



US00D755986S

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

(10) **Patent No.:** **US D755,986 S**  
(45) **Date of Patent:** **\*\* May 10, 2016**

- (54) **CELL ENCAPSULATION DEVICE**
- (71) Applicant: **ViaCyte, Inc.**, San Diego, CA (US)
- (72) Inventors: **Chad Green**, San Diego, CA (US);  
**Vincent So**, San Diego, CA (US); **Laura  
Martinson**, San Diego, CA (US);  
**Michael Scott**, San Diego, CA (US)
- (73) Assignee: **VIACYTE, INC.**, San Diego, CA (US)
- (\*\*) Term: **14 Years**
- (21) Appl. No.: **29/509,102**
- (22) Filed: **Nov. 13, 2014**

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

2,500,388	A	3/1950	Simons
2,519,983	A	8/1950	Simons
2,594,272	A	4/1952	Kauck et al.
2,616,927	A	11/1952	Kauck et al.
3,929,971	A	12/1975	Roy
D254,506	S	3/1980	Holmberg
D270,092	S	8/1983	Lacasse

- (Continued)

- FOREIGN PATENT DOCUMENTS

WO	WO 91/02498	3/1991
WO	WO 92/19195	11/1992

- (Continued)

- OTHER PUBLICATIONS
- Brauker et al., "Local inflammatory response around diffusion chambers containing xenografts. Nonspecific destruction of tissues and decreased local vascularization", *Transplantation* 61(12):1671-1677; 1996.
- (Continued)

**Related U.S. Application Data**

- (62) Division of application No. 29/447,944, filed on Mar. 7, 2013, now Pat. No. Des. 720,469.
- (51) **LOC (10) Cl.** ..... **24-01**
- (52) **U.S. Cl.**  
USPC ..... **D24/224**
- (58) **Field of Classification Search**  
USPC ..... D24/216, 222-232; 422/63-67,  
422/99-104, 509, 552, 553, 549, 569, 400,  
422/423, 421; D23/330, 358; D13/176;  
D1/199; D30/160; D7/387, 701;  
D25/123; 210/638; 435/29, 177, 371,  
435/325; 623/1.41, 23.72; 141/327;  
356/246; 359/396, 398  
CPC ..... G01N 35/00029; G01N 35/025; G01N  
35/026; G01N 35/00009; G01N 31/22;  
G01N 33/525; G01N 35/10; B01L 3/5082;  
B01L 3/5085; B01L 3/50853; B01L 3/5027;  
C02F 9/00; C12Q 1/04; C12N 11/02; C12N  
5/0698; C12N 9/62; A61F 2/06; A61F  
2/0063; B67C 11/00; G02B 21/34  
See application file for complete search history.

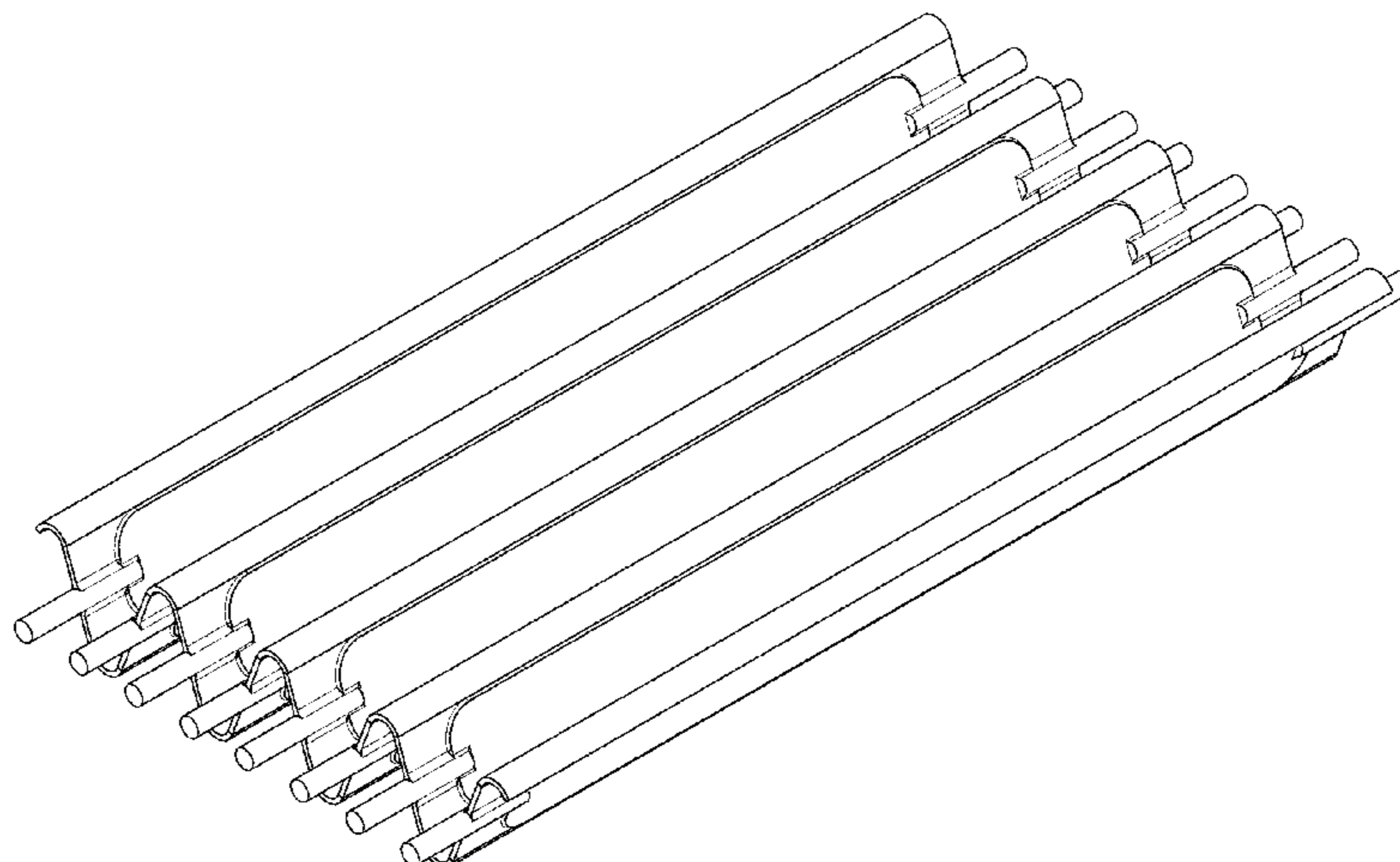
*Primary Examiner* — T. Chase Nelson  
*Assistant Examiner* — Mark Cavanna  
(74) *Attorney, Agent, or Firm* — Mark D. Wieczorek

(57) **CLAIM**  
The ornamental design for the cell encapsulation device, as shown.

**DESCRIPTION**

FIG. 1 is a perspective view of an embodiment of a cell encapsulation device showing our new design; FIG. 2 is a left side elevational view thereof; FIG. 3 is a right side elevational view thereof; FIG. 4 is a back elevational view thereof; FIG. 5 is a front elevational view thereof; FIG. 6 is a bottom plan view thereof; and, FIG. 7 is a top plan view thereof.

**1 Claim, 5 Drawing Sheets**



(56)

## References Cited

## U.S. PATENT DOCUMENTS

4,447,140 A \* 5/1984 Campbell ..... G02B 21/34  
359/396  
4,501,496 A \* 2/1985 Griffin ..... G02B 21/34  
356/246  
D278,140 S 3/1985 Tatum  
4,788,339 A 11/1988 Moore et al.  
D300,293 S 3/1989 Casey  
4,968,733 A 11/1990 Müller et al.  
4,976,859 A 12/1990 Wechs  
5,011,494 A 4/1991 von Recum et al.  
5,100,392 A 3/1992 Orth et al.  
5,158,881 A 10/1992 Aebischer et al.  
5,219,361 A 6/1993 von Recum et al.  
5,284,761 A 2/1994 Aebischer et al.  
5,302,515 A \* 4/1994 Goodwin, Jr. .... B01L 3/5027  
422/421  
5,314,471 A 5/1994 Brauker et al.  
5,324,518 A 6/1994 Orth et al.  
5,344,454 A 9/1994 Clarke et al.  
D353,747 S 12/1994 Lanier  
5,421,923 A 6/1995 Clarke et al.  
5,453,278 A 9/1995 Chan et al.  
5,545,223 A 8/1996 Neuenfeldt et al.  
5,549,675 A 8/1996 Neuenfeldt et al.  
5,569,462 A 10/1996 Martinson et al.  
5,571,721 A \* 11/1996 Turner ..... B01L 3/5085  
359/398  
5,593,440 A 1/1997 Brauker et al.  
5,605,693 A 2/1997 Seare, Jr.  
5,624,674 A 4/1997 Seare, Jr.  
5,653,756 A 8/1997 Clarke et al.  
5,713,888 A 2/1998 Neuenfeldt et al.  
5,733,336 A 3/1998 Neuenfeldt et al.  
5,738,673 A 4/1998 Mills et al.  
5,741,330 A 4/1998 Brauker et al.  
5,782,912 A 7/1998 Brauker et al.  
5,800,529 A 9/1998 Brauker et al.  
5,807,406 A 9/1998 Brauker et al.  
5,882,354 A 3/1999 Brauker et al.  
5,964,261 A 10/1999 Neuenfeldt et al.  
5,964,804 A 10/1999 Brauker et al.  
5,980,889 A 11/1999 Butler et al.  
6,060,640 A 5/2000 Pauley et al.  
6,068,775 A 5/2000 Custer et al.  
6,156,305 A 12/2000 Brauker et al.  
D453,977 S 2/2002 Park et al.  
6,520,997 B1 2/2003 Pekkarinen et al.  
D473,318 S 4/2003 Barbera-Guillem  
6,617,151 B1 9/2003 Newman et al.  
D485,241 S 1/2004 Lee  
6,773,458 B1 8/2004 Brauker et al.  
D536,774 S 2/2007 Kuo et al.  
7,192,450 B2 3/2007 Brauker et al.  
D548,357 S \* 8/2007 Barbera-Guillem ..... D24/216  
7,510,876 B2 3/2009 D'Amour et al.  
7,534,608 B2 5/2009 Martinson et al.  
7,541,185 B2 6/2009 D'Amour et al.  
7,625,753 B2 12/2009 Kelly et al.  
7,695,963 B2 4/2010 Agulnick et al.  
7,695,965 B2 4/2010 Martinson et al.  
7,704,738 B2 4/2010 D'Amour et al.  
D619,232 S 7/2010 Ragaini  
D632,799 S 2/2011 Canner et al.  
7,958,585 B2 6/2011 Zhang et al.  
7,993,916 B2 8/2011 Agulnick et al.  
7,993,920 B2 8/2011 Martinson et al.  
8,008,075 B2 8/2011 Green et al.  
8,129,182 B2 3/2012 D'Amour et al.  
8,178,878 B2 5/2012 Chien et al.  
8,211,699 B2 7/2012 Robins et al.

8,216,836 B2 7/2012 D'Amour et al.  
8,278,106 B2 10/2012 Martinson et al.  
8,334,138 B2 12/2012 Robins et al.  
8,338,170 B2 12/2012 Kelly et al.  
D676,118 S 2/2013 Hansen  
8,414,925 B2 4/2013 Freier  
8,425,928 B2 4/2013 Martinson et al.  
D681,843 S \* 5/2013 Nameth ..... D24/224  
D690,828 S \* 10/2013 Yoon ..... D24/224  
D692,578 S 10/2013 Kikuhara et al.  
8,623,645 B2 1/2014 D'Amour et al.  
D706,017 S 6/2014 King et al.  
2009/0068170 A1 3/2009 Weitz et al.  
2009/0105811 A1 4/2009 Dinh et al.

## FOREIGN PATENT DOCUMENTS

WO WO 93/00439 1/1993  
WO WO 95/05452 2/1995  
WO WO 96/39100 12/1996  
WO WO 99/53021 10/1999  
WO WO 2008/112190 9/2008  
WO WO 2010/121024 10/2010  
WO WO 2012/115619 8/2012

## OTHER PUBLICATIONS

Brauker et al., "Neovascularization of synthetic membranes directed by membrane microarchitecture", *Journal of Biomedical Materials Research*, 29:1517-1524; 1995.  
Carlsson et al., "Measurements of Oxygen Tension in Native and Transplanted Rat Pancreatic Islets", *Diabetes*, 47(7):1027-1032; 1998.  
Chung et al., "Human Embryonic Stem Cell Lines Generated without Embryo Destruction", *Cell Stem Cell*, 2(2), 113-117; 2008.  
Dionne et al., "Effect of Oxygen on Isolated Pancreatic Tissue", *Trans. Am. Soc. Artif. Intern. Organs*, 35: 739-741; 1989.  
Klimanskaya et al., "Human embryonic stem cell lines derived from single blastomeres", *Nature*, 444:481-485; 2006.  
Korsgren et al., "Current Status of Clinical Islet Transplantation", *Transplantation* 79(10):1289-1293; 2005.  
Kumagai-Braesch et al., "The TheraCyte<sup>TM</sup> Device Protects against Islet Allograft Rejection in Immunized Hosts", *Cell Transplantation*, 22:1137-1146; 2013.  
Loudovaris et al., "Destruction of Xenografts But Not Allografts Within Cell Impermeable Membranes", *Transplantation Proceedings* 24:2291-2292; 1992.  
Loudovaris et al., "CD4+ T cell mediated destruction of xenografts within cell-impermeable membranes in the absence of CD8+ T cells and B cell", *Transplantation* 61:1678-1684; 1996.  
McKenzie et al., "Protection of Xenografts by a Combination of Immunoisolation and a Single Dose of Anti-CD4 Antibody", *Cell Transplantation* 10:183-193; 2001.  
Rice et al., "Quantitative biomarkers of stem cell differentiation based on intrinsic two-photon excited fluorescence", *Journal of Biomedical Optics* (2007) Nov.-Dec.; 12(6), 3 pages.  
Tibell et al., "Survival of Macroencapsulated Allogeneic Parathyroid Tissue One Year After Transplantation in Nonimmunosuppressed Humans", *Cell Transplantation*, 10:591-599; 2001.  
International Search Report and Written Opinion dated Jun. 26, 2014 for International Application No. PCT/US2014/022109, 9 pages.  
U.S. Appl. No. 13/672,688, filed Nov. 8, 2012.  
U.S. Appl. No. 13/761,078, filed Feb. 6, 2013.  
U.S. Appl. No. 14/106,330, filed Dec. 13, 2013.  
U.S. Appl. No. 29/408,366, filed Dec. 12, 2011.  
U.S. Appl. No. 29/408,368, filed Dec. 12, 2011.  
U.S. Appl. No. 29/408,370, filed Dec. 12, 2011.  
U.S. Appl. No. 29/423,365, filed May 31, 2012.

\* cited by examiner

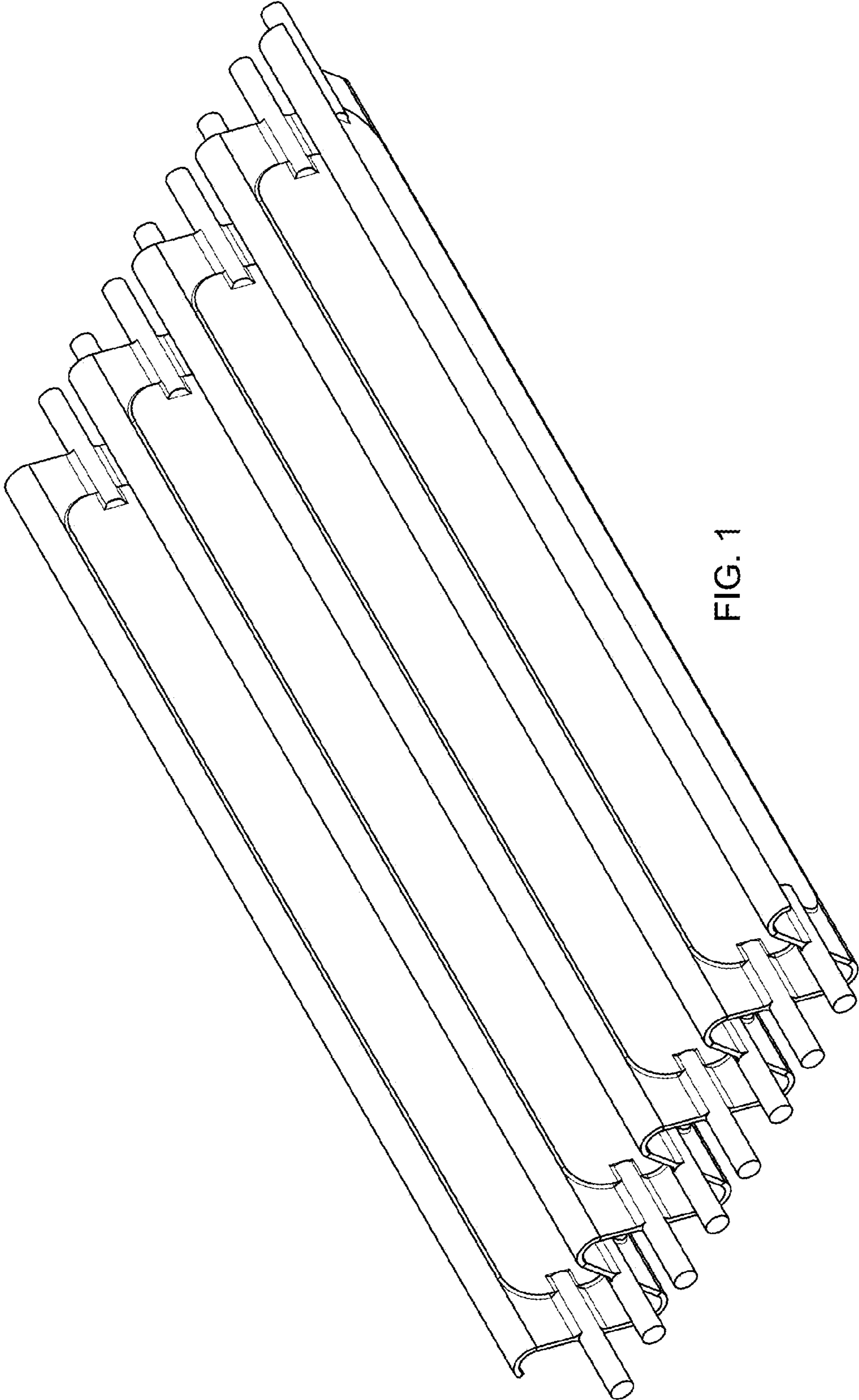


FIG. 1

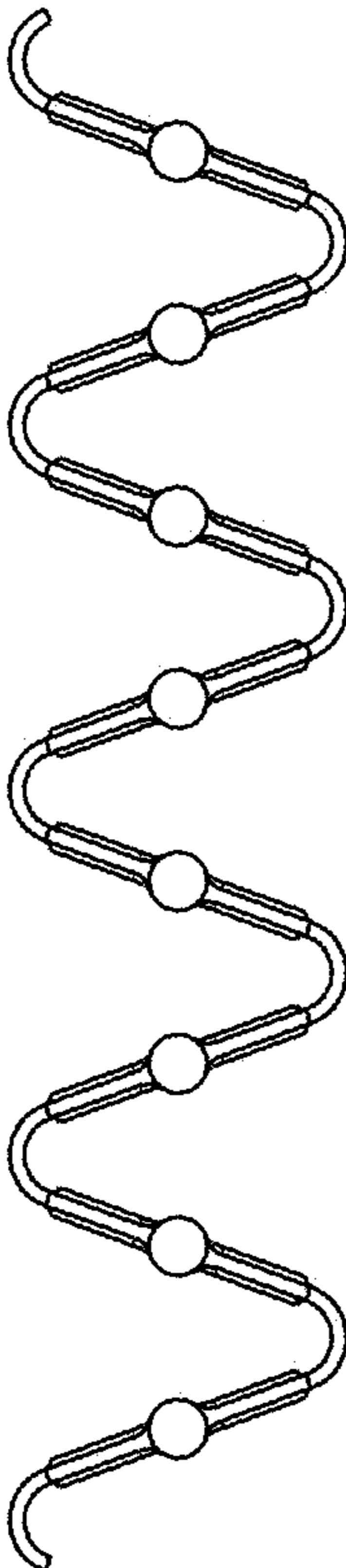


FIG. 2

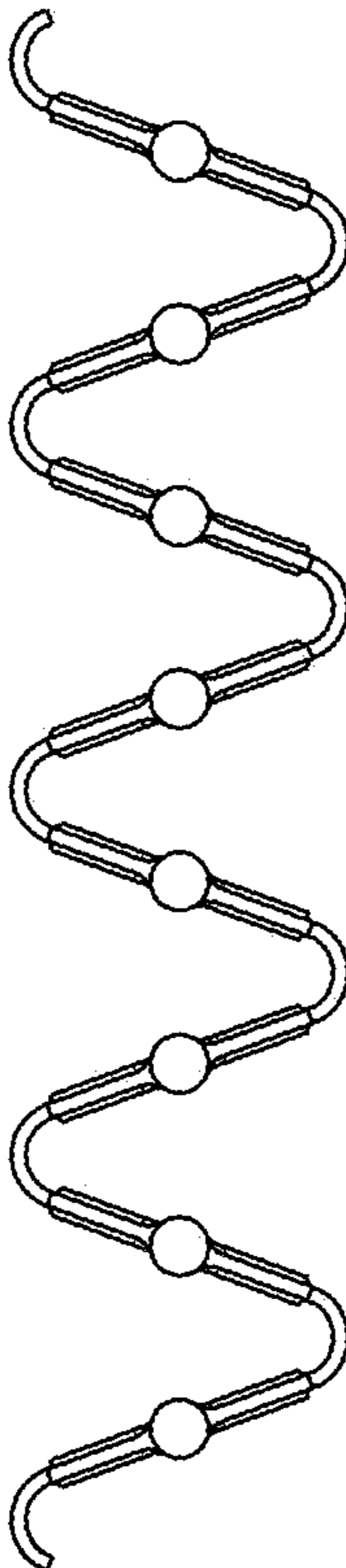


FIG. 3

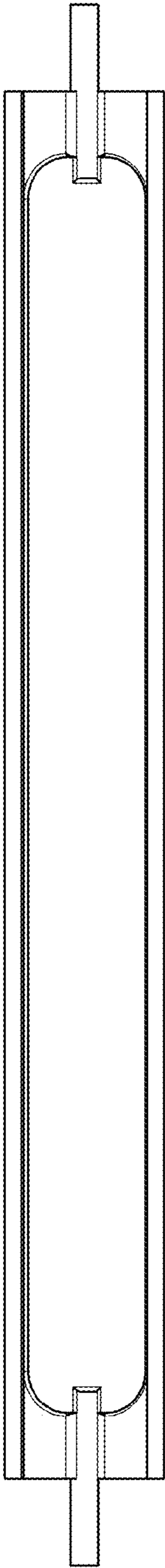


FIG. 4

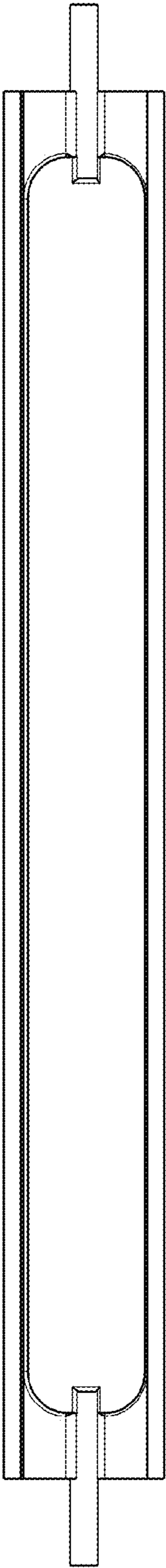


FIG. 5

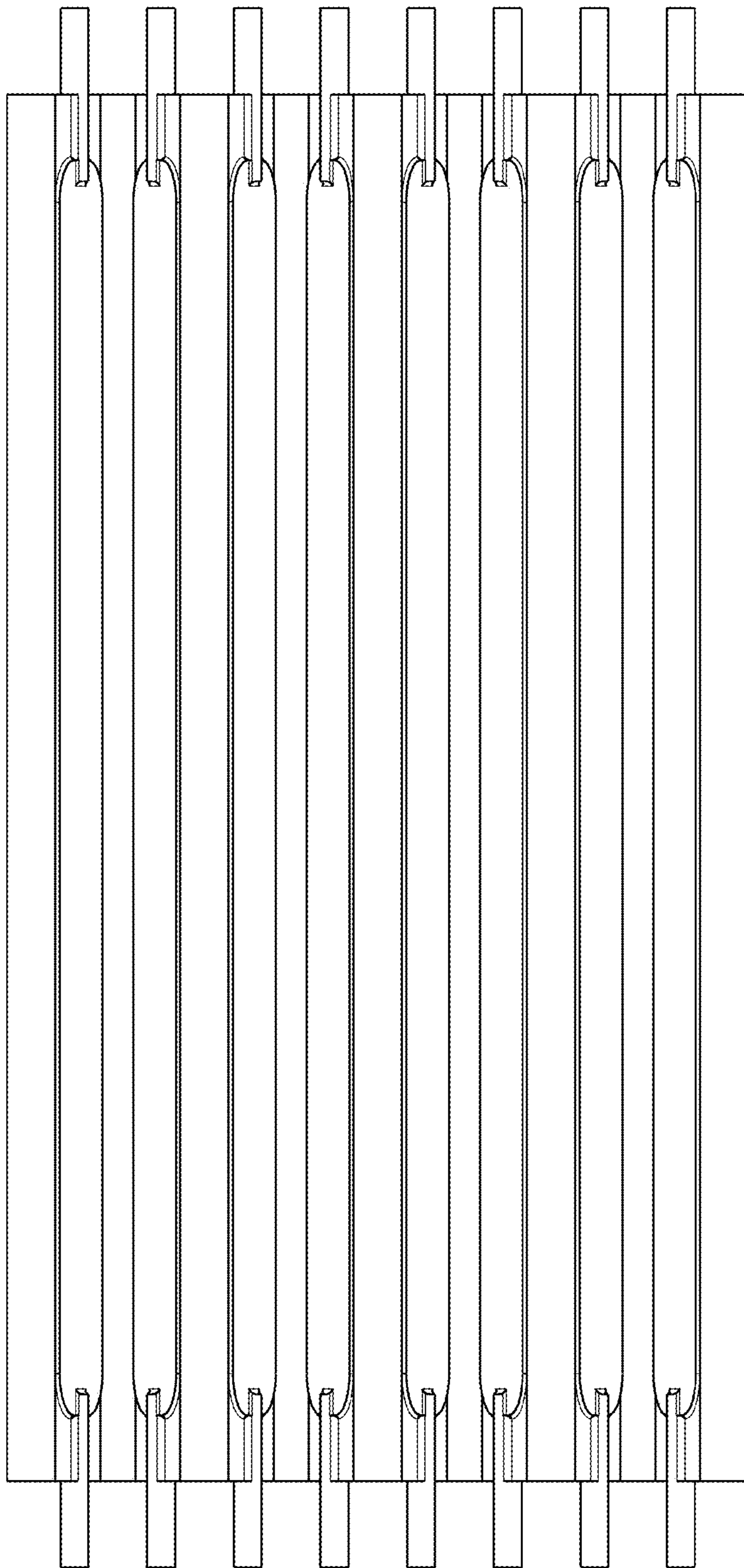


FIG. 6

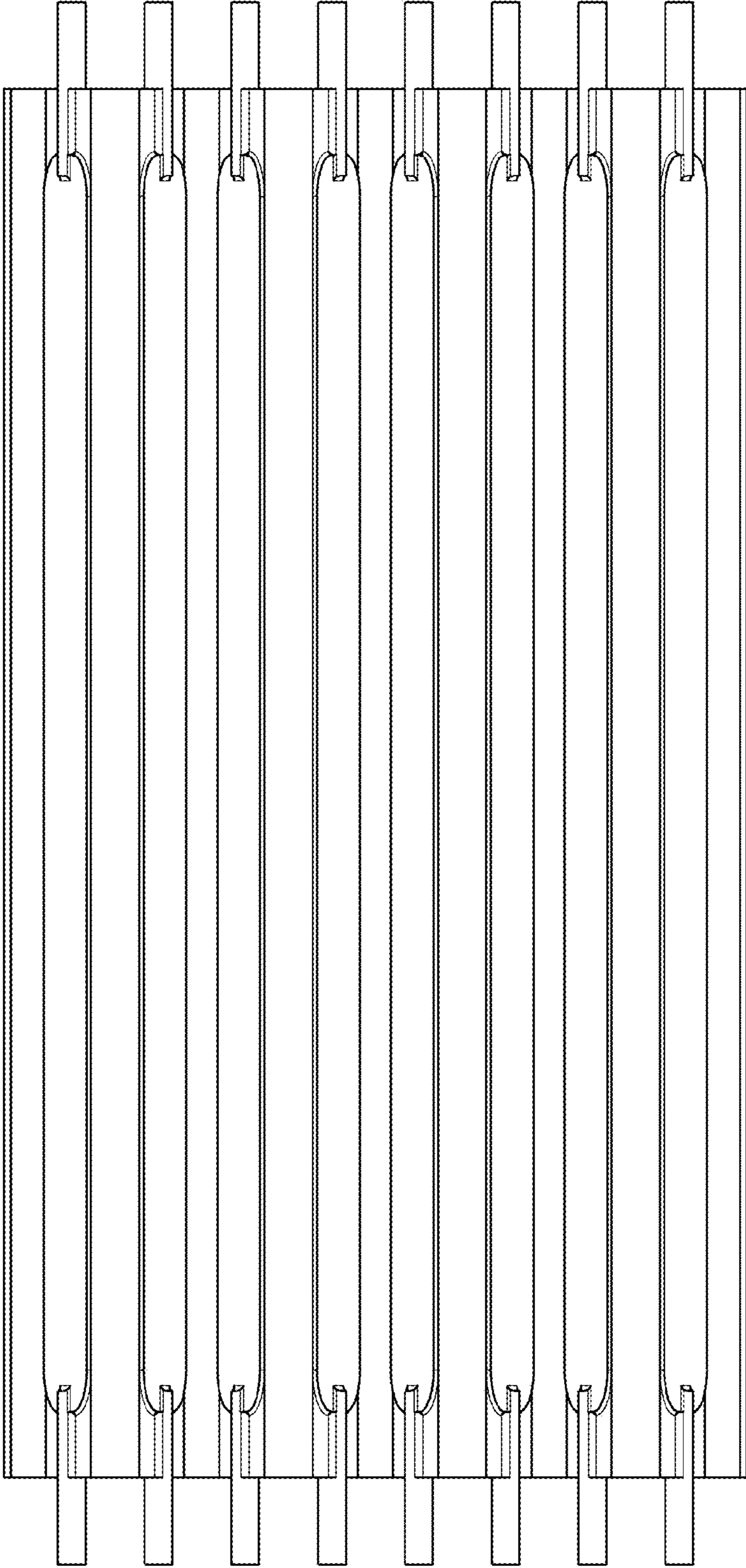


FIG. 7