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(12) **United States Design Patent** (10) **Patent No.:** **US D972,302 S**
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(54) **TOOTHBRUSH DRIVE UNIT**
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(**) Term: **15 Years**

8,707,970 B2 4/2014 Torres-Ortiz
8,713,738 B2 5/2014 Gatzemeyer et al.
8,763,189 B2 7/2014 Jungnickel et al.
8,766,568 B2 7/2014 Benning et al.
8,769,754 B2 7/2014 Byeon
8,806,691 B2 8/2014 Iwahori et al.
D715,057 S 10/2014 Adriaenssen et al.
8,863,344 B2 10/2014 Kloster
D717,547 S 11/2014 Adriaenssen et al.
D718,056 S 11/2014 Masee et al.
D718,057 S 11/2014 Masee et al.
8,875,335 B2 11/2014 Kloster et al.

(Continued)

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(52) **U.S. Cl.**
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CPC A46B 2200/1066; A46B 2200/1073; A46B
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See application file for complete search history.

FOREIGN PATENT DOCUMENTS

WO 2016201063 12/2016
WO 2016205055 12/2016

(Continued)

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(57) **CLAIM**

The ornamental design for a toothbrush drive unit, as shown and described.

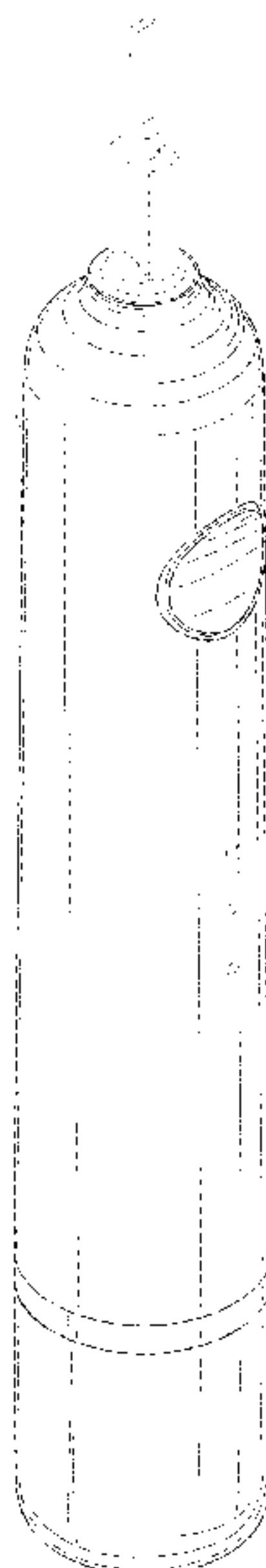
(56) **References Cited**
U.S. PATENT DOCUMENTS

8,479,341 B2 7/2013 Iwahori
D688,464 S * 8/2013 Hara D4/101
D688,872 S 9/2013 Domoto
D688,873 S 9/2013 Domoto
D688,874 S 9/2013 Domoto
8,590,092 B2 11/2013 Dickie
8,601,629 B2 12/2013 Gall et al.
8,607,394 B1 12/2013 Liao
8,621,699 B2 1/2014 Fischer et al.
8,631,532 B2 1/2014 Utsch et al.
8,695,143 B2 4/2014 Kloster
8,707,496 B2 4/2014 Farrell et al.
8,707,500 B2 4/2014 Nanda

DESCRIPTION

FIG. 1 is a perspective view of a toothbrush drive unit embodying the new design;
FIG. 2 is a right side view, the left side being a mirror image thereof;
FIG. 3 is a front view thereof;
FIG. 4 is a rear view thereof;
FIG. 5 is a top view thereof; and,
FIG. 6 is a bottom view thereof.
The broken lines in the drawings depict portions of the toothbrush drive unit that form no part of the claimed design.

1 Claim, 3 Drawing Sheets



(56)

References Cited

U.S. PATENT DOCUMENTS

D719,737 S 12/2014 Adriaenssen et al.
 8,898,843 B2 12/2014 Okazaki
 8,918,940 B2 12/2014 Gatzemeyer et al.
 8,938,839 B2 1/2015 Kitagawa et al.
 8,943,634 B2 2/2015 Sokol et al.
 8,955,186 B2 2/2015 Chan et al.
 8,966,696 B2 3/2015 Hall
 8,966,698 B2 3/2015 Mok et al.
 8,970,141 B2 3/2015 Bax et al.
 8,984,699 B2 3/2015 Russell et al.
 8,990,991 B2 3/2015 Kloster
 9,009,901 B2 4/2015 Doll et al.
 9,009,902 B2 4/2015 Kitagawa et al.
 9,015,886 B2 4/2015 Fritsch
 9,027,188 B2 5/2015 Sorrentino
 9,038,225 B2 5/2015 Haynes et al.
 9,038,226 B1 5/2015 Franklin
 9,044,083 B2 6/2015 Nanda
 9,050,162 B2 6/2015 Kloster
 9,062,736 B2 6/2015 De Jong et al.
 9,113,987 B2 8/2015 Utsch et al.
 9,119,695 B2 9/2015 Reinbold
 9,125,714 B2 9/2015 Fischer et al.
 9,131,765 B2 9/2015 Dickie et al.
 9,138,303 B2 9/2015 Park et al.
 9,144,297 B2 9/2015 Park et al.
 9,144,299 B2 9/2015 Fritsch et al.
 9,144,477 B2 9/2015 Sokol et al.
 9,168,116 B2 10/2015 Gavney, Jr. et al.
 9,168,117 B2 10/2015 Yoshida et al.
 9,198,502 B2 12/2015 Barnes et al.
 9,204,947 B2 12/2015 Bovenkamp et al.
 9,204,948 B2 12/2015 Kloster
 9,204,949 B2 12/2015 Chenvainu et al.
 9,226,808 B2 1/2016 Utsch et al.
 9,259,302 B2 2/2016 Miller
 9,265,338 B1 2/2016 Cygler
 D752,868 S 4/2016 McGarry et al.
 9,301,821 B2 4/2016 Fattori
 9,301,823 B2 4/2016 Jimenez
 9,326,594 B2 5/2016 De Vries et al.
 9,332,828 B2 5/2016 Dickie et al.
 D758,966 S 6/2016 Shigeno et al.
 D759,381 S 6/2016 Watkins
 D759,382 S 6/2016 Watkins
 D759,383 S 6/2016 Watkins
 9,358,087 B2 6/2016 Miller et al.
 9,358,088 B2 6/2016 Schaefer et al.
 9,364,303 B2 6/2016 Driesen et al.
 9,387,059 B2 7/2016 Utsch et al.
 9,427,293 B2 8/2016 Haynes et al.
 9,439,742 B2 9/2016 Shimoyama et al.
 9,492,255 B2 11/2016 Gall et al.
 9,498,312 B2 11/2016 Dykes et al.
 D773,822 S 12/2016 Sikora et al.
 9,561,092 B2 2/2017 Sauer et al.
 9,565,927 B2 2/2017 Bloch et al.
 9,572,419 B2 2/2017 Bloch et al.
 9,572,642 B2 2/2017 Fischer et al.
 9,578,957 B2 2/2017 Patel et al.
 9,597,169 B2 3/2017 Hall
 9,603,686 B2 3/2017 Schaefer et al.
 9,603,687 B2 3/2017 Wu
 9,642,684 B2 5/2017 Yoshida et al.
 9,648,945 B2 5/2017 Cook et al.
 D788,469 S 6/2017 McGarry et al.
 9,668,840 B2 6/2017 Miller
 9,681,933 B2 6/2017 Fischer et al.
 D790,859 S 7/2017 McGarry et al.
 D791,485 S 7/2017 McGarry et al.
 9,724,179 B2 8/2017 Simeth et al.
 9,724,180 B1 8/2017 Liu
 9,724,181 B2 8/2017 Schaefer et al.
 9,744,012 B2 8/2017 Sayles et al.
 9,750,334 B2 9/2017 Kirchhofer et al.

9,750,587 B2 9/2017 Johnson et al.
 9,757,219 B2 9/2017 Kleppen
 D799,217 S 10/2017 Masee
 D801,696 S 11/2017 McGarry et al.
 9,827,078 B2 11/2017 Bock
 9,827,079 B1 11/2017 Liu
 D805,306 S 12/2017 Masee
 D805,782 S 12/2017 Liu
 9,839,501 B2 12/2017 Kandemir
 9,844,260 B2 12/2017 Sayles
 D807,645 S 1/2018 Park et al.
 9,861,459 B2 1/2018 Addington
 9,913,530 B2 3/2018 Ye
 9,918,815 B1 3/2018 Ho et al.
 D814,195 S 4/2018 Sikora et al.
 9,936,795 B2 4/2018 Moskovich et al.
 9,937,027 B2 4/2018 Xu et al.
 9,961,985 B2 5/2018 Shigeno et al.
 9,968,427 B2 5/2018 Fischer et al.
 D819,337 S * 6/2018 Yuan D4/101
 D845,636 S * 4/2019 Porter D4/104
 D874,830 S * 2/2020 Choi D4/101
 D880,871 S * 4/2020 Choi D4/101
 D881,584 S * 4/2020 Porter D4/104
 D886,459 S * 6/2020 Yuan D4/101
 D891,115 S * 7/2020 Damavandi D4/101
 D907,924 S * 1/2021 Wong D4/101
 D938,733 S * 12/2021 Wu D4/101
 D950,247 S * 5/2022 Johnson D4/101
 D954,440 S * 6/2022 Chen D4/101
 2017/0020277 A1 1/2017 Barnes et al.
 2017/0056145 A1 3/2017 Sedic
 2017/0086760 A1 3/2017 Kim et al.
 2017/0105825 A1 4/2017 Okai et al.
 2017/0112272 A1 4/2017 Bloch et al.
 2017/0112273 A1 4/2017 Bloch et al.
 2017/0119510 A1 5/2017 Tomori et al.
 2017/0119511 A1 5/2017 Sablatschan et al.
 2017/0128178 A1 5/2017 Schmidt et al.
 2017/0143460 A1 5/2017 Latikka
 2017/0143957 A1 5/2017 Johansson et al.
 2017/0151044 A1 6/2017 Okai
 2017/0156835 A1 6/2017 Schaefer et al.
 2017/0156836 A1 6/2017 Kleppen et al.
 2017/0181820 A1 6/2017 Goddard et al.
 2017/0188836 A1 7/2017 Xi et al.
 2017/0189153 A1 7/2017 Johansson et al.
 2017/0216004 A1 8/2017 Okai
 2017/0263149 A1 9/2017 Sullivan
 2017/0281323 A1 10/2017 Fischer et al.
 2017/0296314 A1 10/2017 Schaefer et al.
 2017/0319311 A1 11/2017 Luetzgen et al.
 2017/0360538 A1 12/2017 Luo et al.
 2017/0360539 A1 12/2017 Luo et al.
 2018/0000236 A1 1/2018 Scheurich et al.
 2018/0008388 A1 1/2018 Lee
 2018/0014923 A1 1/2018 Hata et al.
 2018/0021116 A1 1/2018 Storkel et al.
 2018/0049854 A1 2/2018 Hall
 2018/0055616 A1 3/2018 Zheng et al.
 2018/0064238 A1 3/2018 Cook et al.
 2018/0064516 A1 3/2018 Wu
 2018/0103747 A1 4/2018 Lavezzo et al.
 2018/0132602 A1 5/2018 Gatzemeyer
 2018/0132604 A1 5/2018 Gatzemeyer et al.
 2018/0140404 A1 5/2018 Schaefer et al.
 2018/0168332 A1 * 6/2018 Wagner H05B 47/16
 2021/0289930 A1 * 9/2021 Wagner A61C 17/222
 2021/0307888 A1 * 10/2021 Wagner A61C 17/222

FOREIGN PATENT DOCUMENTS

WO 2017002004 1/2017
 WO 2017002038 1/2017
 WO 2017070158 4/2017
 WO 2017070163 4/2017
 WO 2017095733 6/2017
 WO 2017095735 6/2017
 WO 2017116971 7/2017

(56)

References Cited

FOREIGN PATENT DOCUMENTS

WO	2017117120	7/2017
WO	2017081548	8/2017
WO	2017139256	8/2017
WO	2017160811	9/2017
WO	2017160816	9/2017
WO	2017220355	12/2017
WO	2018060767	4/2018
WO	2018065373	4/2018
WO	2018075021	4/2018
WO	2018089886	5/2018
WO	2018089888	5/2018
WO	2018094319	5/2018

* cited by examiner

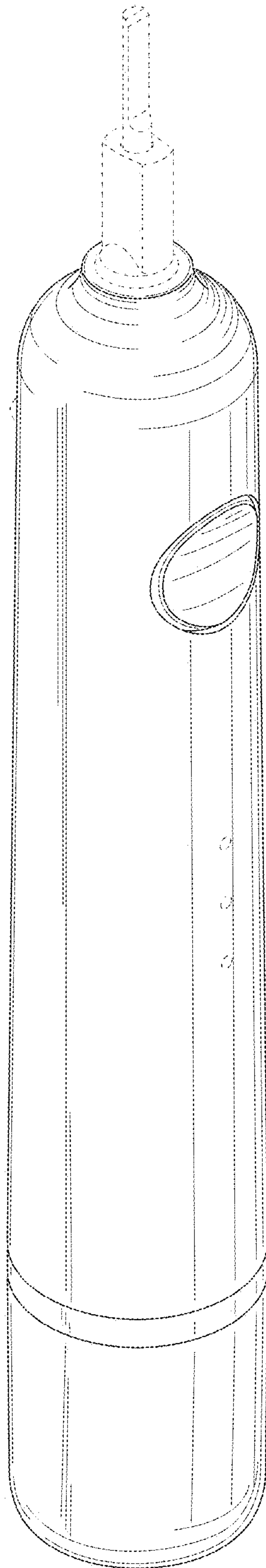


Fig. 1

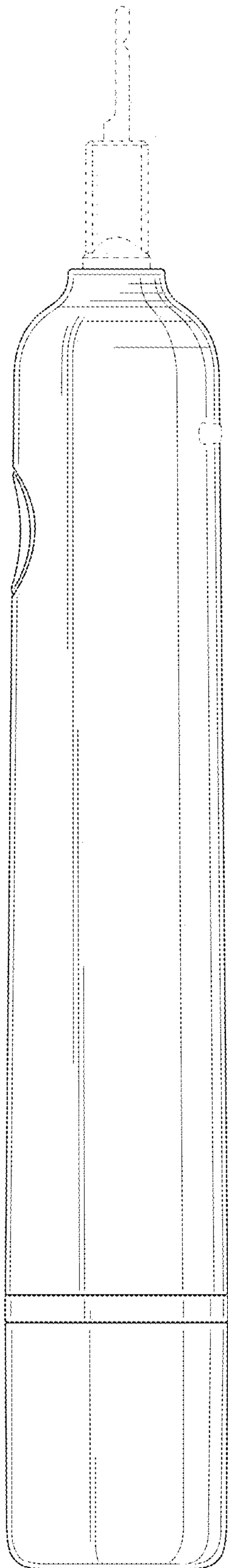


Fig. 2

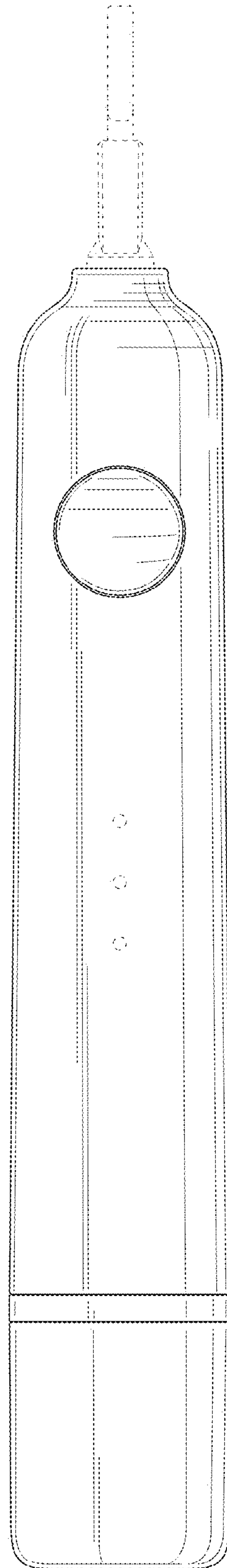


Fig. 3

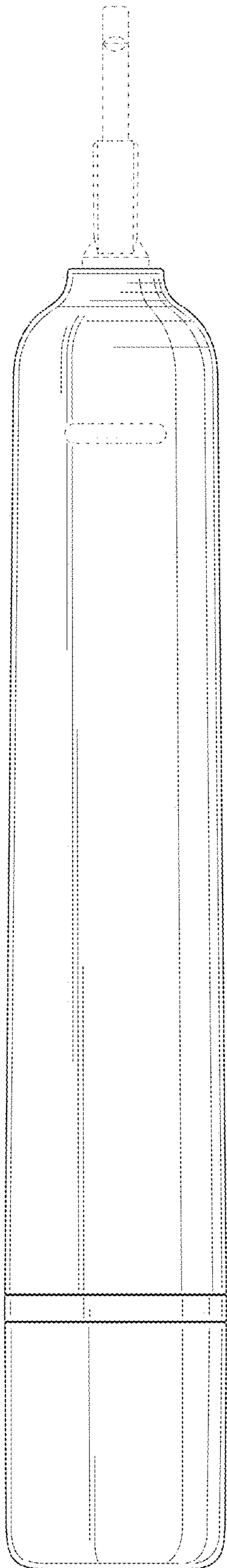


Fig. 4

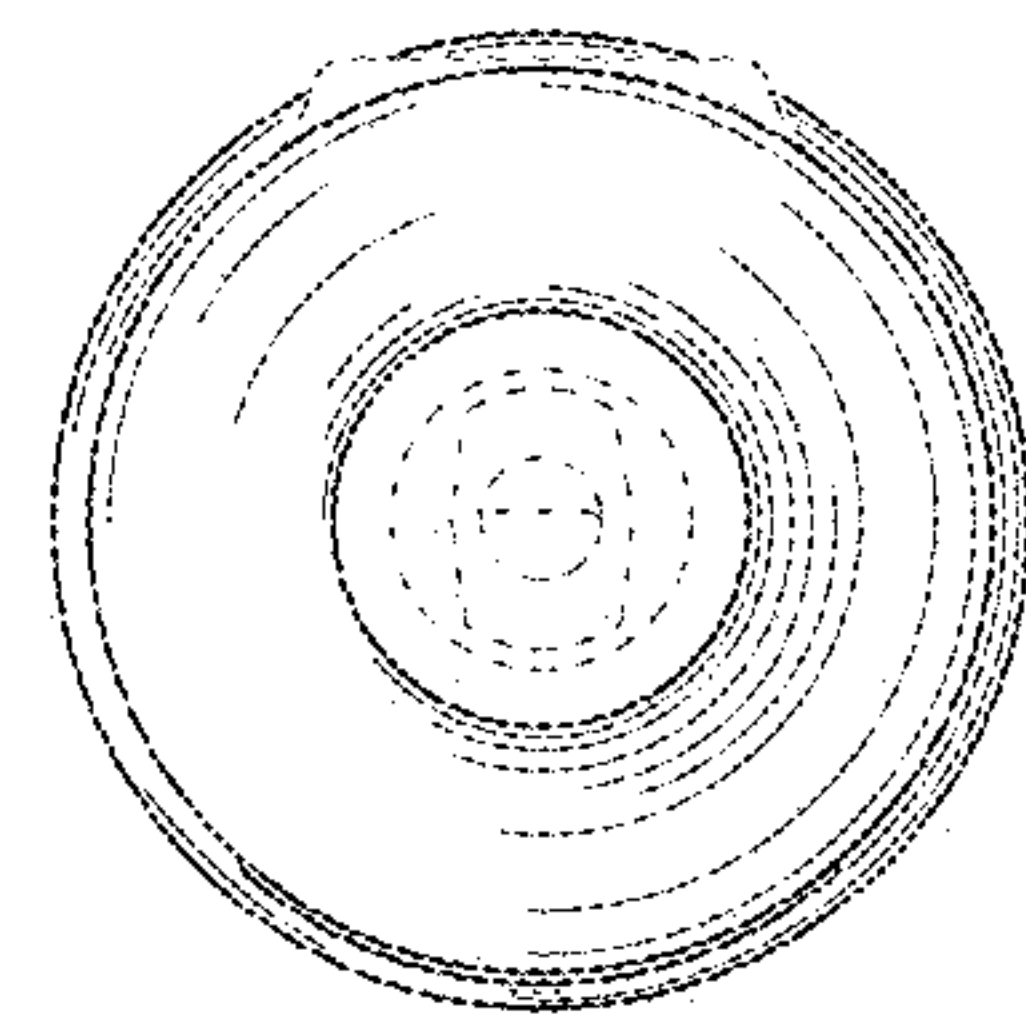


Fig. 5

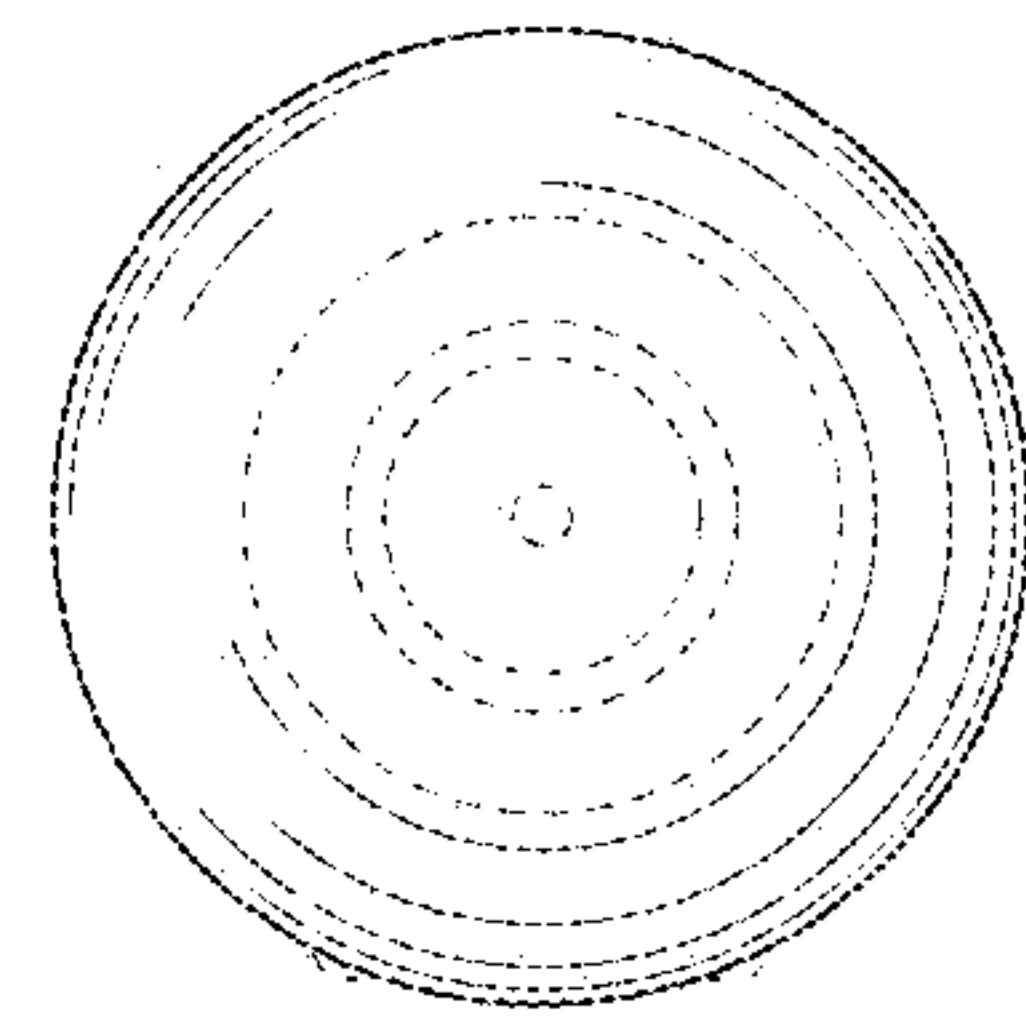


Fig. 6