



US00D802766S

(12) **United States Design Patent** (10) **Patent No.:** **US D802,766 S**
Erzberger et al. (45) **Date of Patent:** **** Nov. 14, 2017**

(54) **SURGICAL STENT**
(71) Applicant: **St. Jude Medical, Cardiology Division, Inc.**, St. Paul, MN (US)
(72) Inventors: **Gary Erzberger**, Minneapolis, MN (US); **Yousef F. Alkhatib**, Edina, MN (US)

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.

(Continued)

FOREIGN PATENT DOCUMENTS

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

DE 198 57 887 A1 7/2000
DE 101 21 210 A1 11/2002

(Continued)

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

(21) Appl. No.: **29/564,600**

OTHER PUBLICATIONS

(22) Filed: **May 13, 2016**

Catheter-implanted Prosthetic Heart Valves, Knudsen, L.L., et al., The International Journal of Artificial Organs, vol. 16, No. 5 1993, pp. 253-262.

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

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

(Continued)

(58) **Field of Classification Search**
USPC D24/155-157
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

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

See application file for complete search history.

(57) **CLAIM**

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

(56) **References Cited**

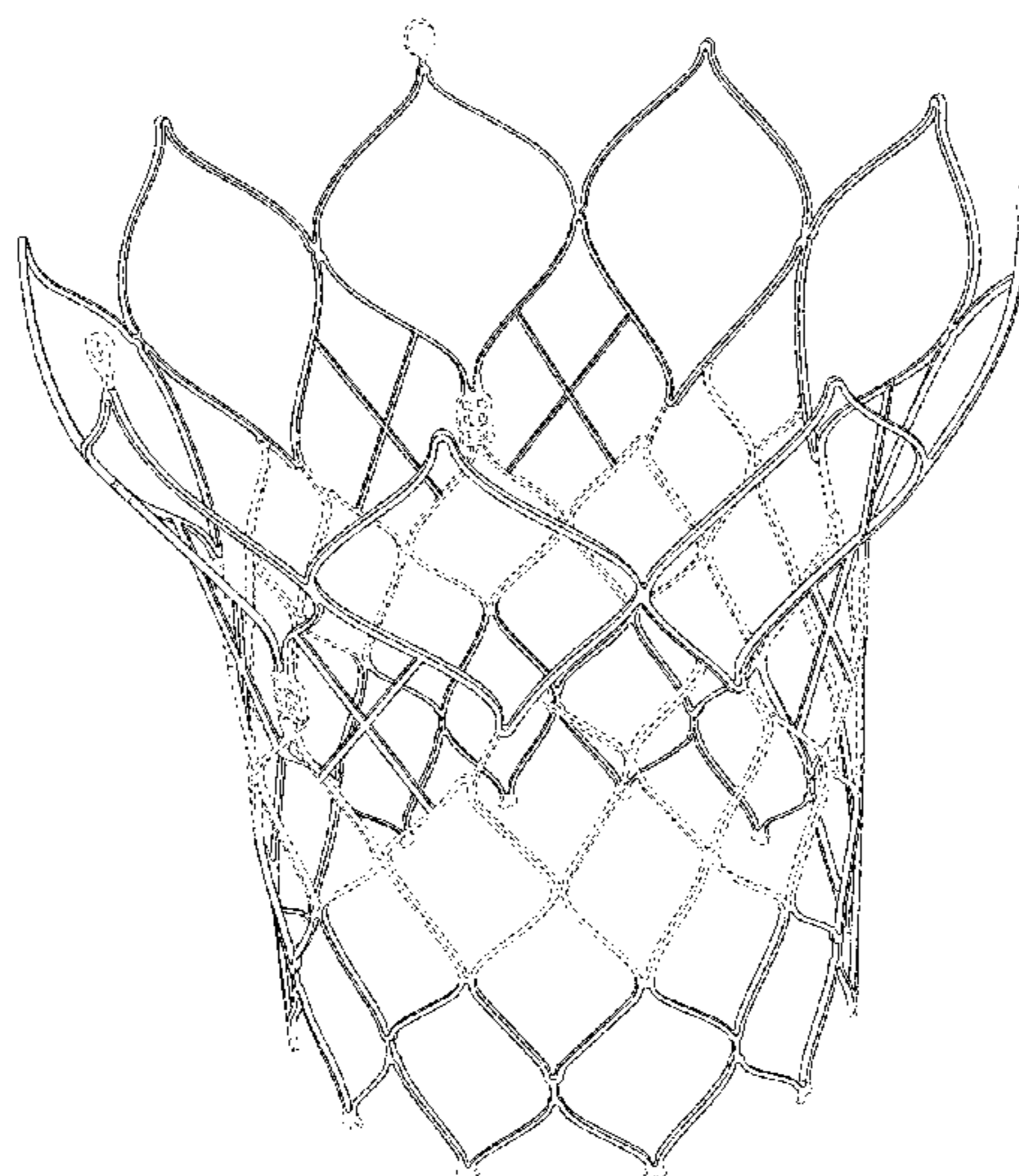
DESCRIPTION

U.S. PATENT DOCUMENTS

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.
5,480,423 A 1/1996 Ravenscroft 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.
6,083,257 A 7/2000 Taylor et al.
6,090,140 A 7/2000 Gabbay

FIG. 1 is a top perspective view of a surgical stent showing our new design;
FIG. 2 is a front side elevational view thereof;
FIG. 3 is a rear side elevational view thereof;
FIG. 4 is a right side elevational view thereof;
FIG. 5 is a left side elevational view thereof;
FIG. 6 is a top plan view thereof; and,
FIG. 7 is a bottom plan view thereof.
It is noted that the aspects shown in broken lines do not form part of the claimed design.

1 Claim, 4 Drawing Sheets



(56)

References Cited

U.S. PATENT DOCUMENTS

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
 6,685,625 B2 2/2004 Gabbay
 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.
 6,869,444 B2 3/2005 Gabbay
 6,893,460 B2 5/2005 Spenser et al.
 6,908,481 B2 6/2005 Cribier
 7,025,780 B2 4/2006 Gabbay
 7,137,184 B2 11/2006 Schreck
 7,160,322 B2 1/2007 Gabbay
 7,247,167 B2 7/2007 Gabbay
 7,267,686 B2 9/2007 DiMatteo et al.
 7,374,573 B2 5/2008 Gabbay
 7,381,218 B2 6/2008 Schreck
 7,452,371 B2 11/2008 Pavcnik et al.
 7,524,331 B2 4/2009 Birdsall
 RE40,816 E 6/2009 Taylor et al.
 7,585,321 B2 9/2009 Cribier
 7,731,742 B2 6/2010 Schlick et al.
 7,846,203 B2 12/2010 Cribier
 7,846,204 B2 12/2010 Letac et al.
 7,914,569 B2 3/2011 Nguyen et al.
 D648,854 S 11/2011 Braido
 D652,926 S 1/2012 Braido
 D652,927 S * 1/2012 Braido A61F 2/91
 D653,341 S * 1/2012 Braido A61F 2/91
 D653,342 S 1/2012 Braido et al.
 D653,343 S 1/2012 Ness et al.
 D654,169 S 2/2012 Braido
 D654,170 S 2/2012 Braido et al.
 D660,432 S 5/2012 Braido
 D660,433 S * 5/2012 Braido A61F 2/91
 D660,967 S * 5/2012 Braido A61F 2/91
 D684,692 S 6/2013 Braido
 8,784,481 B2 * 7/2014 Alkhatib A61F 2/2418
 8,986,375 B2 * 3/2015 Garde A61F 2/2403
 D730,520 S * 5/2015 Braido D24/155
 D730,521 S * 5/2015 Braido D24/155
 D732,666 S * 6/2015 Nguyen A61F 2/2412
 D755,384 S * 5/2016 Pesce D24/155
 2002/0036220 A1 3/2002 Gabbay
 2003/0023303 A1 1/2003 Palmaz et al.
 2003/0130726 A1 7/2003 Thorpe et al.
 2004/0049262 A1 3/2004 Obermiller et al.
 2004/0093075 A1 5/2004 Kuehne
 2005/0096726 A1 5/2005 Sequin et al.
 2005/0256566 A1 11/2005 Gabbay
 2006/0008497 A1 1/2006 Gabbay
 2006/0122692 A1 6/2006 Gilad et al.
 2006/0149360 A1 7/2006 Schwammenthal et al.
 2006/0173532 A1 8/2006 Flagle et al.
 2006/0178740 A1 8/2006 Stacchino et al.
 2006/0195180 A1 8/2006 Kheradvar et al.
 2006/0206202 A1 9/2006 Bonhoeffer et al.
 2006/0241744 A1 10/2006 Beith
 2006/0241745 A1 10/2006 Solem
 2006/0259137 A1 11/2006 Artof et al.
 2006/0265056 A1 11/2006 Nguyen et al.
 2006/0276813 A1 12/2006 Greenberg
 2007/0067029 A1 3/2007 Gabbay
 2007/0093890 A1 4/2007 Eliassen et al.

2007/0100435 A1 5/2007 Case et al.
 2007/0118210 A1 5/2007 Pinchuk
 2007/0213813 A1 9/2007 Von Segesser et al.
 2007/0233228 A1 10/2007 Eberhardt et al.
 2007/0244545 A1 10/2007 Birdsall et al.
 2007/0288087 A1 12/2007 Fearnot et al.
 2008/0021552 A1 1/2008 Gabbay
 2008/0039934 A1 2/2008 Styrc
 2008/0082164 A1 4/2008 Friedman
 2008/0097595 A1 4/2008 Gabbay
 2008/0114452 A1 5/2008 Gabbay
 2008/0125853 A1 5/2008 Bailey et al.
 2008/0140189 A1 6/2008 Nguyen et al.
 2008/0147183 A1 6/2008 Styrc
 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.
 2009/0112309 A1 4/2009 Jaramillo et al.
 2009/0138079 A1 5/2009 Tuval 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.
 2010/0185277 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.
 2010/0249911 A1 9/2010 Alkhatib
 2010/0249923 A1 9/2010 Alkhatib et al.
 2011/0029072 A1 2/2011 Gabbay
 2011/0264196 A1 * 10/2011 Savage A61F 2/2418
 2012/0303116 A1 11/2012 Gorman, III et al.
 2014/0194981 A1 * 7/2014 Menk A61F 2/2418
 2015/0018944 A1 * 1/2015 O'Connell A61F 2/2427

FOREIGN PATENT DOCUMENTS

DE 20 2008 009 610 U1 12/2008
 EP 0850607 A1 7/1998
 EP 1 000 590 A1 5/2000
 EP 1 360 942 A1 11/2003
 EP 1 584 306 A1 10/2005
 EP 1 598 031 A2 11/2005
 FR 2 847 800 A1 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 0128459 A1 4/2001
 WO 0149213 A2 7/2001
 WO 0154625 A1 8/2001
 WO 0156500 A2 8/2001
 WO 0176510 A2 10/2001
 WO 0236048 A1 5/2002
 WO 0247575 A2 6/2002
 WO 03047468 A1 6/2003
 WO 2005070343 A1 8/2005
 WO 2006073626 A2 7/2006
 WO 2010008548 A2 1/2010
 WO 2010008549 A1 1/2010
 WO 2010096176 A1 8/2010
 WO 2010098857 A1 9/2010

OTHER PUBLICATIONS

Transluminal Aortic Valve Placement, Moazami, Nader, et al.,
 ASAIO Journal, 1996; 42:M381-M385.

(56)

References Cited

OTHER PUBLICATIONS

Transluminal Catheter Implanted Prosthetic Heart Valves, Andersen, Henning Rud, *International Journal of Angiology* 7:102-106 (1998).

Transluminal implantation of artificial heart valves, Andersen, H. R., et al., *European Heart Journal* (1992) 13, 704-708.

Is It Reasonable to Treat All Calcified Stenotic Aortic Valves With a Valved Stent?, 579-584, Zegdi, Rachid, MD, PhD et al., *J. of the American College of Cardiology*, vol. 51, No. 5, Feb. 5, 2008.

“Direct-Access Valve Replacement”, Christoph H. Huber, et al., *Journal of the American College of Cardiology*, vol. 46, No. 2, (Jul. 19, 2005).

“Percutaneous Aortic Valve Implantation Retrograde From the Femoral Artery”, John G. Webb et al., *Circulation*, 2006; 113:842-850 (Jun. 2, 2006).

“Minimally invasive cardiac surgery”, M. J. Mack, *Surgical Endoscopy*, 2006, 20:S488-S492, DOI: 10.1007/s00464-006-0110-8 (presented Apr. 24, 2006).

“Transapical Transcatheter Aortic Valve Implantation in Humans”, Samuel V. Lichtenstein et al., *Circulation*. 2006; 114: 591-596 (Jul. 31, 2006).

“Closed heart surgery: Back to the future”, Samuel V. Lichtenstein, *The Journal of Thoracic and Cardiovascular Surgery*, vol. 131, No. 5, pp. 941-943.

“Transapical approach for sutureless stent-fixed aortic valve implantation: experimental results”; Th. Walther et al., *European Journal of Cardio-thoracic Surgery* 29 (2006) 703-708 (Jan. 30, 2006).

“Transapical aortic valve implantation: an animal feasibility study”; Todd M. Dewey et al., *The annals of thoracic surgery* 2006; 82: 110-6 (Feb. 13, 2006).

Textbook “Transcatheter Valve Repair”, 2006, pp. 165-186.

* cited by examiner

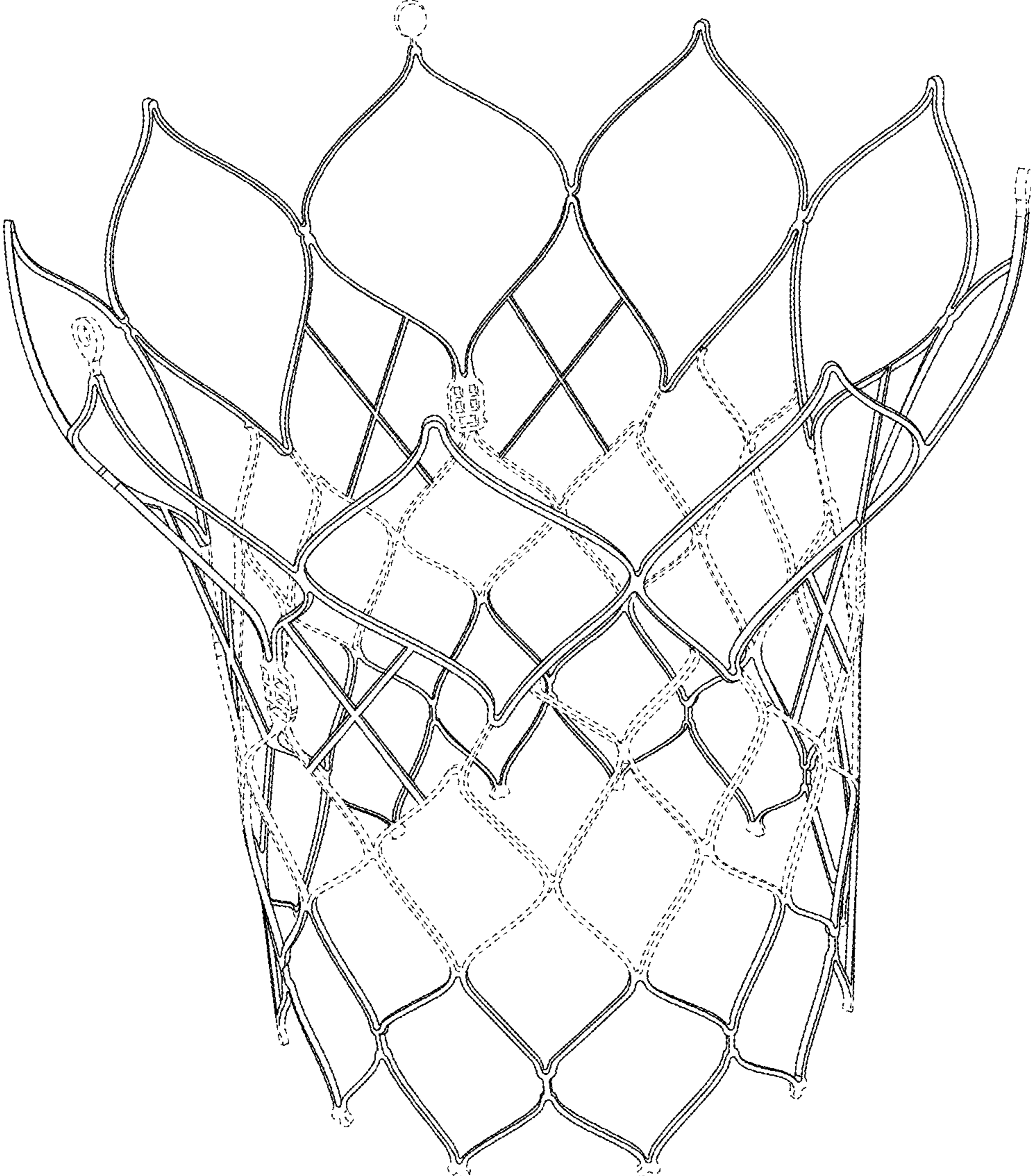


FIG. 1

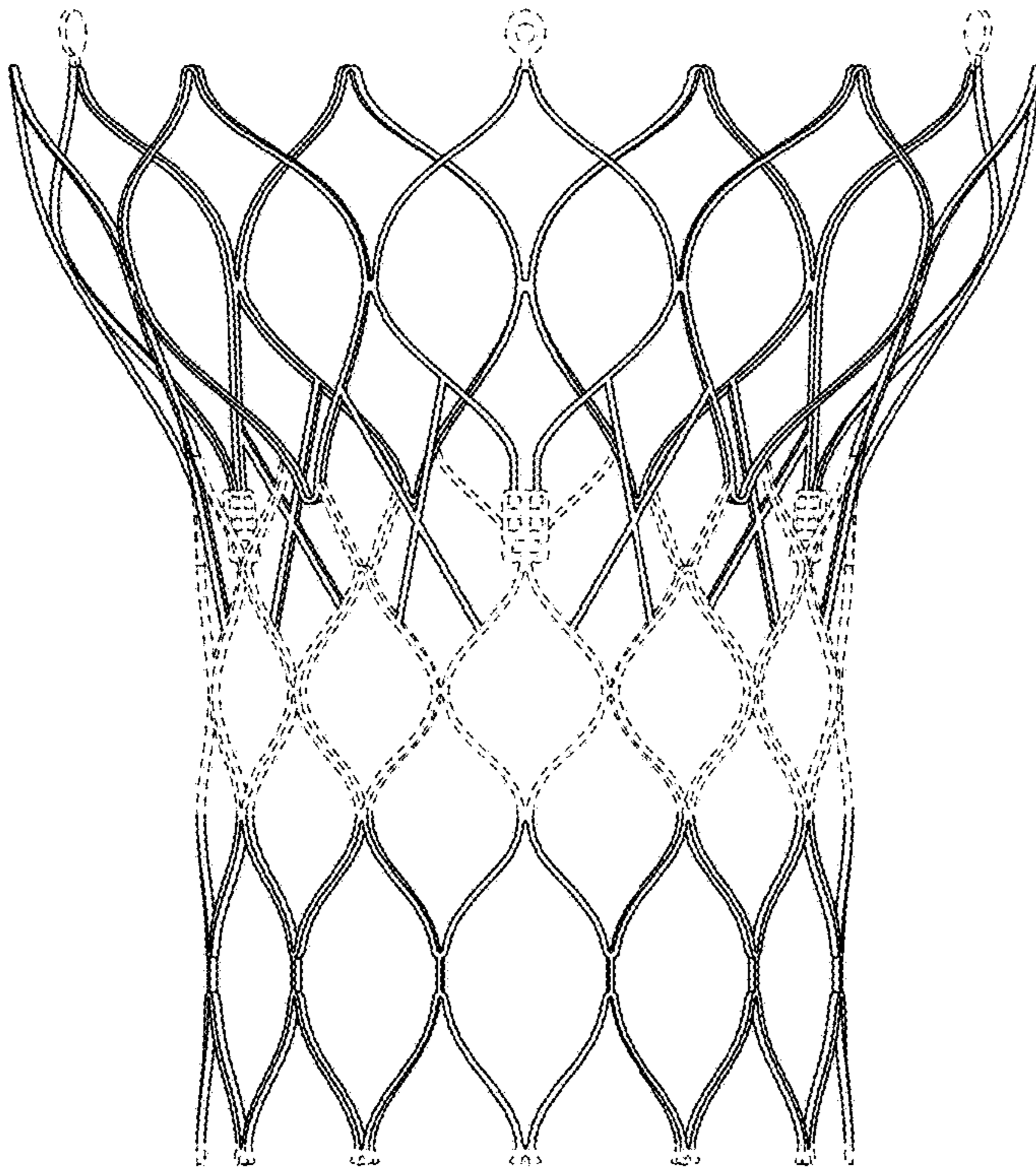


FIG. 2

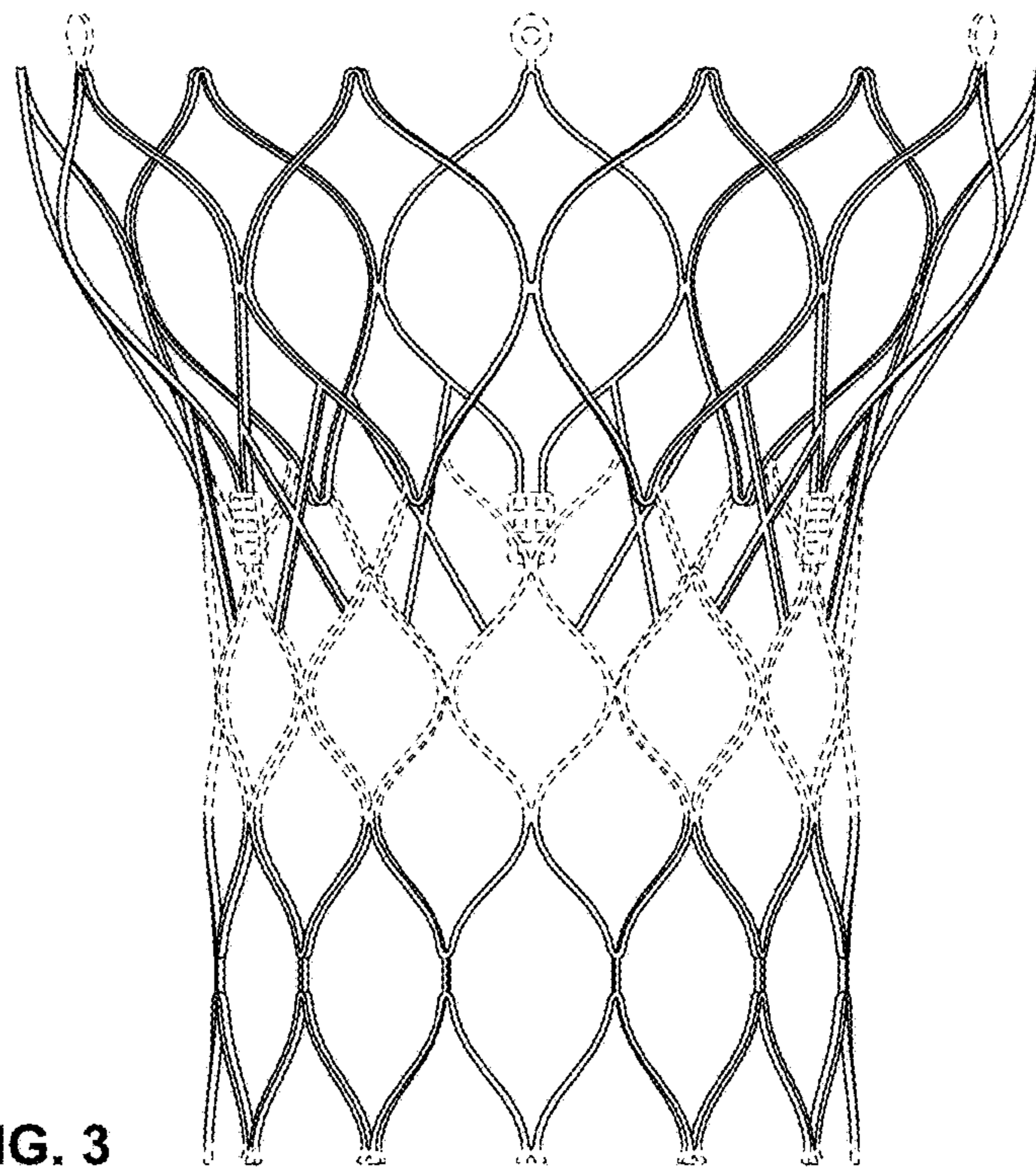


FIG. 3

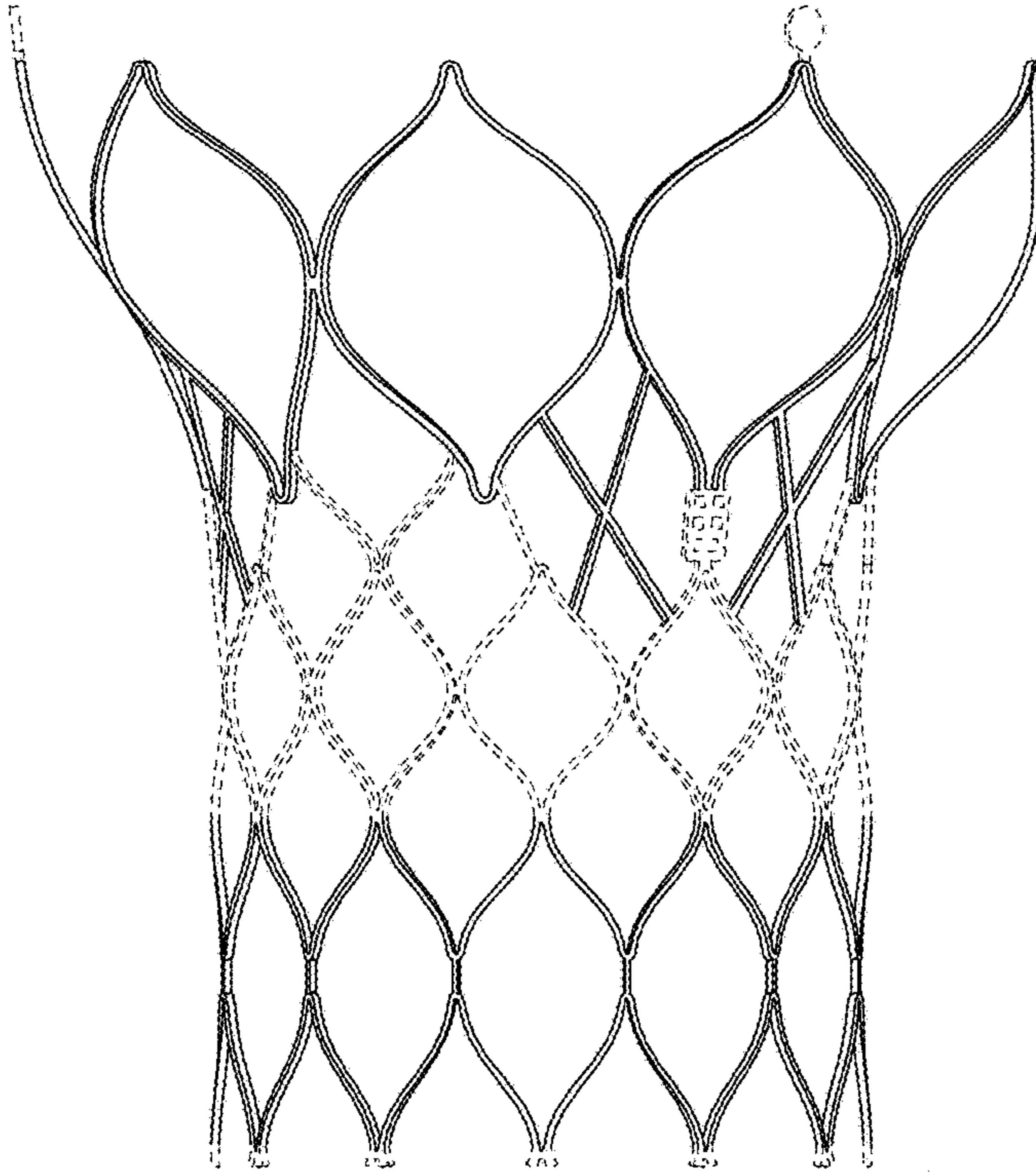


FIG. 4

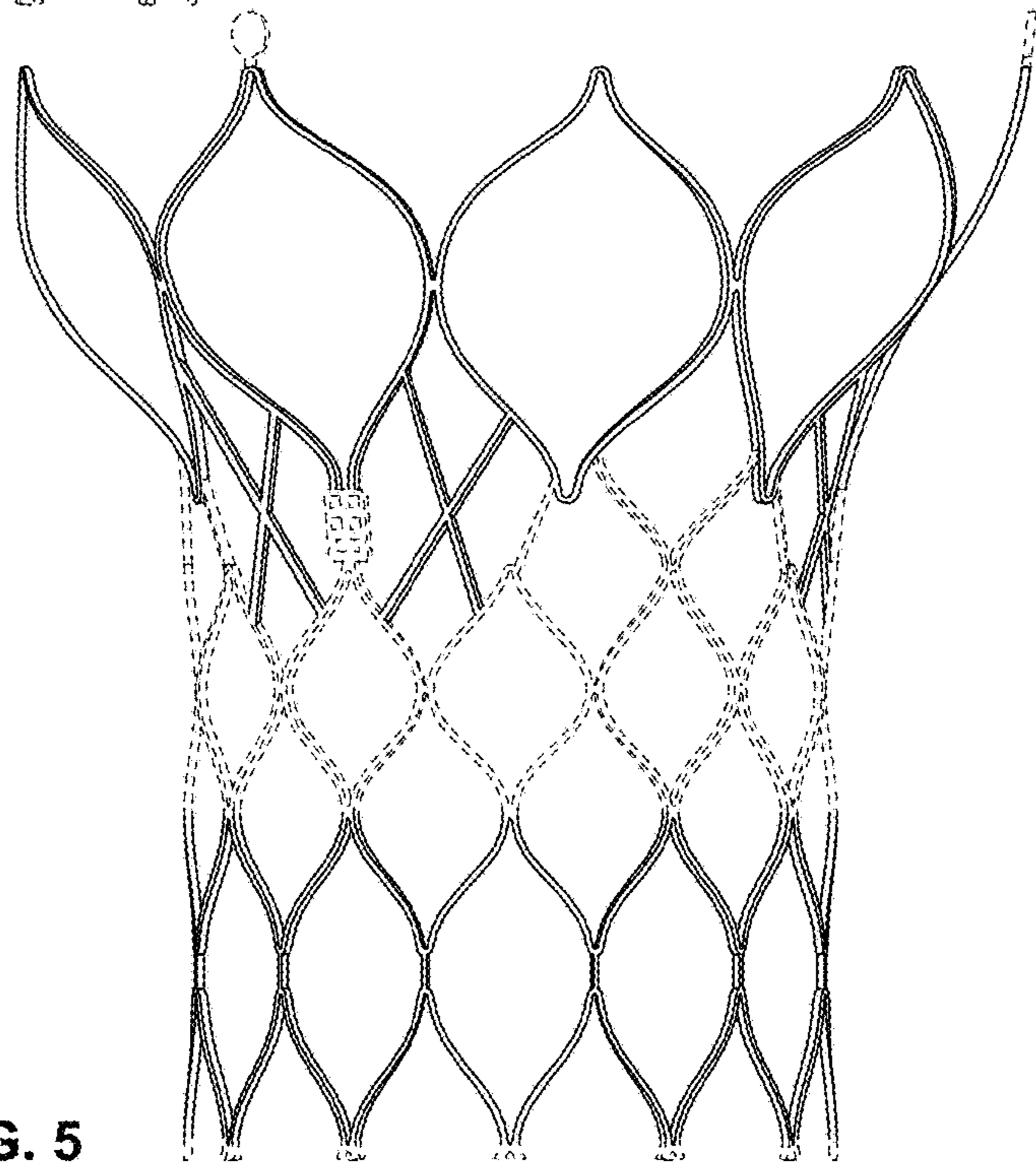


FIG. 5

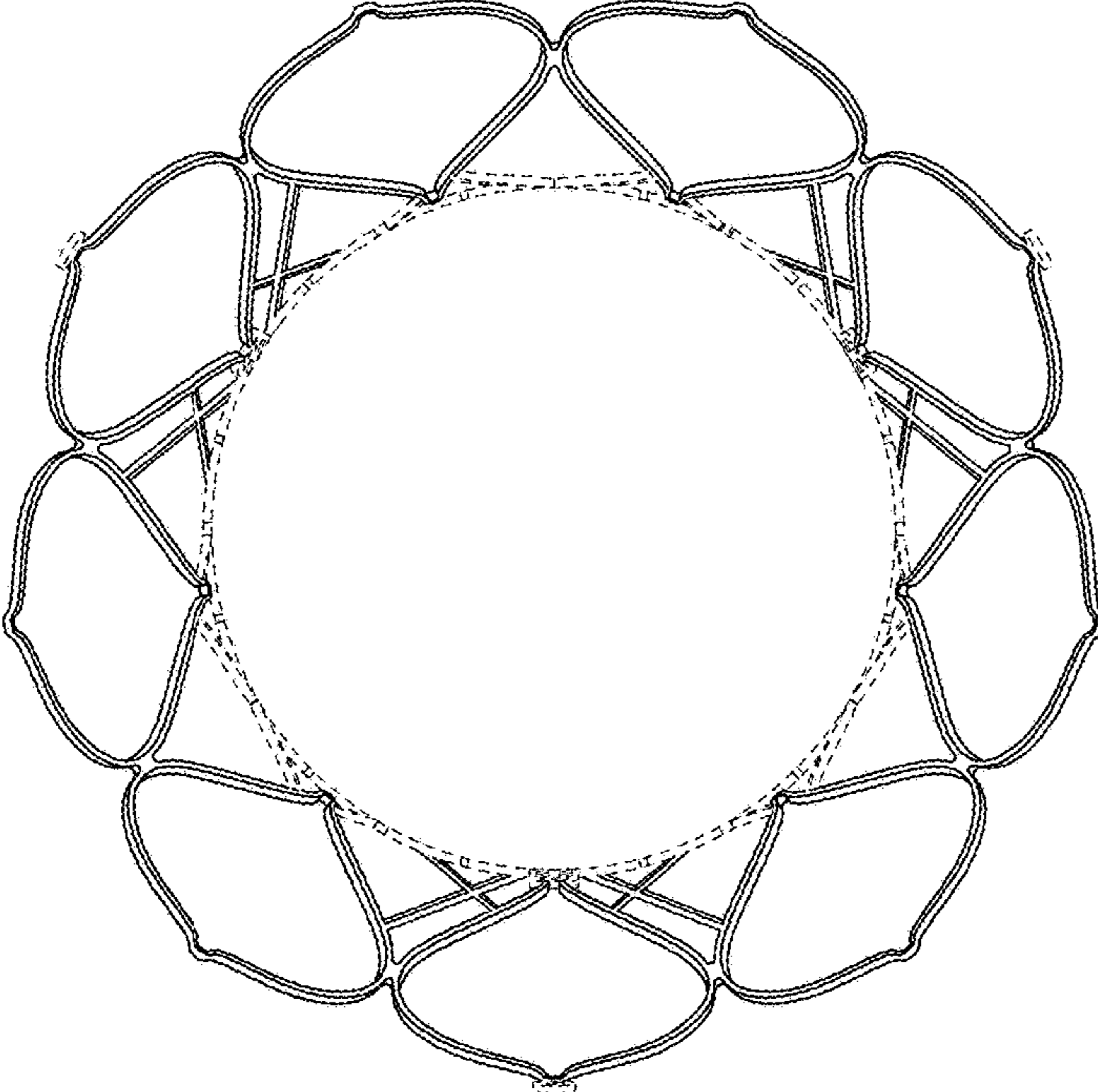


FIG. 6

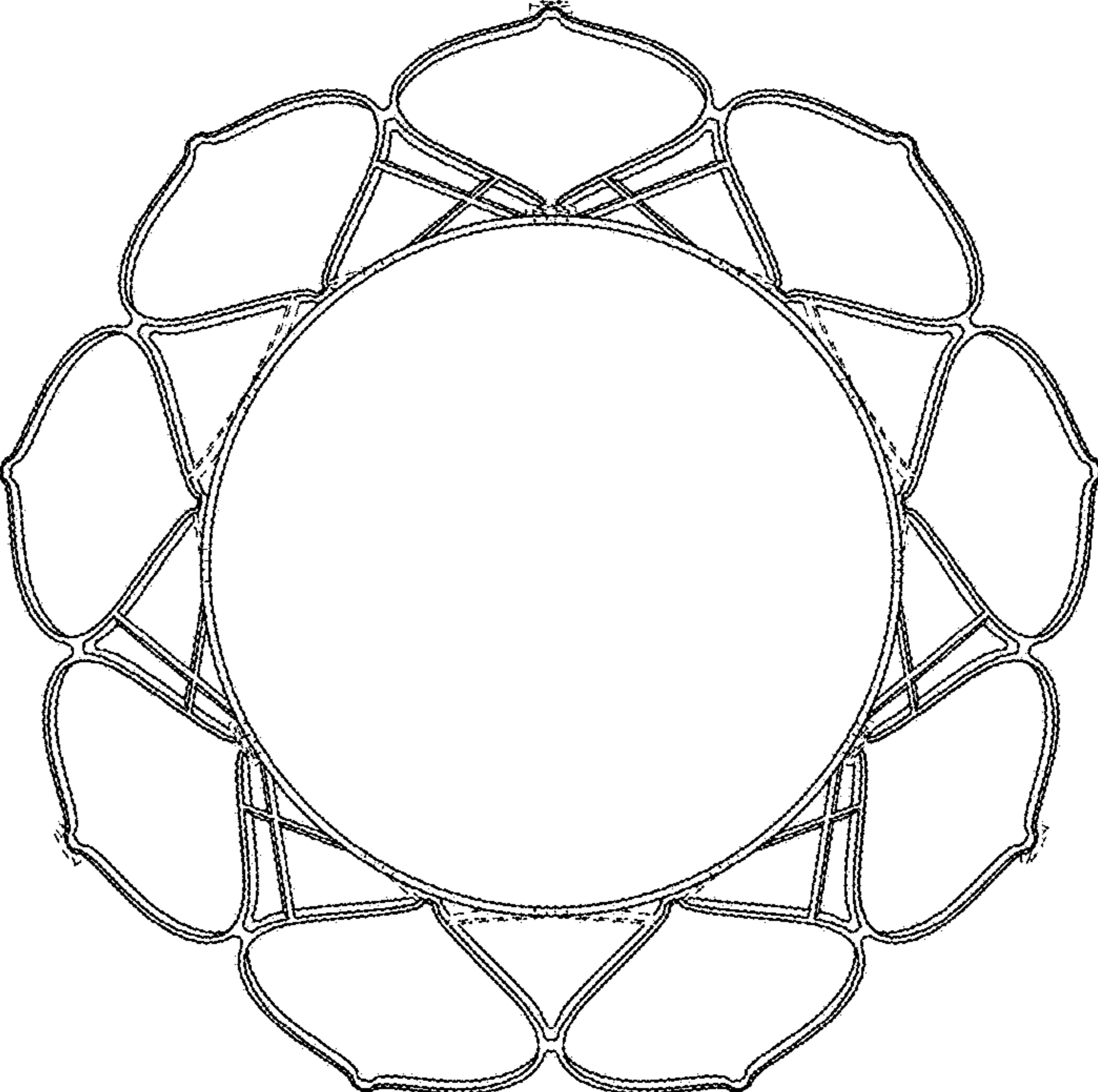


FIG. 7