



US00D889653S

(12) **United States Design Patent** (10) **Patent No.:** **US D889,653 S**
Erzberger et al. (45) **Date of Patent:** **** Jul. 7, 2020**

(54) **STENT HAVING TAPERED STRUTS**

(71) Applicant: **St. Jude Medical, Cardiology Division, Inc., St. Paul, MN (US)**

(72) Inventors: **Gary Erzberger, Minneapolis, MN (US); Kristen T. Morin, Saint Paul, MN (US)**

(73) Assignee: **St. Jude Medical, Cardiology Division, Inc., St. Paul, MN (US)**

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

(21) Appl. No.: **29/604,136**

(22) Filed: **May 15, 2017**

(51) **LOC (12) Cl.** **24-03**

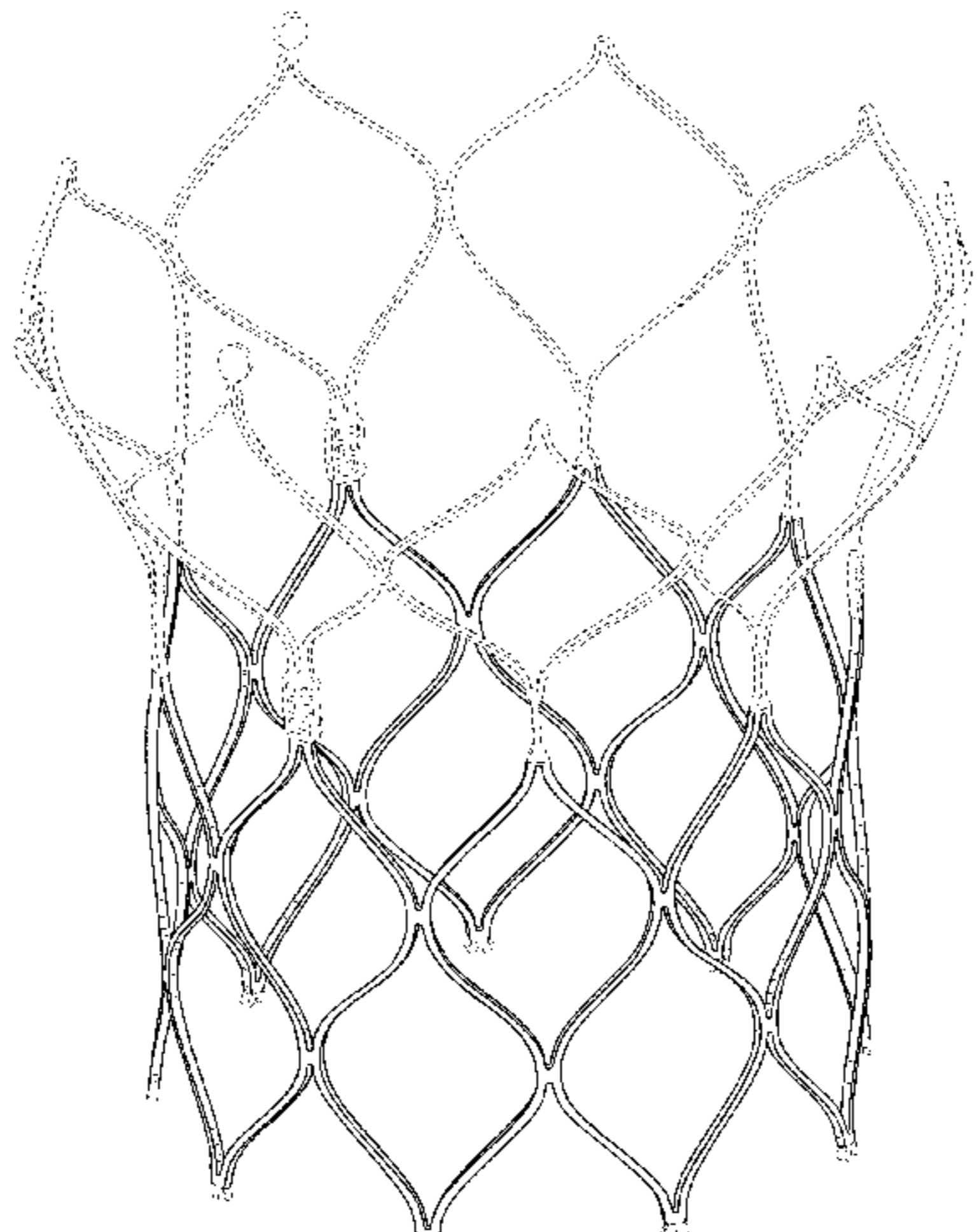
(52) **U.S. Cl.**
 USPC **D24/155**

(58) **Field of Classification Search**
 USPC D24/155
 CPC A61F 2/07; A61F 2/90; A61F 2/958; A61F 2002/016; A61F 2002/072; A61F 2002/075; A61F 2002/91541; A61F 2220/0075; A61F 2230/0069
 See application file for complete search history.

6,077,297 A	6/2000	Robinson et al.
6,083,257 A	7/2000	Taylor et al.
6,090,140 A	7/2000	Gabbay
6,214,036 B1	4/2001	Letendre et al.
6,264,691 B1	7/2001	Gabbay
6,267,783 B1	7/2001	Letendre et al.
6,368,348 B1	4/2002	Gabbay
6,419,695 B1	7/2002	Gabbay
6,458,153 B1	10/2002	Bailey et al.
6,468,660 B2	10/2002	Ogle et al.
6,488,702 B1	12/2002	Besselink
6,517,576 B2	2/2003	Gabbay
6,533,810 B2	3/2003	Hankh et al.
6,582,464 B2	6/2003	Gabbay
6,610,088 B1	8/2003	Gabbay
6,623,518 B2	9/2003	Thompson et al.
6,652,578 B2	11/2003	Bailey et al.
6,685,625 B2	2/2004	Gabbay
6,716,244 B2	4/2004	Klaco
6,719,789 B2	4/2004	Cox
6,730,118 B2	5/2004	Spenser et al.
6,783,556 B1	8/2004	Gabbay
6,790,230 B2	9/2004	Beyersdorf et al.
6,814,746 B2	11/2004	Thompson et al.
6,830,584 B1	12/2004	Seguin
6,869,444 B2	3/2005	Gabbay
6,893,460 B2	5/2005	Spenser et al.
6,908,481 B2	6/2005	Cribier
6,951,573 B1	10/2005	Dilling
7,018,406 B2	3/2006	Seguin et al.
7,025,780 B2	4/2006	Gabbay
7,137,184 B2	11/2006	Schreck
7,147,661 B2	12/2006	Chobotov et al.
7,160,322 B2	1/2007	Gabbay
7,195,641 B2	3/2007	Palmaz et al.
7,247,167 B2	7/2007	Gabbay
7,267,686 B2	9/2007	DiMatteo et al.
7,276,078 B2	10/2007	Spenser et al.
7,311,730 B2	12/2007	Gabbay
7,320,704 B2	1/2008	Lashinski et al.
7,329,278 B2	2/2008	Seguin et al.
7,374,573 B2	5/2008	Gabbay
7,381,218 B2	6/2008	Schreck
7,381,219 B2	6/2008	Salahieh et al.
7,452,371 B2	11/2008	Pavcnik et al.
7,510,572 B2	3/2009	Gabbay
7,510,575 B2	3/2009	Spenser et al.
7,524,331 B2	4/2009	Birdsall
7,534,261 B2	5/2009	Friedman
RE40,816 E	6/2009	Taylor et al.
7,585,321 B2	9/2009	Cribier
7,628,805 B2	12/2009	Spenser et al.
7,682,390 B2	3/2010	Seguin

(56) **References Cited**
 U.S. PATENT DOCUMENTS

3,657,744 A	4/1972	Ersek
4,275,469 A	6/1981	Gabbay
4,491,986 A	1/1985	Gabbay
4,759,758 A	7/1988	Gabbay
4,878,906 A	11/1989	Lindemann et al.
4,922,905 A	5/1990	Strecker
4,994,077 A	2/1991	Dobben
5,411,552 A	5/1995	Andersen et al.
5,415,664 A	5/1995	Pinchuk
5,480,423 A	1/1996	Ravenscroft et al.
5,843,167 A	12/1998	Dwyer et al.
5,855,601 A	1/1999	Bessler et al.
5,935,163 A	8/1999	Gabbay
5,961,549 A	10/1999	Nguyen et al.
6,045,576 A	4/2000	Starr et al.



US D889,653 S

7,708,775 B2	5/2010	Rowe et al.		8,764,820 B2	7/2014	Dehdashtian et al.
7,731,742 B2	6/2010	Schlick et al.		8,784,481 B2 *	7/2014	Alkhatib A61F 2/2418
7,748,389 B2	7/2010	Salahieh et al.				623/2.18
7,780,725 B2	8/2010	Haug et al.		8,795,357 B2	8/2014	Yohanan et al.
7,799,069 B2	9/2010	Bailey et al.		8,801,776 B2	8/2014	House et al.
7,803,185 B2	9/2010	Gabbay		8,808,356 B2	8/2014	Braido et al.
7,824,442 B2	11/2010	Salahieh et al.		8,828,078 B2	9/2014	Salahieh et al.
7,837,727 B2	11/2010	Goetz et al.		8,834,563 B2	9/2014	Righini
7,846,203 B2	12/2010	Cribier		8,840,663 B2	9/2014	Salahieh et al.
7,846,204 B2	12/2010	Letac et al.		8,876,894 B2	11/2014	Tuval et al.
7,892,281 B2	2/2011	Seguin et al.		8,876,895 B2	11/2014	Tuval et al.
7,914,569 B2	3/2011	Nguyen et al.		8,940,040 B2	1/2015	Shahriari
7,959,666 B2	6/2011	Salahieh et al.		8,945,209 B2	2/2015	Bonyuet et al.
7,959,672 B2	6/2011	Salahieh et al.		8,961,595 B2	2/2015	Alkhatib
7,972,378 B2	7/2011	Tabor et al.		8,974,523 B2	3/2015	Thill et al.
7,988,724 B2	8/2011	Salahieh et al.		8,974,524 B2	3/2015	Yeung et al.
7,993,394 B2	8/2011	Hariton et al.		8,986,375 B2 *	3/2015	Garde A61F 2/2403
8,016,877 B2	9/2011	Seguin et al.				623/1.26
D648,854 S	11/2011	Braido		D730,520 S *	5/2015	Braido D24/155
8,048,153 B2	11/2011	Salahieh et al.		D730,521 S *	5/2015	Braido D24/155
8,052,741 B2	11/2011	Bruszewski et al.		D732,666 S *	6/2015	Nguyen A61F 2/2412
8,052,749 B2	11/2011	Salahieh et al.				D24/155
8,052,750 B2	11/2011	Tuval et al.		D755,384 S *	5/2016	Pesce D24/155
8,062,355 B2	11/2011	Figulla et al.		D802,764 S *	11/2017	Erzberger D24/155
8,075,611 B2	12/2011	Millwee et al.		D802,765 S *	11/2017	Erzberger D24/155
D652,926 S	1/2012	Braido		D802,766 S *	11/2017	Erzberger D24/155
D652,927 S *	1/2012	Braido A61F 2/91		2002/0036220 A1	3/2002	Gabbay
		D24/155		2003/0023303 A1	1/2003	Palmaz et al.
D653,341 S *	1/2012	Braido A61F 2/91		2003/0050694 A1	3/2003	Yang et al.
		D24/155		2003/0130726 A1	7/2003	Thorpe et al.
D653,342 S	1/2012	Braido et al.		2003/0236567 A1	12/2003	Elliot
D653,343 S	1/2012	Ness et al.		2004/0049262 A1	3/2004	Obermiller et al.
D654,169 S	2/2012	Braido		2004/0093075 A1	5/2004	Kuehne
D654,170 S	2/2012	Braido et al.		2004/0111111 A1	6/2004	Lin
8,137,398 B2	3/2012	Tuval et al.		2004/0210304 A1	10/2004	Seguin et al.
8,142,497 B2	3/2012	Friedman		2004/0260389 A1	12/2004	Case et al.
D660,432 S	5/2012	Braido		2005/0096726 A1	5/2005	Sequin et al.
D660,433 S *	5/2012	Braido A61F 2/91		2005/0137682 A1	6/2005	Justino
		D24/155		2005/0137695 A1	6/2005	Salahieh et al.
D660,967 S *	5/2012	Braido A61F 2/91		2005/0137697 A1	6/2005	Salahieh et al.
		D24/155		2005/0203605 A1	9/2005	Dolan
8,182,528 B2	5/2012	Salahieh et al.		2005/0240200 A1	10/2005	Bergheim
8,221,493 B2	7/2012	Boyle et al.		2005/0256566 A1	11/2005	Gabbay
8,230,717 B2	7/2012	Matonick		2006/0008497 A1	1/2006	Gabbay
8,231,670 B2	7/2012	Salahieh et al.		2006/0074484 A1	4/2006	Huber
8,252,051 B2	8/2012	Chau et al.		2006/0122692 A1	6/2006	Gilad et al.
8,308,798 B2	11/2012	Pintor et al.		2006/0149360 A1	7/2006	Schwammenthal et al.
8,313,525 B2	11/2012	Tuval et al.		2006/0161249 A1	7/2006	Realyvasquez et al.
8,323,335 B2	12/2012	Rowe et al.		2006/0173532 A1	8/2006	Flagle et al.
8,323,336 B2	12/2012	Hill et al.		2006/0178740 A1	8/2006	Stacchino et al.
8,343,213 B2	1/2013	Salahieh et al.		2006/0195180 A1	8/2006	Kheradvar et al.
8,348,995 B2	1/2013	Tuval et al.		2006/0206202 A1	9/2006	Bonhoeffer et al.
8,348,996 B2	1/2013	Tuval et al.		2006/0241744 A1	10/2006	Beith
8,348,998 B2	1/2013	Pintor et al.		2006/0241745 A1	10/2006	Solem
8,366,769 B2	2/2013	Huynh et al.		2006/0259120 A1	11/2006	Vongphakdy et al.
8,403,983 B2	3/2013	Quadri et al.		2006/0259137 A1	11/2006	Artof et al.
8,408,214 B2	4/2013	Spenser		2006/0265056 A1	11/2006	Nguyen et al.
8,414,643 B2	4/2013	Tuval et al.		2006/0276813 A1	12/2006	Greenberg
8,425,593 B2	4/2013	Braido et al.		2006/0276874 A1	12/2006	Wilson et al.
8,449,599 B2	5/2013	Chau et al.		2007/0010876 A1	1/2007	Salahieh et al.
8,449,604 B2	5/2013	Moaddeb et al.		2007/0027534 A1	2/2007	Bergheim
8,454,686 B2	6/2013	Alkhatib		2007/0043435 A1	2/2007	Seguin et al.
8,500,798 B2	8/2013	Rowe et al.		2007/0055358 A1	3/2007	Krolik et al.
8,568,474 B2	10/2013	Yeung et al.		2007/0067029 A1	3/2007	Gabbay
8,579,962 B2	11/2013	Salahieh et al.		2007/0093890 A1	4/2007	Eliassen et al.
8,579,966 B2	11/2013	Seguin et al.		2007/0100435 A1	5/2007	Case et al.
8,585,755 B2	11/2013	Chau et al.		2007/0118210 A1	5/2007	Pinchuk
8,591,575 B2	11/2013	Cribier		2007/0213813 A1	9/2007	Von Segesser et al.
8,597,349 B2	12/2013	Alkhatib		2007/0233228 A1	10/2007	Eberhardt et al.
8,603,159 B2	12/2013	Seguin et al.		2007/0244545 A1	10/2007	Birdsall et al.
8,603,160 B2	12/2013	Salahieh et al.		2007/0244552 A1	10/2007	Salahieh et al.
8,613,765 B2	12/2013	Bonhoeffer et al.		2007/0288087 A1	12/2007	Fearnot et al.
8,623,074 B2	1/2014	Ryan		2008/0021552 A1	1/2008	Gabbay
8,652,204 B2	2/2014	Quill et al.		2008/0039934 A1	2/2008	Styrc
8,663,322 B2	3/2014	Keranen		2008/0071369 A1	3/2008	Tuval et al.
8,668,733 B2	3/2014	Haug et al.		2008/0082164 A1	4/2008	Friedman
8,685,080 B2	4/2014	White		2008/0097595 A1	4/2008	Gabbay
8,728,154 B2	5/2014	Alkhatib		2008/0114452 A1	5/2008	Gabbay
8,747,459 B2	6/2014	Nguyen et al.		2008/0125853 A1	5/2008	Bailey et al.

2008/0140189 A1 6/2008 Nguyen et al.
 2008/0147183 A1 6/2008 Styrz
 2008/0154355 A1 6/2008 Benichou et al.
 2008/0154356 A1 6/2008 Obermiller et al.
 2008/0243245 A1 10/2008 Thambar et al.
 2008/0255662 A1 10/2008 Stacchino et al.
 2008/0262602 A1 10/2008 Wilk et al.
 2008/0269879 A1 10/2008 Sathe et al.
 2009/0099653 A1 4/2009 Suri et al.
 2009/0112309 A1 4/2009 Jaramillo et al.
 2009/0138079 A1 5/2009 Tuval et al.
 2009/0234443 A1 9/2009 Ottma et al.
 2009/0276027 A1 11/2009 Glynn
 2010/0004740 A1 1/2010 Seguin et al.
 2010/0036484 A1 2/2010 Hariton et al.
 2010/0049306 A1 2/2010 House et al.
 2010/0087907 A1 4/2010 Lattouf
 2010/0131055 A1 5/2010 Case et al.
 2010/0168778 A1 7/2010 Braido
 2010/0168839 A1 7/2010 Braido et al.
 2010/0168844 A1 7/2010 Toomes et al.
 2010/0185277 A1 7/2010 Braido et al.
 2010/0191326 A1 7/2010 Alkhatib
 2010/0204781 A1 8/2010 Alkhatib
 2010/0204785 A1 8/2010 Alkhatib
 2010/0217382 A1 8/2010 Chau et al.
 2010/0234940 A1 9/2010 Dolan
 2010/0249911 A1 9/2010 Alkhatib
 2010/0249923 A1 9/2010 Alkhatib et al.
 2010/0256737 A1* 10/2010 Pollock A61F 2/91
 623/1.15
 2010/0286768 A1 11/2010 Alkhatib
 2010/0298931 A1 11/2010 Quadri et al.
 2011/0029072 A1 2/2011 Gabbay
 2011/0054466 A1 3/2011 Rothstein et al.
 2011/0098800 A1 4/2011 Braido et al.
 2011/0098802 A1 4/2011 Braido et al.
 2011/0137397 A1 6/2011 Chau et al.
 2011/0172765 A1 7/2011 Nguyen et al.
 2011/0208283 A1 8/2011 Rust
 2011/0264196 A1* 10/2011 Savage A61F 2/2418
 623/1.26
 2011/0264206 A1 10/2011 Tabor
 2012/0035722 A1 2/2012 Tuval
 2012/0078347 A1 3/2012 Braido et al.
 2012/0101572 A1 4/2012 Kovalsky et al.
 2012/0123529 A1 5/2012 Levi et al.
 2012/0197390 A1 8/2012 Alkhatib et al.
 2012/0303116 A1 11/2012 Gorman, III et al.
 2013/0274873 A1 10/2013 Delaloye et al.
 2014/0121763 A1 5/2014 Duffy et al.
 2014/0155997 A1 6/2014 Braido
 2014/0194981 A1* 7/2014 Menk A61F 2/2418
 623/2.17
 2014/0214159 A1 7/2014 Vidlund et al.
 2014/0228946 A1 8/2014 Chau et al.
 2014/0277417 A1 9/2014 Schraut et al.
 2014/0303719 A1 10/2014 Cox et al.
 2014/0324164 A1 10/2014 Gross et al.
 2014/0343670 A1* 11/2014 Bakis A61F 2/2436
 623/2.11
 2014/0343671 A1 11/2014 Yohanan et al.
 2014/0350668 A1 11/2014 Delaloye et al.
 2014/0350669 A1 11/2014 Gillespie et al.
 2015/0018944 A1* 1/2015 O'Connell A61F 2/2427
 623/2.42
 2015/0142104 A1 5/2015 Braido
 2015/0148893 A1 5/2015 Braido et al.
 2015/0320556 A1 11/2015 Levi et al.
 2015/0335429 A1 11/2015 Morriss et al.

FOREIGN PATENT DOCUMENTS

DE 19857887 A1 7/2000
 DE 10121210 B4 11/2005
 DE 102005003632 A1 8/2006
 DE 202008009610 U1 12/2008
 EP 0850607 A1 7/1998

EP 1000590 A1 5/2000
 EP 1584306 A1 10/2005
 EP 1598031 A2 11/2005
 EP 1360942 B1 12/2005
 EP 1926455 A2 6/2008
 EP 2537487 A1 12/2012
 FR 2847800 B1 6/2004
 FR 2850008 A1 7/2004
 WO 9117720 A1 11/1991
 WO 9716133 A1 5/1997
 WO 9832412 A2 7/1998
 WO 9913801 A1 3/1999
 WO 2001028459 A1 4/2001
 WO 2001049213 A2 7/2001
 WO 0154625 A1 8/2001
 WO 2001056500 A2 8/2001
 WO 200176510 A2 10/2001
 WO 0236048 A1 5/2002
 WO 0247575 A2 6/2002
 WO 2002067782 A2 9/2002
 WO 2003047468 A1 6/2003
 WO 2005070343 A1 8/2005
 WO 06073626 A2 7/2006
 WO 2007053243 A2 5/2007
 WO 2007071436 A2 6/2007
 WO 08070797 A2 6/2008
 WO 2010008548 A2 1/2010
 WO 2010008549 A1 1/2010
 WO 2010096176 A1 8/2010
 WO 2010098857 A1 9/2010
 WO 2015126711 A1 8/2015
 WO 2015152980 A1 10/2015

OTHER PUBLICATIONS

Andersen et al., "Transluminal implantation of artificial heart valves", European Heart Journal, vol. 13, Issue 5, 704-708, May 1992.
 Andersen, "Transluminal Catheter Implanted Prosthetic Heart Valves", International Journal of Angiology 7:102-106, Mar. 1998.
 Buellesfeld et al., "Treatment of paravalvular leaks through interventional techniques", Multimed Man Cardiothorac Surg MMCTS, 924, Jan. 2011.
 De Cicco et al., "Aortic valve periprosthetic leakage: anatomic observations and surgical results", The Annals of thoracic surgery 79.5 (May 2005): 1480-1485.
 Dewey et al., "Transapical aortic valve implantation: an animal feasibility study"; The annals of thoracic surgery, 82: 110-6 (Feb. 13, 2006).
 Gössl et al., "Percutaneous treatment of aortic and mitral valve paravalvular regurgitation", Current cardiology reports, vol. 15:388, pp. 1-8, Aug. 2013.
 Heat Advisor, "Heart repairs without surgery. Minimally invasive procedures aim to correct valve leakage", Sep. 2004, PubMed ID 15586429.
 Hourihan et al., "Transcatheter Umbrella Closure of Valvular and Paravalvular Leaks", Journal of the American College of Cardiology, vol. 20, No. 6, pp. 1371-1377, (Nov. 1992).
 Huber, et al., "Direct-Access Valve Replacement", Journal of the American College of Cardiology, vol. 46, No. 2, (Jul. 19, 2005).
 International Search Report for Application No. PCT/US2017/048580 dated Nov. 16, 2017.
 Knudsen et al., "Catheter-implanted prosthetic heart valves", The International Journal of Artificial Organs, vol. 16, No. 5, pp. 253-262, May 1993.
 Lichtenstein et al., "Transapical Transcatheter Aortic Valve Implantation in Humans", Circulation, vol. 114, pp. 591-596 (Jul. 31, 2006).
 Lichtenstein, "Closed heart surgery: Back to the future", The Journal of Thoracic and Cardiovascular Surgery, May 2006, vol. 131, No. 5, pp. 941-943.
 Mack, "Minimally invasive cardiac surgery", Surgical Endoscopy, vol. 20, Supplement 2, pp. S488-S492, Apr. 2006.
 Moazami et al., "Transluminal Aortic Valve Placement", ASAIO Journal, vol. 42(5), pp. M381-M385, Sep. 1996.

Muñoz et al., “Guidance of treatment of perivalvular prosthetic leaks”, *Current cardiology reports*, vol. 16(1), p. 430, Jan. 2014.
 Quaden et al., “Percutaneous aortic valve replacement: resection before implantation”, *European J. of Cardio-thoracic Surgery*, vol. 27, Issue 5, pp. 836-840, May 2005.
 Rohde et al., “Resection of Calcified Aortic Heart Leaflets In Vitro by Q-Switched 2 μm Microsecond Laser Radiation”, *Journal of Cardiac Surgery*, vol. 30(2), pp. 157-162, Feb. 2015.
 Ruiz, “Overview of PRE-CE Mark Transcatheter Aortic Valve Technologies”, *Euro PCR*, dated May 25, 2010.
 Swiatkiewicz et al., “Percutaneous closure of mitral perivalvular leak”, *Kardiologia polska*, vol. 67(7), pp. 762-4, Jun. 2009.
 Textbook “Transcatheter Valve Repair”, 2006, pp. 165-186.
 Walther et al., “Transapical approach for sutureless stent-fixed aortic valve implantation: experimental results”, *European Journal of Cardio-thoracic Surgery*, vol. 29(5), pp. 703-708 (Jan. 30, 2006).
 Webb et al., “Percutaneous Aortic Valve Implantation Retrograde From the Femoral Artery”, *Circulation*, vol. 113:842-850, Jun. 2006.
 Zegdi’ Rachid, MD, PhD et al., “Is It Reasonable to Treat All Calcified Stenotic Aortic Valves With a Valved Stent?”, 579-584, *J. of the American College of Cardiology*, vol. 51, No. 5, Feb. 5, 2008.
 Design U.S. Appl. No. 29/604,134, filed May 15, 2017 entitled “Stent Having Tapered Struts”.
 Design U.S. Appl. No. 29/604,139, filed May 15, 2017 entitled “Stent Having Tapered Struts”.
 Design U.S. Appl. No. 29/604,148, filed May 15, 2017 entitled “Stent Having Tapered Struts”.
 Design U.S. Appl. No. 29/604,160, filed May 15, 2017 entitled “Stent Having Tapered Aortic Struts”.

* cited by examiner

Primary Examiner — Charles D Hanson
 (74) *Attorney, Agent, or Firm* — Lerner, David,
 Littenberg, Krumholz & Mentlik, LLP

(57) **CLAIM**

The ornamental design for a stent having tapered struts, as shown and described.

DESCRIPTION

The present application is related to U.S. Design patent application Ser. No. 29/604,134, filed concurrently herewith, and U.S. Design patent application Ser. No. 29/604,160, filed concurrently herewith, and U.S. Design application Ser. No. 29/604,139, filed concurrently herewith, and U.S. Design patent application Ser. No. 29/604,148, filed concurrently herewith, the entire disclosures of all of which are incorporated herein by reference.

FIG. 1 is a front perspective view of a stent having tapered struts according to Embodiments 1-4 of our new design;
 FIG. 2 is a front elevational view of Embodiments 1-4 thereof;
 FIG. 3 is a rear elevational view of Embodiments 1-4 thereof;
 FIG. 4 is a right side elevational view of Embodiments 1-4 thereof;
 FIG. 5 is a left side elevational view of Embodiments 1-4 thereof;
 FIG. 6 is a top plan view of Embodiments 1-4 thereof;
 FIG. 7 is a bottom plan view of Embodiments 1-4 thereof;
 FIG. 8 is an enlarged front elevational view of a portion of FIG. 2;
 FIG. 9 is an enlarged front elevational view of section C of FIG. 8, which is an enlarged strut of the stent having tapered struts according to Embodiment 1;

FIG. 10 is an enlarged front elevational view of section C of FIG. 8, which is an enlarged strut of the stent having tapered struts according to Embodiment 2;

FIG. 11 is an enlarged front elevational view of section C of FIG. 8, which is an enlarged strut of the stent having tapered struts according to Embodiment 3; and,

FIG. 12 is an enlarged front elevational view of section C of FIG. 8, which is an enlarged strut of the stent having tapered struts according to Embodiment 4.

FIG. 8 is an enlarged view of a section of FIG. 2 and illustrates a complete cell of the stent, as well as one-half cell directly above the complete cell according to Embodiments 1-4. The complete cell of the stent includes four struts (strut 1-4) that together form the complete cell. The one-half cell includes only two struts (struts 5-6).

An enlarged view of a single strut (strut 1) of the complete cell is shown in FIGS. 9-12, according to respective Embodiments 1-4, and each single strut 1 includes an first upper end and a lower end. The shapes or profiles of the remaining struts in the enlarged views of FIG. 8 are mirror images of strut 1 across an x-plane or a y-plane, as discussed in further detail below.

In FIG. 8, according to Embodiments 1-4, a respective second strut (strut 2) is shown positioned to the left of strut 1. Strut 2 is a mirror image of strut 1 taken across a plane that extends along a y-axis, such that strut 2 has an identical shape or profile as strut 1. Strut 1 and strut 2 together form an upper one-half of the complete cell.

In FIG. 8, according to Embodiments 1-4, a third strut (strut 3) is shown positioned directly below strut 1 and extends from the lower end of strut 1. Strut 3 has a shape or profile that is a mirror image of strut 1 taken across a plane that extends along an x-axis through the lower end of t strut 1. In FIG. 8, according to Embodiments 1-4, a fourth strut (strut 4) is positioned to the left of strut 3. Strut 4 has a shape or profile that is a mirror image of struts 1 and 3 taken across a plane that extends along the y-axis. Struts 3 and 4 together form a lower one-half of the complete cell, such that taken together, struts 1, 2, 3, and 4 form the complete cell.

In FIG. 8, according to Embodiments 1-4, a fifth strut (strut 5) is positioned above strut 1 and extends from the upper end of strut 1. Strut 5 has a shape or profile that is a mirror image of strut 1 taken across a plane that extends along an x-axis through the upper end of strut 1. In FIG. 8, according to Embodiments 1-4, a sixth strut (strut 6) is positioned to the left of strut 5. Strut 6 has a shape or profile that is a mirror image of struts 3 and 5 taken across a plane that extends along the y-axis. Together, the struts 5 and 6 form one-half of a complete cell.

A similar pattern of the complete cell and one-half cell extends around the circumference of the stent in each of Embodiments 1-4, which in turn, respectively correspond to the enlarged stent sections of FIG. 8, as well as the single struts shown in FIGS. 9-12. Each of the remaining struts in the complete cell and the one-half cell pattern that are oriented in the same position as respective struts 1, 2, 3, 4, 5 and 6 discussed above, will possess the same shape or profile as respective struts 1, 2, 3, 4, 5 and 6 discussed above. In Embodiments 1-4, the complete cell and one-half cell pattern shown in FIG. 8 is repeated an additional eight (8) times around the circumference of the stent.

The broken lines shown in the drawings illustrate environmental structure and form no part of the claimed design. The dot-dash lines represent boundary lines and form no part of

the claimed design. It is to be understood that the claimed design extends to but does not include the defined boundary.

1 Claim, 8 Drawing Sheets

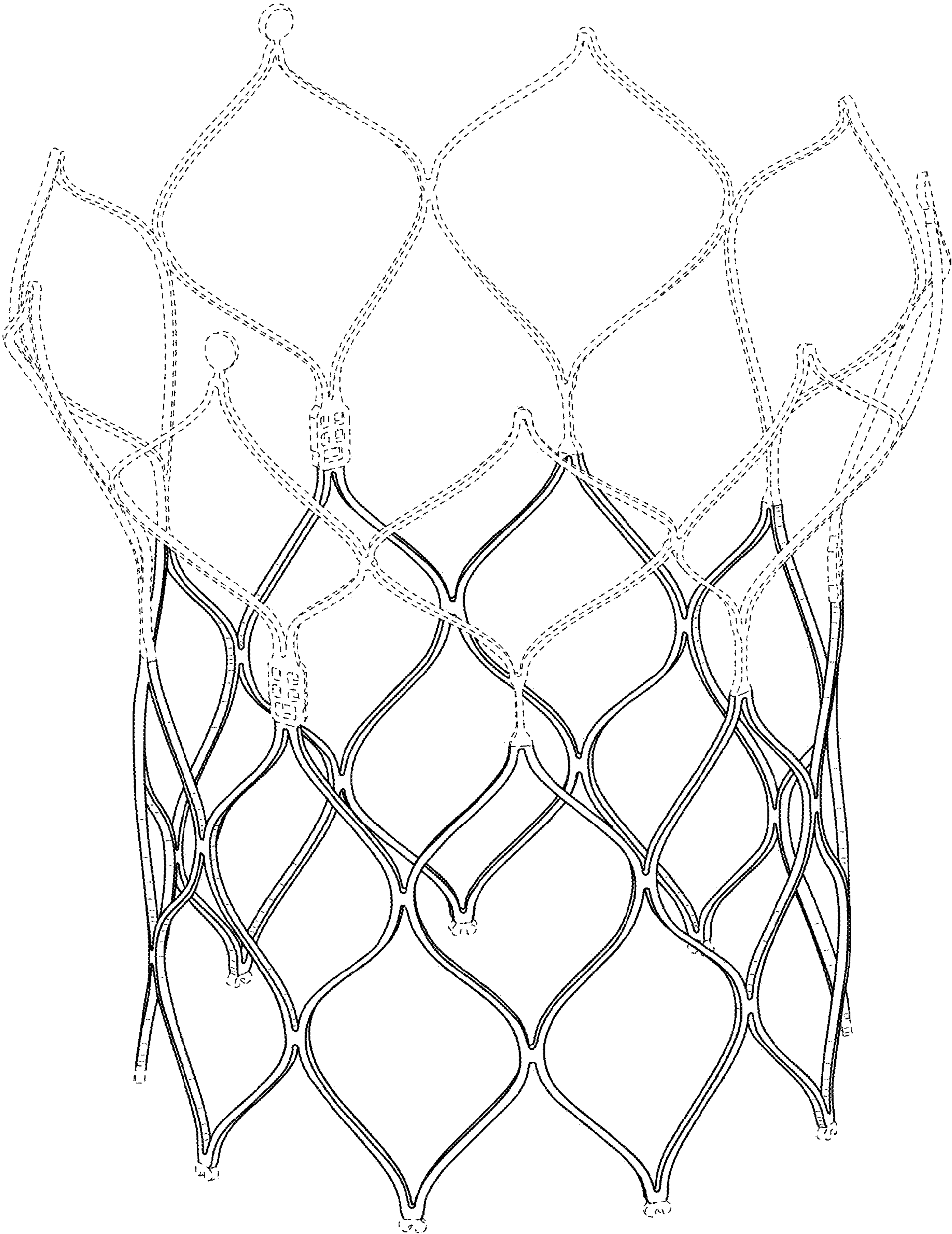


FIG. 1

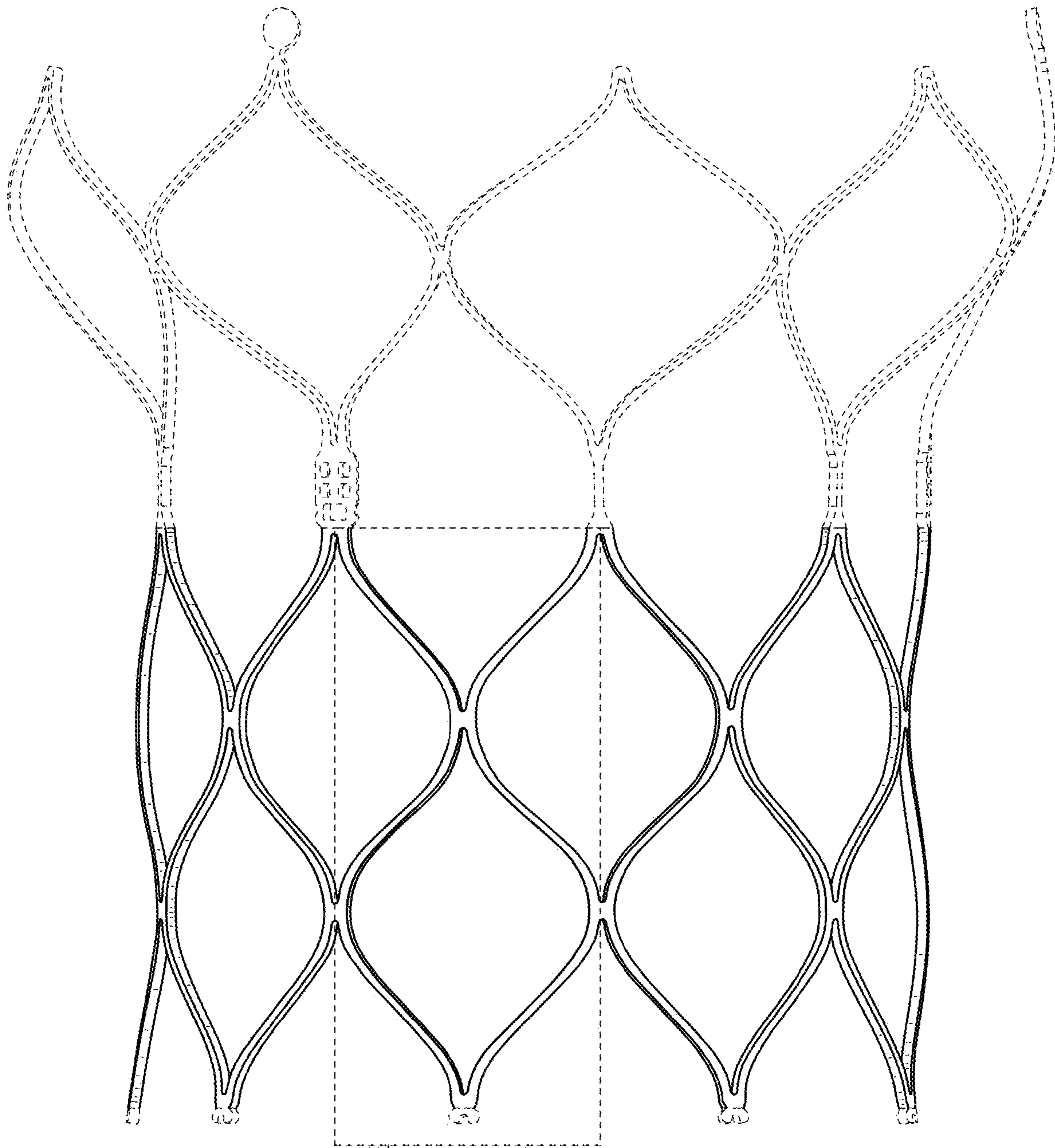
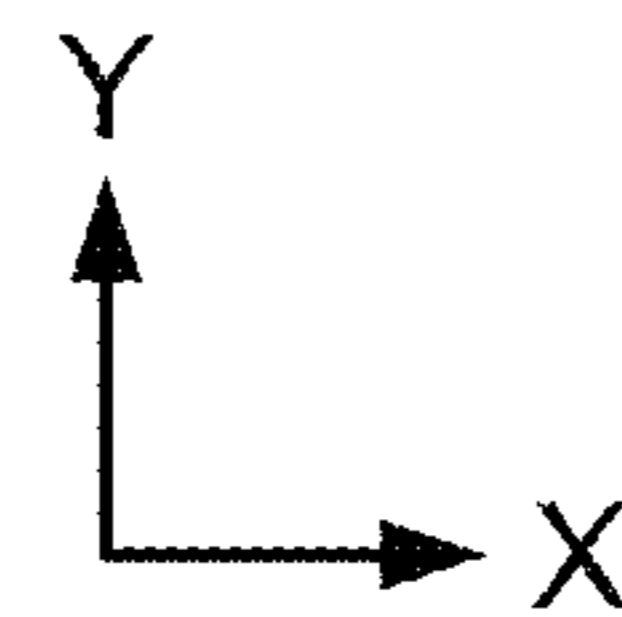


FIG. 8

FIG. 2



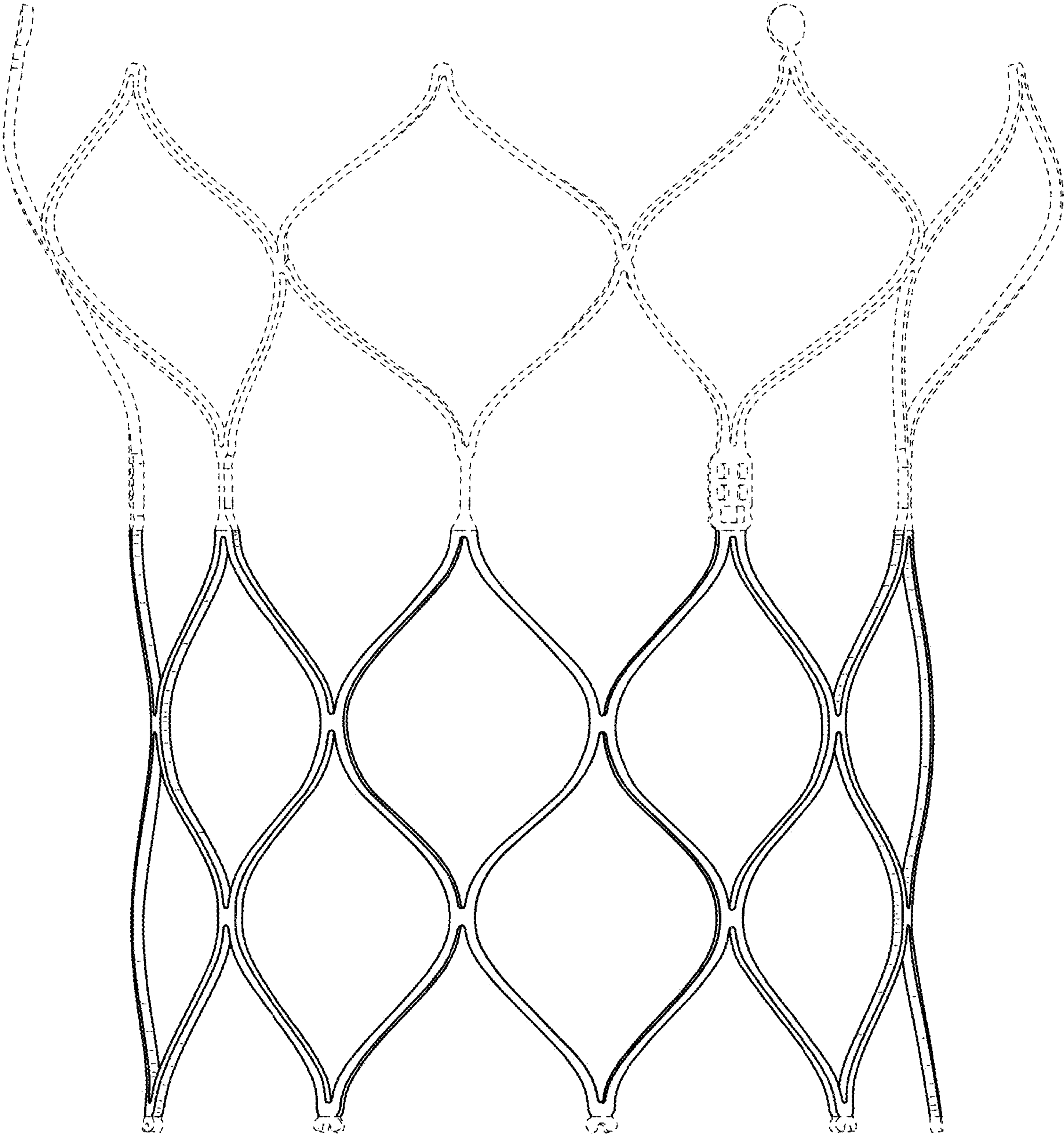


FIG. 3

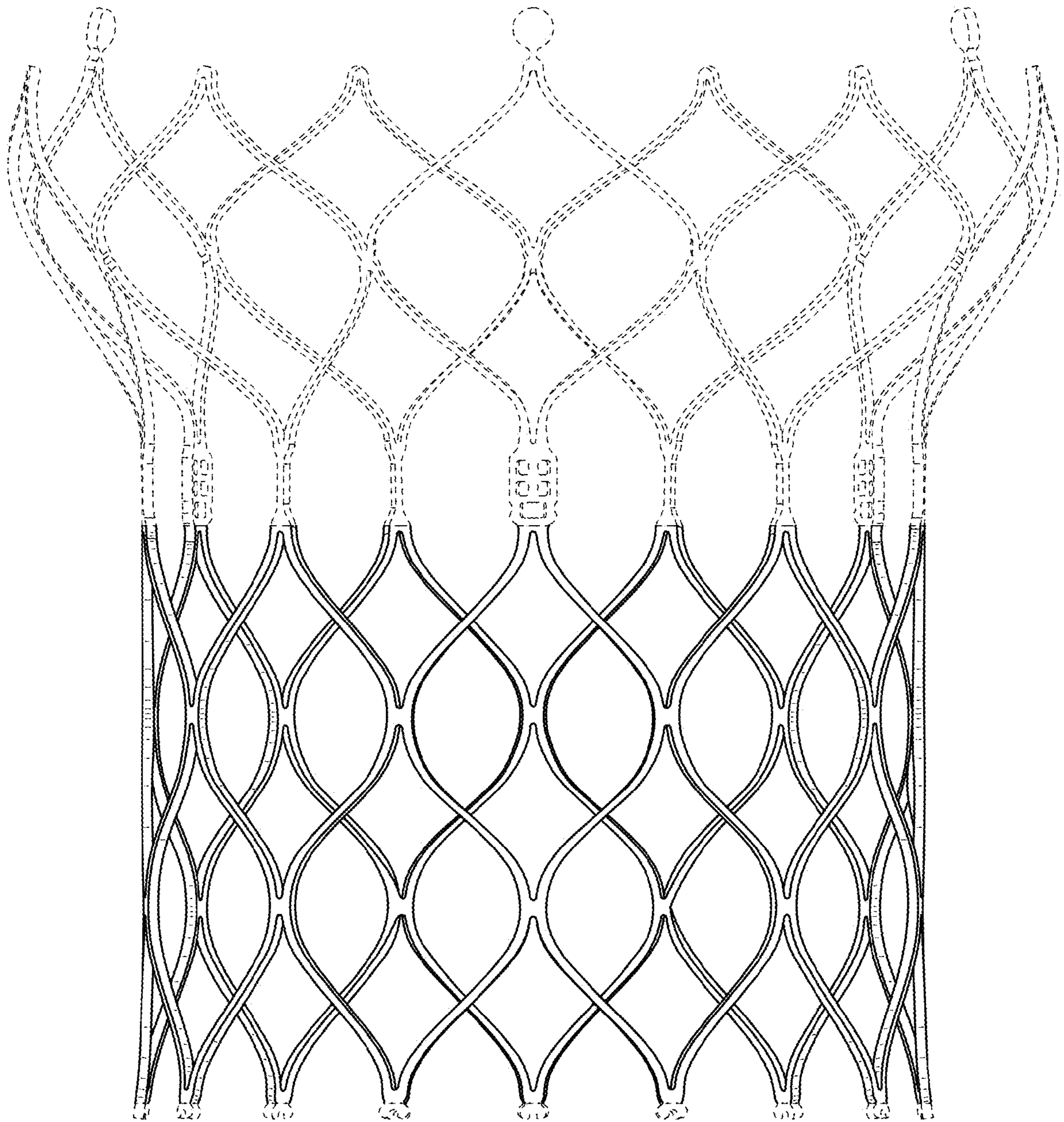


FIG. 4

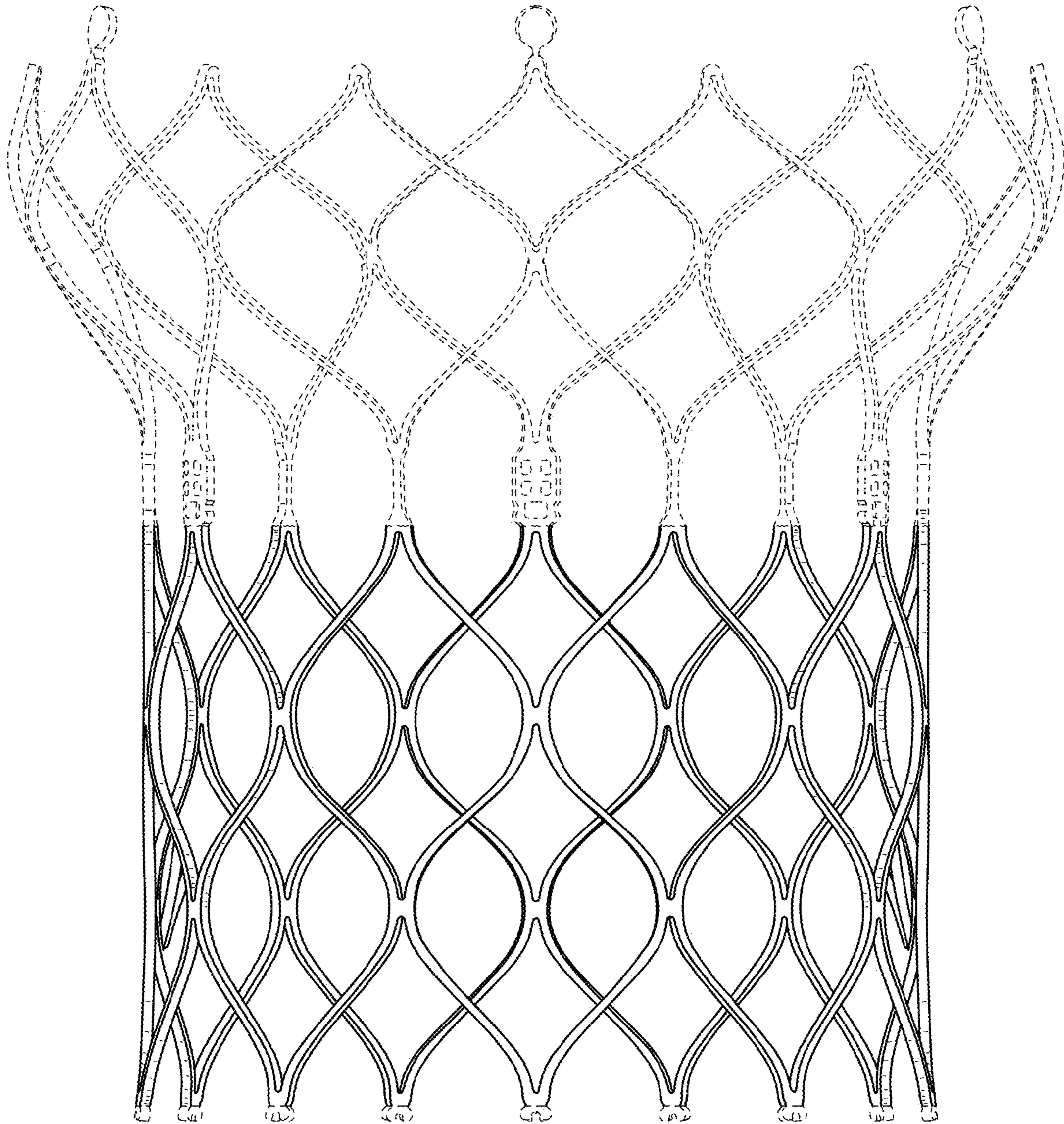


FIG. 5

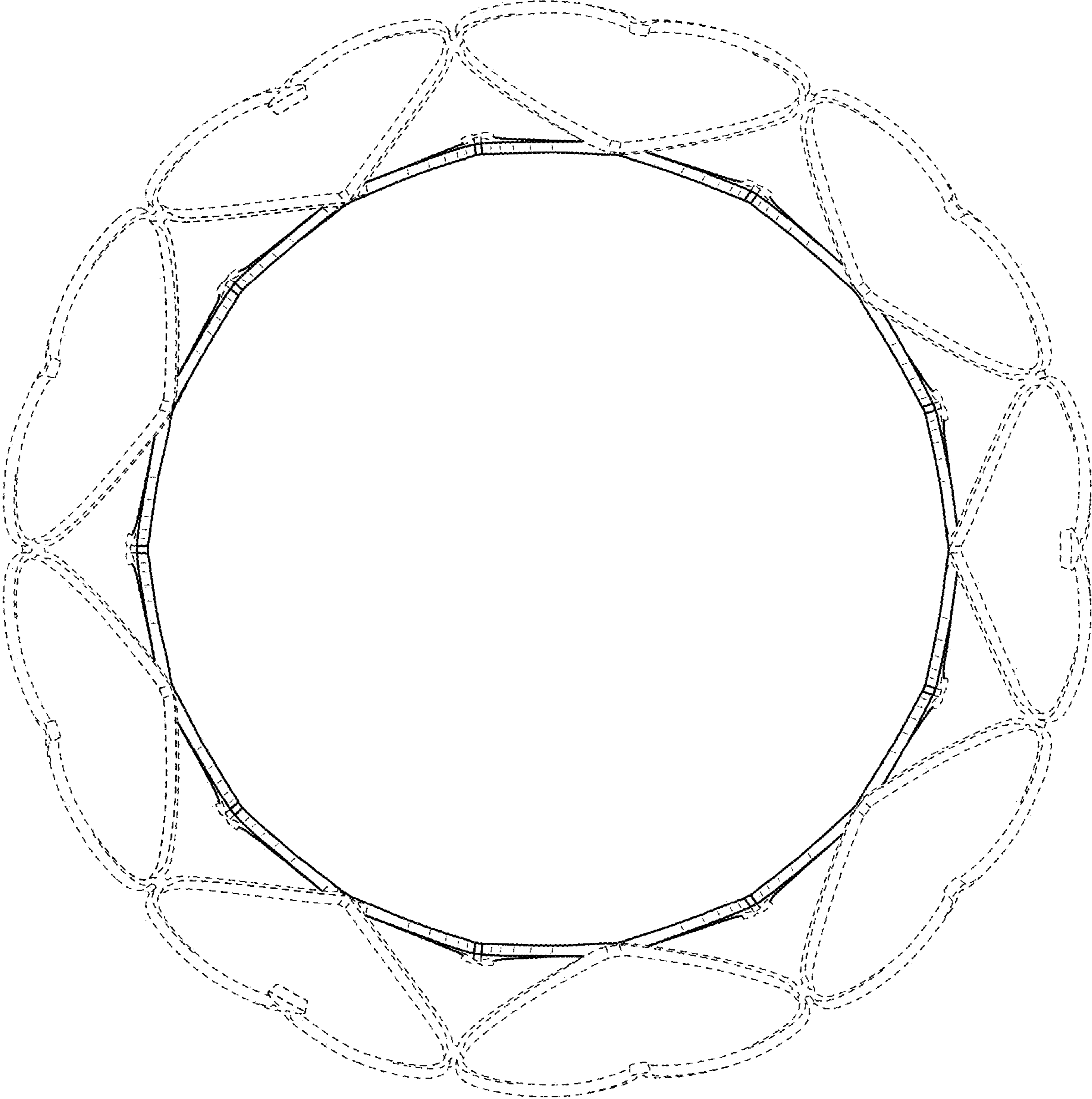


FIG. 6

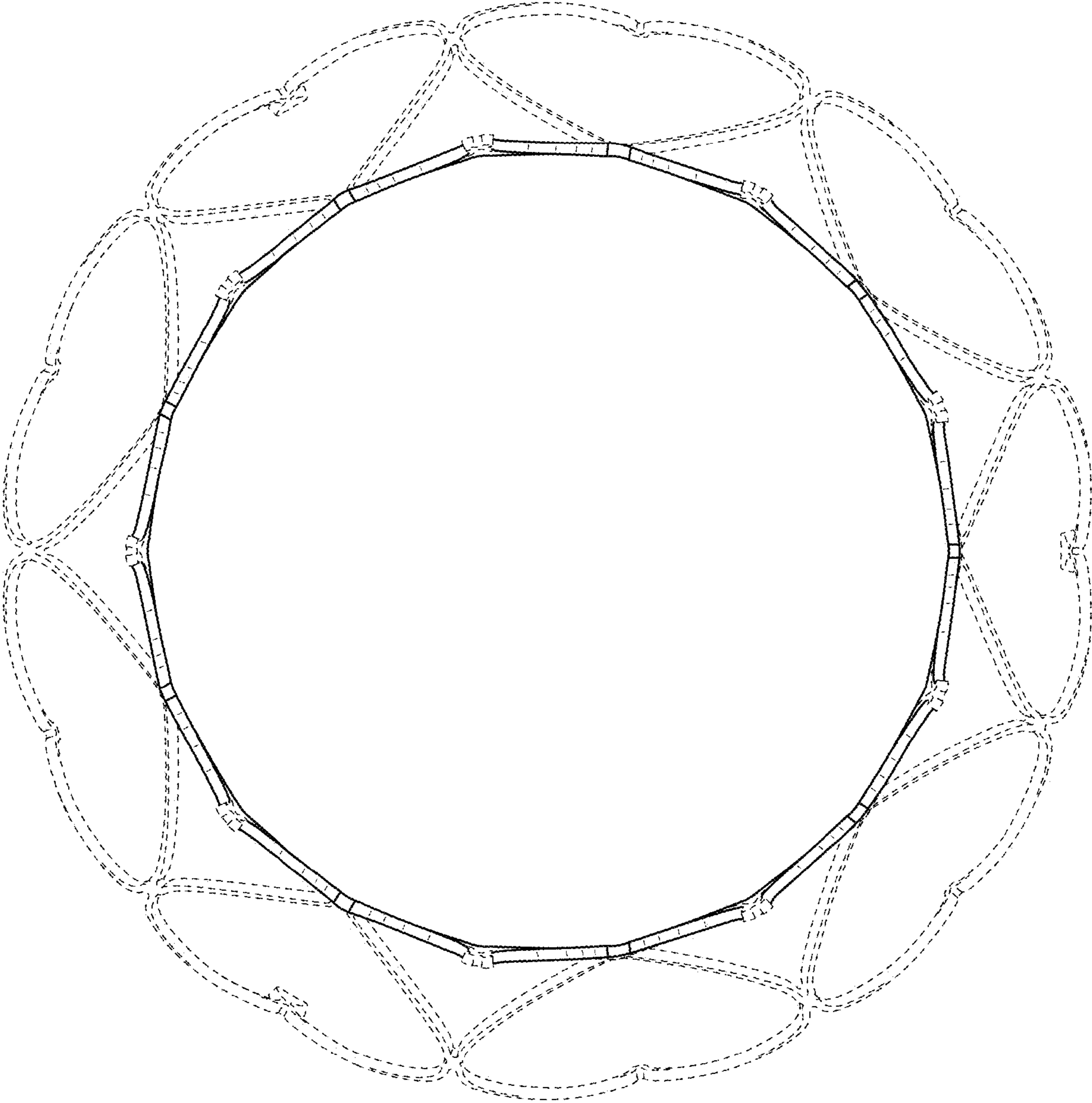


FIG. 7

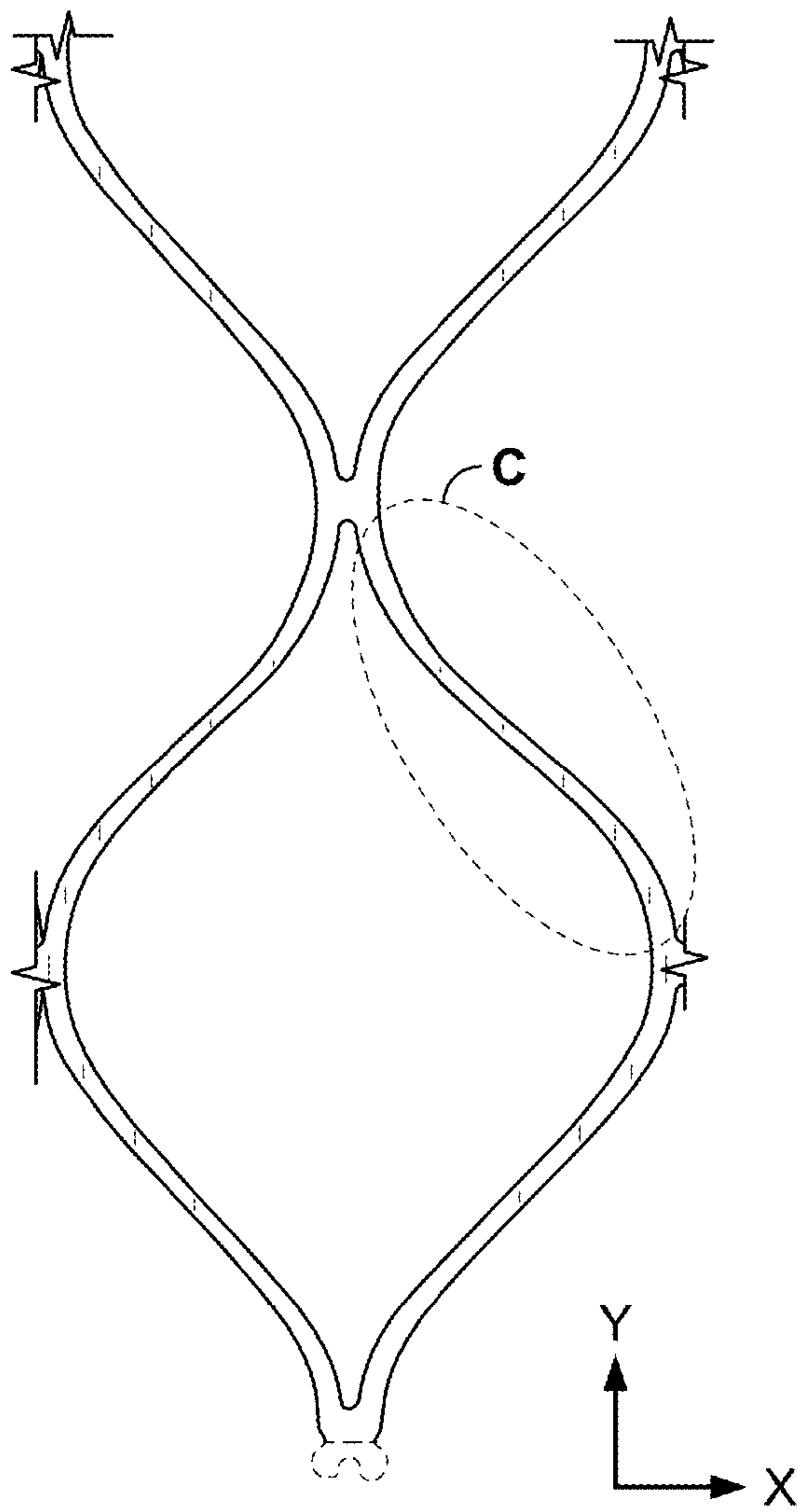


FIG. 8

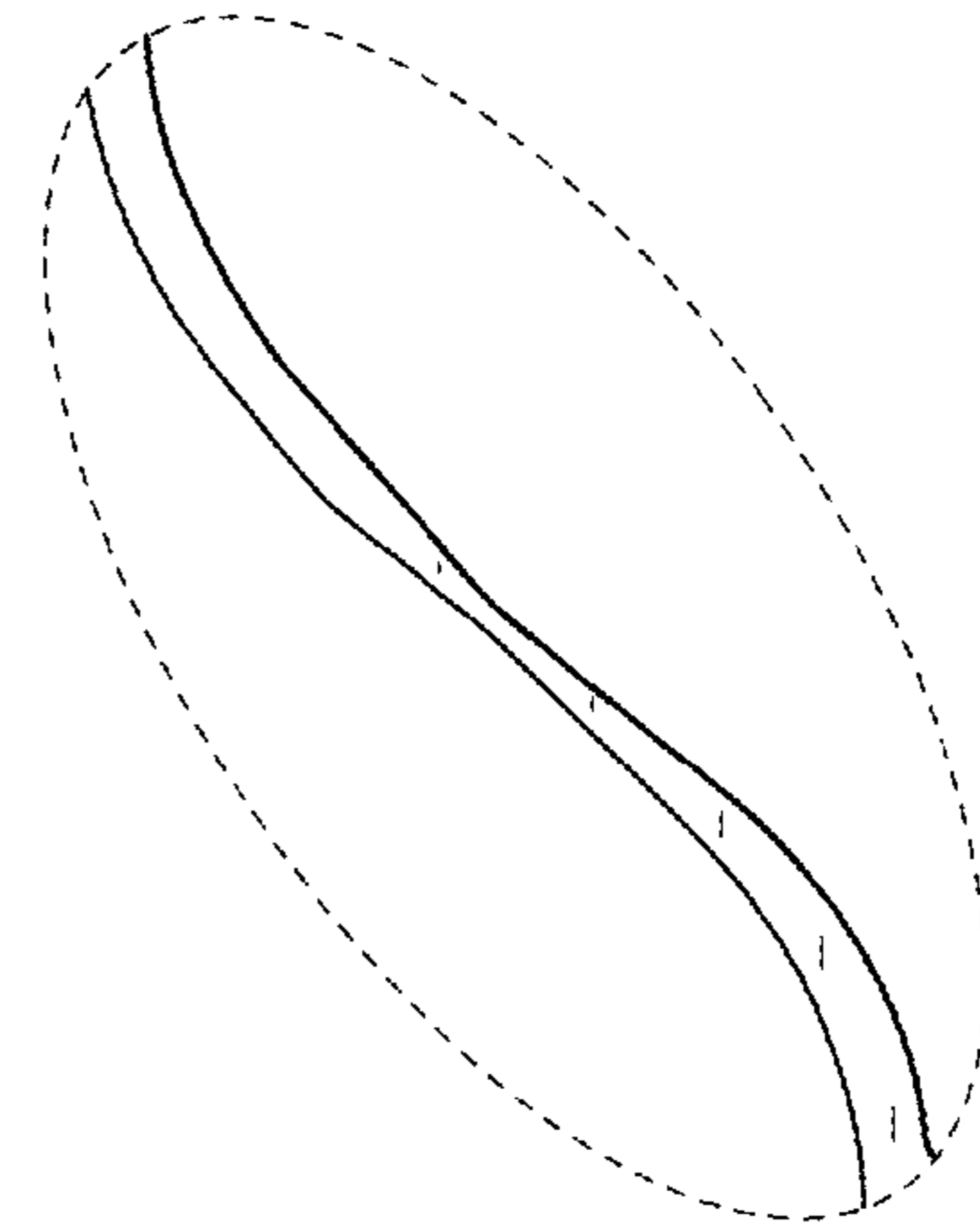


FIG. 10

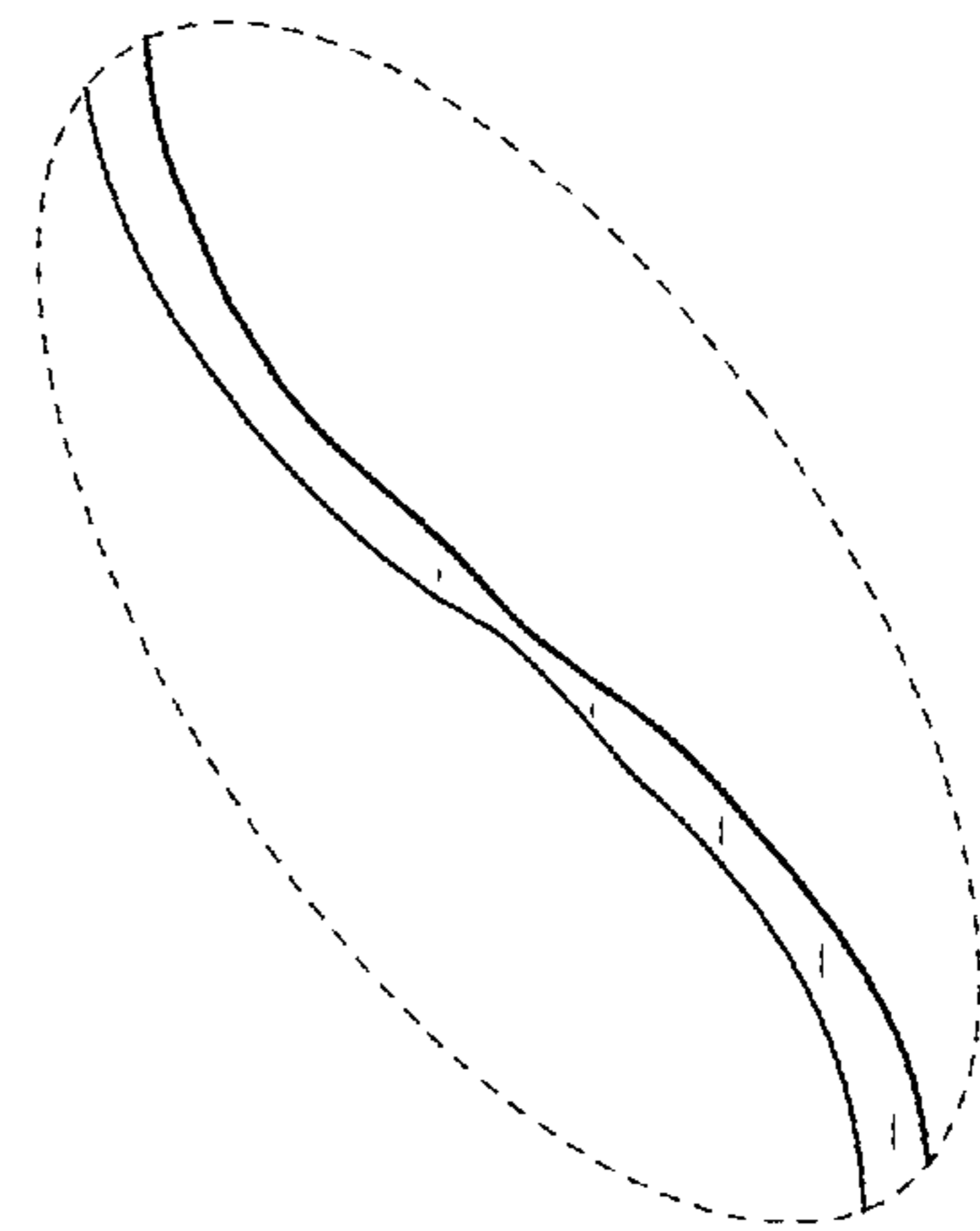


FIG. 11

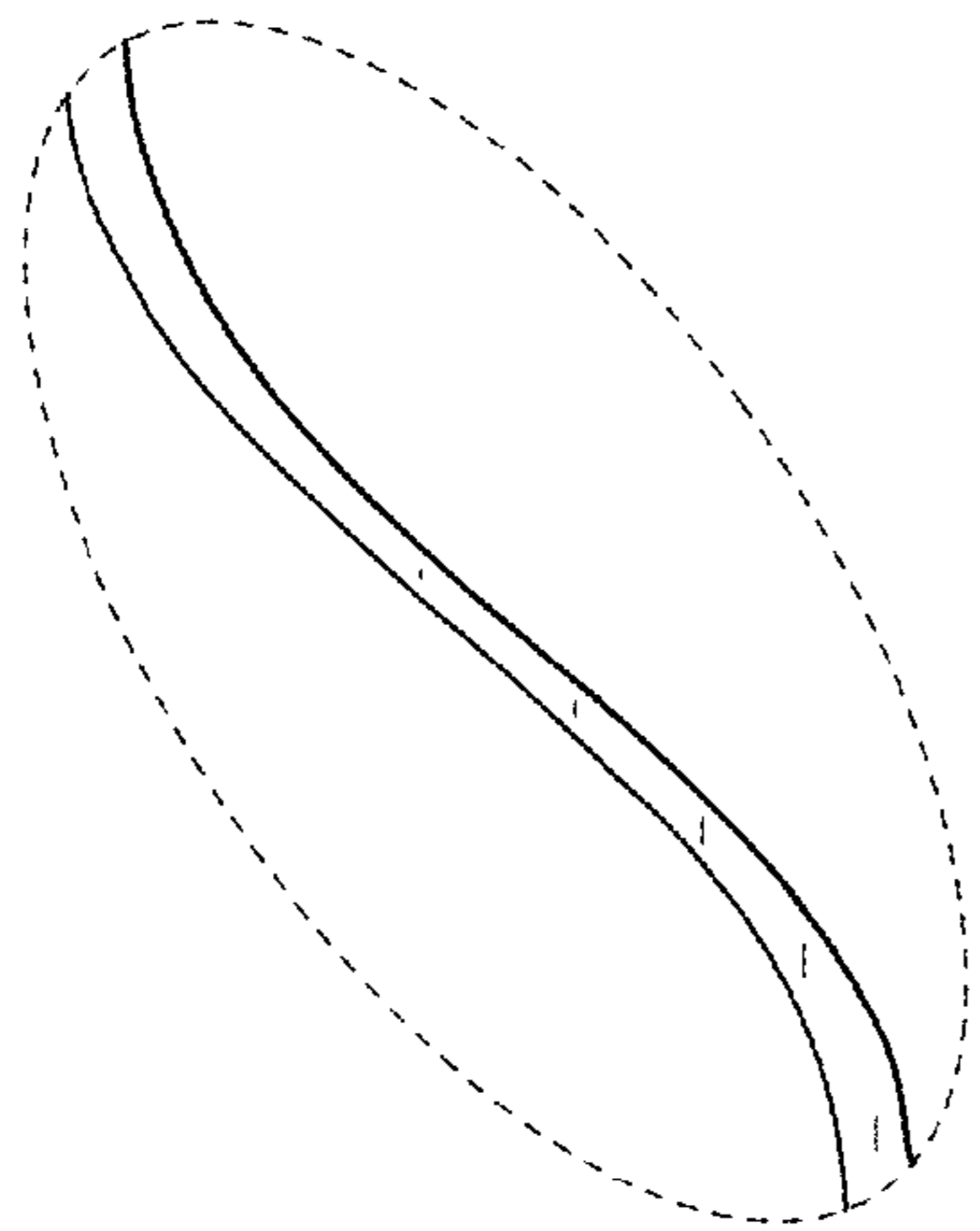


FIG. 9

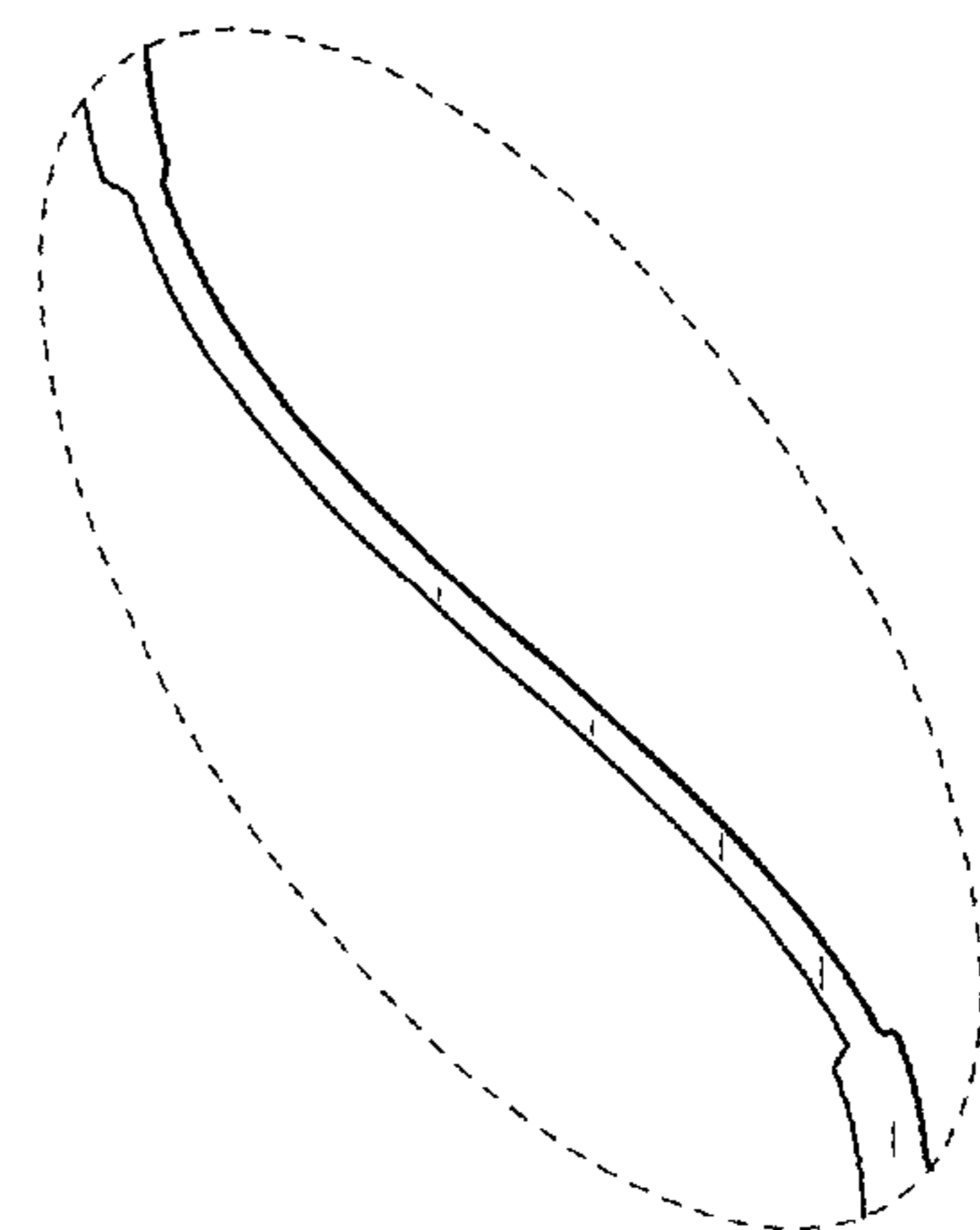


FIG. 12