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(12) **United States Design Patent** (10) **Patent No.:** **US D967,960 S**
Wang et al. (45) **Date of Patent:** **** Oct. 25, 2022**

- (54) **POROUS TIBIAL IMPLANT**
- (71) Applicant: **Howmedica Osteonics Corp.**, Mahwah, NJ (US)
- (72) Inventors: **Aiguo Wang**, Wayne, NJ (US); **Matthew P. Poggie**, Montclair, NJ (US); **Nicholas Nai Guang Dong**, Little Falls, NJ (US); **Robert W. Klein**, Orangeburg, NY (US); **Chau Ngo**, Secaucus, NJ (US)

3,906,550 A 9/1975 Rostoker et al.
 4,000,525 A 1/1977 Klawitter et al.
 4,073,999 A 2/1978 Bryan et al.
 (Continued)

FOREIGN PATENT DOCUMENTS

EP 0761242 A1 3/1997
 JP 2001087292 A 4/2001
 (Continued)

OTHER PUBLICATIONS

Extended European Search Report for Application No. EP14158287 dated Jun. 4, 2014.

(Continued)

- (73) Assignee: **Howmedica Osteonics Corp.**, Mahwah, NJ (US)
- (**) Term: **15 Years**
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Primary Examiner — Charles D Hanson
 (74) *Attorney, Agent, or Firm* — Lerner, David, Littenberg, Krumholz & Mentlik, LLP

Related U.S. Application Data

- (63) Continuation of application No. 15/923,517, filed on Mar. 16, 2018, now abandoned, which is a continuation of application No. 13/788,442, filed on Mar. 7, 2013, now Pat. No. 9,949,837.
- (51) **LOC (13) Cl.** **24-03**
- (52) **U.S. Cl.**
USPC **D24/155**
- (58) **Field of Classification Search**
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CPC A61F 2/3859; A61F 2/38; A61F 2/389; A61F 2/3886; A61F 2/60; A61F 2/06; A61F 2/66; A61F 2/76; A61F 2310/00023
See application file for complete search history.

(57) **CLAIM**

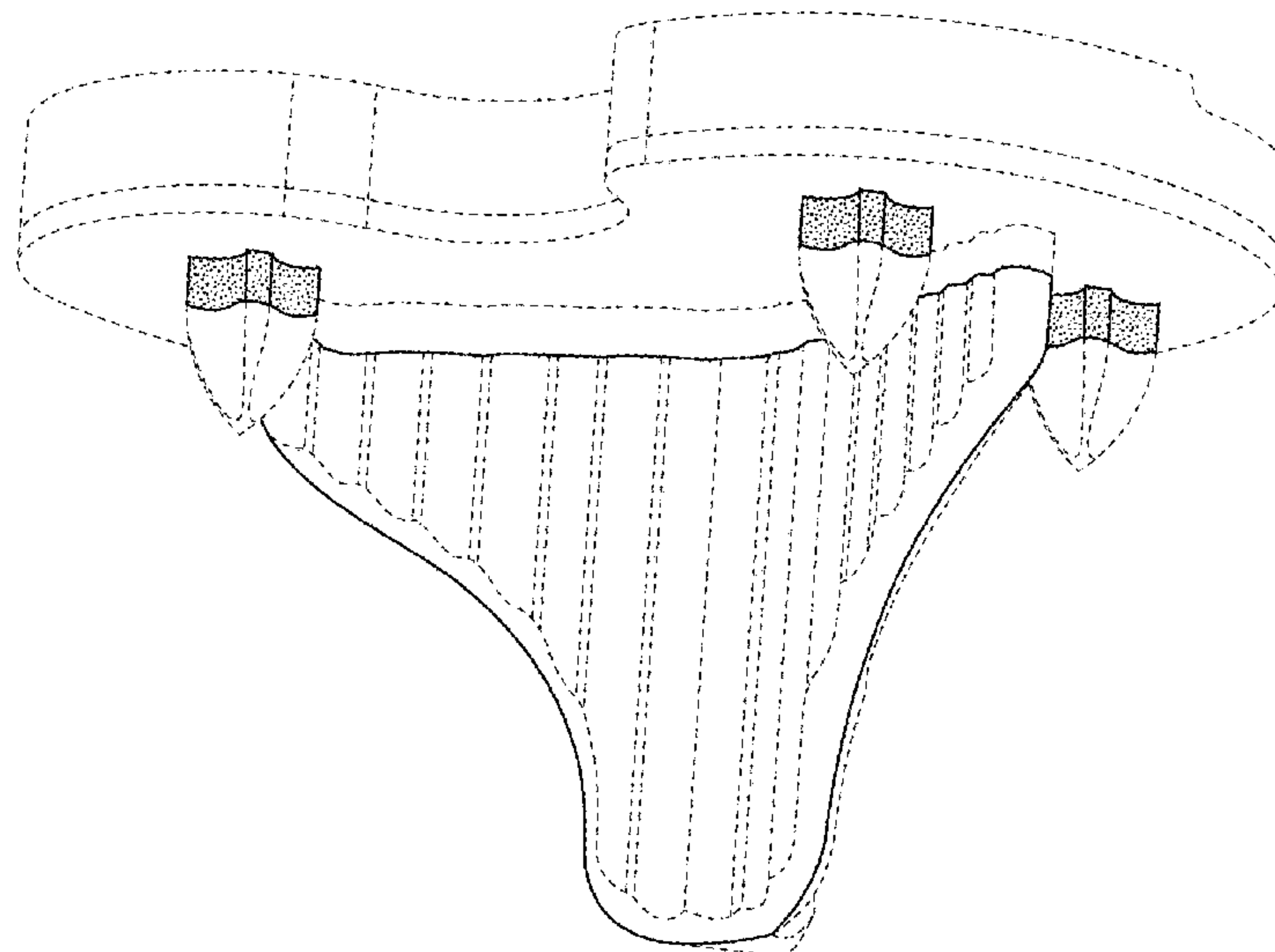
The ornamental design for a porous tibial implant, as shown and described.

DESCRIPTION

FIG. 1 is a front perspective view of a porous tibial implant according to our design;
 FIG. 2 is a front elevation view thereof;
 FIG. 3 is a rear elevation view thereof;
 FIG. 4 is a right side elevation view thereof;
 FIG. 5 is a left side elevation view thereof;
 FIG. 6 is a top plan view thereof;
 FIG. 7 is a bottom plan view thereof; and,
 FIG. 8 is a bottom rear perspective view thereof. The broken lines shown in the drawings are for the purpose of illustrating environmental structure and form no part of the claimed design. The stippling on the surface represents a porous surface, and one that has a different surface texture from the non-stippled surfaces.

- (56) **References Cited**
U.S. PATENT DOCUMENTS
3,605,123 A 9/1971 Pratt et al.
3,808,606 A 5/1974 Tronzo
3,855,638 A 12/1974 Pilliar

1 Claim, 5 Drawing Sheets



(56)

References Cited

U.S. PATENT DOCUMENTS

4,156,943 A	6/1979	Collier	6,008,432 A	12/1999	Taylor
4,179,485 A	12/1979	Tritten	6,010,336 A	1/2000	Shimotoso et al.
4,355,428 A	10/1982	Deloison et al.	6,022,509 A	2/2000	Matthews et al.
4,479,271 A	10/1984	Bolesky et al.	6,060,640 A	5/2000	Pauley et al.
4,501,031 A	2/1985	McDaniel et al.	6,087,553 A	7/2000	Cohen et al.
4,550,448 A	11/1985	Kenna	6,139,581 A	10/2000	Engh et al.
4,644,942 A	2/1987	Sump	6,149,689 A	11/2000	Grundeis
4,743,261 A	5/1988	Epinette	6,179,876 B1	1/2001	Stamper et al.
4,759,767 A	7/1988	Lacey	6,193,761 B1	2/2001	Treacy
4,808,186 A	2/1989	Smith	6,203,576 B1	3/2001	Afriat et al.
4,851,008 A	7/1989	Johnson	6,228,091 B1	5/2001	Lombardo et al.
4,865,603 A	9/1989	Noiles	6,280,478 B1	8/2001	Richter et al.
4,874,155 A	10/1989	Goul	6,391,059 B1	5/2002	Lemperle et al.
4,883,488 A	11/1989	Bloebaum et al.	6,520,964 B2	2/2003	Tallarida et al.
4,911,720 A	3/1990	Collier	6,554,867 B1	4/2003	Joos
4,938,769 A	7/1990	Shaw	6,565,575 B2	5/2003	Lewis
4,944,756 A	7/1990	Kenna	6,582,470 B1	6/2003	Lee et al.
4,969,907 A	11/1990	Koch et al.	6,592,622 B1	7/2003	Ferguson
4,986,834 A	1/1991	Smith et al.	6,599,322 B1	7/2003	Amrich et al.
4,997,445 A	3/1991	Hodorek	6,616,696 B1	9/2003	Merchant
5,002,575 A	3/1991	Johnson	6,652,588 B2	11/2003	Hayes, Jr. et al.
5,019,103 A	5/1991	Van Zile et al.	6,679,917 B2	1/2004	Ek
5,019,104 A	5/1991	Whiteside et al.	6,740,092 B2	5/2004	Lombardo et al.
5,034,186 A	7/1991	Shimamune et al.	6,797,006 B2	9/2004	Hodorek
5,080,674 A	1/1992	Jacobs et al.	6,800,094 B2	10/2004	Burkinshaw
5,108,434 A	4/1992	Ahrens et al.	6,855,150 B1	2/2005	Linehan
5,176,710 A	1/1993	Hahn et al.	6,905,513 B1	6/2005	Metzger
5,192,324 A	3/1993	Kenna	6,913,623 B1	7/2005	Zhu
5,222,983 A	6/1993	Schmitz et al.	6,974,481 B1	12/2005	Carson
5,246,530 A	9/1993	Bugle et al.	7,001,394 B2	2/2006	Gundlapalli et al.
5,258,030 A	11/1993	Wolfarth et al.	7,001,672 B2	2/2006	Justin et al.
5,263,986 A	11/1993	Nolles et al.	7,018,418 B2	3/2006	Amrich et al.
5,336,265 A	8/1994	Serbousek et al.	7,070,623 B2	7/2006	Hunter et al.
5,358,533 A	10/1994	Noiles et al.	7,189,262 B2	3/2007	Hayes, Jr. et al.
5,370,698 A	12/1994	Heimke et al.	7,241,313 B2	7/2007	Unwin et al.
5,397,359 A	3/1995	Mittelmeier et al.	7,255,715 B2	8/2007	Metzger
5,405,389 A	4/1995	Conta et al.	7,258,810 B2	8/2007	Hunter et al.
5,413,605 A	5/1995	Ashby et al.	7,291,169 B2	11/2007	Hodorek
5,441,537 A	8/1995	Kenna	7,320,709 B2	1/2008	Felt et al.
5,466,631 A	11/1995	Ichikawa et al.	7,357,817 B2	4/2008	D'Alessio, II
5,480,443 A	1/1996	Elias	7,387,846 B2	6/2008	Redepenning
5,480,444 A	1/1996	Incavo et al.	7,393,342 B2	7/2008	Henniges et al.
5,480,445 A	1/1996	Burkinshaw	7,431,734 B2	10/2008	Danoff et al.
5,487,933 A	1/1996	White	7,507,256 B2	3/2009	Heck et al.
5,489,306 A	2/1996	Gorski	7,513,912 B2	4/2009	Hayes, Jr. et al.
5,504,300 A	4/1996	Devanathan et al.	7,537,664 B2	5/2009	O'Neill et al.
5,507,815 A	4/1996	Wagner et al.	7,544,209 B2	6/2009	Lotke
5,521,087 A	5/1996	Lee et al.	7,578,850 B2	8/2009	Kuczynski et al.
5,534,027 A	7/1996	Hodorek	7,582,117 B2	9/2009	Hunter et al.
5,571,203 A	11/1996	Masini	7,582,118 B2	9/2009	Brown et al.
5,580,353 A	12/1996	Mendes et al.	7,597,715 B2	10/2009	Brown et al.
5,607,480 A	3/1997	Beaty	7,713,307 B1	5/2010	Hall et al.
5,609,641 A	3/1997	Johnson et al.	7,771,483 B2	8/2010	Justin et al.
5,645,593 A	7/1997	Woods et al.	7,829,433 B2	11/2010	Yamazaki
5,658,334 A	8/1997	Caldarise et al.	7,833,274 B2	11/2010	Popoola et al.
5,658,352 A	8/1997	Draenert	7,842,093 B2	11/2010	Peters et al.
5,665,118 A	9/1997	LaSalle et al.	7,896,922 B2	3/2011	Engh et al.
5,672,284 A	9/1997	Devanathan et al.	7,896,923 B2	3/2011	Blackwell et al.
5,687,788 A	11/1997	Caldarise et al.	7,927,336 B2	4/2011	Rasmussen
5,700,688 A	12/1997	Lee et al.	7,988,736 B2	8/2011	May et al.
5,702,459 A	12/1997	Hummer et al.	8,206,450 B2	6/2012	Henry et al.
5,713,410 A	2/1998	LaSalle et al.	8,403,994 B2 *	3/2013	Maloney A61F 2/389 623/20.14
5,716,412 A	2/1998	DeCarlo, Jr. et al.	8,454,705 B2	6/2013	Pressacco et al.
5,725,594 A	3/1998	McTighe et al.	8,556,972 B2	10/2013	Gordon et al.
5,725,603 A	3/1998	Audousset et al.	8,828,311 B2	9/2014	Medina et al.
5,728,159 A	3/1998	Stroever et al.	8,936,645 B1	1/2015	Masson
5,824,098 A	10/1998	Stein	9,237,950 B2	1/2016	Hensley et al.
5,824,103 A	10/1998	Williams	9,636,229 B2	5/2017	Lang et al.
5,826,586 A	10/1998	Mishra et al.	9,801,974 B2	10/2017	Landon
5,830,215 A	11/1998	Incavo et al.	10,034,756 B2	7/2018	Landon
5,897,592 A	4/1999	Caldarise et al.	10,231,840 B2 *	3/2019	Servidio A61F 2/389
5,989,472 A	11/1999	Ashby et al.	D856,518 S *	8/2019	Dacus D24/155
6,005,164 A	12/1999	Johansson et al.	10,779,951 B2	9/2020	Kemp et al.
6,008,430 A	12/1999	White	D905,246 S *	12/2020	Irwin D24/155
6,008,431 A	12/1999	Caldarise et al.	2001/0011190 A1	8/2001	Park
			2002/0102857 A1	8/2002	Sato
			2002/0153348 A1	10/2002	Say et al.
			2002/0161448 A1	10/2002	Hayes, Jr. et al.

(56)

References Cited

U.S. PATENT DOCUMENTS

2003/0028254 A1 2/2003 Hunter et al.
 2003/0033020 A1 2/2003 Hunter et al.
 2003/0045941 A1 3/2003 Lewallen
 2003/0065401 A1 4/2003 Amrich et al.
 2003/0083751 A1 5/2003 Tornier
 2003/0120346 A1 6/2003 Mercinek et al.
 2003/0135282 A1 7/2003 Anitua
 2003/0171820 A1 9/2003 Wilshaw et al.
 2003/0181984 A1 9/2003 Abendschein
 2003/0220696 A1 11/2003 Levine et al.
 2004/0133283 A1 7/2004 Shetty
 2004/0143337 A1 7/2004 Burkinshaw
 2004/0143338 A1 7/2004 Burkinshaw et al.
 2004/0148026 A1 7/2004 Bonutti
 2004/0162619 A1 8/2004 Blaylock et al.
 2004/0167633 A1 8/2004 Wen et al.
 2004/0199250 A1 10/2004 Fell
 2004/0243237 A1 12/2004 Unwin et al.
 2004/0260396 A1 12/2004 Ferree et al.
 2004/0267371 A1 12/2004 Hayes et al.
 2005/0015153 A1 1/2005 Goble et al.
 2005/0084407 A1 4/2005 Myrick
 2005/0112397 A1 5/2005 Rolfe et al.
 2005/0123672 A1 6/2005 Justin et al.
 2005/0125068 A1* 6/2005 Hozack A61F 2/389
 623/20.32
 2005/0177242 A1 8/2005 Lotke
 2005/0196934 A1 9/2005 Tazoe et al.
 2006/0004466 A1 1/2006 Glocker et al.
 2006/0052875 A1 3/2006 Bernero et al.
 2006/0116682 A1 6/2006 Longo
 2006/0122708 A1 6/2006 Nakamura et al.
 2006/0142869 A1 6/2006 Gross
 2006/0147332 A1 7/2006 Jones et al.
 2006/0149391 A1 7/2006 Opie et al.
 2006/0161263 A1 7/2006 Sul
 2006/0229715 A1 10/2006 Istephanous et al.
 2007/0065779 A1 3/2007 Mangano
 2007/0100461 A1 5/2007 Incavo et al.
 2007/0129808 A1 6/2007 Justin et al.
 2007/0142914 A1 6/2007 Jones et al.
 2007/0179607 A1 8/2007 Hodorek et al.
 2007/0203582 A1 8/2007 Campbell
 2007/0255412 A1 11/2007 Hajaj et al.
 2007/0287027 A1 12/2007 Justin et al.
 2007/0288021 A1 12/2007 Rickels et al.
 2007/0299528 A9 12/2007 Lotke
 2008/0004709 A1 1/2008 O'Neill et al.
 2008/0021566 A1 1/2008 Peters et al.
 2008/0081007 A1 4/2008 Steele et al.
 2008/0119941 A1* 5/2008 Seo A61F 2/461
 623/20.32
 2008/0133020 A1 6/2008 Blackwell et al.
 2008/0183291 A1 7/2008 Scheller et al.
 2008/0188942 A1 8/2008 Brown et al.
 2008/0269893 A1 10/2008 Bhatnagar et al.
 2009/0048660 A1 2/2009 Adden

2009/0084491 A1 4/2009 Uthgenannt et al.
 2009/0093881 A1 4/2009 Bandyopadhyay et al.
 2009/0187256 A1 7/2009 Rauguth et al.
 2009/0228114 A1 9/2009 Clark et al.
 2009/0265011 A1 10/2009 Mandell
 2009/0265012 A1 10/2009 Engh et al.
 2009/0270998 A1 10/2009 Kokubo et al.
 2009/0292365 A1 11/2009 Smith et al.
 2009/0326660 A1 12/2009 Abendschein
 2009/0326671 A1 12/2009 Schofield
 2009/0326674 A1 12/2009 Liu et al.
 2010/0010638 A1 1/2010 Jones et al.
 2010/0057211 A1 3/2010 Cuckler et al.
 2010/0076501 A1 3/2010 Hacking et al.
 2010/0076566 A1 3/2010 Serafin, Jr. et al.
 2010/0100190 A1 4/2010 May et al.
 2010/0100191 A1 4/2010 May et al.
 2010/0131071 A1* 5/2010 O'Connor A61F 2/3868
 623/20.32
 2010/0179662 A1 7/2010 Verne et al.
 2010/0256773 A1 10/2010 Thijs et al.
 2010/0291286 A1 11/2010 O'Neill et al.
 2010/0298947 A1 11/2010 Unger
 2010/0305708 A1 12/2010 Lang et al.
 2011/0004315 A1 1/2011 Muratoglu et al.
 2011/0009974 A1 1/2011 Blaylock et al.
 2011/0014081 A1 1/2011 Jones et al.
 2011/0015749 A1 1/2011 Engh et al.
 2011/0015750 A1 1/2011 Popoola et al.
 2011/0022180 A1 1/2011 Melkent et al.
 2011/0022181 A1 1/2011 Kasahara et al.
 2011/0029092 A1 2/2011 Deruntz et al.
 2011/0035018 A1 2/2011 Deffenbaugh et al.
 2011/0270404 A1 11/2011 Khan et al.
 2012/0191200 A1 7/2012 Choren
 2012/0253474 A1 10/2012 Klein et al.
 2012/0296436 A1 11/2012 Klawitter et al.
 2012/0330429 A1 12/2012 Axelson, Jr. et al.
 2013/0006354 A1 1/2013 Pressacco
 2013/0245777 A1* 9/2013 Jerry A61F 2/38
 623/20.31
 2014/0039621 A1 2/2014 Gordon et al.
 2018/0271668 A1 9/2018 Kemp et al.
 2018/0296351 A1 10/2018 Landon
 2018/0333267 A1 11/2018 Landon
 2018/0344468 A1 12/2018 Landon
 2018/0344469 A1 12/2018 Landon
 2018/0353300 A1 12/2018 Landon

FOREIGN PATENT DOCUMENTS

WO 02/17820 A1 3/2002
 WO 2011056422 A1 5/2011

OTHER PUBLICATIONS

Petrovic, et al., "Additive Manufacturing Solutions for Improved Medical Implants", InBiomedicine, Mar. 2012, 36 pages.

* cited by examiner

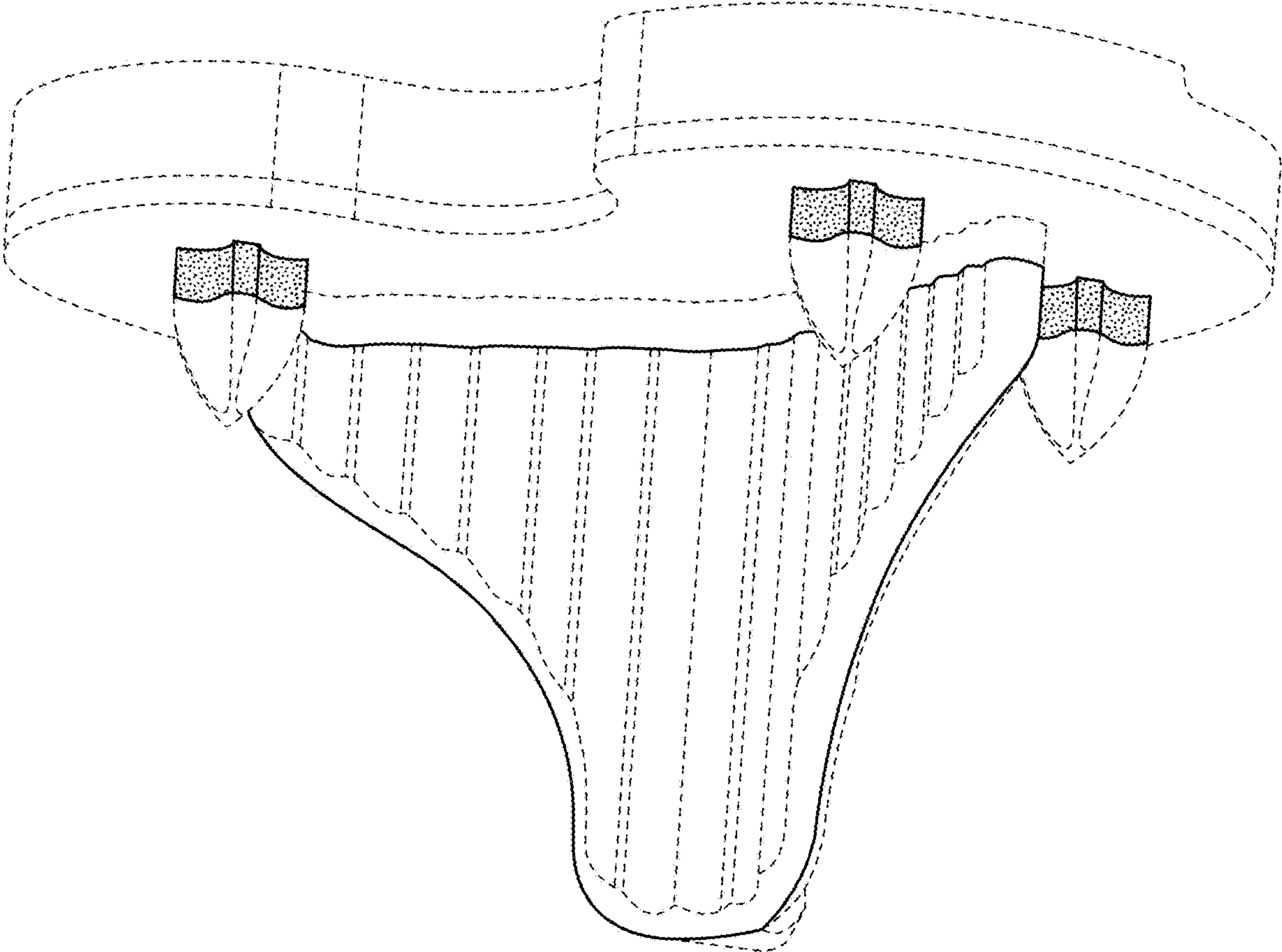


FIG. 1

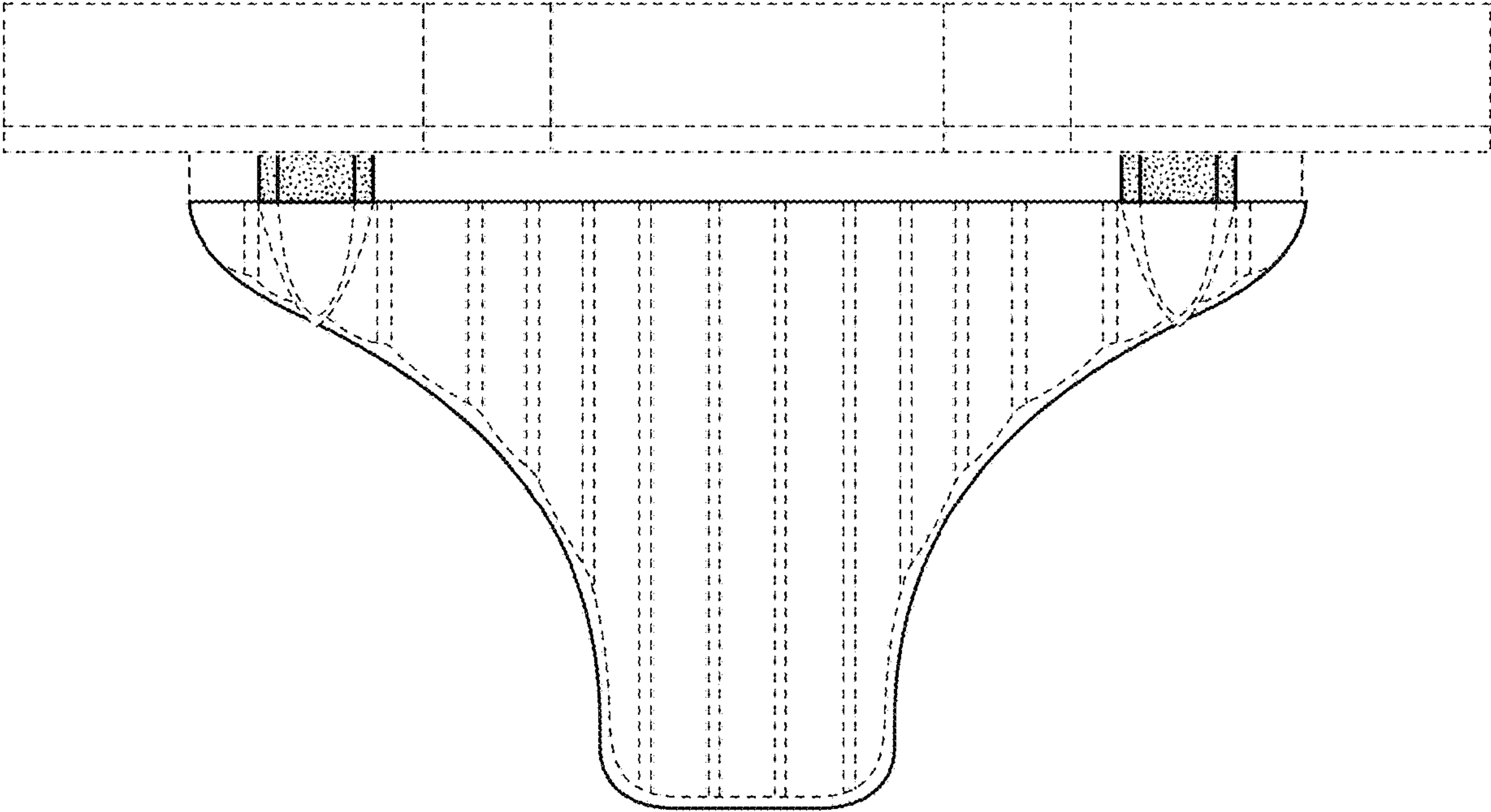


FIG. 2

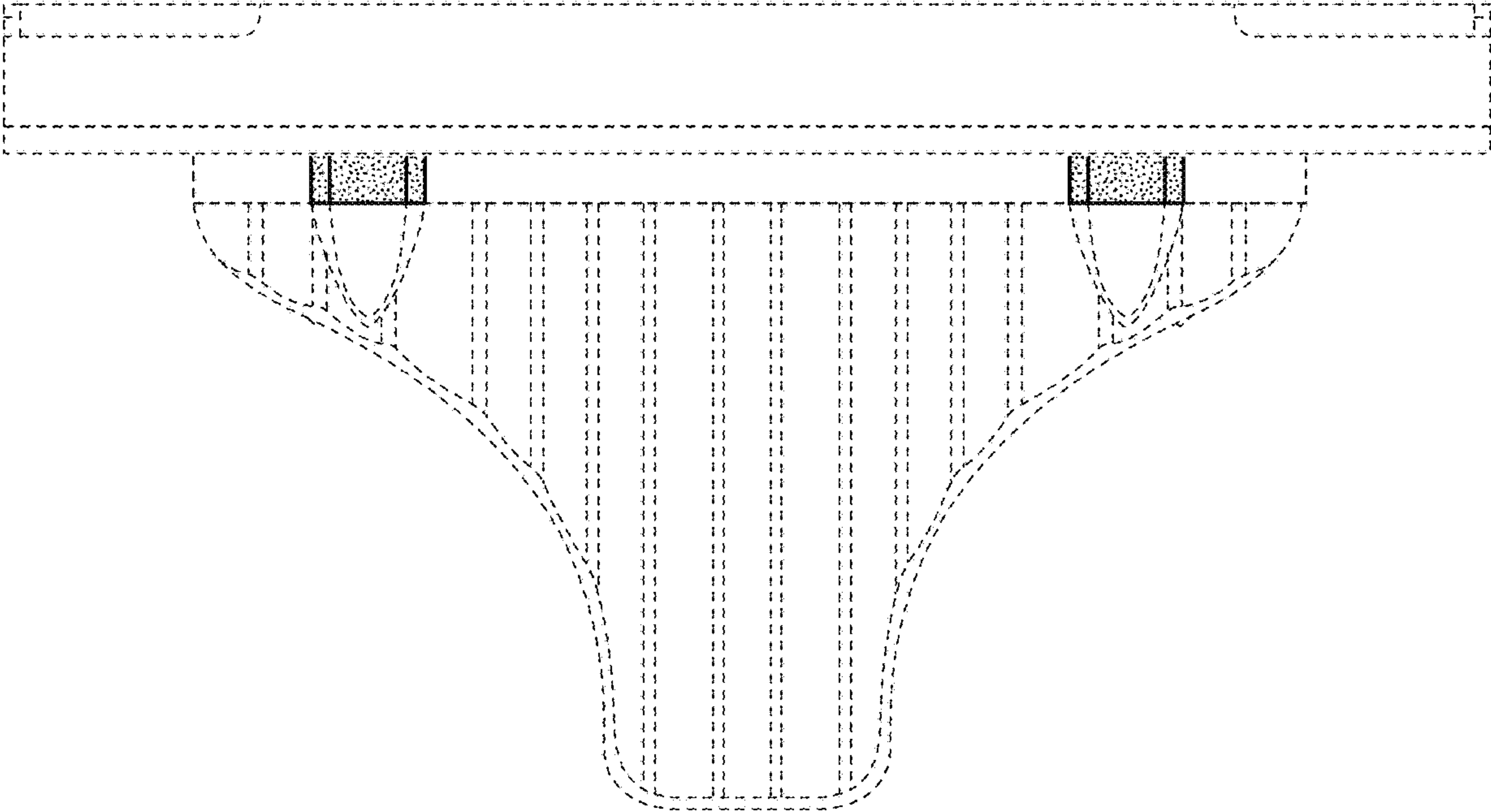


FIG. 3

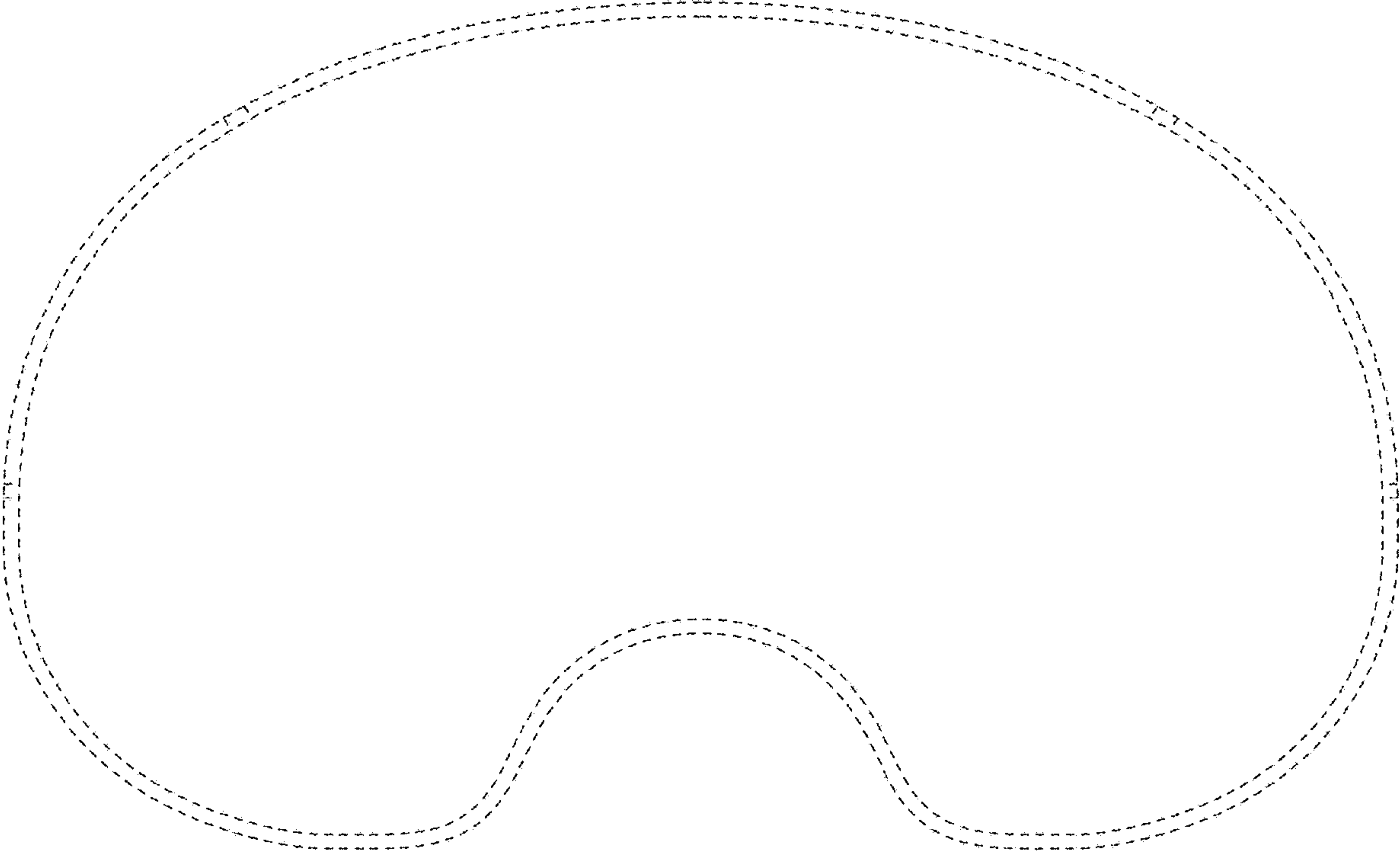


FIG. 4

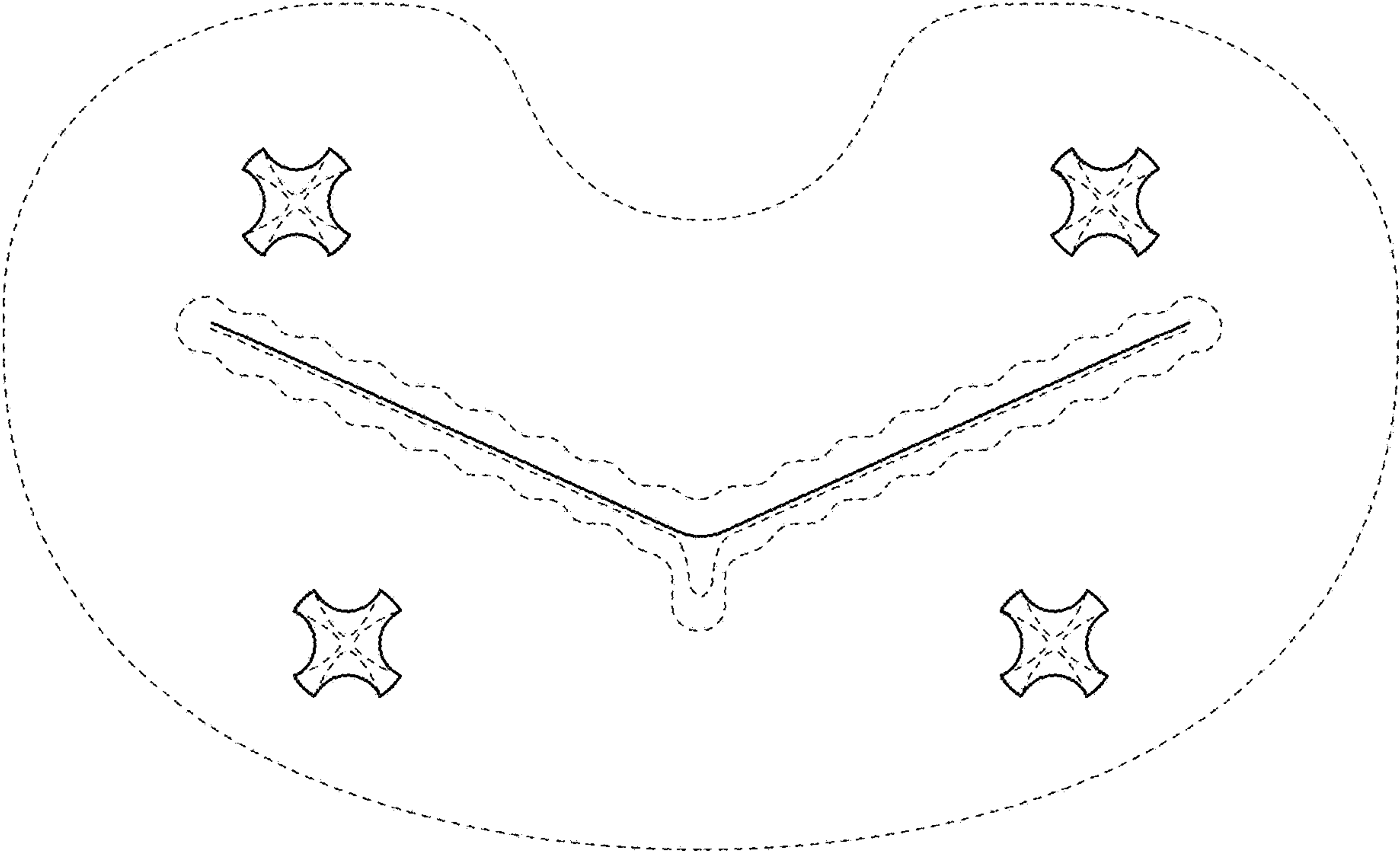


FIG. 5

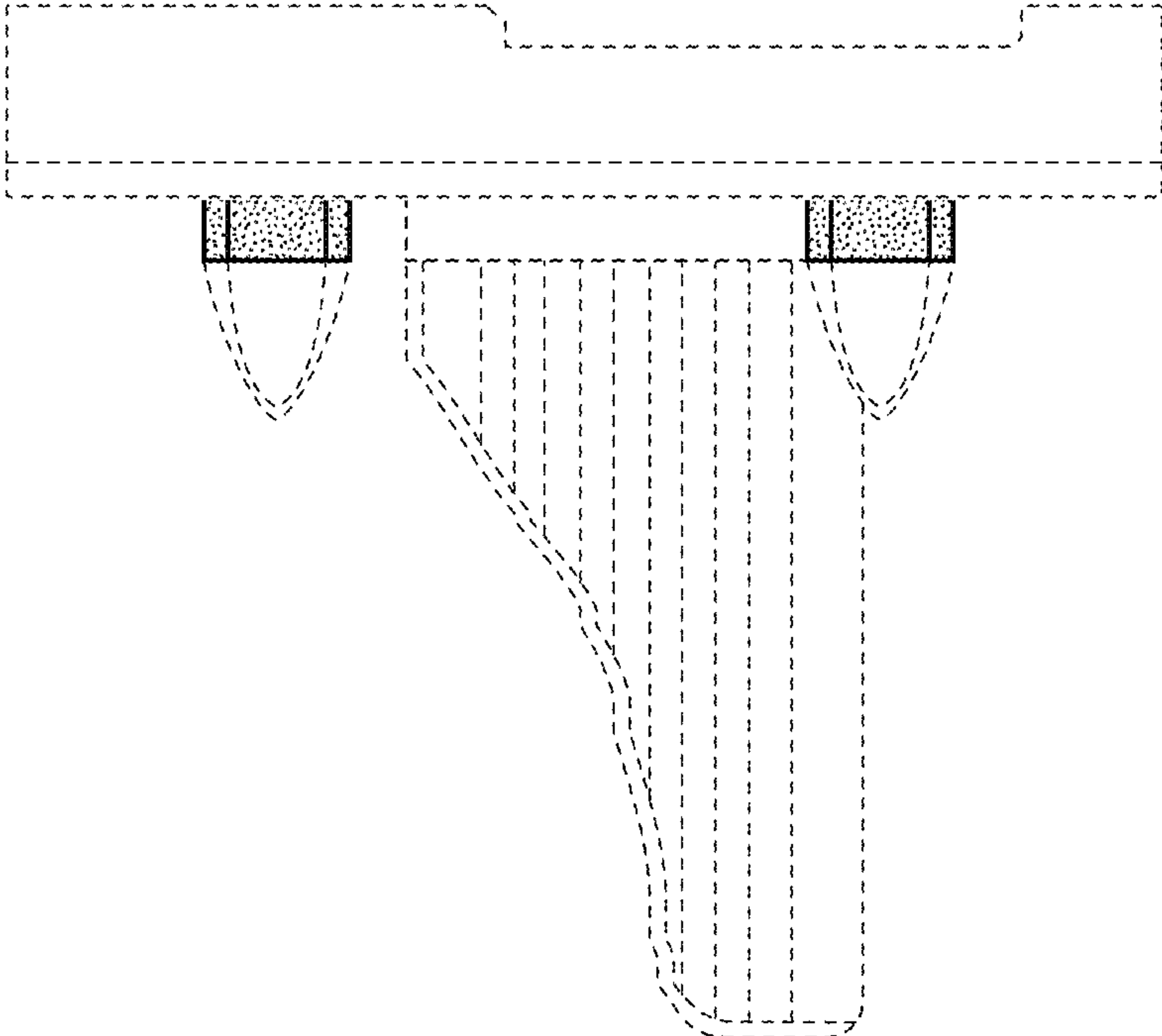


FIG. 6

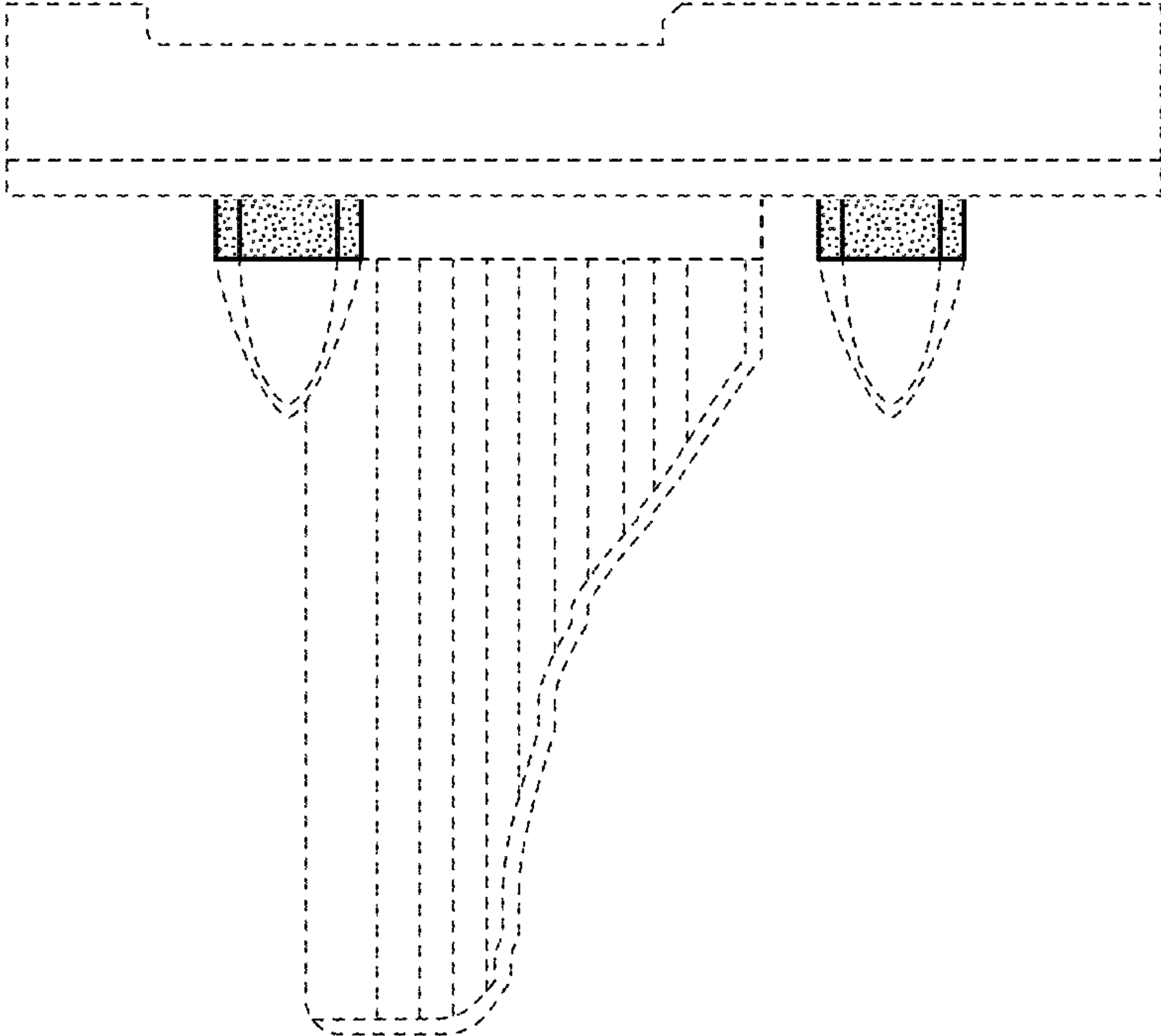


FIG. 7

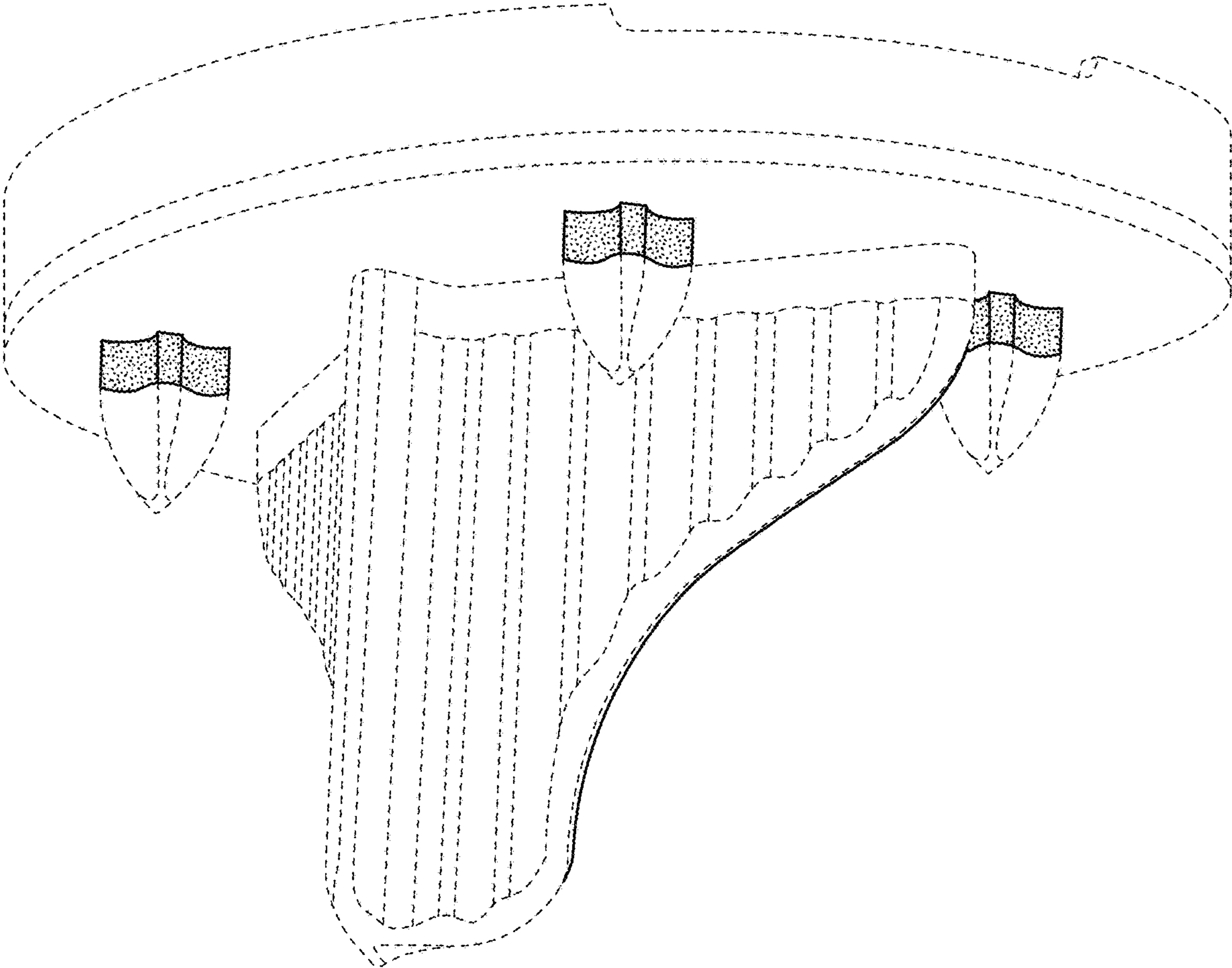


FIG. 8