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(12) **United States Design Patent** (10) **Patent No.:** **US D997,360 S**
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(54) **IMPLANTABLE CARDIAC MONITOR**

(56) **References Cited**

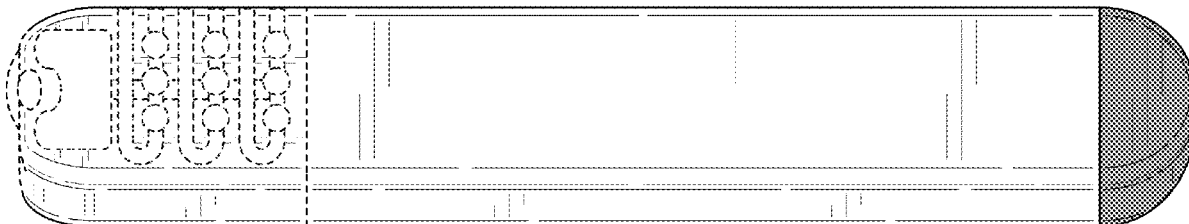
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- (**) Term: **15 Years**
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U.S. PATENT DOCUMENTS

2,009,393 A	7/1935	Failla
4,553,273 A	11/1985	Wu
4,636,217 A	1/1987	Ogilvie et al.
4,796,150 A	1/1989	Dickey et al.
4,915,686 A	4/1990	Frederick
5,059,193 A	10/1991	Kuslich
5,127,404 A	7/1992	Wyborny et al.
5,144,946 A	9/1992	Weinberg et al.
5,170,001 A	12/1992	Amendola
5,171,278 A	12/1992	Pisharodi
5,304,119 A	4/1994	Balaban et al.
5,336,223 A	8/1994	Rogers
D353,889 S	12/1994	Erickson et al.
5,390,683 A	2/1995	Pisharodi
5,484,403 A	1/1996	Yoakum et al.
5,522,899 A	6/1996	Michelson
5,554,191 A	9/1996	Lahille et al.
5,562,613 A	10/1996	Kaldany
5,575,790 A	11/1996	Chen et al.
5,609,635 A	3/1997	Michelson
5,653,762 A	8/1997	Pisharodi
5,658,336 A	8/1997	Pisharodi
5,665,122 A	9/1997	Kambin
5,683,463 A	11/1997	Godefroy et al.
5,693,100 A	12/1997	Pisharodi
5,697,977 A	12/1997	Pisharodi
5,702,391 A	12/1997	Lin
5,702,453 A	12/1997	Rabbe et al.
5,702,455 A	12/1997	Saggari
5,772,671 A	6/1998	Harmon
5,800,550 A	9/1998	Sertich
5,842,999 A	12/1998	Pruitt et al.
5,865,848 A	2/1999	Baker
D406,187 S	3/1999	Garcia-Gutierrez
5,893,890 A	4/1999	Pisharodi
5,954,670 A	9/1999	Baker
5,980,522 A	11/1999	Koros et al.
5,987,352 A	11/1999	Klein et al.
6,045,579 A	4/2000	Hochshuler et al.
6,080,193 A	6/2000	Hochshuler et al.
6,099,531 A	8/2000	Bonutti
6,102,949 A	8/2000	Biedermann et al.
6,102,950 A	8/2000	Vaccaro
6,106,557 A	8/2000	Robioneck et al.
6,113,638 A	9/2000	Williams et al.
6,117,174 A	9/2000	Nolan
6,126,689 A	10/2000	Brett
6,132,465 A	10/2000	Ray et al.
6,159,211 A	12/2000	Boriani et al.

Related U.S. Application Data

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- (58) **Field of Classification Search**
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 CPC . A61B 5/686; A61B 5/0031; A61B 2560/063; A61B 5/076; A61B 5/02055; A61B 5/02405; A61B 5/28; A61B 5/283; A61B 5/29; A61N 1/37; A61N 1/3621; A61N 1/3627; A61N 1/3706; A61N 1/39622; A61N 1/3925; A61N 1/37205; A61M 37/0069
- See application file for complete search history.



US D997,360 S

6,159,244	A	12/2000	Suddaby	8,496,710	B2	7/2013	Bagga et al.
6,176,882	B1	1/2001	Biedermann et al.	8,579,980	B2	11/2013	Delurio et al.
6,179,873	B1	1/2001	Zientek	8,585,767	B2	11/2013	Ullrich, Jr. et al.
6,190,414	B1	2/2001	Young et al.	8,641,767	B2	2/2014	Landry et al.
6,193,757	B1	2/2001	Foley et al.	8,641,768	B2	2/2014	Duffield et al.
6,217,579	B1	4/2001	Koros	8,647,386	B2	2/2014	Gordon et al.
6,230,059	B1	5/2001	Duffin	8,685,098	B2	4/2014	Glerum et al.
6,245,108	B1	6/2001	Biscup	8,709,083	B2	4/2014	Duffield et al.
6,309,421	B1	10/2001	Pisharodi	8,709,085	B2	4/2014	Lechmann et al.
6,342,074	B1	1/2002	Simpson	8,715,353	B2	5/2014	Bagga et al.
6,371,989	B1	4/2002	Chauvin et al.	8,795,366	B2	8/2014	Varela
6,395,031	B1	5/2002	Foley et al.	8,808,305	B2	8/2014	Kleiner
6,409,766	B1	6/2002	Brett	8,834,571	B2	9/2014	Bagga et al.
6,412,490	B1	7/2002	Lee	8,852,282	B2	10/2014	Farley et al.
6,423,063	B1	7/2002	Bonutti	8,888,745	B2	11/2014	Van Der Graaf et al.
6,432,106	B1	8/2002	Fraser	8,894,708	B2	11/2014	Thalgott et al.
6,436,140	B1	8/2002	Liu et al.	8,900,312	B2	12/2014	McLean et al.
6,443,989	B1	9/2002	Jackson	8,906,095	B2	12/2014	Christensen et al.
6,443,990	B1	9/2002	Aebi et al.	8,920,500	B1	12/2014	Pimenta et al.
6,454,805	B1	9/2002	Baccelli et al.	8,926,704	B2	1/2015	Glerum et al.
6,454,806	B1	9/2002	Cohen et al.	9,005,293	B2	4/2015	Moskowitz et al.
6,454,807	B1	9/2002	Jackson	9,005,295	B2	4/2015	Kueenzi et al.
6,461,359	B1	10/2002	Tribus et al.	9,034,045	B2	5/2015	Davenport et al.
6,491,724	B1	12/2002	Ferree	9,060,877	B2	6/2015	Kleiner
6,520,991	B2	2/2003	Huene	D736,930	S	8/2015	Parker et al.
6,520,993	B2	2/2003	James et al.	9,125,757	B2	9/2015	Weiman
6,527,803	B1	3/2003	Crozet et al.	9,132,021	B2	9/2015	Mermuys et al.
6,562,074	B2	5/2003	Gerbec et al.	9,138,330	B2	9/2015	Hansell et al.
6,576,016	B1	6/2003	Hochshuler et al.	9,149,367	B2	10/2015	Davenport et al.
6,623,525	B2	9/2003	Ralph et al.	9,155,631	B2	10/2015	Seifert et al.
6,629,998	B1	10/2003	Lin	D744,109	S *	11/2015	Yoneta D24/186
6,635,086	B2	10/2003	Lin	9,186,193	B2	11/2015	Kleiner et al.
6,648,917	B2	11/2003	Gerbec et al.	9,186,258	B2	11/2015	Davenport et al.
6,676,703	B2	1/2004	Biscup	9,192,482	B1	11/2015	Pimenta et al.
6,770,096	B2	8/2004	Bolger et al.	9,198,772	B2	12/2015	Weiman
6,773,460	B2	8/2004	Jackson	9,211,194	B2	12/2015	Bagga et al.
6,821,298	B1	11/2004	Jackson	9,211,196	B2	12/2015	Glerum et al.
6,835,206	B2	12/2004	Jackson	9,216,095	B2	12/2015	Glerum et al.
6,849,093	B2	2/2005	Michelson	9,226,836	B2	1/2016	Glerum
6,852,129	B2	2/2005	Gerbec et al.	9,233,009	B2	1/2016	Gray et al.
6,863,673	B2	3/2005	Gerbec et al.	9,233,010	B2	1/2016	Thalgott et al.
6,923,814	B1	8/2005	Hildebrand et al.	9,259,327	B2	2/2016	Niemiec et al.
6,926,737	B2	8/2005	Jackson	D757,942	S	5/2016	Suwito et al.
6,964,687	B1	11/2005	Bernard et al.	9,351,845	B1	5/2016	Pimenta et al.
6,974,480	B2	12/2005	Messerli et al.	9,351,848	B2	5/2016	Glerum et al.
6,984,234	B2	1/2006	Bray	9,358,126	B2	6/2016	Glerum et al.
7,035,684	B2	4/2006	Lee	9,358,127	B2	6/2016	Duffield et al.
7,112,222	B2	9/2006	Fraser et al.	9,358,128	B2	6/2016	Glerum et al.
7,135,043	B2	11/2006	Nakahara et al.	9,358,129	B2	6/2016	Weiman
7,137,997	B2	11/2006	Paul	9,364,343	B2	6/2016	Duffield et al.
7,172,627	B2	2/2007	Fiere et al.	9,370,434	B2	6/2016	Weiman
7,195,643	B2	3/2007	Jackson	9,370,435	B2	6/2016	Walkenhorst et al.
7,204,853	B2	4/2007	Gordon et al.	D761,435	S	7/2016	Mizuno
7,232,464	B2	6/2007	Mathieu et al.	9,387,092	B2	7/2016	Mermuys et al.
7,238,203	B2	7/2007	Bagga et al.	9,414,937	B2	8/2016	Carlson et al.
D559,987	S	1/2008	Strother et al.	9,427,328	B2	8/2016	Drochner et al.
7,316,714	B2	1/2008	Gordon et al.	9,452,063	B2	9/2016	Glerum et al.
7,481,766	B2	1/2009	Lee et al.	9,456,906	B2	10/2016	Gray et al.
7,618,456	B2	11/2009	Mathieu et al.	9,474,625	B2	10/2016	Weiman
7,708,778	B2	5/2010	Gordon et al.	9,480,573	B2	11/2016	Perloff et al.
7,727,280	B2	6/2010	McLuen	9,480,576	B2	11/2016	Pepper et al.
7,753,958	B2	7/2010	Gordon et al.	9,480,578	B2	11/2016	Pinto
7,806,932	B2	10/2010	Webb et al.	9,480,579	B2	11/2016	Davenport et al.
7,815,682	B1	10/2010	Peterson et al.	9,486,325	B2	11/2016	Davenport et al.
7,846,207	B2	12/2010	Lechmann et al.	9,492,287	B2	11/2016	Glerum et al.
7,850,731	B2	12/2010	Brittan et al.	9,492,288	B2	11/2016	Wagner et al.
7,850,733	B2	12/2010	Baynham et al.	9,492,289	B2	11/2016	Davenport et al.
7,862,616	B2	1/2011	Lechmann et al.	9,510,954	B2	12/2016	Glerum et al.
7,875,076	B2	1/2011	Mathieu et al.	9,532,821	B2	1/2017	Moskowitz et al.
7,909,869	B2	3/2011	Gordon et al.	9,561,116	B2	2/2017	Weiman et al.
8,118,870	B2	2/2012	Gordon et al.	9,566,168	B2	2/2017	Glerum et al.
8,118,871	B2	2/2012	Gordon et al.	9,572,677	B2	2/2017	Davenport et al.
8,182,539	B2	5/2012	Tyber et al.	9,579,124	B2	2/2017	Gordon et al.
D663,035	S	7/2012	Smith	9,585,762	B2	3/2017	Suddaby et al.
8,211,177	B2	7/2012	Richelsoph	9,603,713	B2	3/2017	Moskowitz et al.
8,262,737	B2	9/2012	Bagga et al.	9,622,778	B2	4/2017	Wengreen et al.
8,287,597	B1	10/2012	Pimenta et al.	9,622,875	B2	4/2017	Moskowitz et al.
8,425,528	B2	4/2013	Berry et al.	9,629,729	B2	4/2017	Grimberg, Jr. et al.
8,425,610	B2	4/2013	Guyer et al.	9,655,746	B2	5/2017	Seifert

9,655,747	B2	5/2017	Glerum et al.		2019/0000707	A1	1/2019	Lim et al.	
9,662,224	B2	5/2017	Weiman et al.		2019/0046381	A1	2/2019	Lim et al.	
D789,514	S *	6/2017	Hill	D24/101	2019/0046383	A1	2/2019	Lim et al.	
9,675,467	B2	6/2017	Duffield et al.		2019/0070015	A1	3/2019	Emerick et al.	
9,700,428	B2	7/2017	Niemiec et al.		2019/0167139	A1	6/2019	Bardy	
9,707,092	B2	7/2017	Davenport et al.		2020/0129206	A1	4/2020	Cornelius et al.	
9,713,536	B2	7/2017	Foley et al.		2020/0137910	A1*	4/2020	Nielsen	H05K 5/0086
9,730,684	B2	8/2017	Beale et al.		2020/0188664	A1*	6/2020	Gill	A61B 5/0538
D800,583	S	10/2017	Ahong et al.		2020/0383702	A1	12/2020	Vanderpool et al.	
9,801,733	B2	10/2017	Wolters et al.		2021/0153895	A1	5/2021	Vanderpool et al.	
D893,023	S *	8/2020	Hogenauer	D24/127	2021/0267634	A1	9/2021	Vanderpool et al.	
D894,396	S	8/2020	Heisel et al.		2021/0267635	A1	9/2021	Vanderpool et al.	
10,786,279	B2	9/2020	Vanderpool et al.		2021/0267636	A1	9/2021	Vanderpool et al.	
D910,868	S *	2/2021	Stewart	D24/215	2021/0275221	A1	9/2021	Vanderpool et al.	
D945,622	S	3/2022	Ries et al.		2022/0192600	A1*	6/2022	Bang	A61B 5/361
D957,639	S *	7/2022	Vanderpool	A61B 17/32093 D24/167					
2001/0029386	A1	10/2001	Matsutani et al.						
2002/0045943	A1	4/2002	Uk		CN	1031481	A	3/1989	
2002/0045945	A1	4/2002	Liu et al.		CN	2621634	Y	6/2004	
2002/0116066	A1	8/2002	Chauvin et al.		CN	2702718	Y	6/2005	
2002/0128713	A1	9/2002	Ferree		CN	202342097	U	7/2012	
2002/0151976	A1	10/2002	Foley et al.		CN	306034622	*	9/2020	
2003/0050701	A1	3/2003	Michelson		CN	306132227	*	10/2020	
2003/0130739	A1	7/2003	Gerbec et al.		CN	202030191887.3		10/2020	
2003/0208275	A1	11/2003	Michelson		DE	469951	C	1/1929	
2004/0082969	A1	4/2004	Kerr		DE	4243641	A1	9/1994	
2004/0172134	A1	9/2004	Berry		EM	008305353-0001	*	1/2021	
2004/0186570	A1	9/2004	Rapp		EP	3034128	A1	6/2016	
2004/0193154	A1	9/2004	Leatherbury et al.		JP	2001502937	A	3/2001	
2004/0193158	A1	9/2004	Lim et al.		JP	2007516031	A	6/2007	
2004/0249388	A1	12/2004	Michelson		JP	2008528084	A	7/2008	
2004/0249461	A1	12/2004	Ferree		JP	201192065	A	5/2011	
2004/0254643	A1	12/2004	Jackson		WO	9813091	A1	4/1998	
2004/0254644	A1	12/2004	Taylor		WO	2005044116	A2	5/2005	
2005/0015149	A1	1/2005	Michelson		WO	2005060306	A1	6/2005	
2005/0033429	A1	2/2005	Kuo		WO	2008016551	A1	2/2008	
2005/0033439	A1	2/2005	Gordon et al.		WO	2009018008	A2	2/2009	
2005/0090852	A1	4/2005	Layne et al.		WO	2012098356	A1	7/2012	
2005/0096645	A1	5/2005	Wellman et al.						
2005/0107768	A1	5/2005	Ting						
2006/0074434	A1	4/2006	Wenstrom et al.						
2006/0097331	A1	5/2006	Hattori et al.						
2006/0106415	A1	5/2006	Gabbay						
2006/0174898	A1	8/2006	Brown						
2007/0010738	A1	1/2007	Mark et al.						
2007/0179515	A1	8/2007	Matsutani et al.						
2007/0249992	A1	10/2007	Bardy						
2008/0154298	A1	6/2008	Grayzel et al.						
2008/0161933	A1	7/2008	Grotz et al.						
2009/0030426	A1	1/2009	Zinn et al.						
2009/0036917	A1	2/2009	Anderson						
2009/0137946	A1	5/2009	Nassiri et al.						
2010/0030227	A1	2/2010	Kast et al.						
2010/0094252	A1	4/2010	Wengreen et al.						
2010/0198140	A1	8/2010	Lawson						
2010/0324578	A1	12/2010	Bardy						
2010/0331868	A1	12/2010	Bardy						
2012/0239150	A1	9/2012	Ullrich, Jr. et al.						
2012/0283705	A1	11/2012	Lee et al.						
2013/0110238	A1	5/2013	Lindemann et al.						
2014/0128963	A1	5/2014	Quill et al.						
2014/0277482	A1	9/2014	Gfeller et al.						
2014/0277500	A1	9/2014	Logan et al.						
2015/0173915	A1	6/2015	Laubert et al.						
2016/0175007	A1	6/2016	Valbuena et al.						
2017/0049651	A1	2/2017	Lim et al.						
2017/0049653	A1	2/2017	Lim et al.						
2017/0095345	A1	4/2017	Davenport et al.						
2017/0105844	A1	4/2017	Kuyler et al.						
2017/0127543	A1*	5/2017	Day	H05K 5/0086					
2017/0258346	A1	9/2017	Vanderpool et al.						
2017/0296352	A1	10/2017	Richerme et al.						
2017/0303424	A1	10/2017	Bobgan et al.						
2018/0036138	A1	2/2018	Robinson						
2018/0116891	A1	5/2018	Beale et al.						
2018/0168686	A1*	6/2018	Jin	A61B 5/361					
2018/0303624	A1	10/2018	Shoshtaev						
2019/0000702	A1	1/2019	Lim et al.						
FOREIGN PATENT DOCUMENTS									
CN 1031481 A 3/1989									
CN 2621634 Y 6/2004									
CN 2702718 Y 6/2005									
CN 202342097 U 7/2012									
CN 306034622 * 9/2020									
CN 306132227 * 10/2020									
CN 202030191887.3 10/2020									
DE 469951 C 1/1929									
DE 4243641 A1 9/1994									
EM 008305353-0001 * 1/2021									
EP 3034128 A1 6/2016									
JP 2001502937 A 3/2001									
JP 2007516031 A 6/2007									
JP 2008528084 A 7/2008									
JP 201192065 A 5/2011									
WO 9813091 A1 4/1998									
WO 2005044116 A2 5/2005									
WO 2005060306 A1 6/2005									
WO 2008016551 A1 2/2008									
WO 2009018008 A2 2/2009									
WO 2012098356 A1 7/2012									
OTHER PUBLICATIONS									
The boys who've been injected with their own heart monitors. Feb. 22, 2014. Site visited Mar. 17, 2023. [https://www.dailymail.co.uk/health/article-2565480/The-boys-whove-injected-heart-monitors-British-3G-implants-protect-brothers-against-deadly-cardiac-condition.html] (Year: 2014).*									
Pacemakers Reduce Occurrence of Fainting, Diagnostic and Interventional Cardiology, https://www.dicardiology.com/article/pacemakers-reduce-occurrence-fainting, Mar. 29, 2012, pp. 1-3.									
Wireless, Implantable Monitors Offer Long-Term Surveillance, Diagnostic and Interventional Cardiology, www.dicardiology.com/article/wireless-implantable-monitors-offer-long-term-surveillance, Dec. 13, 2010, pp. 1-3.									
EP Communication pursuant to Article 94(3) EPC dated May 26, 2021.									
Tiny Wireless Heart Monitoring At Ku Hospital, https://www.youtube.com/watch?v=0c1PQkzGu6c, Apr. 2014.									
Biotronik BioMonitor 2 Insertion—Italian Subtitle*, https://www.youtube.com/watch?v=nYOo2dm6Fak, Nov. 16, 2015.									
Heartrak Cardiac Event Monitor, https://www.youtube.com/watch?v=kdw8tqOzqBI, Jul. 27, 2011.									
McGowan, Eve, "The Boys Who've Been Injected With Their Own Heart Monitors: British First as 3G Implants Protect Brothers Against Deadly Cardiac Condition", Published Feb. 22, 2014. Retrieved from internet on Mar. 9, 2022: https://www.dailymail.co.uk/health/article-2565480/The-boys-whove-injected-heart-monitors-British3G-implants-protect-brothers-against-deadly-cardiac-condition.html.									
Klardie, Michael R., Declaration under 37 C.F.R. § 1.130(a) executed May 2, 2022.									
* cited by examiner									

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(57) **CLAIM**

The ornamental design for an implantable cardiac monitor, as shown and described.

DESCRIPTION

FIG. 1 is a front, right side, perspective view of an implantable cardiac monitor according to the present disclosure.

FIG. 2 is a front view of the implantable cardiac monitor of FIG. 1.

FIG. 3 is a right side view of the implantable cardiac monitor of FIG. 1; and,

FIG. 4 is a left side view of the implantable cardiac monitor of FIG. 1.

The broken lines in the Figures illustrate portions of the article that form no part of the claimed design. The gray shading in the Figures indicates a contrast in appearance that is part of the claimed embodiment of the design.

1 Claim, 2 Drawing Sheets

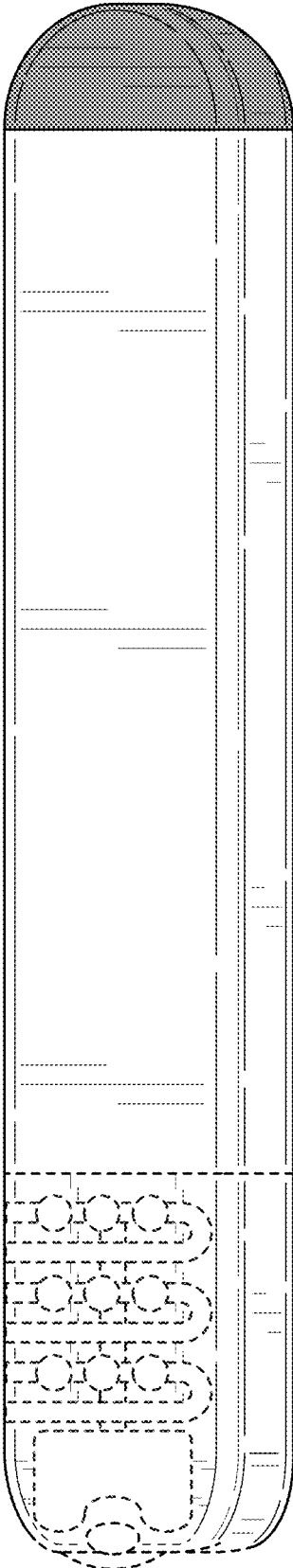


FIG. 1

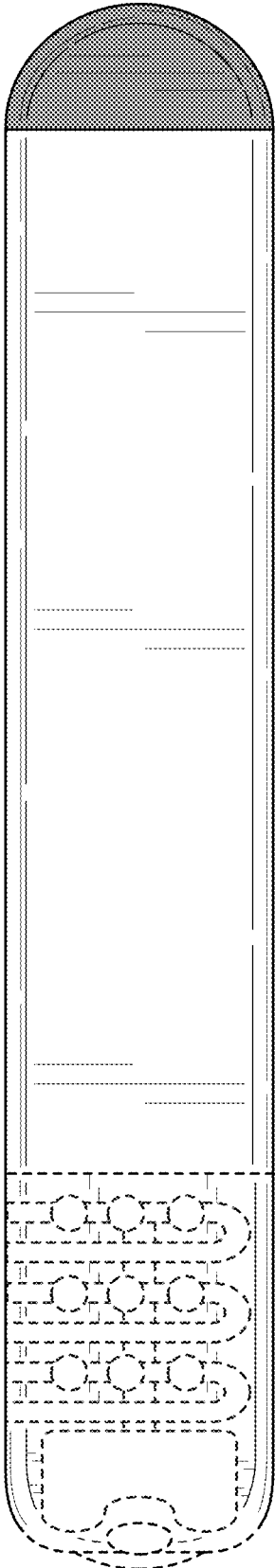


FIG. 2

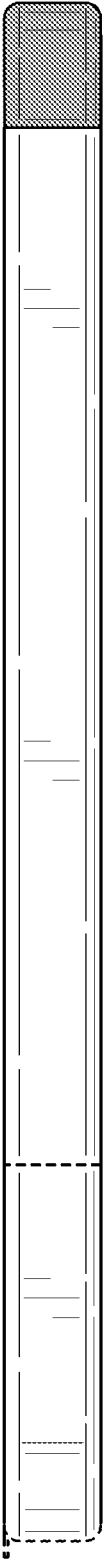


FIG. 3

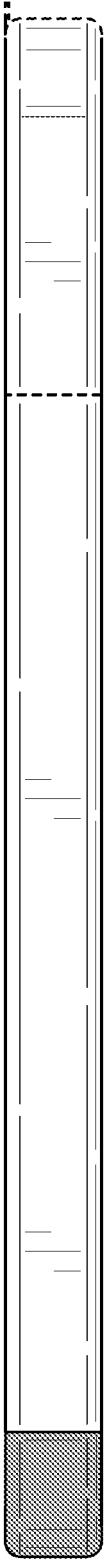


FIG. 4