



US00D960582S

(12) **United States Design Patent** (10) **Patent No.:** **US D960,582 S**
Okai et al. (45) **Date of Patent:** **** Aug. 16, 2022**

(54) **ORAL CARE REFILL HEAD**
(71) Applicant: **Colgate-Palmolive Company**, New York, NY (US)

3,369,265 A 2/1968 Halberstadt et al.
3,927,435 A 12/1975 Moret et al.
3,937,235 A 2/1976 Broughton
(Continued)

(72) Inventors: **Takahide Okai**, Highland Park, NJ (US); **Brian Bloch**, Hillsborough, NJ (US)

FOREIGN PATENT DOCUMENTS

AR 71556 10/2003
AR 80042 11/2009
(Continued)

(73) Assignee: **Colgate-Palmolive Company**, New York, NY (US)

Primary Examiner — Cynthia Ramirez
Assistant Examiner — Tamara L Hahn

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

(21) Appl. No.: **29/761,626**

(57) **CLAIM**

The ornamental design for an oral care refill head, as shown and described.

(22) Filed: **Dec. 10, 2020**

(51) **LOC (13) Cl.** **04-02**

(52) **U.S. Cl.**

USPC **D4/101**

(58) **Field of Classification Search**

USPC D4/100-138, 199; D24/176, 181
CPC A46B 2200/1066; A46B 2200/1073; A46B 2200/1086; A46B 2200/3093; A46B 5/0095; A46B 13/023; A46B 9/04; A61C 17/16; A61C 17/222

See application file for complete search history.

DESCRIPTION

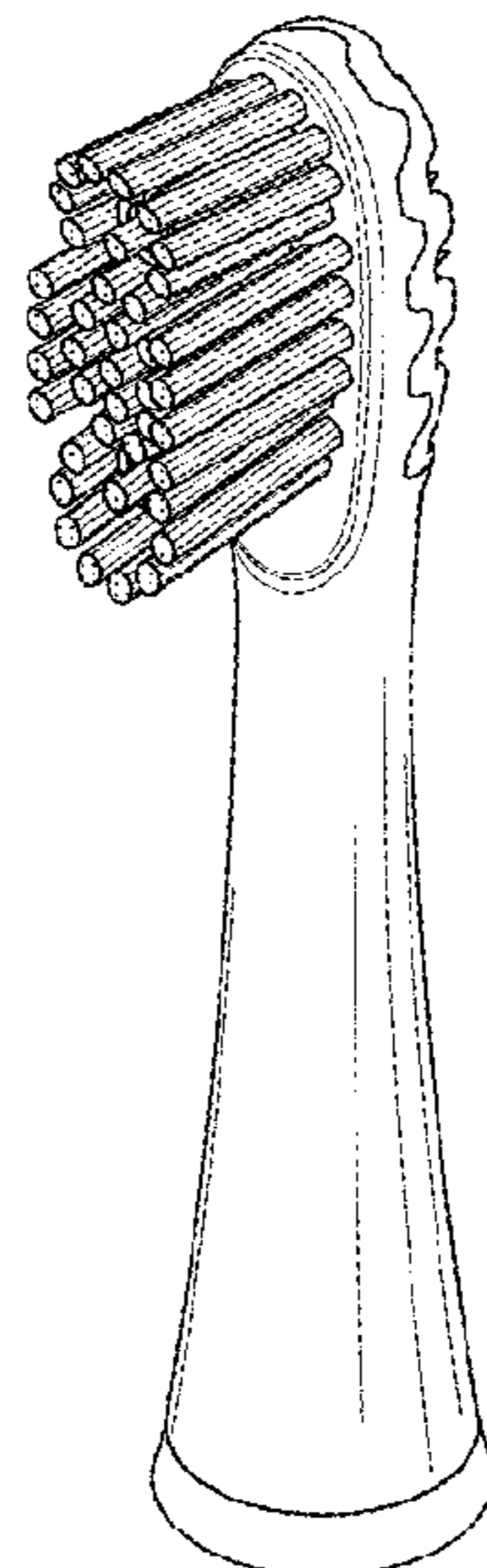
FIG. 1 is a front perspective view of an oral care refill head according to a first embodiment of the new design; FIG. 2 is a rear perspective view thereof; FIG. 3 is a front view thereof; FIG. 4 is a rear view thereof; FIG. 5 is a left side view thereof; FIG. 6 is a right side view thereof; FIG. 7 is a top view thereof; FIG. 8 is a bottom view thereof; FIG. 9 is a front perspective view of an oral care refill head according to a second embodiment of the new design; FIG. 10 is a rear perspective view thereof; FIG. 11 is a front view thereof; FIG. 12 is a rear view thereof; FIG. 13 is a left side view thereof; FIG. 14 is a right side view thereof; FIG. 15 is a top view thereof; and, FIG. 16 is a bottom view thereof. The broken lines illustrate portions of the article that form no part of the claimed design.

(56) **References Cited**

U.S. PATENT DOCUMENTS

758,764 A 5/1904 Macleod
846,900 A 3/1907 Bloom
1,125,532 A 1/1915 Himmel
1,901,230 A 3/1933 Duey
1,924,152 A 8/1933 Coney et al.
2,117,174 A 5/1938 Jones
2,161,349 A 6/1939 Hadden
2,186,005 A 1/1940 Casto
2,305,461 A 12/1942 Spyra
2,921,326 A 1/1960 Lautmann
3,088,148 A 5/1963 Moret
3,182,345 A 5/1965 Smith

1 Claim, 8 Drawing Sheets



(56)

References Cited

U.S. PATENT DOCUMENTS

4,321,839	A	3/1982	Vuilleumier	D479,046	S	9/2003	Winkler
D273,635	S	5/1984	Stocchi	D482,201	S	11/2003	Long
4,517,701	A	5/1985	Stanford, Jr.	6,654,979	B2	12/2003	Calabrese
4,595,850	A	6/1986	Woog	6,658,688	B2	12/2003	Gavney, Jr.
4,827,550	A	5/1989	Graham et al.	6,675,428	B2	1/2004	Halm
4,958,402	A	9/1990	Weihrauch	D486,649	S	2/2004	Sprosta et al.
5,144,712	A	9/1992	Hansel et al.	6,687,940	B1	2/2004	Gross et al.
5,336,089	A	8/1994	Sakurai	6,749,788	B1	6/2004	Holden et al.
5,339,482	A	8/1994	Desimone et al.	6,766,549	B2	7/2004	Klupt
5,392,483	A	2/1995	Heinzelman et al.	6,792,642	B2	9/2004	Wagstaff
D360,760	S	8/1995	Halm	6,817,054	B2	11/2004	Moskovich et al.
D361,433	S	8/1995	Yang	6,820,299	B2	11/2004	Gavney, Jr.
5,584,690	A	12/1996	Maassarani	6,820,300	B2	11/2004	Gavney, Jr.
5,604,951	A	2/1997	Shipp	6,836,917	B2	1/2005	Blaustein et al.
5,617,601	A	4/1997	McDougall	6,859,969	B2	3/2005	Gavney, Jr. et al.
5,617,602	A	4/1997	Okada	D503,538	S	4/2005	Desalvo
5,628,082	A	5/1997	Moskovich	6,886,207	B1	5/2005	Solanki
5,651,158	A	7/1997	Halm	6,889,405	B2	5/2005	Ritrovato et al.
5,697,117	A	12/1997	Craft	6,919,038	B2	7/2005	Meyer et al.
D390,706	S	2/1998	Hohlbein et al.	D509,362	S	9/2005	Maeda
5,735,012	A	4/1998	Heinzelman et al.	6,957,469	B2	10/2005	Davies
5,746,532	A	5/1998	Megill et al.	D511,249	S	11/2005	Hohlbein
5,758,383	A	6/1998	Hohlbein	6,972,106	B2	12/2005	Huber et al.
5,781,958	A	7/1998	Meessmann et al.	D513,882	S	1/2006	Hohlbein et al.
5,799,353	A	9/1998	Oishi et al.	6,983,507	B2	1/2006	McDougall
5,802,656	A	9/1998	Dawson et al.	D514,320	S	2/2006	Hohlbein
5,839,149	A	11/1998	Scheier et al.	D514,812	S	2/2006	Hohlbein et al.
D404,205	S	1/1999	Hohlbein	6,996,870	B2	2/2006	Hohlbein
D404,206	S	1/1999	Hohlbein	D516,819	S	3/2006	Hohlbein
5,862,559	A	1/1999	Hunter	D517,812	S	3/2006	Hohlbein et al.
5,863,102	A	1/1999	Waguespack et al.	D517,813	S	3/2006	Hohlbein et al.
5,908,038	A	6/1999	Bennett	7,007,332	B2	3/2006	Hohlbein
5,915,868	A	6/1999	Frazell	7,020,928	B2	4/2006	Hohlbein
5,930,860	A	8/1999	Shipp	D520,753	S	5/2006	Hohlbein
5,946,758	A	9/1999	Hohlbein et al.	7,047,591	B2	5/2006	Hohlbein
5,967,152	A	10/1999	Rimkus	7,069,615	B2	7/2006	Gavney, Jr.
5,970,564	A	10/1999	Inns et al.	7,073,225	B1	7/2006	Ford
5,984,935	A	11/1999	Welt et al.	D526,487	S	8/2006	Chenvainu et al.
5,991,958	A	11/1999	Hohlbein	7,083,756	B2	8/2006	Strahler
6,015,293	A	1/2000	Rimkus	7,086,111	B2	8/2006	Hilscher et al.
6,032,313	A	3/2000	Tsang	7,089,621	B2	8/2006	Hohlbein
6,041,468	A	3/2000	Chen et al.	D527,528	S	9/2006	Hohlbein
6,073,299	A	6/2000	Hohlbein	D528,803	S	9/2006	Hohlbein
6,088,870	A	7/2000	Hohlbein	D532,202	S	11/2006	Hohlbein
D429,887	S	8/2000	Hohlbein et al.	D532,607	S	11/2006	Hohlbein
6,099,780	A	8/2000	Gellert	7,143,462	B2	12/2006	Hohlbein
6,131,228	A	10/2000	Chen et al.	7,146,675	B2	12/2006	Ansari et al.
6,161,244	A	12/2000	Jeannet et al.	D534,725	S	1/2007	Vu
D436,734	S	1/2001	Van Gelder	7,168,125	B2	1/2007	Hohlbein
6,178,583	B1	1/2001	Volpenhein	7,181,799	B2	2/2007	Gavney, Jr. et al.
6,234,798	B1	5/2001	Beals et al.	7,182,542	B2	2/2007	Hohlbein
6,276,021	B1	8/2001	Hohlbein	7,213,288	B2	5/2007	Hohlbein
6,292,973	B1	9/2001	Moskovich et al.	7,219,384	B2	5/2007	Hohlbein
D450,457	S	11/2001	Hohlbein	7,222,381	B2	5/2007	Kraemer
D450,929	S	11/2001	Angelini et al.	7,273,327	B2	9/2007	Hohlbein et al.
6,314,606	B1	11/2001	Hohlbein	D557,504	S	12/2007	Hohlbein
D451,286	S	12/2001	Hohlbein	D557,505	S	12/2007	Hohlbein
D456,138	S	4/2002	Hohlbein	7,322,067	B2	1/2008	Hohlbein
D456,139	S	4/2002	Hohlbein	D562,560	S	2/2008	Hohlbein
6,370,726	B1	4/2002	Kini et al.	7,331,731	B2	2/2008	Hohlbein et al.
D457,323	S	5/2002	Hohlbein	7,354,112	B2	4/2008	Fischer et al.
6,397,425	B1	6/2002	Szzech et al.	7,383,619	B2	6/2008	Gross et al.
6,408,476	B1	6/2002	Cann	7,386,909	B2	6/2008	Hohlbein
6,421,867	B1	7/2002	Weihrauch	7,415,788	B2	8/2008	Little et al.
D461,313	S	8/2002	Hohlbein	D579,664	S	11/2008	Fisher et al.
6,442,786	B2	9/2002	Halm et al.	7,458,125	B2	12/2008	Hohlbein et al.
6,442,787	B2	9/2002	Hohlbein	7,472,448	B2	1/2009	Hohlbein et al.
D464,133	S	10/2002	Barnett et al.	7,478,959	B2	1/2009	Hohlbein
6,463,618	B1	10/2002	Zimmer	7,480,955	B2	1/2009	Hohlbein et al.
D474,608	S	5/2003	Hohlbein	D589,256	S	3/2009	Taylor et al.
6,564,416	B1	5/2003	Claire et al.	D589,260	S	3/2009	Hohlbein
6,595,087	B2	7/2003	Whalen et al.	7,540,844	B2	6/2009	Muser
6,596,213	B2	7/2003	Swenson	D598,199	S	8/2009	Russell et al.
6,599,048	B2	7/2003	Kuo	D598,654	S	8/2009	Huang
6,601,272	B2	8/2003	Stvartak et al.	D599,556	S	9/2009	Russell et al.
				7,607,189	B2	10/2009	Moskovich
				7,614,111	B2	11/2009	Moskovich et al.
				D609,915	S	2/2010	Erskine-Smith et al.
				D611,712	S	3/2010	Stoerckel et al.

(56)

References Cited

U.S. PATENT DOCUMENTS

D612,611 S	3/2010	Brown, Jr. et al.	9,066,579 B2	6/2015	Hess et al.	
7,712,175 B2	5/2010	Blanchard et al.	D734,613 S	7/2015	Yoshida et al.	
7,721,376 B2	5/2010	Hohlbein et al.	9,084,659 B2	7/2015	Bovenkamp	
7,722,274 B2	5/2010	Hohlbein et al.	9,131,765 B2	9/2015	Dickie et al.	
7,735,174 B2	6/2010	Hohlbein et al.	9,167,887 B2	10/2015	Xi et al.	
7,765,629 B2	8/2010	Kressner	9,168,117 B2	10/2015	Yoshida et al.	
D623,415 S	9/2010	Geiberger	9,173,478 B2	11/2015	Tsurukawa et al.	
7,788,756 B2	9/2010	Kraemer	9,185,967 B2	11/2015	Geiberger	
7,805,796 B2	10/2010	Winter et al.	D747,609 S *	1/2016	Watkins	D4/101
7,814,603 B2	10/2010	Gavney, Jr.	D749,851 S	2/2016	Watkins	
7,845,039 B2	12/2010	Chan et al.	D752,868 S	4/2016	McGarry et al.	
7,845,042 B2	12/2010	Moskovich et al.	9,301,821 B2	4/2016	Fattori	
7,854,036 B2	12/2010	Georgi	9,301,823 B2	4/2016	Jimenez	
7,861,349 B2	1/2011	Hilscher et al.	D757,439 S	5/2016	Shigeno et al.	
D632,894 S	2/2011	Shigeno et al.	9,332,828 B2	5/2016	Dickie et al.	
7,877,833 B2	2/2011	Gavney, Jr.	D758,736 S	6/2016	Shigeno et al.	
7,908,699 B2	3/2011	Hohlbein et al.	D766,581 S	9/2016	Bloch et al.	
7,937,794 B2	5/2011	Huber et al.	D767,895 S	10/2016	Stebila et al.	
7,954,191 B2	6/2011	Hohlbein	D767,896 S	10/2016	Shigeno et al.	
7,958,589 B2	6/2011	Braun et al.	9,462,877 B2	10/2016	Xi et al.	
7,975,343 B2	7/2011	Hohlbein et al.	9,474,590 B2	10/2016	Farrell et al.	
7,975,346 B2	7/2011	Moskovich et al.	D774,771 S	12/2016	Yoshida et al.	
7,979,947 B2	7/2011	Storkel et al.	D774,775 S	12/2016	Buchholz	
8,032,991 B2	10/2011	Lawless	9,510,669 B2	12/2016	Newman et al.	
8,042,217 B2	10/2011	Sorrentino	D775,835 S	1/2017	Yoshida et al.	
8,046,864 B2	11/2011	Baertschi et al.	D777,444 S	1/2017	Sedic	
8,060,972 B2	11/2011	Geiberger et al.	9,539,750 B2	1/2017	Gross et al.	
8,083,980 B2	12/2011	Huber et al.	9,561,092 B2	2/2017	Sauer et al.	
D653,035 S	1/2012	Gebski	9,578,956 B2	2/2017	Sedic	
8,201,298 B2	6/2012	Hohlbein	D780,456 S	3/2017	Shigeno et al.	
D665,074 S	8/2012	Gebski et al.	9,603,686 B2	3/2017	Schaefer et al.	
8,239,996 B2	8/2012	Garbers et al.	9,655,436 B2	5/2017	Hohlbein	
8,281,448 B2	10/2012	Waguespack et al.	D788,469 S	6/2017	McGarry et al.	
8,307,488 B2	11/2012	Pfenniger et al.	9,668,840 B2	6/2017	Miller	
8,327,492 B2	12/2012	Cann	D791,485 S	7/2017	McGarry et al.	
8,332,982 B2	12/2012	Braun et al.	D793,735 S	8/2017	Zavalloni	
8,332,985 B2	12/2012	Solanki	D793,736 S	8/2017	Zavalloni	
D676,660 S	2/2013	Crossman	D795,419 S	8/2017	Kohler	
8,382,208 B2	2/2013	Baertschi et al.	D795,590 S	8/2017	Sedic	
8,443,476 B2	5/2013	Hilscher et al.	9,724,180 B1	8/2017	Liu	
8,448,284 B2	5/2013	Gross et al.	D798,060 S	9/2017	Shigeno et al.	
8,448,287 B2	5/2013	Ponzini et al.	9,750,334 B2	9/2017	Kirchhofer et al.	
8,453,285 B2	6/2013	Dickie	D799,218 S	10/2017	Okai	
8,458,846 B2	6/2013	Schamberg et al.	D799,835 S	10/2017	Okai	
8,484,789 B2	7/2013	Claire-Zimmet et al.	9,795,465 B2	10/2017	Fattori	
D688,045 S *	8/2013	Key	9,826,822 B2	11/2017	Geiberger et al.	
8,500,766 B2	8/2013	Jimenez et al.	D805,306 S	12/2017	Massee	
D689,698 S	9/2013	Dickie et al.	D808,659 S	1/2018	Ballmaier et al.	
8,522,386 B2	9/2013	Hohlbein	D811,094 S	2/2018	Sedic	
8,528,148 B2	9/2013	Brown, Jr. et al.	D812,911 S	3/2018	Bloch et al.	
8,534,769 B2	9/2013	Loetscher et al.	D814,195 S	4/2018	Sikora et al.	
8,561,247 B2	10/2013	Moskovich et al.	D817,000 S	5/2018	Sedic	
8,590,092 B2	11/2013	Dickie	D817,001 S	5/2018	Sedic	
8,595,886 B2	12/2013	Edelstein et al.	D819,337 S	6/2018	Yuan et al.	
8,601,635 B2	12/2013	Goldman et al.	D819,973 S	6/2018	Greve et al.	
8,608,251 B2	12/2013	Nirwing et al.	D819,974 S	6/2018	Johansson	
8,621,698 B2	1/2014	Chenvainu et al.	D820,599 S	6/2018	Park et al.	
8,631,534 B2	1/2014	Blanchard et al.	D824,174 S	7/2018	Altmann et al.	
D701,388 S	3/2014	Chuanzhou et al.	10,022,208 B2	7/2018	Yoshida et al.	
8,671,493 B2	3/2014	Hilscher et al.	10,022,209 B2	7/2018	Lee	
8,732,890 B2	5/2014	Mohr et al.	D824,677 S	8/2018	Tseng et al.	
D706,033 S	6/2014	Dickie et al.	10,357,347 B2	7/2019	Hata et al.	
8,739,351 B2	6/2014	Kling et al.	10,433,940 B2	10/2019	Wu	
8,776,299 B2	7/2014	Haynes	D866,188 S *	11/2019	Wagner	A46B 13/04 D4/101
8,776,302 B2	7/2014	Baertschi et al.	10,603,147 B2	3/2020	Bloch et al.	
8,806,695 B2	8/2014	Moskovich et al.	10,603,150 B2	3/2020	Bloch et al.	
8,813,292 B2	8/2014	Driesen et al.	D881,584 S	4/2020	Porter et al.	
D714,443 S	9/2014	Tanaka	10,617,199 B2	4/2020	Jimenez et al.	
D715,057 S	10/2014	Adriaenssen et al.	D884,351 S	5/2020	Albay et al.	
D719,737 S	12/2014	Adriaenssen et al.	D884,353 S	5/2020	Xi et al.	
8,955,190 B2	2/2015	Ivory	D884,354 S	5/2020	Albay et al.	
D724,845 S	3/2015	Yoshida et al.	D888,435 S *	6/2020	Damavandi	D4/101
8,997,297 B2	4/2015	Mohr et al.	D890,528 S	7/2020	Albay et al.	
9,011,032 B2	4/2015	Schlatter	D891,115 S	7/2020	Damavandi	
9,060,593 B2	6/2015	Ballmaier et al.	D893,196 S	8/2020	Zhao et al.	
			D895,973 S	9/2020	Ji et al.	
			10,869,743 B2	12/2020	Fritsch et al.	
			D906,688 S *	1/2021	Porter	D4/104

(56)

References Cited

FOREIGN PATENT DOCUMENTS

U.S. PATENT DOCUMENTS			BR		
				7900283	8/2000
			BR	DI6601454-9	4/2006
			BR	DI6702593	8/2007
			BR	DI6805210-3	11/2008
			BR	DI6902120-1	5/2009
			BR	DI6903329-3	8/2009
			BR	DI6903330-7	8/2009
			BR	DI6904386	11/2009
			BR	DI7102178-7	4/2011
			BR	302013000448-1	2/2013
			BR	DI6401609-9	5/2014
			CH	215110	6/1941
			CN	1341006	3/2002
			CN	3323357	9/2003
			CN	3372860	6/2004
			CN	3372861	6/2004
			CN	1662189	8/2005
			CN	2732059	10/2005
			CN	1692007	11/2005
			CN	1897846	1/2007
			CN	300704339	10/2007
			CN	101427944	5/2009
			CN	201294969	8/2009
			CN	301054685	11/2009
			CN	301136943	2/2010
			CN	301150823	3/2010
			CN	201453406	5/2010
			CN	201518876	7/2010
			CN	201518877	7/2010
			CN	201518880	7/2010
			CN	201528796	7/2010
			CN	201541995	8/2010
			CN	201541996	8/2010
			CN	201541997	8/2010
			CN	201550827	8/2010
			CN	301406316	12/2010
			CN	301421505	12/2010
			CN	301517889	4/2011
			CN	201814085	5/2011
			CN	201986933	9/2011
			CN	301736979	11/2011
			CN	301763519	12/2011
			CN	301908826	5/2012
			CN	302058056	9/2012
			CN	302225957	12/2012
			CN	302328863	2/2013
			CN	202800555	3/2013
			CN	103005839	4/2013
			CN	103077549	5/2013
			CN	302437307 S	5/2013
			CN	103327933	9/2013
			CN	203194906	9/2013
			CN	203220069	10/2013
			CN	203220073	10/2013
			CN	203252150	10/2013
			CN	302655801	11/2013
			CN	302712322	1/2014
			CN	302951500	10/2014
			CN	302956580	10/2014
			CN	104135964	11/2014
			CN	303137887	3/2015
			CN	303228612	6/2015
			CN	303269796 S	7/2015
			CN	303291741	7/2015
			CN	303332820 S	8/2015
			CN	303485297	12/2015
			CN	303485300	12/2015
			CN	303512748 S	12/2015
			CN	303555842	1/2016
			CN	303568989 S	1/2016
			CN	303568990 S	1/2016
			CN	303568996	1/2016
			CN	303582077	2/2016
			CN	303600325	3/2016
			CN	303630115	3/2016
			CN	303651162	4/2016
			CN	303658434	5/2016
10,952,529 B2	3/2021	Bloch et al.			
D922,775 S *	6/2021	Albay D4/101			
2003/0163881 A1	9/2003	Driesen et al.			
2003/0178745 A1	9/2003	Scarabelli et al.			
2003/0178885 A1	9/2003	Weihrauch			
2004/0107521 A1	6/2004	Chan et al.			
2004/0134007 A1	7/2004	Davies			
2006/0048323 A1	3/2006	Rueb			
2006/0064827 A1	3/2006	Chan			
2006/0123574 A1	6/2006	Storkel et al.			
2006/0236478 A1	10/2006	Hohlbein et al.			
2007/0151058 A1	7/2007	Georgi et al.			
2007/0265555 A1	11/2007	Deng			
2007/0283517 A1	12/2007	Blanchard et al.			
2008/0020351 A1	1/2008	Hilscher et al.			
2008/0070189 A1	3/2008	Turner			
2009/0007357 A1	1/2009	Meadows et al.			
2009/0083924 A1	4/2009	Shepherd et al.			
2009/0158543 A1	6/2009	Lee			
2009/0255077 A1	10/2009	Mori et al.			
2010/0043162 A1	2/2010	Zimmermann et al.			
2010/0088836 A1	4/2010	Kirchhofer et al.			
2010/0115724 A1	5/2010	Huang			
2010/0180392 A1	7/2010	Binet et al.			
2010/0223746 A1	9/2010	Mueller			
2010/0263149 A1	10/2010	Ballmaier et al.			
2010/0306941 A1	12/2010	Erskine-Smith et al.			
2011/0030160 A1	2/2011	Knutzen et al.			
2011/0047729 A1	3/2011	Iwahori et al.			
2011/0047736 A1	3/2011	Jimenez et al.			
2011/0138560 A1	6/2011	Vitt et al.			
2011/0219558 A1	9/2011	Vitt et al.			
2012/0034576 A1	2/2012	Mostafa			
2012/0077145 A1	3/2012	Tsurukawa et al.			
2012/0151697 A1	6/2012	Farrell et al.			
2013/0007968 A1	1/2013	Driesen et al.			
2013/0145567 A1	6/2013	Haynes			
2014/0130274 A1	5/2014	Fattori			
2014/0137346 A1	5/2014	Fattori			
2014/0143963 A1	5/2014	Fattori			
2014/0150190 A1	6/2014	Fattori			
2014/0158152 A1	6/2014	Butz et al.			
2014/0173853 A1	6/2014	Kirchhofer et al.			
2014/0182071 A1	7/2014	Farrell et al.			
2014/0230169 A1	8/2014	Farrell et al.			
2014/0304932 A1	10/2014	Patel			
2014/0310900 A1	10/2014	Curry et al.			
2017/0128179 A1	5/2017	Sedic			
2017/0151044 A1	6/2017	Okai			
2017/0156835 A1	6/2017	Schaefer et al.			
2017/0367473 A1	12/2017	Jimenez et al.			
2018/0020819 A1	1/2018	Steckling			
2018/0021116 A1	1/2018	Storkel et al.			
2018/0140404 A1	5/2018	Schaefer et al.			
2018/0168332 A1	6/2018	Wagner et al.			
2018/0296309 A1	10/2018	Yoshida et al.			
2019/0014901 A1	1/2019	Xi et al.			
2019/0125065 A1	5/2019	Altmann et al.			
2019/0125068 A1	5/2019	Schaefer et al.			
2019/0125507 A1	5/2019	Watcharotone et al.			
2019/0174906 A1	6/2019	Bloch et al.			
2019/0175320 A1	6/2019	Bloch et al.			
2019/0175322 A1	6/2019	Bloch et al.			
2019/0200748 A1	7/2019	Gorich et al.			
2019/0274801 A1	9/2019	Choi et al.			
2019/0351463 A1	11/2019	Wupendram			
2020/0000566 A1	1/2020	Wagner			
2020/0214816 A1	7/2020	Bloch et al.			
2020/0289246 A1	9/2020	Bloch et al.			
2020/0345130 A1	11/2020	Schaefer et al.			
2021/0045857 A1	2/2021	Fritsch et al.			
2021/0186414 A1 *	6/2021	Gatzemeyer A61B 5/0088			

(56)

References Cited

FOREIGN PATENT DOCUMENTS					
CN	303705050	6/2016	EM	004173342-0003	9/2017
CN	303705073	6/2016	EM	004173342-0004	9/2017
CN	303731682	6/2016	EM	001468458-0007	4/2018
CN	303758098	7/2016	EP	0716821	6/1996
CN	303781887	8/2016	EP	0769920	5/1997
CN	303808877 S	8/2016	EP	1087681	4/2001
CN	303808890 S	8/2016	EP	1864590	12/2007
CN	303810436	8/2016	EP	2478865	7/2012
CN	303857368	9/2016	EP	2810581	12/2014
CN	303858605	9/2016	ES	1063617	11/2006
CN	303873245	9/2016	IT	2010PDO000035-001	10/2010
CN	303914338 S	11/2016	JP	H08-164025	6/1996
CN	303919026	11/2016	JP	10-042957	8/1996
CN	303939813 S	11/2016	JP	D1164402	2/2003
CN	303962142	12/2016	JP	D1212185	7/2004
CN	303972535	12/2016	JP	D1212254	7/2004
CN	303990679	12/2016	JP	D1299025	4/2007
CN	304097979	4/2017	JP	D1314270	10/2007
CN	304108472	4/2017	JP	D1356462	4/2009
CN	304120816	5/2017	JP	D1419789	8/2011
CN	304124146	5/2017	JP	D1432629	1/2012
CN	304134556	5/2017	JP	D1441638	5/2012
CN	304181219	6/2017	JP	D1462455	2/2013
CN	304189305	6/2017	JP	D1472455	6/2013
CN	304251488	8/2017	JP	D1619012	11/2018
CN	107198589	9/2017	KR	3003414330000	12/2003
CN	304267080	9/2017	KR	20040032038	4/2004
CN	304276474	9/2017	KR	1008381740000	6/2007
CN	304276504	9/2017	KR	3004557060000	7/2007
CN	304302840 S	9/2017	KR	3005384630000	9/2009
CN	304329326	10/2017	KR	3006388210000	4/2012
CN	304371937 S	11/2017	KR	2020120005449	7/2012
CN	304929686	12/2018	KR	2004735690000	7/2014
CN	305191008	5/2019	KR	3007501960000	7/2014
DE	19858102	6/2000	KR	2004739420000	8/2014
DE	202005009026	10/2005	KR	3008292460001	12/2015
DE	102006016939	5/2007	KR	3008292460002	12/2015
DE	102006005616	8/2007	MX	32553	11/2009
DE	102006024874	11/2007	MX	36113	4/2011
DE	202008016004	2/2009	MX	36650	4/2011
DE	202014102603	10/2014	RU	55985	1/2005
DE	202017106104	10/2017	RU	79787	10/2011
EM	000366984-0001	7/2005	RU	80086	11/2011
EM	000638028-0002	12/2006	RU	81915	6/2012
EM	001078414-0007	5/2009	TW	308482	6/1997
EM	01127815-0002	6/2009	TW	D120714	12/2007
EM	001127815-0002	6/2009	TW	D160733	5/2014
EM	001787714-0004	12/2010	TW	D170543	9/2015
EM	001255947-0002	4/2011	TW	D184377	7/2017
EM	001975079-0005	1/2012	WO	1995/006420	3/1995
EM	001312672-0001	2/2012	WO	1995/010959	4/1995
EM	002012328-0001	4/2012	WO	1999/023910	5/1999
EM	002012328-0002	4/2012	WO	1999/055514	11/1999
EM	001317358-0002	5/2012	WO	1999/065358	12/1999
EM	001312672-0001	7/2012	WO	2000/049911	8/2000
EM	001333496-0001	7/2012	WO	2001/017392	3/2001
EM	002163675-0002	1/2013	WO	2001/029128	4/2001
EM	002163675-0003	1/2013	WO	2001/045573	6/2001
EM	002212522-0004	4/2013	WO	2001/082741	11/2001
EM	002212522-0012	4/2013	WO	2004/043669	5/2004
EM	002218651-0001	7/2013	WO	2005/122827	12/2005
EM	002218651-0002	7/2013	WO	2008/017996	2/2008
EM	002424069-0001	3/2014	WO	2011/006259	1/2011
EM	001413454-0001	6/2014	WO	2011/070549	6/2011
EM	002422949-0001	9/2014	WO	2012/017923	2/2012
EM	002424069-0001	9/2014	WO	2012/115035	8/2012
EM	002488676-0001	1/2015	WO	2012/144328	10/2012
EM	002488676-0002	1/2015	WO	2012/176741	12/2012
EM	002637884-0001	2/2015	WO	2013/031685	3/2013
EM	004043263-0001	6/2017	WO	2017/095733	6/2017
EM	004119089-0001	7/2017	WO	2017/116971	7/2017
EM	004140150-0001	8/2017	WO	2017/160811	9/2017
			WO	2017/160816	9/2017

* cited by examiner

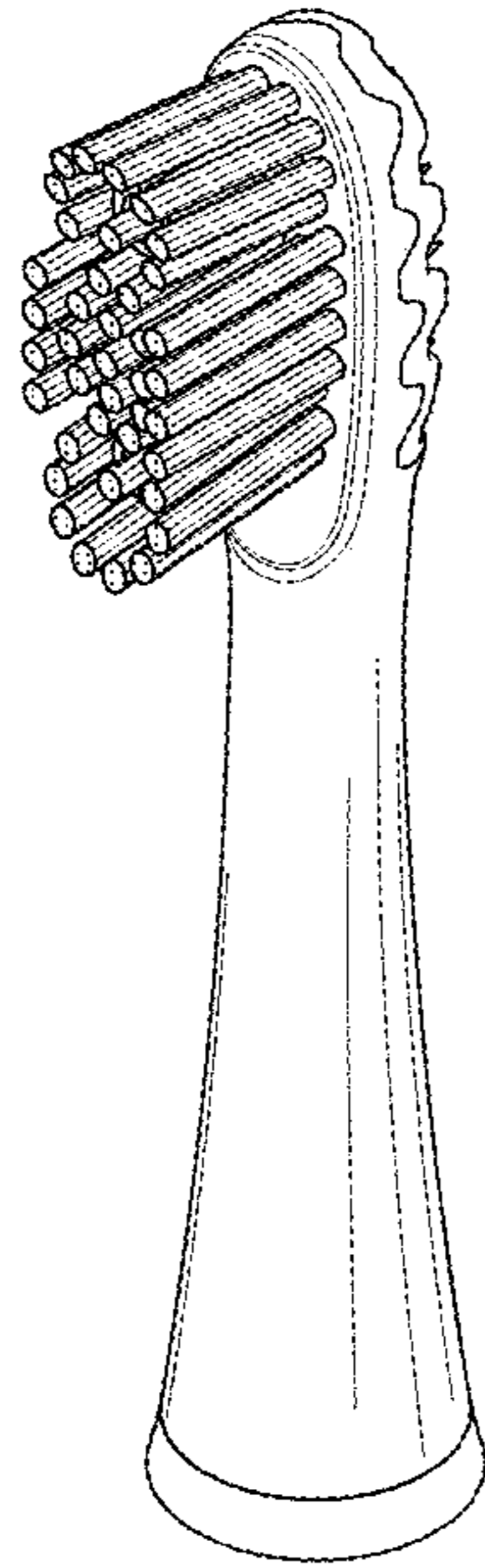


FIG. 1

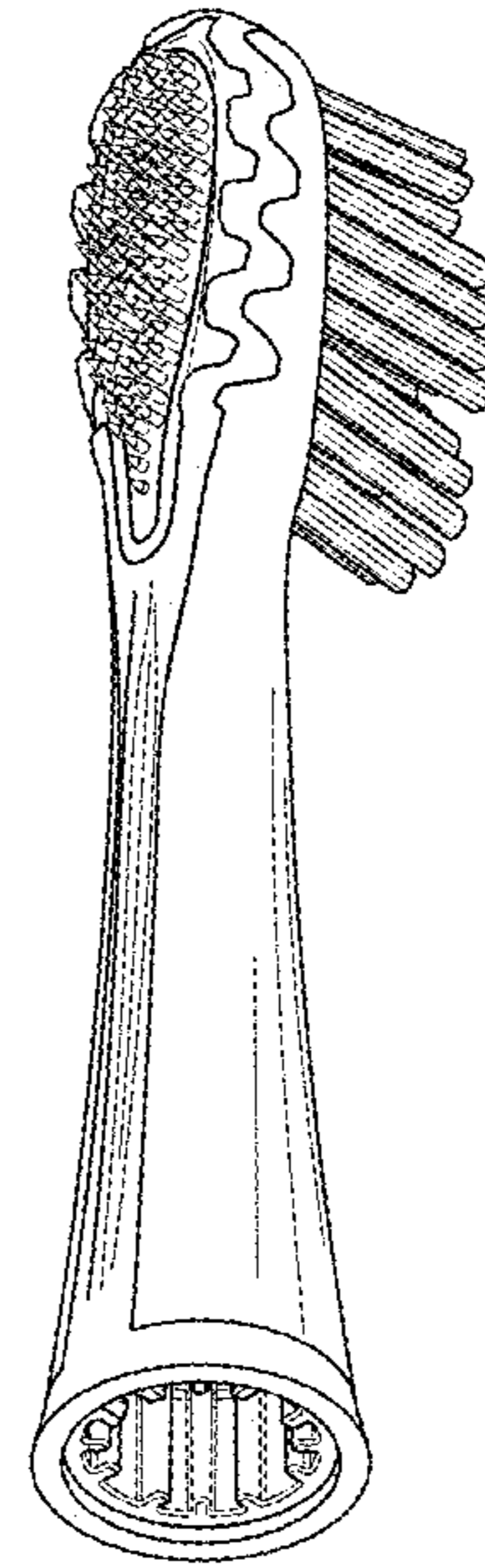


FIG. 2

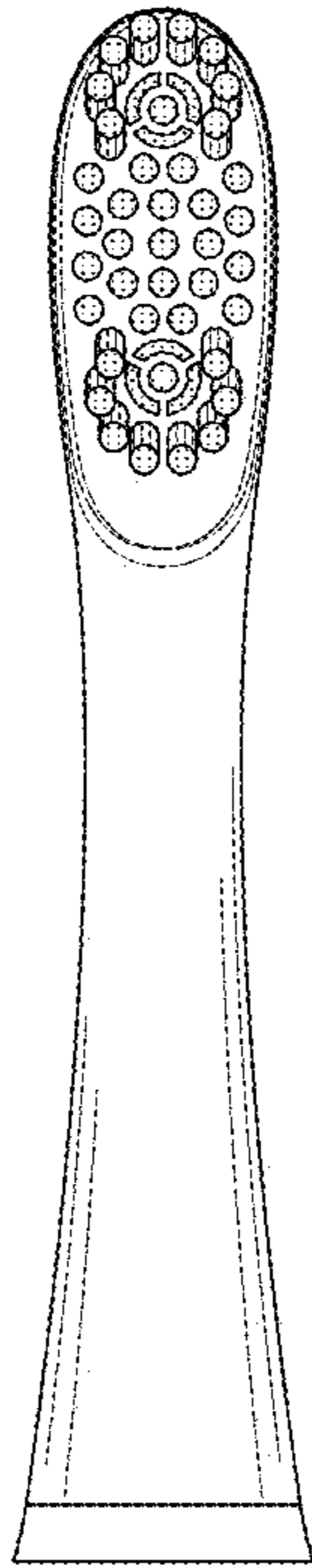


FIG. 3

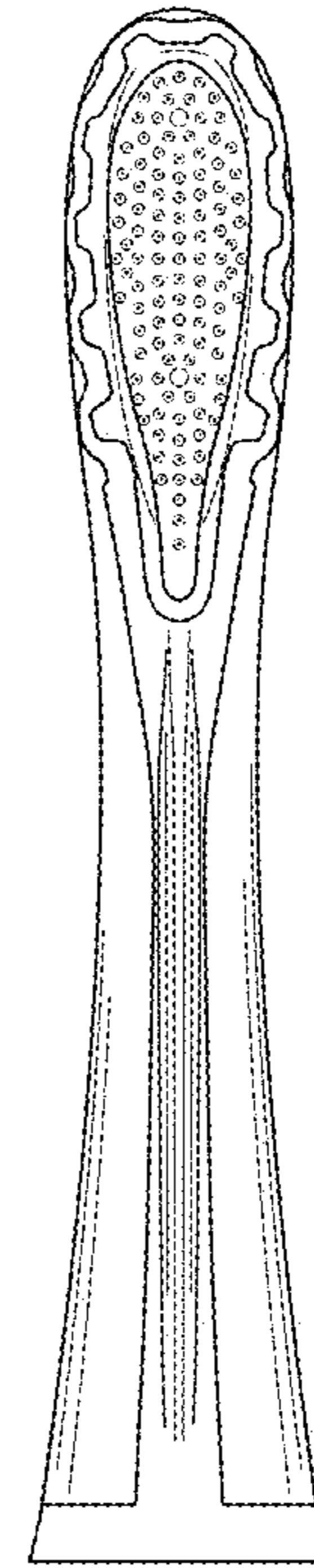


FIG. 4

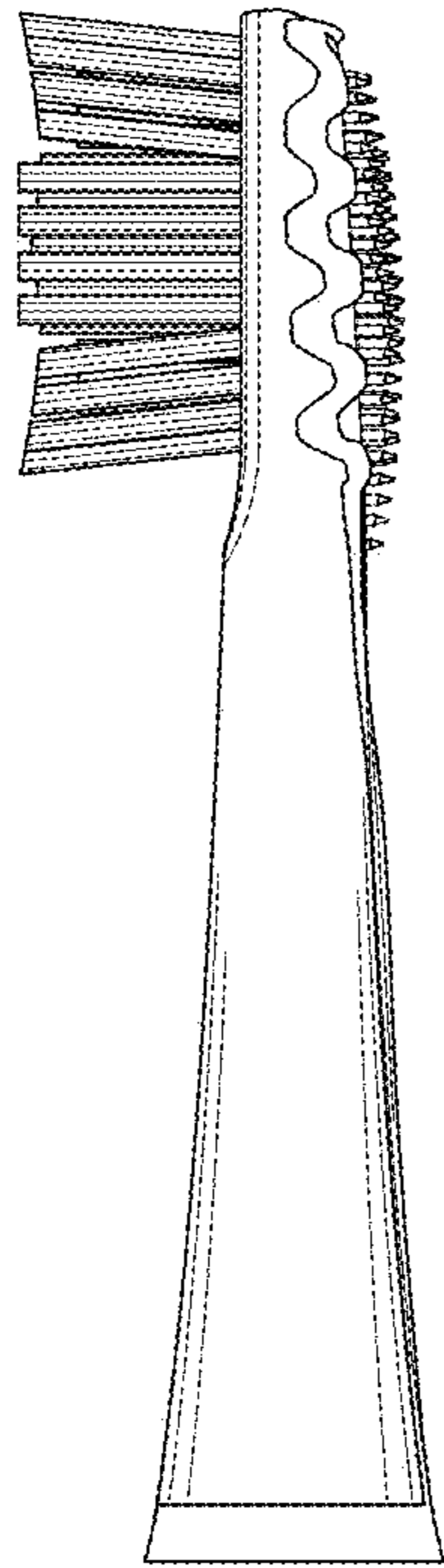


FIG. 5

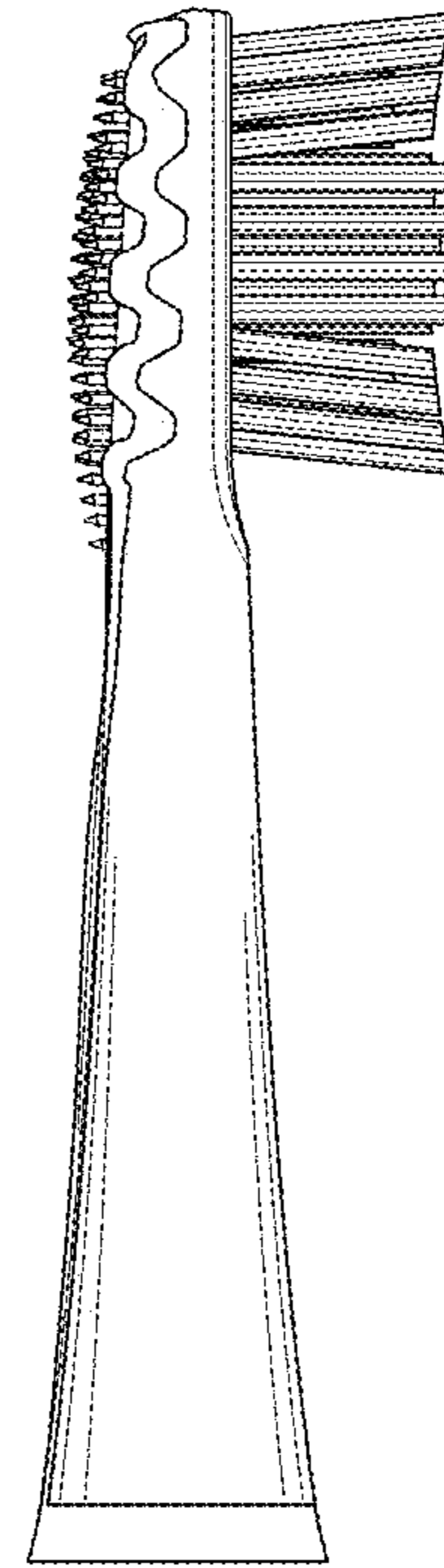


FIG. 6

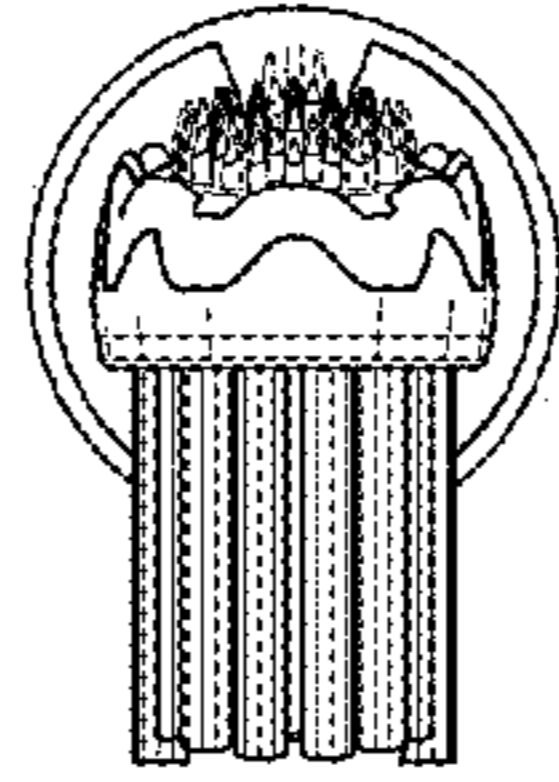


FIG. 7

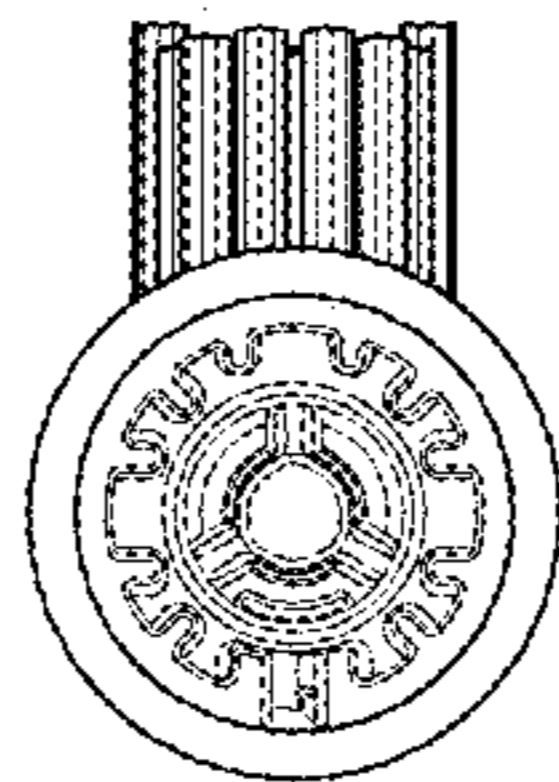


FIG. 8

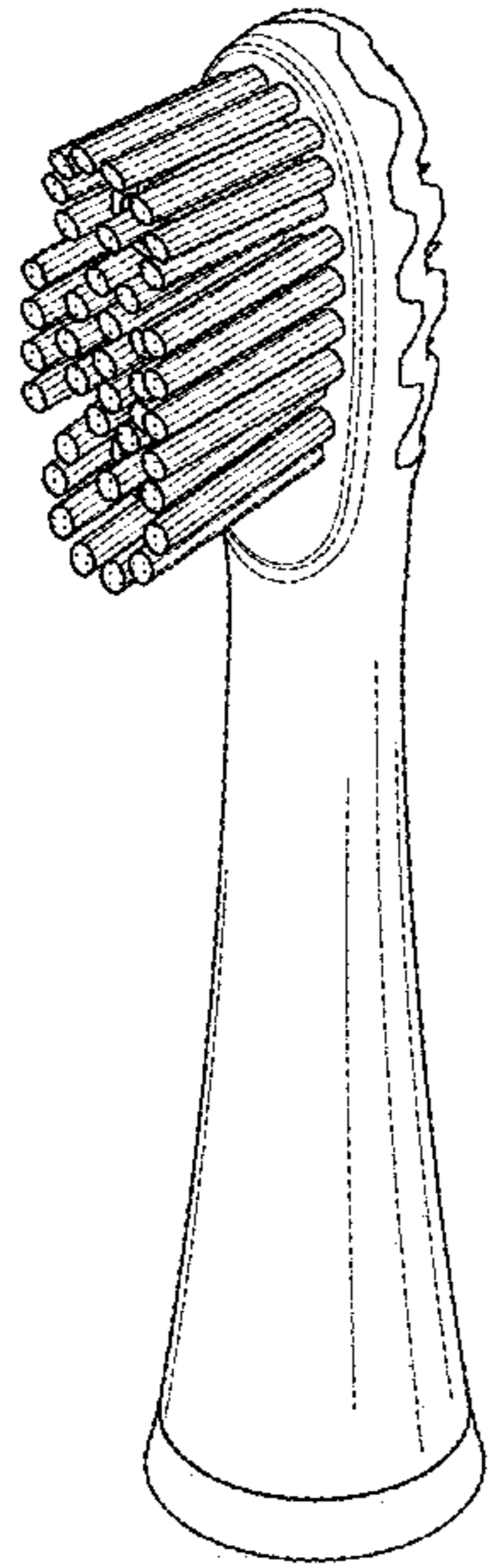


FIG. 9

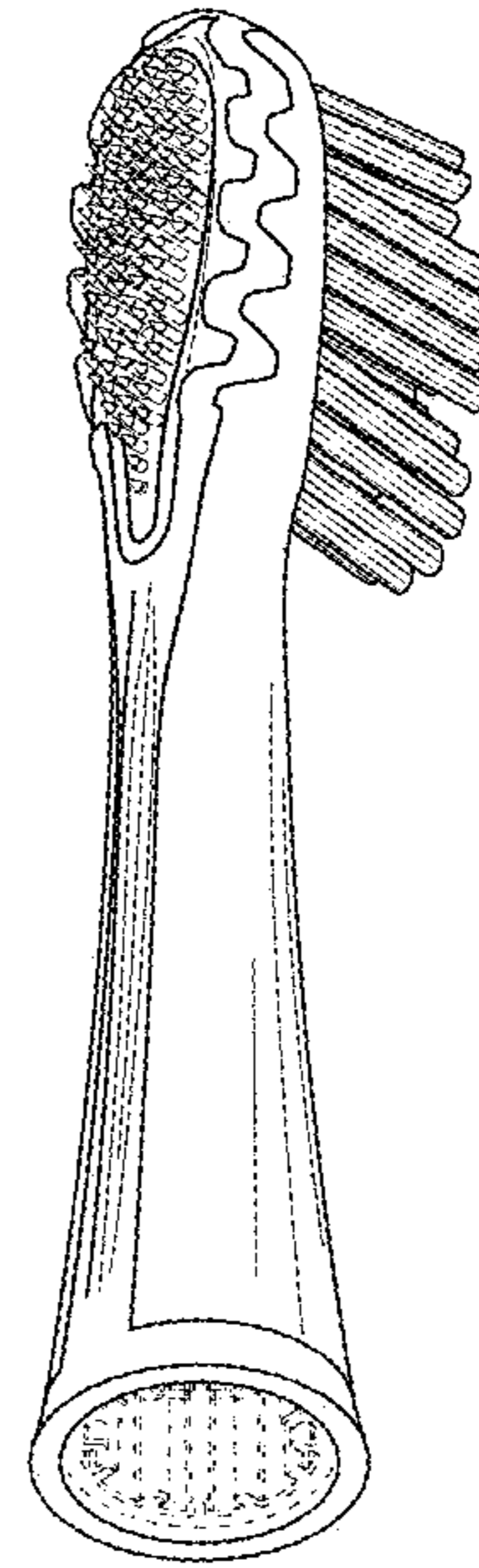


FIG. 10

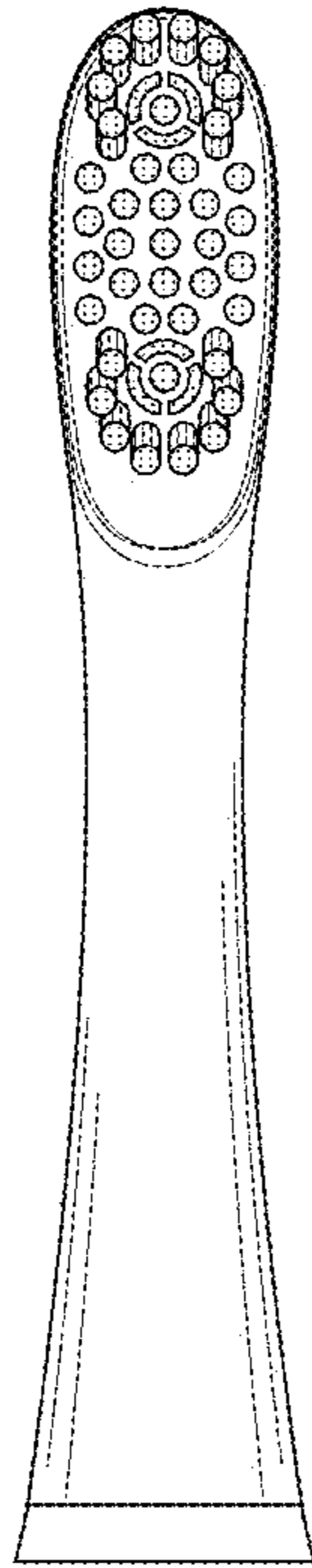


FIG. 11

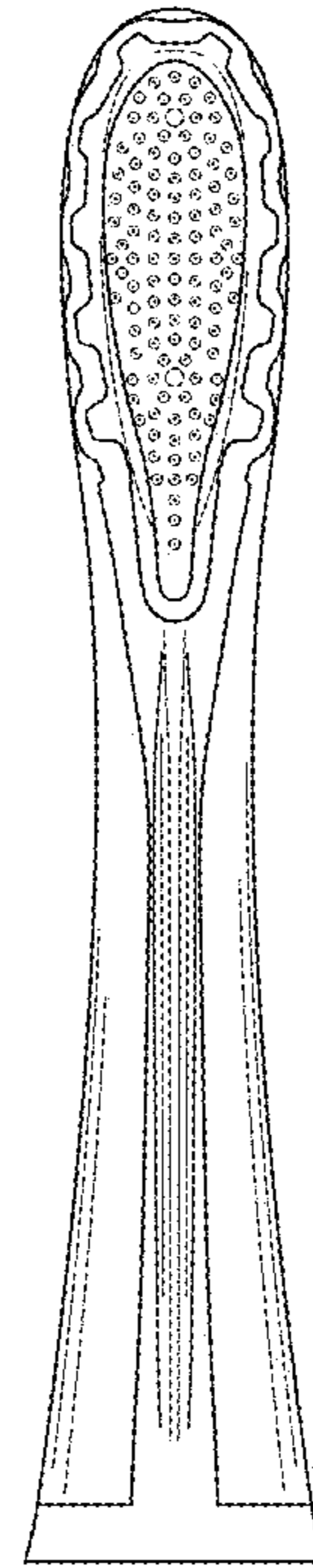


FIG. 12

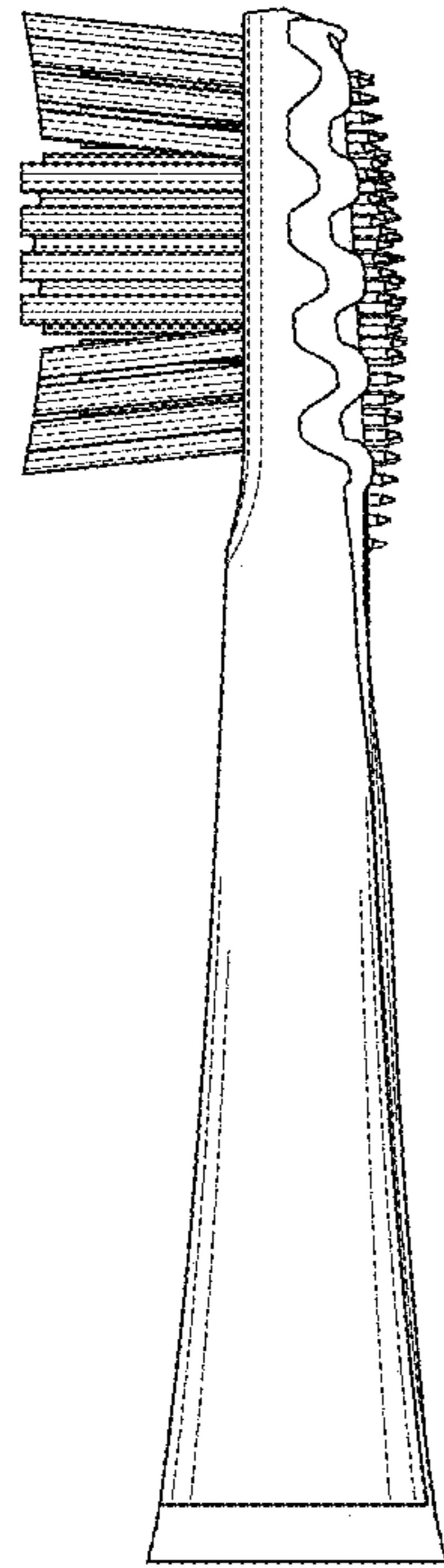


FIG. 13

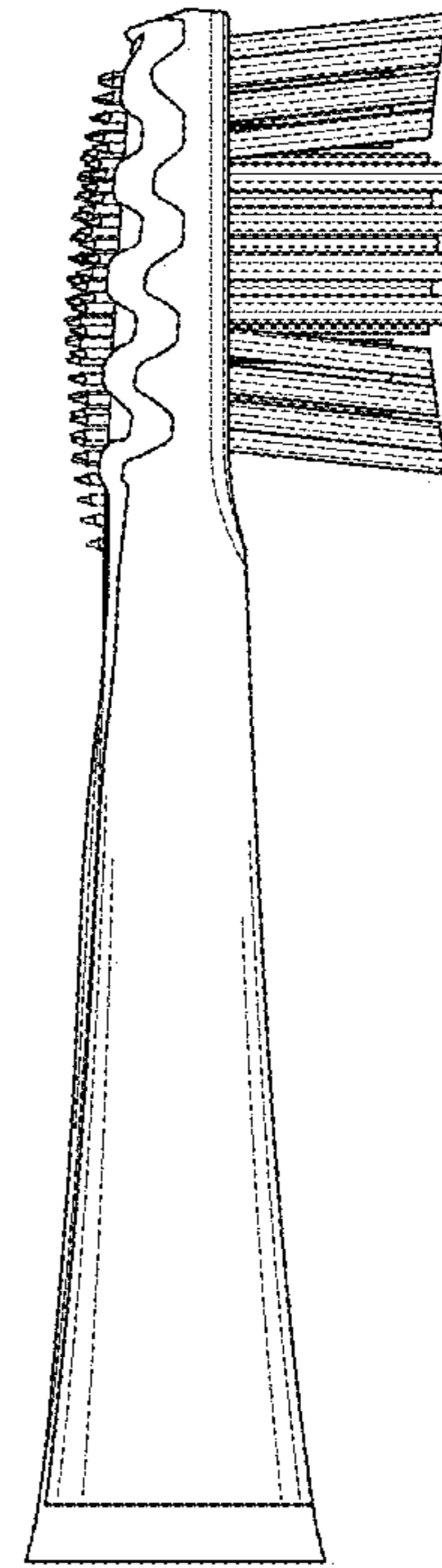


FIG. 14

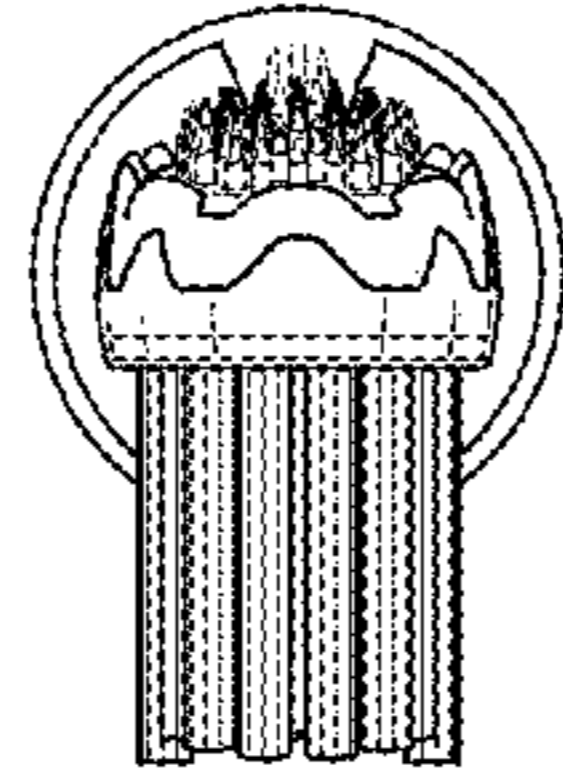


FIG. 15

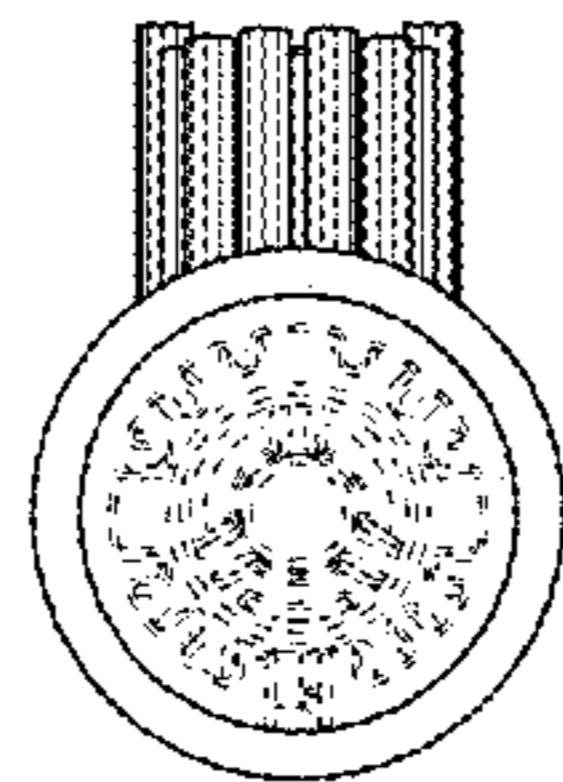


FIG. 16