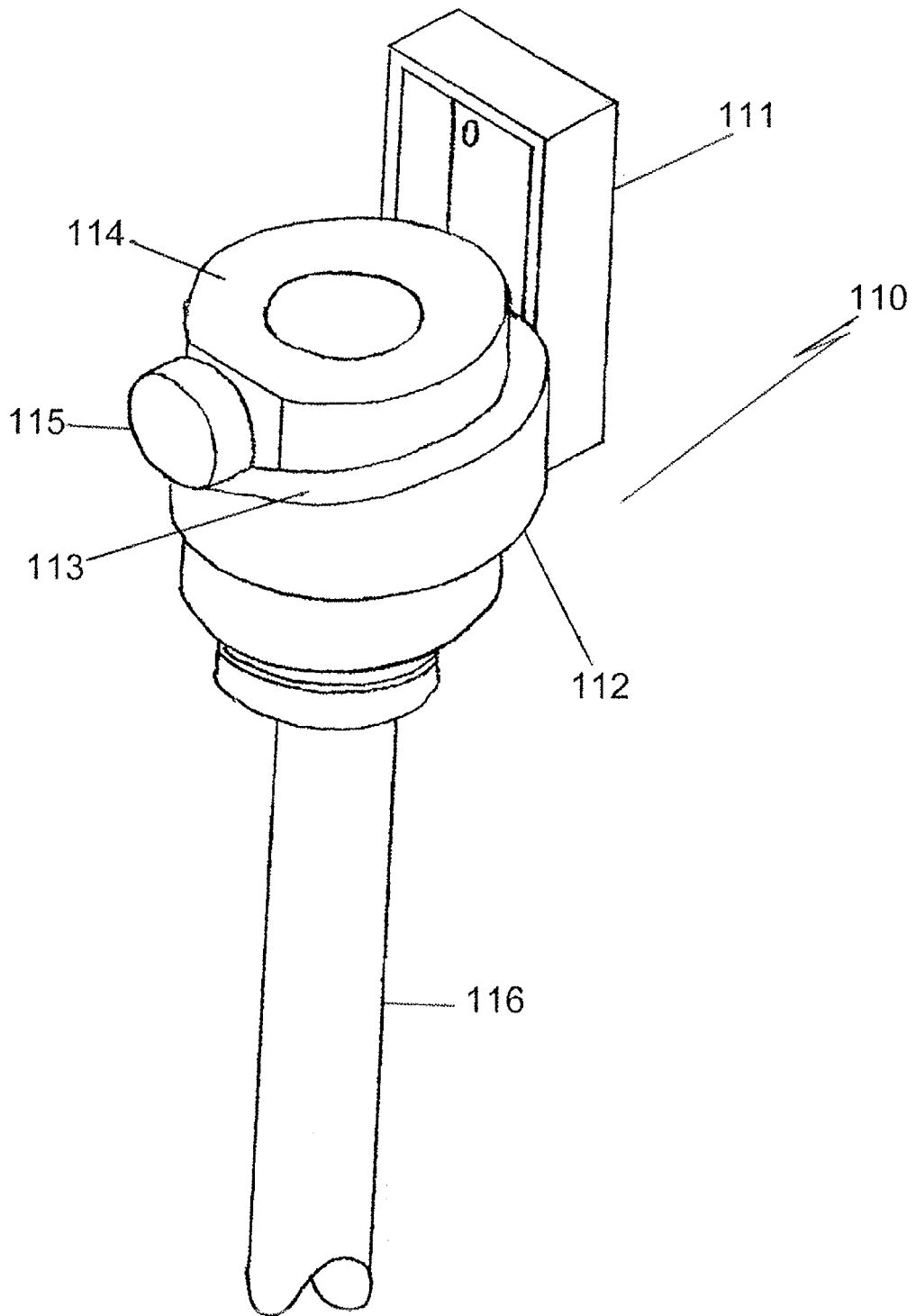


Figure 3

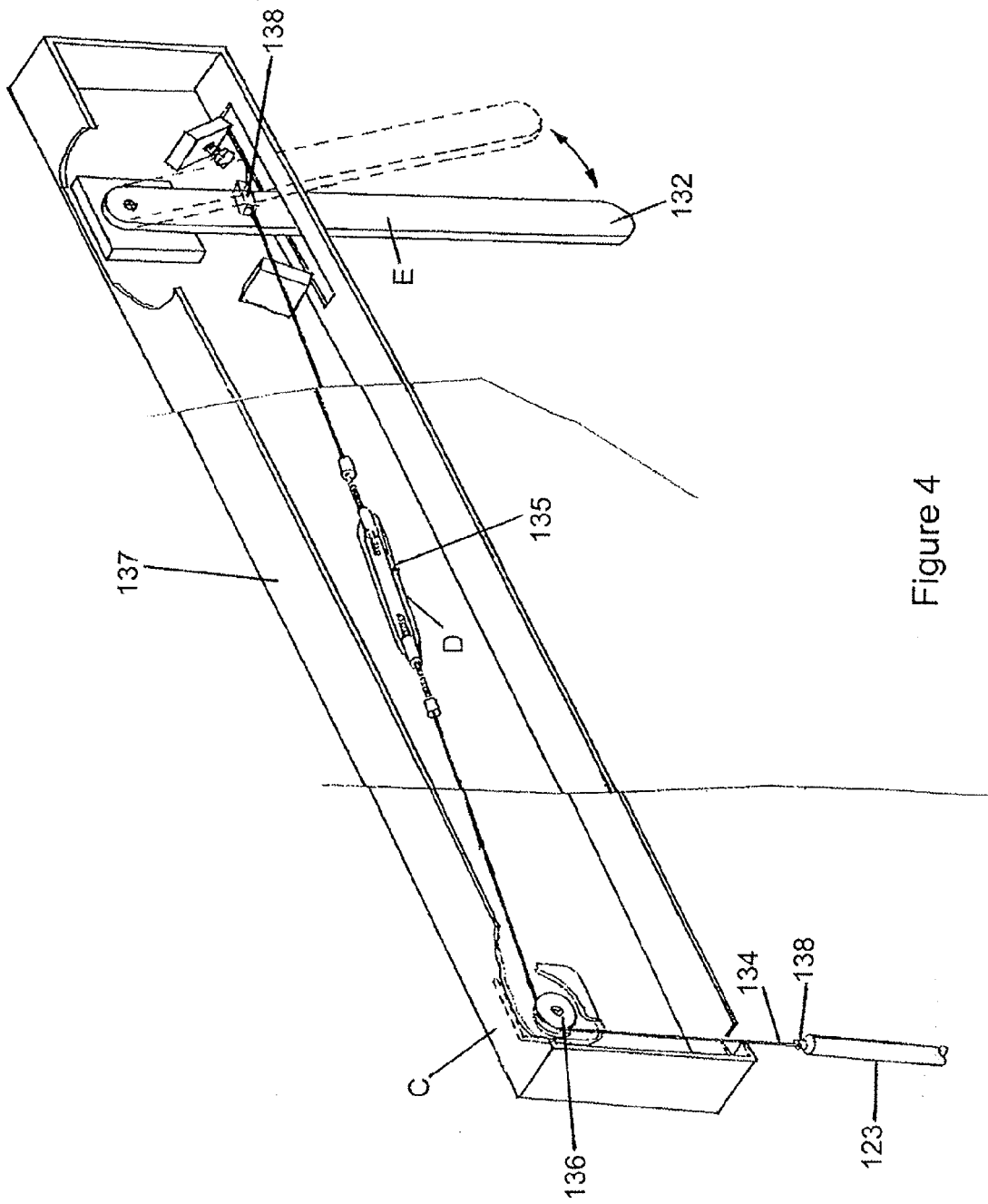


Figure 4

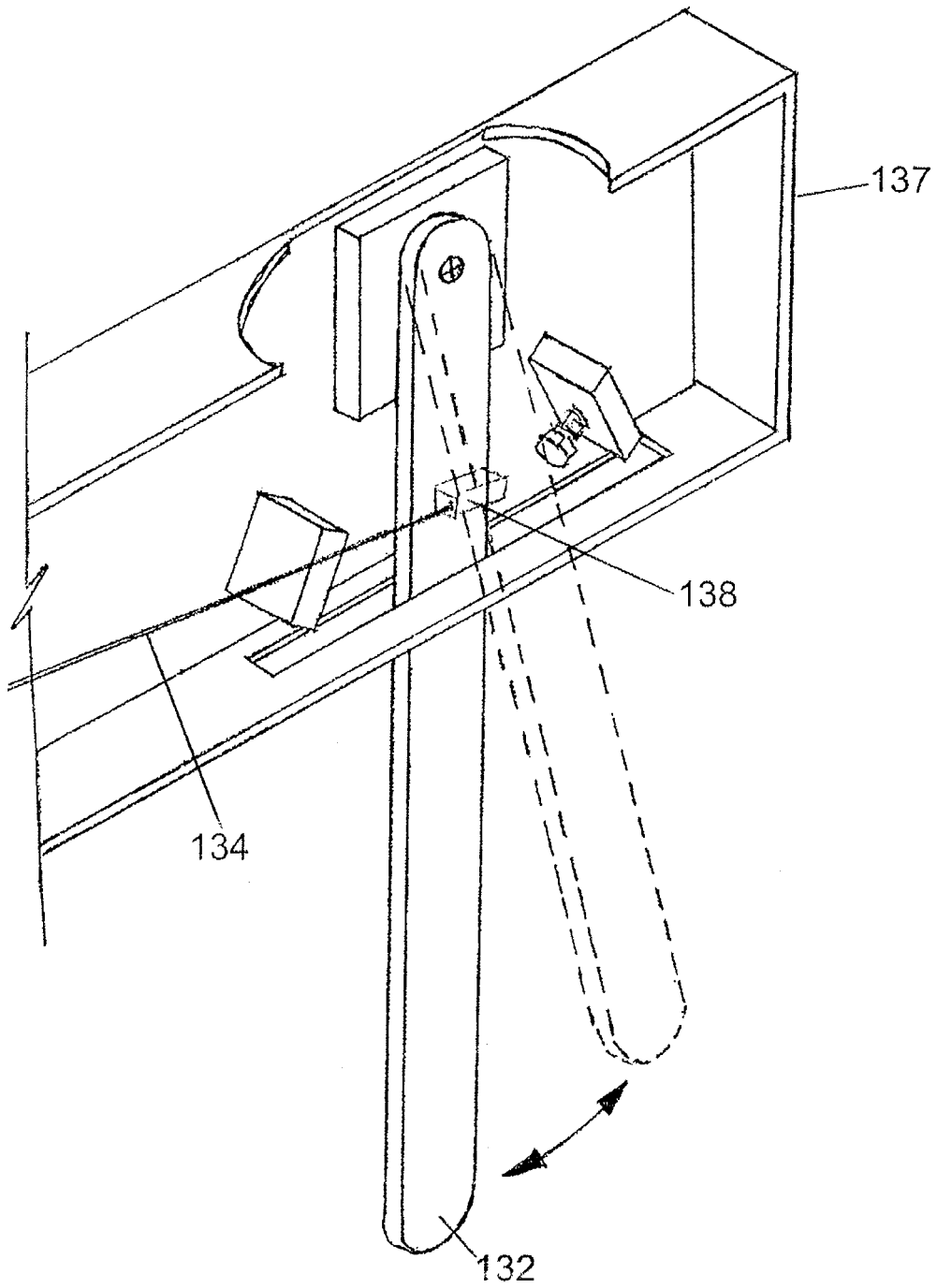


Figure 5

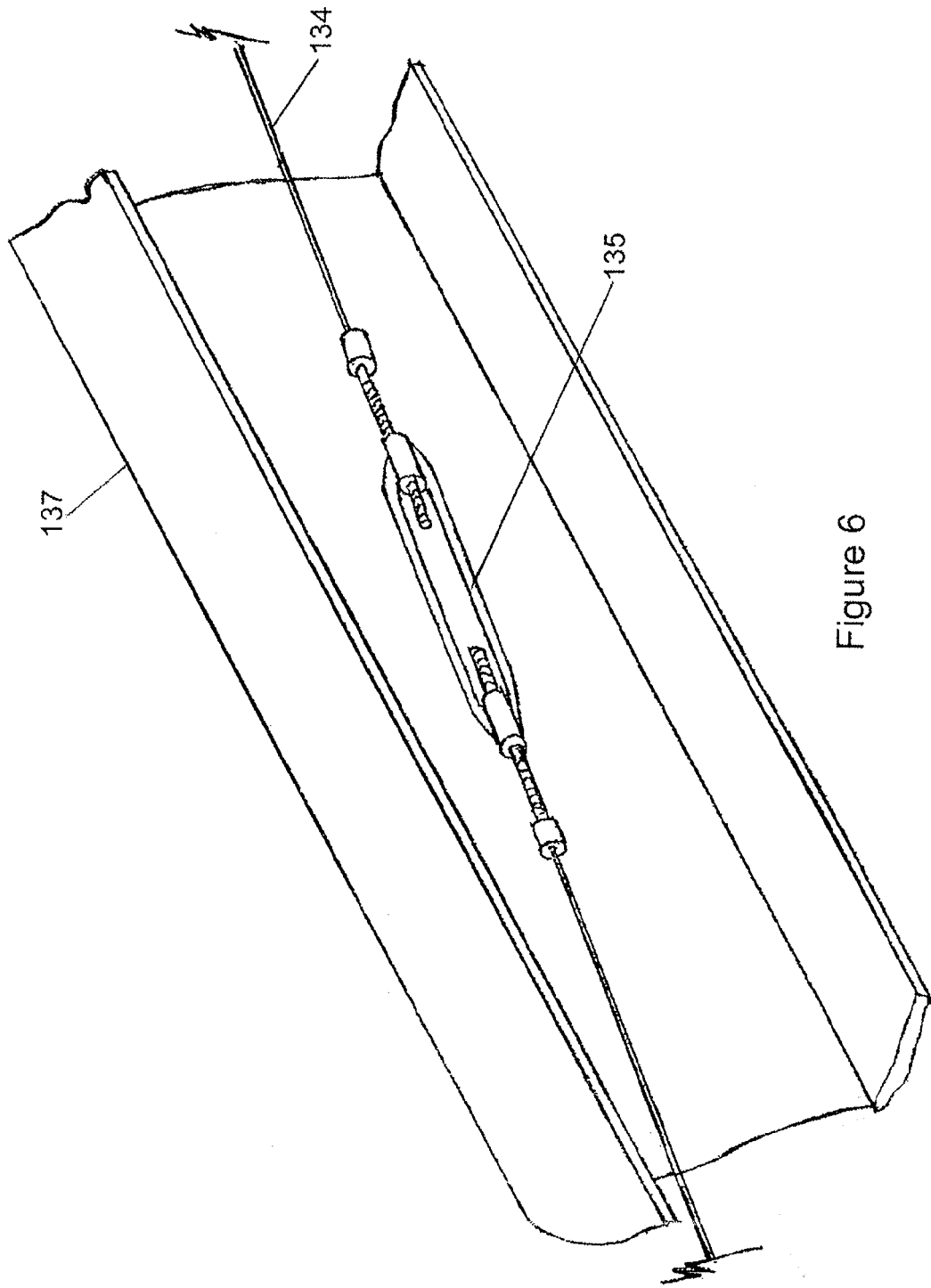


Figure 6

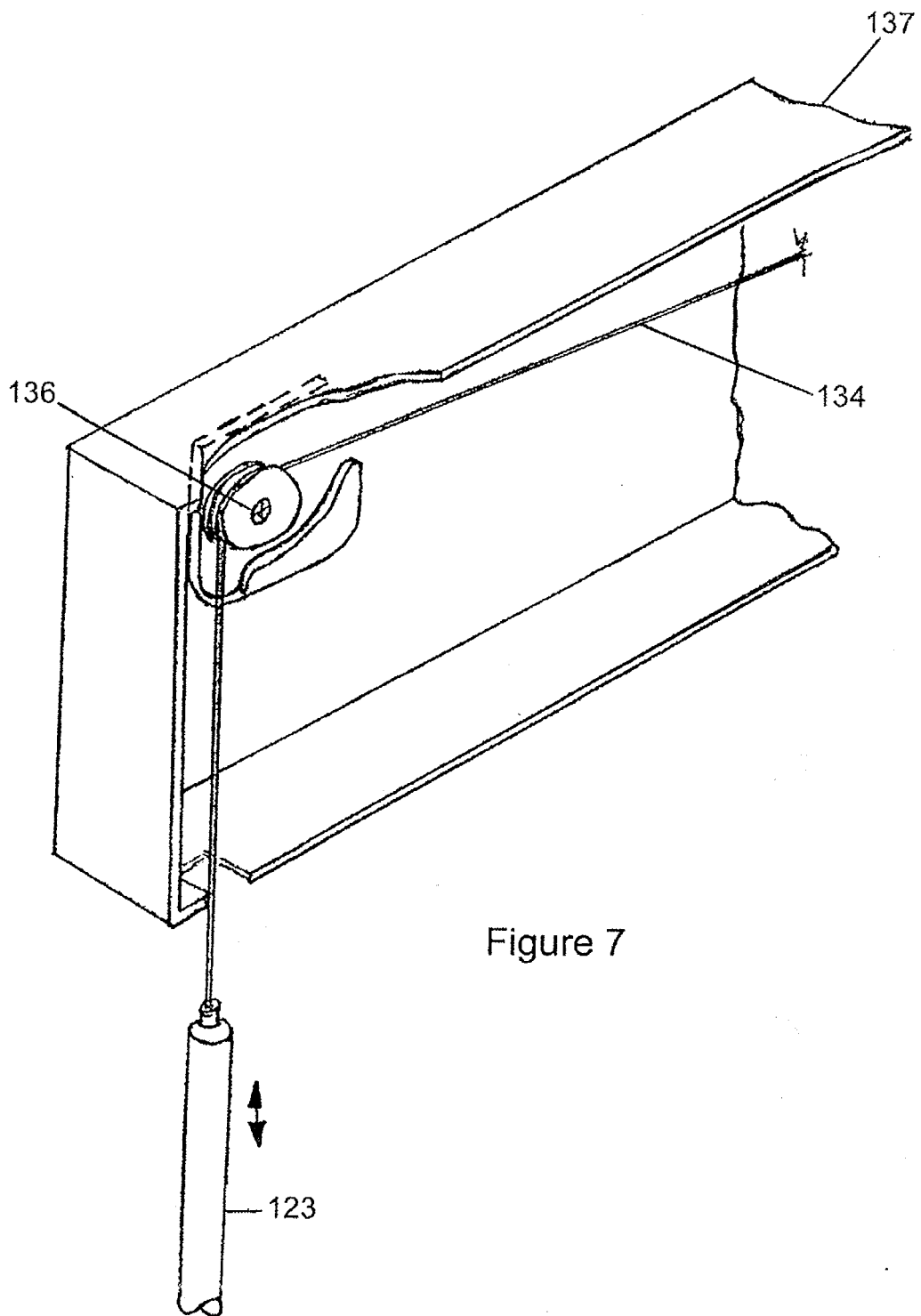


Figure 7

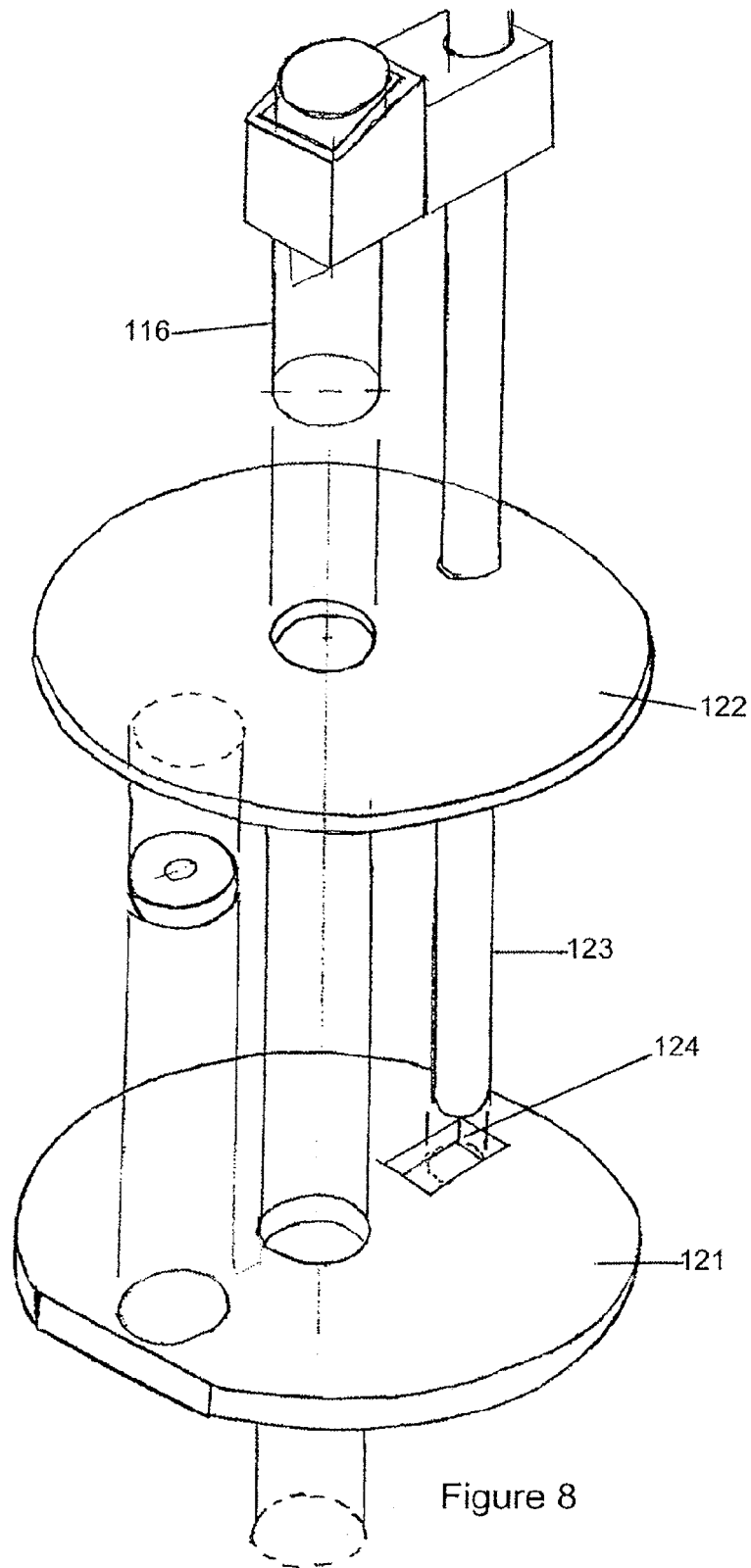


Figure 8

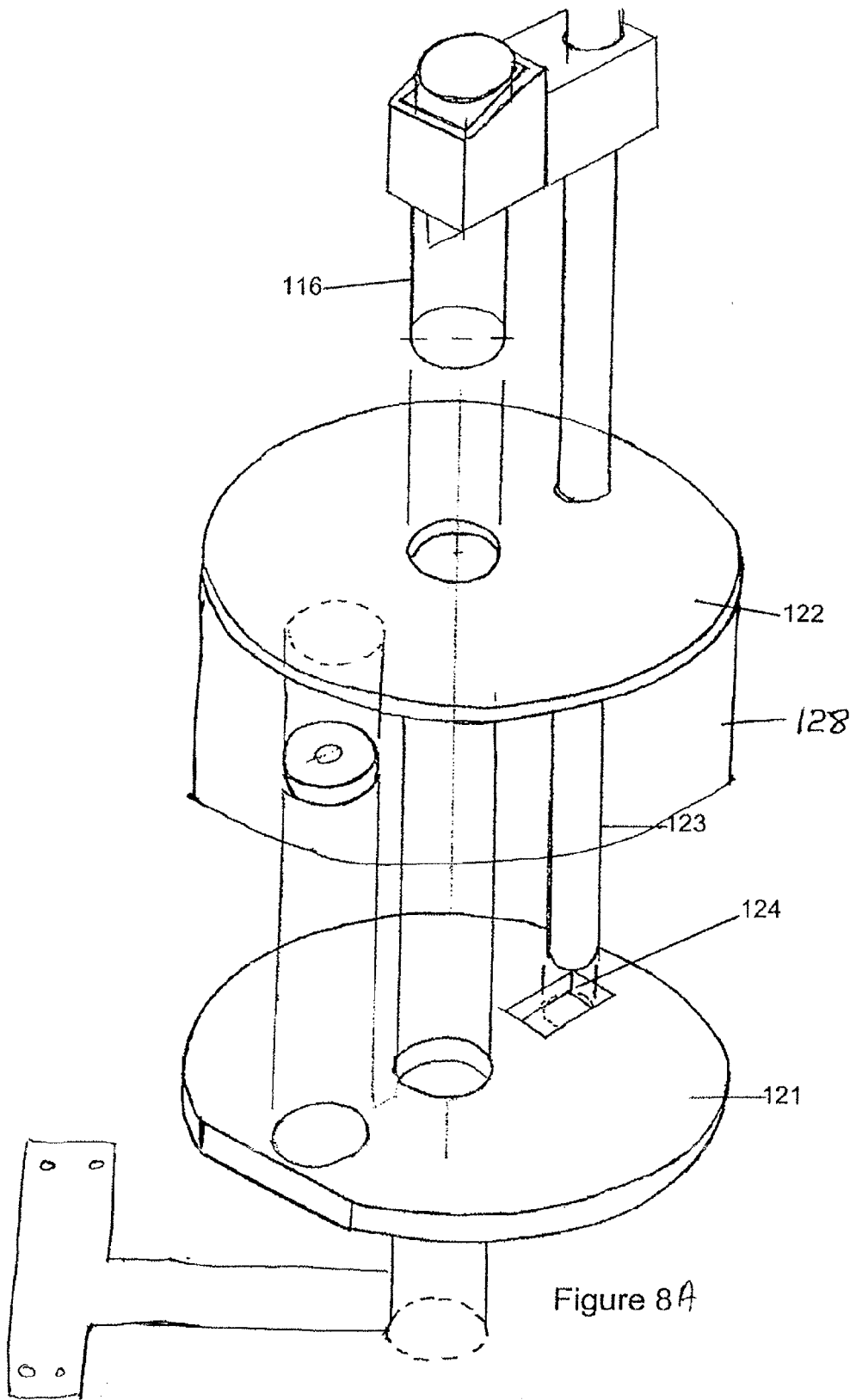


Figure 8A

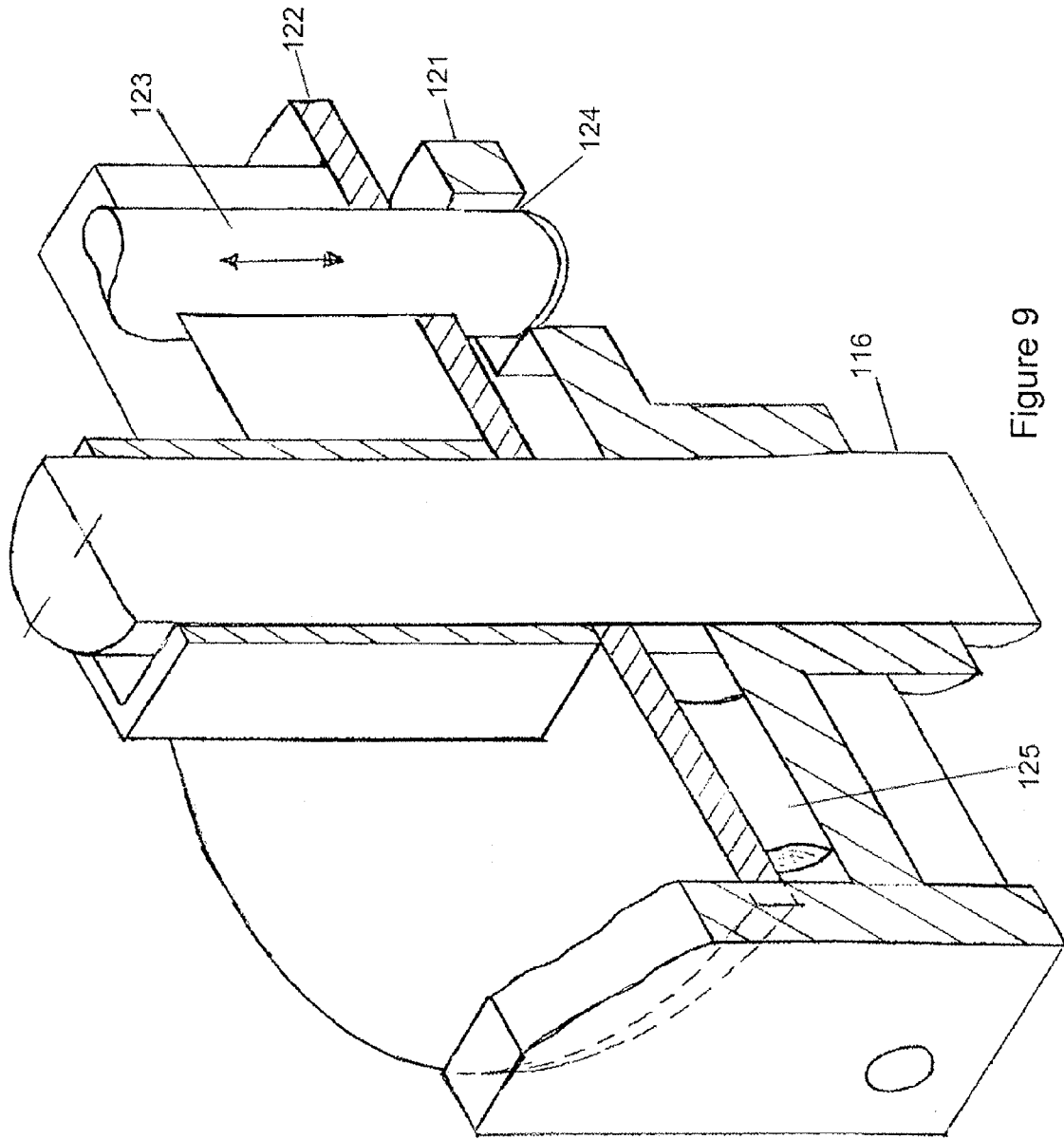


Figure 9

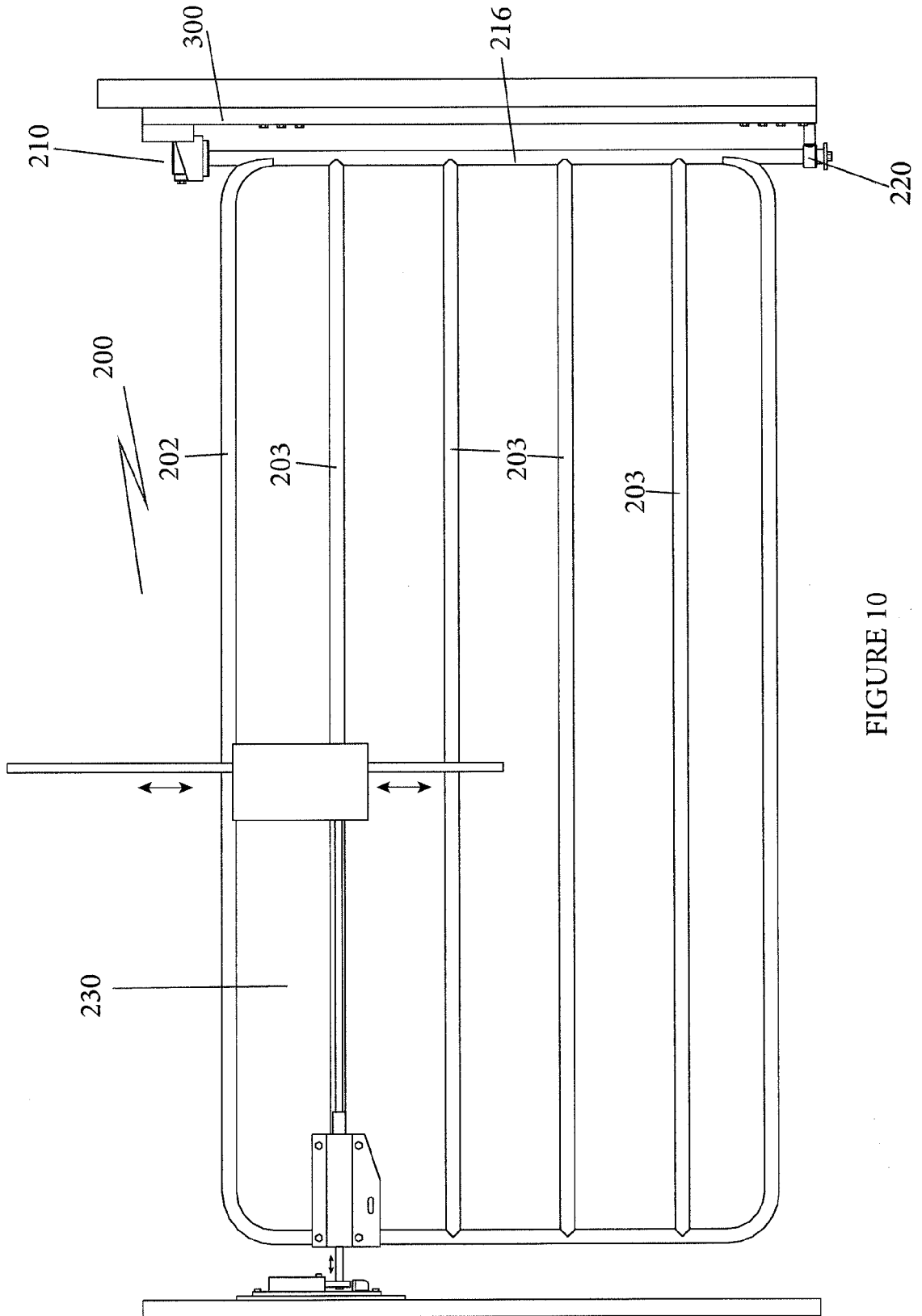


FIGURE 10

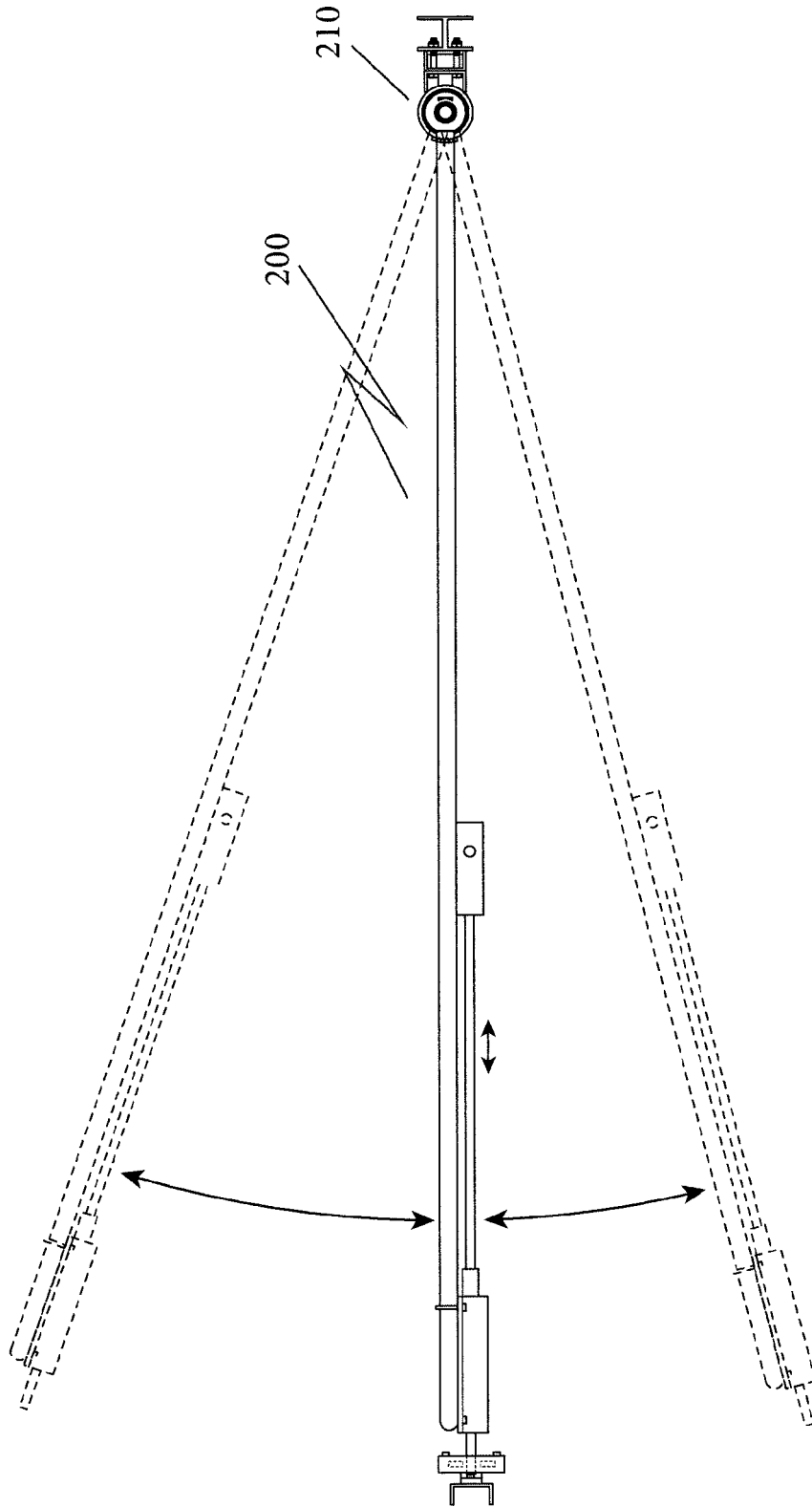


FIGURE 11

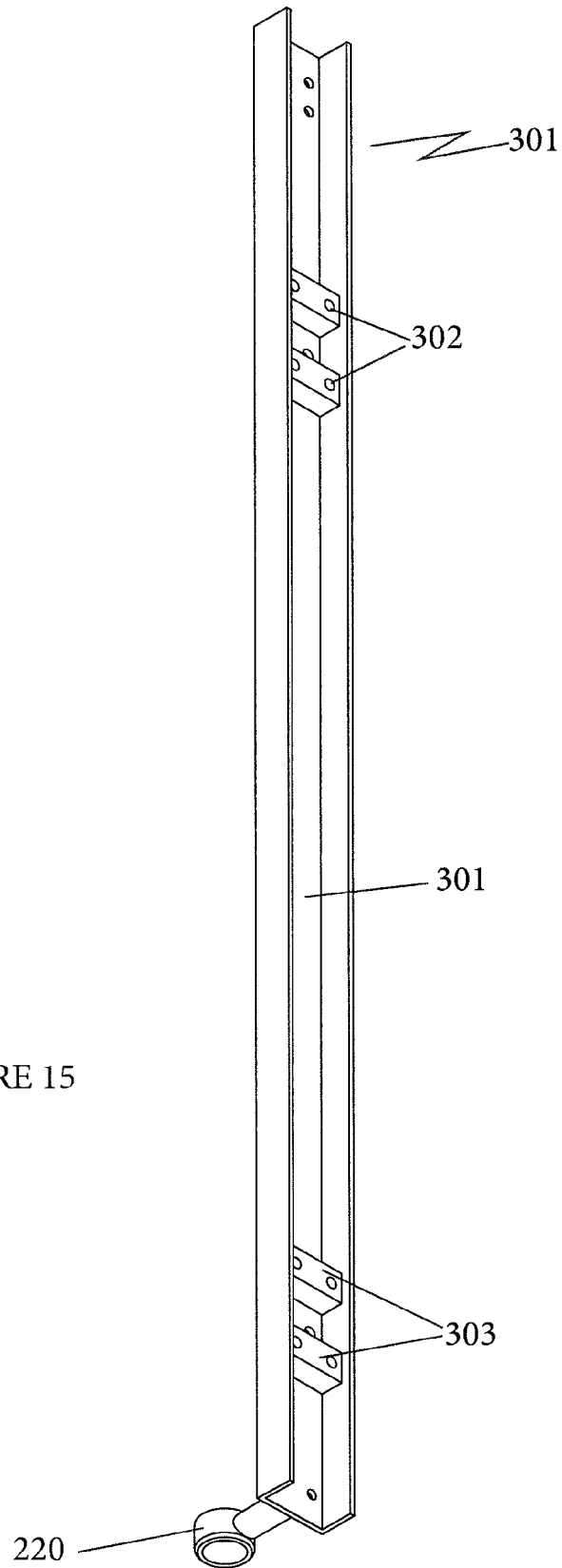
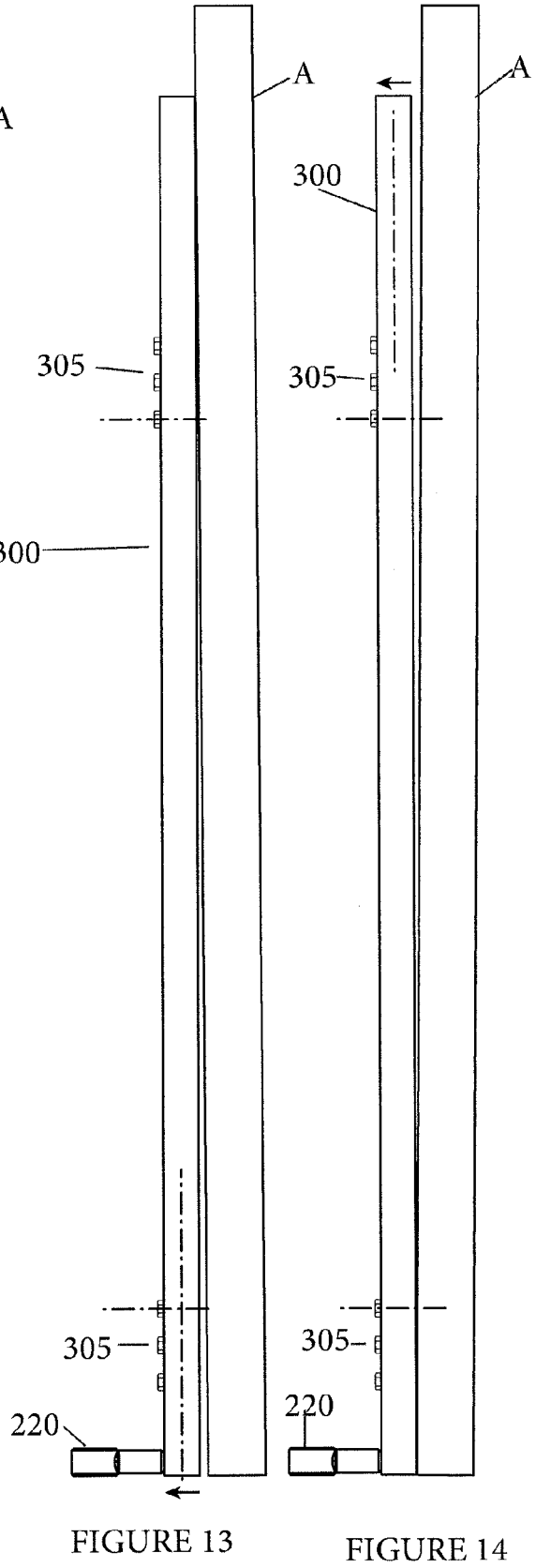
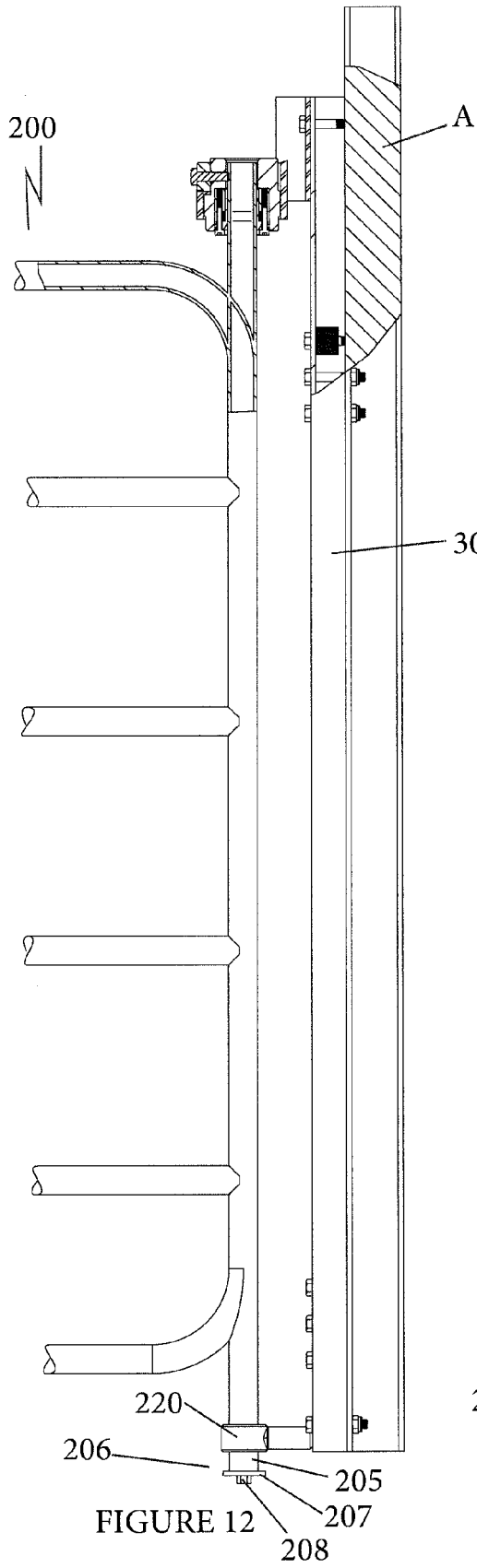


FIGURE 15



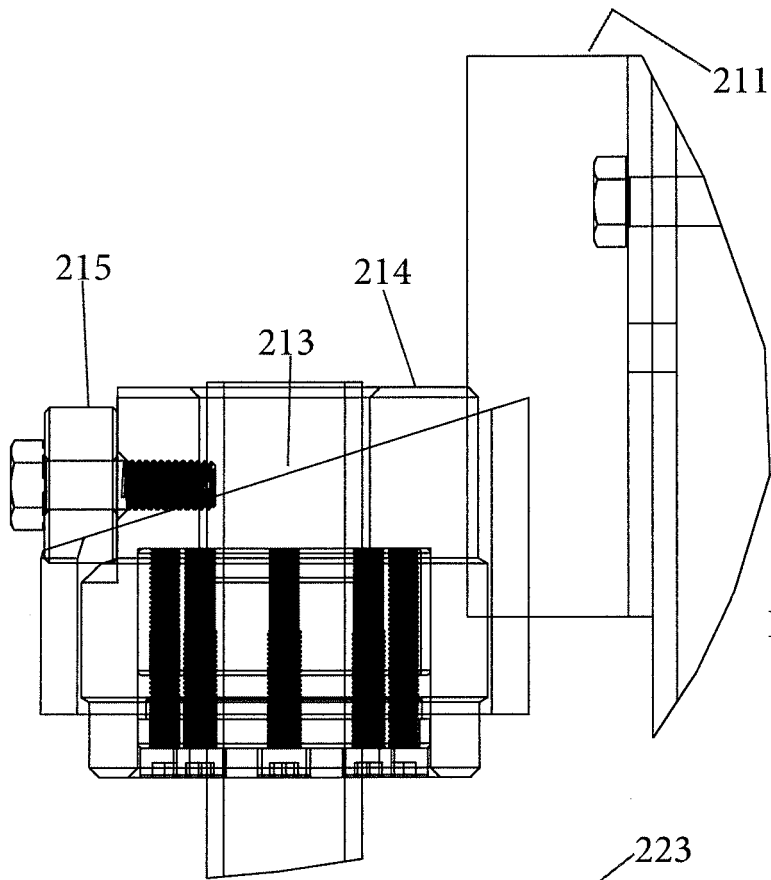


FIGURE 16

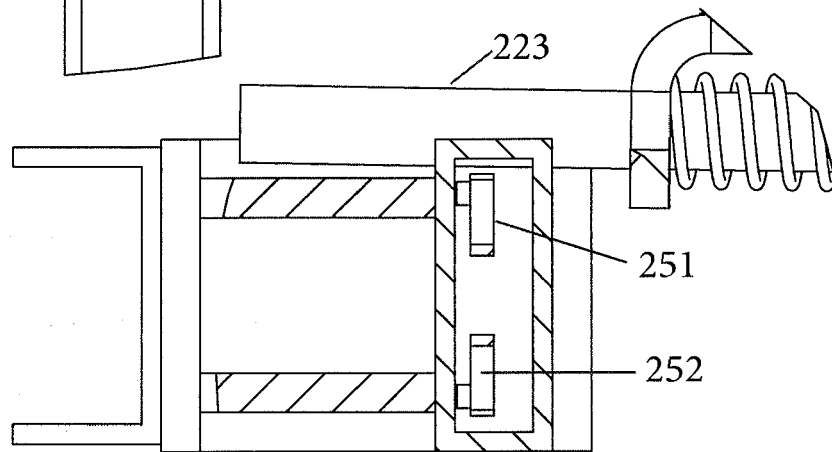
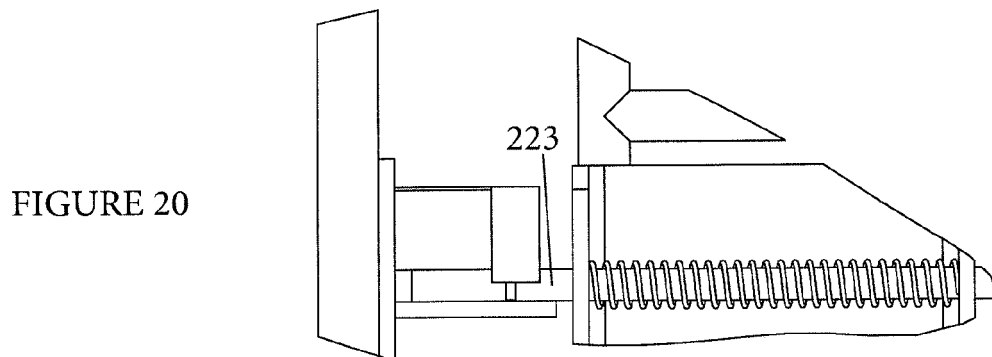
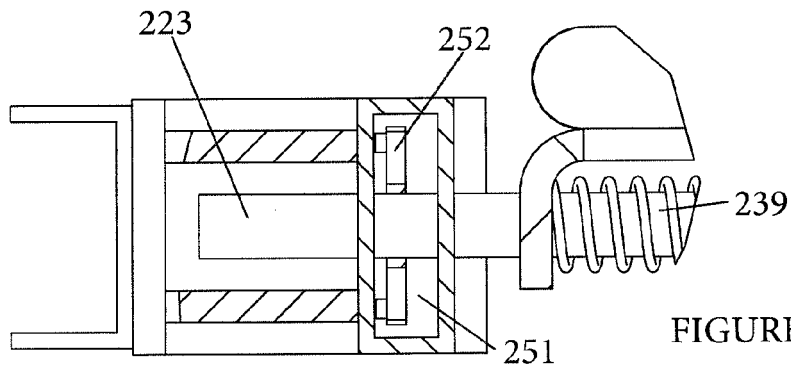
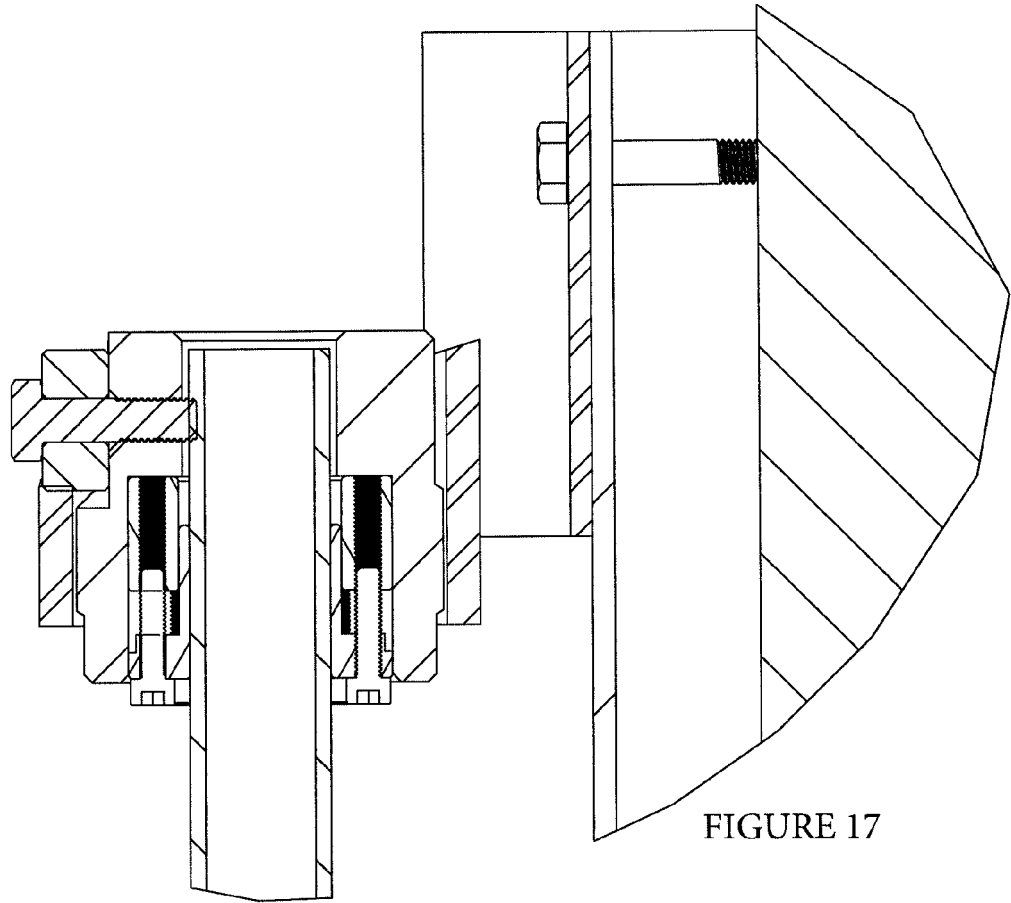


FIGURE 18



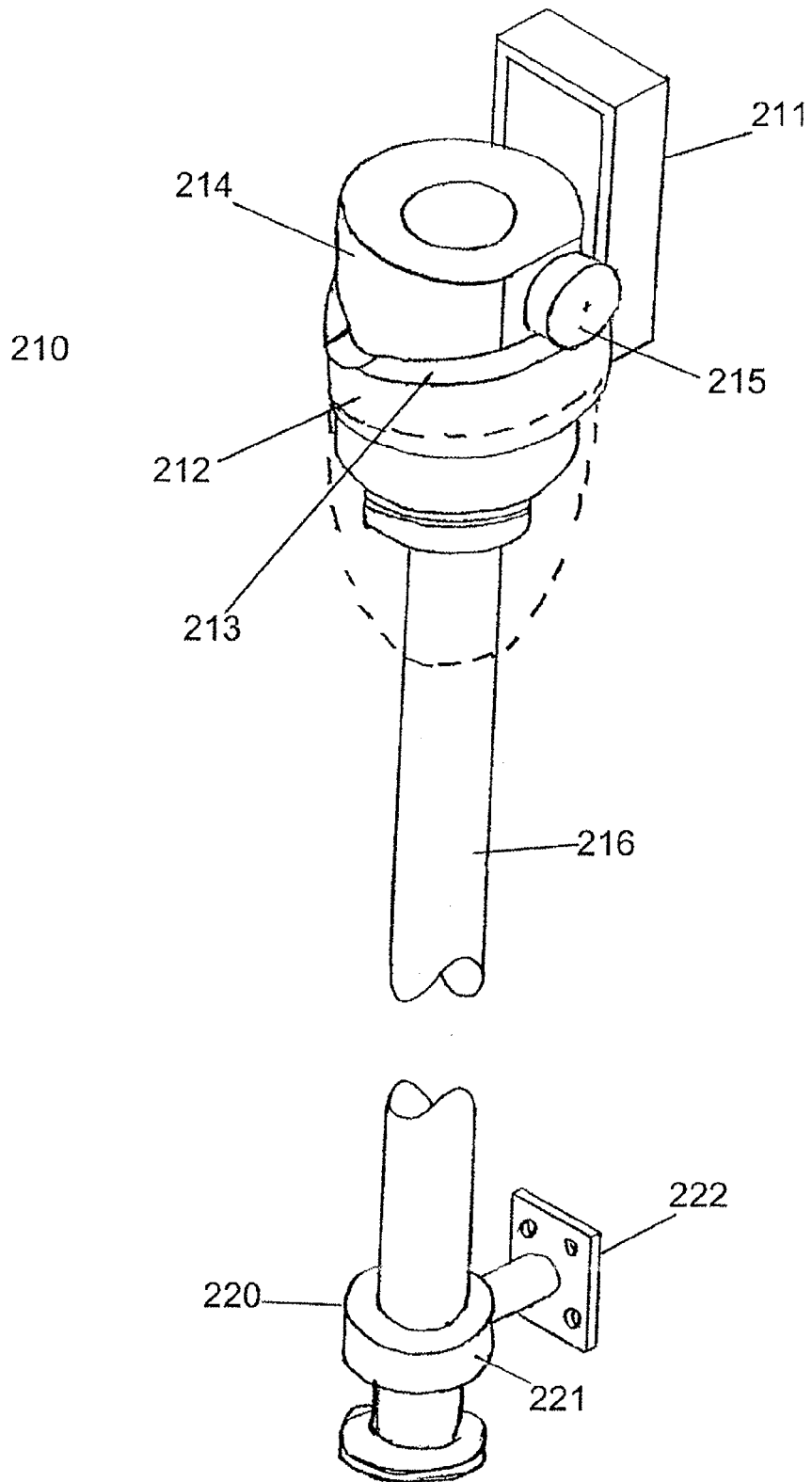


FIGURE 21

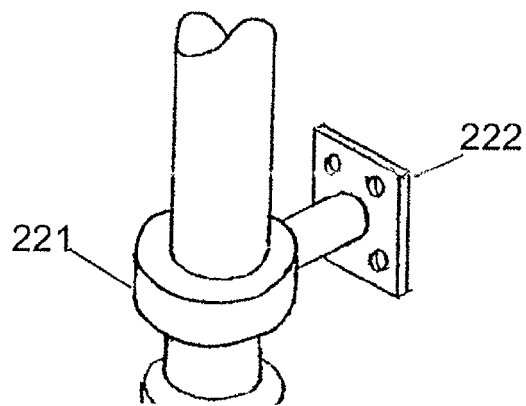
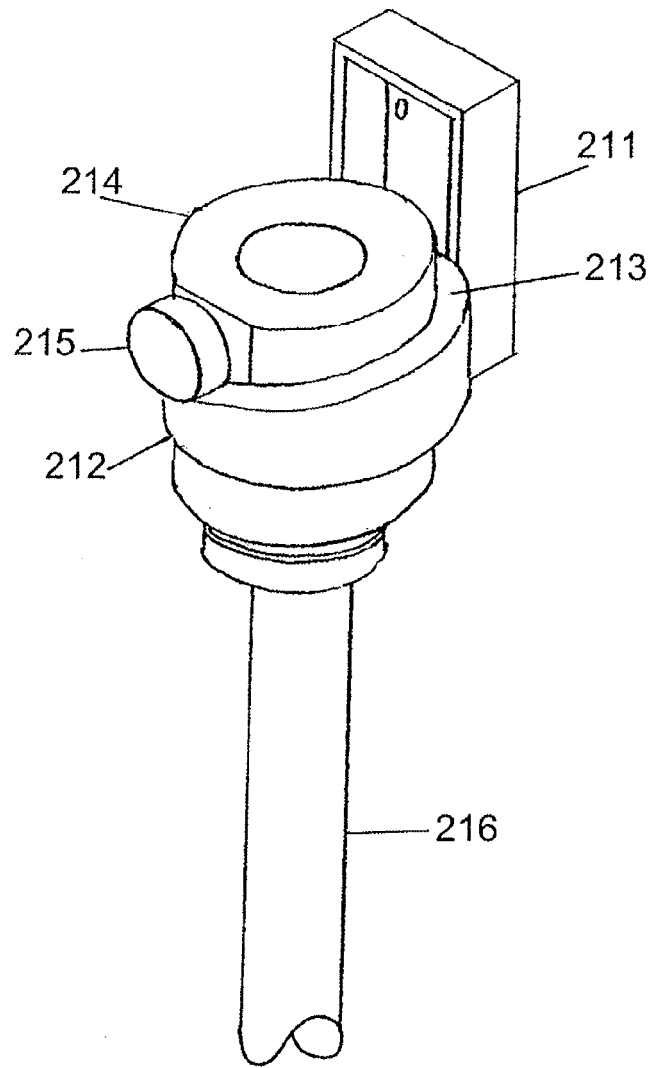


FIGURE 22

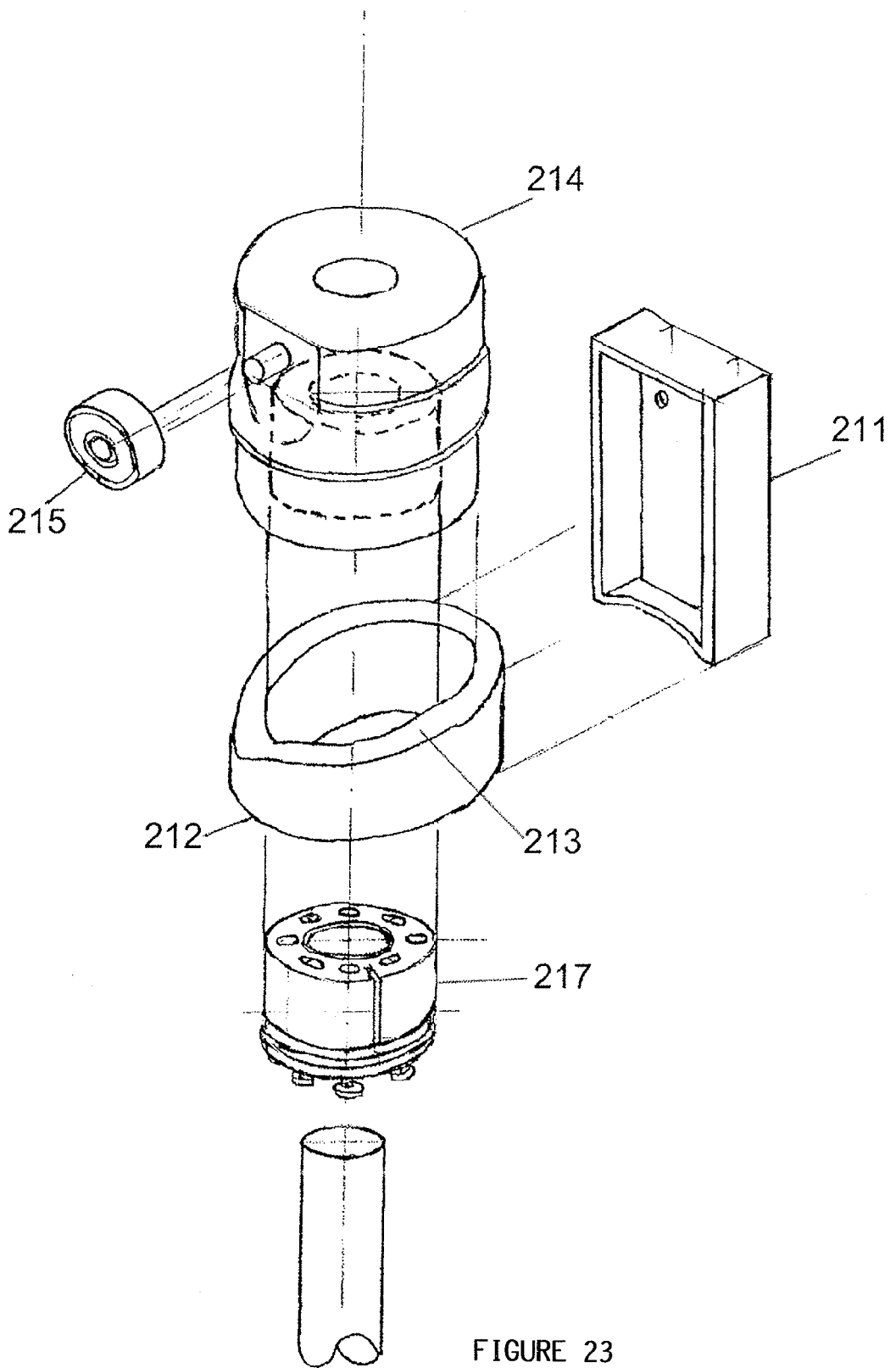


FIGURE 23

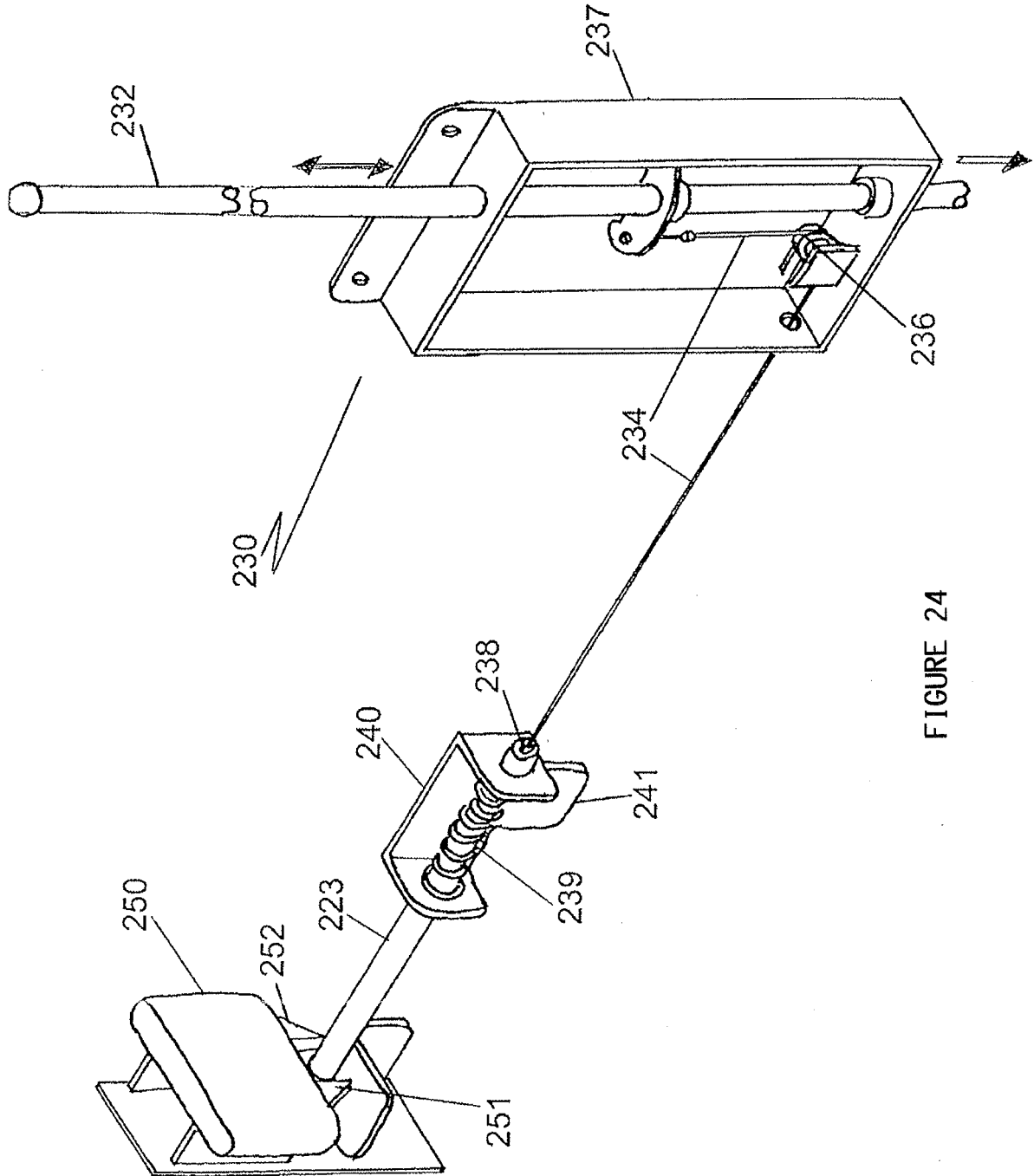


FIGURE 24

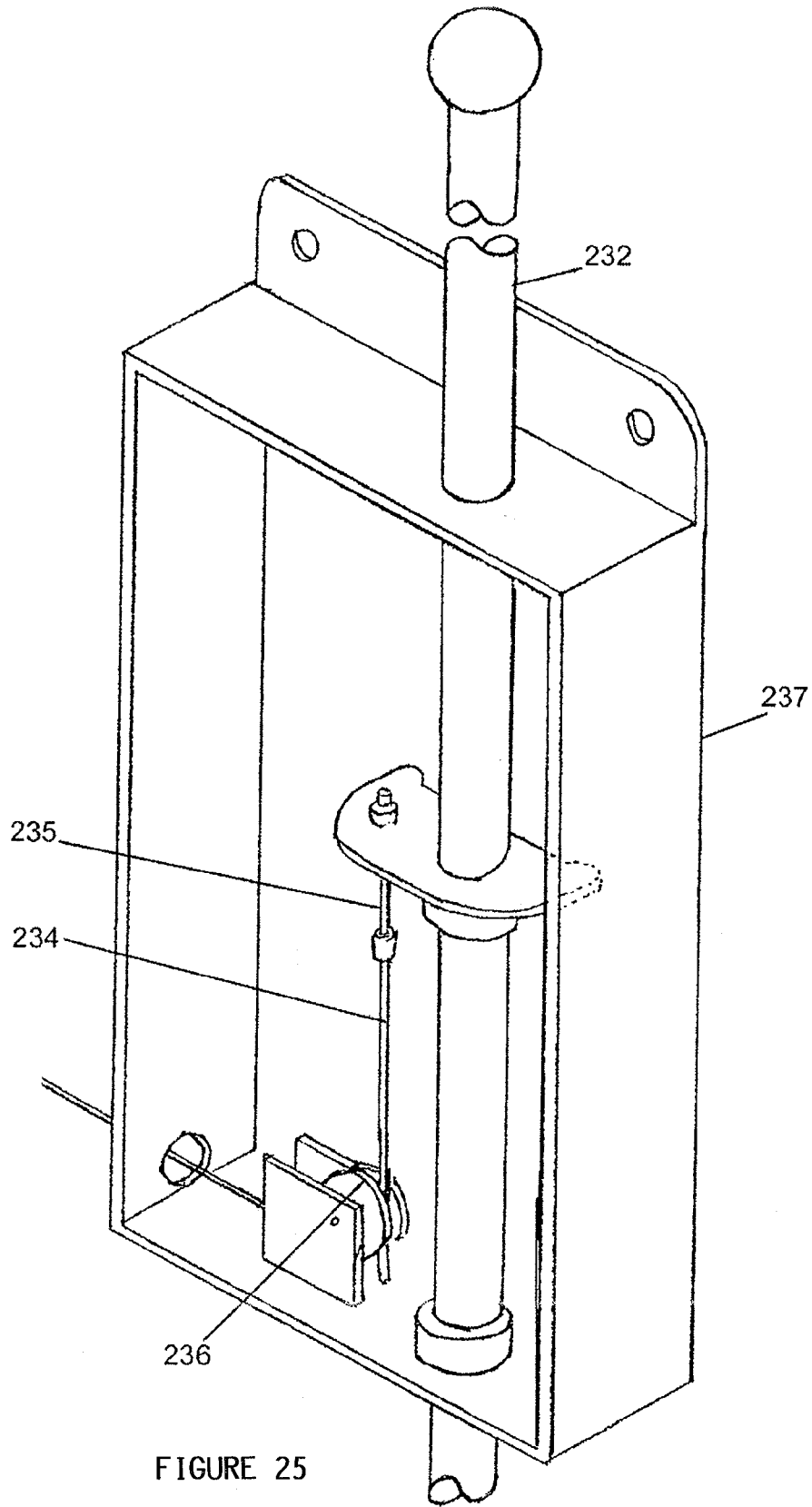
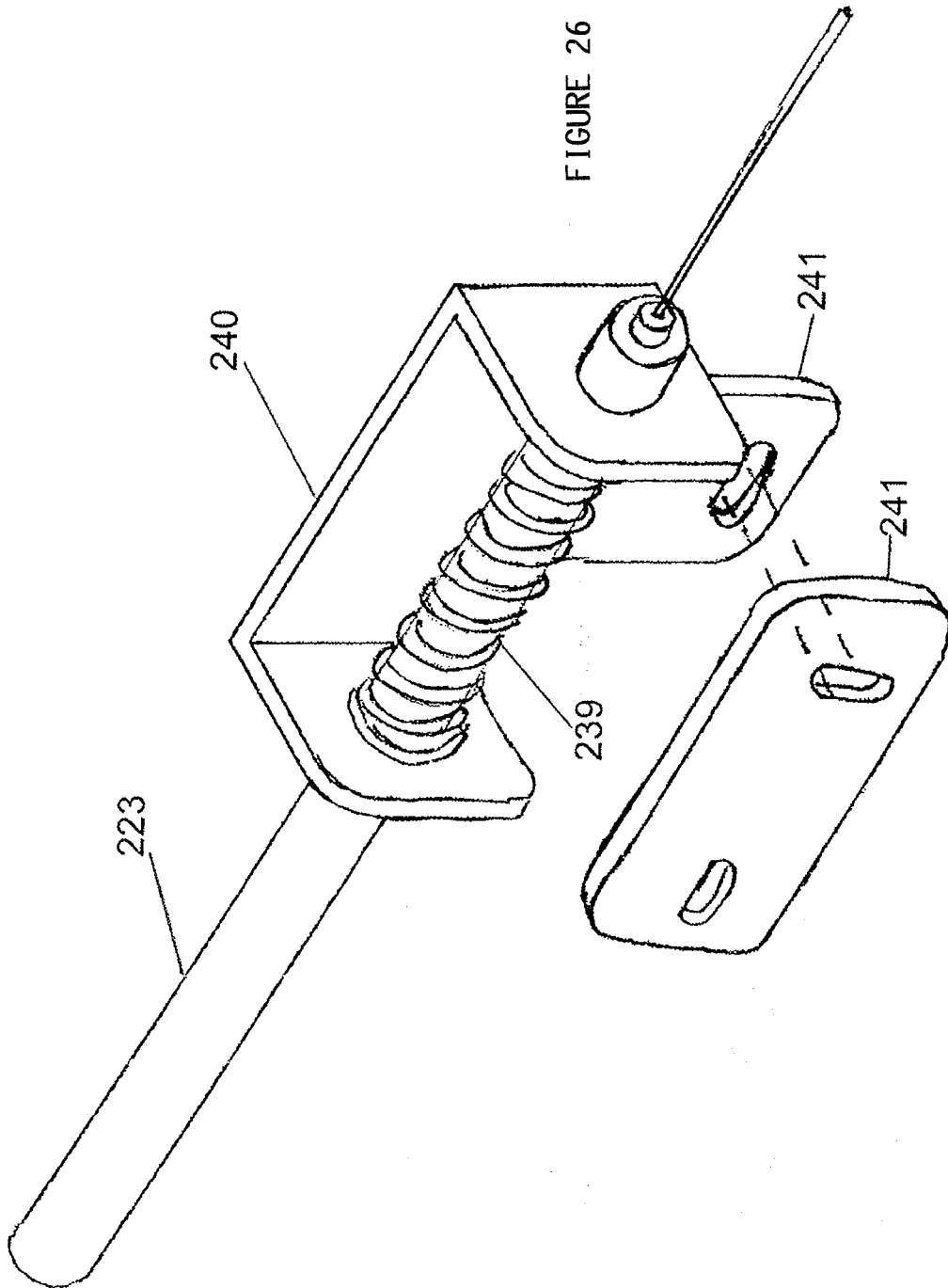


FIGURE 25



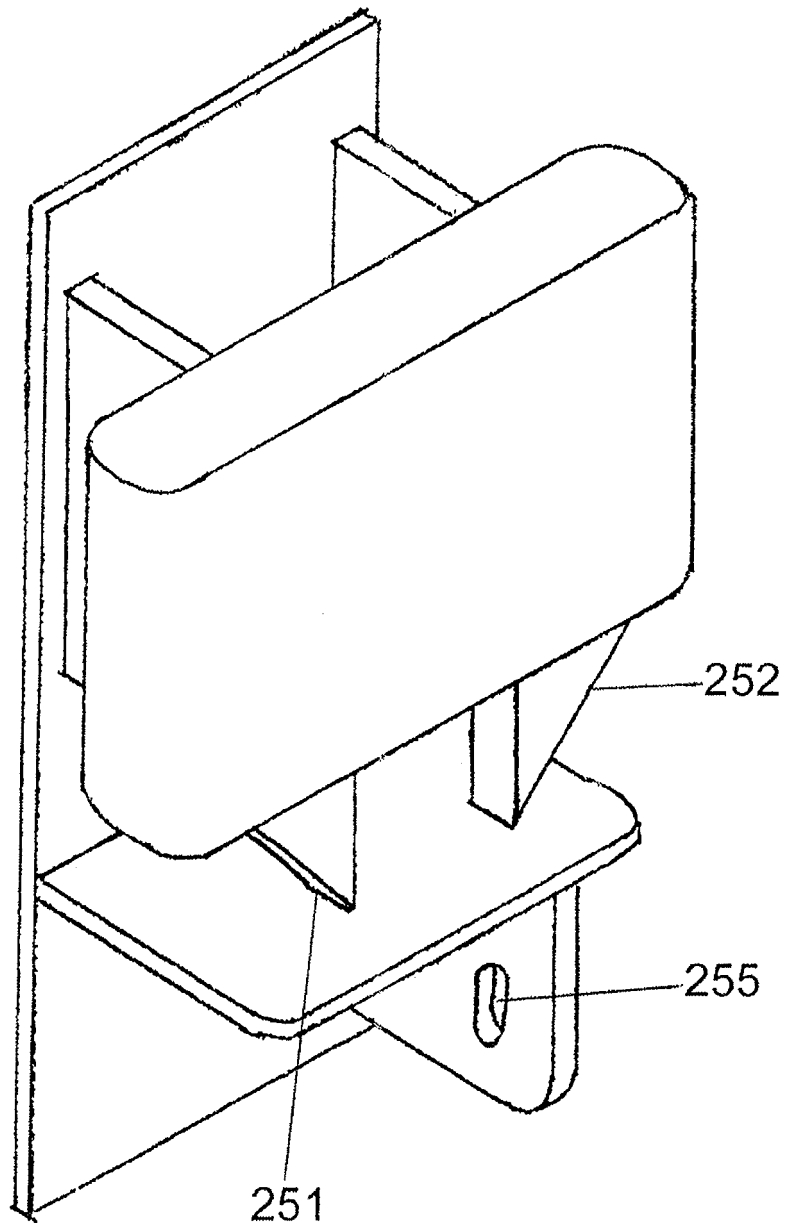


FIGURE 27

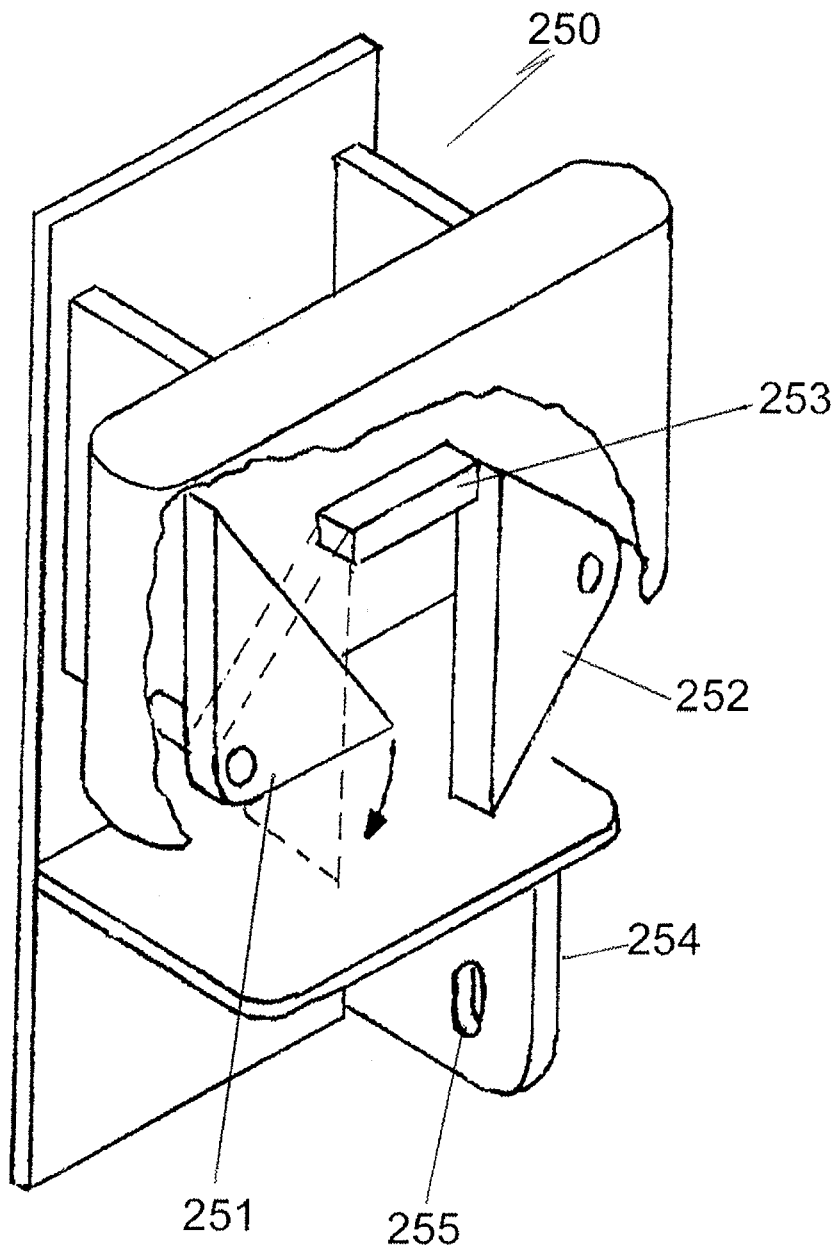


FIGURE 28



EUROPEAN SEARCH REPORT

Application Number  
EP 14 19 2900

5

10

15

20

25

30

35

40

45

50

55

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	US 231 907 A (W.W.GOODWIN) 7 September 1880 (1880-09-07)	1,2,4	INV. E05B53/00 E05B63/24 E05B65/00 E05F1/06 E06B11/08 E05D7/04
A	* the whole document *	9,10	
Y	WO 99/61743 A1 (CLARE KEITH JOHN [NZ]) 2 December 1999 (1999-12-02) * page 6, line 2 - line 4 * * page 26, line 10 - line 16 * * page 29, line 17 - line 33 * * page 33 - page 34; figures 1,1b,1c,17,18 *	1,2,4	
A	EP 0 138 423 A2 (RENOLD PLC [GB]) 24 April 1985 (1985-04-24) * page 4 - page 5; figures 1-3 *	1	
A	GB 611 994 A (JOHN HENRY BARDSLEY) 5 November 1948 (1948-11-05) * page 1 * * page 4, line 9 - line 25; figures 1-6 *	1	
A	US 2003/020058 A1 (MARTIN ROBERT E [US]) 30 January 2003 (2003-01-30) * paragraph [0017]; figure 1 *	9,10	
A	DE 20 2007 008793 U1 (MANNEBECK B LANDTECHNIK GMBH [DE]) 4 October 2007 (2007-10-04) * abstract; figures 1,3,7 *	9,10	E05B E05F E06B A01K E05D
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 5 March 2015	Examiner Ansel, Yannick
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ..... & : member of the same patent family, corresponding document	

EPO FORM 1503 03.82 (P04/C01)



Application Number

EP 14 19 2900

5

**CLAIMS INCURRING FEES**

The present European patent application comprised at the time of filing claims for which payment was due.

10

Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

15

No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

20

**LACK OF UNITY OF INVENTION**

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

25

see sheet B

30

All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

35

As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

40

Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

45

None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

50

The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).

55

**LACK OF UNITY OF INVENTION  
SHEET B**Application Number  
EP 14 19 2900

5

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

10

## 1. claims: 1-10

15

A gate having an upper pivot member with a cam surface and a roller, wherein the roller rolls upwardly on the cam surface until the gate is in a fully opened position and as the gate is released, the gate closes itself under its own weight and the roller moves downwardly on the cam surface.

20

## 1.1. claims: 1-8(partially)

A gate (200) comprising a mounting channel (300) to allow the gate (200) to be hung plumb.

25

## 1.2. claims: 9, 10(partially)

A gate (100) comprising a lower pivot member (110) that provides locking and unlocking means by which the gate is locked and unlocked.

---

30

Please note that all inventions mentioned under item 1, although not necessarily linked by a common inventive concept, could be searched without effort justifying an additional fee.

35

40

45

50

55

ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.

EP 14 19 2900

5

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on  
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

05-03-2015

10

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 231907 A	07-09-1880	NONE	
-----			
WO 9961743 A1	02-12-1999	AU 754678 B2	21-11-2002
		AU 4296799 A	13-12-1999
		WO 9961743 A1	02-12-1999
-----			
EP 0138423 A2	24-04-1985	AU 3333984 A	28-03-1985
		EP 0138423 A2	24-04-1985
-----			
GB 611994 A	05-11-1948	NONE	
-----			
US 2003020058 A1	30-01-2003	NONE	
-----			
DE 202007008793 U1	04-10-2007	AT 555271 T	15-05-2012
		DE 202007008793 U1	04-10-2007
		EP 2005820 A2	24-12-2008
-----			

15

20

25

30

35

40

45

50

55

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82