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Johnson et al.

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(54) **SURGICAL INSTRUMENT**

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See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2,736,960 A	3/1956	Armstrong
2,849,788 A	9/1958	Creek
3,015,961 A	1/1962	Roney
3,526,219 A	9/1970	Balamuth
3,614,484 A	10/1971	Shoh
3,636,943 A	1/1972	Balamuth
3,776,238 A	12/1973	Peyman et al.
3,805,787 A	4/1974	Banko
3,862,630 A	1/1975	Balamuth
3,900,823 A	8/1975	Sokal et al.
3,918,442 A	11/1975	Nikolaev et al.
3,946,738 A	3/1976	Newton et al.
3,955,859 A	5/1976	Stella et al.

3,956,826 A	5/1976	Perdreux, Jr.
4,156,187 A	5/1979	Murry et al.
4,188,927 A	2/1980	Harris
4,200,106 A	4/1980	Douvas et al.
4,445,063 A	4/1984	Smith

(Continued)

FOREIGN PATENT DOCUMENTS

CN	1634601 A	7/2005
CN	1640365 A	7/2005

(Continued)

OTHER PUBLICATIONS

Technology Overview, printed from www.harmonicscalpel.com,
Internet site, website accessed on Jun. 13, 2007, (3 pages).

(Continued)

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(57) **CLAIM**

The ornamental design for a surgical instrument, as shown
and described.

DESCRIPTION

FIG. 1 is a top left perspective view of a surgical instrument
showing our new design;

FIG. 2 is a right perspective view thereof;

FIG. 3 is a bottom left perspective view thereof;

FIG. 4 is a left view thereof;

FIG. 5 is a front view thereof;

FIG. 6 is a right view thereof;

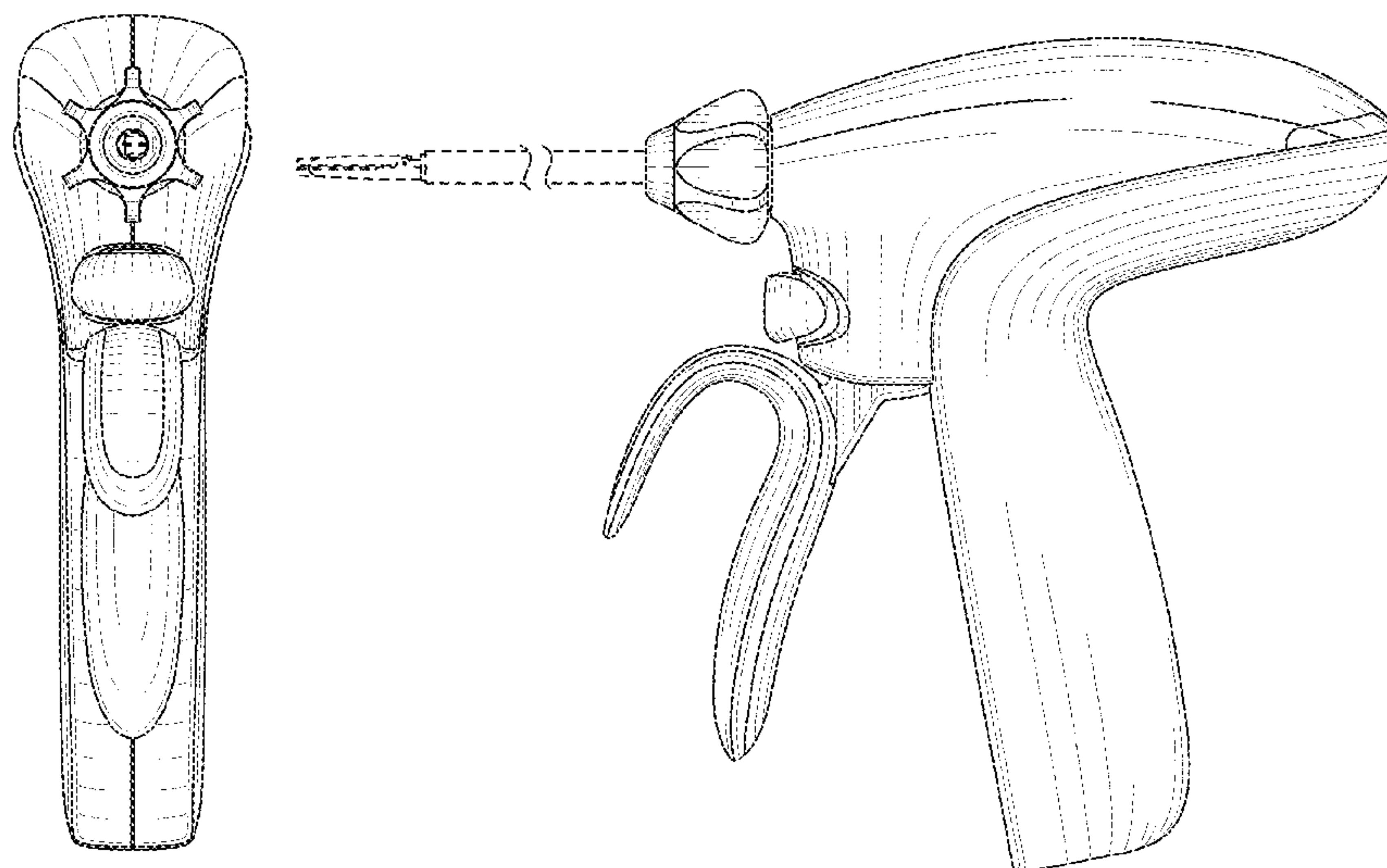
FIG. 7 is a rear view thereof;

FIG. 8 is a top view thereof; and,

FIG. 9 is a bottom view thereof.

The broken lines showing the remainder of the surgical
instrument are directed to environment and are for illustrative
purposes only; the broken lines form no part of the claimed
design.

1 Claim, 6 Drawing Sheets



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U.S. PATENT DOCUMENTS					
4,491,132 A	1/1985	Aikins	5,957,882 A	9/1999	Nita et al.
4,617,927 A	10/1986	Manes	5,957,943 A	9/1999	Vaitekunas
4,634,420 A	1/1987	Spinosa et al.	5,968,007 A	10/1999	Simon et al.
4,640,279 A	2/1987	Beard	5,968,060 A	10/1999	Kellogg
4,708,127 A	11/1987	Abdelghani	D416,089 S	11/1999	Barton et al.
4,832,683 A	5/1989	Idemoto et al.	5,989,274 A	11/1999	Davison et al.
4,838,853 A	6/1989	Parisi	5,989,275 A	11/1999	Estabrook et al.
4,850,354 A	7/1989	McGurk-Burleson et al.	5,993,972 A	11/1999	Reich et al.
4,865,159 A	9/1989	Jamison	6,033,375 A	3/2000	Brumbach
4,896,009 A	1/1990	Pawlowski	6,063,098 A	5/2000	Houser et al.
4,922,902 A	5/1990	Wuchinich et al.	6,066,132 A	5/2000	Chen et al.
4,981,756 A	1/1991	Rhandhawa	6,068,647 A	5/2000	Witt et al.
5,026,387 A	6/1991	Thomas	6,077,285 A	6/2000	Boukhny
5,112,300 A	5/1992	Ureche	6,083,191 A	7/2000	Rose
5,123,903 A	6/1992	Quaid et al.	6,086,584 A	7/2000	Miller
5,162,044 A	11/1992	Gahn et al.	6,090,120 A	7/2000	Wright et al.
5,167,725 A	12/1992	Clark et al.	6,109,500 A	8/2000	Alli et al.
D332,660 S	1/1993	Rawson et al.	6,113,594 A	9/2000	Savage
5,176,695 A	1/1993	Dulebohn	6,139,320 A	10/2000	Hahn
5,184,605 A	2/1993	Grzeszykowski	6,152,902 A	11/2000	Christian et al.
5,213,569 A	5/1993	Davis	6,159,160 A	12/2000	Hsei et al.
5,221,282 A	6/1993	Wuchinich	6,159,175 A	12/2000	Strukel et al.
5,226,910 A	7/1993	Kajiyama et al.	6,206,844 B1	3/2001	Reichel et al.
5,241,236 A	8/1993	Sasaki et al.	6,210,403 B1	4/2001	Klicek
5,257,988 A	11/1993	L'Esperance, Jr.	6,214,023 B1	4/2001	Whipple et al.
5,261,922 A	11/1993	Hood	6,233,476 B1	5/2001	Strommer et al.
5,263,957 A	11/1993	Davison	6,238,366 B1	5/2001	Savage et al.
5,282,800 A	2/1994	Foshee et al.	D444,365 S	7/2001	Bass et al.
5,304,115 A	4/1994	Pflueger et al.	6,254,623 B1	7/2001	Haibel, Jr. et al.
D347,474 S	5/1994	Olson	6,258,034 B1	7/2001	Hanafy
5,322,055 A	6/1994	Davison et al.	6,267,761 B1	7/2001	Ryan
5,324,299 A	6/1994	Davison et al.	6,270,831 B2	8/2001	Kumar et al.
5,344,420 A	9/1994	Hilal et al.	6,273,852 B1	8/2001	Lehe et al.
5,346,502 A	9/1994	Estabrook et al.	6,274,963 B1	8/2001	Estabrook et al.
5,366,466 A	11/1994	Christian et al.	6,277,115 B1	8/2001	Saadat
D354,564 S	1/1995	Medema	6,278,218 B1	8/2001	Madan et al.
5,381,067 A	1/1995	Greenstein et al.	6,283,981 B1	9/2001	Beaupre
D358,887 S *	5/1995	Feinberg D24/143	6,309,400 B2	10/2001	Beaupre
5,411,481 A	5/1995	Allen et al.	6,319,221 B1	11/2001	Savage et al.
5,419,761 A	5/1995	Narayanan et al.	6,325,811 B1	12/2001	Messerly
5,421,829 A	6/1995	Olichney et al.	6,328,751 B1	12/2001	Beaupre
5,449,370 A	9/1995	Vaitekunas	6,352,532 B1	3/2002	Kramer et al.
5,483,501 A	1/1996	Park et al.	6,379,320 B1	4/2002	Lafon et al.
5,486,162 A	1/1996	Brumbach	D457,958 S *	5/2002	Dycus et al. D24/144
5,500,216 A	3/1996	Julian et al.	6,383,194 B1	5/2002	Pothula
5,501,654 A	3/1996	Failla et al.	6,387,109 B1	5/2002	Davison et al.
5,505,693 A	4/1996	Mackool	6,388,657 B1	5/2002	Natoli
5,562,609 A	10/1996	Brumbach	6,391,042 B1	5/2002	Cimino
5,562,610 A	10/1996	Brumbach	6,416,486 B1	7/2002	Wampler
5,601,601 A	2/1997	Tal et al.	6,423,073 B2	7/2002	Bowman
5,607,436 A	3/1997	Pratt et al.	6,423,082 B1	7/2002	Houser et al.
5,618,492 A	4/1997	Auten et al.	6,432,118 B1	8/2002	Messerly
5,628,760 A	5/1997	Knoepfler	6,436,114 B1	8/2002	Novak et al.
5,630,420 A	5/1997	Vaitekunas	6,436,115 B1	8/2002	Beaupre
D381,077 S	7/1997	Hunt	6,443,969 B1	9/2002	Novak et al.
5,651,780 A	7/1997	Jackson et al.	6,454,781 B1	9/2002	Witt et al.
5,653,713 A	8/1997	Michelson	6,454,782 B1	9/2002	Schwemberger
5,669,922 A	9/1997	Hood	6,458,142 B1	10/2002	Faller et al.
5,674,235 A	10/1997	Parisi	6,480,796 B2	11/2002	Wiener
5,690,269 A	11/1997	Bolanos et al.	6,485,490 B2	11/2002	Wampler et al.
5,694,936 A	12/1997	Fujimoto et al.	6,491,708 B2	12/2002	Madan et al.
5,713,896 A	2/1998	Nardella	6,497,715 B2	12/2002	Satou
5,733,074 A	3/1998	Stöck et al.	6,500,176 B1	12/2002	Truckai et al.
5,741,226 A	4/1998	Strukel et al.	6,500,188 B2	12/2002	Harper et al.
5,810,859 A	9/1998	DiMatteo et al.	6,524,316 B1	2/2003	Nicholson et al.
5,827,323 A	10/1998	Klieman et al.	6,533,784 B2	3/2003	Truckai et al.
5,828,160 A	10/1998	Sugishita	6,537,291 B2	3/2003	Friedman et al.
5,843,109 A	12/1998	Mehta et al.	6,543,456 B1	4/2003	Freeman
5,879,364 A	3/1999	Bromfield et al.	6,544,260 B1	4/2003	Markel et al.
5,893,835 A	4/1999	Witt et al.	6,561,983 B2	5/2003	Cronin et al.
5,897,569 A	4/1999	Kellogg et al.	6,572,632 B2	6/2003	Zisterer et al.
5,935,143 A	8/1999	Hood	6,575,969 B1	6/2003	Rittman, III et al.
5,935,144 A	8/1999	Estabrook	6,582,451 B1	6/2003	Marucci et al.
5,938,633 A	8/1999	Beaupre	6,589,200 B1	7/2003	Schwemberger et al.
5,944,718 A	8/1999	Austin et al.	6,589,239 B2	7/2003	Khandkar et al.
5,944,737 A	8/1999	Tsonton et al.	6,616,450 B2	9/2003	Mossle et al.
5,954,736 A	9/1999	Bishop et al.	6,623,501 B2	9/2003	Heller et al.
5,954,746 A	9/1999	Holthaus et al.	6,626,926 B2	9/2003	Friedman et al.
			6,633,234 B2	10/2003	Wiener et al.

US D687,549 S

Page 3

6,656,177 B2	12/2003	Truckai et al.	D578,643 S	10/2008	Shumer et al.
6,662,127 B2	12/2003	Wiener et al.	D578,644 S	10/2008	Shumer et al.
6,663,941 B2	12/2003	Brown et al.	D578,645 S	10/2008	Shumer et al.
6,676,660 B2	1/2004	Wampler et al.	7,431,704 B2	10/2008	Babaev
6,678,621 B2	1/2004	Wiener et al.	7,472,815 B2	1/2009	Shelton, IV et al.
6,679,899 B2	1/2004	Wiener et al.	7,479,148 B2	1/2009	Beaupre
6,682,544 B2	1/2004	Mastri et al.	7,479,160 B2	1/2009	Branch et al.
6,716,215 B1	4/2004	David et al.	7,494,468 B2	2/2009	Rabiner et al.
6,731,047 B2	5/2004	Kauf et al.	7,503,893 B2	3/2009	Kucklick
6,733,506 B1	5/2004	McDevitt et al.	7,534,243 B1	5/2009	Chin et al.
6,762,535 B2	7/2004	Take et al.	D594,983 S	6/2009	Price et al.
6,770,072 B1	8/2004	Truckai et al.	7,567,012 B2	7/2009	Namikawa
6,773,444 B2	8/2004	Messerly	D618,797 S	6/2010	Price et al.
6,786,382 B1	9/2004	Hoffman	7,751,115 B2	7/2010	Song
6,786,383 B2	9/2004	Stegelmann	D621,503 S *	8/2010	Otten et al. D24/133
6,790,216 B1	9/2004	Ishikawa	7,770,774 B2	8/2010	Mastri et al.
D496,997 S *	10/2004	Dycus et al. D24/144	7,780,659 B2	8/2010	Okada et al.
6,802,843 B2	10/2004	Truckai et al.	D627,066 S *	11/2010	Romero D24/133
6,828,712 B2	12/2004	Battaglin et al.	D631,155 S *	1/2011	Peine et al. D24/133
6,869,439 B2	3/2005	White et al.	D631,965 S	2/2011	Price et al.
6,875,220 B2	4/2005	Du et al.	7,892,606 B2	2/2011	Thies et al.
6,905,497 B2	6/2005	Truckai et al.	7,901,423 B2	3/2011	Stulen et al.
6,908,472 B2	6/2005	Wiener et al.	D637,288 S *	5/2011	Houghton D24/133
6,913,579 B2	7/2005	Truckai et al.	D638,540 S *	5/2011	Ijiri et al. D24/133
6,926,716 B2	8/2005	Baker et al.	7,959,050 B2	6/2011	Smith et al.
6,929,632 B2	8/2005	Nita et al.	7,959,626 B2	6/2011	Hong et al.
6,929,644 B2	8/2005	Truckai et al.	7,976,544 B2	7/2011	McClurken et al.
D509,589 S	9/2005	Wells	8,057,498 B2	11/2011	Robertson
6,945,981 B2	9/2005	Donofrio et al.	8,058,771 B2	11/2011	Giordano et al.
D511,145 S	11/2005	Donofrio et al.	2001/0025184 A1	9/2001	Messerly
6,976,844 B2	12/2005	Hickok et al.	2001/0031950 A1	10/2001	Ryan
6,976,969 B2	12/2005	Messerly	2001/0039419 A1	11/2001	Francischelli et al.
6,977,495 B2	12/2005	Donofrio	2002/0002377 A1	1/2002	Cimino
6,984,220 B2	1/2006	Wuchinich	2002/0019649 A1	2/2002	Sikora et al.
7,011,657 B2	3/2006	Truckai et al.	2002/0022836 A1	2/2002	Goble et al.
7,041,083 B2	5/2006	Chu et al.	2002/0077550 A1	6/2002	Rabiner et al.
7,041,088 B2	5/2006	Nawrocki et al.	2002/0156493 A1	10/2002	Houser et al.
7,041,102 B2	5/2006	Truckai et al.	2003/0055443 A1	3/2003	Spotnitz
7,070,597 B2	7/2006	Truckai et al.	2003/0204199 A1	10/2003	Novak et al.
7,074,219 B2	7/2006	Levine et al.	2003/0212332 A1	11/2003	Fenton et al.
7,077,039 B2	7/2006	Gass et al.	2004/0030254 A1	2/2004	Babaev
7,077,853 B2	7/2006	Kramer et al.	2004/0047485 A1	3/2004	Sherrit et al.
7,083,619 B2	8/2006	Truckai et al.	2004/0092921 A1	5/2004	Kadziauskas et al.
7,087,054 B2	8/2006	Truckai et al.	2004/0097919 A1	5/2004	Wellman et al.
7,108,695 B2	9/2006	Witt et al.	2004/0097996 A1	5/2004	Rabiner et al.
7,112,201 B2	9/2006	Truckai et al.	2004/0199193 A1	10/2004	Hayashi et al.
7,118,564 B2	10/2006	Ritchie et al.	2004/0204728 A1	10/2004	Haefner
7,124,932 B2	10/2006	Isaacson et al.	2004/0260300 A1	12/2004	Gorensek et al.
7,125,409 B2	10/2006	Truckai et al.	2005/0033337 A1	2/2005	Muir et al.
7,135,018 B2	11/2006	Ryan et al.	2005/0049546 A1	3/2005	Messerly et al.
7,135,030 B2	11/2006	Schwemberger et al.	2005/0143769 A1	6/2005	White et al.
7,153,315 B2	12/2006	Miller	2005/0149108 A1	7/2005	Cox
7,156,189 B1	1/2007	Bar-Cohen et al.	2005/0165345 A1	7/2005	Laufer et al.
7,156,853 B2	1/2007	Muratsu	2005/0177184 A1	8/2005	Easley
7,157,058 B2	1/2007	Marhasin et al.	2005/0192610 A1	9/2005	Houser et al.
7,159,750 B2	1/2007	Racenet et al.	2005/0209620 A1	9/2005	Du et al.
7,163,548 B2	1/2007	Stulen et al.	2005/0261581 A1	11/2005	Hughes et al.
7,169,146 B2	1/2007	Truckai et al.	2005/0261588 A1	11/2005	Makin et al.
7,179,271 B2	2/2007	Friedman et al.	2005/0288659 A1	12/2005	Kimura et al.
7,186,253 B2	3/2007	Truckai et al.	2006/0030797 A1	2/2006	Zhou et al.
7,189,233 B2	3/2007	Truckai et al.	2006/0063130 A1	3/2006	Hayman et al.
D541,418 S *	4/2007	Schechter et al. D24/148	2006/0079878 A1	4/2006	Houser
7,204,820 B2	4/2007	Akahoshi	2006/0084963 A1	4/2006	Messerly
7,220,951 B2	5/2007	Truckai et al.	2006/0190034 A1	8/2006	Nishizawa et al.
7,223,229 B2	5/2007	Inman et al.	2006/0211943 A1	9/2006	Beaupre
7,229,455 B2	6/2007	Sakurai et al.	2006/0235306 A1	10/2006	Cotter et al.
7,273,483 B2	9/2007	Wiener et al.	2006/0253050 A1	11/2006	Yoshimine et al.
7,309,849 B2	12/2007	Truckai et al.	2007/0016235 A1	1/2007	Tanaka et al.
7,311,709 B2	12/2007	Truckai et al.	2007/0016236 A1	1/2007	Beaupre
7,317,955 B2	1/2008	McGreevy	2007/0055228 A1	3/2007	Berg et al.
7,326,236 B2	2/2008	Andreas et al.	2007/0060915 A1	3/2007	Kucklick
7,331,410 B2	2/2008	Yong et al.	2007/0063618 A1	3/2007	Bromfield
7,353,068 B2	4/2008	Tanaka et al.	2007/0129716 A1	6/2007	Daw et al.
7,354,440 B2	4/2008	Truckai et al.	2007/0130771 A1	6/2007	Ehlert et al.
7,380,695 B2	6/2008	Doll et al.	2007/0131034 A1	6/2007	Ehlert et al.
7,381,209 B2	6/2008	Truckai et al.	2007/0149881 A1	6/2007	Rabin
7,390,317 B2	6/2008	Taylor et al.	2007/0162050 A1	7/2007	Sartor
7,408,288 B2	8/2008	Hara	2007/0173872 A1	7/2007	Neuenfeldt
D576,725 S	9/2008	Shumer et al.	2007/0185380 A1	8/2007	Kucklick

2007/0219481	A1	9/2007	Babaev	
2007/0249941	A1	10/2007	Salehi et al.	
2007/0260234	A1	11/2007	McCullagh et al.	
2007/0265560	A1	11/2007	Soltani et al.	
2007/0275348	A1	11/2007	Lemon	
2007/0282335	A1	12/2007	Young et al.	
2007/0287933	A1	12/2007	Phan et al.	
2008/0009848	A1	1/2008	Paraschiv et al.	
2008/0058585	A1	3/2008	Novak et al.	
2008/0058775	A1	3/2008	Darian et al.	
2008/0058845	A1	3/2008	Shimizu et al.	
2008/0082039	A1	4/2008	Babaev	
2008/0082098	A1	4/2008	Tanaka et al.	
2008/0172051	A1	7/2008	Masuda et al.	
2008/0177268	A1	7/2008	Daum et al.	
2008/0188878	A1	8/2008	Young	
2008/0200940	A1	8/2008	Eichmann et al.	
2008/0208231	A1	8/2008	Ota et al.	
2008/0234708	A1	9/2008	Houser et al.	
2008/0234709	A1	9/2008	Houser	
2008/0234710	A1	9/2008	Neurohr et al.	
2008/0234711	A1	9/2008	Houser et al.	
2008/0262490	A1	10/2008	Williams	
2008/0281200	A1	11/2008	Voic et al.	
2008/0287948	A1	11/2008	Newton et al.	
2009/0030311	A1	1/2009	Stulen et al.	
2009/0030351	A1	1/2009	Wiener et al.	
2009/0030437	A1	1/2009	Houser et al.	
2009/0030438	A1	1/2009	Stulen	
2009/0030439	A1	1/2009	Stulen	
2009/0036911	A1	2/2009	Stulen	
2009/0036912	A1	2/2009	Wiener et al.	
2009/0036913	A1	2/2009	Wiener et al.	
2009/0036914	A1	2/2009	Houser	
2009/0076506	A1	3/2009	Baker	
2009/0082716	A1	3/2009	Akahoshi	
2009/0105750	A1	4/2009	Price et al.	
2009/0118802	A1	5/2009	Mioduski et al.	
2009/0143806	A1	6/2009	Witt et al.	
2009/0270853	A1	10/2009	Yachi et al.	
2010/0036370	A1	2/2010	Mirel et al.	
2010/0036405	A1	2/2010	Giordano et al.	
2010/0158307	A1	6/2010	Kubota et al.	
2010/0179577	A1	7/2010	Houser	
2010/0187283	A1	7/2010	Crainich et al.	
2010/0298743	A1	11/2010	Nield et al.	
2010/0298851	A1	11/2010	Nield	
2010/0331869	A1	12/2010	Voegele et al.	
2010/0331870	A1	12/2010	Wan et al.	
2010/0331871	A1	12/2010	Nield et al.	
2010/0331872	A1	12/2010	Houser et al.	
2011/0015627	A1	1/2011	DiNardo et al.	
2011/0015631	A1 *	1/2011	Wiener et al.	606/42
2011/0015660	A1	1/2011	Wiener et al.	
2011/0082486	A1	4/2011	Messerly et al.	
2011/0087212	A1	4/2011	Aldridge et al.	
2011/0087213	A1	4/2011	Messerly et al.	
2011/0087214	A1	4/2011	Giordano et al.	
2011/0087215	A1	4/2011	Aldridge et al.	
2011/0087216	A1	4/2011	Aldridge et al.	
2011/0087217	A1	4/2011	Yates et al.	
2011/0087256	A1	4/2011	Wiener et al.	
2011/0125175	A1	5/2011	Stulen et al.	
2011/0196286	A1	8/2011	Robertson et al.	
2011/0196287	A1	8/2011	Robertson et al.	
2011/0196398	A1	8/2011	Robertson et al.	
2011/0196399	A1	8/2011	Robertson et al.	
2011/0196400	A1	8/2011	Robertson et al.	
2011/0196401	A1	8/2011	Robertson et al.	
2011/0196402	A1	8/2011	Robertson et al.	
2011/0196403	A1	8/2011	Robertson et al.	
2011/0196404	A1	8/2011	Dietz et al.	
2011/0196405	A1	8/2011	Dietz	

2011/0288452	A1	11/2011	Houser et al.	
2012/0078243	A1 *	3/2012	Worrell et al.	606/33
2012/0078244	A1 *	3/2012	Worrell et al.	606/33

FOREIGN PATENT DOCUMENTS

CN	1694649	A	11/2005
CN	1922563	A	2/2007
EP	0171967	A2	2/1986
EP	0443256	A1	8/1991
EP	0456470	A1	11/1991
EP	0482195	B1	1/1996
EP	0612570	B1	6/1997
EP	0908148	B1	1/2002
EP	1199044	B1	12/2005
EP	1844720	A1	10/2007
EP	1862133	A1	12/2007
EP	1974771	A1	10/2008
EP	1832259	B1	6/2009
EP	2074959	A1	7/2009
GB	2032221	A	4/1980
GB	2447767	B	8/2011
WO	WO 92/22259	A2	12/1992
WO	WO 93/14708	A1	8/1993
WO	WO 98/37815	A1	9/1998
WO	WO 01/54590	A1	8/2001
WO	2005/122917	A1	12/2005
WO	WO 2006/042210	A2	4/2006
WO	WO 2006/129465	A1	12/2006
WO	WO 2007/047531	A2	4/2007
WO	WO 2007/143665	A2	12/2007
WO	WO 2008/130793	A1	10/2008
WO	WO 2009/018406	A2	2/2009
WO	WO 2009/027065	A1	3/2009

OTHER PUBLICATIONS

Sherrit et al., "Novel Horn Designs for Ultrasonic/Sonic Cleaning Welding, Soldering, Cutting and Drilling," Proc. SPIE Smart Structures Conference, vol. 4701, Paper No. 34, San Diego, CA, pp. 353-360, Mar. 2002.

AST Products, Inc., "Principles of Video Contact Angle Analysis," 20 pages, (2006).

Lim et al., "A Review of Mechanism Used in Laparoscopic Surgical Instruments," Mechanism and Machine Theory, vol. 38, pp. 1133-1147, (2003).

Gooch et al., "Recommended Infection-Control Practices for Dentistry, 1993," Published: May 28, 1993; [retrieved on Aug. 23, 2008]. Retrieved from the internet: URL: <http://wonder.cdc.gov/wonder/prevguid/p0000191/p0000191.asp> (15 pages).

Huston et al., "Magnetic and Magnetostrictive Properties of Cube Textured Nickel for Magnetostrictive Transducer Applications," IEEE Transactions on Magnetics, vol. 9(4), pp. 636-640 (Dec. 1973).

F. A. Duck, "Optical Properties of Tissue Including Ultraviolet and Infrared Radiation," pp. 43-71 in *Physical Properties of Tissue* (1990).

Orr et al., "Overview of Bioheat Transfer," pp. 367-384 in *Optical-Thermal Response of Laser-Irradiated Tissue*, A. J. Welch and M. J. C. van Gernert, eds., Plenum, New York (1995).

Campbell et al., "Thermal Imaging in Surgery," p. 19-3, in *Medical Infrared Imaging*, N. A. Diakides and J. D. Bronzino, Eds. (2008).

U.S. Appl. No. 12/896,351, filed Oct. 1, 2010.

U.S. Appl. No. 12/896,411, filed Oct. 1, 2010.

U.S. Appl. No. 12/896,420, filed Oct. 1, 2010.

U.S. Appl. No. 29/402,697, filed Sep. 26, 2011.

U.S. Appl. No. 29/402,699, filed Sep. 26, 2011.

U.S. Appl. No. 29/402,700, filed Sep. 26, 2011.

U.S. Appl. No. 29/402,701, filed Sep. 26, 2011.

U.S. Appl. No. 13/270,459, filed Oct. 11, 2011.

U.S. Appl. No. 13/251,766, filed Oct. 3, 2011.

* cited by examiner

FIG. 1

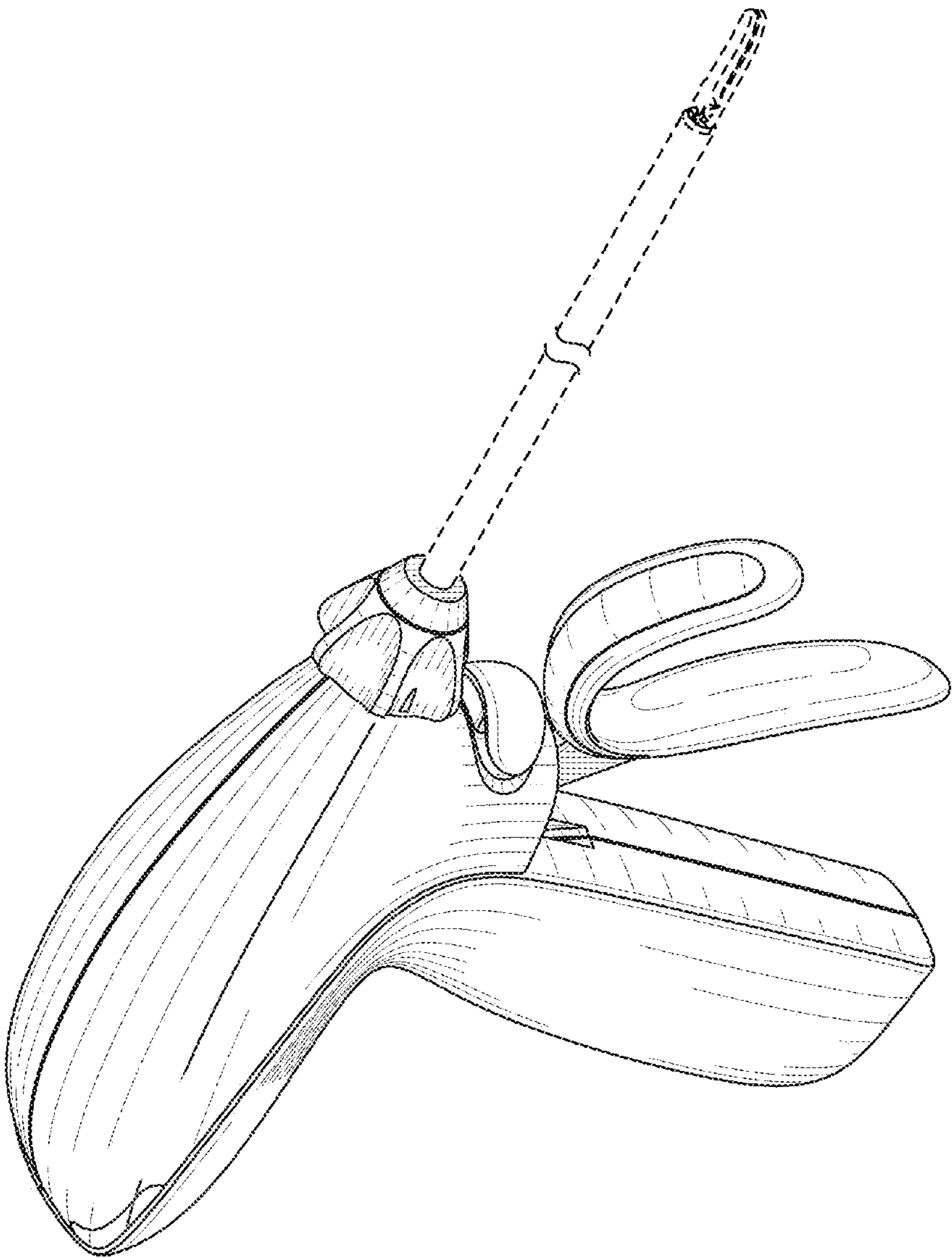


FIG. 2

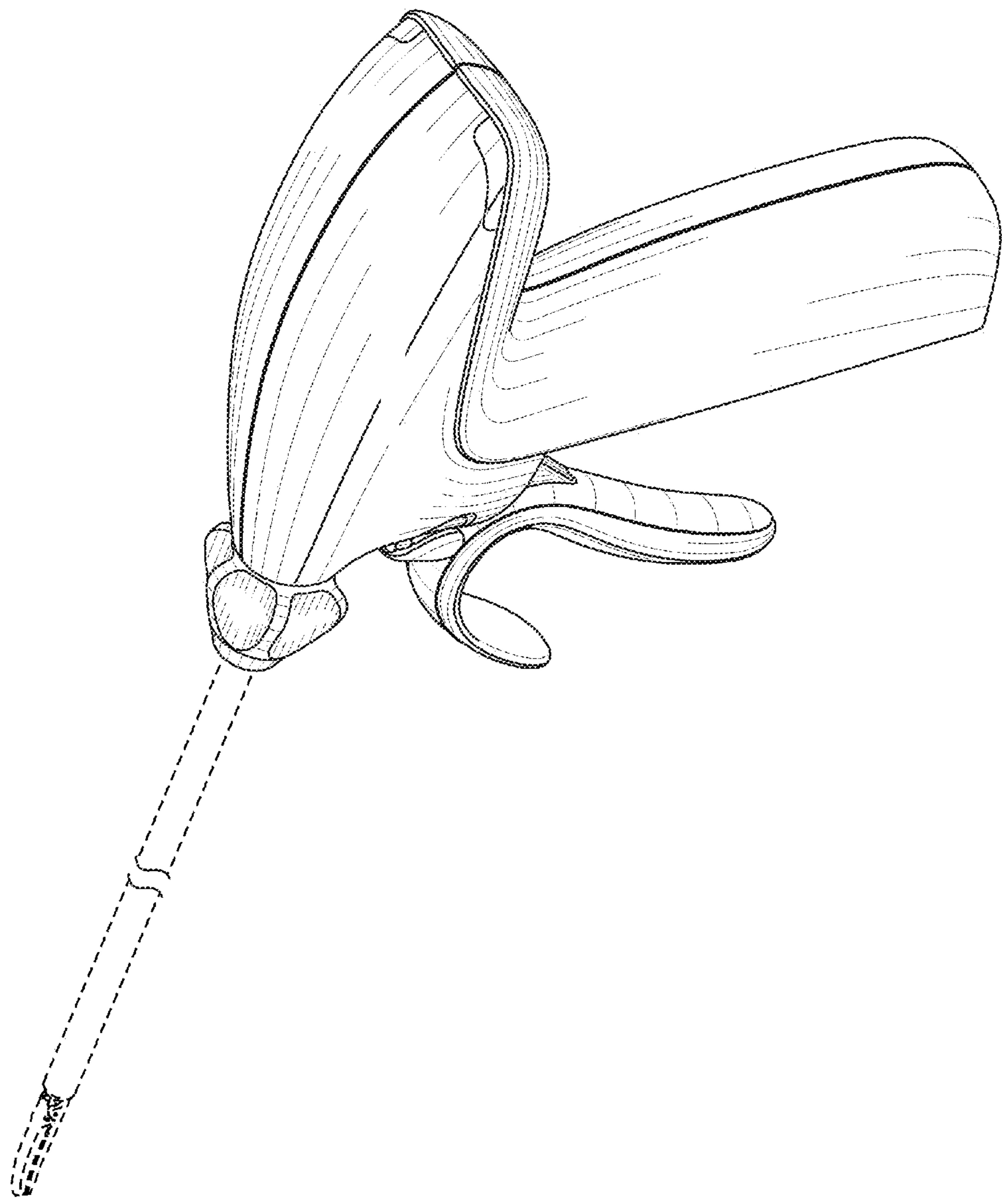
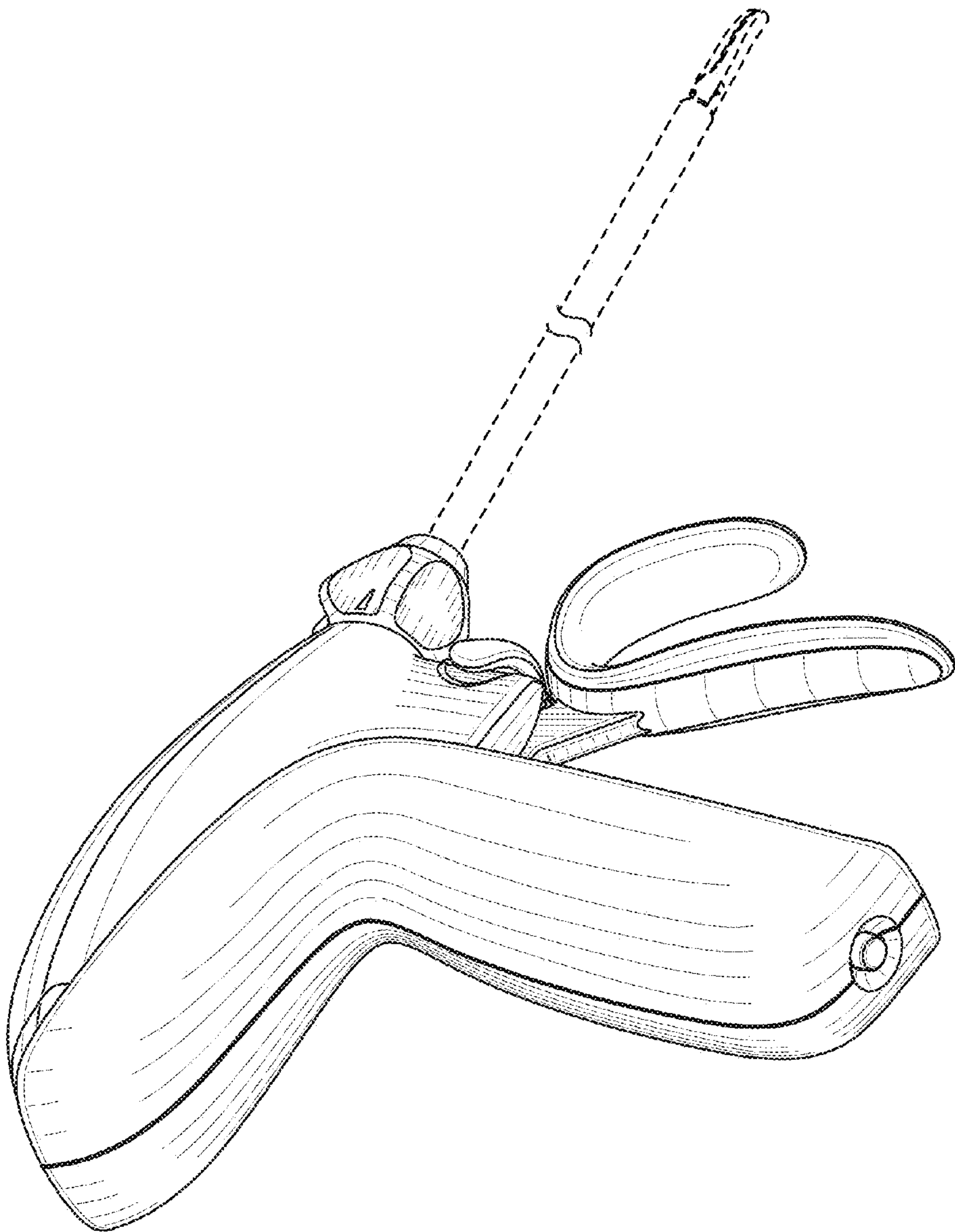


FIG. 3



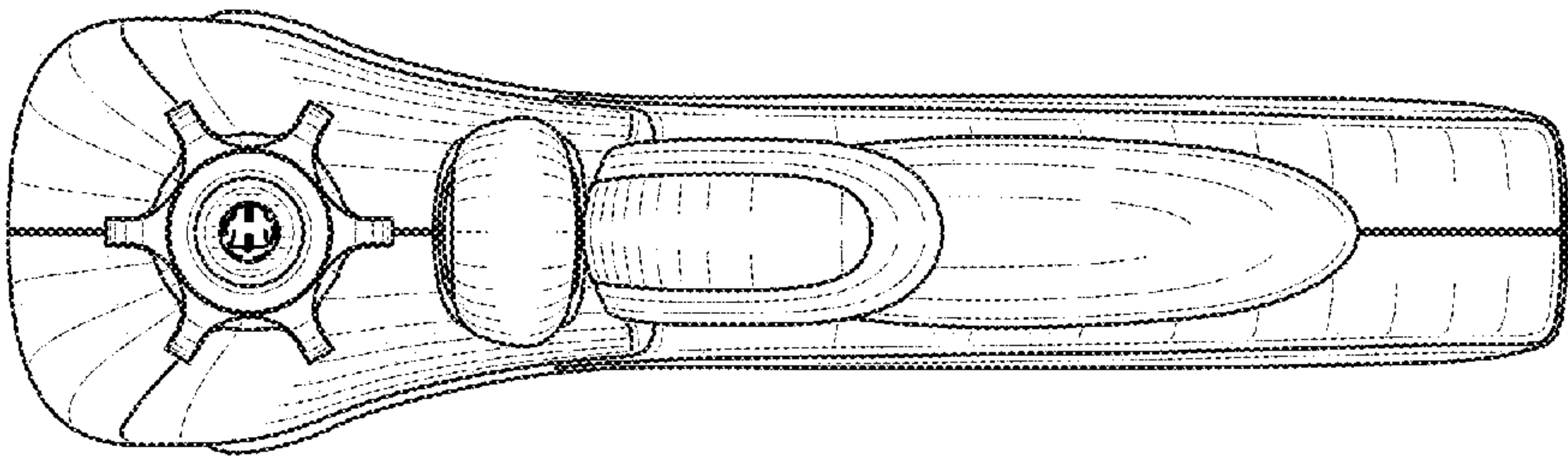


FIG. 5

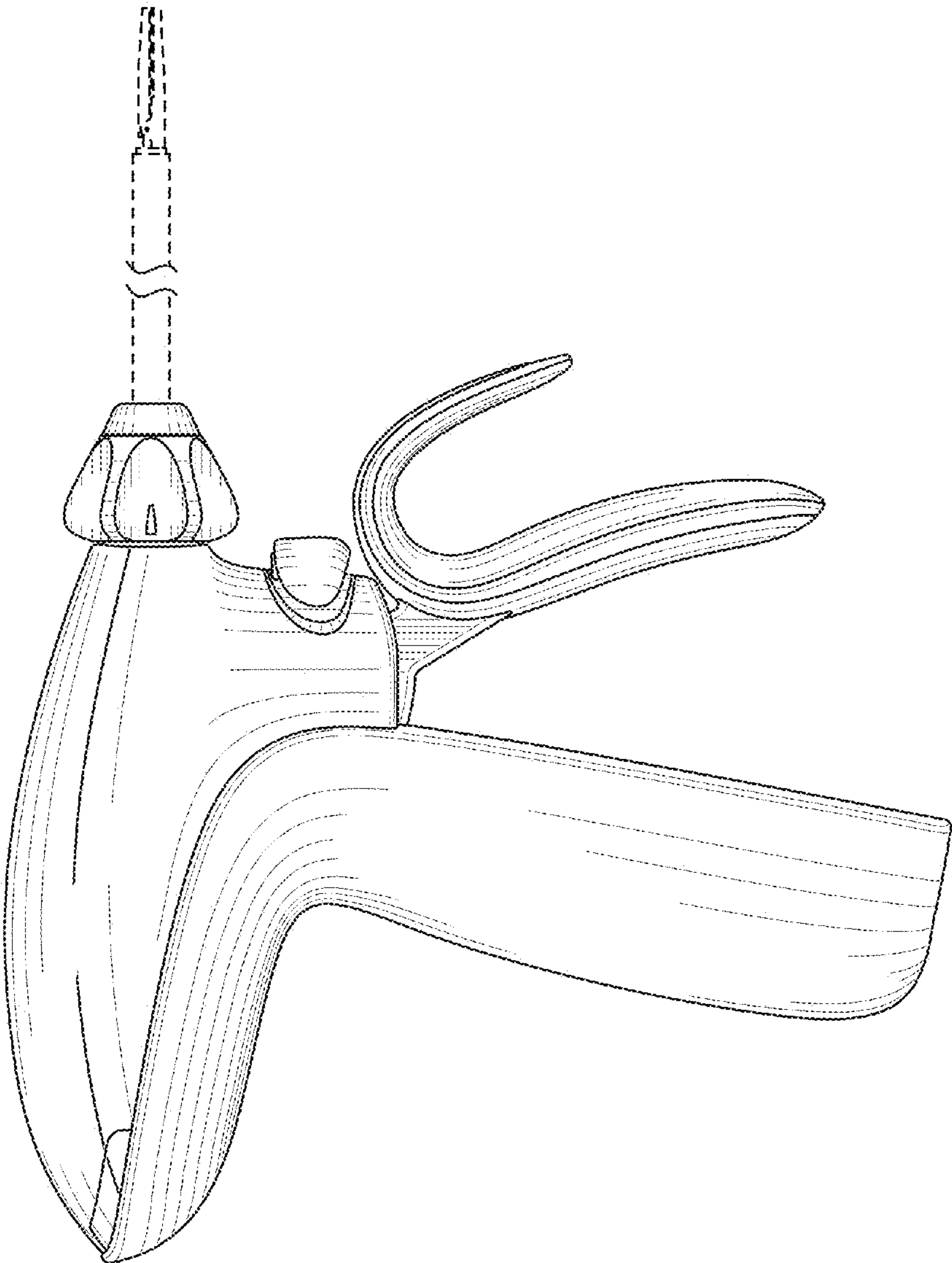


FIG. 4

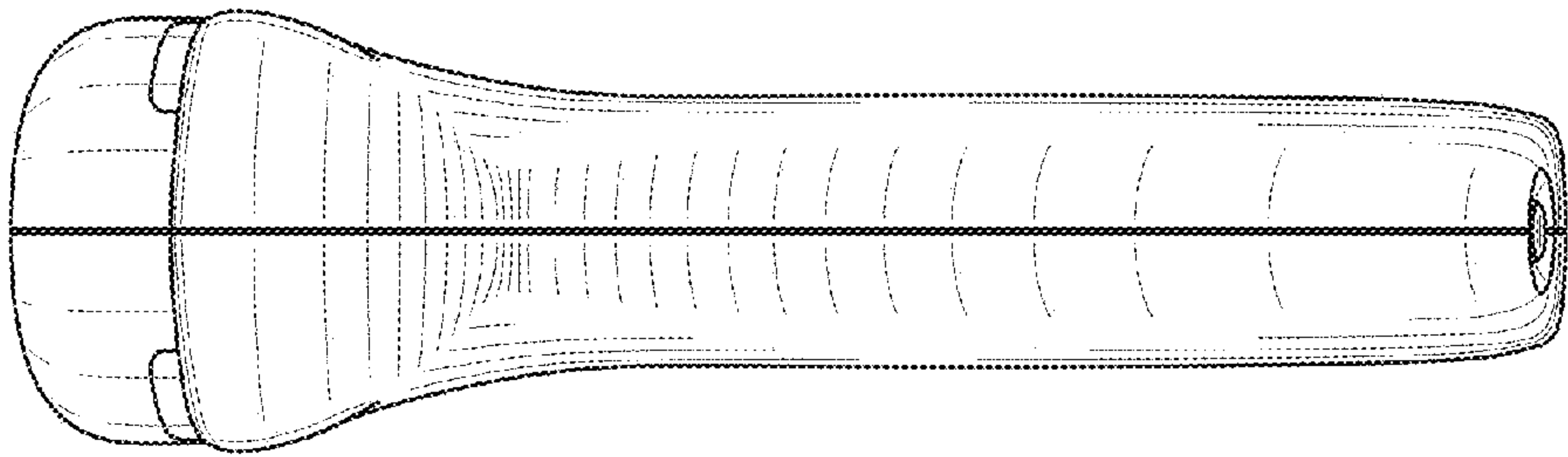


FIG. 7

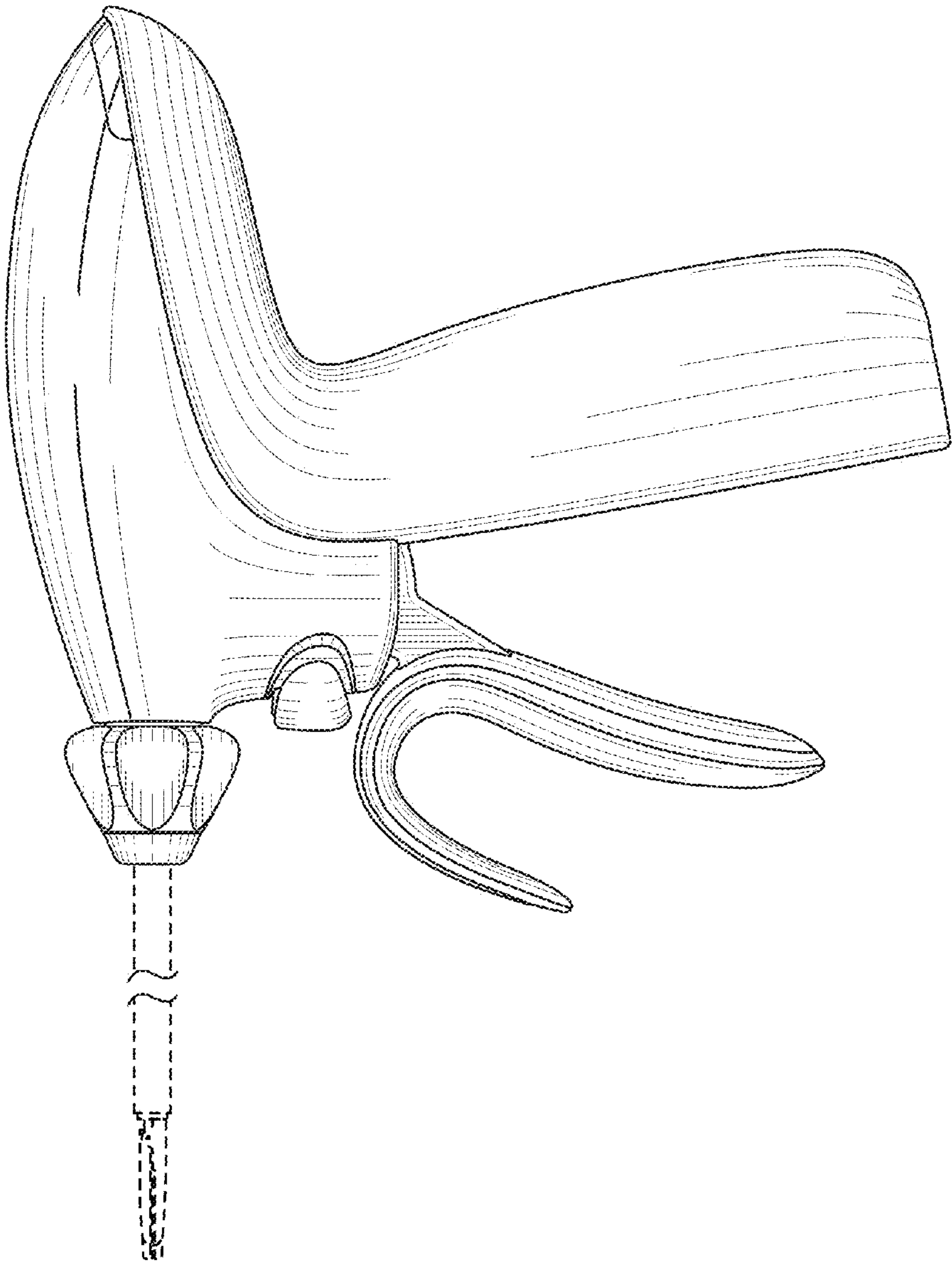


FIG. 6

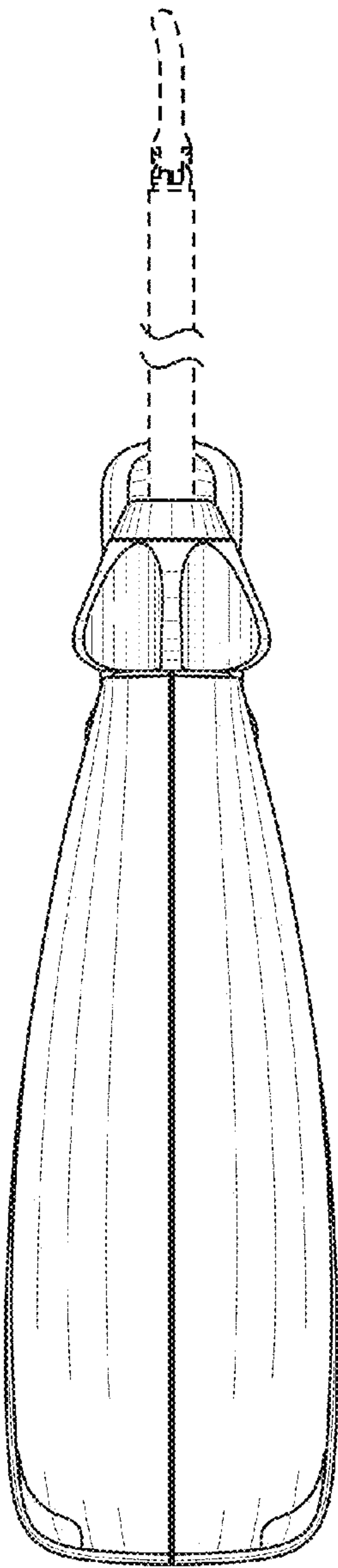


FIG. 8

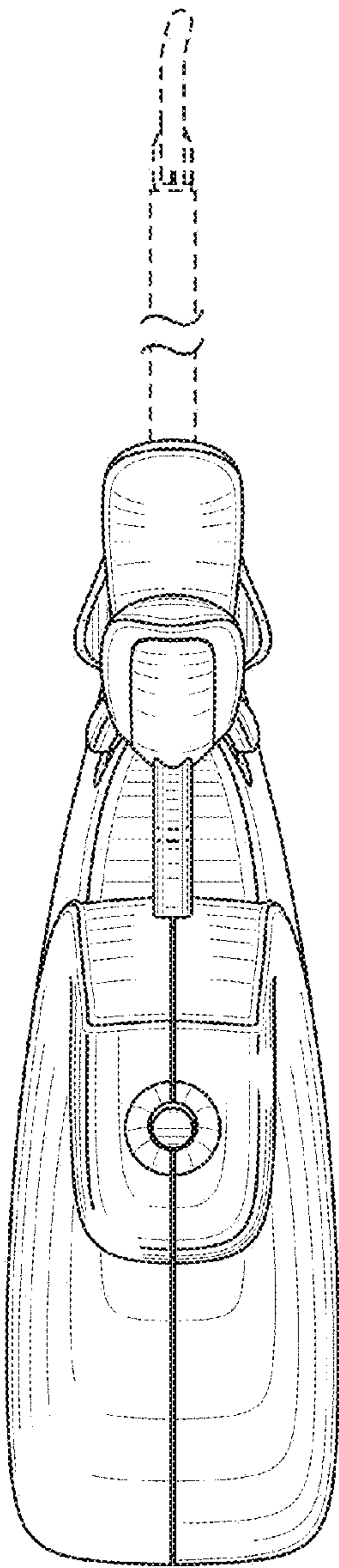


FIG. 9