



US00D845467S

(12) **United States Design Patent** (10) **Patent No.:** **US D845,467 S**
Henne et al. (45) **Date of Patent:** **** Apr. 9, 2019**

(54) **HAND-PIECE FOR MEDICAL ABLATION CATHETER**

(71) Applicant: **UPTAKE MEDICAL TECHNOLOGY INC.**, Seattle, WA (US)

(72) Inventors: **Erik Henne**, Seattle, WA (US); **Joshua Pieter Kroon**, Seattle, WA (US); **Joseph Jin Hyo Lee**, Seattle, WA (US); **Robert Barry**, Seattle, WA (US)

(73) Assignee: **UPTAKE MEDICAL TECHNOLOGY INC.**, Seattle, WA (US)

(**) Term: **15 Years**

(21) Appl. No.: **29/617,917**

(22) Filed: **Sep. 17, 2017**

(51) **LOC (11) Cl.** **24-02**

(52) **U.S. Cl.**
USPC **D24/113**

(58) **Field of Classification Search**
USPC D24/127-131, 112-114, 133, 186; 606/181, 185; 604/264, 523-528, 272, 604/187, 158, 164.01-164.11, 181, 184, 604/227; 600/101, 139, 143; 128/200.24, 207.14, 207.15
CPC .. A61M 25/065; A61M 5/42; A61M 25/0612; A61M 25/00; A61M 39/00; A61M 27/00; A61M 25/0043; A61M 25/0067; A61M 25/0097; A61F 2/958
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

408,899 A 8/1889 Small
1,719,750 A 7/1929 Bridge et al.
3,507,283 A 4/1970 Edward, Jr.

3,880,168 A 4/1975 Berman
4,026,285 A 5/1977 Jackson
4,713,060 A 12/1987 Riuli
4,773,410 A 9/1988 Blackmer et al.
4,793,352 A 12/1988 Eichenlaub
4,915,113 A 4/1990 Holman
4,950,266 A 8/1990 Sinofsky
5,006,119 A 4/1991 Acker et al.

(Continued)

FOREIGN PATENT DOCUMENTS

AU 721086 B2 6/2000
EP 1003582 B1 2/2003

(Continued)

OTHER PUBLICATIONS

Becker, et al.; Lung volumes before and after lung volume reduction surgery; Am J Respir Crit Care Med; vol. 157; pp. 1593-1599; (1998) Oct. 28, 1997.

(Continued)

Primary Examiner — David G Muller

(74) *Attorney, Agent, or Firm* — Richard Batt

(57) **CLAIM**

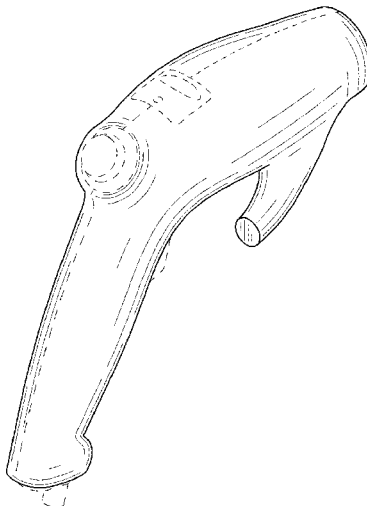
The ornamental design for a hand-piece for medical ablation catheter, as shown and described.

DESCRIPTION

FIG. 1 is a front view of a hand-piece for medical ablation catheter showing our new design; FIG. 2 is a side view thereof; FIG. 3 is a top view thereof; FIG. 4 is a bottom view thereof; FIG. 5 is another side view thereof; FIG. 6 is a front, top, side, perspective view; and, FIG. 7 is a rear view thereof.

The broken lines shown in the figures form no part of the claimed design.

1 Claim, 7 Drawing Sheets



(56)

References Cited

U.S. PATENT DOCUMENTS

5,011,566	A	4/1991	Hoffman	6,592,594	B2	7/2003	Rimbaugh et al.	
5,084,043	A	1/1992	Hertzmann et al.	6,599,311	B1	7/2003	Biggs et al.	
5,112,328	A	5/1992	Taboada et al.	6,610,043	B1	8/2003	Ingenito	
5,158,536	A	10/1992	Sekins et al.	6,629,951	B2	10/2003	Laufer et al.	
5,263,951	A	11/1993	Spears et al.	6,652,594	B2	11/2003	Francis et al.	
5,331,947	A	7/1994	Shturman	6,653,525	B2	11/2003	Ingenito et al.	
5,334,190	A	8/1994	Seiler	6,669,694	B2	12/2003	Shaddock	
5,348,551	A	9/1994	Spears et al.	6,676,628	B2	1/2004	Sussman et al.	
5,352,512	A	10/1994	Hoffman	6,679,264	B1	1/2004	Deem et al.	
5,424,620	A	6/1995	Cheon et al.	6,682,520	B2	1/2004	Ingenito	
5,462,521	A	10/1995	Brucker et al.	6,692,494	B1	2/2004	Cooper et al.	
5,500,012	A	3/1996	Brucker et al.	6,712,812	B2	3/2004	Roschak et al.	
5,503,638	A	4/1996	Cooper et al.	6,719,738	B2	4/2004	Mehier	
5,524,620	A	6/1996	Rosenschein	6,755,794	B2	6/2004	Soukup	
5,529,076	A	6/1996	Schachar	6,770,070	B1	8/2004	Balbierz	
5,549,628	A	8/1996	Cooper et al.	6,776,765	B2	8/2004	Soukup et al.	
5,562,608	A	10/1996	Sekins et al.	6,860,847	B2	3/2005	Alferness et al.	
5,575,803	A	11/1996	Cooper et al.	6,885,888	B2	4/2005	Rezai	
5,591,157	A	1/1997	Hennings et al.	6,901,927	B2	6/2005	Deem et al.	
5,620,440	A	4/1997	Heckele et al.	6,904,909	B2	6/2005	Andreas et al.	
5,695,507	A	12/1997	Auth et al.	6,907,881	B2	6/2005	Suki et al.	
5,735,811	A	4/1998	Brisken	6,911,028	B2	6/2005	Shaddock	
5,752,965	A	5/1998	Francis et al.	6,986,769	B2	1/2006	Nelson et al.	
5,755,753	A	5/1998	Knowlton	6,997,189	B2	2/2006	Biggs et al.	
5,782,914	A	7/1998	Schankereli	7,022,088	B2	4/2006	Keast et al.	
5,800,482	A	9/1998	Pomeranz et al.	7,027,869	B2	4/2006	Danek et al.	
5,824,703	A	10/1998	Clark, Jr.	7,031,504	B1	4/2006	Argiro et al.	
5,827,268	A	10/1998	Laufer	7,083,612	B2	8/2006	Littrup et al.	
5,913,856	A	6/1999	Chia et al.	7,128,748	B2	10/2006	Mooradian et al.	
5,957,919	A	9/1999	Laufer	7,136,064	B2	11/2006	Zuiderveld	
5,964,752	A	10/1999	Stone	7,144,402	B2	12/2006	Kuester, III	
5,972,026	A	10/1999	Laufer et al.	7,144,588	B2	12/2006	Oray et al.	
5,986,662	A	11/1999	Argiro et al.	7,175,644	B2	2/2007	Cooper et al.	
5,989,445	A	11/1999	Wise et al.	7,192,400	B2	3/2007	Campbell et al.	
6,032,077	A	2/2000	Pomeranz	7,198,635	B2	4/2007	Danek et al.	
6,053,909	A	4/2000	Shaddock	7,233,820	B2	6/2007	Gilboa	
6,059,011	A	5/2000	Giolo	7,235,070	B2	6/2007	Vanney	
6,083,255	A	7/2000	Laufer et al.	7,335,195	B2	2/2008	Mehier	
6,099,251	A	8/2000	LaFleur	7,347,859	B2	3/2008	Garabedian et al.	
6,102,037	A	8/2000	Koch	D574,492	S *	8/2008	Lowenstein	D24/116
6,113,722	A	9/2000	Hoffman et al.	7,412,977	B2	8/2008	Fields et al.	
6,130,671	A	10/2000	Argiro	7,422,563	B2	9/2008	Roschak et al.	
6,131,570	A	10/2000	Schuster et al.	7,422,584	B2	9/2008	Loomas et al.	
6,139,571	A	10/2000	Fuller et al.	7,425,212	B1	9/2008	Danek et al.	
6,156,036	A	12/2000	Sussman et al.	D580,549	S *	11/2008	Schwartz	D24/133
6,162,232	A	12/2000	Shaddock	7,462,162	B2	12/2008	Phan et al.	
6,179,805	B1	1/2001	Sussman et al.	D604,842	S *	11/2009	Bisleri	D24/108
6,194,066	B1	2/2001	Hoffman	7,628,789	B2	12/2009	Soltesz et al.	
6,200,333	B1	3/2001	Laufer	D610,679	S *	2/2010	Nakagawa	D24/133
6,210,404	B1	4/2001	Shaddock	7,708,712	B2	5/2010	Phan et al.	
6,219,059	B1	4/2001	Argiro	7,740,017	B2	6/2010	Danek et al.	
6,273,907	B1	8/2001	Laufer	7,778,704	B2	8/2010	Rezai	
6,283,988	B1	9/2001	Laufer et al.	7,815,590	B2	10/2010	Cooper	
6,283,989	B1	9/2001	Laufer et al.	7,819,908	B2	10/2010	Ingenito	
6,299,633	B1	10/2001	Laufer	D627,066	S *	11/2010	Romero	D24/133
6,300,150	B1	10/2001	Venkatasubramanian	D632,787	S *	2/2011	Tenger	D24/133
6,312,474	B1	11/2001	Francis et al.	7,906,124	B2	3/2011	Laufer et al.	
6,327,505	B1	12/2001	Medhkour et al.	7,913,698	B2	3/2011	Barry et al.	
6,394,949	B1	5/2002	Crowley et al.	D640,789	S *	6/2011	Peine	D24/133
6,398,759	B1	6/2002	Sussman et al.	D641,871	S *	7/2011	Tenger	D24/133
6,398,775	B1	6/2002	Perkins et al.	7,985,187	B2	7/2011	Wibowo et al.	
6,409,723	B1	6/2002	Edwards	7,993,323	B2	8/2011	Barry et al.	
6,411,852	B1	6/2002	Danek et al.	8,002,740	B2	8/2011	Willink et al.	
6,458,231	B1	10/2002	Wapner et al.	D646,384	S *	10/2011	Gauthier	D24/133
6,468,313	B1	10/2002	Claeson et al.	D646,385	S *	10/2011	Gauthier	D24/133
D466,213	S *	11/2002	Snitkin	D650,073	S *	12/2011	Pedersen	D24/133
6,488,673	B1	12/2002	Laufer et al.	D652,920	S *	1/2012	Sherwood	D24/133
6,493,589	B1	12/2002	Medhkour et al.	8,088,127	B2	1/2012	Mayse et al.	
6,508,816	B2	1/2003	Shaddock	8,172,827	B2	5/2012	Deem et al.	
6,527,761	B1	3/2003	Soltesz et al.	8,187,269	B2	5/2012	Shaddock et al.	
6,575,929	B2	6/2003	Sussman et al.	8,251,070	B2	8/2012	Danek et al.	
6,579,270	B2	6/2003	Sussman et al.	8,292,882	B2	10/2012	Danek et al.	
6,585,639	B1	7/2003	Kotmel et al.	8,322,335	B2	12/2012	Barry et al.	
6,588,613	B1	7/2003	Pechenik et al.	8,568,141	B2 *	10/2013	Tanaka	A61M 5/20 433/90
6,589,201	B1	7/2003	Sussman et al.	8,585,645	B2	11/2013	Barry et al.	
				8,626,495	B2	1/2014	Horton	
				8,734,380	B2	5/2014	Barry et al.	
				8,858,549	B2	10/2014	Shaddock et al.	

(56)

References Cited

U.S. PATENT DOCUMENTS

D717,431 S * 11/2014 Cardinale D24/133
 8,900,223 B2 12/2014 Shaddock
 9,050,076 B2 6/2015 Barry et al.
 9,113,858 B2 8/2015 Barry et al.
 D774,034 S * 12/2016 Kheradpir D14/426
 D776,874 S * 1/2017 Kling D24/133
 D777,321 S * 1/2017 Nakagami D24/112
 D777,914 S * 1/2017 Wapler D24/133
 D785,185 S * 4/2017 Yang D24/186
 D812,744 S * 3/2018 Robinson D24/133
 D813,400 S * 3/2018 Bechtel D24/186
 2002/0077516 A1 6/2002 Flanigan
 2002/0111386 A1 8/2002 Sekins et al.
 2002/0112723 A1 8/2002 Schuster et al.
 2002/0177846 A1 11/2002 Mulier et al.
 2003/0099279 A1 5/2003 Venkatasubramanian et al.
 2003/0181922 A1 9/2003 Alferness
 2004/0031494 A1 2/2004 Danek et al.
 2004/0038868 A1 2/2004 Ingenito
 2004/0047855 A1 3/2004 Ingenito
 2004/0055606 A1 3/2004 Hendricksen et al.
 2004/0068306 A1 4/2004 Shaddock
 2004/0199226 A1 10/2004 Shaddock
 2004/0200484 A1 10/2004 Springmeyer
 2004/0244803 A1 12/2004 Tanaka
 2005/0016530 A1 1/2005 McCutcheon et al.
 2005/0066974 A1 3/2005 Fields et al.
 2005/0166925 A1 8/2005 Wilson et al.
 2005/0171396 A1 8/2005 Pankratov et al.
 2005/0171582 A1 8/2005 Matlock
 2005/0203483 A1 9/2005 Perkins et al.
 2005/0215991 A1 9/2005 Altman et al.
 2005/0222485 A1 10/2005 Shaw et al.
 2006/0004400 A1 1/2006 McGurk et al.
 2006/0047291 A1 3/2006 Barry
 2006/0100619 A1 5/2006 McClurken et al.
 2006/0130830 A1 6/2006 Barry
 2006/0135955 A1 6/2006 Shaddock
 2006/0162731 A1 7/2006 Wondka et al.
 2006/0200076 A1 9/2006 Gonzalez et al.
 2006/0224154 A1 10/2006 Shaddock et al.
 2007/0032785 A1 2/2007 Diederich et al.
 2007/0036417 A1 2/2007 Argiro et al.
 2007/0068530 A1 3/2007 Pacey
 2007/0091087 A1 4/2007 Zuiderveld
 2007/0092864 A1 4/2007 Reinhardt et al.
 2007/0102011 A1 5/2007 Danek et al.
 2007/0106292 A1 5/2007 Kaplan et al.
 2007/0109299 A1 5/2007 Peterson
 2007/0112349 A1 5/2007 Danek et al.
 2007/0118184 A1 5/2007 Danek et al.
 2007/0137646 A1 6/2007 Weinstein et al.
 2007/0293853 A1 12/2007 Truckai et al.
 2008/0033493 A1 2/2008 Deckman et al.
 2008/0132826 A1 6/2008 Shaddock et al.
 2009/0018538 A1 1/2009 Webster et al.
 2009/0043301 A1 2/2009 Jarrard et al.
 2009/0138001 A1 5/2009 Barry et al.
 2009/0149846 A1 6/2009 Hoey et al.
 2009/0192508 A1 7/2009 Laufer et al.
 2009/0216220 A1 8/2009 Hoey et al.
 2009/0306640 A1 12/2009 Glaze
 2009/0312753 A1 12/2009 Shaddock et al.
 2010/0094270 A1 4/2010 Sharma
 2010/0204688 A1 8/2010 Hoey et al.
 2010/0256714 A1 10/2010 Springmeyer
 2010/0262133 A1 10/2010 Hoey et al.
 2011/0077628 A1 3/2011 Hoey et al.
 2011/0160648 A1 6/2011 Hoey
 2011/0270031 A1 11/2011 Frazier et al.
 2011/0301587 A1 12/2011 Deem et al.
 2012/0016363 A1 1/2012 Mayse et al.
 2012/0016364 A1 1/2012 Mayse et al.
 2013/0006231 A1 1/2013 Sharma et al.
 2013/0267939 A1 10/2013 Barry et al.

2015/0094607 A1 4/2015 Barry et al.
 2015/0230852 A1 8/2015 Barry et al.
 2016/0151103 A1 6/2016 Henne
 2016/0220297 A1 8/2016 Kroon

FOREIGN PATENT DOCUMENTS

EP 1143864 B1 2/2004
 EP 1173103 B1 10/2005
 EP 1326549 B1 12/2005
 EP 1326548 B1 1/2006
 EP 1485033 B1 8/2009
 WO WO 00/11927 A2 3/2000
 WO WO 01/02042 1/2001
 WO WO 02/069821 A1 9/2002
 WO WO 03/070302 A 8/2003
 WO WO 03/086498 10/2003
 WO WO 2005/025635 3/2005
 WO WO 2005/102175 11/2005
 WO WO 2006/003665 1/2006
 WO WO 2006/052940 5/2006
 WO WO 2006/053308 5/2006
 WO WO 2006/053309 5/2006
 WO WO 2006/080015 8/2006
 WO WO 2006/116198 11/2006
 WO WO 2008/051706 5/2008
 WO WO 2009/009236 1/2009
 WO WO 2009/009398 1/2009
 WO WO 2009/015278 1/2009
 WO WO 2009/137819 11/2009
 WO WO 2010/042461 4/2010
 WO WO 2011/06020 5/2011
 WO WO 2011/056684 5/2011
 WO WO 2011/060201 5/2011
 WO WO 2011/127216 10/2011

OTHER PUBLICATIONS

Blacker, G. F.; Vaporization of the uterus; J. of Obstetrics and Gynaecology; vol. 33; pp. 488-511; (year of publication is sufficiently earlier than the effective U.S. filing.
 Carpenter III et al.; Comparison of endoscopic cryosurgery and electrocoagulation of bronchi; Trans. Amer. Acad. Ophth.; vol. 84; No. 1; pp. ORL-313-ORL-323; Jan. 1977.
 clinicaltrials.gov.; Study of the AeriSeal System for HyPerinflation Reduction in Emphysema; 4 pages; Nov. 5, 2014; retrieved from the internet (<http://clinicaltrials.gov/show/N>).
 Coda, et al., "Effects of pulmonary reventilation on gas exchange after cryolytic disobstruction of endobronchial tumors," *Minerva Medical*, vol. 72, pp. 1627-1631, Jun. 1981.
 Delaunois; Anatomy and physiology of collateral respiratory pathways; *Eur. Respir. J.*; 2(9); pp. 893-904; Oct. 1989.
 Eyal et al.; The acute effect of pulmonary burns on lung mechanics and gas exchange in the rabbit; *Br. J. Anaesth.*; vol. 47; pp. 546-552; (year of publication is sufficiently.
 Ferlay et al.; GLOBOCAN 2008 v1.2, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 10 [internet]; 16 pages; retrieved from the internet (<http://www.iarc.fr/en/me>).
 Fishman et al., A randomized trial comparing lung-volume-reduction surgery with medical therapy for severe emphysema, *N Engl J Med*, vol. 348, No. 21, pp. 2059-73, May 22, 2003.
 Goldberg et al.; Radiofrequency tissue ablation in the rabbit lung: Efficacy and complications; *Acad. Radiol.*; vol. 2; pp. 776-784; Sep. 1995.
 Herth et al., Efficacy predictors of lung volume reduction with zephyr valves in a european cohort, *Eur.Respir. J.*: 39(6); pp. 1334-1342, Jun. 2012.
 Homasson, et al., "Bronchoscopic cryotherapy for airway strictures caused by tumors," *Chest*, vol. 90, No. 2, Aug. 1986.
 Kinsella, et al., "Quantitation of emphysema by computer tomography using a densitometry program and correlation with pulmonary function tests," *Chest* 97(2), Feb. 1990.
 Logra, R., "Mechanism of changes in the respiratory and cardiovascular reflexes from the lungs associated with intrapulmonary

(56)

References Cited

OTHER PUBLICATIONS

steam burns," Eng. Trans from Byulleten Experimental not Biologii i Meditsiny: vol. 6, No. 6, Jun. 1966.

Marasso, et al., "Cryosurgery in bronchoscopic treatment of tracheobronchial stenosis," Chest, vol. 103, No. 2, Feb. 1993.

Marasso, et al., "Radiofrequency resection of bronchial tumors in combination with cryotherapy; evaluation of a new technique," Thorax, vol. 53, 1998.

Mathur, et al., "Fiberoptic bronchoscopic cryotherapy in the management of tracheobronchial obstruction," Chest, vol. 110, No. 3, Sep. 1996.

Morice, et al., "Endobronchial argon plasma coagulation for treatment of hemoptysis and neoplastic airway obstruction," Chest, vol. 119, No. 3, Mar. 2001.

Moritz, et al., "The effects of inhaled heat on the air passage and lungs," American J. of Pathology, vol. XXI, 1944.

Moulding, et al., "Preliminary studies for achieving transcervical oviduct occlusion by hot water or low pressure steam," Advances in Planned Parenthood, vol. 12 No. 2, 1977.

National Lung Screening Trial Research Team, "Reduced Lung Cancer mortality with low dose computed tomographic screening," N. Eng. J. Med, 365(5), Aug. 2011.

Pracht, Adam, "VIDA takes new approach," Iowa City Press Citizen, Sep. 12, 2005.

Quin, J., "Use of neodymium yttrium aluminum garnet laser in long term palliation of airway obstruction," Connecticut Medicine, vol. 59, No. 7, Jul. 1995.

Sciurba et al., "A randomized study of endobronchial valves for advanced emphysema," N. Eng. J. Med, 363(13), Sep. 2010.

Shah, et al., "Collateral ventilation and selection of techniques for bronchoscopic lung volume reduction," Thorax, 67(4), Apr. 2012.

Slebos, et al., "Bronchoscopic lung volume reduction coil treatment of patients with severe heterogeneous emphysema," Chest, 142(3), Sep. 2012.

Sutedja, et al., "Bronchoscopic treatment of lung tumors," Elsevier, Lung Cancer, Jul. 11, 1994.

Van De Velde, "Vapo-cauterization of the uterus," Amer. J. Med, Sci vol. CXVII, 1899.

Vorre, et al., "Morphology of tracheal scar after resection with CO2 laser and high-frequency cutting loop," Acta Otolaryngol (Stockh), vol. 107, 1989.

Tschirren, "Interthoracic Airway Trees: Segmentation and Airway Morphology Analysis from Low Dose CT Scans," IEEE Transactions on Medical Imaging, vol. 24, No. 12, 2005.

* cited by examiner

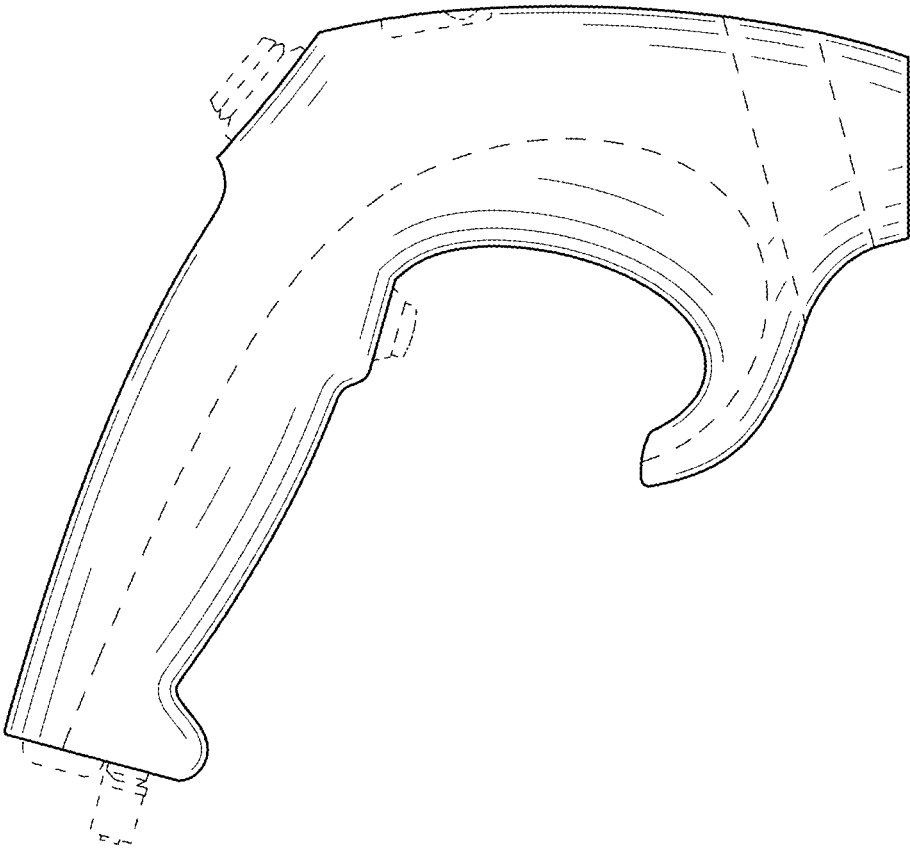


FIG. 1

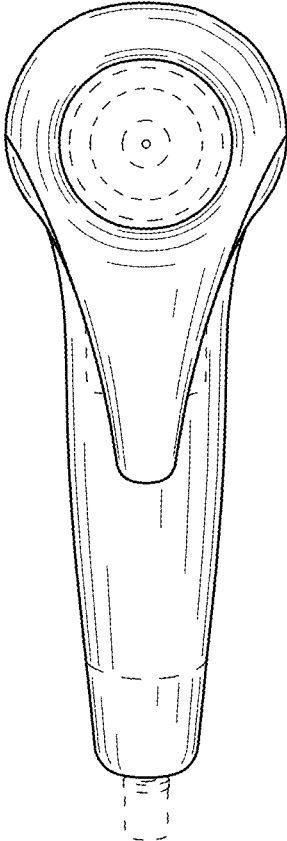


FIG. 2

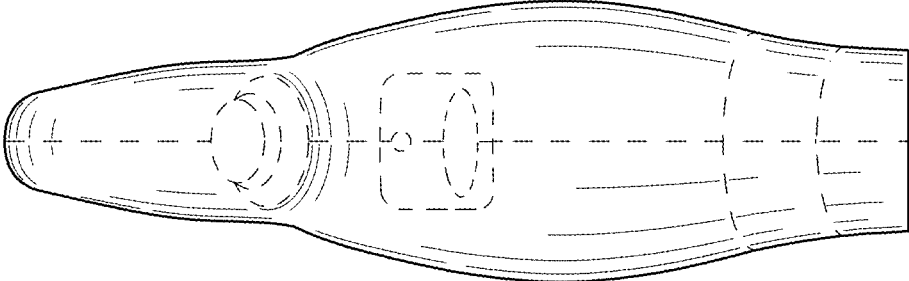


FIG. 3

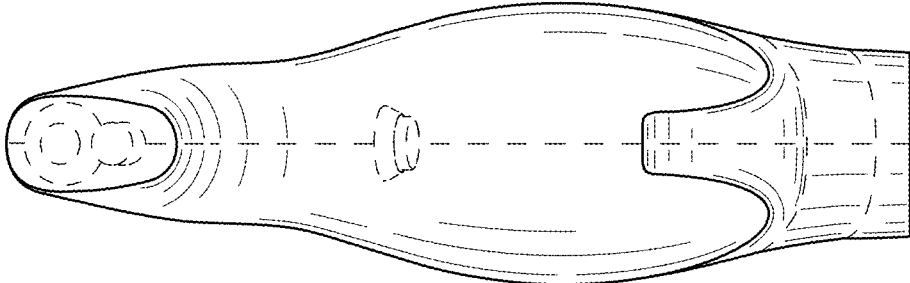


FIG. 4

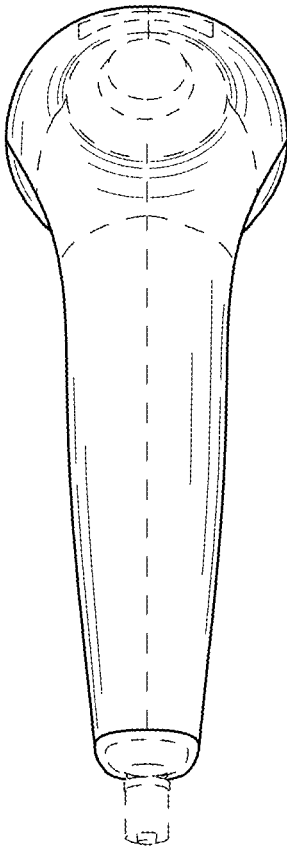


FIG. 5

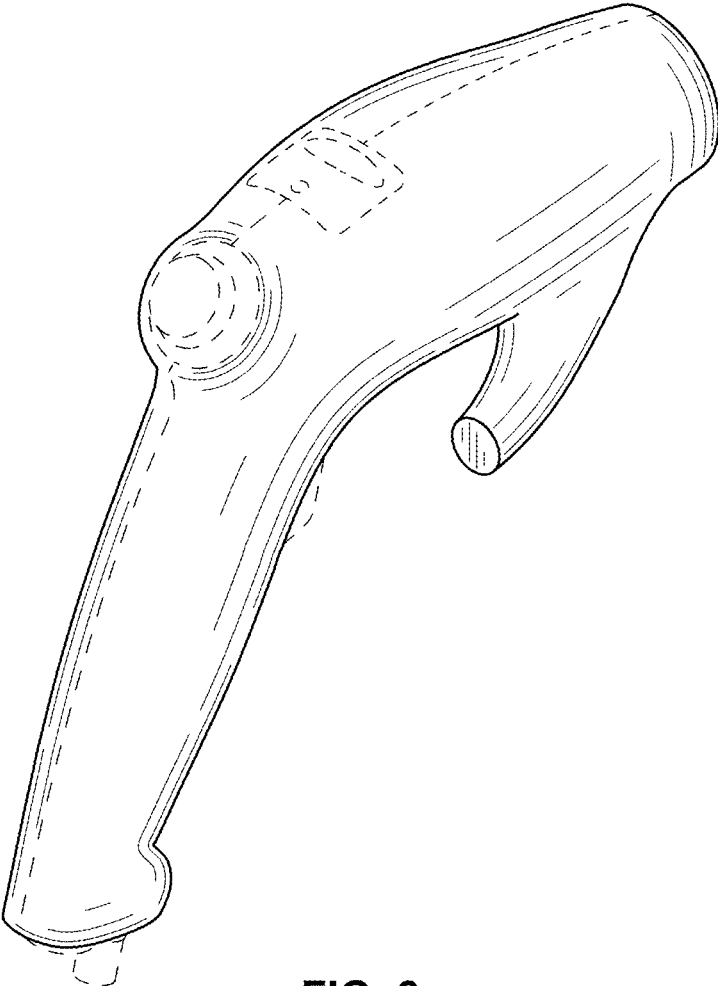


FIG. 6

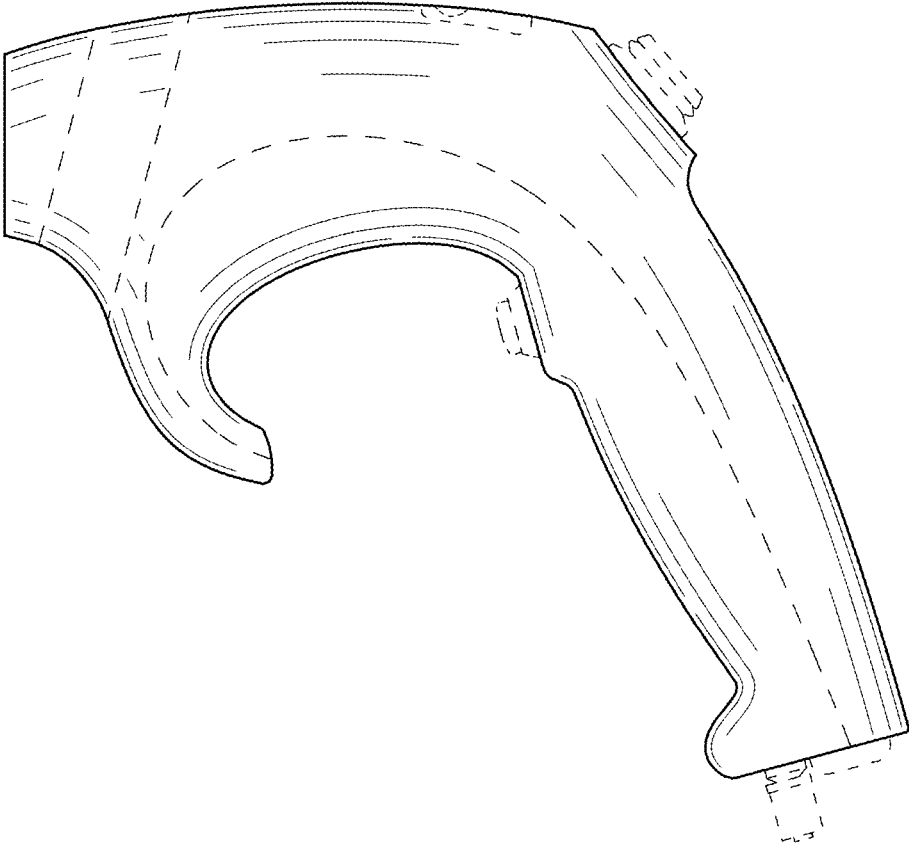


FIG. 7