



(12) **United States Design Patent**  
**Kim**

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- (54) **ORAL IRRIGATOR**
- (71) Applicant: **WATER PIK, INC.**, Fort Collins, CO (US)
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- (\*\*) Term: **15 Years**

1,977,782 A 10/1934 Roy  
 2,107,686 A 2/1938 Bramsen et al.  
 D159,872 S 8/1950 Skold  
 2,531,730 A 11/1950 Henderson  
 2,595,666 A 5/1952 Hutson  
 2,669,233 A 2/1954 Friend  
 2,709,227 A 5/1955 Foley et al.  
 2,783,919 A 3/1957 Ansell  
 2,794,437 A 6/1957 Tash  
 (Continued)

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**FOREIGN PATENT DOCUMENTS**

CA 851479 9/1970  
 CH 655237 4/1986  
 (Continued)

**OTHER PUBLICATIONS**

US RE27,274, 01/1972, Mattingly (withdrawn)  
 (Continued)

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(57) **CLAIM**

I claim the ornamental design for an oral irrigator, as shown and described.

(56) **References Cited**

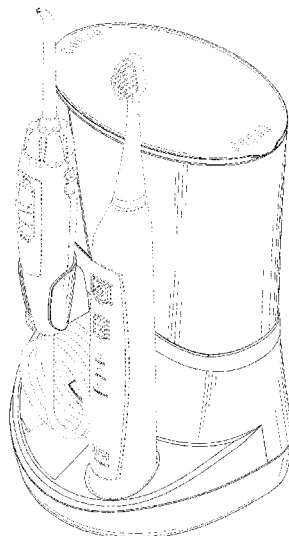
**U.S. PATENT DOCUMENTS**

555,588 A 3/1896 Spencer  
 1,278,225 A 9/1918 Schamberg  
 1,452,258 A 4/1923 Smith  
 1,464,419 A 8/1923 Gill  
 1,480,310 A 1/1924 Smith  
 1,498,267 A 6/1924 Hachman  
 1,650,686 A 11/1927 Binks  
 1,669,889 A 5/1928 Andrews et al.  
 1,681,320 A 8/1928 Bergl et al.  
 1,933,454 A 10/1933 Sidney  
 1,940,111 A 12/1933 Austin  
 D93,019 S 8/1934 Hose

**DESCRIPTION**

FIG. 1 is a front perspective of an oral irrigator;  
 FIG. 2 is a front elevation thereof;  
 FIG. 3 is a rear elevation thereof;  
 FIG. 4 is a left side elevation view thereof;  
 FIG. 5 is a right side elevation view thereof;  
 FIG. 6 is a top plan view thereof; and,  
 FIG. 7 is a bottom plan view thereof.  
 The broken lines in the drawings illustrate portions of the oral irrigator that form no part of the claimed design.

**1 Claim, 7 Drawing Sheets**



(56)

## References Cited

## U.S. PATENT DOCUMENTS

|           |   |         |                      |           |   |         |                  |
|-----------|---|---------|----------------------|-----------|---|---------|------------------|
| 2,870,932 | A | 1/1959  | Davis                | 3,959,883 | A | 6/1976  | Walls et al.     |
| 2,984,452 | A | 5/1961  | Hooper               | 3,973,558 | A | 8/1976  | Stouffer et al.  |
| 3,089,490 | A | 5/1963  | Goldberg             | 3,977,084 | A | 8/1976  | Sloan            |
| 3,096,913 | A | 7/1963  | Jousson              | 4,001,526 | A | 1/1977  | Olson            |
| 3,144,867 | A | 8/1964  | Trupp et al.         | 4,004,302 | A | 1/1977  | Hori             |
| D202,041  | S | 8/1965  | Burzlauff            | 4,007,739 | A | 2/1977  | Bron et al.      |
| 3,209,956 | A | 10/1965 | McKenzie             | 4,013,227 | A | 3/1977  | Herrera          |
| 3,216,619 | A | 11/1965 | Richards et al.      | 4,052,002 | A | 10/1977 | Stouffer et al.  |
| 3,225,759 | A | 12/1965 | Drapen et al.        | D246,667  | S | 12/1977 | Mackay et al.    |
| 3,227,158 | A | 1/1966  | Mattingly            | 4,060,870 | A | 12/1977 | Cannarella       |
| 3,266,623 | A | 8/1966  | Poferl               | 4,075,761 | A | 2/1978  | Behne et al.     |
| 3,297,558 | A | 1/1967  | Hillquist            | 4,078,558 | A | 3/1978  | Woog et al.      |
| D208,778  | S | 10/1967 | Koch                 | 4,094,311 | A | 6/1978  | Hudson           |
| D209,204  | S | 11/1967 | St. Clair            | 4,108,167 | A | 8/1978  | Hickman et al.   |
| D209,395  | S | 11/1967 | Gilbert              | 4,108,178 | A | 8/1978  | Betush           |
| D210,018  | S | 1/1968  | Mattingly et al.     | 4,109,650 | A | 8/1978  | Peclard          |
| D210,019  | S | 1/1968  | Johnson et al.       | 4,122,845 | A | 10/1978 | Stouffer et al.  |
| 3,370,214 | A | 2/1968  | Aymar                | 4,135,501 | A | 1/1979  | Leunissan        |
| 3,391,696 | A | 7/1968  | Woodward             | 4,141,352 | A | 2/1979  | Ebner et al.     |
| 3,393,673 | A | 7/1968  | Mattingly et al.     | 4,144,646 | A | 3/1979  | Takemoto et al.  |
| 3,400,999 | A | 9/1968  | Goldstein            | 4,149,315 | A | 4/1979  | Page, Jr. et al. |
| 3,418,552 | A | 12/1968 | Holmes               | 4,154,375 | A | 5/1979  | Bippus           |
| 3,420,228 | A | 1/1969  | Kalbfeld             | 4,160,383 | A | 7/1979  | Rauschenberger   |
| 3,425,410 | A | 2/1969  | Cammack              | 4,171,572 | A | 10/1979 | Nash             |
| 3,453,969 | A | 7/1969  | Mattingly            | 4,182,038 | A | 1/1980  | Fleer            |
| 3,465,751 | A | 9/1969  | Powers               | 4,200,235 | A | 4/1980  | Monschke         |
| 3,467,083 | A | 9/1969  | Mattingly            | 4,201,200 | A | 5/1980  | Hubner           |
| D215,920  | S | 11/1969 | McCarty et al.       | 4,215,476 | A | 8/1980  | Armstrong        |
| 3,487,828 | A | 1/1970  | Troy                 | 4,219,618 | A | 8/1980  | Leonard          |
| 3,489,268 | A | 1/1970  | Meierhoefer          | 4,227,878 | A | 10/1980 | Lohn             |
| 3,495,587 | A | 2/1970  | Freedman             | 4,229,634 | A | 10/1980 | Hickman et al.   |
| 3,496,933 | A | 2/1970  | Lloyd                | 4,236,889 | A | 12/1980 | Wright           |
| 3,499,440 | A | 3/1970  | Gibbs                | D258,097  | S | 2/1981  | Wistrand         |
| 3,500,824 | A | 3/1970  | Gilbert              | 4,248,589 | A | 2/1981  | Lewis            |
| 3,501,203 | A | 3/1970  | Falk                 | 4,249,899 | A | 2/1981  | Davis            |
| 3,502,072 | A | 3/1970  | Stillman             | 4,257,458 | A | 3/1981  | Kondo et al.     |
| 3,517,669 | A | 6/1970  | Buono et al.         | 4,262,799 | A | 4/1981  | Perrett          |
| D218,270  | S | 8/1970  | Soper                | 4,266,934 | A | 5/1981  | Pernot           |
| 3,522,801 | A | 8/1970  | Robinson             | 4,276,023 | A | 6/1981  | Phillips et al.  |
| 3,532,221 | A | 10/1970 | Kaluhiokalani et al. | 4,276,880 | A | 7/1981  | Malmin           |
| 3,536,065 | A | 10/1970 | Moret                | 4,302,186 | A | 11/1981 | Cammack et al.   |
| 3,537,444 | A | 11/1970 | Garn                 | 4,303,064 | A | 12/1981 | Buffa            |
| 3,538,950 | A | 11/1970 | Porteners            | 4,303,070 | A | 12/1981 | Ichikawa et al.  |
| 3,547,110 | A | 12/1970 | Balamuth             | 4,306,862 | A | 12/1981 | Knox             |
| 3,561,433 | A | 2/1971  | Kovach               | 4,315,741 | A | 2/1982  | Reichl           |
| D220,334  | S | 3/1971  | Mackay et al.        | 4,319,568 | A | 3/1982  | Tregoning        |
| 3,570,525 | A | 3/1971  | Borsum               | 4,331,422 | A | 5/1982  | Heyman           |
| 3,572,375 | A | 3/1971  | Rosenberg            | 4,337,040 | A | 6/1982  | Cammack et al.   |
| 3,578,884 | A | 5/1971  | Jacobson             | 4,340,365 | A | 7/1982  | Pisanu           |
| D220,996  | S | 6/1971  | Irons                | 4,340,368 | A | 7/1982  | Lococo           |
| 3,583,609 | A | 6/1971  | Oppenheimer          | D266,117  | S | 9/1982  | Oberheim         |
| 3,590,813 | A | 7/1971  | Roszyk               | 4,353,694 | A | 10/1982 | Pelerin          |
| 3,608,548 | A | 9/1971  | Lewis                | 4,363,626 | A | 12/1982 | Schmidt et al.   |
| D222,862  | S | 1/1972  | Cook                 | 4,365,376 | A | 12/1982 | Oda et al.       |
| 3,636,947 | A | 1/1972  | Balamuth             | 4,370,131 | A | 1/1983  | Banko            |
| 3,651,576 | A | 3/1972  | Massa                | 4,374,354 | A | 2/1983  | Petrovic et al.  |
| 3,669,101 | A | 6/1972  | Kleiner              | 4,382,167 | A | 5/1983  | Maruyama et al.  |
| 3,703,170 | A | 11/1972 | Ryckman, Jr.         | 4,382,786 | A | 5/1983  | Lohn             |
| 3,747,595 | A | 7/1973  | Grossan              | D270,000  | S | 8/1983  | Ketler           |
| 3,768,472 | A | 10/1973 | Hodosh et al.        | 4,412,823 | A | 11/1983 | Sakai et al.     |
| 3,783,364 | A | 1/1974  | Gallanis et al.      | 4,416,628 | A | 11/1983 | Cammack          |
| 3,809,506 | A | 5/1974  | Malcosky             | 4,442,830 | A | 4/1984  | Markau           |
| 3,809,977 | A | 5/1974  | Balamuth et al.      | 4,442,831 | A | 4/1984  | Trenary          |
| 3,811,432 | A | 5/1974  | Moret                | 4,452,238 | A | 6/1984  | Kerr             |
| 3,820,532 | A | 6/1974  | Eberhardt et al.     | 4,454,866 | A | 6/1984  | Fayen            |
| 3,827,147 | A | 8/1974  | Condon               | 4,512,769 | A | 4/1985  | Kozam et al.     |
| 3,837,166 | A | 9/1974  | Hiraoka              | 4,517,962 | A | 5/1985  | Heckele          |
| 3,840,795 | A | 10/1974 | Roszyk et al.        | 4,531,912 | A | 7/1985  | Schuss et al.    |
| 3,847,145 | A | 11/1974 | Grossan              | 4,531,913 | A | 7/1985  | Taguchi          |
| 3,854,209 | A | 12/1974 | Franklin et al.      | 4,534,340 | A | 8/1985  | Kerr et al.      |
| 3,863,628 | A | 2/1975  | Vit                  | 4,552,130 | A | 11/1985 | Kinoshita        |
| 3,871,560 | A | 3/1975  | Crippa               | 4,561,214 | A | 12/1985 | Inoue            |
| 3,874,506 | A | 4/1975  | Hill et al.          | D283,374  | S | 4/1986  | Cheuk-Yiu        |
| 3,912,125 | A | 10/1975 | Acklin               | 4,585,415 | A | 4/1986  | Hommann          |
| 3,943,628 | A | 3/1976  | Kronman et al.       | 4,591,777 | A | 5/1986  | McCarty et al.   |
|           |   |         |                      | 4,592,728 | A | 6/1986  | Davis            |
|           |   |         |                      | 4,602,906 | A | 7/1986  | Grunenfelder     |
|           |   |         |                      | 4,607,627 | A | 8/1986  | Leber et al.     |
|           |   |         |                      | 4,613,074 | A | 9/1986  | Schulze          |

(56)

## References Cited

## U.S. PATENT DOCUMENTS

|           |   |         |                    |           |   |         |                  |
|-----------|---|---------|--------------------|-----------|---|---------|------------------|
| 4,619,009 | A | 10/1986 | Rosenstatter       | 5,064,168 | A | 11/1991 | Raines et al.    |
| 4,619,612 | A | 10/1986 | Weber et al.       | D322,314  | S | 12/1991 | Ohbayashi        |
| 4,629,425 | A | 12/1986 | Detsch             | 5,071,346 | A | 12/1991 | Domaas           |
| 4,636,198 | A | 1/1987  | Stade              | 5,082,115 | A | 1/1992  | Hutcheson        |
| 4,642,037 | A | 2/1987  | Fritchman          | 5,082,443 | A | 1/1992  | Lohn             |
| 4,644,937 | A | 2/1987  | Hommann            | 5,085,317 | A | 2/1992  | Jensen et al.    |
| 4,645,488 | A | 2/1987  | Matukas            | 5,086,756 | A | 2/1992  | Powell           |
| 4,647,831 | A | 3/1987  | O'Malley et al.    | 5,095,893 | A | 3/1992  | Rawden, Jr.      |
| 4,648,838 | A | 3/1987  | Schlachter         | 5,098,291 | A | 3/1992  | Curtis et al.    |
| 4,650,475 | A | 3/1987  | Smith et al.       | 5,098,676 | A | 3/1992  | Brooks, Jr.      |
| 4,655,198 | A | 4/1987  | Hommann            | 5,100,319 | A | 3/1992  | Baum             |
| 4,669,453 | A | 6/1987  | Atkinson et al.    | 5,117,871 | A | 6/1992  | Gardner et al.   |
| 4,672,953 | A | 6/1987  | DiVito             | 5,125,835 | A | 6/1992  | Young            |
| 4,673,396 | A | 6/1987  | Urbaniak           | 5,127,831 | A | 7/1992  | Bab              |
| D291,354  | S | 8/1987  | Camens             | 5,142,723 | A | 9/1992  | Lustig et al.    |
| 4,716,352 | A | 12/1987 | Hurn et al.        | 5,150,841 | A | 9/1992  | Silvenis et al.  |
| 4,749,340 | A | 6/1988  | Ikeda et al.       | 5,172,810 | A | 12/1992 | Brewer           |
| 4,770,632 | A | 9/1988  | Ryder et al.       | 5,173,273 | A | 12/1992 | Brewer           |
| D298,565  | S | 11/1988 | Kohler, Jr. et al. | 5,183,035 | A | 2/1993  | Weir             |
| 4,783,321 | A | 11/1988 | Spence             | 5,197,458 | A | 3/1993  | Ito et al.       |
| 4,787,845 | A | 11/1988 | Valentine          | 5,197,460 | A | 3/1993  | Ito et al.       |
| 4,787,847 | A | 11/1988 | Martin et al.      | 5,199,871 | A | 4/1993  | Young            |
| 4,798,292 | A | 1/1989  | Hauze              | 5,203,697 | A | 4/1993  | Malmin           |
| 4,803,974 | A | 2/1989  | Powell             | 5,203,769 | A | 4/1993  | Clement et al.   |
| 4,804,364 | A | 2/1989  | Dieras et al.      | 5,204,004 | A | 4/1993  | Johnston et al.  |
| 4,818,229 | A | 4/1989  | Vasile             | 5,208,933 | A | 5/1993  | Lustig et al.    |
| 4,820,152 | A | 4/1989  | Warrin et al.      | 5,215,193 | A | 6/1993  | Dennis           |
| 4,821,923 | A | 4/1989  | Skorka             | 5,218,956 | A | 6/1993  | Handler et al.   |
| 4,824,368 | A | 4/1989  | Hickman            | 5,220,914 | A | 6/1993  | Thompson         |
| 4,826,431 | A | 5/1989  | Fujimura et al.    | 5,228,646 | A | 7/1993  | Raines           |
| 4,827,551 | A | 5/1989  | Maser et al.       | 5,230,624 | A | 7/1993  | Wolf et al.      |
| 4,832,683 | A | 5/1989  | Idemoto et al.     | 5,232,687 | A | 8/1993  | Geimer           |
| 4,854,869 | A | 8/1989  | Lawhorn            | 5,235,968 | A | 8/1993  | Woog             |
| 4,861,340 | A | 8/1989  | Smith et al.       | 5,241,714 | A | 9/1993  | Barry            |
| 4,862,876 | A | 9/1989  | Lih-Sheng          | 5,246,367 | A | 9/1993  | Ito et al.       |
| 4,869,720 | A | 9/1989  | Chernack           | 5,252,064 | A | 10/1993 | Baum et al.      |
| 4,880,382 | A | 11/1989 | Moret et al.       | D341,200  | S | 11/1993 | Yoshimoto        |
| 4,886,452 | A | 12/1989 | Lohn               | 5,257,933 | A | 11/1993 | Jousson          |
| 4,900,252 | A | 2/1990  | Liefke et al.      | 5,261,448 | A | 11/1993 | Furuya et al.    |
| 4,902,225 | A | 2/1990  | Lohn               | D341,943  | S | 12/1993 | Si-Hoe           |
| 4,903,687 | A | 2/1990  | Lih-Sheng          | 5,267,586 | A | 12/1993 | Jankavaara       |
| 4,906,187 | A | 3/1990  | Amadera            | 5,269,684 | A | 12/1993 | Fischer          |
| 4,907,744 | A | 3/1990  | Jousson            | 5,281,137 | A | 1/1994  | Jousson          |
| 4,925,450 | A | 5/1990  | Imonti et al.      | 5,281,139 | A | 1/1994  | Frank et al.     |
| 4,928,675 | A | 5/1990  | Thornton           | 5,282,745 | A | 2/1994  | Wiltrout et al.  |
| 4,930,660 | A | 6/1990  | Porteous           | 5,286,192 | A | 2/1994  | Dixon            |
| 4,941,459 | A | 7/1990  | Mathur             | 5,286,201 | A | 2/1994  | Yu               |
| 4,950,159 | A | 8/1990  | Hansen             | 5,295,832 | A | 3/1994  | Evans            |
| 4,958,629 | A | 9/1990  | Peace et al.       | 5,297,962 | A | 3/1994  | O'Connor et al.  |
| 4,958,751 | A | 9/1990  | Curtis et al.      | D346,212  | S | 4/1994  | Hosl             |
| 4,959,199 | A | 9/1990  | Brewer             | 5,301,381 | A | 4/1994  | Klupt            |
| 4,961,698 | A | 10/1990 | Vlock              | 5,302,123 | A | 4/1994  | Bechard          |
| 4,966,551 | A | 10/1990 | Betush             | 5,317,691 | A | 5/1994  | Traeger          |
| 4,969,874 | A | 11/1990 | Michel et al.      | 5,321,865 | A | 6/1994  | Kaeser           |
| 4,973,246 | A | 11/1990 | Black              | 5,331,704 | A | 7/1994  | Rosen et al.     |
| 4,973,247 | A | 11/1990 | Varnes et al.      | 5,344,317 | A | 9/1994  | Pacher et al.    |
| 4,973,250 | A | 11/1990 | Milman             | 5,346,677 | A | 9/1994  | Risk             |
| 4,975,054 | A | 12/1990 | Esrock             | D351,892  | S | 10/1994 | Wolf et al.      |
| 4,979,503 | A | 12/1990 | Chernack           | 5,360,338 | A | 11/1994 | Waggoner         |
| 4,979,504 | A | 12/1990 | Mills              | 5,368,548 | A | 11/1994 | Jousson          |
| 4,989,590 | A | 2/1991  | Baum et al.        | 5,370,534 | A | 12/1994 | Wolf et al.      |
| 4,998,880 | A | 3/1991  | Nerli              | D354,168  | S | 1/1995  | Hartwein         |
| 5,013,241 | A | 5/1991  | Von Gutfeld et al. | D354,559  | S | 1/1995  | Knute            |
| 5,014,884 | A | 5/1991  | Wunsch             | 5,378,149 | A | 1/1995  | Stropko          |
| 5,019,054 | A | 5/1991  | Clement et al.     | 5,380,201 | A | 1/1995  | Kawata           |
| 5,027,798 | A | 7/1991  | Primiano           | D356,864  | S | 3/1995  | Woog             |
| 5,029,576 | A | 7/1991  | Evans, Sr.         | 5,399,089 | A | 3/1995  | Eichman et al.   |
| 5,033,617 | A | 7/1991  | Hartwein et al.    | D358,883  | S | 5/1995  | Vos              |
| 5,033,961 | A | 7/1991  | Kandler et al.     | 5,456,672 | A | 10/1995 | Diederich et al. |
| D318,918  | S | 8/1991  | Hartwein .....     | 5,465,445 | A | 11/1995 | Yeh              |
| 5,046,486 | A | 9/1991  | Grulke et al.      | 5,467,495 | A | 11/1995 | Boland et al.    |
| 5,049,071 | A | 9/1991  | Davis et al.       | 5,468,148 | A | 11/1995 | Ricks            |
| 5,060,825 | A | 10/1991 | Palmer et al.      | 5,470,305 | A | 11/1995 | Arnett et al.    |
| 5,061,180 | A | 10/1991 | Wiele              | 5,474,450 | A | 12/1995 | Chronister       |
| 5,062,795 | A | 11/1991 | Woog               | 5,474,451 | A | 12/1995 | Dalrymple et al. |
|           |   |         |                    | 5,476,379 | A | 12/1995 | Disel            |
|           |   |         |                    | 5,484,281 | A | 1/1996  | Renow et al.     |
|           |   |         |                    | 5,487,877 | A | 1/1996  | Choi             |
|           |   |         |                    | 5,490,779 | A | 2/1996  | Malmin           |

(56)

References Cited

U.S. PATENT DOCUMENTS

|               |         |                                     |              |         |                        |
|---------------|---------|-------------------------------------|--------------|---------|------------------------|
| 5,505,916 A   | 4/1996  | Berry, Jr.                          | D435,905 S   | 1/2001  | Bachman et al.         |
| D369,656 S    | 5/1996  | Vos                                 | D437,049 S * | 1/2001  | Hartwein ..... D24/111 |
| D370,125 S    | 5/1996  | Craft et al.                        | 6,193,512 B1 | 2/2001  | Wallace                |
| 5,525,058 A   | 6/1996  | Gallant et al.                      | 6,193,932 B1 | 2/2001  | Wu et al.              |
| 5,526,841 A   | 6/1996  | Detsch et al.                       | 6,199,239 B1 | 3/2001  | Dickerson              |
| 5,540,587 A   | 7/1996  | Malmin                              | 6,200,134 B1 | 3/2001  | Kovac                  |
| 5,547,374 A   | 8/1996  | Coleman                             | D439,781 S   | 4/2001  | Spore                  |
| D373,631 S    | 9/1996  | Maeda et al.                        | 6,217,835 B1 | 4/2001  | Riley et al.           |
| 5,554,014 A   | 9/1996  | Becker                              | D441,861 S   | 5/2001  | Haffiger               |
| 5,554,025 A   | 9/1996  | Kinsel                              | 6,233,773 B1 | 5/2001  | Karge et al.           |
| 5,556,001 A   | 9/1996  | Weissman et al.                     | 6,234,205 B1 | 5/2001  | D'Amelio et al.        |
| 5,564,629 A   | 10/1996 | Weissman et al.                     | 6,237,178 B1 | 5/2001  | Krammer et al.         |
| D376,893 S    | 12/1996 | Gornet                              | 6,247,929 B1 | 6/2001  | Bachman et al.         |
| D377,091 S    | 12/1996 | Scott, Sr.                          | 6,280,190 B1 | 8/2001  | Hoffman                |
| 5,613,259 A   | 3/1997  | Craft et al.                        | D448,236 S   | 9/2001  | Murray                 |
| 5,616,028 A   | 4/1997  | Hafele et al.                       | 6,293,792 B1 | 9/2001  | Hanson                 |
| 5,626,472 A   | 5/1997  | Pennetta                            | D449,884 S * | 10/2001 | Tobin ..... D24/111    |
| 5,634,791 A   | 6/1997  | Matsuura et al.                     | D453,453 S   | 2/2002  | Lun                    |
| 5,636,987 A   | 6/1997  | Serfaty                             | D455,201 S   | 4/2002  | Jones                  |
| 5,640,735 A   | 6/1997  | Manning                             | D455,203 S   | 4/2002  | Jones                  |
| D382,407 S    | 8/1997  | Craft et al.                        | 6,363,565 B1 | 4/2002  | Paffirath              |
| 5,653,591 A   | 8/1997  | Loge                                | D457,949 S   | 5/2002  | Krug                   |
| 5,659,995 A   | 8/1997  | Hoffman                             | D464,799 S   | 10/2002 | Crossman et al.        |
| 5,667,483 A   | 9/1997  | Santos                              | 6,468,482 B1 | 10/2002 | Frieze et al.          |
| D386,576 S    | 11/1997 | Wang et al.                         | 6,475,173 B1 | 11/2002 | Bachman et al.         |
| 5,683,192 A   | 11/1997 | Kilfoil                             | 6,485,451 B1 | 11/2002 | Roberts et al.         |
| 5,685,829 A   | 11/1997 | Allen                               | 6,497,375 B1 | 12/2002 | Srinath et al.         |
| 5,685,851 A   | 11/1997 | Murphy et al.                       | 6,497,572 B2 | 12/2002 | Hood et al.            |
| 5,697,784 A   | 12/1997 | Hafele et al.                       | 6,502,584 B1 | 1/2003  | Fordham                |
| D388,612 S *  | 1/1998  | Stutzer ..... D24/111               | D470,660 S   | 2/2003  | Schaber                |
| D388,613 S *  | 1/1998  | Stutzer ..... D24/111               | 6,558,344 B2 | 5/2003  | McKinnon et al.        |
| D389,091 S    | 1/1998  | Dickinson                           | 6,561,808 B2 | 5/2003  | Neuberger et al.       |
| 5,709,545 A   | 1/1998  | Johnston et al.                     | D475,346 S   | 6/2003  | McCurrach et al.       |
| D390,934 S    | 2/1998  | McKeone                             | D476,743 S * | 7/2003  | D'Silva ..... D24/177  |
| 5,716,007 A   | 2/1998  | Nottingham et al.                   | 6,589,477 B1 | 7/2003  | Frieze et al.          |
| 5,718,668 A   | 2/1998  | Arnett et al.                       | 6,602,071 B1 | 8/2003  | Ellion et al.          |
| 5,746,595 A   | 5/1998  | Ford                                | 6,632,091 B1 | 10/2003 | Cise et al.            |
| 5,749,726 A   | 5/1998  | Kinsel                              | D482,451 S   | 11/2003 | Page et al.            |
| 5,759,502 A   | 6/1998  | Spencer et al.                      | 6,640,999 B2 | 11/2003 | Peterson               |
| 5,779,471 A * | 7/1998  | Tseng ..... A61C 19/063<br>433/80   | 6,647,577 B2 | 11/2003 | Tam                    |
| 5,779,654 A   | 7/1998  | Foley et al.                        | 6,659,674 B2 | 12/2003 | Carlucci et al.        |
| 5,795,153 A   | 8/1998  | Rechmann                            | 6,669,059 B2 | 12/2003 | Mehta                  |
| 5,796,325 A   | 8/1998  | Lundell et al.                      | D484,971 S   | 1/2004  | Hartwein               |
| 5,833,065 A   | 11/1998 | Burgess                             | 6,681,418 B1 | 1/2004  | Bierend                |
| 5,836,030 A   | 11/1998 | Hazeu et al.                        | D486,573 S   | 2/2004  | Callaghan et al.       |
| D402,744 S    | 12/1998 | Zuege                               | 6,689,078 B1 | 2/2004  | Rehkemper et al.       |
| 5,851,079 A   | 12/1998 | Horstman et al.                     | 6,699,208 B2 | 3/2004  | Bachman et al.         |
| D403,511 S *  | 1/1999  | Serbinski ..... D24/111             | 6,719,561 B2 | 4/2004  | Gugel et al.           |
| D406,334 S    | 3/1999  | Rosenthal et al.                    | D489,183 S   | 5/2004  | Akahori et al.         |
| 5,876,201 A   | 3/1999  | Wilson et al.                       | 6,739,782 B1 | 5/2004  | Rehkemper et al.       |
| D408,511 S    | 4/1999  | Allen et al.                        | 6,740,053 B2 | 5/2004  | Kaplowitz              |
| 5,901,397 A   | 5/1999  | Hafele et al.                       | D490,899 S   | 6/2004  | Gagnon                 |
| 5,934,902 A   | 8/1999  | Abahusayn                           | D491,728 S   | 6/2004  | Jimenez                |
| D413,975 S    | 9/1999  | Maeda                               | D492,996 S   | 7/2004  | Rehkemper et al.       |
| D416,999 S    | 11/1999 | Miyamoto                            | 6,761,324 B2 | 7/2004  | Chang                  |
| D417,082 S    | 11/1999 | Classen et al.                      | 6,766,549 B2 | 7/2004  | Klupt                  |
| 5,993,402 A   | 11/1999 | Sauer et al.                        | D495,142 S   | 8/2004  | Berde                  |
| 6,030,215 A   | 2/2000  | Ellion et al.                       | D495,143 S   | 8/2004  | Berde                  |
| 6,038,960 A   | 3/2000  | Fukushima et al.                    | 6,779,216 B2 | 8/2004  | Davies et al.          |
| 6,039,180 A   | 3/2000  | Grant                               | 6,783,004 B1 | 8/2004  | Rinner                 |
| 6,047,429 A   | 4/2000  | Wu                                  | 6,783,505 B1 | 8/2004  | Lai                    |
| D424,181 S    | 5/2000  | Caplow                              | 6,796,796 B2 | 9/2004  | Segal                  |
| D425,615 S    | 5/2000  | Bachman et al.                      | D498,643 S   | 11/2004 | Pryor                  |
| D425,981 S    | 5/2000  | Bachman et al.                      | 6,814,259 B1 | 11/2004 | Foster et al.          |
| 6,056,710 A * | 5/2000  | Bachman ..... A61C 17/02<br>601/162 | D499,885 S   | 12/2004 | Xi                     |
| D426,633 S    | 6/2000  | Bachman et al.                      | 6,835,181 B2 | 12/2004 | Hippensteel            |
| 6,089,865 A   | 7/2000  | Edgar                               | D500,599 S   | 1/2005  | Callaghan              |
| 6,116,866 A   | 9/2000  | Tomita et al.                       | 6,837,708 B2 | 1/2005  | Chen et al.            |
| 6,120,755 A   | 9/2000  | Jacobs                              | 6,884,069 B2 | 4/2005  | Goldman                |
| 6,124,699 A   | 9/2000  | Suzuki et al.                       | 6,902,337 B1 | 6/2005  | Kuo                    |
| D434,500 S    | 11/2000 | Pollock et al.                      | 6,907,879 B2 | 6/2005  | Drinan et al.          |
| 6,159,006 A   | 12/2000 | Cook et al.                         | D509,585 S   | 9/2005  | Kling et al.           |
| 6,164,967 A   | 12/2000 | Sale et al.                         | D513,638 S   | 1/2006  | Pan                    |
|               |         |                                     | D515,215 S   | 2/2006  | Wang                   |
|               |         |                                     | D522,652 S   | 6/2006  | Massey                 |
|               |         |                                     | 7,080,980 B2 | 7/2006  | Klupt                  |
|               |         |                                     | D529,661 S   | 10/2006 | Schmidt                |
|               |         |                                     | D530,010 S   | 10/2006 | Luettgen et al.        |
|               |         |                                     | 7,117,555 B2 | 10/2006 | Fattori et al.         |

(56)

References Cited

U.S. PATENT DOCUMENTS

|              |         |                   |                  |         |                  |                        |
|--------------|---------|-------------------|------------------|---------|------------------|------------------------|
| D532,570 S   | 11/2006 | Vizcarra          | D717,427 S       | 11/2014 | Kim              |                        |
| 7,131,838 B2 | 11/2006 | Suzuki            | D718,855 S       | 12/2014 | Kim et al.       |                        |
| D533,720 S   | 12/2006 | Vu                | D723,387 S       | 3/2015  | Fath             |                        |
| D538,474 S   | 3/2007  | Sheppard et al.   | D725,770 S       | 3/2015  | Kim et al.       |                        |
| D548,334 S   | 8/2007  | Izumi             | D731,640 S       | 6/2015  | Kim et al.       |                        |
| D550,097 S   | 9/2007  | Lepoitevin        | D735,305 S       | 7/2015  | Obara            |                        |
| D553,980 S   | 10/2007 | VerWeyst          | D740,936 S *     | 10/2015 | Kim              | D24/111                |
| 7,276,035 B2 | 10/2007 | Lu                | D745,329 S       | 12/2015 | Ong              |                        |
| 7,314,456 B2 | 1/2008  | Shaw              | D746,975 S       | 1/2016  | Schenck          |                        |
| D565,175 S * | 3/2008  | Boyd              | D747,464 S       | 1/2016  | Taylor           |                        |
| 7,344,510 B1 | 3/2008  | Yande             | D754,330 S       | 4/2016  | Kim et al.       |                        |
| D565,713 S   | 4/2008  | Gao               | D756,122 S       | 5/2016  | Taylor           |                        |
| 7,367,803 B2 | 5/2008  | Egeresi           | D764,051 S *     | 8/2016  | Wang             | D24/111                |
| D574,952 S   | 8/2008  | Boyd et al.       | D766,423 S       | 9/2016  | Kim et al.       |                        |
| D577,198 S   | 9/2008  | Jimenez           | D772,396 S       | 11/2016 | Kim et al.       |                        |
| D577,814 S   | 9/2008  | Seki et al.       | D772,397 S       | 11/2016 | Kim et al.       |                        |
| D581,279 S   | 11/2008 | Oates             | D774,651 S       | 12/2016 | Kaib             |                        |
| 7,455,521 B2 | 11/2008 | Fishburne, Jr.    | D776,253 S       | 1/2017  | Li               |                        |
| 7,469,440 B2 | 12/2008 | Boland et al.     | D782,326 S       | 3/2017  | Fath             |                        |
| D585,132 S   | 1/2009  | Pukall            | D798,440 S *     | 9/2017  | Kim              | D24/111                |
| D588,262 S   | 3/2009  | Pukall            | 2002/0090252 A1  | 7/2002  | Hall et al.      |                        |
| 7,500,584 B2 | 3/2009  | Schutz            | 2002/0108193 A1  | 8/2002  | Gruber           |                        |
| D590,492 S   | 4/2009  | Powell            | 2002/0119415 A1  | 8/2002  | Bailey           |                        |
| D592,748 S   | 5/2009  | Boulton           | 2002/0152565 A1  | 10/2002 | Klupt            |                        |
| D595,136 S   | 6/2009  | Canamasas Puigbo  | 2003/0060743 A1  | 3/2003  | Chang            |                        |
| D601,694 S   | 10/2009 | Rocklin           | 2003/0098249 A1  | 5/2003  | Rollock          |                        |
| D601,697 S   | 10/2009 | Sobeich et al.    | 2003/0204155 A1  | 10/2003 | Egeresi          |                        |
| D603,708 S   | 11/2009 | Handy             | 2003/0213075 A1  | 11/2003 | Hui et al.       |                        |
| D608,430 S   | 1/2010  | Slothower         | 2004/0045107 A1  | 3/2004  | Egeresi          |                        |
| 7,670,141 B2 | 3/2010  | Thomas et al.     | 2004/0076921 A1  | 4/2004  | Gofman et al.    |                        |
| 7,677,888 B1 | 3/2010  | Halm              | 2004/0122377 A1  | 6/2004  | Fischer et al.   |                        |
| D613,550 S   | 4/2010  | Picozza et al.    | 2004/0126730 A1  | 7/2004  | Panagotacos      |                        |
| D621,949 S   | 8/2010  | Seki et al.       | 2004/0209222 A1  | 10/2004 | Snyder           |                        |
| D622,928 S   | 9/2010  | Griebel           | 2005/0049620 A1  | 3/2005  | Chang            |                        |
| D623,376 S   | 9/2010  | Griebel           | 2005/0064371 A1  | 3/2005  | Soukos et al.    |                        |
| D625,406 S   | 10/2010 | Seki et al.       | 2005/0101894 A1  | 5/2005  | Hippensteel      |                        |
| 7,814,585 B1 | 10/2010 | Reich             | 2005/0102773 A1  | 5/2005  | Obermann et al.  |                        |
| D629,884 S   | 12/2010 | Stephens          | 2005/0144745 A1  | 7/2005  | Russell          |                        |
| 7,857,623 B2 | 12/2010 | Grez              | 2005/0177079 A1  | 8/2005  | Pan              |                        |
| 7,862,536 B2 | 1/2011  | Chen et al.       | 2005/0271531 A1  | 12/2005 | Brown et al.     |                        |
| 7,959,597 B2 | 6/2011  | Baker et al.      | 2006/0008373 A1  | 1/2006  | Schutz           |                        |
| D640,872 S   | 7/2011  | Nanda             | 2006/0010624 A1  | 1/2006  | Cleland          |                        |
| D648,539 S   | 11/2011 | Wai               | 2006/0026784 A1  | 2/2006  | Moskovich et al. |                        |
| D651,409 S   | 1/2012  | Papenfu           | 2006/0057539 A1  | 3/2006  | Sodo             |                        |
| D651,805 S   | 1/2012  | Hay               | 2006/0078844 A1  | 4/2006  | Goldman et al.   |                        |
| D653,340 S   | 1/2012  | Goerge et al.     | 2006/0079818 A1  | 4/2006  | Yande            |                        |
| 8,113,832 B2 | 2/2012  | Snyder et al.     | 2007/0082316 A1  | 4/2007  | Zhadanov et al.  |                        |
| D655,380 S   | 3/2012  | Taylor            | 2007/0082317 A1* | 4/2007  | Chuang           | A61C 17/0202<br>433/80 |
| D658,381 S   | 5/2012  | Gebski            | 2007/0113360 A1  | 5/2007  | Tsai             |                        |
| D658,538 S   | 5/2012  | Korzeniowski      | 2007/0202459 A1* | 8/2007  | Boyd             | A61C 17/02<br>433/80   |
| 8,220,726 B2 | 7/2012  | Qiu et al.        | 2007/0203439 A1* | 8/2007  | Boyd             | A61C 1/0084<br>601/162 |
| D666,912 S   | 9/2012  | Kawai             | 2007/0254260 A1  | 11/2007 | Alden            |                        |
| 8,256,979 B2 | 9/2012  | Hilscher et al.   | 2008/0189951 A1  | 8/2008  | Molema et al.    |                        |
| D668,339 S   | 10/2012 | Luoto             | 2008/0213719 A1  | 9/2008  | Giniger et al.   |                        |
| D669,169 S   | 10/2012 | Washington et al. | 2009/0070949 A1  | 3/2009  | Sagel et al.     |                        |
| 8,297,534 B2 | 10/2012 | Li et al.         | 2009/0082706 A1  | 3/2009  | Shaw             |                        |
| D670,373 S   | 11/2012 | Taylor et al.     | 2009/0124945 A1  | 5/2009  | Reich et al.     |                        |
| D670,958 S   | 11/2012 | Picozza et al.    | 2009/0163839 A1  | 6/2009  | Alexander        |                        |
| D671,637 S   | 11/2012 | Gebski et al.     | 2009/0188780 A1  | 7/2009  | Watanabe         |                        |
| D672,018 S   | 12/2012 | Bucher            | 2009/0281454 A1  | 11/2009 | Baker et al.     |                        |
| 8,366,024 B2 | 2/2013  | Leber et al.      | 2010/0010524 A1  | 1/2010  | Barrington       |                        |
| 8,403,577 B2 | 3/2013  | Khoshnevis        | 2010/0015566 A1  | 1/2010  | Shaw             |                        |
| 8,403,665 B2 | 3/2013  | Thomas et al.     | 2010/0190132 A1  | 7/2010  | Taylor et al.    |                        |
| 8,408,483 B2 | 4/2013  | Boyd et al.       | 2010/0239998 A1* | 9/2010  | Snyder           | A61C 17/02<br>433/29   |
| D686,311 S   | 7/2013  | Mori              | 2010/0261134 A1  | 10/2010 | Boyd et al.      |                        |
| D694,378 S   | 11/2013 | Bates             | 2010/0261137 A1  | 10/2010 | Boyd et al.      |                        |
| D694,398 S   | 11/2013 | Taylor            | 2010/0326536 A1  | 12/2010 | Nan              |                        |
| D700,343 S   | 2/2014  | Liu               | 2010/0330527 A1  | 12/2010 | Boyd et al.      |                        |
| D702,819 S   | 4/2014  | Garland           | 2011/0027749 A1  | 2/2011  | Syed             |                        |
| D702,821 S   | 4/2014  | Garland           | 2011/0076090 A1  | 3/2011  | Wu et al.        |                        |
| D707,350 S   | 6/2014  | Woodard           | 2011/0097683 A1  | 4/2011  | Boyd et al.      |                        |
| D709,183 S   | 7/2014  | Kemlein           | 2011/0139826 A1  | 6/2011  | Hair et al.      |                        |
| D714,929 S   | 10/2014 | Kim et al.        | 2011/0144588 A1  | 6/2011  | Taylor et al.    |                        |
| D714,930 S   | 10/2014 | Kim et al.        | 2011/0184341 A1  | 7/2011  | Baker et al.     |                        |
| D717,412 S   | 11/2014 | Bucher            | 2011/0307039 A1  | 12/2011 | Cornell          |                        |

(56)

References Cited

U.S. PATENT DOCUMENTS

2012/0021374 A1\* 1/2012 Cacka ..... A61C 17/02  
433/82  
2012/0045730 A1\* 2/2012 Sayder ..... A61C 17/02  
433/29  
2012/0064480 A1 3/2012 Hegemann  
2012/0077145 A1 3/2012 Tsurukawa  
2012/0141952 A1 6/2012 Snyder et al.  
2012/0179118 A1 7/2012 Hair  
2012/0189976 A1 7/2012 McDonough et al.  
2012/0266396 A1 10/2012 Leung  
2012/0277677 A1 11/2012 Taylor et al.  
2012/0277678 A1 11/2012 Taylor et al.  
2012/0279002 A1 11/2012 Sokol et al.  
2012/0295220 A1 11/2012 Thomas et al.  
2013/0295520 A1 11/2013 Hsieh  
2014/0106296 A1 4/2014 Woodard et al.  
2014/0193774 A1 7/2014 Snyder et al.  
2014/0259474 A1 9/2014 Sokol et al.  
2014/0272769 A1 9/2014 Luetngen et al.  
2014/0272782 A1\* 9/2014 Luetngen ..... A61H 13/005  
433/80  
2014/0352088 A1 12/2014 Wu  
2015/0004559 A1 1/2015 Luetngen et al.  
2015/0147717 A1\* 5/2015 Taylor ..... A61C 17/0205  
433/80  
2015/0173850 A1\* 6/2015 Garrigues ..... A61C 1/0092  
433/80  
2015/0182319 A1\* 7/2015 Wagner ..... A61C 17/0202  
132/308  
2016/0100921 A1 4/2016 Ungar  
2016/0151133 A1 6/2016 Luetngen et al.

FOREIGN PATENT DOCUMENTS

CN 204049908 12/2014  
DE 1466963 5/1969  
DE 2019003 11/1971  
DE 2409752 9/1975  
DE 2545936 4/1977  
DE 2714876 10/1978  
DE 2910982 2/1980  
EP 0023672 7/1980  
EP 0515983 2/1992  
FR 2556954 6/1985  
FR 2654627 5/1991  
GB 838564 6/1960  
GB 1182031 2/1970  
GB 2018605 10/1979  
JP 2-134150 5/1990  
JP 2009-39455 2/2009  
KR 20120126265 11/2012  
WO WO95/016404 6/1995  
WO WO01/10327 2/2001  
WO WO04/021958 3/2004  
WO WO04/039205 5/2004  
WO WO2004/060259 7/2004  
WO WO2004/062518 7/2004  
WO WO2008/070730 6/2008  
WO WO2008/157585 12/2008  
WO WO2013/124691 8/2013

OTHER PUBLICATIONS

The Right Tool, Electron Fusion Devices, Inc., 2 pages, at least as early as Feb. 1991.  
Japanese Packaging, 2 pages, at least as early as Dec. 2002.  
Japanese Instruction Brochure, 20 pages, at least as early as Dec. 2002.  
Brochure: Woog International, "You have a 98% chance of getting gum disease. Unless you read this.", Lancaster, Pennsylvania, 5 pages, Feb. 1987.  
Brochure: Woog International, "We put the control of home dental care back into the hands of the professional", Lancaster, Pennsylvania, 2 pages, Feb. 1987.  
Brochure: Woog International, "Products at a Glance: Home Dental Care System" Woog Orajet, 3 pages, at least as early as Dec. 18, 1998.  
Website: [http://www.just4teeth.com/product/Panasonic/Panasonic\\_Portable\\_Irrigator.htm](http://www.just4teeth.com/product/Panasonic/Panasonic_Portable_Irrigator.htm), 2 pages, at least as early as Jun. 20, 2003.  
Website: [http://www.videodirectstore.com/store/merchant.mv?Screen=PROD&Product\\_Code=EW1](http://www.videodirectstore.com/store/merchant.mv?Screen=PROD&Product_Code=EW1). . . ", 2 pages, at least as early as Jun. 20, 2003.  
Website: <http://products.consumerguide.com/cp/family/review/index.cfm/id/18742>, 2 pages, at least as early as Jun. 20, 2003.  
Website: <http://www.racekarteng.com/images/walbroparts.gif> and <http://www.muller.net/mullermachine/docs/walbro1.html>, 4 pages, at least as early as Jun. 20, 2003.  
European Search Report, EPO Application No. 07250799.9, dated Jul. 5, 2007.  
European Search Report, EPO Application No. 07252693.2, 14 pages, dated Apr. 28, 2008.  
European Examination Report, EPO Application No. 07250799.9, dated Feb. 5, 2009.  
International Search Report, Application No. PCT/US2010/028180, 2 pages, dated May 18, 2010.  
International Search Report, PCT/US2010/060800, 2 pages, dated Feb. 11, 2011.  
International Search Report, PCT/US2011/052795, 10 pages, dated Jan. 17, 2012.  
Waterpik SinuSense Website: <http://www.insightsbyapril.com/2012/03/waterpik-natural-remedy-for-sinus.html>, 8 pages, retrieved on May 31, 2012.  
Website: <https://www.waterpik.com/about-us/>, 3 pages.  
Waterpik WP350W Oral Irrigator. Dentist.net. Copyright date 2013. Date accessed: Mar. 30, 2017, 2 pages <<http://www.dentalhoo.com/waterpik-wp350.asp>>.  
iPik Portable Oral Irrigator. AliExpress. Date reviewed: Oct. 5, 2016. <[https://www.aliexpress.com/...e-Oral-Care-Product-Nasal-Irrigator-Tooth-Flosser-Water/1525541997.html?aff\\_platform=aaf&cpt=1490913714609&sk=yfAeyJa&aff\\_trace\\_key=c5a300c4f02e46d08c042f5292e1762f-1490913714609-07517-yfAeyJa](https://www.aliexpress.com/...e-Oral-Care-Product-Nasal-Irrigator-Tooth-Flosser-Water/1525541997.html?aff_platform=aaf&cpt=1490913714609&sk=yfAeyJa&aff_trace_key=c5a300c4f02e46d08c042f5292e1762f-1490913714609-07517-yfAeyJa)>, 18 pages.  
Brite Leafs Professional Portable 2-in-1 Nasal Sinus & Oral Irrigator. Brite Leafs. Copyright date 2012, <<http://www.briteleafs.com/product6.html>>, 1 page.  
AliExpress. Date reviewed: Jan. 12, 2017. <<https://www.aliexpress.com/item/Cordless-Water-Floss-Portable-Oral-Irrigator-Dental-Water-Flosser-Waterpic-Whatpick-Dental-Water-Pic-Whater-Pick/32769416341.html?spm=2114.40010308.4.75.Owuzfj>>.

\* cited by examiner

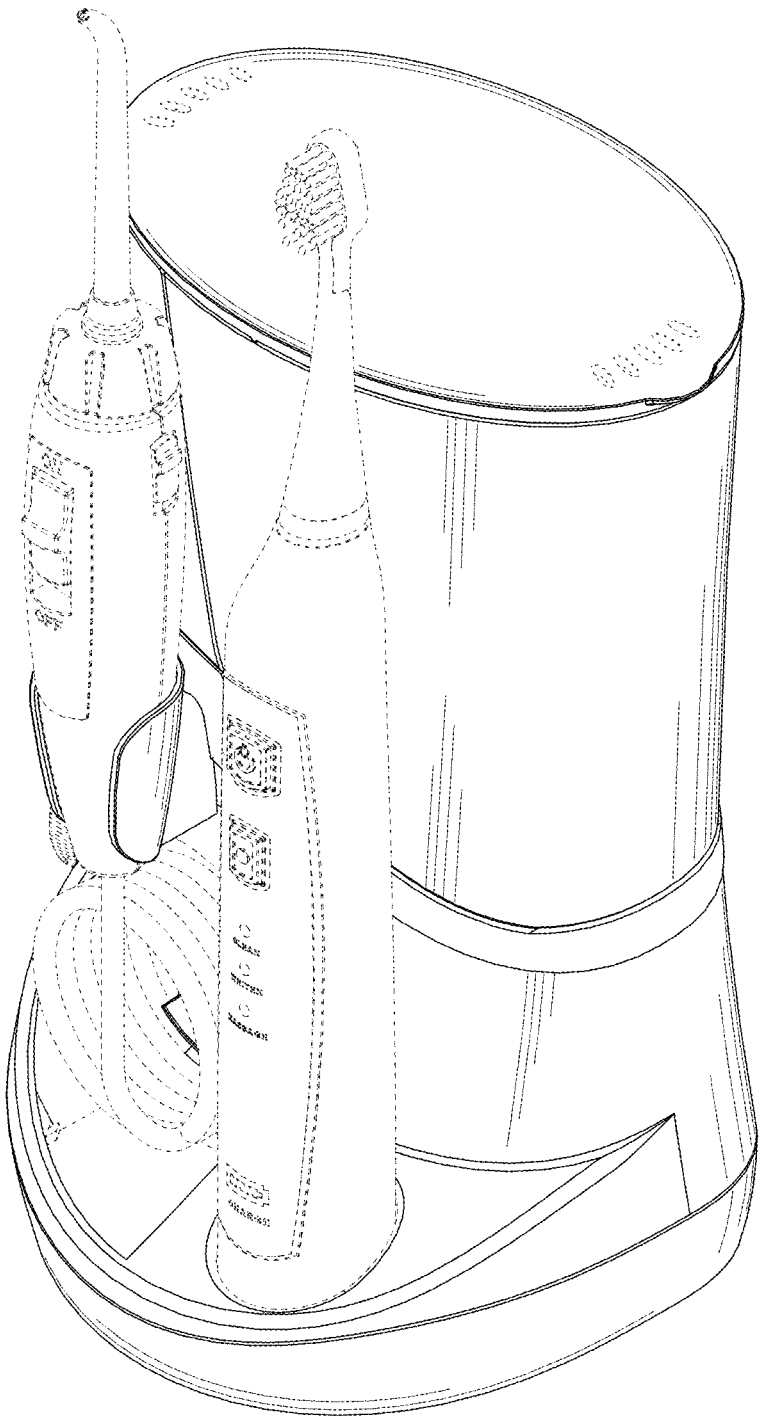


FIG. 1

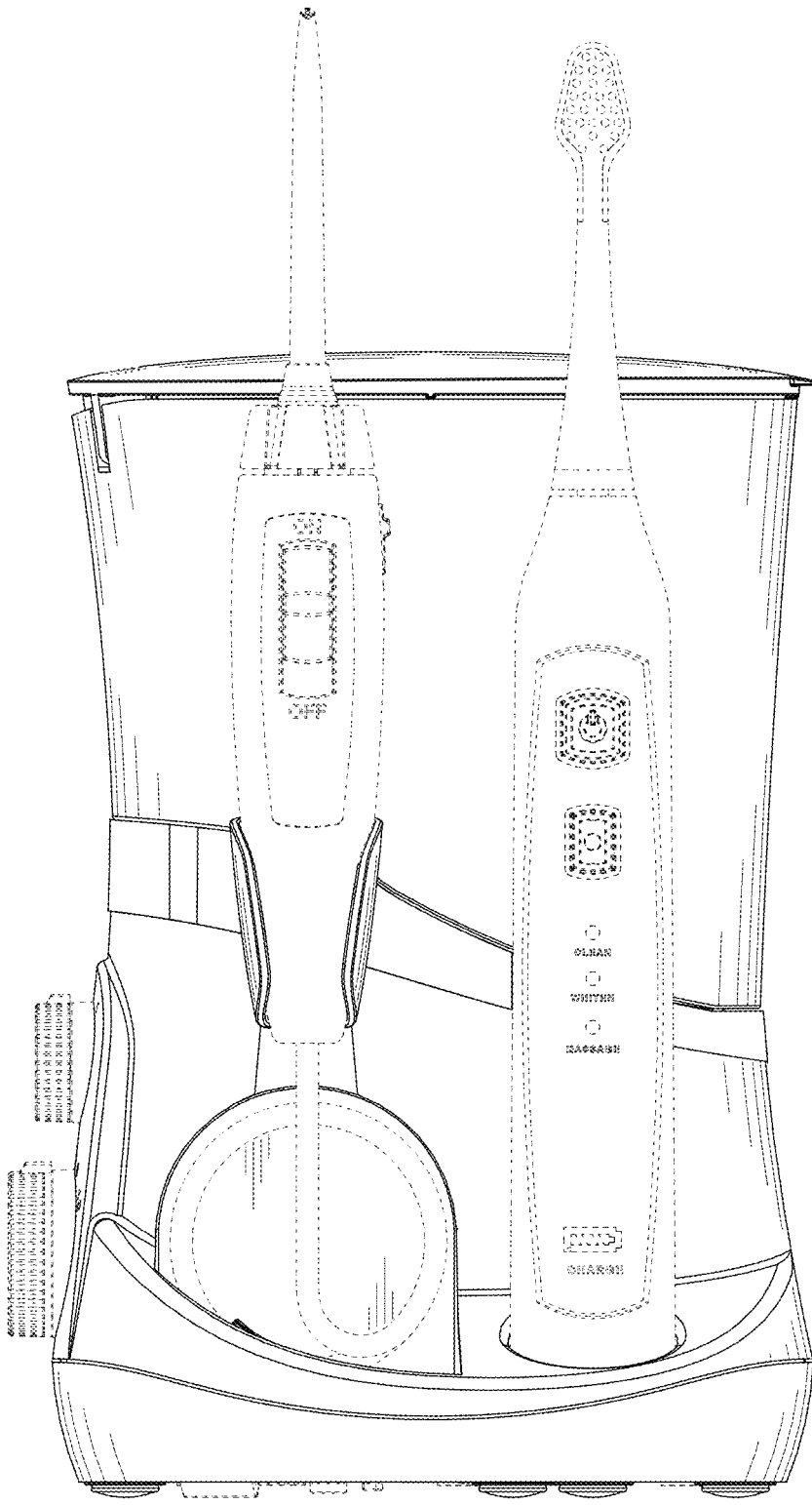


FIG. 2



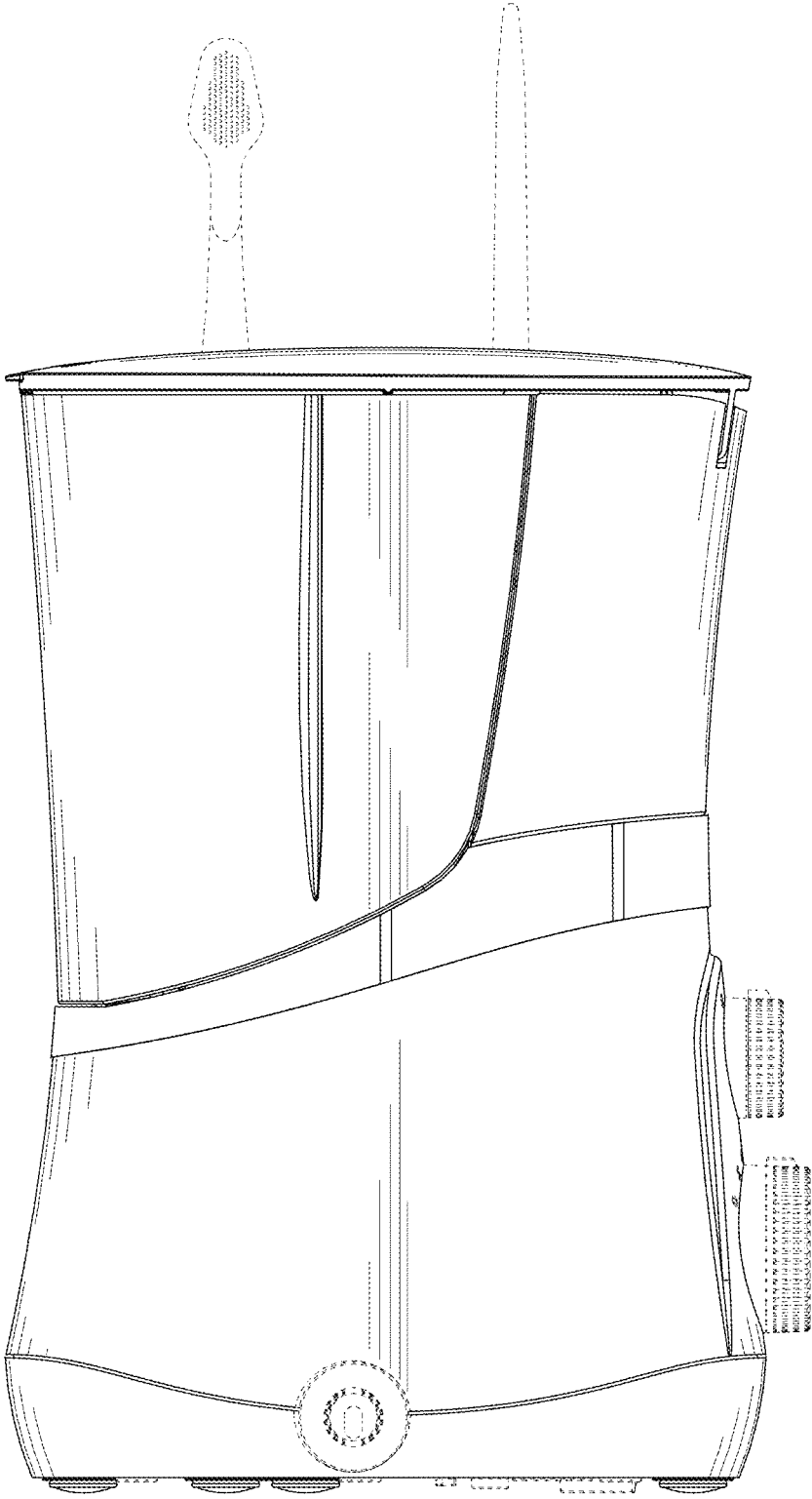


FIG. 3

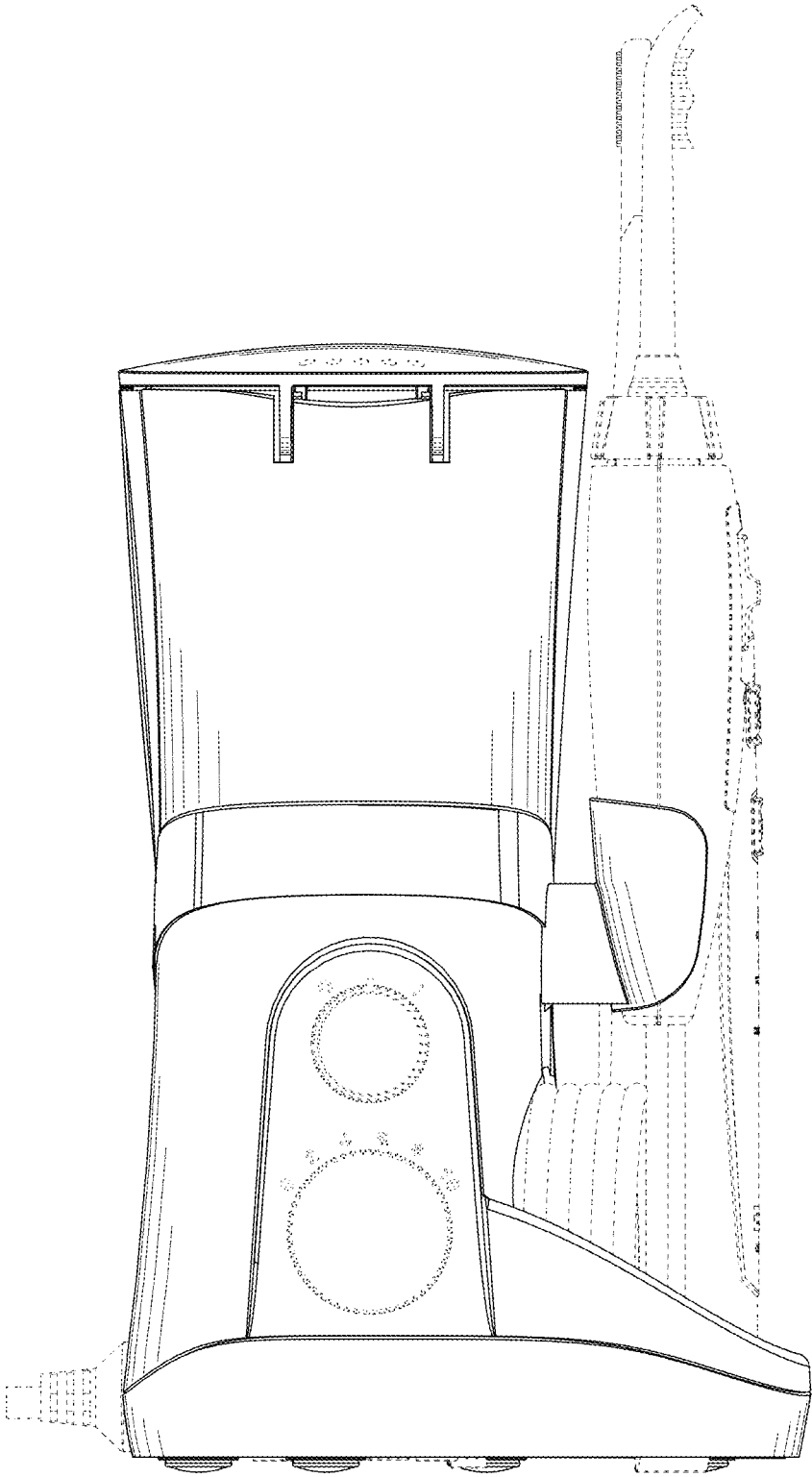


FIG. 4

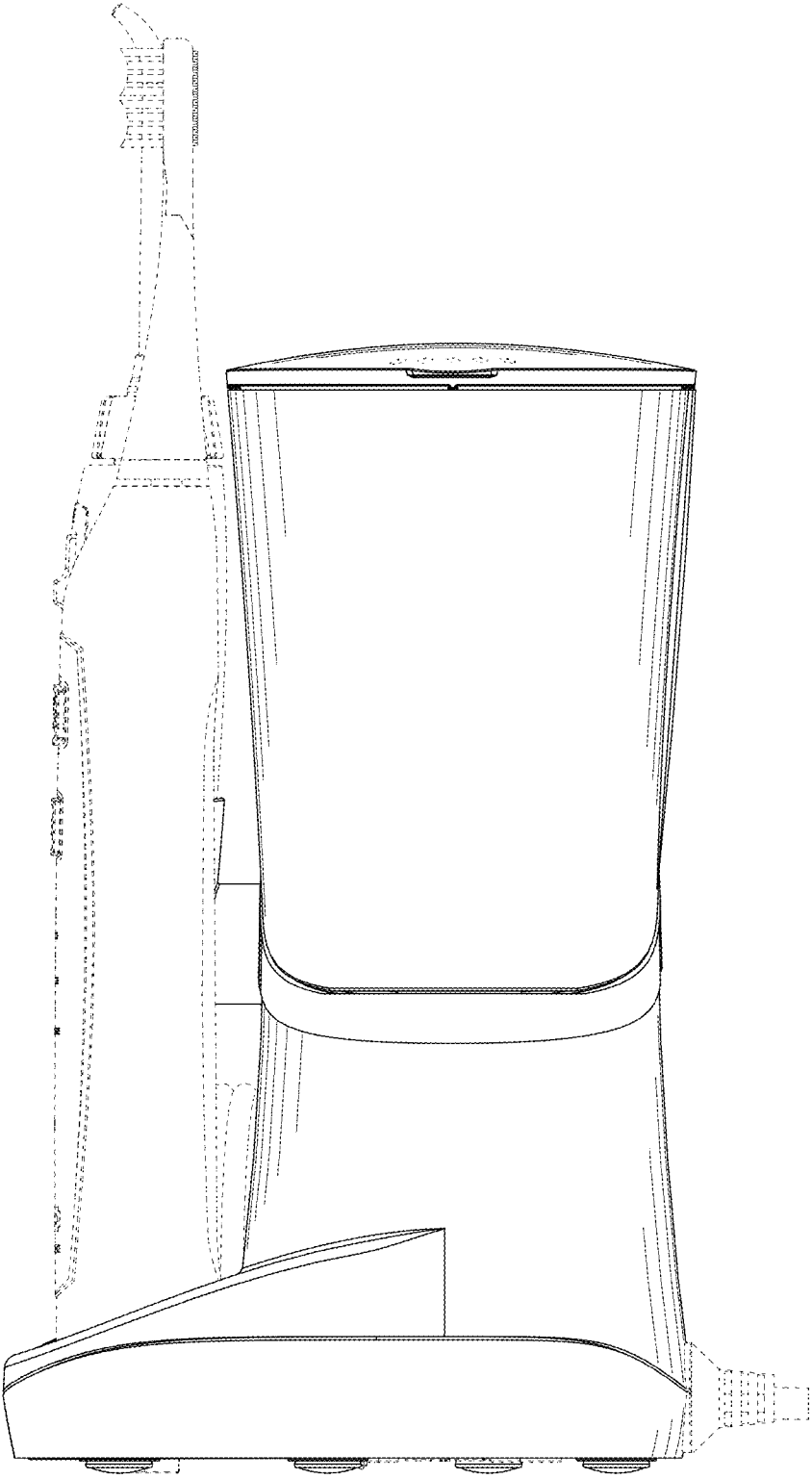


FIG. 5

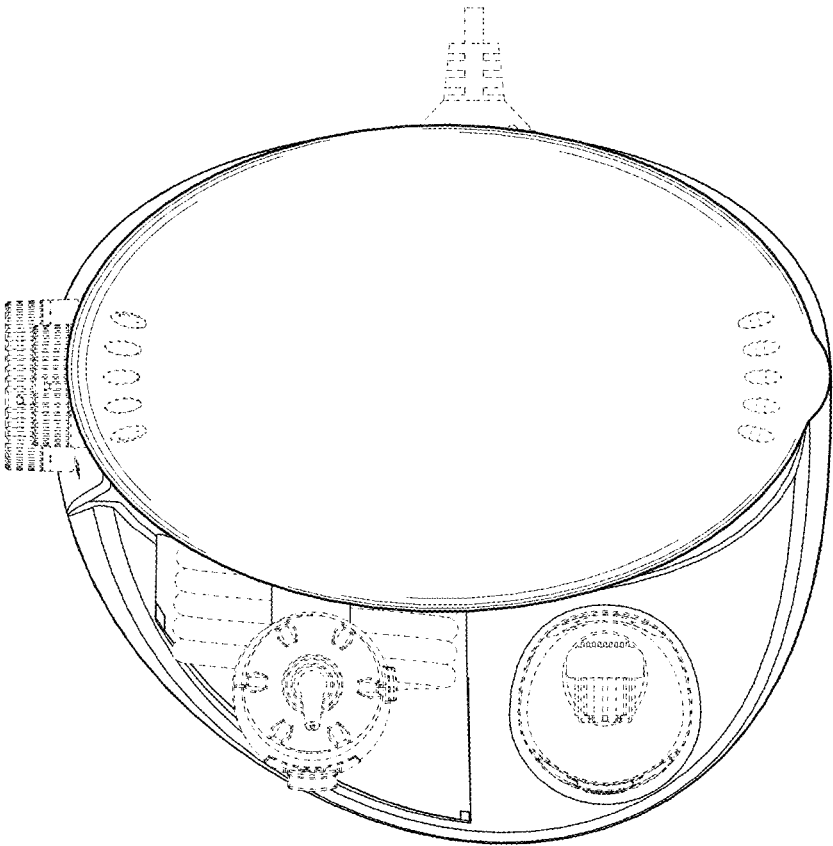


FIG. 6

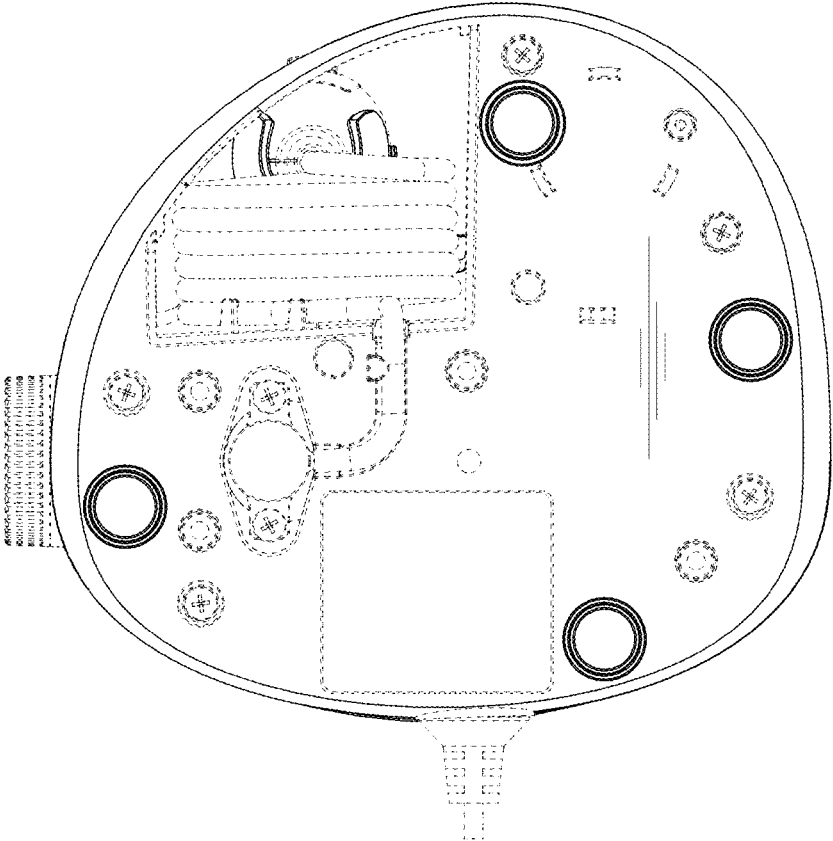


FIG. 7