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(54) **SAMPLE COLLECTION DEVICE OF AN ANALYTE DETECTION SYSTEM**

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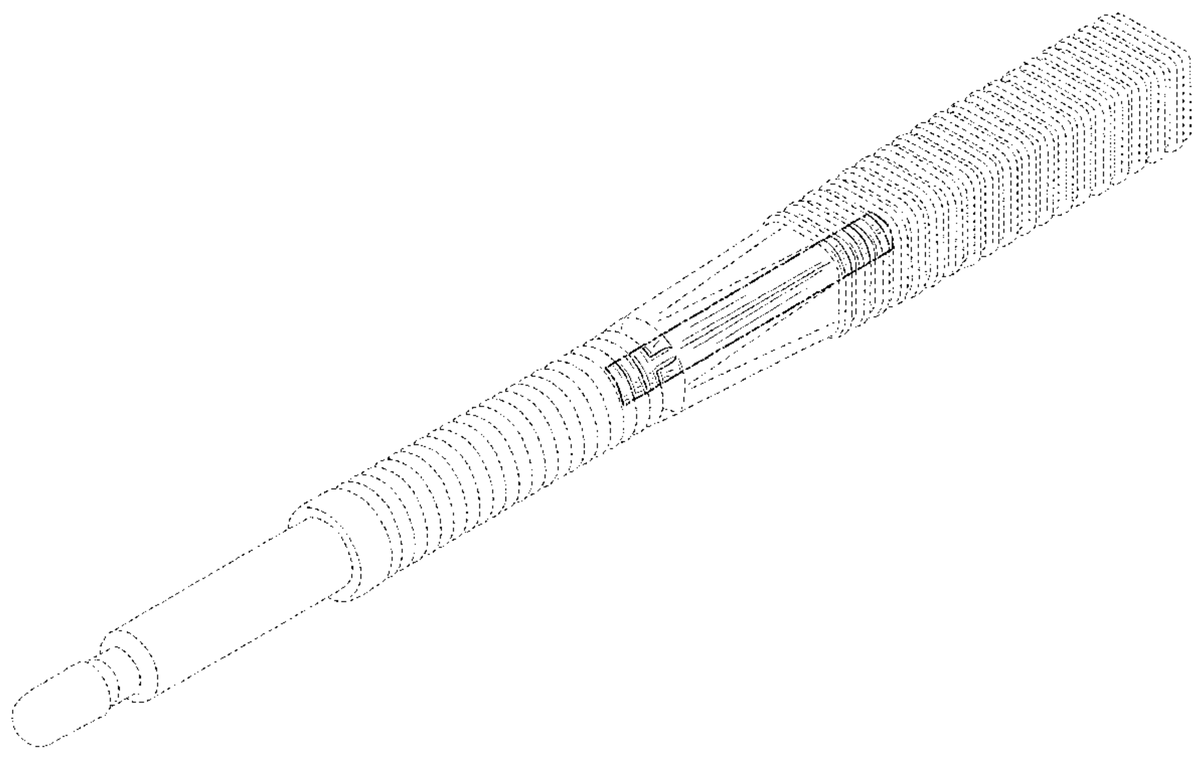
(56) **References Cited**

U.S. PATENT DOCUMENTS

D115,326	S	6/1939	Chott
3,915,806	A	10/1975	Horlach
D249,062	S	8/1978	Crafoord et al.
D298,166	S	10/1988	Chennault
D302,585	S	8/1989	Elliott
D303,288	S	9/1989	Harboe et al.
D306,067	S	2/1990	Bogdanoff et al.
5,178,298	A	1/1993	Allina
5,223,414	A	6/1993	Zarling et al.
5,273,881	A	12/1993	Sena et al.
D343,679	S	1/1994	Wong
5,455,166	A	10/1995	Walker
5,470,723	A	11/1995	Walker et al.
5,498,392	A	3/1996	Wilding et al.
D379,230	S	5/1997	Mark
5,708,247	A	1/1998	McAleer et al.
5,714,320	A	2/1998	Kool
D402,753	S	12/1998	White
5,935,804	A	8/1999	Laine et al.
6,146,590	A	11/2000	Mazurek et al.
6,235,502	B1	5/2001	Weissman et al.
D458,456	S	6/2002	Dragan et al.
6,410,278	B1	6/2002	Notomi et al.
6,514,415	B2	2/2003	Hatch et al.
6,523,560	B1	2/2003	Williams et al.
D472,975	S	4/2003	Iori et al.
6,686,195	B1	2/2004	Colin et al.
6,893,879	B2	5/2005	Petersen et al.
6,929,915	B2	8/2005	Benkovic et al.
D518,597	S	4/2006	Sommers
7,118,667	B2	10/2006	Lee
7,195,036	B2	3/2007	Burns et al.
D542,931	S	5/2007	Pukall et al.
7,282,328	B2	10/2007	Kong et al.
7,285,412	B2	10/2007	Casagrande et al.
7,291,497	B2	11/2007	Holmes et al.
7,399,590	B2	7/2008	Piepenburg et al.
7,432,106	B2	10/2008	Cox
7,466,908	B1	12/2008	Lem et al.
7,478,792	B2	1/2009	Oh et al.
D591,864	S	5/2009	Schmidt
D600,578	S	9/2009	Tsuji
7,635,594	B2	12/2009	Holmes et al.
7,723,099	B2	5/2010	Miller et al.
7,888,125	B2	2/2011	Gibbons et al.



7,981,696	B2	7/2011	Moreland et al.
8,007,999	B2	8/2011	Holmes et al.
8,008,034	B2	8/2011	Gibbons et al.
8,012,744	B2	9/2011	Gibbons et al.
D646,189	S	10/2011	Dinter et al.
8,071,054	B2	12/2011	Oh et al.
8,071,308	B2	12/2011	Piepenburg et al.
8,101,402	B2	1/2012	Holmes
8,202,697	B2	6/2012	Holmes
8,216,832	B2	7/2012	Battrell et al.
8,265,955	B2	9/2012	Michelson et al.
8,283,155	B2	10/2012	Holmes et al.
8,361,808	B2	1/2013	Wang
D679,025	S	3/2013	Motadel et al.
8,449,842	B2	5/2013	Knopp et al.
8,470,524	B2	6/2013	Gibbons et al.
8,475,739	B2	7/2013	Holmes et al.
8,528,777	B2	9/2013	Harder et al.
8,551,714	B2	10/2013	Jovanovich et al.
8,562,918	B2	10/2013	Jovanovich et al.
D698,036	S	1/2014	Dickinson
8,637,253	B2	1/2014	Piepenburg et al.
8,669,047	B2	3/2014	Holmes et al.
8,679,407	B2	3/2014	Holmes et al.
8,724,833	B1	5/2014	Shain et al.
8,735,104	B2	5/2014	Harder et al.
D707,847	S	6/2014	Motadel et al.
8,741,230	B2	6/2014	Holmes et al.
8,778,665	B2	7/2014	Gibbons et al.
8,802,445	B2	8/2014	Linder et al.
8,834,691	B2	9/2014	Kondo et al.
D718,462	S	11/2014	Cook et al.
8,883,518	B2	11/2014	Roy et al.
D719,666	S	12/2014	Manian
8,945,880	B2	2/2015	Cloake et al.
9,028,773	B2	5/2015	Ganesan
9,034,168	B2	5/2015	Khattak et al.
9,052,275	B2	6/2015	Khattak et al.
9,086,417	B2	7/2015	Khattak et al.
9,176,126	B2	11/2015	Holmes et al.
D745,185	S	12/2015	Kimura et al.
D745,423	S	12/2015	Khattak et al.
9,207,244	B2	12/2015	Khattak et al.
9,207,245	B2	12/2015	Khattak
9,310,231	B2	4/2016	Bloss et al.
9,360,491	B2	6/2016	Sever et al.
9,435,793	B2	9/2016	Burd et al.
D774,407	S	12/2016	Khattak et al.
9,522,397	B2	12/2016	Khattak et al.
9,623,409	B2	4/2017	Khattak et al.
9,636,676	B2	5/2017	Sever et al.
D789,815	S	6/2017	Khattak et al.
9,718,058	B2 *	8/2017	Khattak B01L 3/5027
9,724,691	B2	8/2017	Khattak et al.
9,808,804	B2	11/2017	Khattak et al.
9,962,703	B2	5/2018	Khattak et al.
D820,130	S	6/2018	Khattak et al.
D821,602	S	6/2018	Sever et al.
10,272,434	B2 *	4/2019	Khattak G01N 33/54306
10,545,161	B2 *	1/2020	Khattak B01L 3/5029
2002/0002326	A1	1/2002	Causey et al.
2002/0123048	A1	9/2002	Gau
2002/0137234	A1	9/2002	Wohlstadter et al.
2003/0019522	A1	1/2003	Parunak
2004/0011650	A1	1/2004	Zenhausern et al.
2004/0082878	A1	4/2004	Baldwin et al.
2004/0173456	A1	9/2004	Boos et al.
2004/0189311	A1	9/2004	Glezer et al.
2004/0214200	A1	10/2004	Brown et al.
2004/0219732	A1	11/2004	Burns et al.
2005/0136529	A1	6/2005	Yang et al.
2005/0171528	A1	8/2005	Sartor et al.
2005/0178700	A1	8/2005	Tyvoll et al.
2005/0200643	A1	9/2005	Falcon
2006/0131994	A1	6/2006	D'Angelico et al.
2006/0160205	A1	7/2006	Blackburn et al.
2006/0207891	A1	9/2006	Althaus et al.
2006/0243591	A1	11/2006	Plotkin et al.
2007/0031283	A1	2/2007	Davis et al.
2007/0060815	A1	3/2007	Martin et al.
2007/0154922	A1	7/2007	Collier et al.
2007/0184547	A1	8/2007	Handique et al.
2007/0299364	A1	12/2007	Sangha
2008/0124779	A1	5/2008	Oh et al.
2008/0146892	A1	6/2008	Leboeuf et al.
2008/0160601	A1	7/2008	Handique
2008/0160622	A1	7/2008	Su et al.
2008/0160630	A1	7/2008	Liu et al.
2008/0182301	A1	7/2008	Handique et al.
2008/0275229	A1	11/2008	Lem et al.
2008/0302193	A1	12/2008	Bommarito et al.
2009/0061450	A1	3/2009	Hunter
2009/0130777	A1	5/2009	Arinaga et al.
2010/0180980	A1	7/2010	Lee et al.
2010/0236340	A1	9/2010	Lee et al.
2010/0274155	A1	10/2010	Battrell et al.
2010/0280146	A1	11/2010	Vanderlaan et al.
2010/0297708	A1	11/2010	Collier et al.
2010/0331652	A1	12/2010	Groll et al.
2011/0008813	A1	1/2011	Dilleen et al.
2011/0059468	A1	3/2011	Earhart et al.
2011/0129841	A1	6/2011	Heid et al.
2011/0165562	A1	7/2011	Pourahmadi et al.
2011/0171754	A1	7/2011	Redmond et al.
2011/0201099	A1	8/2011	Anderson et al.
2011/0212440	A1	9/2011	Viovy et al.
2011/0233073	A1	9/2011	Laczka et al.
2011/0272294	A1	11/2011	Fujiwara
2012/0009588	A1	1/2012	Rajagopal et al.
2012/0014836	A1	1/2012	Dittmer
2012/0071342	A1	3/2012	Lochhead et al.
2012/0095316	A1	4/2012	Lewis et al.
2012/0164036	A1	6/2012	Stern et al.
2012/0180580	A1	7/2012	Immink et al.
2012/0190589	A1	7/2012	Anderson et al.
2012/0255860	A1	10/2012	Briman et al.
2012/0267258	A1	10/2012	Uraoka et al.
2012/0271127	A1	10/2012	Battrell et al.
2012/0282602	A1	11/2012	Drader et al.
2013/0011210	A1	1/2013	Toner et al.
2013/0017807	A1	1/2013	Rooyen et al.
2013/0029324	A1	1/2013	Rajagopal et al.
2013/0085680	A1	4/2013	Arlen et al.
2013/0137591	A1	5/2013	Clemens et al.
2013/0145591	A1	6/2013	Chen
2013/0244241	A1	9/2013	Carrera Fabra et al.
2013/0244339	A1	9/2013	Ehrenkranz et al.
2013/0273528	A1	10/2013	Ehrenkranz
2013/0309778	A1	11/2013	Lowe et al.
2013/0317318	A1	11/2013	Tartz et al.
2014/0027286	A1	1/2014	Ikegami et al.
2014/0030717	A1	1/2014	Zhong et al.
2014/0194305	A1	7/2014	Kayyem et al.
2014/0242622	A1	8/2014	Petrich et al.
2014/0335520	A1	11/2014	Jackson et al.
2014/0336083	A1	11/2014	Khattak et al.
2015/0129049	A1	5/2015	Khattak et al.
2015/0140556	A1	5/2015	Albert et al.
2016/0091518	A1	3/2016	Khattak et al.
2016/0279635	A1	9/2016	Sever et al.
2017/0043334	A1	2/2017	Khattak et al.
2017/0043335	A1	2/2017	Khattak et al.
2017/0043336	A1	2/2017	Khattak et al.
2017/0043342	A1	2/2017	Khattak et al.
2017/0045507	A1	2/2017	Khattak et al.
2017/0045508	A1	2/2017	Khattak et al.
2017/0080421	A1	3/2017	Khattak et al.
2017/0216842	A1	8/2017	Khattak et al.
2017/0241845	A1	8/2017	Hwang et al.
2017/0248622	A1	8/2017	Khattak et al.
2017/0266657	A1	9/2017	Khattak et al.
2018/0104682	A1	4/2018	Khattak et al.
2018/0147575	A1	5/2018	Khattak et al.

FOREIGN PATENT DOCUMENTS

CA	159365	11/2015
CN	1347494 A	5/2002

CN	1870943	A	11/2006
CN	1898544	A	1/2007
CN	1985166	A	6/2007
CN	101464412	A	6/2009
CN	102224260	A	10/2011
CN	102333488	A	1/2012
CN	104232622	A	12/2014
EP	0 965 388	A2	12/1999
EP	1 183 102	B1	12/2003
EP	1 473 086	A1	11/2004
EP	2 050 498	A1	4/2009
EP	2 179 294	A2	4/2010
ES	2158808	A1	9/2001
GB	2 430 032	A	3/2007
JP	2001-503856	A	3/2001
JP	2006-007146	A	1/2006
JP	2007-505319		3/2007
JP	2008-528170	A	7/2008
JP	2009-531064		9/2009
JP	2009-226404	A	10/2009
JP	3157523		2/2010
JP	2010-535346	A	11/2010
JP	2011-013043	A	1/2011
JP	2011-516824	A	5/2011
JP	2012-504956		3/2012
JP	2012-127978	A	7/2012
JP	2012-173181	A	9/2012
JP	2012-521558		9/2012
JP	2012-528995		11/2012
JP	2013-508859	A	3/2013
KR	10-2004-0094280	A	11/2004
WO	WO-99/14599	A1	3/1999
WO	WO-01/28682	A1	4/2001
WO	WO-03/103485	A1	12/2003
WO	WO-2005/026689		3/2005
WO	WO-2006/121510	A1	11/2006
WO	WO-2007/112114		10/2007
WO	WO-2007/112114	A2	10/2007
WO	WO-2008/122908	A1	10/2008
WO	WO-2009/018473	A1	2/2009
WO	WO-2010/003212	A1	1/2010
WO	WO-2010/036808	A1	4/2010
WO	WO-2010/041231		4/2010
WO	WO-2010/109392	A1	9/2010
WO	WO-2010/140128		12/2010
WO	WO-2011/082309	A1	7/2011
WO	WO-2012/025729	A1	3/2012
WO	WO-2012/032294	A1	3/2012
WO	WO-2012/147426		11/2012
WO	WO-2012/170703	A1	12/2012
WO	WO-2013/136115	A1	9/2013
WO	WO-2013/144643	A2	10/2013
WO	WO-2016/040642	A1	3/2016

OTHER PUBLICATIONS

U.S. Appl. No. 15/945,646, filed Apr. 4, 2018, Khattak et al.
U.S. Appl. No. 29/647,395, filed May 11, 2018, Khattak et al.
Company Profile: Nemera (Injectbles Offering), www.ondrugdeliver.com, Issue 71, Oct. 2016, pp. 32-35, retrieved from Internet https://www.ondrugdelivery.com/publications/71/Nemera.pdf.
Nemera Safe'n'Sound Product Leaflet, 2017, http://www.nemera.net/wp-content/uploads/2017/11/Nemera-SAFENSOUND_ProductLeaflet_LD.pdf (4 pages).
Syrina Data Sheet, Bespak, Oct. 28, 2015, retrieved from Internet http://www.bespak.com/wp-content/uploads/2015/10/U969_DATASHEET_Bespak_AW TEMPLATE_SYRINA-ARTWORK1.pdf (2 pages).
U.S. Notice of Allowability for U.S. Appl. No. 29/584,030 dated May 18, 2018. (7 Pages).
U.S. Office Action for U.S. Appl. No. 14/954,817 dated Nov. 3, 2016. (9 pages).
U.S. Office Action for U.S. Appl. No. 15/785,394 dated Apr. 13, 2018. (6 pages).
U.S. Office Action for U.S. Appl. No. 29/584,030 dated Feb. 22, 2018. (6 pages).
U.S. Office Action for U.S. Appl. No. 29/584,030 dated Nov. 29, 2017. (8 pages).
U.S. Appl. No. 15/785,394, filed Oct. 16, 2017 Khattak et al.
U.S. Appl. No. 29/584,030, filed Nov. 10, 2016 Khattak et al.
U.S. Appl. No. 29/584,715, filed Nov. 16, 2016 Khattak et al.
U.S. Appl. No. 29/591,165, filed Jan. 17, 2017 Khattak et al.
Anderson, J.C. et al.(2008) "Thermally-Actuated Microfluidic Systems," JALA 13:65-72.
Beyor, N. et al. (2008) "Immunomagnetic bead-based cell concentration microdevice for dilute pathogen detection," Biomed Microdevices 10:909-917.
Boon, E.M. et al. (2003) "Reduction of Ferricyanide by Methylene Blue at a DNA-Modified Rotating-Disk Electrode," Langmuir 19(22):9255-9259.
Borjac-Natour, J.M. et al. (2004) "Divergence of the mRNA targets for the Ssb proteins of bacteriophages T4 and RB69," Virol. J. 1(4): 14 pages.
Brill, A.S. et al. (1967) "Reactions of Horseradish Peroxidase with Azide. Evidence for a Methionine Residue at the Active Site," Biochemistry 6(11):3528-3535.
Cecchet, F. et al. (2006) "Redox Mediation at 11-Mercaptoundecanoic Acid Self-Assembled Monolayers on Gold," J. Phys. Chem. B 110:2241-2248.
Chakrabarti, R. et al. (2001) "The enhancement of PCR amplification by low molecular weight amides," Nucleic Acids Res. 29(11):2377-2381.
Chen, Z. et al. (2005) "Thermally-actuated, phase change flow control for microfluidic systems," Lab Chip 5:1277-1285.
Cho, H. et al. (2007) "How the capillary burst microvalve works," Journal of Colloid and Interface Science 306:379-385.
Clinical IVD Products: Liat™ Analyzer; IQuum, Inc.: http://www.iquum.com/products/analyzer.shtml. Last accessed May 5, 2014.
Desplats, C. et al. (2002) "Snapshot of the Genome of the Pseudo-T-Even Bacteriophage RB49," J. Bacteriol. 184(10):2789-2804.
Dong, F. et al. (1996) "A coupled complex of T4 DNA replication helicase (gp41) and polymerase (pg43) can perform rapid and processive DNA strand-displacement synthesis," Proc. Natl. Acad. Sci. USA 93:14456-14461.
Fan, R. et al. (2008) "Integrated barcode chips for rapid, multiplexed analysis of proteins in microliter quantities of blood," Nature Biotechnology 26(12):1373-1378.
Ferguson, B.S. et al. (2009) "Integrated Microfluidic Electrochemical DNA Sensor," Anal. Chem. 81:6503-6508.
Frackman, S. et al. (1998) "Betaine and DMSA: Enhancing Agents for PCR," Promega Notes 65:27.
Fujisawa T Al. (1985) "Sequence of the T4 recombination gene, uvsX, and its comparison with that of recA gene of Escherichia coli," Nuclec Acid Res. 13(20):7473-7481.
Harada, K. et al. (1993) "In vitro selection of optimal DNA substrates for T4 RNA ligase," Proc. Natl. Acad. Sci. USA 90:1576-1579.
Henares, T.G. et al. (2007) "Integration of Multianalyte Sensing Functions on a Capillary-Assembled Microchip: Simultaneous Determination of Ion Concentrations and Enzymatic Activities by a "Drop-and-Sip" Technique," Anal. Chem. 79:908-915.
International Search Report and Written Opinion (ISA/EP) for International Application No. PCT/US2015/049439, dated Dec. 7, 2015, 15 pages.
International Search Report and Written Opinion (ISA/KR) for International Application No. PCT/US2014/023821, dated Jul. 7, 2014, 12 pages.
Jagannathan, H. et al. (2001) "Micro-Fluidic Channels with Integrated Ultrasonic Transducers," IEEE Ultrasonics Symposium:859-862.
Jarvis, T.C. et al. (1990) "'Macromolecular Crowding': Thermodynamic Consequences for Protein-Protein Interactions within the T4 DNA Replication Complex," J. Biol. Chem. 265(25):15160-15167.
Jarvis, T.C. et al. (1991) "Stimulation of the Processivity of the DNA Polymerase of Bacteriophage T4 by the Polymerase Accessory Proteins," J. Biol. Chem. 266(3):1830-1840.
Kaigala, G.V. et al. (2008) "Electrically controlled microvalves to integrate microchip polymerase chain reaction and capillary electrophoresis," Lab Chip 8:1071-1078.

Kim, D. et al. (2007) "A Bi-Polymer Micro One-Way Valve," Sensors and Actuators A 136:426-433.
Kinoshita, T. et al. (2007) "Functionalization of Magnetic Gold/Iron-Oxide Composite Nanoparticles with Oligonucleotides and Magnetic Separation of Specific Target," J. of Magnetism and Magnetic Materials 311:255-258.
Kwakye, S. et al. (2006) "Electrochemical Microfluidic Biosensor for Nucleic Acid Detection with Integrated Minipotentiostat," Biosensors and Bioelectronics 21: 2217-2223.
Laschi, S. et al. (2010) "A New Gravity-Driven Microfluidic-Based Electrochemical Assay Coupled to Magnetic Beads for Nucleic Acid Detection," Electrophoresis 31: 3727-3736.
Lavery, P.E. et al. (1992) "Enhancement of recA Protein-promoted DNA Strand Exchange Activity by Volume-occupying Agents," J. Biol. Chem. 267(13):9307-9314.
Lawi, W. et al. (2009) "A Microfluidic Cartridge System for Multiplexed Clinical Analysis," J. Assoc. Laboratory Automation 14(6):407-412.
Lee, C.S. et al. (2001) "Microelectromagnets for the Control of Magnetic Nanoparticles," Applied Physics Letters 79(20):3308-3310.
Lillehoj, P.B. et al. (2010) "A Self-Pumping Lab-on-a-Chip for Rapid Detection of Botulinum Toxin," Lab Chip 10: 2265-2270.
Liu, R.H. et al. (2004) "Self-Contained, Fully Integrated Biochip for Sample Preparation, Polymerase Chain Reaction Amplification, and DNA Microarray Detection," Analytical Chemistry 76(7):1824-1831.
Liu, R.H. et al. (2004) "Single-use, Thermally Actuated Paraffin Valves for Microfluidic Applications," Sensors and Actuators B 98:328-336.
Lomas, N. (2014) "Cue Is a Connected Lab-In-A-Box For On-Demand Health Testing At Home," TechCrunch.
Ma, X. et al. (1988) "Role of oxygen during horseradish peroxidase turnover and inactivation," Biochem Biophys Res Commun. 157(1):160-165.
Marentis, T.C. et al. (2005) "Microfluidic Sonicator for Real-Time Disruption of Eukaryotic Cells and Bacterial Spores for DNA Analysis," Ultrasound in Med. & Biol. 31(9):1265-1277.
Morrical, S.W. et al. (1991) "Amplification of Snap-back DNA Synthesis Reactions by the uvsX Recombinase of Bacteriophage T4," J. Biol. Chem. 266(21):14031-14038.
Mrksich, M. et al. (1997) "Using Self-Assembled Monolayers that Present Oligo(ethylene glycol) Groups to Control the Interactions of Proteins with Surfaces," American Chemical Society Symposium Series 680:361-373.
PCT International Search Report and Written Opinion for Application No. PCT/US2016/042688 dated Jan. 10, 2017. (15 pages).
PCT International Search Report and Written Opinion for Application No. PCT/US2018/015111 dated Apr. 13, 2018. (11 pages).
Prindle, D. (2014) "Sick? Need more vitamin D? Testosterone? Lick a stick and Cue fills you in," www.digitaltrends.com.
Reddy, M.K. et al. (1993) "Assembly of a functional replication complex without ATP hydrolysis: A direct interaction of bacteriophage T4 gp45 with T4 DNA polymerase," Proc. Natl. Acad. Sci. USA 90:3211-3215.
Rida, A. et al. (2004) "Manipulation of Self-Assembled Structures of Magnetic Beads for Microfluidic Mixing and Assaying," Analytical Chemistry 76(21):6239-6246.
Roderee, K. et al. (2011) "DNA Hybridization Enhancement Using Piezoelectric Microagitation through a Liquid Coupling Medium," Lab Chip, doi:10.1039/C0LC00419G.
Sharma, V. et al. (2007) "Surface Characterization of Plasma-Treated and PEG-Grafted PDMS for Micro Fluidic Applications," Vacuum 81:1094-1100.
Shin, Y.S. et al. (2010) "Chemistries for Patterning Robust DNA MicroBarcodes Enable Multiplex Assays of Cytoplasm Proteins from Single Cancer Cells," ChemPhysChem 11:3063-3069.
Simplexa™ Flu A/B & RSV Direct Kit; Focus Diagnostics, Inc.: http://www.focusdx.com/product/MOL2650. Last accessed May 5, 2014.
Sun, S. et al. (2003) "Biochemical Characterization of Interactions between DNA Polymerase and Single-stranded DNA-binding Protein in Bacteriophage RB69," J. Biol. Chem. 278(6):3876-3881.
Taylor, M.T. et al. (2001) "Lysing Bacterial Spores by Sonication through a Flexible Interface in a Microfluidic System," Analytical Chemistry 73(3):492-496.
The FilmArray System; Biofire Diagnostics, Inc.: http://filmarray.com/the-panels/. Last accessed May 5, 2014.
U.S. Notice of Allowance for U.S. Appl. No. 29/591,165 dated Apr. 11, 2018. (9 pages).
U.S. Notice of Allowance for Design U.S. Appl. No. 29/490,660 dated Aug. 20, 2015. (9 pages).
U.S. Notice of Allowance for Design U.S. Appl. No. 29/545,014 dated Sep. 2, 2016. (10 pages).
U.S. Office Action for U.S. Appl. No. 14/205,146 dated Apr. 3, 2015. (13 pages).
U.S. Office Action for U.S. Appl. No. 14/205,146 dated Apr. 6, 2016. (9 pages).
U.S. Office Action for U.S. Appl. No. 14/205,146 dated Dec. 21, 2016. (13 pages).
U.S. Office Action for U.S. Appl. No. 14/205,146 dated Jun. 23, 2017. (11 pages).
U.S. Office Action for U.S. Appl. No. 14/205,146 dated Oct. 22, 2015. (13 pages).
U.S. Office Action for U.S. Appl. No. 14/205,146 dated Sep. 26, 2014. (6 pages).
U.S. Office Action for U.S. Appl. No. 14/479,149 dated Jan. 13, 2015. (21 pages).
U.S. Office Action for U.S. Appl. No. 14/479,149 dated Mar. 6, 2015. (14 pages).
U.S. Office Action for U.S. Appl. No. 14/543,842 dated Apr. 24, 2015. (10 pages).
U.S. Office Action for U.S. Appl. No. 14/543,842 dated Feb. 12, 2015. (14 pages).
U.S. Office Action for U.S. Appl. No. 14/599,365 dated May 1, 2015. (13 pages).
U.S. Office Action for U.S. Appl. No. 14/599,369 dated Apr. 22, 2016. (9 pages).
U.S. Office Action for U.S. Appl. No. 14/599,369 dated Aug. 18, 2015. (15 pages).
U.S. Office Action for U.S. Appl. No. 14/599,369 dated Jan. 4, 2016. (8 pages).
U.S. Office Action for U.S. Appl. No. 14/599,369 dated May 11, 2016. (4 pages).
U.S. Office Action for U.S. Appl. No. 14/599,369 dated May 7, 2015. (6 pages).
U.S. Office Action for U.S. Appl. No. 14/599,372 dated Mar. 27, 2015 (15 pages).
U.S. Office Action for U.S. Appl. No. 14/599,372 dated Sep. 14, 2015. (17 pages).
U.S. Office Action for U.S. Appl. No. 14/599,375 dated Aug. 26, 2015. (13 pages).
U.S. Office Action for U.S. Appl. No. 14/599,375 dated Jun. 19, 2015. (20 pages).
U.S. Office Action for U.S. Appl. No. 14/954,817 dated Feb. 2, 2016. (21 pages).
U.S. Office Action for U.S. Appl. No. 14/954,817 dated May 23, 2016. (15 pages).
U.S. Office Action for U.S. Appl. No. 14/954,817 dated Sep. 19, 2016. (8 pages).
U.S. Office Action for U.S. Appl. No. 15/172,077 dated Feb. 10, 2017. (19 pages).
U.S. Office Action for U.S. Appl. No. 15/172,077 dated Mar. 7, 2017. (4 pages).
U.S. Office Action for U.S. Appl. No. 15/336,487 dated Jan. 30, 2017. (27 pages).
U.S. Office Action for U.S. Appl. No. 15/336,487 dated Jun. 6, 2017. (26 pages).
U.S. Office Action for U.S. Appl. No. 15/336,502 dated Feb. 21, 2018. (14 pages).
U.S. Office Action for U.S. Appl. No. 15/336,502 dated Jan. 27, 2017. (31 pages).
U.S. Office Action for U.S. Appl. No. 15/336,502 dated Jul. 14, 2017. (11 pages).
U.S. Office Action for U.S. Appl. No. 15/336,712 dated Jul. 12, 2017. (9 pages).

U.S. Office Action for U.S. Appl. No. 15/336,712 dated Mar. 16, 2017. (25 pages).
U.S. Office Action for U.S. Appl. No. 15/336,712 dated Sep. 20, 2017. (5 pages).
U.S. Office Action for U.S. Appl. No. 15/336,715 dated Feb. 9, 2017. (8 pages).
U.S. Office Action for U.S. Appl. No. 15/336,715 dated Jun. 29, 2017. (3 pages).
U.S. Office Action for U.S. Appl. No. 15/336,715 dated May 17, 2017. (17 pages).
U.S. Office Action for U.S. Appl. No. 15/336,735 dated Feb. 13, 2017. (5 pages).
U.S. Office Action for U.S. Appl. No. 15/336,735 dated Jan. 5, 2017. (10 pages).
U.S. Office Action for U.S. Appl. No. 15/336,739 dated Feb. 26, 2018. (8 pages).
U.S. Office Action for U.S. Appl. No. 15/336,739 dated Jul. 21, 2017. (7 pages).
U.S. Office Action for U.S. Appl. No. 15/336,739 dated Mar. 21, 2017. (18 pages).
U.S. Office Action for U.S. Appl. No. 15/487,956 dated Jan. 31, 2018. (8 pages).
U.S. Office Action for U.S. Appl. No. 15/487,956 dated Mar. 14, 2018. (2 pages).
U.S. Office Action for U.S. Appl. No. 15/487,956 dated Oct. 18, 2017. (6 pages).
U.S. Office Action for U.S. Appl. No. 29/574,538 dated Feb. 17, 2017. (8 pages).
U.S. Office Action for U.S. Appl. No. 29/584,715 dated Feb. 20, 2018. (7 pages).
U.S. Office Action for U.S. Appl. No. 29/591,165 dated Nov. 29, 2017. (18 pages).
U.S. Office Action for Design U.S. Appl. No. 29/490,660 dated Jun. 25, 2014. (6 pages).
U.S. Restriction Requirement for Design U.S. Appl. No. 29/490,660 dated Jun. 2, 2015. (8 pages).
U.S. Restriction Requirement for Design U.S. Appl. No. 29/545,014 dated May 10, 2016. (15 pages).
Wang, J. (2002) "Portable Electrochemical Systems," Trends in Analytical Chemistry 21(4):226-232.
Wang, J. et al. (2005) "Self-Actuated, Thermo-Responsive Hydrogel Valves for Lab on a Chip," Biomedical Microdevices 7(4):313-322.
Wang, J. et al. (2010) "A Self-Powered, One-Step Chip for Rapid, Quantitative and Multiplexed Detection of Proteins from Pinpricks of Whole Blood," Lab Chip 10:3157-3162.
Wu, C. et al. (2011) "Ultrasonication on a Microfluidic Chip to Lyse Single and Multiple Pseudo-Nitzschia for Marine Biotoxin Analysis," Biotechnology Journal 6:150-155.
Xpert® Flu; Cepheid: http://www.cepheid.com/us/cepheid-solutions/clinical-ivd-tests/critical-infectious-diseases/xpert-flu. Last accessed May 5, 2014.
Yoshioka, K. et al. (2010) "Suppression of Non-specific Adsorption Using Densified Tri(ethylene glycol) Alkanethiols: Monolayer Characteristics Evaluated by Electrochemical Measurements," Analytical Sciences 26:33-37.
Zhang, Z. et al. (1998) "Strand Exchange Protein 1 (Sep1) from Saccharomyces cerevisiae Does not Promote Branch Migration in Vitro," J. Biol. Chem. 273(9):4950-4956.
Ziegler, J. et al. (2008) "High-Performance Immunoassays Based on Through-Stencil Patterned Antibodies and Capillary Systems," Analytical Chemistry 80(5):1763-1769.
U.S. Notice of Allowability for U.S. Appl. No. 29/591,165 dated May 21, 2018. (4 pages).
U.S. Office Action for U.S. Appl. No. 15/945,646 dated Jul. 3, 2018. (23 pages).
Ahmad et al. "Electrochemical immunosensor modified with self-assembled monolayer of 11-mercaptoundecanoic acid on gold electrodes for detection of benzo[a]pyrene in water" Analyst, 2012, 137, 5839-5844. (Year: 2012).
Yoshioka, et al., Suppression of Non-specific Adsorption Using Densified Tri(ethylene glycol) Alkanethiols: Monolayer Characteristics Evaluated by Electromechanical Measurements, Analytical Sciences, vol. 26, pp. 33-37 (2010).

* cited by examiner

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(57) **CLAIM**

We claim the ornamental design for a sample collection device of an analyte detection system, as shown and described.

DESCRIPTION

FIG. **1** is a top, front, right side perspective view of a sample collection device of an analyte detection system;
FIG. **2** is a right side elevation view thereof;
FIG. **3** is a left side elevation view thereof;
FIG. **4** is a top plan view thereof;
FIG. **5** is a bottom plan view thereof;
FIG. **6** is a front elevation view thereof; and,
FIG. **7** is a rear elevation view thereof.

The broken lines in the drawings are for illustrative purposes only and form no part of the claimed design. Broken lines formed by equal length dashes show unclaimed subject matter. Broken lines formed by unequal length dashes (i.e., dash-dot) define bounds of the claimed design.

1 Claim, 4 Drawing Sheets

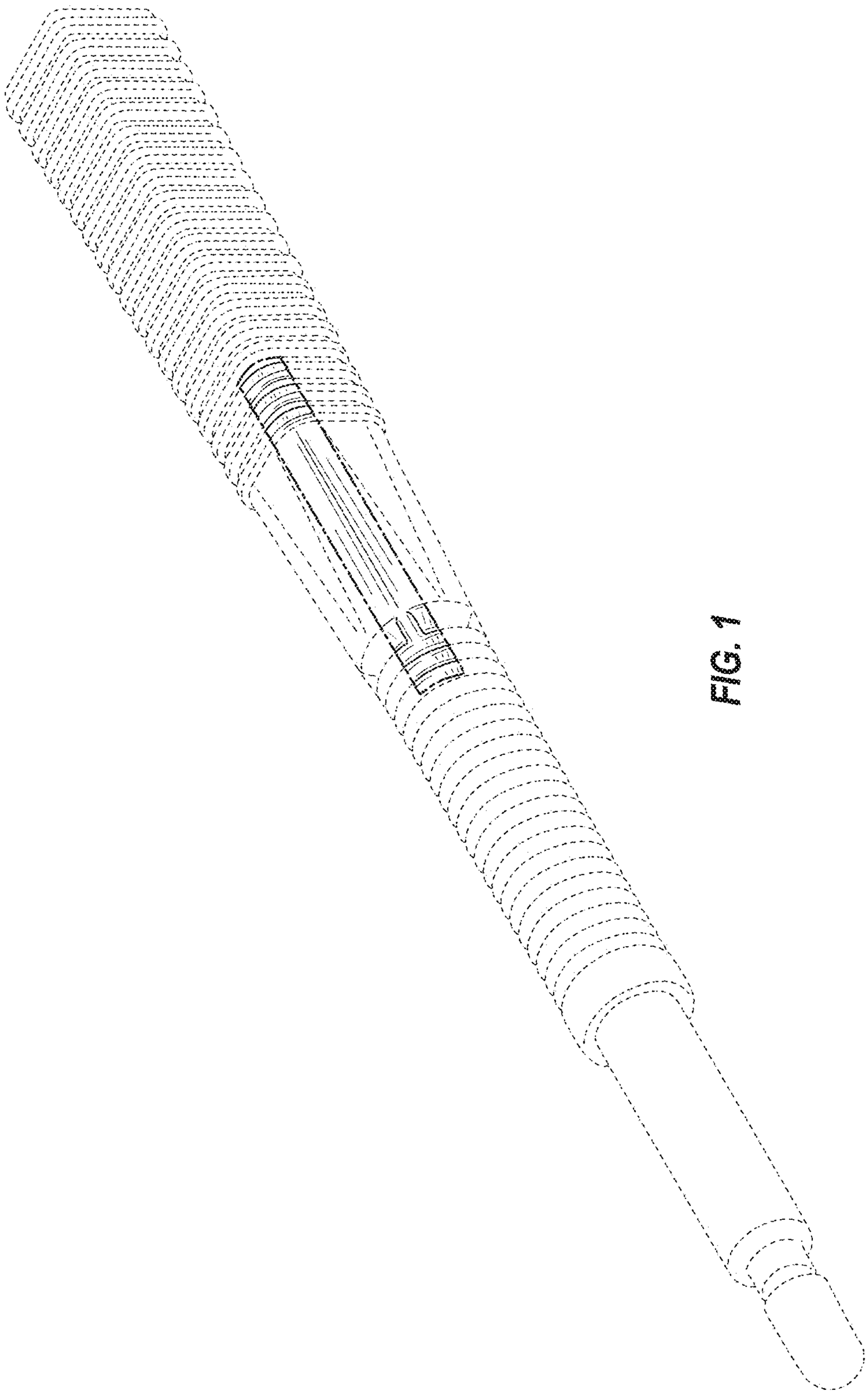

FIG. 1

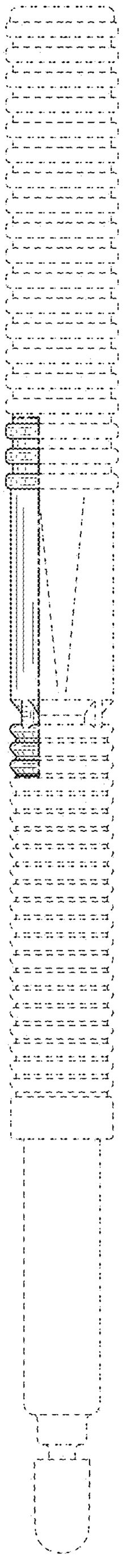

FIG. 2

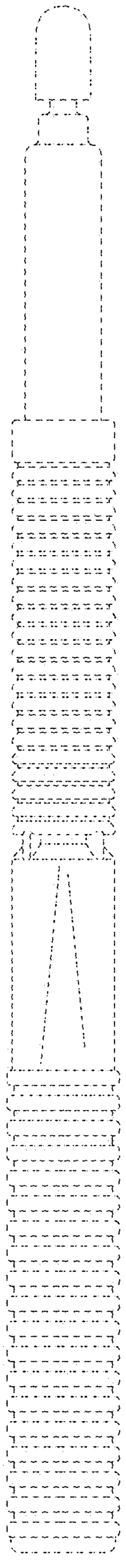

FIG. 3

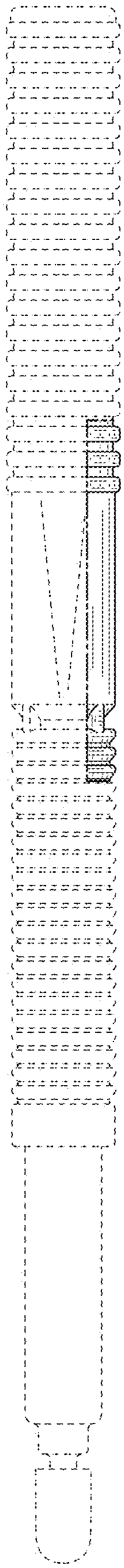

FIG. 4

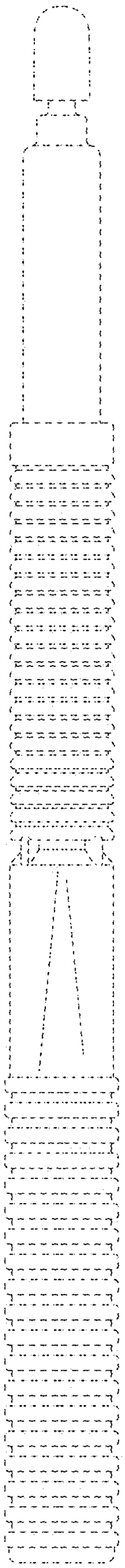

FIG. 5

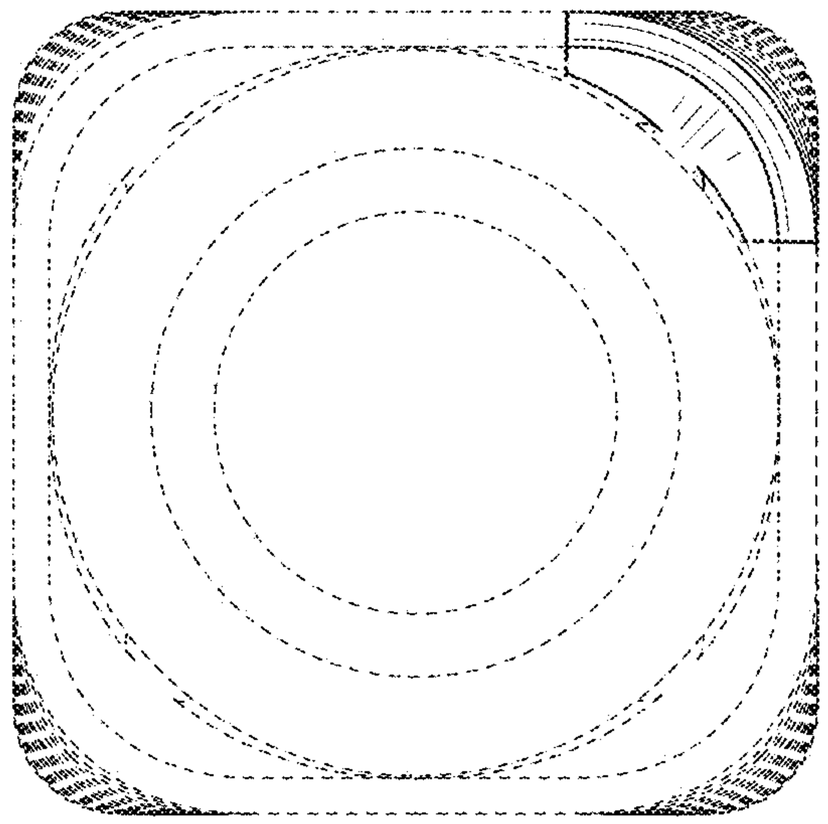

FIG. 6

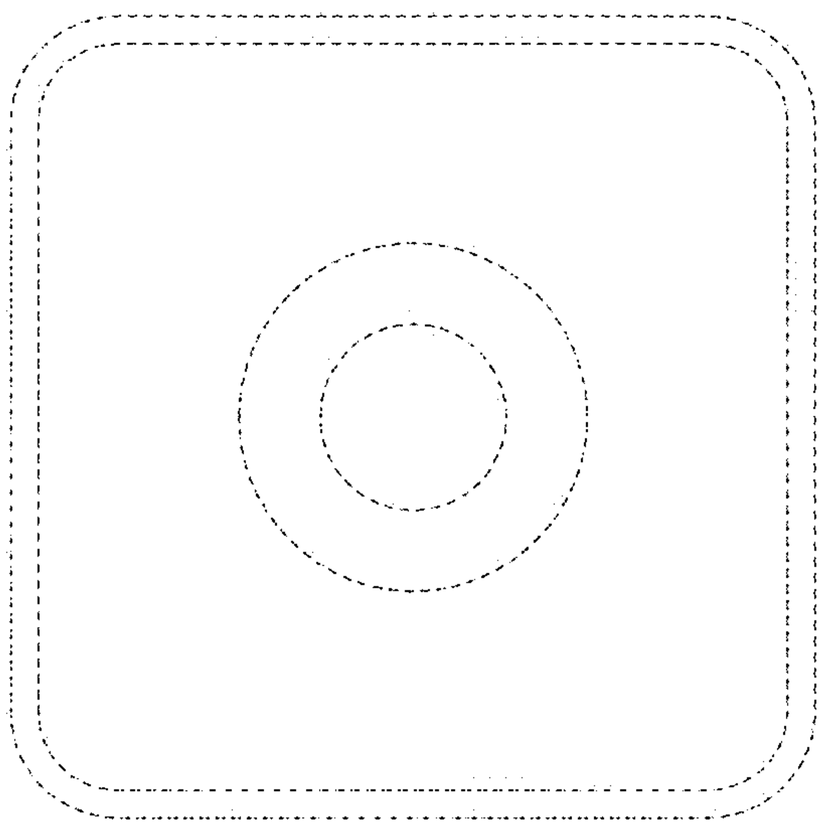

FIG. 7