



US00D700326S

(12) **United States Design Patent**  
**Minnelli et al.**

(10) **Patent No.:** **US D700,326 S**

(45) **Date of Patent:** **\*\* Feb. 25, 2014**

(54) **TROCAR HOUSING**

(75) Inventors: **Patrick J. Minnelli**, Harrison, OH (US);  
**Kevin M. Montgomery**, Camden, OH (US)

(73) Assignee: **Ethicon Endo-Surgery, Inc.**, Cincinnati, OH (US)

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

(21) Appl. No.: **29/399,721**

(22) Filed: **Aug. 17, 2011**

**Related U.S. Application Data**

(63) Continuation-in-part of application No. 12/902,265, filed on Oct. 12, 2010, now Pat. No. 8,636,686, which is a continuation-in-part of application No. 12/533,590, filed on Jul. 31, 2009, now Pat. No. 8,568,362, which is a continuation-in-part of application No. 12/110,724, filed on Apr. 28, 2008, now Pat. No. 8,579,807, and a continuation-in-part of application No. 12/110,727, filed on Apr. 28, 2008, and a continuation-in-part of application No. 12/110,742, filed on Apr. 28, 2008, and a continuation-in-part of application No. 12/110,755, filed on Apr. 28, 2008, now Pat. No. 8,273,060.

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

(52) **U.S. Cl.**  
USPC ..... **D24/146**

(58) **Field of Classification Search**  
USPC ..... D24/147, 140, 133, 146; 604/164, 604/167.07, 167.04, 158, 167, 256, 264; 600/566, 567, 568; 606/167, 170, 606/184-185

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2,628,404 A 2/1953 Myers  
3,229,691 A 1/1966 Crowe, Jr.

(Continued)

FOREIGN PATENT DOCUMENTS

CA 2060930 A1 10/1992  
CA 2661238 A1 10/2009

(Continued)

OTHER PUBLICATIONS

Extended European Search Report for App. No. 12173272.1, dated Jul. 19, 2012 (7 pages).

(Continued)

*Primary Examiner* — Ian Simmons

*Assistant Examiner* — Carissa C Fitts

(74) *Attorney, Agent, or Firm* — Nutter McClennen & Fish LLP

(57) **CLAIM**

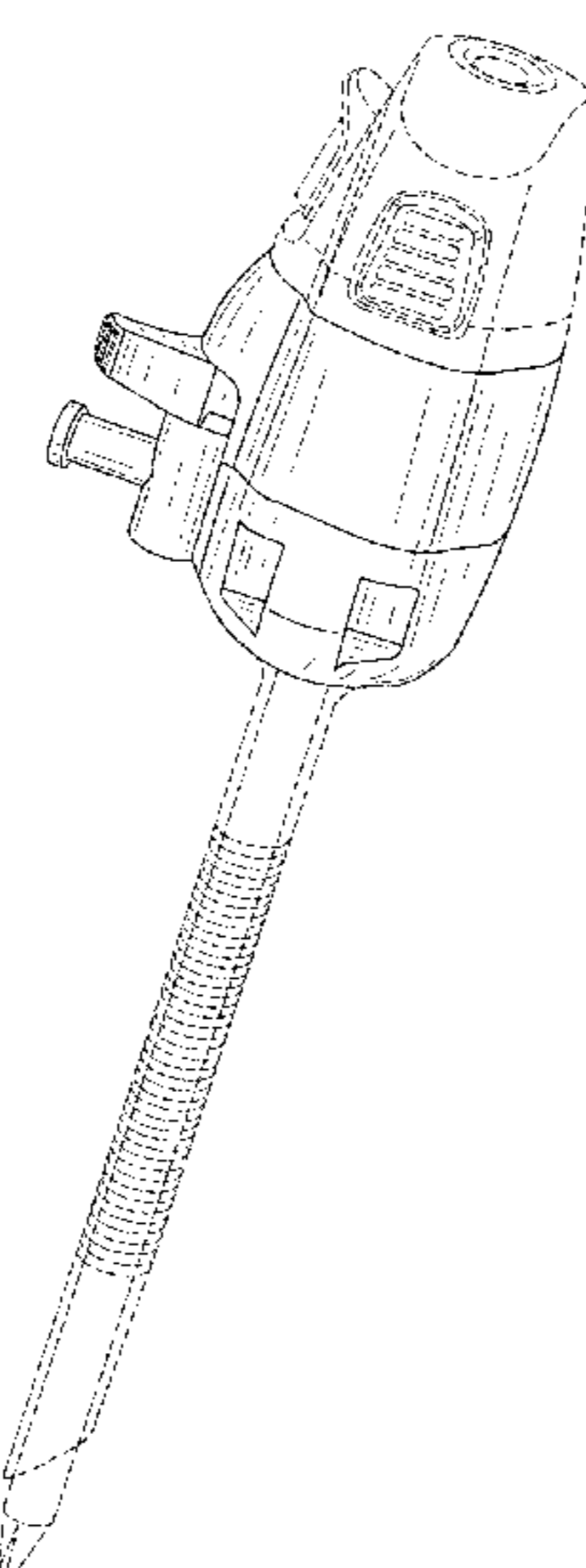
The ornamental design for a trocar housing, as shown and described.

**DESCRIPTION**

FIG. 1 is a perspective view of a trocar having a trocar, showing our design;  
FIG. 2 is a first side view of the trocar of FIG. 1;  
FIG. 3 is a second side view of the trocar of FIG. 1; and  
FIG. 4 is a third side view of the trocar of FIG. 1;  
FIG. 5 is a fourth side view of the trocar of FIG. 1;  
FIG. 6 is a top view of the trocar of FIG. 1; and,  
FIG. 7 is a top view of the trocar housing of FIG. 1, with the obturator removed.

The broken line showing of the cannula and obturator is for environmental purposes only and forms no part of the claimed design.

**1 Claim, 4 Drawing Sheets**



(56)

References Cited

U.S. PATENT DOCUMENTS

3,900,022 A	8/1975	Widran	5,458,640 A	10/1995	Gerrone
3,903,877 A	9/1975	Terada	5,462,100 A	10/1995	Covert et al.
3,924,608 A	12/1975	Mitsui	5,464,008 A	11/1995	Kim
3,980,078 A	9/1976	Tominaga	5,476,475 A	12/1995	Gadberry
3,981,276 A	9/1976	Ernest	5,486,154 A	1/1996	Kelleher
4,204,563 A	5/1980	Pyle	5,492,304 A	2/1996	Smith et al.
4,279,246 A	7/1981	Chikama	5,496,142 A	3/1996	Fodor et al.
4,281,646 A	8/1981	Kinoshita	5,496,280 A	3/1996	Vandenbroek et al.
4,335,721 A	6/1982	Matthews	5,496,345 A	3/1996	Kieturakis et al.
4,651,517 A	3/1987	Benhamou et al.	5,496,411 A	3/1996	Candy
4,687,033 A	8/1987	Furrow et al.	5,514,084 A	5/1996	Fisher
4,690,140 A	9/1987	Mecca	5,514,153 A	5/1996	Bonutti
4,722,000 A	1/1988	Chatenever	5,518,026 A	5/1996	Benjey
4,836,187 A	6/1989	Iwakoshi et al.	5,518,502 A	5/1996	Kaplan et al.
4,844,052 A	7/1989	Iwakoshi et al.	5,522,833 A *	6/1996	Stephens et al. .... 606/185
4,847,364 A	7/1989	Mockli	5,533,496 A	7/1996	De Faria-Correa et al.
4,877,016 A	10/1989	Kantor et al.	5,535,759 A	7/1996	Wilk
4,919,305 A	4/1990	Podgers	5,536,234 A	7/1996	Newman
4,929,235 A	5/1990	Merry et al.	5,542,931 A	8/1996	Gravener et al.
4,934,135 A	6/1990	Rozenwasser	5,545,142 A	8/1996	Stephens et al.
4,942,867 A	7/1990	Takahashi et al.	5,545,179 A	8/1996	Williamson, IV
4,943,280 A	7/1990	Lander	5,549,543 A	8/1996	Kim
4,958,970 A	9/1990	Rose et al.	5,551,448 A	9/1996	Matula et al.
4,960,412 A	10/1990	Fink	5,554,151 A	9/1996	Hinchliffe
5,000,745 A	3/1991	Guest et al.	5,568,828 A	10/1996	Harris
5,084,057 A	1/1992	Green et al.	5,569,183 A	10/1996	Kieturakis
5,104,383 A	4/1992	Shichman	5,569,205 A	10/1996	Hart et al.
5,112,308 A	5/1992	Olsen et al.	5,575,756 A	11/1996	Karasawa et al.
5,127,909 A	7/1992	Shichman	5,584,850 A	12/1996	Hart et al.
5,167,220 A	12/1992	Brown	5,590,697 A	1/1997	Benjey et al.
5,180,373 A	1/1993	Green et al.	5,591,192 A *	1/1997	Privitera et al. .... 606/185
5,191,878 A	3/1993	Iida et al.	5,603,702 A	2/1997	Smith et al.
5,197,955 A	3/1993	Stephens et al.	5,605,175 A	2/1997	Bergsma et al.
5,201,714 A	4/1993	Gentelia et al.	5,628,732 A	5/1997	Antoon, Jr. et al.
5,207,213 A	5/1993	Auhll et al.	5,630,795 A	5/1997	Kuramoto et al.
5,209,737 A	5/1993	Ritchart et al.	5,630,813 A	5/1997	Kieturakis
5,226,891 A	7/1993	Bushatz et al.	5,634,911 A	6/1997	Hermann et al.
5,237,984 A	8/1993	Williams, III et al.	5,643,227 A	7/1997	Stevens
5,256,149 A *	10/1993	Banik et al. .... 604/164.01	5,643,301 A	7/1997	Mollenauer
5,279,542 A	1/1994	Wilk	5,647,372 A	7/1997	Tovey et al.
5,308,336 A	5/1994	Hart et al.	5,647,840 A	7/1997	D'Amelio et al.
5,312,351 A	5/1994	Gerrone	5,651,757 A	7/1997	Meckstroth
5,312,363 A	5/1994	Ryan et al.	5,658,273 A	8/1997	Long
5,312,397 A	5/1994	Cosmescu	5,662,614 A	9/1997	Edoga
5,313,934 A	5/1994	Wiita et al.	5,685,823 A	11/1997	Ito et al.
5,320,608 A	6/1994	Gerrone	5,688,222 A	11/1997	Hluchy et al.
5,320,610 A	6/1994	Yoon	5,709,664 A	1/1998	Vandenbroek et al.
5,326,013 A	7/1994	Green et al.	5,720,756 A	2/1998	Green et al.
5,330,437 A	7/1994	Durman	5,720,759 A	2/1998	Green et al.
5,334,164 A	8/1994	Guy et al.	5,725,477 A	3/1998	Yasui et al.
5,337,730 A	8/1994	Maguire	5,725,478 A	3/1998	Saad
5,339,800 A	8/1994	Wiita et al.	5,743,884 A	4/1998	Hasson et al.
5,342,315 A	8/1994	Rowe et al.	5,752,938 A	5/1998	Flatland et al.
5,347,988 A	9/1994	Hori	5,755,252 A	5/1998	Bergsma et al.
5,354,302 A	10/1994	Ko	5,755,732 A	5/1998	Green et al.
5,364,002 A	11/1994	Green et al.	5,776,112 A *	7/1998	Stephens et al. .... 604/264
5,369,525 A	11/1994	Bala et al.	5,782,751 A	7/1998	Matsuno
5,370,656 A	12/1994	Shevel	5,782,859 A	7/1998	Nicholas et al.
5,377,669 A	1/1995	Schulz	5,788,676 A	8/1998	Yoon
5,382,297 A	1/1995	Valentine et al.	5,792,044 A	8/1998	Foley et al.
5,386,817 A	2/1995	Jones	5,792,113 A	8/1998	Kramer et al.
5,387,197 A *	2/1995	Smith et al. .... 604/164.12	5,797,434 A	8/1998	Benjey et al.
5,389,081 A	2/1995	Castro	5,807,338 A	9/1998	Smith et al.
5,391,154 A	2/1995	Young	5,814,026 A	9/1998	Yoon
5,392,766 A	2/1995	Masterson et al.	D399,316 S	10/1998	Molina
5,395,342 A	3/1995	Yoon	5,817,061 A	10/1998	Goodwin et al.
5,400,767 A	3/1995	Murdoch	5,820,600 A	10/1998	Carlson et al.
5,407,433 A	4/1995	Loomas	5,842,971 A	12/1998	Yoon
5,419,309 A	5/1995	Biehl	5,848,992 A	12/1998	Hart et al.
5,419,311 A	5/1995	Yabe et al.	5,860,458 A	1/1999	Benjey et al.
5,441,513 A	8/1995	Roth	5,871,440 A	2/1999	Okada
5,443,452 A	8/1995	Hart et al.	5,882,345 A	3/1999	Yoon
5,448,990 A	9/1995	De Faria-Correa	5,895,377 A	4/1999	Smith et al.
5,449,370 A	9/1995	Vaitekunas	5,902,231 A	5/1999	Foley et al.
5,458,633 A	10/1995	Bailey	5,902,264 A	5/1999	Toso et al.
			5,906,595 A	5/1999	Powell et al.
			5,906,598 A	5/1999	Giesler et al.
			5,944,654 A	8/1999	Crawford
			5,954,635 A	9/1999	Foley et al.

(56)

References Cited

U.S. PATENT DOCUMENTS

5,957,888	A	9/1999	Hinchliffe	7,052,454	B2	5/2006	Taylor
5,961,505	A	10/1999	Coe et al.	7,056,303	B2	6/2006	Dennis et al.
5,964,781	A	10/1999	Mollenauer et al.	7,056,321	B2	6/2006	Pagliuca et al.
5,983,958	A	11/1999	Bergsma et al.	7,060,025	B2	6/2006	Long et al.
5,989,183	A	11/1999	Reisdorf et al.	7,077,803	B2	7/2006	Kasahara et al.
5,989,224	A	11/1999	Exline et al.	7,083,626	B2	8/2006	Hart et al.
5,993,380	A	11/1999	Yabe et al.	7,104,657	B2	9/2006	Sherwin
6,004,326	A	12/1999	Castro et al.	7,105,009	B2	9/2006	Johnson et al.
6,007,487	A	12/1999	Foley et al.	7,112,185	B2	9/2006	Hart et al.
6,017,333	A	1/2000	Bailey	7,163,525	B2	1/2007	Franer
D425,619	S	5/2000	Bierman	7,169,130	B2	1/2007	Exline et al.
6,062,276	A	5/2000	Benjey et al.	D541,417	S *	4/2007	Albrecht et al. .... D24/146
6,063,050	A	5/2000	Manna et al.	7,198,598	B2	4/2007	Smith et al.
6,110,103	A	8/2000	Donofrio	7,207,347	B2	4/2007	Olshanetsky et al.
6,126,592	A	10/2000	Proch et al.	7,244,244	B2	7/2007	Racenet et al.
6,152,871	A	11/2000	Foley et al.	D555,788	S	11/2007	Southwell et al.
6,159,182	A	12/2000	Davis et al.	7,309,469	B2	12/2007	Anderson et al.
6,162,170	A	12/2000	Foley et al.	7,344,519	B2	3/2008	Wing et al.
6,167,920	B1	1/2001	Enge	D567,372	S	4/2008	Chesnin
6,176,823	B1	1/2001	Foley et al.	7,371,227	B2 *	5/2008	Zeiner ..... 604/167.03
6,176,825	B1	1/2001	Chin et al.	D573,255	S	7/2008	Stephens
6,206,057	B1	3/2001	Benjey et al.	7,444,801	B2	11/2008	Rosenwasser et al.
6,206,822	B1	3/2001	Foley et al.	7,473,243	B2	1/2009	Dennis et al.
6,216,661	B1	4/2001	Pickens et al.	D589,617	S *	3/2009	Carter ..... D24/146
6,217,509	B1	4/2001	Foley et al.	7,507,210	B2 *	3/2009	Hibner et al. .... 600/567
6,253,802	B1	7/2001	Enge	7,591,802	B2	9/2009	Johnson et al.
6,258,025	B1	7/2001	Swallert	7,717,412	B2	5/2010	Anzai
6,258,065	B1	7/2001	Dennis et al.	7,785,294	B2 *	8/2010	Hueil et al. .... 604/167.06
6,264,604	B1	7/2001	Kieturakis et al.	7,981,092	B2 *	7/2011	Duke ..... 604/264
6,287,313	B1	9/2001	Sasso	8,075,528	B2 *	12/2011	Widenhouse et al. ... 604/164.03
6,354,992	B1	3/2002	Kato	D652,509	S	1/2012	Kyvik et al.
6,371,909	B1	4/2002	Hoeg et al.	8,206,357	B2	6/2012	Bettuchi
6,409,657	B1	6/2002	Kawano	8,206,376	B2	6/2012	Barron et al.
6,423,266	B1	7/2002	Choperena et al.	8,273,060	B2	9/2012	Moreno, Jr. et al.
6,425,535	B1	7/2002	Akiba	8,328,768	B2	12/2012	Quigley et al.
6,425,859	B1	7/2002	Foley et al.	8,551,058	B2	10/2013	Measamer et al.
6,443,190	B1	9/2002	Enge	8,568,362	B2	10/2013	Moreno, Jr. et al.
6,447,446	B1	9/2002	Smith et al.	2002/0022762	A1	2/2002	Beane et al.
6,482,181	B1	11/2002	Racenet et al.	2002/0065450	A1	5/2002	Ogawa
6,494,893	B2	12/2002	Dubrul et al.	2002/0068923	A1	6/2002	Caldwell et al.
6,497,687	B1	12/2002	Blanco	2002/0103420	A1	8/2002	Coleman et al.
6,516,835	B2	2/2003	Enge	2002/0107484	A1	8/2002	Dennis et al.
6,520,907	B1	2/2003	Foley et al.	2002/0161387	A1	10/2002	Blanco
6,534,002	B1	3/2003	Lin et al.	2003/0004529	A1	1/2003	Tsonton et al.
6,551,282	B1	4/2003	Exline et al.	2003/0060770	A1	3/2003	Wing et al.
6,562,046	B2	5/2003	Sasso	2003/0130674	A1	7/2003	Kasahara et al.
6,569,120	B1	5/2003	Green et al.	2003/0135942	A1	7/2003	Bastien
6,595,915	B2	7/2003	Akiba	2003/0139756	A1	7/2003	Brustad
6,595,946	B1	7/2003	Pasqualucci	2003/0195472	A1	10/2003	Green et al.
6,601,617	B2	8/2003	Enge	2003/0208104	A1	11/2003	Carrillo et al.
6,605,098	B2	8/2003	Nobis et al.	2004/0034339	A1	2/2004	Stoller et al.
6,638,214	B2	10/2003	Akiba	2004/0106942	A1	6/2004	Taylor et al.
6,648,906	B2	11/2003	Lasheras et al.	2004/0167559	A1	8/2004	Taylor et al.
6,668,418	B2	12/2003	Bastien	2004/0171990	A1	9/2004	Dennis et al.
6,679,833	B2	1/2004	Smith et al.	2004/0220452	A1	11/2004	Shalman
6,679,834	B2	1/2004	Stahl et al.	2004/0230161	A1	11/2004	Zeiner
6,679,837	B2	1/2004	Daikuzono	2004/0256004	A1	12/2004	Kessell et al.
6,685,665	B2	2/2004	Booth et al.	2004/0260244	A1	12/2004	Piechowicz et al.
6,699,185	B2	3/2004	Gminder et al.	2005/0033342	A1	2/2005	Hart et al.
6,702,787	B2	3/2004	Racenet et al.	2005/0043683	A1	2/2005	Ravo
6,712,757	B2	3/2004	Becker et al.	2005/0059865	A1	3/2005	Kahle et al.
6,726,663	B1	4/2004	Dennis	2005/0059934	A1	3/2005	Wenchell et al.
6,755,782	B2	6/2004	Ogawa	2005/0070850	A1	3/2005	Albrecht
6,860,869	B2	3/2005	Dennis	2005/0070946	A1	3/2005	Franer et al.
6,860,892	B1	3/2005	Tanaka et al.	2005/0070947	A1	3/2005	Franer et al.
6,873,409	B1	3/2005	Slater	2005/0077688	A1	4/2005	Voegele et al.
6,916,286	B2	7/2005	Kazakevich	2005/0077689	A1	4/2005	Hueil
6,918,924	B2	7/2005	Lasheras et al.	2005/0096605	A1	5/2005	Green et al.
6,923,759	B2	8/2005	Kasahara et al.	2005/0131349	A1	6/2005	Albrecht et al.
6,942,671	B1	9/2005	Smith	2005/0165277	A1	7/2005	Carrillo et al.
6,976,957	B1	12/2005	Chin et al.	2005/0203543	A1	9/2005	Hilal et al.
6,981,966	B2	1/2006	Green et al.	2005/0216028	A1	9/2005	Hart et al.
6,989,003	B2	1/2006	Wing et al.	2005/0222582	A1	10/2005	Wenchell
7,008,416	B2	3/2006	Sakaguchi et al.	2005/0241647	A1	11/2005	Nguyen et al.
7,025,747	B2	4/2006	Smith	2005/0267419	A1	12/2005	Smith
				2005/0288622	A1	12/2005	Albrecht et al.
				2006/0020165	A1	1/2006	Adams
				2006/0047240	A1	3/2006	Kumar et al.
				2006/0052666	A1	3/2006	Kumar et al.

(56)

## References Cited

## U.S. PATENT DOCUMENTS

2006/0068360 A1 3/2006 Boulais  
 2006/0069306 A1 3/2006 Banik et al.  
 2006/0069312 A1 3/2006 O'Connor  
 2006/0100485 A1 5/2006 Arai et al.  
 2006/0122556 A1 6/2006 Kumar et al.  
 2006/0122557 A1 6/2006 Kumar et al.  
 2006/0129098 A1 6/2006 Hart et al.  
 2006/0135972 A1 6/2006 Zeiner  
 2006/0135977 A1 6/2006 Thompson et al.  
 2006/0135978 A1 6/2006 Franer  
 2006/0149137 A1 7/2006 Pingleton et al.  
 2006/0199998 A1 9/2006 Akui et al.  
 2006/0211916 A1 9/2006 Kasahara et al.  
 2006/0224121 A1 10/2006 Hart et al.  
 2006/0224164 A1 10/2006 Hart et al.  
 2006/0229565 A1 10/2006 Dennis et al.  
 2006/0235455 A1 10/2006 Oshida  
 2006/0264991 A1 11/2006 Johnson et al.  
 2006/0276688 A1 12/2006 Surti  
 2006/0293559 A1 12/2006 Grice et al.  
 2007/0005087 A1 1/2007 Smith et al.  
 2007/0021713 A1 1/2007 Kumar et al.  
 2007/0027453 A1 2/2007 Hart et al.  
 2007/0088275 A1 4/2007 Stearns et al.  
 2007/0088277 A1 4/2007 McGinley et al.  
 2007/0129719 A1 6/2007 Kendale et al.  
 2007/0142709 A1 6/2007 Martone et al.  
 2007/0149931 A1 6/2007 Cannon et al.  
 2007/0149993 A1 6/2007 Kasahara et al.  
 2007/0185453 A1 8/2007 Michael et al.  
 2007/0191759 A1 8/2007 Stoller et al.  
 2007/0204890 A1 9/2007 Torii  
 2007/0225556 A1 9/2007 Ortiz et al.  
 2007/0225566 A1 9/2007 Kawanishi  
 2007/0244361 A1 10/2007 Ikeda et al.  
 2008/0009797 A1 1/2008 Stellan et al.  
 2008/0009832 A1 1/2008 Barron et al.  
 2008/0091143 A1 4/2008 Taylor et al.  
 2008/0249475 A1 10/2008 Albrecht et al.  
 2008/0269696 A1 10/2008 Exline et al.  
 2008/0294113 A1 11/2008 Brockmeier et al.  
 2009/0005799 A1 1/2009 Franer et al.  
 2009/0093682 A1 4/2009 Izzo et al.  
 2009/0137943 A1 5/2009 Stearns et al.  
 2009/0192444 A1 7/2009 Albrecht et al.  
 2009/0221960 A1 9/2009 Albrecht et al.  
 2009/0234293 A1 9/2009 Albrecht et al.  
 2009/0240204 A1 9/2009 Taylor et al.  
 2009/0264703 A1 10/2009 Pribanic  
 2009/0270681 A1 10/2009 Moreno et al.  
 2009/0270685 A1 10/2009 Moreno et al.  
 2009/0270813 A1 10/2009 Moreno, Jr. et al.  
 2009/0270817 A1 10/2009 Moreno et al.  
 2009/0281478 A1 11/2009 Duke  
 2009/0314422 A1 12/2009 Racenet et al.  
 2010/0022958 A1 1/2010 Moreno, Jr. et al.  
 2010/0018513 A1 7/2010 Stearns et al.  
 2010/0211049 A1 8/2010 Schertiger et al.  
 2011/0046449 A1 2/2011 Minnelli et al.  
 2012/0140494 A1 6/2012 Gu et al.  
 2012/0330099 A1 12/2012 Moreno et al.

## FOREIGN PATENT DOCUMENTS

DE 19619065 A1 11/1997  
 DE 10330518 A1 2/2006  
 EP 0517248 12/1992  
 EP 0567142 10/1993  
 EP 0568383 11/1993  
 EP 570802 A1 11/1993  
 EP 664101 A1 7/1995  
 EP 0696459 A1 2/1996  
 EP 0731718 9/1996  
 EP 845960 A1 6/1998

EP 875256 A1 11/1998  
 EP 890342 A1 1/1999  
 EP 898971 A2 3/1999  
 EP 0972493 A2 1/2000  
 EP 1210904 A2 8/2002  
 EP 1284664 A1 2/2003  
 EP 1323373 A2 2/2003  
 EP 1312318 A1 5/2003  
 EP 1348386 A1 10/2003  
 EP 1459688 A1 9/2004  
 EP 1629787 A1 7/2006  
 EP 1679043 A1 7/2006  
 EP 1698291 A1 9/2006  
 EP 1707133 A1 10/2006  
 EP 1707135 A1 10/2006  
 EP 1709918 10/2006  
 EP 1834571 A1 9/2007  
 EP 1834573 A1 9/2007  
 EP 1994895 A1 11/2008  
 GB 2298906 A 9/1996  
 JP 61036718 A 2/1986  
 JP 3106329 A 5/1991  
 JP 4020324 A 1/1992  
 JP 4158825 A 6/1992  
 JP 4170929 A 6/1992  
 JP 4329510 A2 11/1992  
 JP 5192294 A 8/1993  
 JP 5199979 A 8/1993  
 JP 5207962 A 8/1993  
 JP 6133927 A 5/1994  
 JP 6169879 A 6/1994  
 JP 6304121 A 11/1994  
 JP 7178039 A 7/1995  
 JP 7246187 A 9/1995  
 JP 7289501 A 11/1995  
 JP 7313442 A 12/1995  
 JP 8154888 A 6/1996  
 JP 8173372 A 7/1996  
 JP 08-285001 A 11/1996  
 JP 10043128 A 2/1998  
 JP 11146882 A 6/1999  
 JP 2002224014 A 8/2002  
 JP 2002238906 A 8/2002  
 JP 2002282274 A 10/2002  
 JP 2003284686 A 10/2003  
 JP 2004016455 A 1/2004  
 JP 2004267583 A 9/2004  
 JP 2005253543 A 9/2005  
 JP 2005319101 A2 11/2005  
 JP 2007117289 A 5/2007  
 JP 3151790 U 6/2009  
 JP 2009261923 A 11/2009  
 RU 2014032 C1 6/1994  
 WO WO-0278527 4/1937  
 WO WO-0296307 10/1937  
 WO WO-9740759 11/1967  
 WO WO-9407552 A1 4/1994  
 WO 9532019 11/1995  
 WO WO-9604946 A1 2/1996  
 WO WO-9809673 A1 3/1998  
 WO WO-0189371 A1 11/2001  
 WO WO-03011154 A2 2/2003  
 WO WO-2004043275 A1 5/2004  
 WO WO-2005016133 A1 2/2005  
 WO WO-2005030293 A2 4/2005  
 WO WO-2005097019 A2 10/2005  
 WO WO-2005097234 A2 10/2005  
 WO WO-2008093313 A1 8/2008  
 WO WO-2009005986 A1 1/2009

## OTHER PUBLICATIONS

Extended European Search Report for App. No. 12173277.0, dated Jul. 18, 2012 (6 pages).  
 Extended European Search Report for App. No. 12173283.8, dated Jul. 18, 2012 (6 pages).  
 Extended European Search Report for App. No. 12173290.3, dated Jul. 18, 2012 (7 pages).  
 International Search Report and Written Opinion for Application No. PCT/US2011/055905, mailed Jan. 11, 2012 (11 pages).

(56)

**References Cited**

OTHER PUBLICATIONS

European Search Report for EP App. No. 09251201.1, dated Aug. 13, 2009 (7 pages).

European Search Report for EP App. No. 09251208.6, dated Aug. 11, 2009 (8 pages).

International Search Report/Written Opinion, from PCT/US2010/042765, mailed Oct. 13, 2010 (18 pages).

European Search Report issued Aug. 11, 2009 for Application No. 09251196.3 (7 pages).

European Search Report issued Aug. 12, 2009 for Application No. 09251210.3 (8 pages).

U.S. Office Action issued May 30, 2013 for U.S. Appl. No. 29/403,077 (10 pages).

\* cited by examiner

FIG. 1

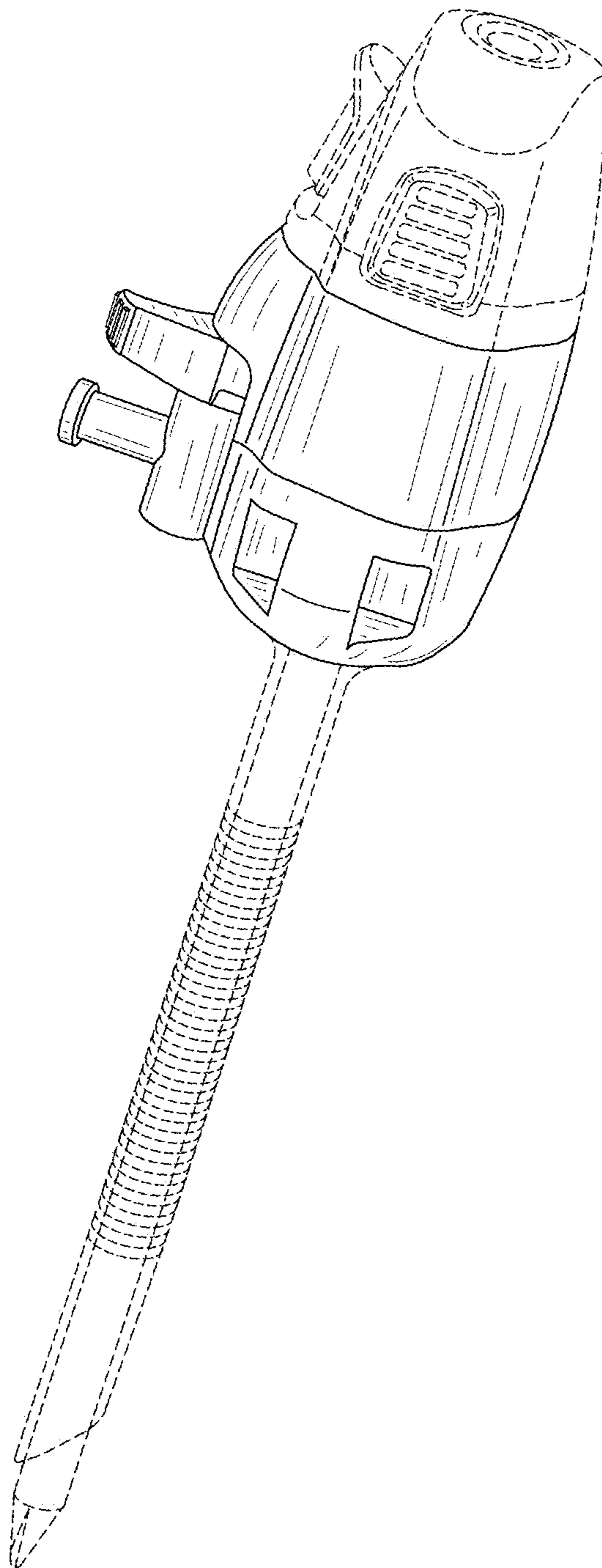


FIG. 2

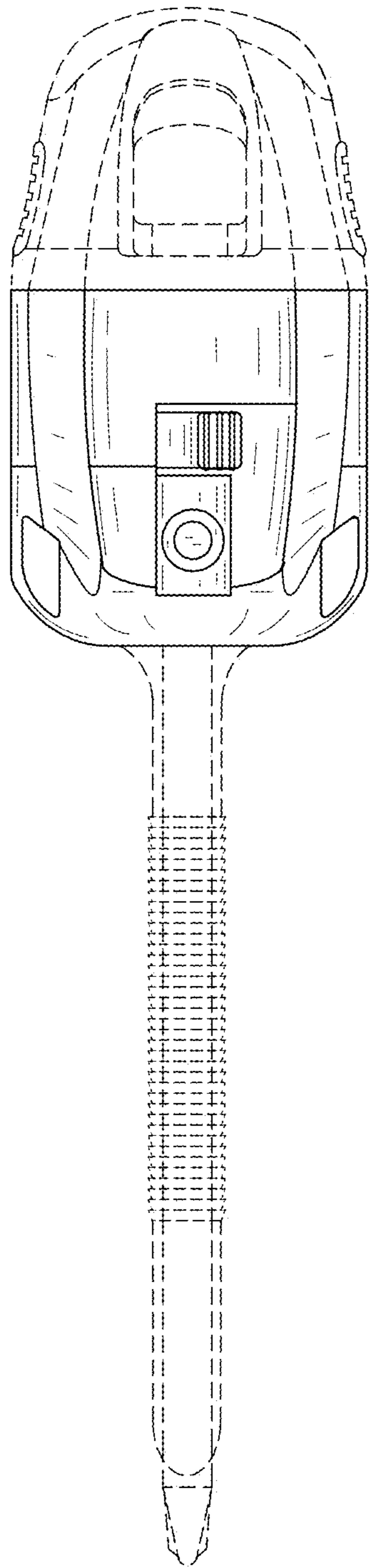


FIG. 3

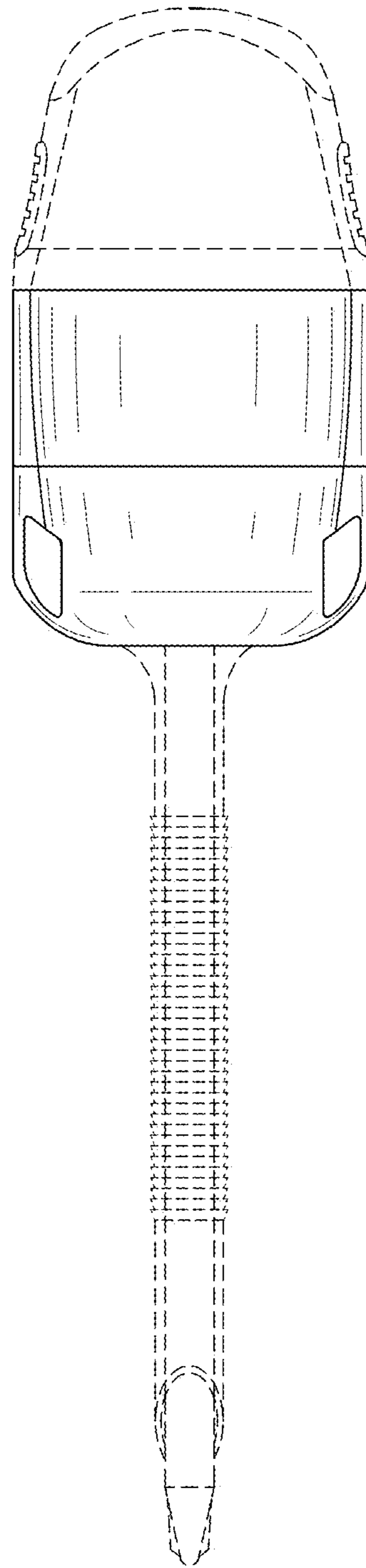


FIG. 4

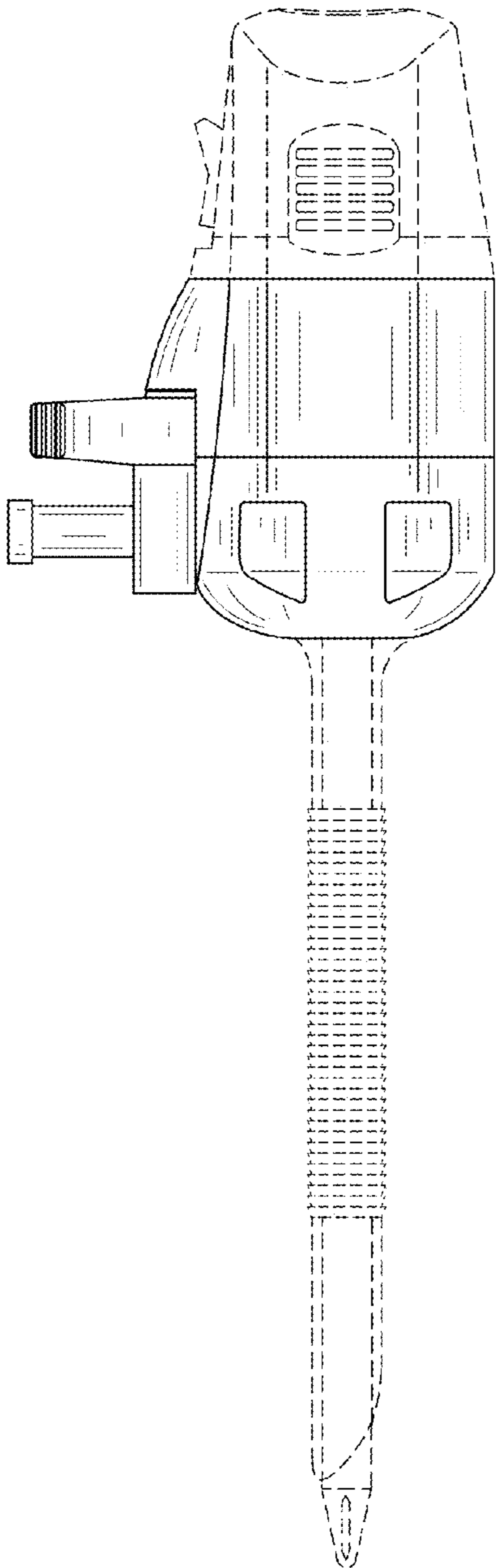


FIG. 5

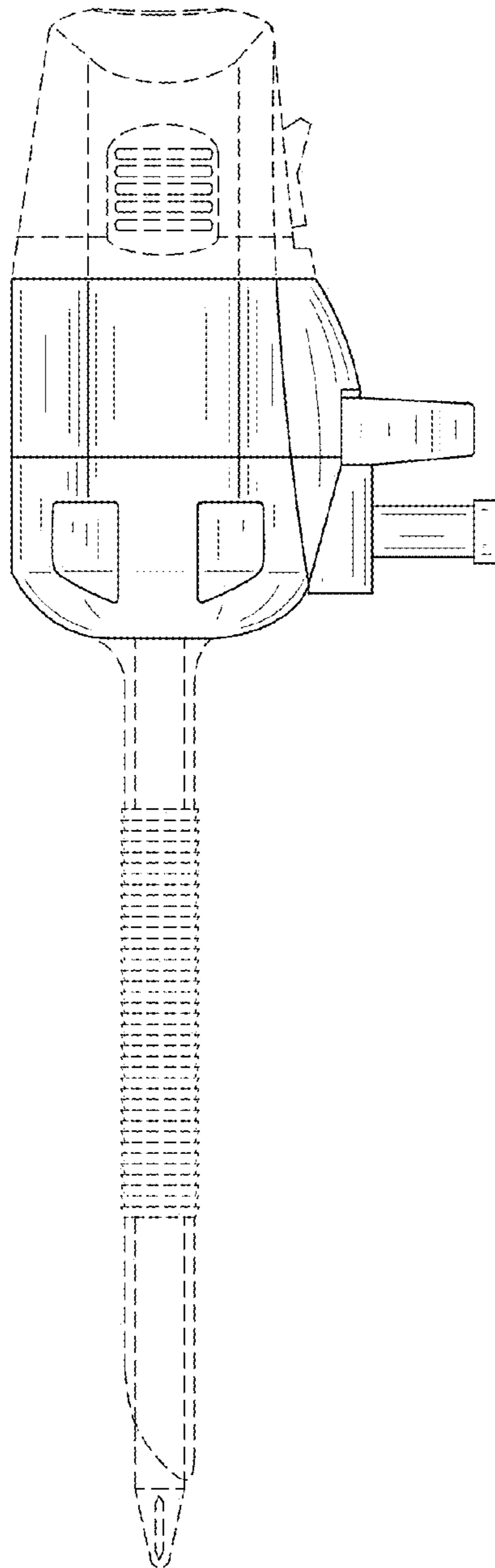




FIG. 6

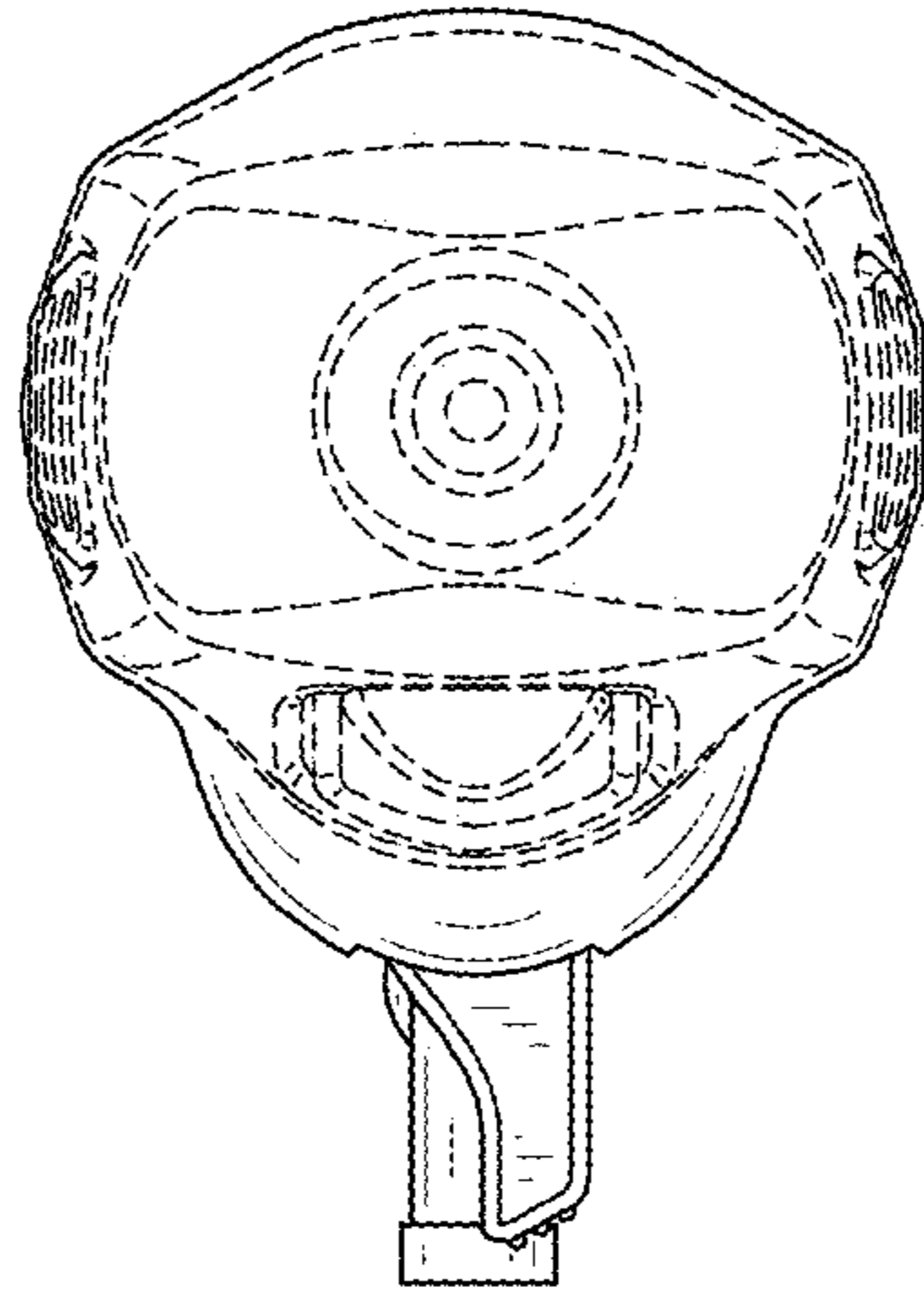


FIG. 7

