



US00D856517S

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

(10) **Patent No.:** **US D856,517 S**

(45) **Date of Patent:** **** Aug. 13, 2019**

- (54) **ASYMMETRIC TISSUE GRAFT**
- (71) Applicant: **MUSCULOSKELETAL TRANSPLANT FOUNDATION**, Edison, NJ (US)
- (72) Inventors: **Aldona J. Spiegel**, Houston, TX (US); **Michael Locarno**, Kinnelon, NJ (US); **Gregory P. Adams**, Wall, NJ (US)
- (73) Assignee: **Musculoskeletal Transplant Foundation**, Edison, NJ (US)
- (**) Term: **15 Years**
- (21) Appl. No.: **29/566,994**
- (22) Filed: **Jun. 3, 2016**
- (51) **LOC (12) Cl.** **24-03**
- (52) **U.S. Cl.**
USPC **D24/155**
- (58) **Field of Classification Search**
USPC D24/155-157
CPC A61F 2/12
See application file for complete search history.

- 5,964,804 A 10/1999 Brauker et al.
- 6,293,970 B1 9/2001 Wolfenbarger et al.
- 6,497,875 B1 12/2002 Sorrell et al.

(Continued)

FOREIGN PATENT DOCUMENTS

- CN 104640577 5/2015
- EP 2692363 2/2014

(Continued)

OTHER PUBLICATIONS

Final Office Action for U.S. Appl. No. 14/208,205, dated Aug. 19, 2016.

(Continued)

Primary Examiner — Charles D Hanson
(74) *Attorney, Agent, or Firm* — Cole Schotz, P.C.;
Marcella M. Bodner

(57) **CLAIM**

The ornamental design for an asymmetric tissue graft, as shown and described.

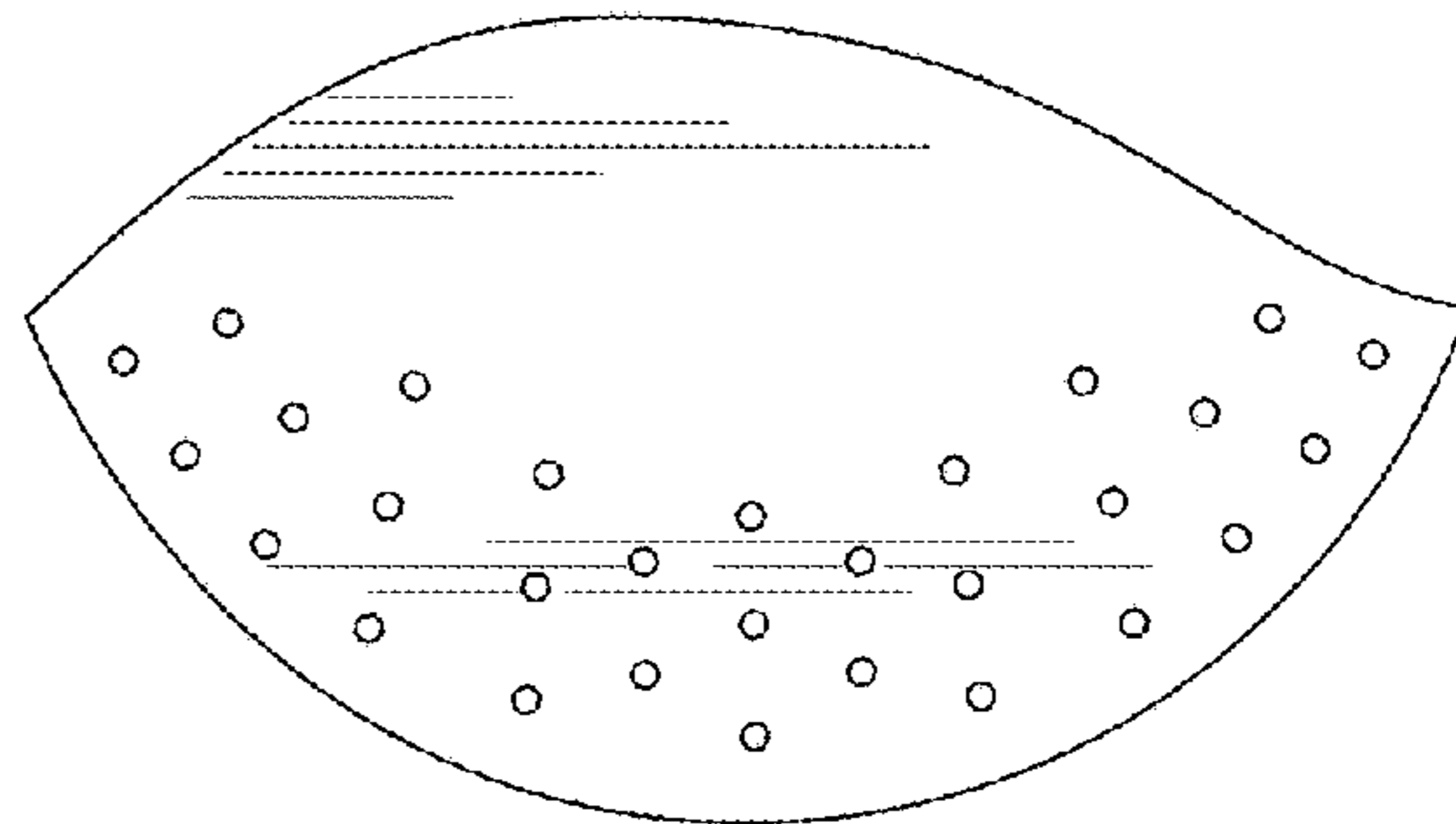
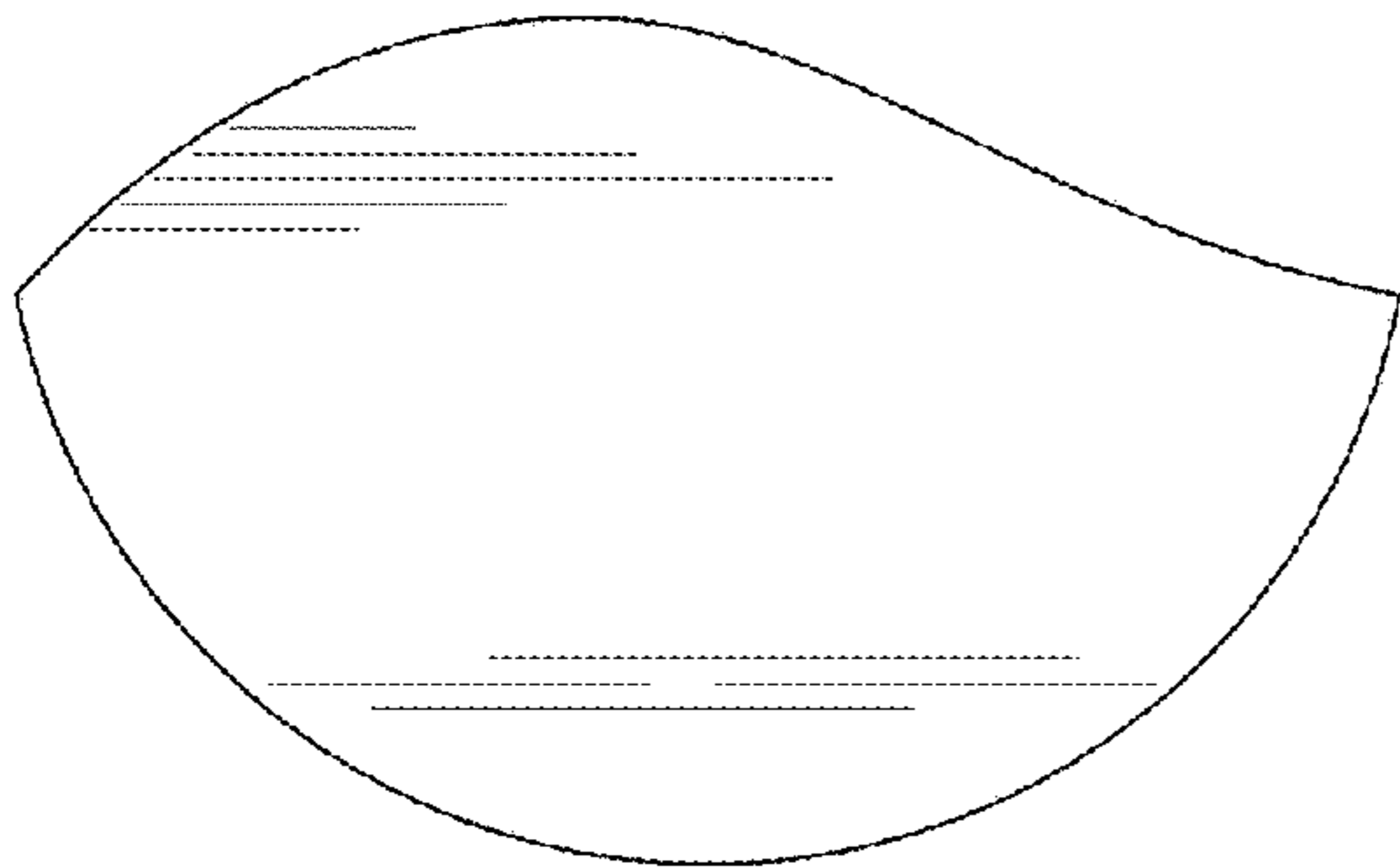
DESCRIPTION

FIG. 1 is front elevational view of a first embodiment of an asymmetric tissue graft showing my new design;
FIG. 2 is a rear elevational view thereof;
FIG. 3 is a left side elevational view thereof;
FIG. 4 is right side elevational view thereof;
FIG. 5 is a top plan view thereof;
FIG. 6 is a bottom plan view thereof;
FIG. 7 is front elevational view of a second embodiment of an asymmetric tissue graft showing my new design;
FIG. 8 is a rear elevational view thereof;
FIG. 9 is a left side elevational view thereof;
FIG. 10 is right side elevational view thereof;
FIG. 11 is a top plan view thereof; and,
FIG. 12 is a bottom plan view thereof.

1 Claim, 2 Drawing Sheets

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

- 4,776,853 A 10/1988 Klement et al.
- 5,314,471 A 5/1994 Brauker et al.
- 5,336,616 A 8/1994 Livesey et al.
- 5,344,454 A 9/1994 Clarke et al.
- 5,453,278 A 9/1995 Chan et al.
- 5,545,233 A 8/1996 Neuenfeldt et al.
- 5,593,440 A 1/1997 Brauker et al.
- 5,653,756 A 8/1997 Clarke et al.
- 5,713,888 A 2/1998 Neunfeldt et al.
- 5,733,336 A 3/1998 Neuenfeldt 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
- 5,882,354 A 3/1999 Brauker et al.



(56)

References Cited

U.S. PATENT DOCUMENTS

6,723,133	B1 *	4/2004	Pajotin	A61F 2/0063 606/151	9,539,086	B2	1/2017	Schuessler et al.	
6,734,018	B2	5/2004	Wolfbarger et al.		9,549,805	B2	1/2017	Hayzlett et al.	
6,743,574	B1	6/2004	Wolfbarger et al.		9,549,812	B2 *	1/2017	Shetty	A61F 2/0077
6,773,458	B1	8/2004	Brauker et al.		9,579,420	B2	2/2017	Wolfbarger et al.	
6,866,686	B2	3/2005	Ollerenshaw et al.		9,585,744	B2	3/2017	Moses et al.	
6,933,326	B1	8/2005	Griffey et al.		9,585,986	B2	3/2017	Wolfbarger et al.	
D539,506	S *	4/2007	Valentin	D2/706	9,592,254	B2	3/2017	Monteiro et al.	
7,358,284	B2	4/2008	Griffey et al.		9,592,278	B2	3/2017	Sun et al.	
7,476,249	B2	1/2009	Frank		9,622,845	B2	4/2017	Markman	
7,582,309	B2	9/2009	Rosenberg et al.		9,636,435	B2	5/2017	Sun et al.	
7,723,108	B2	5/2010	Truncate et al.		9,681,941	B2	6/2017	Griffin et al.	
7,799,325	B2	9/2010	Kleinsek et al.		9,713,524	B2 *	7/2017	Glicksman	A61F 2/12
7,875,074	B2	1/2011	Chen et al.		9,782,436	B2	10/2017	Sun	
7,927,414	B2	4/2011	Yang et al.		9,808,338	B2	11/2017	Schuessler et al.	
8,007,531	B2	8/2011	Frank		10,022,214	B2	1/2018	Hayzlett	
8,067,149	B2	11/2011	Livesey et al.		9,888,999	B2	2/2018	Forsell et al.	
8,197,542	B2	6/2012	Becker		9,936,688	B2	4/2018	Wolfingarger et al.	
8,202,317	B2	6/2012	Becker		9,956,072	B2	5/2018	Diaz et al.	
8,263,101	B2	9/2012	Owens et al.		9,956,316	B2	5/2018	Chen	
8,268,361	B2	9/2012	Ahlfors		9,957,477	B2	5/2018	Chen et al.	
8,324,449	B2	12/2012	Macquillan et al.		9,999,637	B2	6/2018	Owens et al.	
8,343,717	B2	1/2013	Owens et al.		10,004,590	B2	6/2018	Shetty et al.	
8,415,159	B2	4/2013	Ward et al.		9,901,440	B2	8/2018	Liu et al.	
8,425,600	B2	4/2013	Maxwell		10,039,633	B2	8/2018	Ansorge et al.	
8,486,616	B2	7/2013	Owens et al.		D836,778	S *	12/2018	Limem	D24/155
8,557,581	B2	10/2013	Ngo et al.		2003/0083752	A1	5/2003	Wolfbarger et al.	
8,563,232	B2	10/2013	Wolfbarger et al.		2004/0260315	A1	12/2004	Dell et al.	
8,563,234	B2	10/2013	Tousimis		2005/0028228	A1	2/2005	McQuillan et al.	
8,623,398	B2	1/2014	Altman et al.		2005/0186286	A1	8/2005	Takami	
8,628,791	B2	1/2014	Altman et al.		2005/0246035	A1	11/2005	Wolfbarger et al.	
8,633,027	B2	1/2014	Altman et al.		2006/0210960	A1	9/2006	Livesey et al.	
8,685,426	B2	4/2014	Altman et al.		2007/0207125	A1	9/2007	Bothwell et al.	
8,735,054	B1	5/2014	Sun et al.		2007/0244568	A1	10/2007	Matsuda et al.	
8,746,014	B2	6/2014	Montarino		2007/0269791	A1	11/2007	Takami et al.	
8,758,781	B2	6/2014	Ward et al.		2008/0097601	A1	4/2008	Codori-Hurff et al.	
8,764,824	B2	7/2014	Ledergerber		2008/0154366	A1	6/2008	Frank	
8,764,825	B2	7/2014	Ledergerber		2008/0281419	A1	11/2008	Matheny et al.	
8,777,965	B2	7/2014	Chen		2009/0082864	A1 *	3/2009	Chen	A61F 2/12 623/8
8,802,920	B2	8/2014	McQuillan et al.		2009/0198332	A1	8/2009	Becker	
8,858,629	B2	10/2014	Moses et al.		2009/0198333	A1	8/2009	Becker	
8,858,647	B2	10/2014	Markman		2010/0003306	A1	1/2010	Von Waldburg-Zeil	
8,876,899	B2	11/2014	Maxwell		2010/0010627	A1	1/2010	Matheny	
8,936,651	B2	1/2015	Yang		2010/0028396	A1	2/2010	Ward et al.	
8,986,377	B2 *	3/2015	Richter	A61F 2/12 623/8	2010/0040687	A1	2/2010	Pedrozo et al.	
9,027,213	B2	5/2015	Tousimis		2010/0112543	A1	5/2010	Ngo et al.	
9,050,177	B2	6/2015	Markman		2010/0191330	A1	7/2010	Laurysen	
9,066,884	B2	6/2015	Altman et al.		2010/0216206	A1	8/2010	Marzaro	
9,078,731	B2	7/2015	Montarino		2010/0272782	A1	10/2010	Owens et al.	
9,089,501	B2	7/2015	Altman		2010/0285587	A1	11/2010	Ollerenshaw et al.	
9,089,523	B2	7/2015	Xu et al.		2010/0310628	A1	12/2010	Waldburg-Zeil	
9,114,003	B2	8/2015	Kalus		2011/0022171	A1	1/2011	Richter et al.	
9,150,318	B1	10/2015	Sun et al.		2011/0035004	A1	2/2011	Maxwell	
9,162,011	B2	10/2015	Stilwell et al.		2011/0054604	A1	3/2011	Becker	
9,180,143	B2	11/2015	Bolland et al.		2011/0054605	A1	3/2011	Becker	
9,199,002	B2	12/2015	Mao et al.		2011/0106249	A1	5/2011	Becker	
9,204,953	B2	12/2015	Montarino		2011/0167602	A1	7/2011	Altman et al.	
9,204,954	B2	12/2015	Montarino		2011/0184227	A1	7/2011	Altman et al.	
9,206,442	B2	12/2015	Chen		2011/0276039	A1	11/2011	Markman	
9,220,259	B2	12/2015	Owens et al.		2012/0010728	A1	1/2012	Sun et al.	
9,238,793	B2	1/2016	Chen et al.		2012/0034191	A1	2/2012	Matheny	
9,271,821	B2	3/2016	Roock et al.		2012/0040013	A1	2/2012	Owens et al.	
9,277,986	B2	3/2016	Moses et al.		2012/0053690	A1	3/2012	Frank	
9,308,070	B2	4/2016	Montarino		2012/0059411	A1	3/2012	Sun et al.	
9,326,840	B2	5/2016	Mortarino		2012/0158134	A1	6/2012	Codori-Hurff et al.	
9,351,819	B2	5/2016	Harper		2012/0221105	A1	8/2012	Altman et al.	
9,370,536	B2	6/2016	Sun et al.		2012/0226352	A1	9/2012	Becler	
9,375,017	B2	6/2016	Hazylett et al.		2012/0263763	A1	10/2012	Sun et al.	
9,375,513	B2	6/2016	Sun et al.		2012/0265218	A1	10/2012	Chen et al.	
9,382,422	B2	7/2016	Owens		2012/0266348	A1 *	10/2012	Meginnis	A41B 17/00 2/69
9,426,980	B2	8/2016	Tousimis		2012/0276213	A1	11/2012	Chen	
9,504,770	B2	11/2016	Xu et al.		2012/0283826	A1	11/2012	Moses et al.	
9,532,863	B2	1/2017	Hayzlett		2012/0310367	A1	12/2012	Connor	
9,532,866	B2	1/2017	Kim et al.		2012/0329034	A1	12/2012	Chun et al.	
					2013/0013068	A1	1/2013	Forsell et al.	
					2013/0103061	A1	4/2013	Harper	
					2013/0144356	A1	6/2013	Horn et al.	
					2013/0156744	A1	6/2013	Taylor et al.	

(56)

References Cited

FOREIGN PATENT DOCUMENTS

U.S. PATENT DOCUMENTS

2013/0158658 A1 6/2013 Hayzlett
 2013/0224260 A1 8/2013 Ward et al.
 2013/0287741 A1 10/2013 Stillwell et al.
 2013/0317610 A1 11/2013 Ledegerber
 2014/0039617 A1* 2/2014 Maxwell A61F 2/12
 623/8
 2014/0081397 A1 3/2014 Kalus
 2014/0100656 A1 4/2014 Namnoum et al.
 2014/0257481 A1 9/2014 Brooke et al.
 2014/0257482 A1 9/2014 Ward et al.
 2014/0276957 A1 9/2014 Locarno et al.
 2014/0296623 A1 10/2014 Owens et al.
 2014/0335144 A1 11/2014 Ward et al.
 2015/0012089 A1 1/2015 Shetty et al.
 2015/0037436 A1 2/2015 Huang et al.
 2015/0150674 A1 6/2015 Ansgore et al.
 2015/0157451 A1 6/2015 Bowley et al.
 2015/0209128 A1 7/2015 Markman
 2015/0223928 A1 8/2015 Limem
 2015/0250582 A1 9/2015 Greenhalgh
 2015/0297798 A1 10/2015 Badylak et al.
 2015/0320911 A1 11/2015 Sun et al.
 2015/0351891 A1 12/2015 Moses et al.
 2016/0000970 A1 1/2016 Rosines
 2016/0022416 A1 1/2016 Felix et al.
 2016/0030487 A1 2/2016 Bachrach et al.
 2016/0030636 A1 2/2016 Muir
 2016/0045198 A1 2/2016 Bachrach
 2016/0135940 A1 5/2016 Roock et al.
 2016/0151062 A1 6/2016 Bachrach
 2016/0199173 A1 7/2016 Liu et al.
 2016/0256259 A1 9/2016 Wirth et al.
 2016/0256606 A1 9/2016 Sun et al.
 2016/0262835 A1 9/2016 Davila et al.
 2016/0271295 A1 9/2016 Sun et al.
 2016/0287747 A1 10/2016 Schallenberger
 2016/0331504 A1 11/2016 Wang
 2017/0007394 A1 1/2017 Shetty et al.
 2017/0021058 A1 1/2017 Huang et al.
 2017/0049549 A1 2/2017 Bayat et al.
 2017/0049929 A1 2/2017 Xu et al.
 2017/0049932 A1 2/2017 Badylak et al.
 2017/0065742 A1 3/2017 Sun et al.
 2017/0071725 A1 3/2017 Barere et al.
 2017/0072110 A1 3/2017 Rigo
 2017/0143475 A1 3/2017 Moses et al.
 2017/0100509 A1 4/2017 Sun et al.
 2017/0143478 A1 5/2017 Moses et al.
 2017/0202661 A1 7/2017 Griffin et al.
 2017/0209619 A1 7/2017 Monteiro et al.
 2017/0216008 A1 8/2017 Markman
 2017/0224460 A1 8/2017 Ringo
 2017/0224869 A1 8/2017 Shah et al.
 2017/0231753 A1 8/2017 Lee
 2017/0281333 A1 10/2017 Locarno et al.
 2017/0340437 A1 11/2017 Bowley et al.
 2017/0348353 A1 12/2017 Sun
 2017/0348460 A1 12/2017 Fang et al.
 2017/0367807 A1 12/2017 Chen et al.
 2018/0008745 A1 1/2018 Park et al.
 2018/0044629 A1 2/2018 Qin
 2018/0055624 A1 3/2018 Barere et al.
 2018/0092737 A1 4/2018 Barere et al.
 2018/0110612 A1 4/2018 Schuessler et al.
 2018/0214262 A1 8/2018 Diaz et al.
 2018/0214607 A1 8/2018 Chen
 2018/0216062 A1 8/2018 Chen et al.
 2018/0264037 A1 9/2018 Owens
 2018/0280132 A1 10/2018 Shetty et al.
 2018/0333252 A1 11/2018 Ansorga et al.

EP 2692364 2/2014
 EP 2926840 10/2015
 EP 3034038 6/2016
 EP 3056167 8/2016
 EP 3056168 8/2016
 WO 1984004880 12/1984
 WO 1999/065470 12/1999
 WO 2005/063314 7/2005
 WO 2008/066883 6/2008
 WO 2008/148026 12/2008
 WO 20080154623 12/2008
 WO 2009/065013 5/2009
 WO 2010/027613 8/2009
 WO 2011/011394 1/2011
 WO 2011/019361 2/2011
 WO 2012/031162 3/2012
 WO 2013/106556 7/2013
 WO 2013126062 8/2013
 WO 2013/137664 9/2013
 WO 2013/192197 12/2013
 WO 2014/008184 1/2014
 WO 2014019672 2/2014
 WO 2014/047234 3/2014
 WO 2014/145462 9/2014
 WO 2014/160124 10/2014
 WO 2014160008 10/2014
 WO 2014160124 10/2014
 WO 2015/021807 2/2015
 WO 2015/065923 5/2015
 WO 2015065923 5/2015
 WO 2015/121686 8/2015
 WO 2015/164728 10/2015
 WO 2015/176014 11/2015
 WO 2016/130559 8/2016
 WO 2016/144475 9/2016
 WO 2015148932 10/2018

OTHER PUBLICATIONS

Final Office Action for U.S. Appl. No. 15/173,286, dated Jan. 26, 2018.
 Further Examination Report in related New Zealand Patent Application No. 710330, dated Feb. 8, 2017.
 Further Examination Report in related New Zealand Patent Application No. 710330, dated Oct. 11, 2016.
 International Preliminary Report on Patentability for PCT/US2014/025619, dated Sep. 15, 2015.
 Kesmarky G., et al., "Plasma viscosity: A forgotten variable", *Clinical Hemorheology and Microcirculation*, 2008, vol. 39, pp. 243-246, IOS Press.
 Li Y., et al., "Experimental validation of non-invasive and fluid density independent methods for the determination of local wave speed and arrival time of reflected wave", *Journal of Biomechanics*, 2011, vol. 44, pp. 1393-1399, Elsevier.
 Mine et al. Aging Alters Functionally Human Dermal Papillary Fibroblasts but Not Reticular Fibroblasts: A New View of Skin Morphogenesis and Aging. *PLoS One* (2008), v3(12), e4066, 13 pages.
 Mulder G. D., "Quantifying wound fluids for the clinician and researcher", *Ostomy / Wound Management*, 1994, vol. 40, pp. 65-69.
 Non-Final Office Action for U.S. Appl. No. 15/621,602, dated Aug. 10, 2017.
 Office Action for U.S. Appl. No. 14/208,025, dated Mar. 13, 2017.
 Office Action for U.S. Appl. No. 15/173,286, dated Jul. 10, 2018.
 Office Action for U.S. Appl. No. 15/858,360 dated May 11, 2018.
 Office Action in related Canadian Patent Application No. 2,899,642, dated Oct. 24, 2017.
 Office Action issued for related European Patent Application No. 147182505, dated Nov. 23, 2016.
 Patent Examination Report No. 1 in related Australian Patent Application No. 2016234904, dated Apr. 28, 2017.

(56)

References Cited

OTHER PUBLICATIONS

Restriction Requirement for U.S. Appl. No. 14/208,025, dated Nov. 3, 2015.
 U.S. Appl. No. 14/208,025, filed Mar. 13, 2014.
 U.S. Appl. No. 15/621,602, filed Jun. 13, 2017.
 U.S. Appl. No. 61/783,237, filed Mar. 14, 2013.
 U.S. Appl. No. 15/858,360, filed Dec. 29, 2017.
 U.S. Appl. No. 62/440,526, filed Dec. 30, 2016.
 Final Office Action for U.S. Appl. No. 15/621,602, dated Nov. 13, 2017.
 Final Office for U.S. Appl. No. 15/621,602, dated Jul. 12, 2018.
 First Examination Report in related New Zealand Patent Application No. 710330, dated Feb. 25, 2016.
 Office Action for U.S. Appl. No. 14/208,025, dated Feb. 26, 2016.
 Office Action in related Canadian Patent Application No. 2,899,642, dated Sep. 13, 2016.
 Patent Examination Report No. 1 in related Australian Patent Application No. 2014244272, dated Mar. 10, 2016.
 U.S. Appl. No. 15/915,412, filed Mar. 8, 2018.
 U.S. Appl. No. 62/468,511, filed Mar. 8, 2017.
 U.S. Appl. No. 12/964,250, filed Dec. 9, 2010.
 Non-Final Office Action for U.S. Appl. No. 15/173,286, dated Aug. 3, 2017.
 Ownby (2010), The Integument—the skin and all of its derivatives.
 Butler et al., Reduction of Adhesions with Composite AlloDerm/ Polypropylene Mesh Implants for Abdominal Wall Reconstruction, *Plast. Reconstr. Surg.*(2004), v114, pp. 464-473.

Erdag, et al., “Fibroblasts Improve Performance of Cultured Composite Skin Substitutes on Athymic Mice”, *Burns*, 30 (2004), pp. 322-328.
 International Search Report and Written Opinion for Applicant’s related International (PCT) Application No. PCT/US2014/025619, dated Jun. 30, 2014 (13 pages).
 IP Australia, Patent Examination Report No. 1 in Applicant’s related Australian Patent Application No. 2014244272, dated Mar. 10, 2016 (3 pages).
 Isch et al., Patch Esophagoplasty Using AlloDerm as a Tissue Scaffold, *Journal of Pediatric Surgery* (2001), v36(2), pp. 266-268.
 Kolker et al., Multilayer Reconstruction of Abdominal Wall Defects With Acellular Dermal Allograft (AlloDerm) and component Separation, *Annals of Plastic Surgery* (2005), v55(1), pp. 36-42.
 Leung et al., *Skin Grafts*, UTMJ (2009), v86(2), pp. 61-64.
 New Zealand Intellectual Property Office, First Examination Report in Applicant’s related New Zealand Patent Application No. 710330, dated Feb. 25, 2016 (4 pages).
 Oliver, et al., “Reconstruction of Full-Thickness Loss Skin Wounds Using Skin Collagen Allografts”, *British Journal of Plastic Surgery*, 32 (1979), pp. 87-90.
 Shuster et al., The influence of age and sex on skin thickness, skin collagen and density, *British Journal of Dermatology* (1975), v96, p. 639-643.
 U.S. Appl. No. 15/032,567, filed Apr. 27, 2016 (72 pages).
 Applicant’s related U.S. Appl. No. 15/173,286, filed Jun. 3, 2016 (62 pages).
 U.S. Appl. No. 16/125,435, filed Sep. 7, 2018.
 Design U.S. Appl. No. 29/662,750, filed Sep. 7, 2018.

* cited by examiner

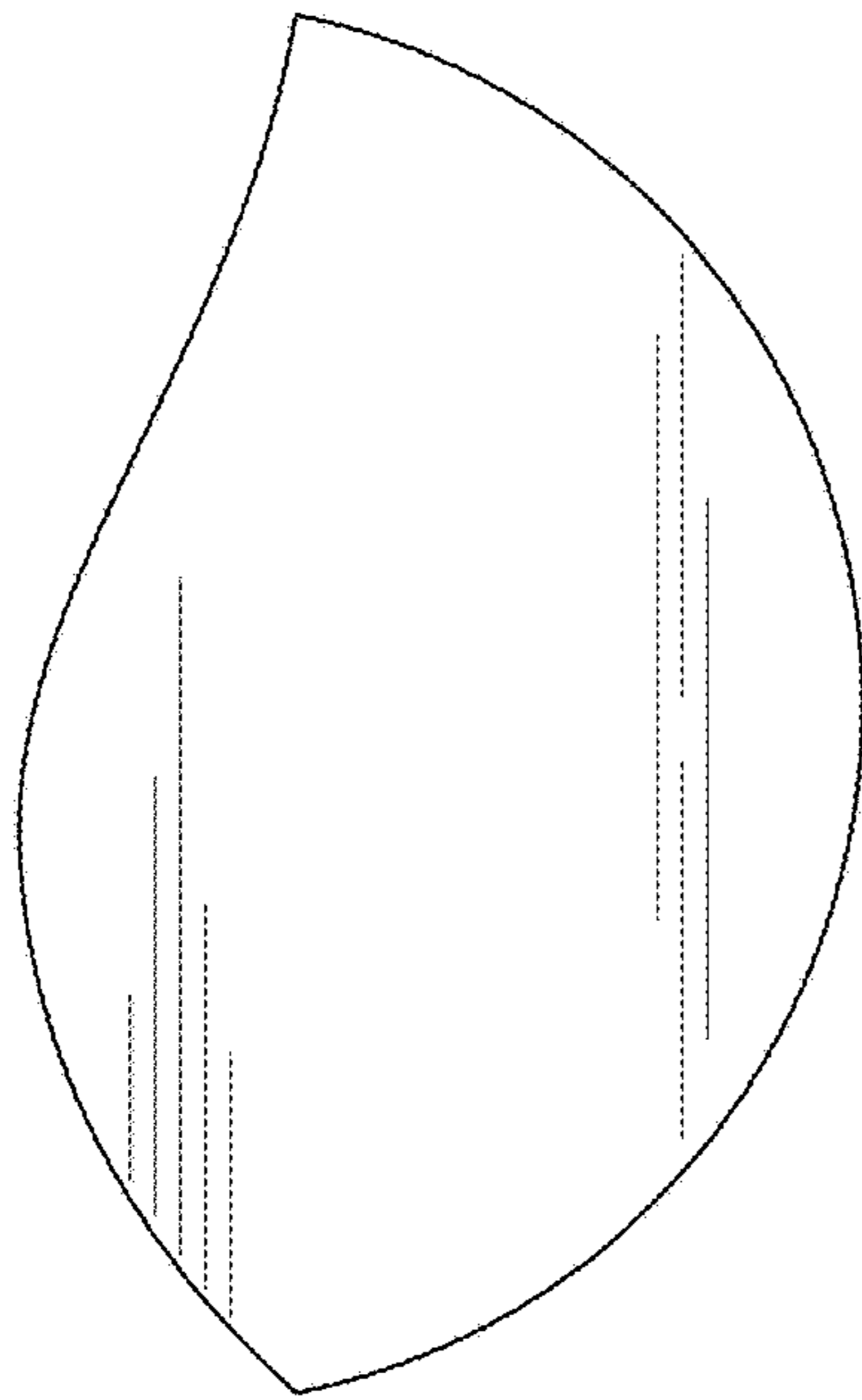


FIG. 1

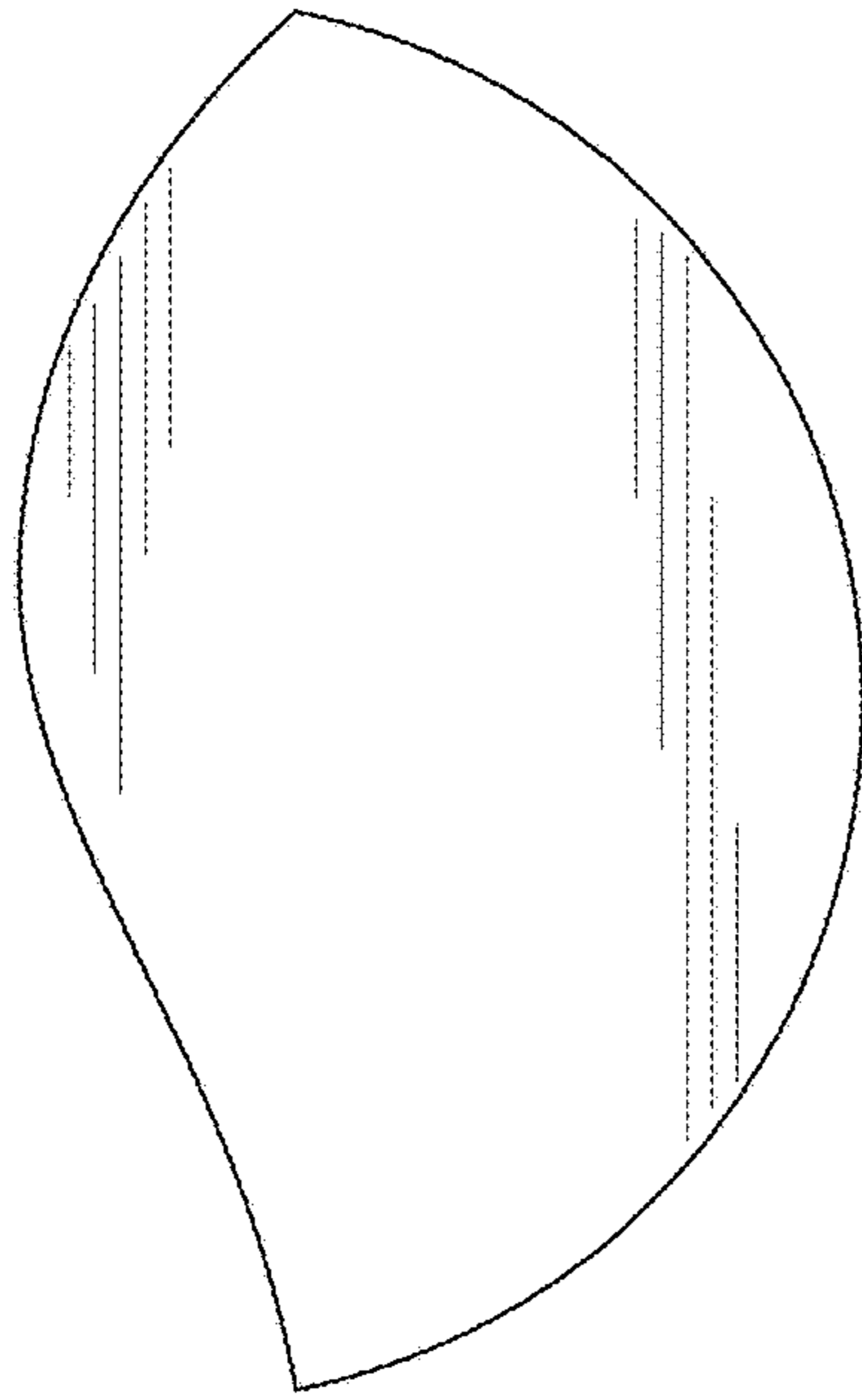


FIG. 2

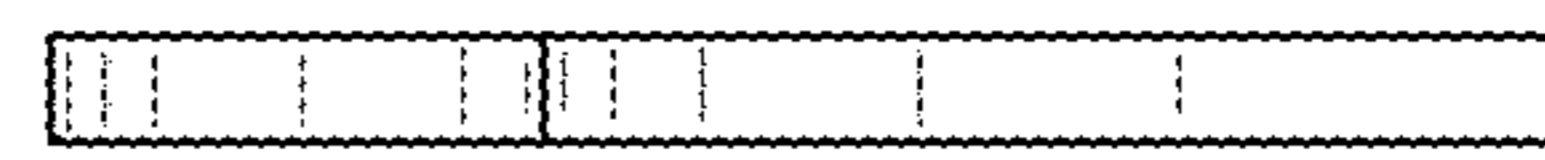


FIG. 3

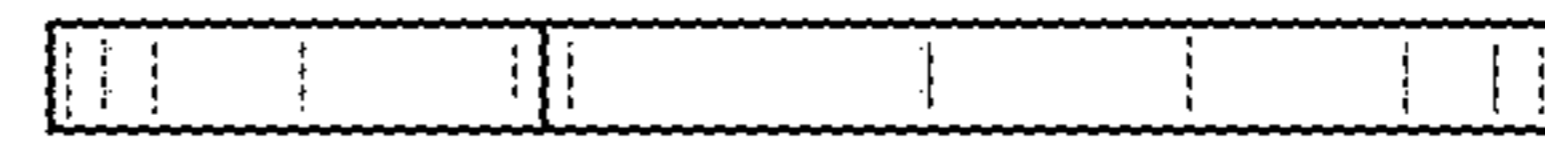


FIG. 4



FIG. 5



FIG. 6

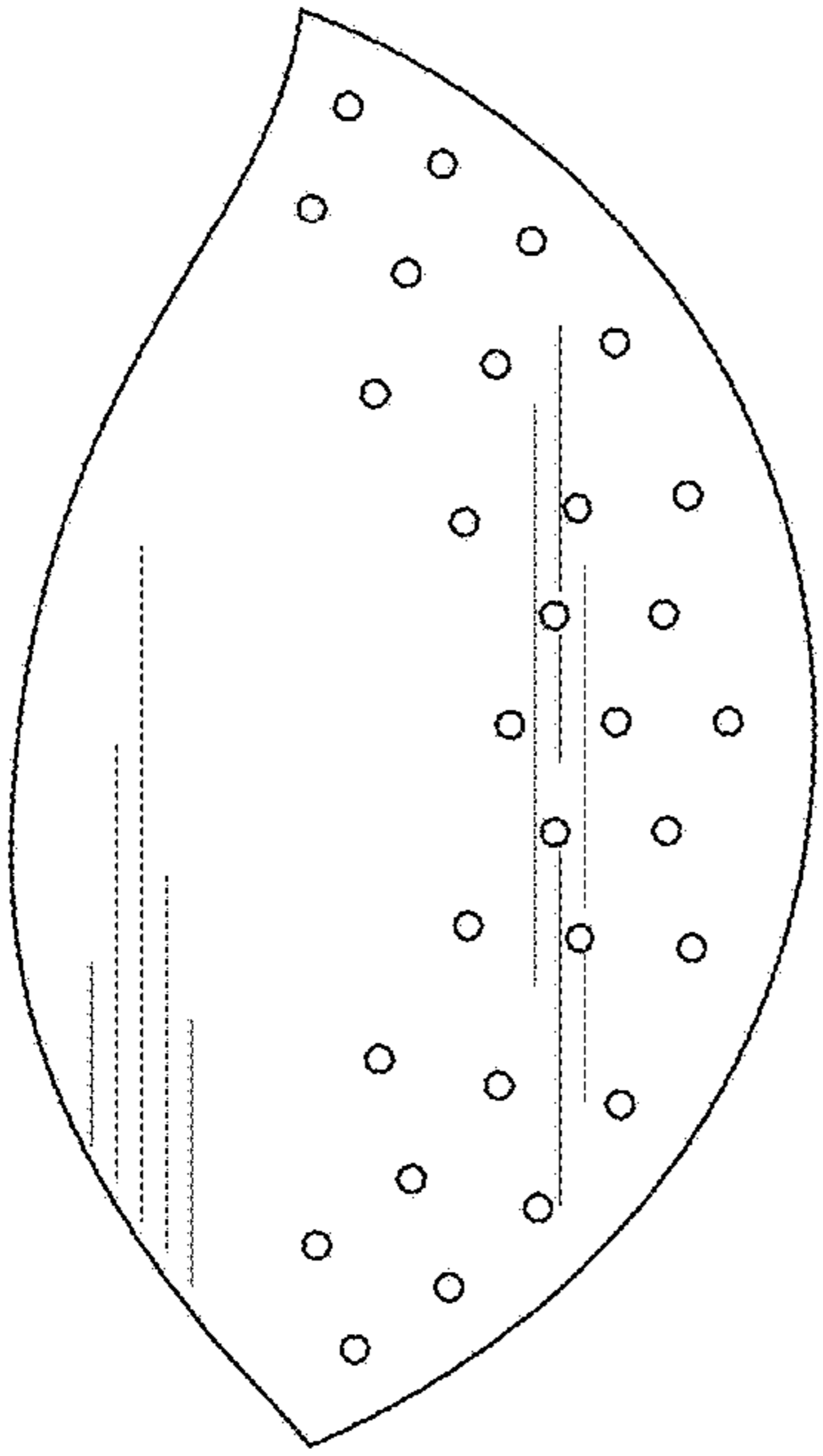


FIG. 7

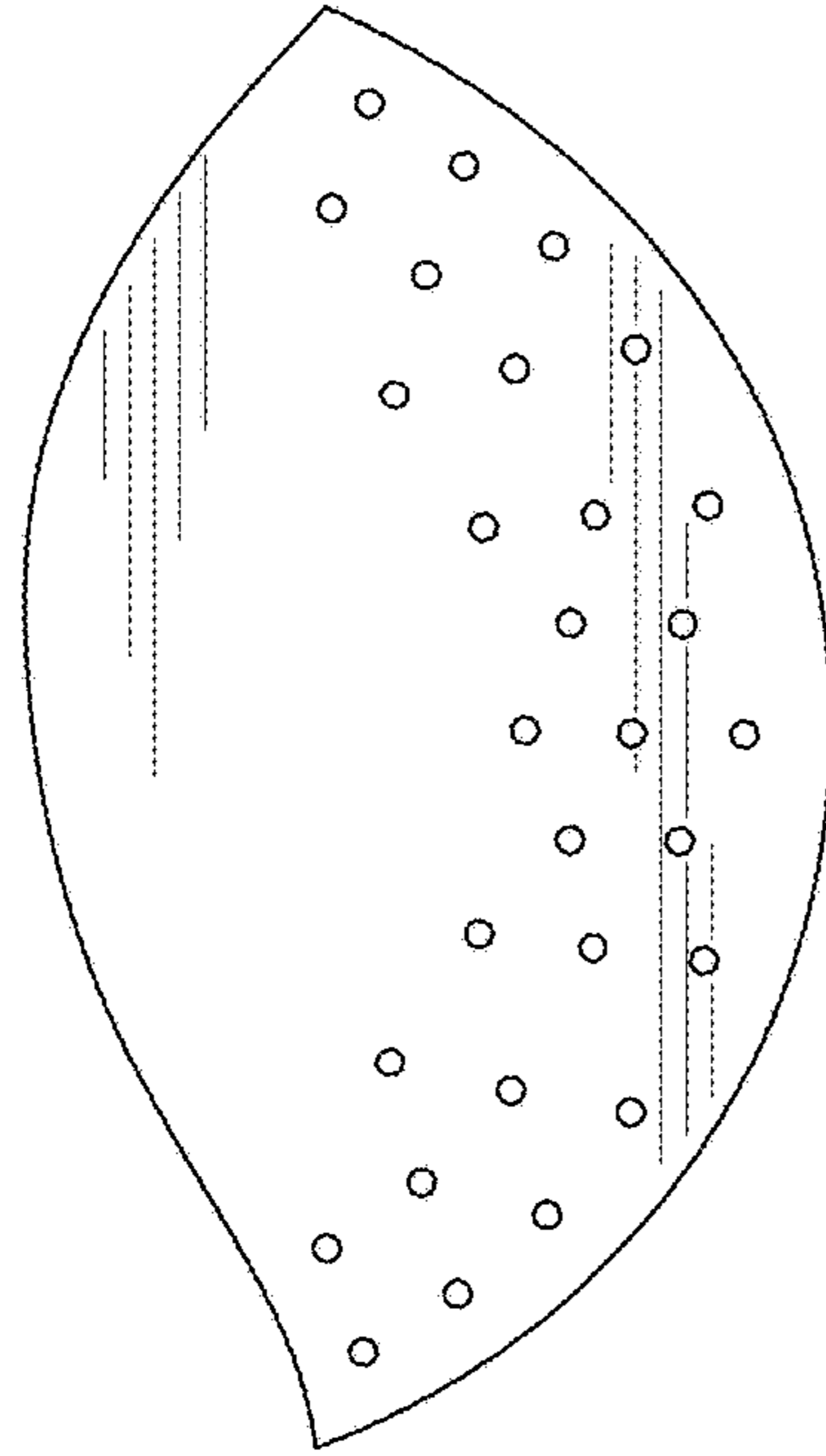


FIG. 8

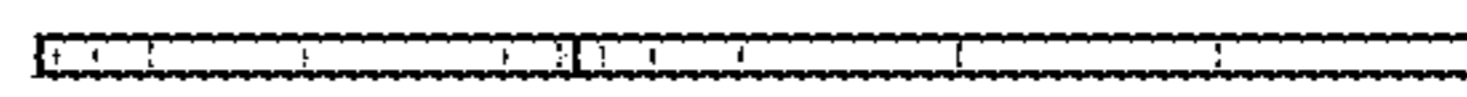


FIG. 9

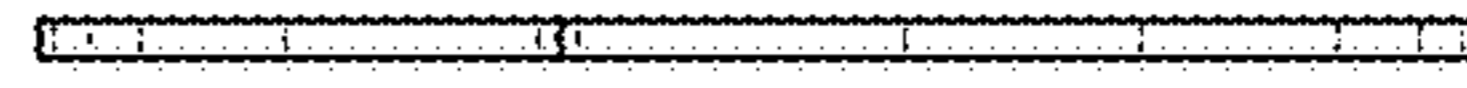


FIG. 10



FIG. 11



FIG. 12