



US00D700322S

(12) **United States Design Patent**  
**Kleiner**

(10) **Patent No.:** **US D700,322 S**  
(45) **Date of Patent:** **\*\* Feb. 25, 2014**

(54) **INTERVERTEBRAL SURGICAL TOOL**

FOREIGN PATENT DOCUMENTS

(76) Inventor: **Jeffrey B. Kleiner**, Denver, CO (US)

WO WO 99/08627 2/1999  
WO WO 2005/037149 4/2005

(\*\*) Term: **14 Years**

OTHER PUBLICATIONS

(21) Appl. No.: **29/427,387**

Ray, C., "Facet Joint Disorders and Back Pain," published on Spine-Health, Dec. 10, 2002, available at [www.spine-health.com/conditions/arthritis/facet-joint-disorders-and-back-pain](http://www.spine-health.com/conditions/arthritis/facet-joint-disorders-and-back-pain), 1 page.  
U.S. Appl. No. 13/168,611, filed Jun. 24, 2011, Kleiner.

(22) Filed: **Jul. 17, 2012**

(Continued)

**Related U.S. Application Data**

*Primary Examiner* — Bridget L Eland

(63) Continuation of application No. 13/277,272, filed on Oct. 20, 2011, now Pat. No. 8,277,510.

(74) *Attorney, Agent, or Firm* — Sheridan Ross P.C.

(51) **LOC (10) Cl.** ..... **24-02**

(57) **CLAIM**

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

The ornamental design for an intervertebral surgical tool, as shown and described.

USPC ..... **D24/133**

**DESCRIPTION**

(58) **Field of Classification Search**

USPC ..... D24/133, 145, 146, 147; 606/246, 264, 606/279, 86 A, 86 R; 623/17.11

See application file for complete search history.

FIG. 1 is a front perspective view of the intervertebral surgical tool;

FIG. 2 is a top plan view thereof;

FIG. 3 is a front elevation view thereof;

FIG. 4 is a right elevation view thereof;

FIG. 5 is a left elevation view thereof;

FIG. 6 is a rear elevation view thereof;

FIG. 7 is a bottom plan view thereof;

FIG. 8 is a front perspective view of the intervertebral surgical tool shown in an alternate environment;

FIG. 9 is a top plan view thereof;

FIG. 10 is a front elevation view thereof;

FIG. 11 is a right elevation view thereof;

FIG. 12 is a left elevation view thereof;

FIG. 13 is a rear elevation view thereof; and,

FIG. 14 is a bottom plan view thereof.

The broken lines showing an intervertebral surgical tool are included for the purpose of illustrating environment and form no part of the claimed design.

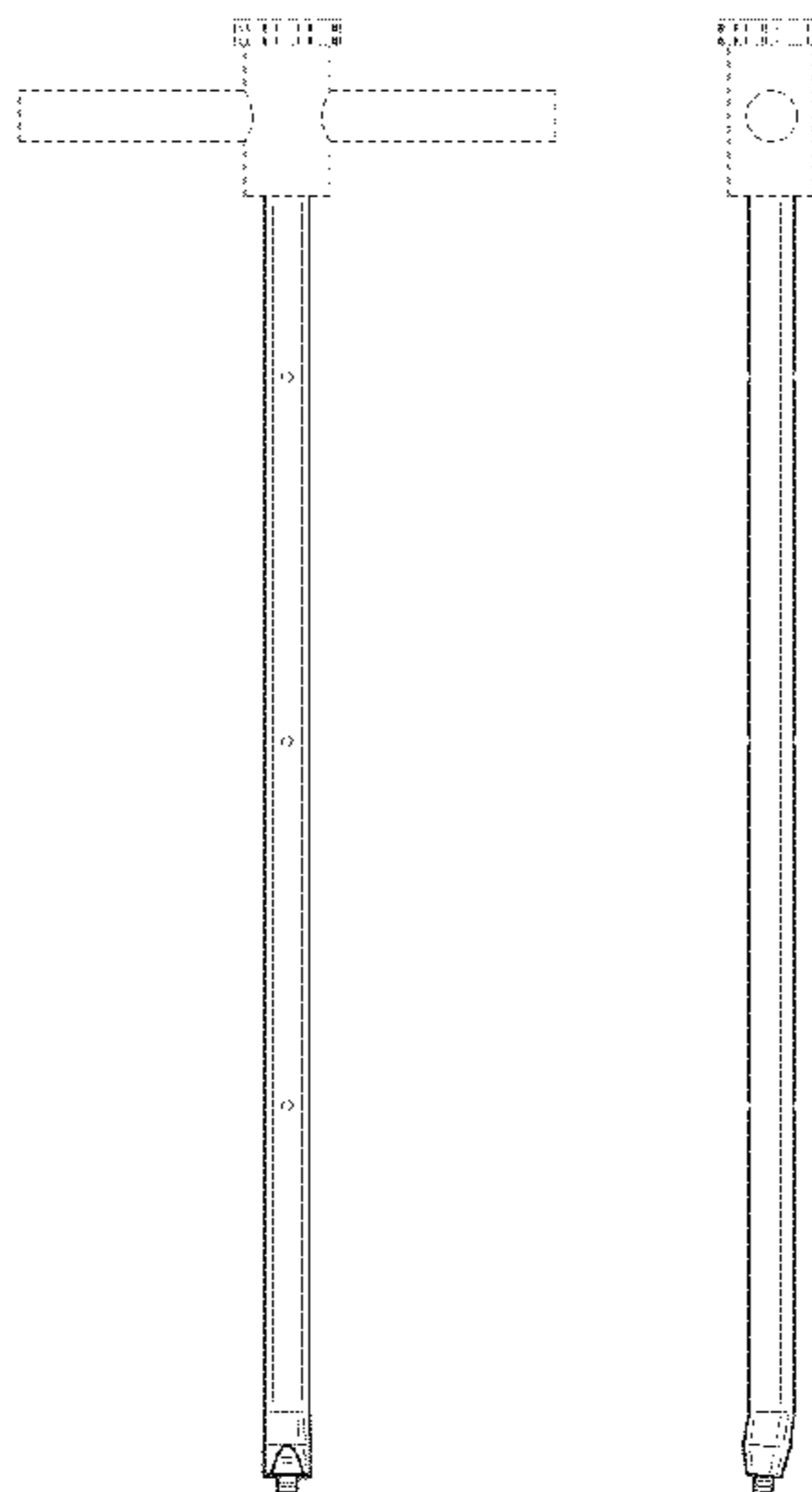
(56) **References Cited**

**U.S. PATENT DOCUMENTS**

D30,951 S *	6/1899	Saint Cyr, Jr. ....	D24/133
1,867,624 A *	7/1932	Hoffman .....	600/567
2,520,464 A	8/1950	Hubner	
3,697,011 A	10/1972	Christensen et al.	
3,741,496 A	6/1973	Beller	
3,836,092 A	9/1974	Hull	
3,855,638 A	12/1974	Pilliar	
4,039,156 A	8/1977	Abraham	
4,041,939 A	8/1977	Hall	
4,047,524 A	9/1977	Hall	
4,206,516 A	6/1980	Pilliar	
4,277,184 A	7/1981	Solomon	
4,430,062 A	2/1984	Henrichsen et al.	
4,462,402 A	7/1984	Burgio et al.	
4,467,478 A	8/1984	Jurgutis	

(Continued)

**1 Claim, 6 Drawing Sheets**



(56)

References Cited

U.S. PATENT DOCUMENTS

4,501,269 A	2/1985	Bagby	6,004,191 A	12/1999	Schur et al.
4,522,270 A	6/1985	Kishi	6,004,326 A	12/1999	Castro et al.
4,570,623 A	2/1986	Ellison et al.	6,013,028 A	1/2000	Jho et al.
4,580,978 A	4/1986	Motola et al.	6,019,765 A	2/2000	Thornhill et al.
4,592,346 A	6/1986	Jurgutis	6,030,356 A	2/2000	Carlson et al.
4,743,256 A	5/1988	Brantigan	6,030,388 A	2/2000	Yoshimi et al.
4,877,399 A	10/1989	Frank et al.	6,030,390 A	2/2000	Mehdizadeh
4,925,924 A	5/1990	Silver et al.	6,030,401 A	2/2000	Marino
4,991,570 A	2/1991	Bullard	6,033,408 A	3/2000	Gage et al.
5,037,422 A	8/1991	Hayhurst	6,033,438 A	3/2000	Bianchi et al.
5,053,038 A	10/1991	Sheehan	6,045,555 A	4/2000	Smith et al.
5,055,104 A	10/1991	Ray	6,090,143 A	7/2000	Meriwether et al.
5,058,823 A	10/1991	Emura et al.	6,096,080 A	8/2000	Nicholson et al.
5,282,744 A	2/1994	Meyer	6,113,602 A	9/2000	Sand
5,290,295 A	3/1994	Querals et al.	6,120,503 A	9/2000	Michelson
5,311,640 A	5/1994	Holland	6,136,001 A	10/2000	Michelson
5,312,407 A	5/1994	Carter	6,142,998 A	11/2000	Smith et al.
5,312,417 A	5/1994	Wilk	6,146,420 A	11/2000	McKay
5,324,307 A	6/1994	Jarrett et al.	6,149,096 A	11/2000	Hartley
5,329,834 A	7/1994	Wong	6,152,871 A	11/2000	Foley et al.
5,333,812 A	8/1994	Sato	6,159,245 A	12/2000	Meriwether et al.
D351,022 S *	9/1994	Saito ..... D24/146	6,180,085 B1	1/2001	Achilefu
5,354,292 A	10/1994	Braeuer et al.	6,209,886 B1	4/2001	Estes et al.
5,395,372 A	3/1995	Holt et al.	6,216,573 B1	4/2001	Moutafis et al.
D360,689 S	7/1995	Giampapa	6,224,599 B1	5/2001	Baynham et al.
5,431,658 A	7/1995	Moskovich	6,235,805 B1	5/2001	Chang et al.
D364,462 S	11/1995	Michelson	6,238,397 B1	5/2001	Zucherman et al.
5,520,611 A	5/1996	Rao et al.	6,241,733 B1	6/2001	Nicholson et al.
D370,531 S *	6/1996	Ash et al. .... D24/140	6,241,769 B1	6/2001	Nicholson et al.
5,527,312 A	6/1996	Ray	6,245,108 B1	6/2001	Biscup
D372,311 S *	7/1996	Koros et al. .... D24/147	6,258,094 B1	7/2001	Nicholson et al.
5,541,191 A	7/1996	Skotnicki et al.	6,261,293 B1	7/2001	Nicholson et al.
D372,781 S	8/1996	Reif	6,261,295 B1	7/2001	Nicholson et al.
5,549,607 A	8/1996	Olson et al.	6,261,296 B1	7/2001	Aebi et al.
5,554,191 A	9/1996	Lahille et al.	6,290,724 B1	9/2001	Marino
5,558,674 A	9/1996	Heggeness et al.	6,299,613 B1	10/2001	Ogilvie et al.
D374,283 S	10/1996	Michelson	6,309,395 B1	10/2001	Smith et al.
5,562,661 A	10/1996	Yoshimi et al.	6,325,805 B1	12/2001	Ogilvie et al.
5,569,246 A	10/1996	Ojima et al.	6,328,738 B1	12/2001	Suddaby
5,586,989 A	12/1996	Bray	6,336,928 B1	1/2002	Guerin et al.
5,595,563 A	1/1997	Moisdon	6,364,880 B1	4/2002	Michelson
5,601,557 A	2/1997	Hayhurst	6,375,635 B1	4/2002	Moutafis et al.
D378,409 S	3/1997	Michelson	6,387,096 B1	5/2002	Hyde, Jr.
5,611,800 A	3/1997	Davis et al.	6,409,765 B1	6/2002	Bianchi et al.
5,634,925 A	6/1997	Urbanski	6,436,101 B1	8/2002	Hamada
5,653,763 A	8/1997	Errico et al.	6,451,017 B1	9/2002	Moutafis et al.
5,662,655 A	9/1997	Laboureau et al.	6,454,806 B1	9/2002	Cohen et al.
5,665,122 A	9/1997	Kambin	6,467,556 B2	10/2002	Alsrue
5,688,285 A	11/1997	Yamada	D467,657 S *	12/2002	Scribner ..... D24/133
5,697,932 A	12/1997	Smith et al.	6,500,206 B1	12/2002	Bryan
5,702,449 A	12/1997	McKay	6,511,493 B1	1/2003	Moutafis et al.
5,704,892 A	1/1998	Adair	D469,871 S *	2/2003	Sand ..... D24/133
5,741,253 A	4/1998	Michelson	6,520,976 B1	2/2003	Gage
5,762,629 A	6/1998	Kambin	6,524,318 B1	2/2003	Longhini et al.
5,779,642 A	7/1998	Nightengale	6,565,574 B2	5/2003	Michelson
5,782,919 A	7/1998	Zdeblick et al.	6,569,201 B2	5/2003	Moumene et al.
5,797,918 A	8/1998	McGuire et al.	6,616,669 B2	9/2003	Ogilvie et al.
5,836,948 A	11/1998	Zucherman et al.	6,620,356 B1	9/2003	Wong et al.
5,836,958 A	11/1998	Ralph	6,641,613 B2	11/2003	Sennett
5,860,977 A	1/1999	Zucherman et al.	6,648,915 B2	11/2003	Sazy
5,865,746 A	2/1999	Murugesan et al.	6,652,533 B2	11/2003	O'Neil
5,865,846 A	2/1999	Bryan et al.	6,669,710 B2	12/2003	Moutafis et al.
5,871,462 A	2/1999	Yoder et al.	6,673,113 B2	1/2004	Ralph et al.
5,888,228 A	3/1999	Knothe et al.	6,679,887 B2	1/2004	Nicholson et al.
5,904,689 A	5/1999	Jonjic	6,695,882 B2	2/2004	Bianchi et al.
5,904,718 A	5/1999	Jefferies	6,699,288 B2	3/2004	Moret
5,906,616 A	5/1999	Pavlov et al.	6,709,438 B2	3/2004	Dixon et al.
5,925,051 A	7/1999	Mikhail	6,719,760 B2	4/2004	Dorchak et al.
5,925,056 A	7/1999	Thomas et al.	6,719,795 B1	4/2004	Cornwall et al.
5,944,658 A	8/1999	Koros et al.	6,730,125 B1	5/2004	Lin
5,944,686 A	8/1999	Patterson et al.	6,743,257 B2	6/2004	Castro
5,947,972 A	9/1999	Gage et al.	6,746,487 B2	6/2004	Scifert et al.
5,976,146 A	11/1999	Ogawa et al.	6,764,491 B2	7/2004	Frey et al.
5,989,257 A	11/1999	Tidwell et al.	6,773,437 B2	8/2004	Ogilvie et al.
5,997,895 A	12/1999	Narotam et al.	6,800,093 B2	10/2004	Nicholson et al.
			6,824,565 B2	11/2004	Muhanna et al.
			6,830,574 B2	12/2004	Heckele et al.
			6,890,728 B2	5/2005	Dolecek et al.
			6,899,712 B2	5/2005	Moutafis et al.

(56)

References Cited

U.S. PATENT DOCUMENTS

6,923,792 B2	8/2005	Staid et al.	D593,202 S	5/2009	Petersen	
6,929,646 B2	8/2005	Gambale	7,531,003 B2	5/2009	Reindel	
6,942,665 B2	9/2005	Gambale	7,534,265 B1	5/2009	Boyd	
6,960,182 B2	11/2005	Moutafis et al.	7,534,270 B2	5/2009	Ball	
6,962,592 B2	11/2005	Gatturna et al.	D594,119 S *	6/2009	Berberich et al.	D24/133
6,969,523 B1	11/2005	Mattern et al.	7,553,320 B2	6/2009	Molz, IV et al.	
6,974,480 B2	12/2005	Messerli et al.	D597,669 S *	8/2009	Petersen	D24/133
6,991,653 B2	1/2006	White et al.	D598,096 S *	8/2009	Petersen	D24/133
6,994,728 B2	2/2006	Zubok et al.	D599,015 S *	8/2009	Petersen	D24/133
7,004,946 B2	2/2006	Parker et al.	7,578,820 B2	8/2009	Moore et al.	
7,008,431 B2	3/2006	Simonson	D600,806 S *	9/2009	Horton et al.	D24/133
7,014,640 B2	3/2006	Kemppainen et al.	D601,251 S *	9/2009	Horton et al.	D24/133
7,025,742 B2	4/2006	Rubenstein et al.	7,582,058 B1	9/2009	Miles et al.	
7,025,769 B1	4/2006	Ferree	7,582,107 B2	9/2009	Trail et al.	
7,033,317 B2	4/2006	Pruitt	7,595,043 B2	9/2009	Hedrick et al.	
7,041,136 B2	5/2006	Goble et al.	D603,502 S	11/2009	Petersen	
7,066,961 B2	6/2006	Michelson	7,615,078 B2	11/2009	White et al.	
7,077,864 B2	7/2006	Byrd, III et al.	7,618,423 B1	11/2009	Valentine et al.	
7,094,257 B2	8/2006	Mujwid et al.	7,625,374 B2	12/2009	Branch et al.	
7,122,017 B2	10/2006	Moutafis et al.	7,632,276 B2	12/2009	Fishbein	
7,128,760 B2	10/2006	Michelson	D608,001 S *	1/2010	Reardon et al.	D24/133
7,135,043 B2	11/2006	Nakahara et al.	7,655,027 B2	2/2010	Michelson	
7,182,782 B2	2/2007	Kirschman	7,658,766 B2	2/2010	Melkent et al.	
7,204,825 B2	4/2007	Cimino et al.	7,671,014 B2	3/2010	Beals et al.	
7,207,992 B2	4/2007	Ritland	7,674,297 B2	3/2010	Falahee	
7,211,112 B2	5/2007	Baynham et al.	7,677,418 B2	3/2010	Henniges et al.	
7,214,186 B2	5/2007	Ritland	7,686,805 B2	3/2010	Michelson	
7,223,292 B2	5/2007	Messerli et al.	7,691,133 B2	4/2010	Partin et al.	
7,232,463 B2	6/2007	Falahee	7,693,562 B2	4/2010	Marino et al.	
7,238,203 B2	7/2007	Bagga et al.	7,708,761 B2	5/2010	Petersen	
7,255,703 B2	8/2007	Mujwid et al.	7,717,685 B2	5/2010	Moutafis et al.	
7,267,691 B2	9/2007	Keller et al.	7,722,530 B2	5/2010	Davison	
7,273,498 B2	9/2007	Bianchi et al.	7,722,613 B2	5/2010	Sutterlin et al.	
7,288,093 B2	10/2007	Michelson	7,723,291 B2	5/2010	Beals et al.	
7,316,070 B2	1/2008	Green	7,728,868 B2	6/2010	Razzaque et al.	
7,329,283 B2	2/2008	Estes et al.	7,730,563 B1	6/2010	Sklar et al.	
7,337,538 B2	3/2008	Moutafis et al.	7,734,327 B2	6/2010	Colquhoun	
7,341,590 B2	3/2008	Ferree	7,740,634 B2	6/2010	Orbay et al.	
7,341,591 B2	3/2008	Grinberg	7,740,661 B2	6/2010	Baratz et al.	
7,357,284 B2	4/2008	Jauvin	7,744,555 B2	6/2010	DiMauro et al.	
7,357,804 B2	4/2008	Binder, Jr. et al.	7,744,637 B2	6/2010	Johnson et al.	
7,361,178 B2	4/2008	Hearn et al.	7,744,973 B2	6/2010	Schoenle et al.	
7,364,657 B2	4/2008	Mandrusov et al.	D620,108 S *	7/2010	Eitenmueller et al.	D24/144
7,371,239 B2	5/2008	Dec et al.	7,749,231 B2	7/2010	Bonvallet et al.	
7,377,923 B2	5/2008	Purcell et al.	7,749,253 B2	7/2010	Zucherman et al.	
7,387,643 B2	6/2008	Michelson	7,749,269 B2	7/2010	Peterman et al.	
7,399,041 B2	7/2008	Prentner et al.	7,749,273 B2	7/2010	Cauthen et al.	
D574,495 S	8/2008	Petersen	7,749,274 B2	7/2010	Razian	
7,406,775 B2	8/2008	Funk et al.	7,749,276 B2	7/2010	Fitz	
7,410,334 B2	8/2008	McGrew	7,749,279 B2	7/2010	Twomey et al.	
7,410,478 B2	8/2008	Yang	7,749,555 B2	7/2010	Zanella	
7,413,065 B2	8/2008	Gauthier	7,751,865 B2	7/2010	Jascob et al.	
7,421,772 B2	9/2008	Gao et al.	7,753,911 B2	7/2010	Ray et al.	
7,429,270 B2	9/2008	Baumgartner et al.	7,753,914 B2	7/2010	Ruhling et al.	
D579,562 S *	10/2008	Anderson et al.	7,753,938 B2	7/2010	Aschmann et al.	D24/133
7,430,945 B2	10/2008	Gauthier et al.	7,753,940 B2	7/2010	Veldman et al.	
7,431,711 B2	10/2008	Moutafis et al.	7,753,962 B2	7/2010	Melder	
7,442,208 B2	10/2008	Mathieu et al.	7,758,501 B2	7/2010	Frasier et al.	
7,455,157 B2	11/2008	Kimes et al.	7,758,616 B2	7/2010	LeHuec et al.	
D582,552 S *	12/2008	Berberich	7,758,617 B2	7/2010	Iott et al.	D24/146
7,461,803 B2	12/2008	Boerner	7,758,644 B2	7/2010	Trieu	
7,473,255 B2	1/2009	McGarity et al.	7,758,648 B2	7/2010	Castlemen et al.	
7,476,226 B2	1/2009	Weikel et al.	7,763,025 B2	7/2010	Assell et al.	
7,478,577 B1	1/2009	Wheeler	7,763,035 B2	7/2010	Melkent et al.	
7,481,766 B2	1/2009	Lee et al.	7,763,055 B2	7/2010	Foley	
7,481,813 B1	1/2009	Purcell	7,763,078 B2	7/2010	Peterman et al.	
7,485,145 B2	2/2009	Purcell	7,763,080 B2	7/2010	Southworth	
D589,626 S	3/2009	Petersen	D621,509 S	8/2010	Lovell	
7,501,073 B2	3/2009	Wen et al.	D622,395 S	8/2010	Iott et al.	
7,503,933 B2	3/2009	Michelson	D622,843 S	8/2010	Horton	
7,503,934 B2	3/2009	Eisermann et al.	D622,851 S	8/2010	Horton	
7,503,936 B2	3/2009	Trieu	7,766,914 B2	8/2010	McCormack et al.	
D590,943 S	4/2009	Petersen	7,766,918 B2	8/2010	Allard et al.	
D590,945 S *	4/2009	Berberich	7,766,930 B2	8/2010	DiPoto et al.	D24/146
7,513,901 B2	4/2009	Scifert et al.	7,766,940 B2	8/2010	Kwak et al.	
			7,766,967 B2	8/2010	Francis	
			7,766,969 B2	8/2010	Justin et al.	
			7,769,422 B2	8/2010	DiSilvestro et al.	
			7,771,143 B2	8/2010	Bharadwaj et al.	

(56)

References Cited

U.S. PATENT DOCUMENTS

7,771,475 B2	8/2010	Michelson	8,293,232 B2	10/2012	Beals et al.
7,771,476 B2	8/2010	Justis et al.	D692,133 S *	10/2013	Steinwachs et al. .... D24/146
7,771,479 B2	8/2010	Humphreys et al.	2002/0049448 A1	4/2002	Sand et al.
7,776,040 B2	8/2010	Markworth et al.	2003/0083748 A1	5/2003	Lee et al.
7,776,046 B2	8/2010	Boyd et al.	2003/0149482 A1	8/2003	Michelson
7,776,047 B2	8/2010	Fanger et al.	2003/0229358 A1 *	12/2003	Errico et al. .... 606/99
7,776,049 B1	8/2010	Curran et al.	2004/0024466 A1	2/2004	Heerklotz et al.
7,776,075 B2	8/2010	Bruneau et al.	2004/0073314 A1	4/2004	White et al.
7,776,090 B2	8/2010	Winslow et al.	2004/0087956 A1	5/2004	Weikel et al.
7,776,091 B2	8/2010	Mastrorio et al.	2004/0133217 A1	7/2004	Watschke
7,776,094 B2	8/2010	McKinley et al.	2004/0143330 A1	7/2004	Sazy
7,776,095 B2	8/2010	Peterman et al.	2004/0148027 A1 *	7/2004	Errico et al. .... 623/17.11
7,776,594 B2	8/2010	Bays et al.	2004/0153158 A1	8/2004	Errico et al.
7,780,707 B2	8/2010	Johnson et al.	2004/0167532 A1	8/2004	Olson, Jr. et al.
7,794,396 B2	9/2010	Gattani et al.	2004/0176853 A1	9/2004	Sennett et al.
7,794,501 B2	9/2010	Edie et al.	2004/0215201 A1	10/2004	Lieberman
7,799,034 B2	9/2010	Johnson et al.	2004/0230211 A1	11/2004	Moutafis et al.
7,799,036 B2	9/2010	Davison et al.	2005/0112091 A1	5/2005	DiMauro et al.
7,799,053 B2	9/2010	Haid et al.	2005/0124993 A1	6/2005	Chappuis
7,799,054 B2	9/2010	Kwak et al.	2005/0124994 A1	6/2005	Berger et al.
7,799,055 B2	9/2010	Lim	2005/0149035 A1	7/2005	Pimenta et al.
7,799,056 B2	9/2010	Sankaran	2005/0149192 A1	7/2005	Zucherman et al.
7,799,076 B2	9/2010	Sybert et al.	2005/0159765 A1	7/2005	Moutafis et al.
7,799,078 B2	9/2010	Embry et al.	2005/0165405 A1	7/2005	Tsou
7,799,083 B2	9/2010	Smith et al.	2005/0216002 A1	9/2005	Simonson
7,806,901 B2	10/2010	Stad et al.	2005/0216018 A1	9/2005	Sennett
7,811,327 B2	10/2010	Hansell et al.	2005/0251257 A1	11/2005	Mitchell et al.
7,811,329 B2	10/2010	Ankney et al.	2005/0283150 A1	12/2005	Moutafis et al.
7,815,681 B2	10/2010	Ferguson	2006/0004367 A1	1/2006	Alamin et al.
7,819,801 B2	10/2010	Miles et al.	2006/0100304 A1	5/2006	Vresilovic et al.
D627,460 S	11/2010	Horton	2006/0111779 A1	5/2006	Petersen
7,824,328 B2	11/2010	Gattani et al.	2006/0111780 A1	5/2006	Petersen
7,824,332 B2	11/2010	Fakhrai	2006/0116770 A1	6/2006	White et al.
7,824,410 B2	11/2010	Simonson	2006/0122597 A1	6/2006	Jones et al.
7,824,703 B2	11/2010	Scifert et al.	2006/0154366 A1	7/2006	Brown et al.
7,828,804 B2	11/2010	Li et al.	2006/0155170 A1	7/2006	Hanson et al.
7,828,845 B2	11/2010	Estes et al.	2006/0167461 A1	7/2006	Hawkins et al.
7,828,849 B2	11/2010	Lim	2006/0190081 A1	8/2006	Kraus
7,837,713 B2	11/2010	Petersen	2006/0229550 A1	10/2006	Staid et al.
7,837,732 B2	11/2010	Zucherman et al.	2006/0247650 A1	11/2006	Yerby et al.
D628,694 S	12/2010	Donnez	2006/0247791 A1	11/2006	McKay et al.
D629,896 S	12/2010	Horton	2006/0264808 A1	11/2006	Staid et al.
7,846,210 B2	12/2010	Perez-Cruet et al.	2006/0264964 A1	11/2006	Scifert et al.
7,850,733 B2	12/2010	Baynham et al.	2007/0003598 A1	1/2007	Trieu
7,850,735 B2	12/2010	Eisermann et al.	2007/0043442 A1	2/2007	Abernathie
7,850,736 B2	12/2010	Heinz et al.	2007/0067034 A1	3/2007	Chirico et al.
D631,156 S	1/2011	Halder et al.	2007/0073110 A1	3/2007	Larson et al.
7,867,277 B1	1/2011	Tohmeh	2007/0073294 A1	3/2007	Chin et al.
7,897,164 B2	3/2011	Scifert	2007/0088007 A1	4/2007	Ng
7,897,564 B2	3/2011	Beals et al.	2007/0093850 A1	4/2007	Harris et al.
7,905,840 B2	3/2011	Pimenta et al.	2007/0123985 A1 *	5/2007	Errico et al. .... 623/17.11
7,918,891 B1	4/2011	Curran et al.	2007/0172790 A1	7/2007	Doucette, Jr. et al.
7,927,361 B2	4/2011	Oliver et al.	2007/0185496 A1	8/2007	Beckman et al.
7,935,124 B2	5/2011	Frey et al.	2007/0208423 A1	9/2007	Messerli et al.
7,939,092 B2	5/2011	McKay et al.	2007/0213596 A1	9/2007	Hamada
7,951,107 B2	5/2011	Staid et al.	2007/0213717 A1	9/2007	Trieu
7,964,208 B2	6/2011	Spagnoli et al.	2007/0213718 A1	9/2007	Trieu
D641,872 S	7/2011	Solingen et al.	2007/0213822 A1	9/2007	Trieu
D641,873 S	7/2011	Solingen et al.	2007/0213826 A1	9/2007	Smith et al.
D641,874 S	7/2011	Solingen et al.	2007/0225219 A1	9/2007	Boden et al.
D642,268 S	7/2011	Qureshi	2007/0225811 A1	9/2007	Scifert et al.
7,985,256 B2	7/2011	Grotz et al.	2007/0242869 A1	10/2007	Luo et al.
D643,921 S *	8/2011	Davila ..... D24/133	2007/0250166 A1	10/2007	McKay
D647,202 S	10/2011	Scifert	2007/0264300 A1	11/2007	Scifert et al.
8,080,521 B2	12/2011	Beals et al.	2007/0265632 A1	11/2007	Scifert et al.
8,088,163 B1	1/2012	Kleiner	2007/0270951 A1	11/2007	Davis et al.
D655,414 S	3/2012	Cuschieri et al.	2007/0276406 A1	11/2007	Mahoney et al.
D656,610 S	3/2012	Kleiner	2007/0288007 A1	12/2007	Burkus et al.
8,148,326 B2	4/2012	Beals et al.	2008/0003255 A1	1/2008	Kerr et al.
D660,428 S *	5/2012	Hohl ..... D24/141	2008/0009929 A1	1/2008	Harris et al.
8,198,238 B2	6/2012	Beals et al.	2008/0033440 A1	2/2008	Moskowitz et al.
8,246,572 B2	8/2012	Cantor et al.	2008/0058606 A1	3/2008	Miles et al.
D667,542 S	9/2012	Kleiner	2008/0086142 A1	4/2008	Kohm et al.
8,277,510 B2	10/2012	Kleiner	2008/0147191 A1	6/2008	Lopez et al.
8,292,960 B2	10/2012	Kleiner	2008/0154375 A1	6/2008	Serhan et al.
			2008/0154377 A1	6/2008	Voellmicke
			2008/0154381 A1 *	6/2008	Parrish ..... 623/17.16
			2008/0195058 A1	8/2008	Moutafis et al.
			2008/0243126 A1	10/2008	Gutierrez et al.

(56)

References Cited

U.S. PATENT DOCUMENTS

2008/0249569 A1 10/2008 Waugh et al.  
 2008/0255564 A1 10/2008 Michelson  
 2008/0260598 A1 10/2008 Scifert et al.  
 2008/0269904 A1 10/2008 Voorhies  
 2008/0288071 A1 11/2008 Biyani et al.  
 2009/0043312 A1 2/2009 Koullis  
 2009/0076440 A1 3/2009 Moutafis et al.  
 2009/0076556 A1 3/2009 McGarity et al.  
 2009/0088765 A1 4/2009 Butler et al.  
 2009/0098184 A1 4/2009 Govil et al.  
 2009/0099660 A1 4/2009 Scifert et al.  
 2009/0105718 A1 4/2009 Zhang et al.  
 2009/0124860 A1 5/2009 Miles et al.  
 2009/0124980 A1 5/2009 Chen  
 2009/0125066 A1 5/2009 Kraus et al.  
 2009/0142385 A1 6/2009 Gross et al.  
 2009/0187194 A1 7/2009 Hamada  
 2009/0192350 A1 7/2009 Meja  
 2009/0192403 A1 7/2009 Gharib et al.  
 2009/0198245 A1 8/2009 Phan  
 2009/0198249 A1 8/2009 Ziegler  
 2009/0198337 A1 8/2009 Phan  
 2009/0198338 A1 8/2009 Phan  
 2009/0198339 A1 8/2009 Kleiner et al.  
 2009/0203967 A1 8/2009 Branch et al.  
 2009/0204148 A1 8/2009 Lenke  
 2009/0204159 A1 8/2009 Justis et al.  
 2009/0204220 A1 8/2009 Trieu  
 2009/0222011 A1 9/2009 Lehuec et al.  
 2009/0246244 A1 10/2009 McKay et al.  
 2009/0248163 A1 10/2009 King et al.  
 2009/0259108 A1 10/2009 Miles et al.  
 2009/0264892 A1 10/2009 Beyar et al.  
 2009/0275995 A1 11/2009 Truckai  
 2009/0299477 A1 12/2009 Clayton et al.  
 2009/0306692 A1 12/2009 Barrington et al.  
 2010/0004752 A1 1/2010 White et al.  
 2010/0010367 A1 1/2010 Foley et al.  
 2010/0010524 A1 1/2010 Barrington et al.  
 2010/0016903 A1 1/2010 Matityahu et al.  
 2010/0016972 A1 1/2010 Jansen et al.  
 2010/0016973 A1 1/2010 de Villiers et al.  
 2010/0021518 A1 1/2010 Scifert et al.  
 2010/0030065 A1 2/2010 Farr et al.  
 2010/0036226 A9 2/2010 Marino et al.  
 2010/0036442 A1 2/2010 Laurysen et al.  
 2010/0042221 A1 2/2010 Boyd  
 2010/0057208 A1 3/2010 Dryer  
 2010/0063516 A1 3/2010 Parmer et al.  
 2010/0063554 A1 3/2010 Branch et al.  
 2010/0076335 A1 3/2010 Gharib et al.  
 2010/0076445 A1 3/2010 Pagano  
 2010/0076446 A1 3/2010 Gorek  
 2010/0082036 A1 4/2010 Reiley et al.  
 2010/0087828 A1 4/2010 Krueger et al.  
 2010/0087875 A1 4/2010 McGahan et al.  
 2010/0100141 A1 4/2010 de Villiers et al.  
 2010/0105986 A1 4/2010 Miles et al.  
 2010/0105987 A1 4/2010 Miles et al.  
 2010/0112029 A1 5/2010 Scifert  
 2010/0121365 A1 5/2010 O'Sullivan et al.  
 2010/0121453 A1 5/2010 Peterman  
 2010/0125333 A1 5/2010 Zdeblick et al.  
 2010/0125338 A1 5/2010 Fitz  
 2010/0131020 A1 5/2010 Heinz et al.  
 2010/0137690 A1 6/2010 Miles et al.  
 2010/0137923 A1 6/2010 Greenhalgh et al.  
 2010/0145390 A1 6/2010 McCarthy et al.  
 2010/0145391 A1 6/2010 Kleiner  
 2010/0145452 A1 6/2010 Blaylock et al.  
 2010/0145461 A1 6/2010 Landry et al.  
 2010/0160923 A1 6/2010 Sand et al.  
 2010/0160982 A1 6/2010 Justis et al.  
 2010/0161062 A1 6/2010 Foley et al.  
 2010/0161074 A1 6/2010 Mckay

2010/0168755 A1 7/2010 Reiley et al.  
 2010/0168862 A1 7/2010 Edie et al.  
 2010/0174326 A1 7/2010 Selover et al.  
 2010/0185286 A1 7/2010 Allard  
 2010/0185287 A1 7/2010 Allard  
 2010/0185288 A1 7/2010 Carls  
 2010/0191334 A1 7/2010 Keller  
 2010/0191337 A1 7/2010 Zamani et al.  
 2010/0198140 A1 8/2010 Lawson  
 2010/0199483 A1 8/2010 Justis et al.  
 2010/0204798 A1 8/2010 Gerbec et al.  
 2010/0217398 A1 8/2010 Keller  
 2010/0222784 A1 9/2010 Schwab et al.  
 2010/0222824 A1 9/2010 Simonson  
 2010/0228294 A1 9/2010 LeHuec et al.  
 2010/0228351 A1 9/2010 Ankney et al.  
 2010/0234848 A1 9/2010 Sutterlin et al.  
 2010/0234957 A1 9/2010 Zdeblick et al.  
 2010/0256767 A1 10/2010 Melkent  
 2010/0256768 A1 10/2010 Lim et al.  
 2010/0262241 A1 10/2010 Eisermann et al.  
 2010/0262245 A1 10/2010 Alfaro et al.  
 2010/0266689 A1 10/2010 Simonton et al.  
 2010/0280622 A1 11/2010 McKinley  
 2010/0286778 A1 11/2010 Eisermann et al.  
 2010/0286784 A1 11/2010 Curran et al.  
 2010/0298938 A1 11/2010 Humphreys et al.  
 2010/0305575 A1 12/2010 Wilkinson et al.  
 2010/0312103 A1 12/2010 Gorek et al.  
 2010/0312290 A1 12/2010 McKinley et al.  
 2010/0312347 A1 12/2010 Arramon et al.  
 2010/0331847 A1 12/2010 Wilkinson et al.  
 2011/0014587 A1 1/2011 Spagnoli et al.  
 2011/0015748 A1 1/2011 Molz, IV  
 2011/0020768 A1 1/2011 Spagnoli et al.  
 2011/0021427 A1 1/2011 Amsden et al.  
 2011/0028393 A1 2/2011 Vickers et al.  
 2011/0071536 A1 3/2011 Kleiner  
 2011/0093005 A1 4/2011 Strokosz et al.  
 2011/0106162 A1 5/2011 Ballard et al.  
 2011/0144755 A1 6/2011 Baynham et al.  
 2011/0160777 A1 6/2011 Spagnoli et al.  
 2011/0184412 A1 7/2011 Scifert et al.  
 2012/0035668 A1 2/2012 Manninen et al.  
 2012/0065687 A1 3/2012 Ballard et al.  
 2012/0078315 A1\* 3/2012 Sweeney ..... 606/86 A  
 2012/0136442 A1 5/2012 Kleiner  
 2012/0259335 A1 10/2012 Scifert et al.  
 2013/0073041 A1 3/2013 Scifert et al.  
 2013/0110169 A1 5/2013 Hynes et al.

OTHER PUBLICATIONS

Stahler, R., "Spine Surgery for a Cervical Herniated Disc," published on Spine-Health, Jun. 12, 2002, available at [www.spine-health.com/conditions/herniated-disc/spine-surgery-a-cervical-herniated-disc](http://www.spine-health.com/conditions/herniated-disc/spine-surgery-a-cervical-herniated-disc), 2 pages.  
 Stahler, R., "Summary of Cervical Herniated Disc Treatment Options," published on Spine-Health, Jun. 12, 2002, available at [www.spine-health.com/conditions/herniated-disc/summary-cervical-herniated-disc-treatment-options](http://www.spine-health.com/conditions/herniated-disc/summary-cervical-herniated-disc-treatment-options), 1 page.  
 Ullrich, P.F., "Anterior Cervical Spinal Fusion Surgery," published on Spine-Health, Oct. 7, 2005, available at [www.spine-health.com/treatment/back-surgery/anterior-cervical-spinal-fusion-surgery](http://www.spine-health.com/treatment/back-surgery/anterior-cervical-spinal-fusion-surgery), 2 pages.  
 Ullrich, P.F., "Cervical Spinal Instrumentation," published on Spine-Health, Oct. 7, 2005, available at [www.spine-health.com/treatment/back-surgery/cervical-spinal-instrumentation](http://www.spine-health.com/treatment/back-surgery/cervical-spinal-instrumentation), 2 pages.  
 Wascher, T.M., "Anterior cervical decompression and spine fusion procedure," published on Spine-Health, Aug. 29, 2001, available at [www.spine-health.com/treatment/spinal-fusion/anterior-cervical-decompression-and-spine-fusion-procedure](http://www.spine-health.com/treatment/spinal-fusion/anterior-cervical-decompression-and-spine-fusion-procedure), 2 pages.  
 "BAK® /Proximity™ (BP®) Cage", Zimmer Website, as early as Oct. 23, 2007, available at <http://www.zimmer.com/z/ctl/op/global/action/1/id/7930/template/MP/prcat/M6/prod/y>, printed on Jun. 8, 2009, 1 page.

(56)

**References Cited**

## OTHER PUBLICATIONS

“BAK® Vista® Radiolucent Interbody Fusion System”, Zimmer Website, as early as Oct. 25, 2005, available at <http://www.zimmerindia.com/z/ctl/op/global/action/1/id/7809/template/MP/prcat/M6/prod/y>, printed on Jun. 8, 2009, pp. 1-2.

“Facet Joint Syndrome,” The Cleveland Clinic Foundation, copyright 1995-2008, printed Nov. 19, 2008, available at [http://my.clevelandclinic.org/disorders/facet\\_joint\\_syndrome/hic\\_facet\\_joint\\_syndrome.aspx](http://my.clevelandclinic.org/disorders/facet_joint_syndrome/hic_facet_joint_syndrome.aspx), 2 pages.

“Screws, Cages or Both”, Spine Universe Website, as early as Aug. 18, 2002, available at <http://www.spineuniverse.com/displayarticle.php/article1363.html>, printed on Jun. 8, 2009, pp. 1-13.

“University of Maryland Spine Program: A Patient’s Guide to Anterior Lumbar Interbody Fusion with Intervertebral Cages”, University of Maryland Medical Center website, as early as 2003, available at [http://www.umm.edu/spinecenter/education/anterior\\_lumbar\\_interbody\\_fusion\\_with\\_intervertebral\\_cages.htm](http://www.umm.edu/spinecenter/education/anterior_lumbar_interbody_fusion_with_intervertebral_cages.htm), printed on Jun. 8, 2009, pp. 1-4.

“Vertebral column,” from Wikipedia, the free encyclopedia, printed May 19, 2009, retrieved from [http://en.wikipedia.org/wiki/Vertebral\\_column](http://en.wikipedia.org/wiki/Vertebral_column), 6 pages.

“Zygapophysial joint,” from Wikipedia, the free encyclopedia, printed May 19, 2009, retrieved from [http://en.wikipedia.org/wiki/Zygapophysial\\_joint](http://en.wikipedia.org/wiki/Zygapophysial_joint), 2 pages.

International Search Report for International (PCT) Patent Application No. PCT/US2009/033488, mailed. Mar. 25, 2009, 2 pages.

Written Opinion for International (PCT) Patent Application No. PCT/US2009/033488, mailed. Mar. 25, 2009, 9 pages.

Official Action for U.S. Appl. No. 12/367,487, mailed Aug. 3, 2011 10 pages.

Notice of Allowance for U.S. Appl. No. 29/393,737, mailed Jan. 11, 2012 9 pages.

Notice of Allowance for U.S. Appl. No. 13/277,272, mailed Jun. 11, 2012 8 pages.

Notice of Allowance for U.S. Appl. No. 29/415,847, mailed Jul. 17, 2012 10 pages.

Official Action for U.S. Appl. No. 13/473,366, mailed Jul. 18, 2012 8 pages.

Notice of Allowance for U.S. Appl. No. 13/473,366, mailed Sep. 4, 2012.

Official Action for U.S. Appl. No. 13/632,956 mailed Aug. 1, 2013, 12 pages.

Notice of Allowance for U.S. Appl. No. 29/433,403, mailed Aug. 7, 2013 9 pages.

U.S. Appl. No. 29/453,829, filed May 3, 2013, Kleiner.

Official Action for U.S. Appl. No. 13/168,611 mailed Aug. 15, 2013, 12 pages.

Official Action for U.S. Appl. No. 13/632,956 mailed Mar. 29, 2013, 9 pages.

Official Action for U.S. Appl. No. 13/168,611 mailed Apr. 15, 2013, 7 pages.

U.S. Appl. No. 13/754,042, filed Jan. 30, 2013, Kleiner.

U.S. Appl. No. 29/433,403, filed Sep. 28, 2012, Kleiner.

U.S. Appl. No. 13/632,956, filed Oct. 1, 2012, Kleiner.

U.S. Appl. No. 13/714,971, filed Dec. 14, 2012, Kleiner.

Ehrenberg, “The 3-D Printing Revolution,” Science News, Mar. 9, 2013, pp. 20-25.

U.S. Appl. No. 13/947,255, filed Jul. 22, 2013, Kleiner.

\* cited by examiner

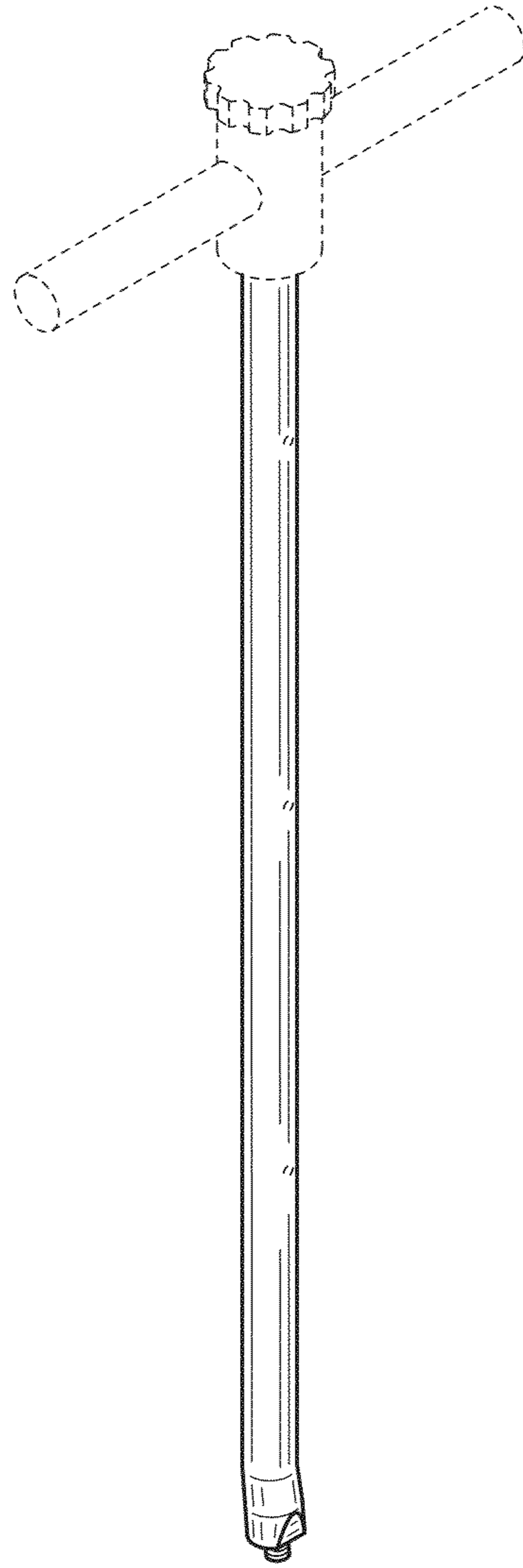


FIG.1

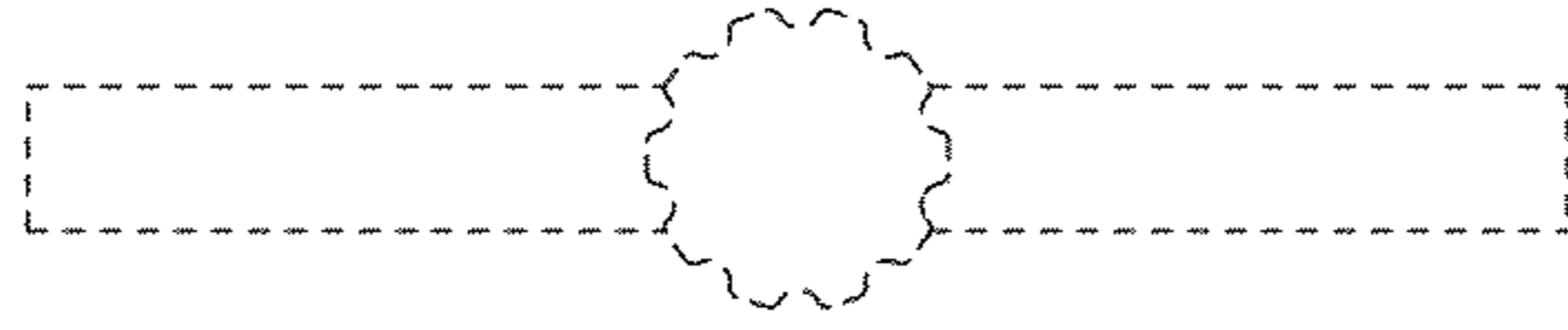


FIG. 2

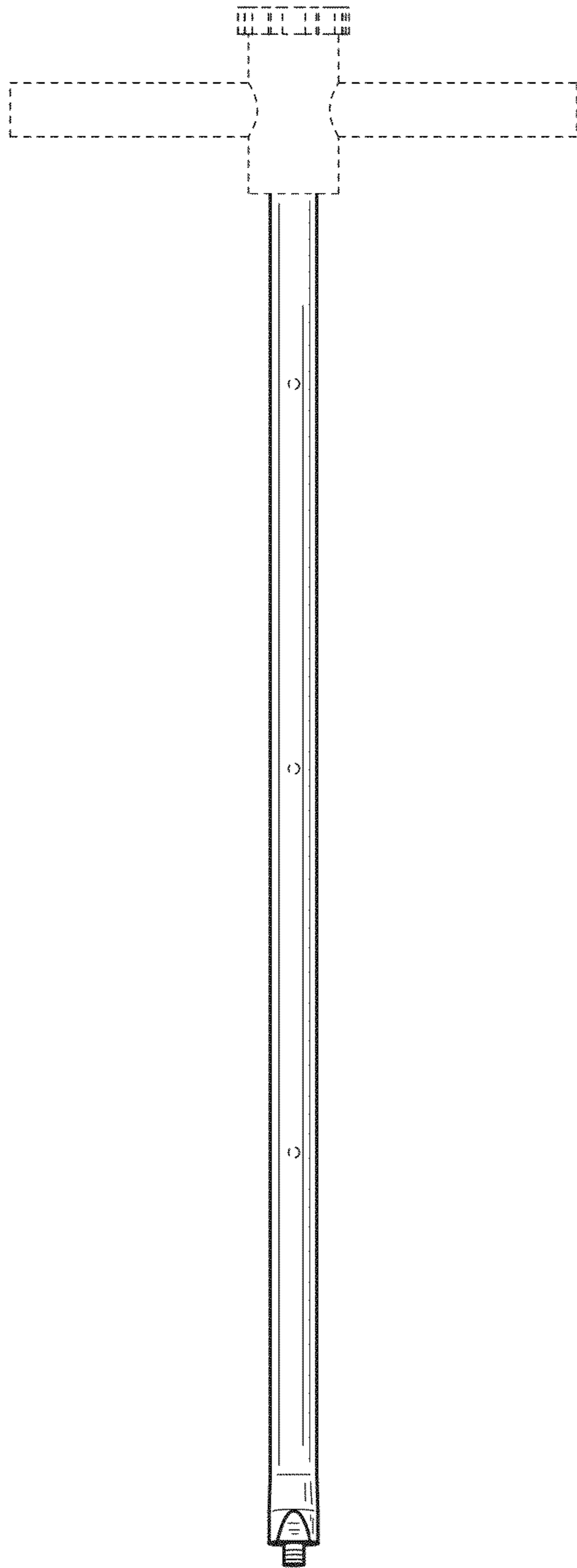


FIG. 3

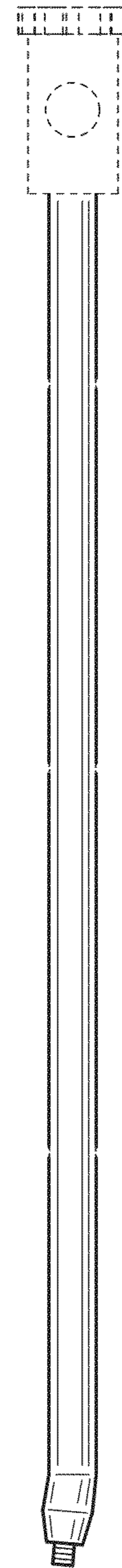


FIG. 4



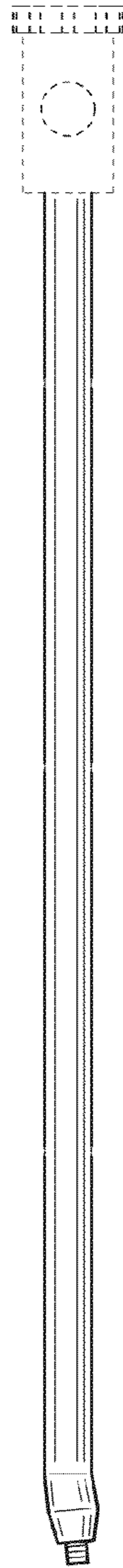


FIG. 5

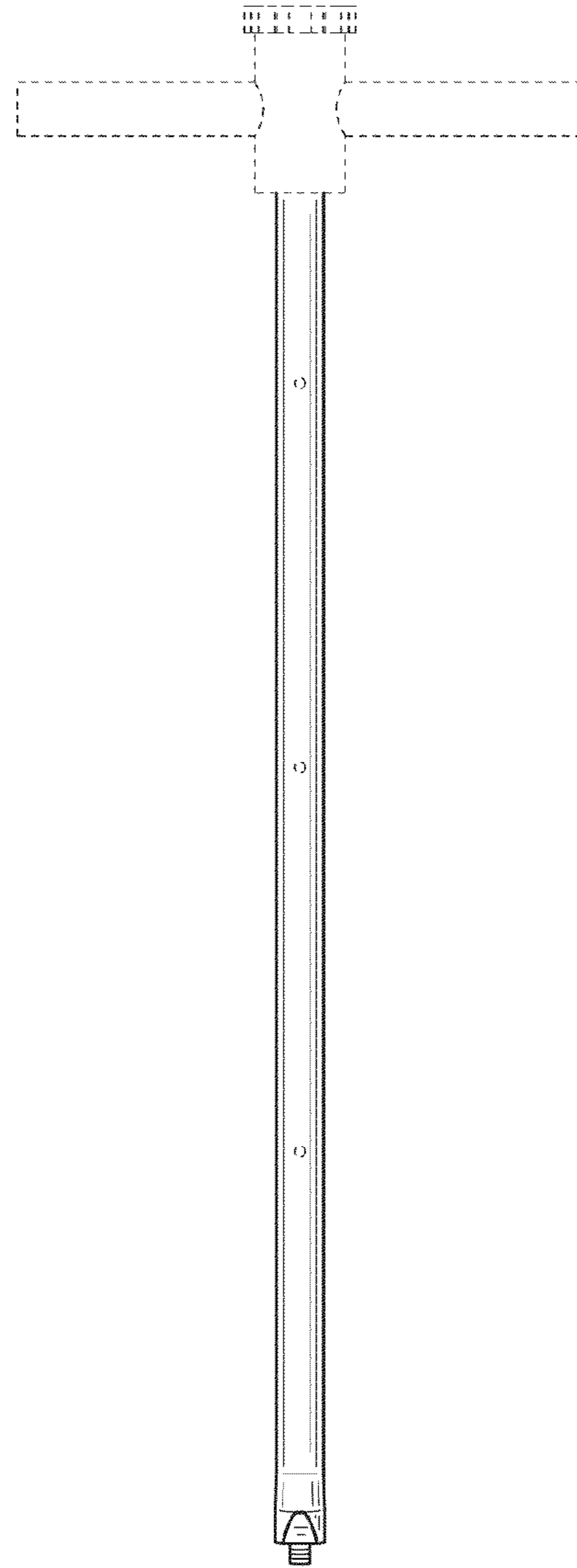


FIG. 6

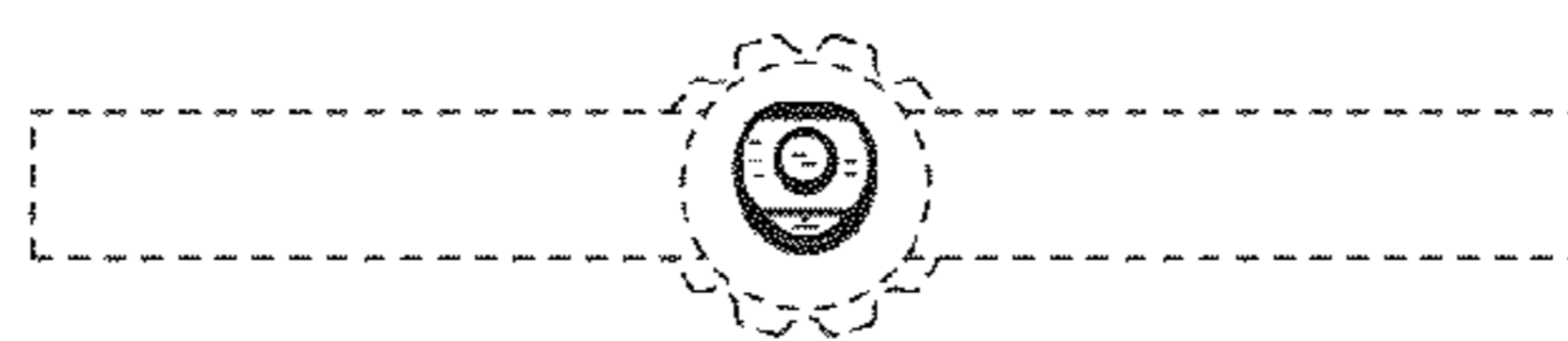


FIG. 7

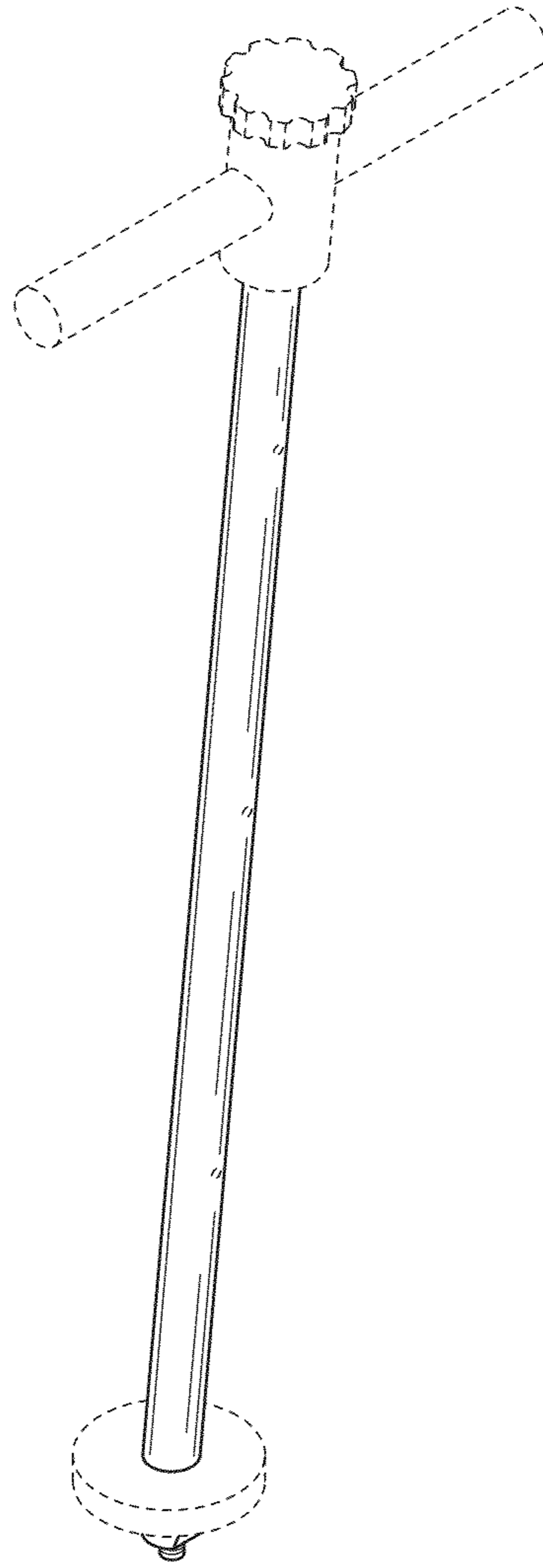


FIG.8

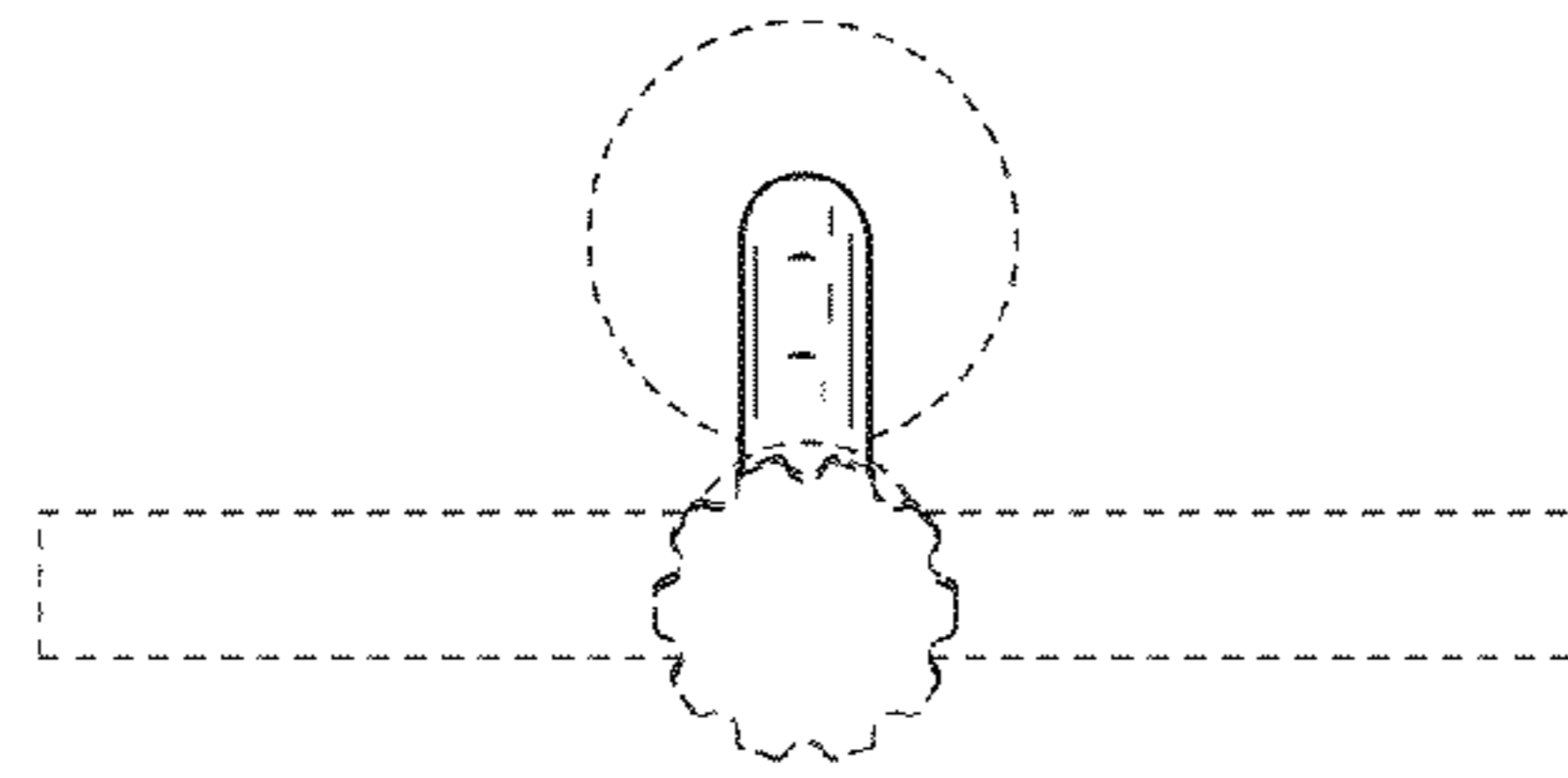


FIG. 9

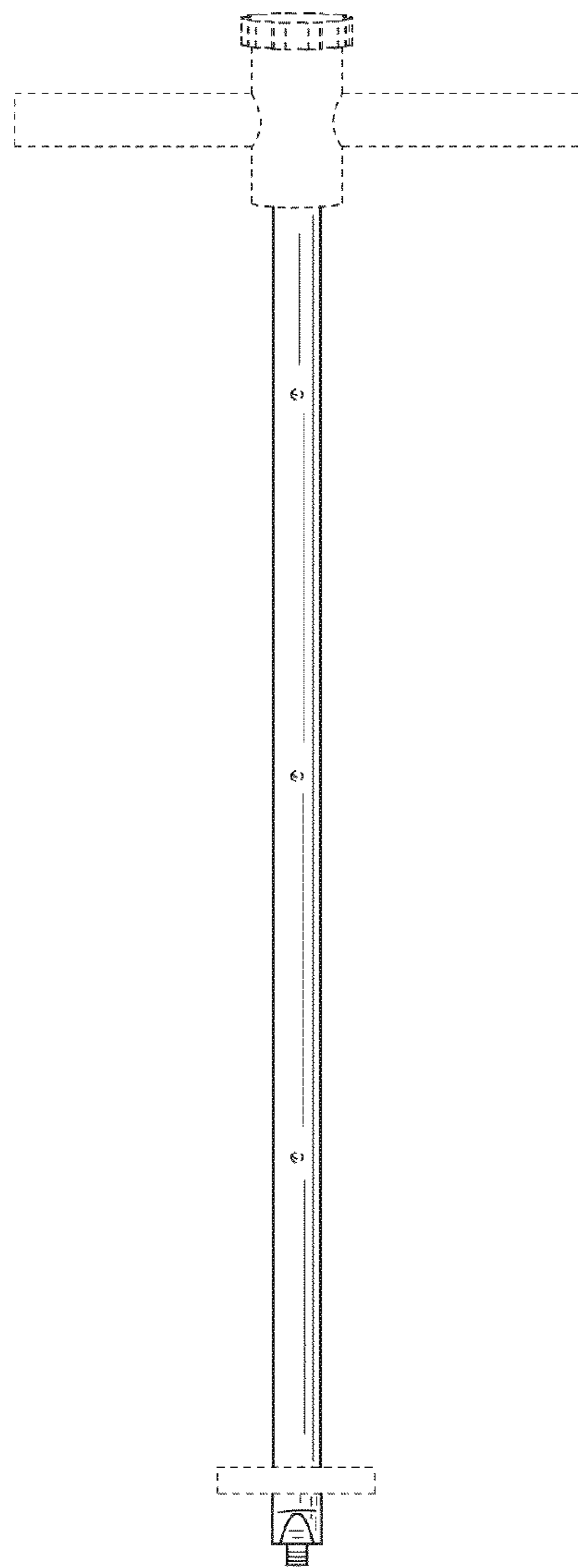


FIG. 10

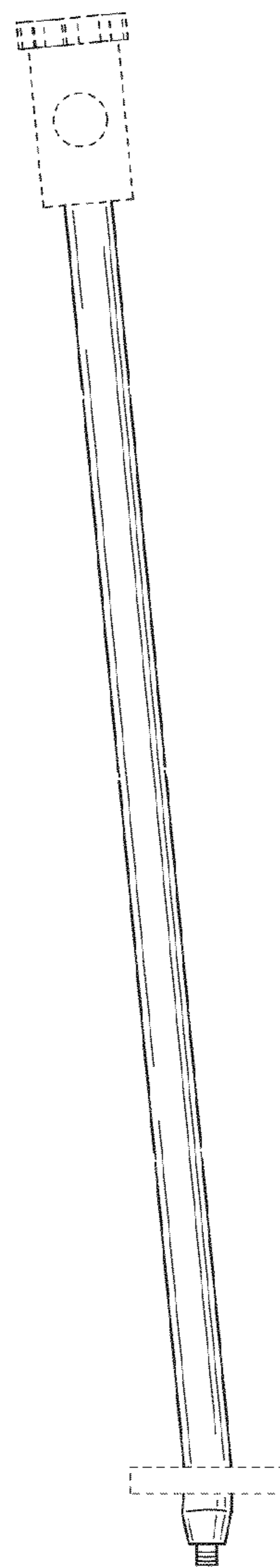


FIG. 11

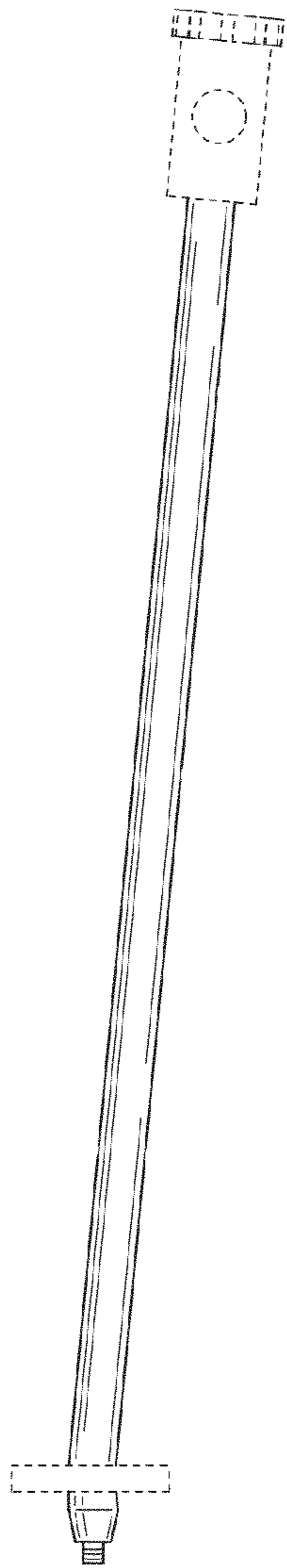


FIG. 12

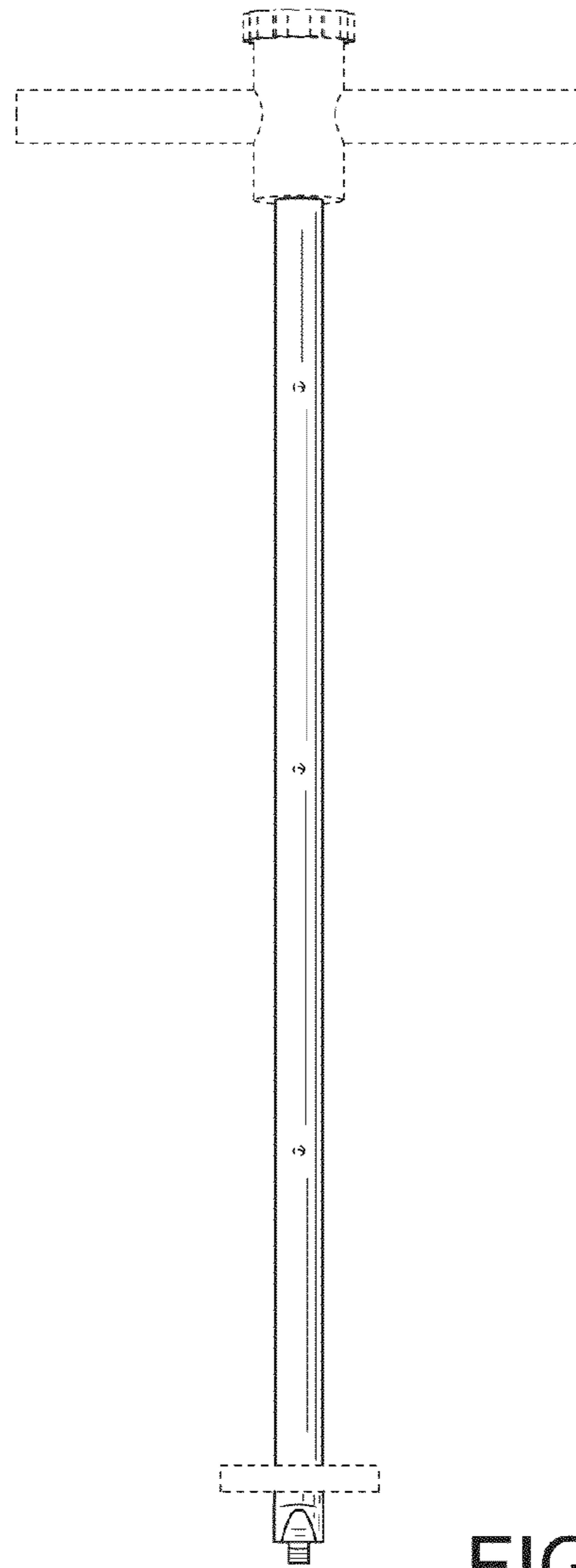


FIG. 13

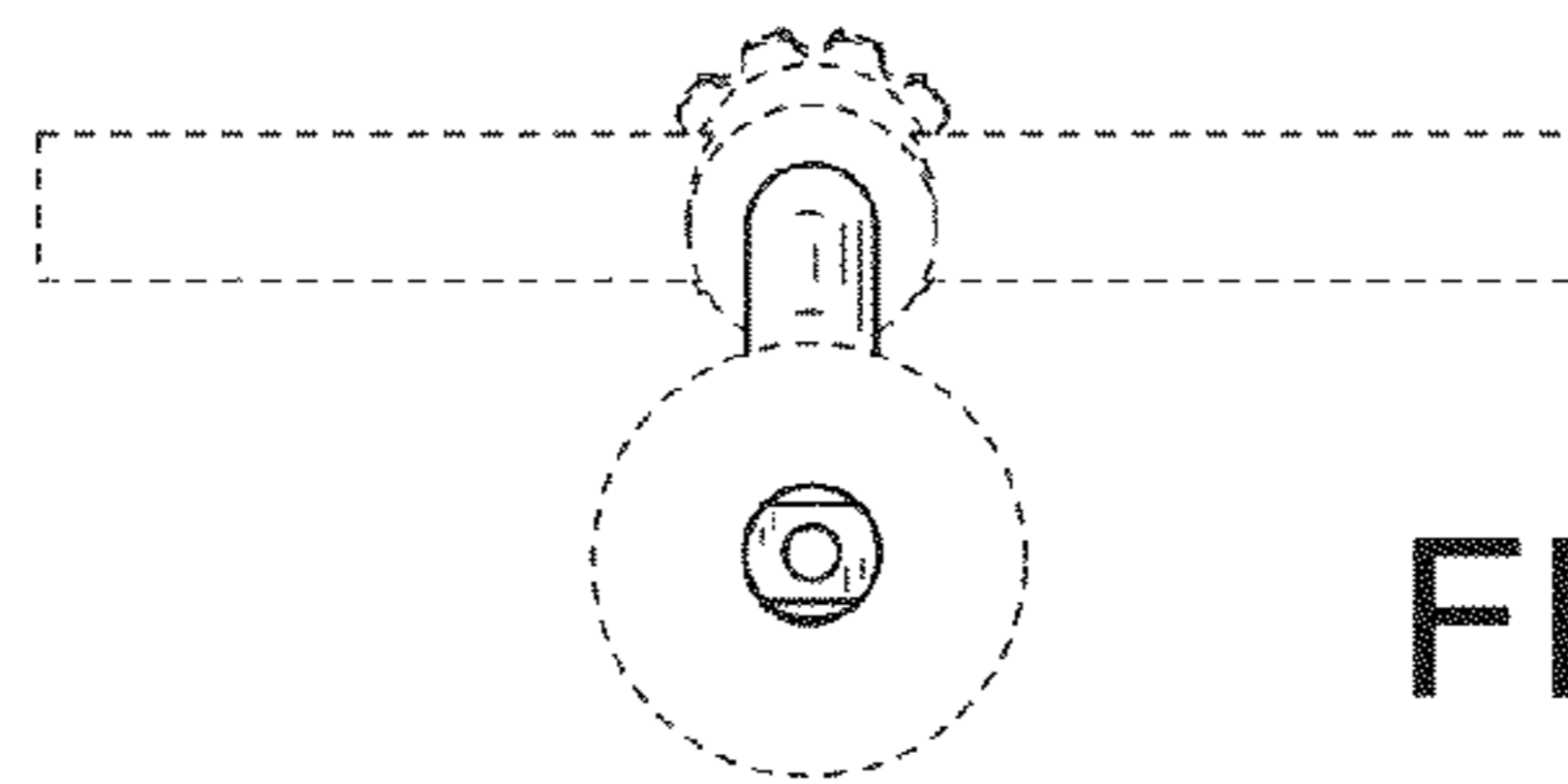


FIG. 14