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(12) **United States Design Patent** (10) **Patent No.:** **US D977,643 S**
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(54) **HUMERAL STEM IMPLANT**
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(72) Inventors: **Robert J. Ball**, West Olive, MI (US); **Donald E. Running**, Missoula, MT (US)

5,030,219 A 7/1991 Matsen, III et al.
5,032,132 A 7/1991 Matsen, III et al.
5,080,673 A 1/1992 Burkhead et al.
5,108,440 A 4/1992 Grundei
5,282,865 A 2/1994 Dong
5,314,479 A 5/1994 Rockwood, Jr. et al.
5,314,489 A 5/1994 Hoffman et al.
5,344,458 A 9/1994 Bonutti

(Continued)

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FOREIGN PATENT DOCUMENTS

(**) Term: **15 Years**

DE 4220217 A1 12/1993
DE 10164328 A1 7/2003

(Continued)

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(52) **U.S. Cl.**
USPC **D24/155**

(58) **Field of Classification Search**
USPC D24/155
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A61F 2/34; A61F 2002/3631; A61F
2002/30332; A61F 2002/365; A61F
2002/30507; A61F 2310/00029
See application file for complete search history.

OTHER PUBLICATIONS

Biomet, "Absolute™ Bi-Polar." 2001 in 2 pages.
(Continued)

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(57) **CLAIM**

The ornamental design for a humeral stem implant, as shown and described.

(56) **References Cited**

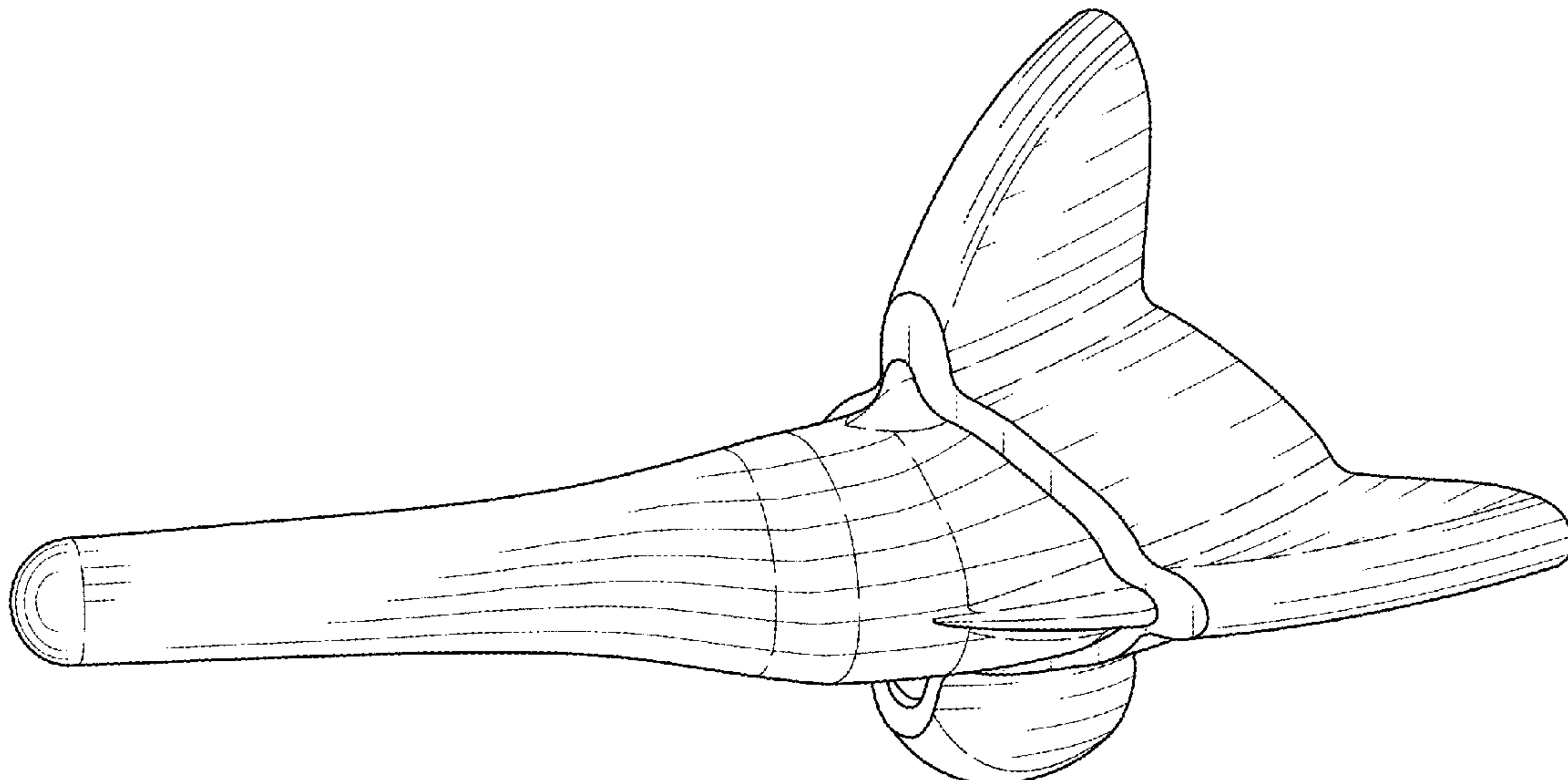
DESCRIPTION

U.S. PATENT DOCUMENTS

2,781,758 A 2/1957 Chevalier
3,979,778 A 9/1976 Stroot
4,003,095 A 1/1977 Gristina
4,045,826 A 9/1977 Stroot
4,206,517 A 6/1980 Pappas et al.
4,261,062 A 4/1981 Amstutz et al.
4,404,693 A 9/1983 Zweymuller
4,550,450 A 11/1985 Kinnett
4,865,605 A 9/1989 Dines et al.
4,964,865 A 10/1990 Burkhead et al.
4,986,833 A 1/1991 Worland
4,990,161 A 2/1991 Kampner

FIG. 1 is a side perspective view of a first embodiment of a humeral stem implant embodying the new design;
FIG. 2 is a top view thereof;
FIG. 3 is a bottom view thereof;
FIG. 4 is a front view thereof;
FIG. 5 is a back view thereof;
FIG. 6 is a first side view thereof; and,
FIG. 7 is a second side view thereof.
Broken lines are used to illustrate features of the humeral stem implant which form no part of the claimed design.

1 Claim, 7 Drawing Sheets



(56)

References Cited

U.S. PATENT DOCUMENTS

5,358,525 A	10/1994	Fox et al.	2002/0138148 A1	9/2002	Hyde, Jr. et al.
5,370,694 A	12/1994	Davidson	2003/0100952 A1	5/2003	Rockwood, Jr. et al.
5,437,677 A	8/1995	Shearer et al.	2003/0114933 A1	6/2003	Bouttens et al.
5,462,563 A	10/1995	Shearer et al.	2003/0144738 A1	7/2003	Rogalski
5,489,309 A	2/1996	Lackey et al.	2003/0158605 A1	8/2003	Tournier
5,489,310 A	2/1996	Mikhail	2003/0163202 A1	8/2003	Lakin
5,507,819 A	4/1996	Wolf	2003/0236572 A1	12/2003	Bertram, III
5,514,184 A	5/1996	Doi	2004/0002766 A1	1/2004	Hunter et al.
5,549,683 A	8/1996	Bonutti	2004/0039449 A1	2/2004	Tournier
5,593,448 A	1/1997	Dong	2004/0039451 A1	2/2004	Southworth
5,702,486 A	12/1997	Craig et al.	2004/0059424 A1	3/2004	Guederian et al.
5,755,811 A	5/1998	Tanamal et al.	2004/0064187 A1	4/2004	Ball et al.
5,769,856 A	6/1998	Dong et al.	2004/0064189 A1	4/2004	Maroney et al.
5,800,551 A	9/1998	Williamson et al.	2004/0064190 A1	4/2004	Ball et al.
5,928,285 A	7/1999	Bigliani et al.	2004/0107002 A1	6/2004	Katsuya
6,228,119 B1	5/2001	Ondria et al.	2004/0122519 A1	6/2004	Wiley et al.
6,231,913 B1	5/2001	Schwimmer et al.	2004/0122520 A1	6/2004	Lipman et al.
6,290,726 B1	9/2001	Pope et al.	2004/0167629 A1	8/2004	Geremakis et al.
6,334,874 B1	1/2002	Tornier et al.	2004/0167630 A1	8/2004	Rolston
6,364,910 B1	4/2002	Shultz et al.	2004/0193168 A1	9/2004	Long et al.
6,368,353 B1	4/2002	Arcand	2004/0193275 A1	9/2004	Long et al.
6,379,386 B1	4/2002	Resch et al.	2004/0193276 A1	9/2004	Maroney et al.
6,458,136 B1	10/2002	Allard et al.	2004/0193277 A1	9/2004	Long et al.
6,514,287 B2	2/2003	Ondria et al.	2004/0193278 A1	9/2004	Maroney et al.
6,520,964 B2	2/2003	Tallarida et al.	2004/0220674 A1	11/2004	Pria
6,589,281 B2	7/2003	Hyde, Jr.	2004/0230311 A1	11/2004	Cyprien et al.
6,610,067 B2	8/2003	Tallarida et al.	2004/0260398 A1	12/2004	Kelman
6,620,197 B2	9/2003	Maroney	2005/0043805 A1	2/2005	Chudik
6,673,115 B2	1/2004	Resch et al.	2005/0049709 A1	3/2005	Tornier
6,679,916 B1	1/2004	Frankie et al.	2005/0065612 A1	3/2005	Winslow
6,679,917 B2	1/2004	Ek	2005/0107882 A1	5/2005	Stone et al.
6,699,289 B2	3/2004	Iannotti et al.	2005/0119531 A1	6/2005	Sharratt
6,709,463 B1	3/2004	Pope et al.	2006/0036328 A1	2/2006	Parrott et al.
6,712,823 B2	3/2004	Grusin et al.	2006/0069443 A1	3/2006	Deffenbaugh et al.
6,761,740 B2	7/2004	Tornier	2006/0069444 A1	3/2006	Deffenbaugh et al.
6,783,549 B1	8/2004	Stone et al.	2006/0069445 A1	3/2006	Ondria et al.
6,875,234 B2	4/2005	Lipman et al.	2007/0038302 A1	2/2007	Shultz et al.
7,011,686 B2	3/2006	Ball et al.	2007/0050042 A1	3/2007	Dietz et al.
7,044,973 B2	5/2006	Rockwood et al.	2007/0055380 A1	3/2007	Berelsman et al.
7,238,089 B2	7/2007	Camino et al.	2007/0112433 A1	5/2007	Frederick et al.
7,238,208 B2	7/2007	Camino et al.	2007/0225817 A1	9/2007	Ruebelt et al.
7,294,149 B2	11/2007	Hozack et al.	2007/0225818 A1	9/2007	Ruebelt et al.
7,329,284 B2	2/2008	Maroney et al.	2008/0021564 A1	1/2008	Gunther
7,465,319 B2	12/2008	Tornier	2008/0082175 A1	4/2008	Holovacs et al.
7,517,364 B2	4/2009	Long et al.	2008/0234820 A1	9/2008	Felt et al.
7,618,462 B2	11/2009	Ek	2009/0105837 A1	4/2009	LaFosse et al.
7,678,151 B2	3/2010	Ek	2009/0125113 A1	5/2009	Guederian et al.
7,749,278 B2	7/2010	Frederick et al.	2009/0228112 A1	9/2009	Clark et al.
7,776,098 B2	8/2010	Murphy	2009/0287309 A1	11/2009	Walch et al.
7,892,287 B2	2/2011	Deffenbaugh	2010/0087876 A1	4/2010	Gunther
7,922,769 B2	4/2011	Deffenbaugh et al.	2010/0087877 A1	4/2010	Gunther
8,007,538 B2	8/2011	Gunther	2010/0114326 A1	5/2010	Winslow et al.
8,038,719 B2	10/2011	Gunther	2010/0161066 A1	6/2010	Ionetti et al.
8,048,161 B2	11/2011	Guederian et al.	2010/0274360 A1	10/2010	Gunther
8,048,167 B2	11/2011	Dietz et al.	2011/0029089 A1	2/2011	Giuliani et al.
8,529,629 B2	9/2013	Angibaud et al.	2011/0144758 A1	6/2011	Deffenbaugh
8,778,028 B2	7/2014	Gunther et al.	2011/0276144 A1	11/2011	Wirth et al.
8,840,671 B2	9/2014	Ambacher	2011/0313533 A1	12/2011	Gunther
8,920,508 B2	12/2014	Iannotti et al.	2012/0172996 A1*	7/2012	Ries A61F 2/3672 623/23.44
8,940,054 B2	1/2015	Wiley et al.	2012/0209392 A1	8/2012	Angibuad et al.
9,381,086 B2	7/2016	Ries et al.	2013/0060346 A1	3/2013	Collins
9,610,166 B2	4/2017	Gunther et al.	2013/0194353 A1	8/2013	Hirai et al.
9,693,784 B2	7/2017	Gunther	2013/0197651 A1	8/2013	McDaniel et al.
9,867,710 B2	1/2018	Pria et al.	2014/0107794 A1	4/2014	Deffenbaugh et al.
10,143,559 B2	12/2018	Ries et al.	2014/0253641 A1	9/2014	Furuya
10,492,926 B1	12/2019	Gunther	2015/0223941 A1	8/2015	Lang
10,722,373 B2*	7/2020	Hodorek A61F 2/4014	2015/0265411 A1	9/2015	Deransart et al.
10,966,788 B2*	4/2021	Britton A61B 34/10	2017/0056187 A1	3/2017	Humphrey et al.
2001/0011192 A1	8/2001	Ondria et al.	2017/0071749 A1	3/2017	Lappin et al.
2001/0037153 A1	11/2001	Rockwood, Jr. et al.	2017/0360456 A1	6/2017	Gunther
2001/0047210 A1	11/2001	Wolf	2017/0202674 A1	7/2017	Gunther et al.
2002/0082702 A1	6/2002	Resch et al.	2018/0193150 A1	7/2018	Winslow et al.
2002/0087213 A1	7/2002	Bertram, III	2018/0368982 A1	12/2018	Ball
2002/0095214 A1	7/2002	Hyde, Jr.			
2002/0111689 A1	8/2002	Hyde, Jr. et al.			

(56)

References Cited

U.S. PATENT DOCUMENTS

2020/0315808 A1* 10/2020 Goldberg A61F 2/4014
 2021/0038401 A1* 2/2021 Ball A61F 2/4014

FOREIGN PATENT DOCUMENTS

EP	0299889	A2	1/1989
EP	0339530	A2	11/1989
EP	1464305	A1	10/2004
EP	570816	A1	9/2005
EP	1858453		11/2007
EP	1952788	A1	8/2008
EP	2083759	B1	9/2015
FR	2248820	A1	5/1975
FR	2567019	A1	1/1986
FR	2695313	A1	3/1994
JP	2013-158909		8/2013
JP	2014-515651		7/2014
WO	WO 2006/093763	A3	8/2006
WO	WO 2008/011078	A2	1/2008
WO	WO 2009/071940	A1	6/2009
WO	WO 2011/112425		9/2011
WO	WO 2014/0195909		12/2014
WO	WO 2018/191420		10/2018
WO	WO 2019/178104	A1	9/2019
WO	WO 2019/213073		11/2019

OTHER PUBLICATIONS

Biomet, “Copeland™ Humeral Resurfacing Head, Interlok®/HA Coated Implant Information,” 2003 in 1 page.
 Biomet, “Copeland™ Humeral Resurfacing Head,” 2001 in 12 pages.
 Biomet, “Copeland™ Humeral Resurfacing Head, Macrobond™ Implant Information,” 2003 in 1 page.
 Biomet, “Copeland™ Humeral Resurfacing Head, Surgical Technique,” 2003 in 2 pages.
 Boileau et al., “The Three-Dimensional Geometry of the Proximal Humerus. Implications for Surgical Technique and Prosthetic Design,” J. Bone Joint Surg. Br. 79: 857-865, 1997.

Braun, et al., Modular Short-stem Prosthesis in Total Hip Arthroplasty: Implant Positioning and the Influence of Navigation, ORTHO SuperSite (Oct. 2007) in 8 pages.
 Clavert et al. Glenoid resurfacing: what are the limits to asymmetric reaming for posterior erosion? J. Shoulder and Elbow Surg. Nov./Dec. 2007: 843-848.
 Dalia Pria, Paolo. Slide presentation, entitled “Shoulder Prosthesis Design and Evolution”, to the Naples International Shoulder Congress in Italy (2000) in 55 pages.
 DePuy, “Global C.A.P., Surgical Technique Resurfacing Humeral Head Implant,” 2004 in 23 pages.
 Inset Mini-glenoid Brochure, Ascension Orthopedics, 2011, 4 pages.
 Karduna et al. Glenohumeral Joint Translations before and after Total Shoulder Arthroplasty. J. Bone and Joint Surg. 79(8) (1997): 1166-1174.
 Levy et al., “Cementless Surface Replacement Arthroplasty of the Should. 5- to 10-year Results with the Copeland Mark-2 Prosthesis,” J. Bone Joint Surg. Br. 83: 213-221, 2001.
 Lima-Lto Medical Systems Glenoidi/Glenoids catalogue (2001) in 1 page.
 Lima-Lto Miniglenoide Cementata document 7560.50.030 (1999) in 1 page.
 Panisello, et al., Bone remodelling after total hip arthroplasty using an uncemented anatomic femoral stem: a three-year prospective study using bone densitometry, J Ortho Surg 14(1):32-37 (2006).
 Redacted letter from a third party dated Aug. 24, 2012 in 2 pages.
 Ross, Mark and Duke, Phillip, “Early Experience In The Use of a New Glenoid Resurfacing Technique” Glenoid Presentation, SESA Nov. 4, 2006, Session 4/0800-0930 p. 93 in 1 page.
 Statement of Grounds and Particulars of Opposition for Australian Patent Application No. 2006218936 dated Oct. 5, 2012 in 8 pages.
 Tight Fit Tools, Right Angle Drill Attachment, Serial No. 00400 www.tightfittools.com/riganat.html in 1 page.
 Titan(TM) Modular Shoulder System Brochure, 2011, available at http://www.ascensionortho.com/Assets/PDF/TitanModular/TITANModularShoulder_Brochure-revD.pdf (2 pages).
 Tournier et al., Enhancement of Glenoid Prosthesis Anchorage using Burying Technique. Techniques in Shoulder & Elbow Surgery 9(1)(2008): 35-42.
 Wang et al., Biomechanical Evaluation of a Novel Glenoid Design in Total Shoulder Arthroplasty. J. Shoulder & Elbow Surgery (2005) 15: 129S-140S.

* cited by examiner

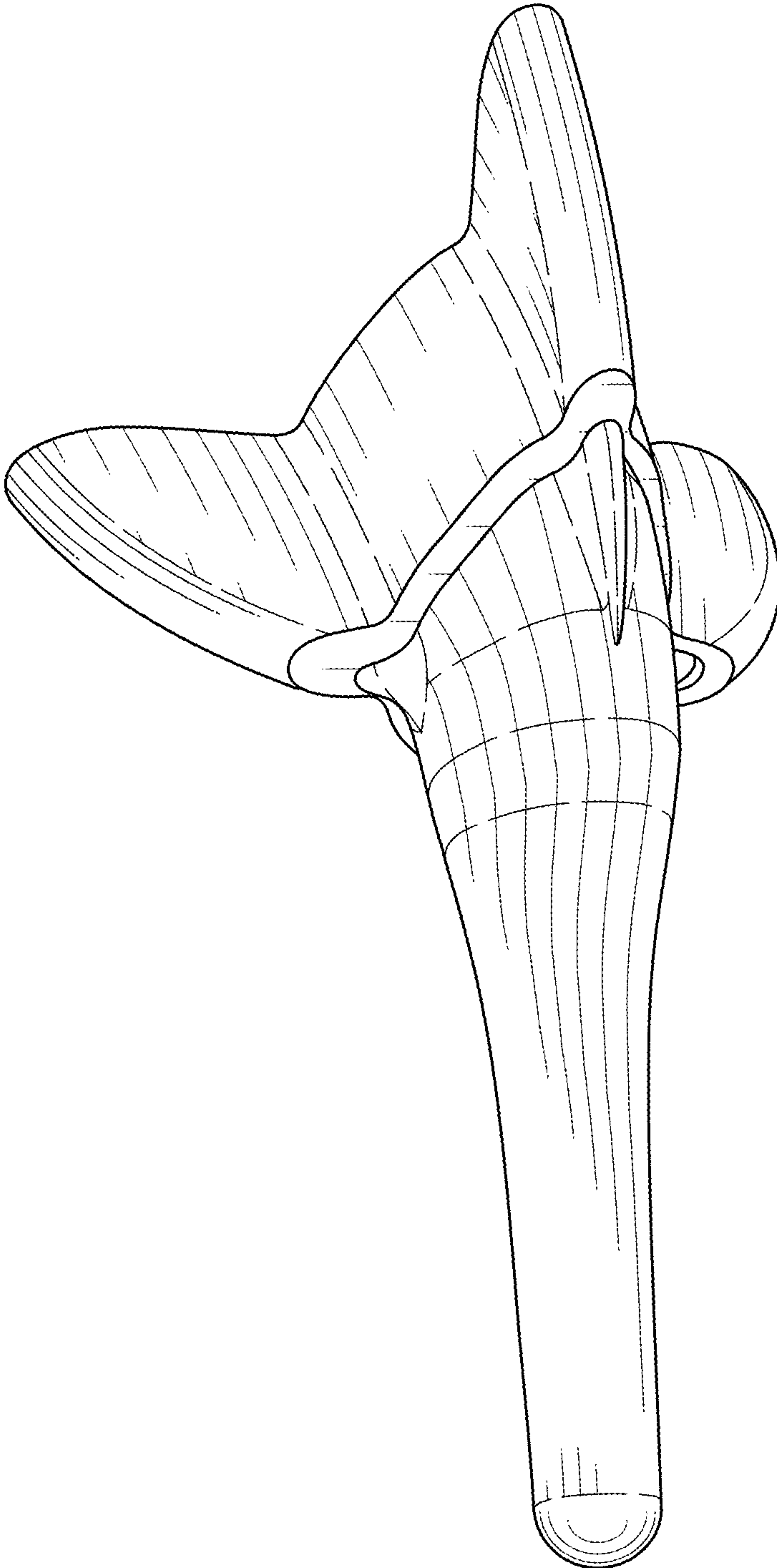


FIG.1

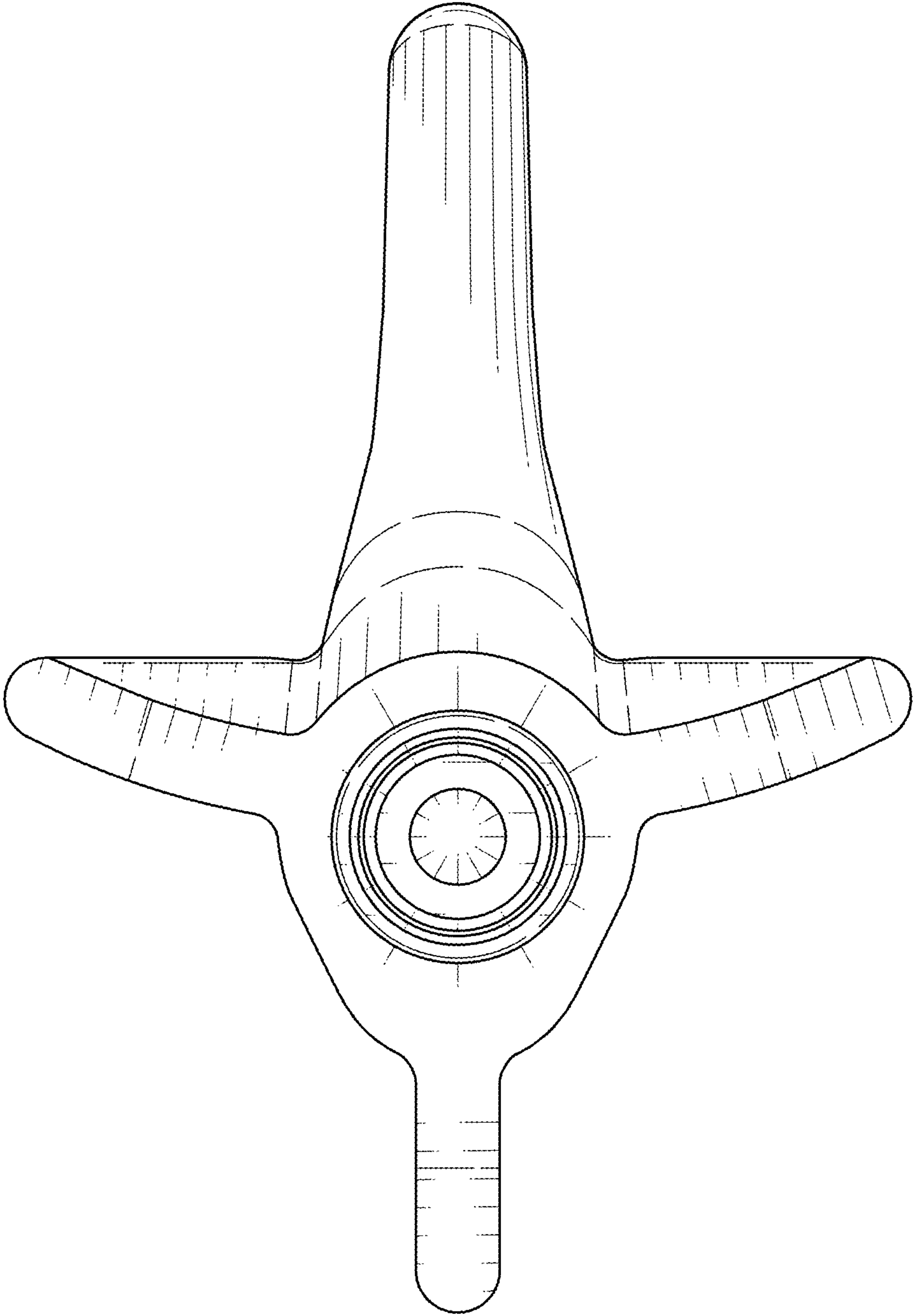


FIG. 2

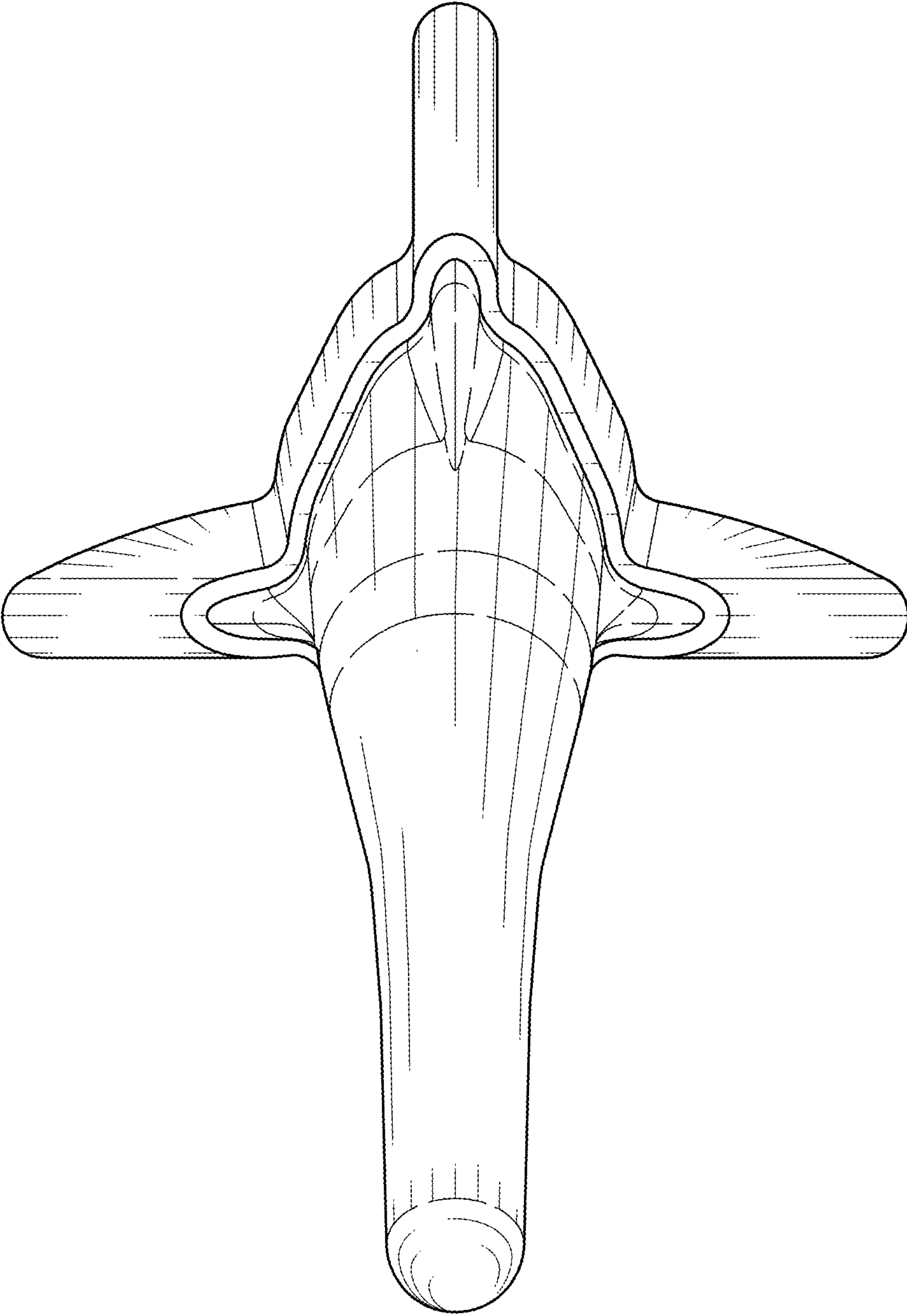


FIG. 3

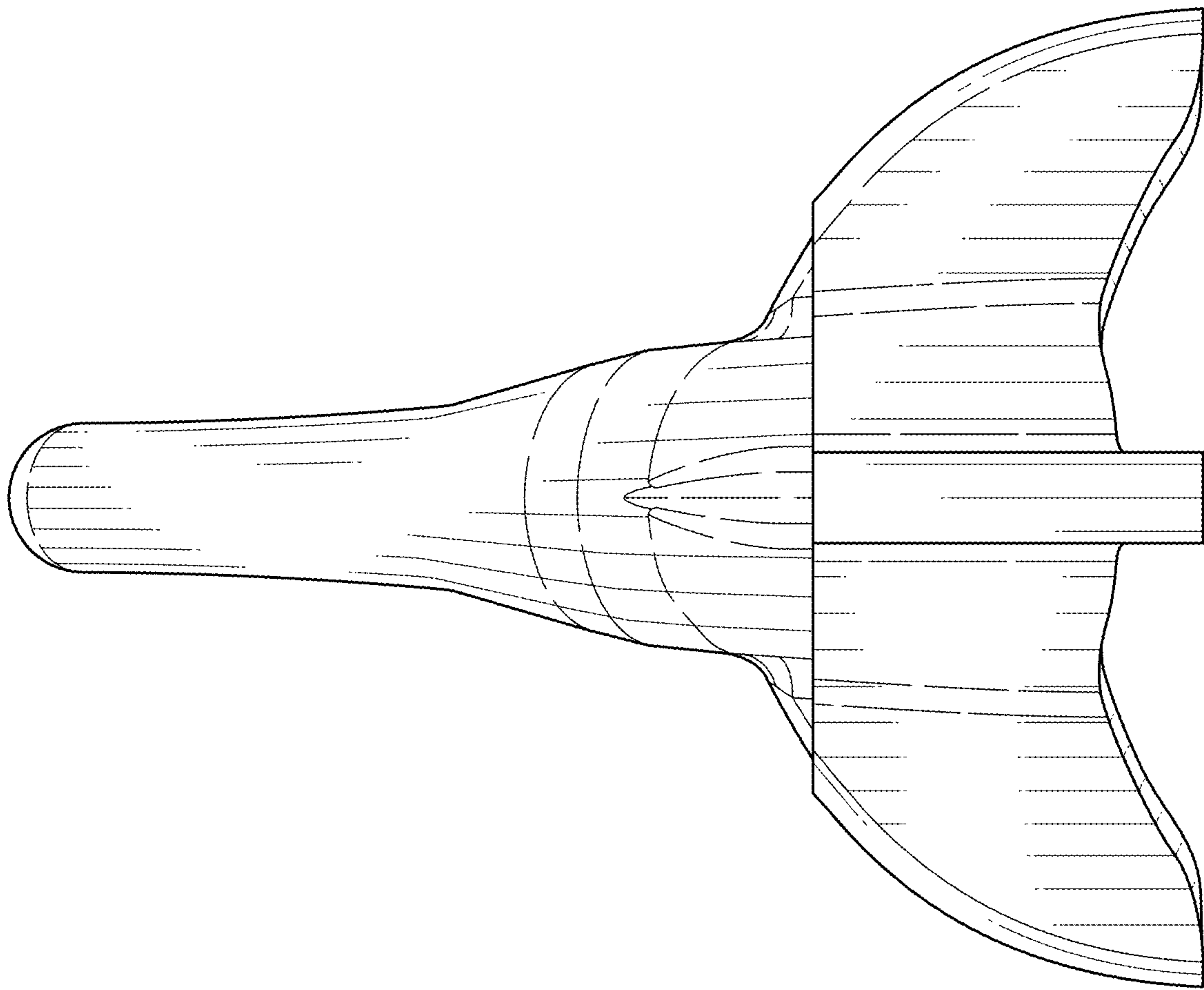


FIG. 4

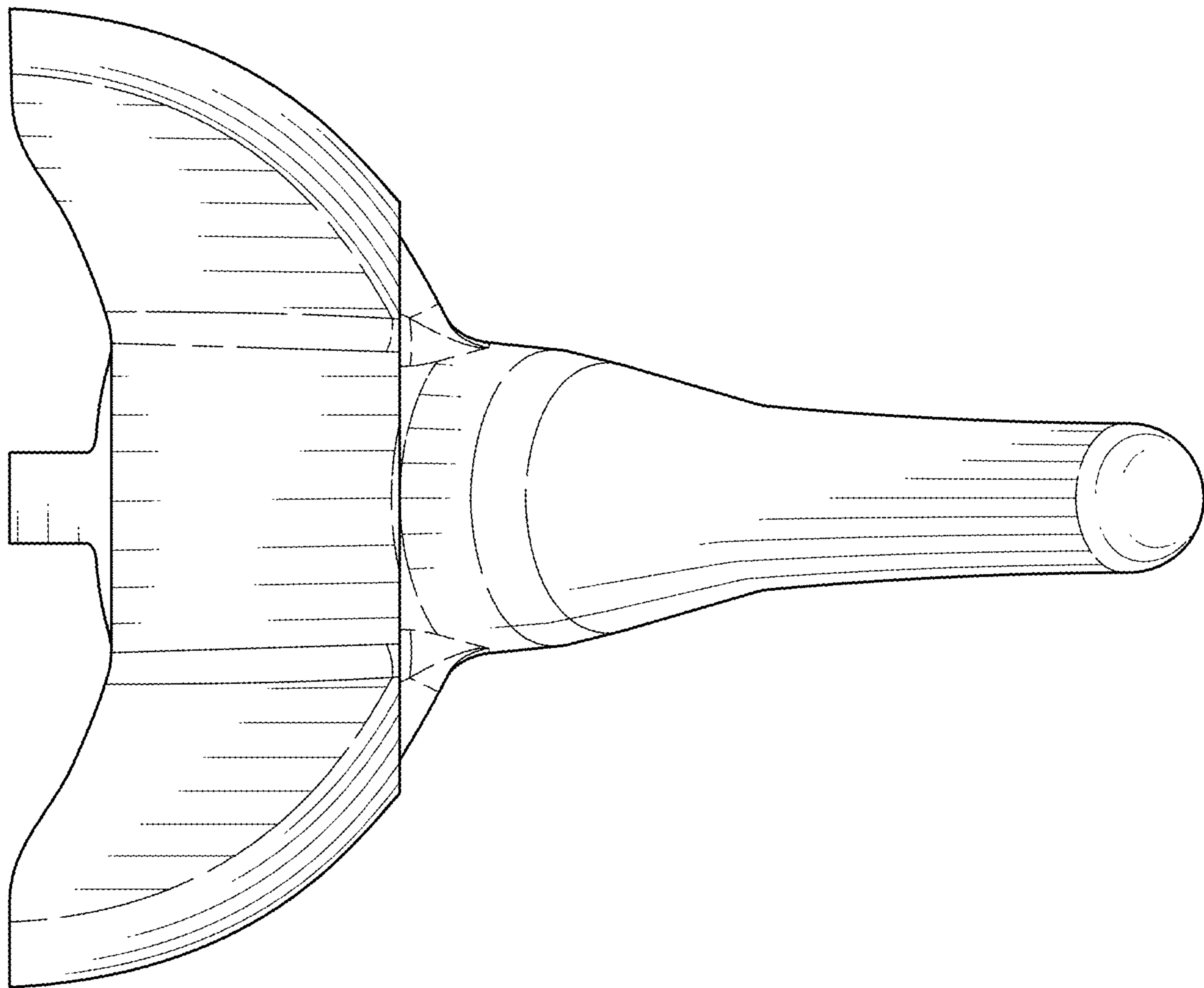


FIG. 5

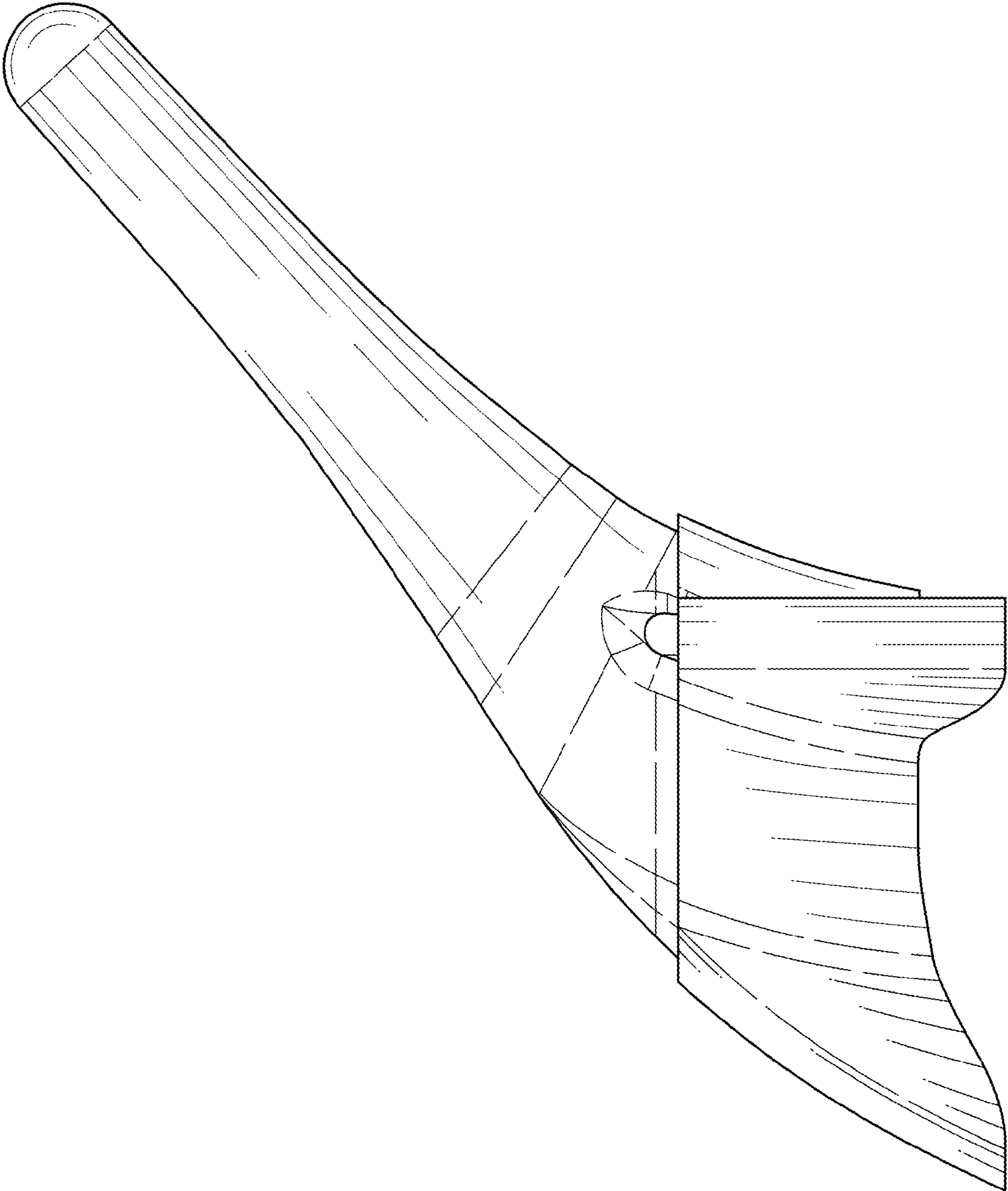


FIG. 6

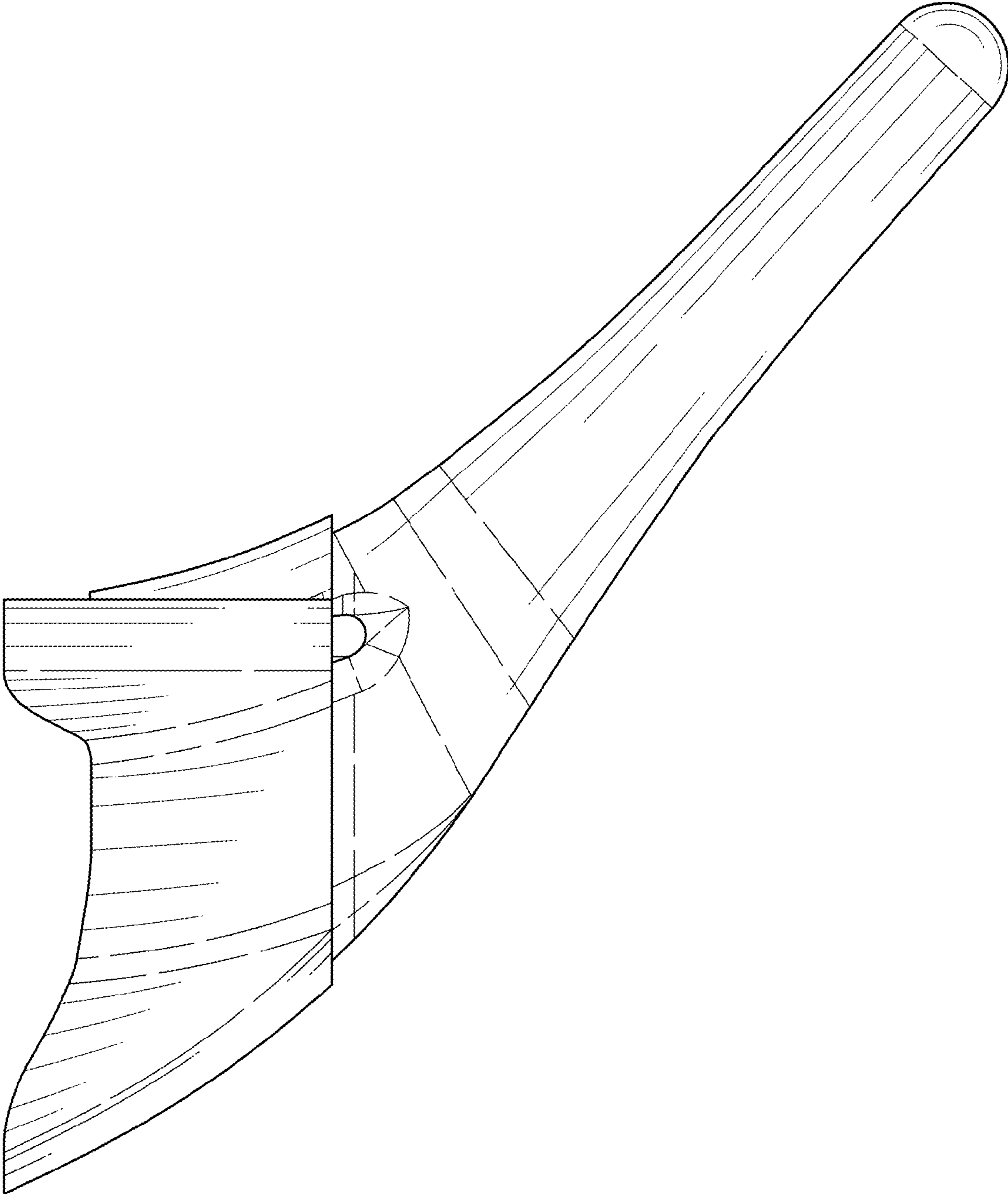


FIG. 7