



US00D644731S

(12) **United States Design Patent**
Fangrow, Jr.

(10) **Patent No.:** **US D644,731 S**
(45) **Date of Patent:** **** Sep. 6, 2011**

(54) **MEDICAL CONNECTOR**
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(US)

3,334,860 A 8/1967 Bolton, Jr.
3,352,531 A 11/1967 Kilmarx
3,354,881 A 11/1967 Bloch
3,385,301 A 5/1968 Harautuneian
3,502,097 A 3/1970 Muller

(Continued)

(**) Term: **14 Years**

CA 1105959 7/1981

(Continued)

(21) Appl. No.: **29/376,647**

OTHER PUBLICATIONS

(22) Filed: **Oct. 8, 2010**

Capless Backcheck Valve, Sep. 3, 1993.

(Continued)

Related U.S. Application Data

(63) Continuation of application No. 12/730,074, filed on
Mar. 23, 2010.

(51) **LOC (9) Cl.** **24-02**

(52) **U.S. Cl.** **D24/129**

(58) **Field of Classification Search** D24/127-129;
604/905, 533, 535, 167.03, 167.04, 247-248,
604/167.06, 249, 403, 256, 5
See application file for complete search history.

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(57) **CLAIM**

The ornamental design for a medical connector, as shown and
described.

(56) **References Cited**

DESCRIPTION

U.S. PATENT DOCUMENTS

274,447 A 3/1883 Kennish
1,578,517 A 3/1926 Hein
1,923,501 A 8/1933 Perry
2,210,098 A 8/1940 Ravenscroft
2,289,677 A 7/1942 Perelson
2,577,780 A 12/1951 Lockhart
2,756,282 A 7/1956 Deane
2,756,740 A 7/1956 Deane
2,809,665 A 10/1957 Crowe
2,847,995 A 8/1958 Adams
2,999,499 A 9/1961 Willet
3,134,380 A 5/1964 Armao
3,135,261 A 6/1964 Carroll
3,171,412 A 3/1965 Willet
3,176,021 A 3/1965 Volungis et al.
3,191,655 A 6/1965 McCord
3,193,154 A 7/1965 Bross

FIG. 1 is a top perspective view of a medical connector
embodying my new design.

FIG. 2 is a bottom perspective view of the medical connector
of FIG. 1.

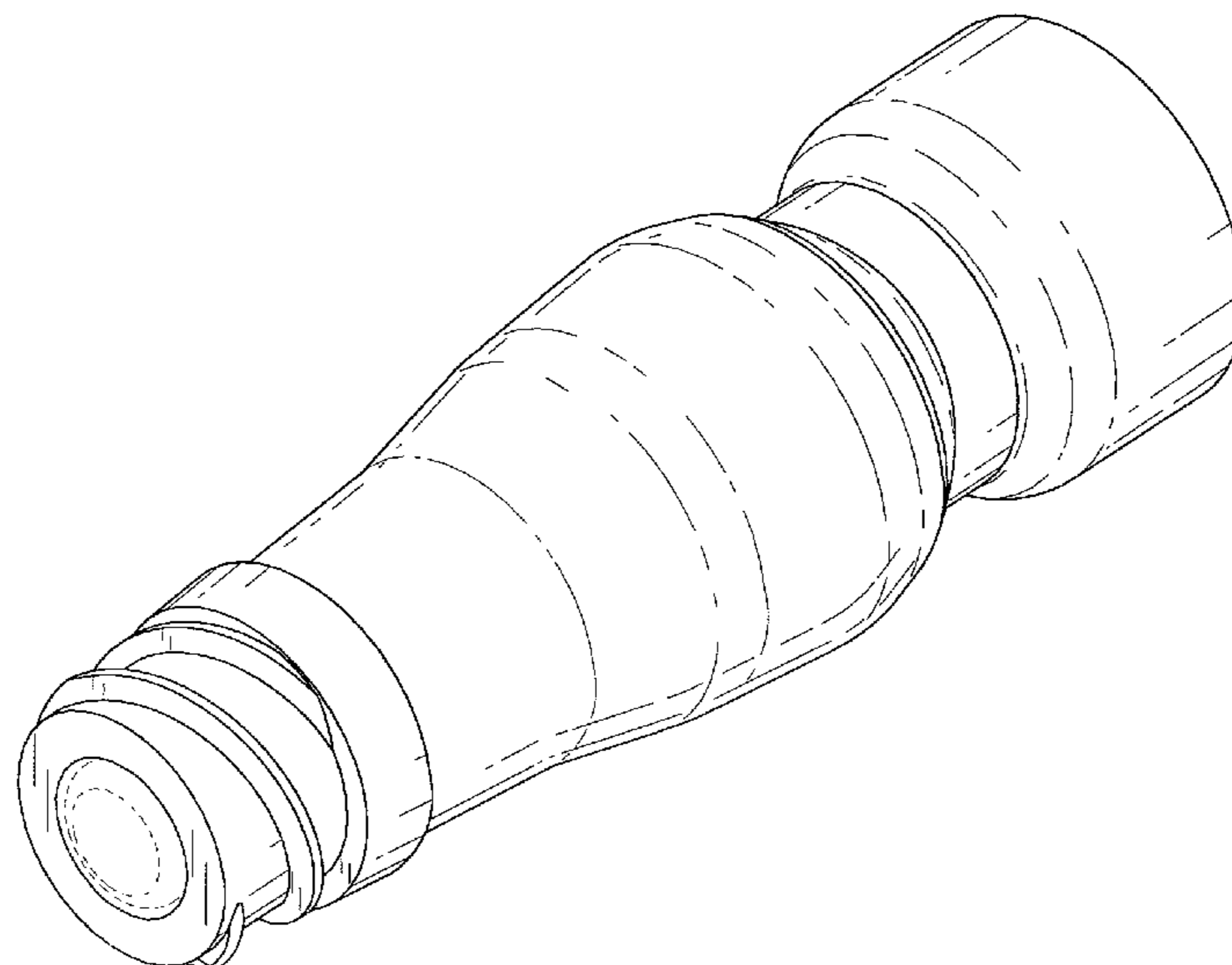
FIG. 3 is a right side view of the medical connector of FIG. 1,
the left side view being a mirror image thereof.

FIG. 4 is a top plan view of the medical connector of FIG. 1;
and,

FIG. 5 is a bottom plan view of the medical connector of FIG.
1.

The broken lines shown in the Figures are included for the
purpose of illustrating portions of the article and form no part
of the claimed design.

1 Claim, 3 Drawing Sheets



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U.S. PATENT DOCUMENTS					
3,534,771	A	10/1970 Eyerdam et al.	4,607,868	A	8/1986 Harvey et al.
3,570,484	A	3/1971 Steer et al.	4,610,469	A	9/1986 Wolff-Mooij
3,630,199	A	12/1971 Gangarosa	4,617,012	A	10/1986 Vaillancourt
3,648,684	A	3/1972 Barnwell et al.	4,619,640	A	10/1986 Poholsky et al.
3,659,602	A	5/1972 Cloyd	4,623,068	A	11/1986 Brown et al.
3,717,174	A	2/1973 Dewall	4,645,494	A	2/1987 Lee et al.
3,726,282	A	4/1973 Patel	4,666,429	A	5/1987 Stone
3,788,519	A	1/1974 Mengel	4,673,400	A	6/1987 Martin
3,830,241	A	8/1974 Dye et al.	4,676,228	A	6/1987 Krasner et al.
3,831,629	A	8/1974 Mackal et al.	4,683,916	A	8/1987 Raines
3,852,385	A	12/1974 Huggins	4,706,487	A	11/1987 Bandou et al.
3,861,388	A	1/1975 Vaughn	4,710,168	A	12/1987 Schwab et al.
3,889,675	A	6/1975 Stewart	4,725,267	A	2/1988 Vaillancourt
3,896,853	A	7/1975 Bernhard	4,730,635	A	3/1988 Linden
3,965,910	A	6/1976 Fischer	4,752,292	A	6/1988 Lopez et al.
3,974,832	A	8/1976 Kruck	D296,592	S *	7/1988 Wellenstam D24/129
3,976,063	A	8/1976 Henneman et al.	4,759,756	A	7/1988 Forman et al.
3,976,073	A	8/1976 Quick et al.	4,775,369	A	10/1988 Schwartz
3,977,403	A	8/1976 Patel	4,778,447	A	10/1988 Velde et al.
3,986,508	A	10/1976 Barrington	4,778,453	A	10/1988 Lopez
3,993,063	A	11/1976 Larrabee	4,781,702	A	11/1988 Herrli
3,994,293	A	11/1976 Ferro	4,804,015	A	2/1989 Albinsson
4,005,710	A	2/1977 Zeddies et al.	D300,177	S *	3/1989 Bellotti et al. D24/129
4,019,512	A	4/1977 Tenczar	4,810,241	A	3/1989 Rogers
4,022,205	A	5/1977 Tenczar	4,813,938	A	3/1989 Raulerson
4,040,420	A	8/1977 Speer	4,819,684	A	4/1989 Zaugg et al.
4,076,285	A	2/1978 Martinez	4,832,214	A	5/1989 Schrader et al.
4,079,738	A	3/1978 Dunn et al.	4,834,664	A	5/1989 Lin
4,080,965	A	3/1978 Phillips	4,834,716	A	5/1989 Ogle, II
4,121,585	A	10/1978 Becker, Jr.	D303,013	S *	8/1989 Konopka D24/129
4,128,098	A	12/1978 Bloom et al.	4,871,356	A	10/1989 Haindl et al.
4,133,441	A	1/1979 Mittleman et al.	4,874,377	A	10/1989 Newgard et al.
4,143,853	A	3/1979 Abramson	4,878,897	A	11/1989 Katzin
4,149,535	A	4/1979 Volder	4,880,414	A	11/1989 Whipple
4,161,949	A	7/1979 Thanawalla	4,889,527	A	12/1989 Herrli
4,186,775	A	2/1980 Muroi	4,915,687	A	4/1990 Sivert
4,187,846	A	2/1980 Lolachi et al.	4,917,668	A	4/1990 Haindl
4,191,183	A	3/1980 Mendelson	4,919,167	A	4/1990 Maska
4,198,983	A	4/1980 Becker et al.	4,928,212	A	5/1990 Benavides
4,200,096	A	4/1980 Charvin	4,943,896	A	7/1990 Johnson
4,214,779	A	7/1980 Losell	4,946,445	A	8/1990 Lynn
4,219,912	A	9/1980 Adams	4,963,133	A	10/1990 Whipple
4,243,034	A	1/1981 Brandt	4,964,855	A	10/1990 Todd et al.
4,257,416	A	3/1981 Prager	4,966,199	A	10/1990 Ruschke
D259,278	S *	5/1981 McCaw et al. D24/129	4,969,883	A	11/1990 Gilbert et al.
4,294,249	A	10/1981 Sheehan et al.	D314,050	S *	1/1991 Sone D24/129
4,294,250	A *	10/1981 Dennehey 604/403	4,985,399	A	1/1991 Matsuda et al.
4,296,949	A	10/1981 Muetterties et al.	4,987,181	A	1/1991 Bichon et al.
4,306,705	A	12/1981 Svensson	4,991,413	A	2/1991 Arnaldo
4,324,239	A	4/1982 Gordon et al.	4,991,629	A	2/1991 Ernesto et al.
4,328,802	A	5/1982 Curley et al.	4,998,713	A	3/1991 Vaillancourt
4,329,987	A	5/1982 Rogers et al.	4,998,927	A	3/1991 Vaillancourt
4,334,551	A	6/1982 Pfister	5,006,114	A	4/1991 Rogerts et al.
4,338,933	A	7/1982 Bayard et al.	5,009,490	A	4/1991 Kouno et al.
4,342,315	A	8/1982 Jackson	5,018,532	A	5/1991 Ethridge, III
4,346,703	A	8/1982 Dennehey et al.	5,024,657	A	6/1991 Needham et al.
4,362,156	A	12/1982 Feller, Jr. et al.	5,031,675	A	7/1991 Lindgren
4,387,879	A	6/1983 Tauschinski	5,041,087	A	8/1991 Loo et al.
RE31,315	E	7/1983 Jenkins et al.	5,046,456	A	9/1991 Heyman et al.
4,392,851	A	7/1983 Elias	5,049,128	A	9/1991 Duquette
4,405,163	A	9/1983 Voges et al.	D321,250	S	10/1991 Jepson et al.
4,405,312	A	9/1983 Gross et al.	D321,251	S	10/1991 Jepson et al.
4,411,662	A	10/1983 Pearson	5,061,253	A	10/1991 Yoshida
4,417,890	A	11/1983 Dennehey et al.	5,064,416	A	11/1991 Newgard
4,421,296	A	12/1983 Stephens	5,065,783	A	11/1991 Ogle, II
4,429,856	A	2/1984 Jackson	5,071,411	A	12/1991 Hillstead
4,432,759	A	2/1984 Gross et al.	5,098,385	A	3/1992 Walsh
4,432,765	A	2/1984 Oscarsson	5,098,405	A	3/1992 Peterson et al.
4,439,188	A	3/1984 Dennehey et al.	5,098,406	A	3/1992 Sawyer
4,439,193	A	3/1984 Larkin	5,100,394	A	3/1992 Dudar et al.
4,449,693	A	5/1984 Gereg	5,108,380	A	4/1992 Heritze et al.
4,457,749	A	7/1984 Bellotti et al.	5,114,408	A	5/1992 Fleischhaker et al.
4,483,368	A	11/1984 Panthofer	5,116,361	A	5/1992 Kim et al.
4,508,367	A	4/1985 Oreopoulos et al.	5,122,123	A	6/1992 Vaillancourt
4,511,359	A	4/1985 Vaillancourt	5,125,915	A	6/1992 Berry et al.
4,512,766	A	4/1985 Vaillancourt	5,135,489	A	8/1992 Jepson et al.
4,564,054	A	1/1986 Gustavsson	5,137,524	A	8/1992 Lynn et al.
4,592,356	A	6/1986 Gutierrez	5,147,333	A	9/1992 Raines
			5,154,703	A	10/1992 Bonaldo

US D644,731 S

5,158,554 A	10/1992	Jepson et al.	5,549,651 A	8/1996	Lynn
5,163,922 A	11/1992	McElveen et al.	5,555,908 A	9/1996	Edwards et al.
5,167,238 A	12/1992	Newman	5,556,388 A	9/1996	Johlin, Jr.
5,167,636 A	12/1992	Clement	5,562,632 A	10/1996	Davila et al.
5,171,234 A	12/1992	Jepson et al.	5,569,235 A	10/1996	Ross et al.
5,180,761 A	1/1993	Shiao	5,573,516 A	11/1996	Tyner
5,188,620 A	2/1993	Jepson et al.	5,577,706 A	11/1996	King
5,190,067 A	3/1993	Paradis et al.	5,578,059 A	11/1996	Patzer
5,199,947 A	4/1993	Lopez et al.	5,597,536 A	1/1997	Mayer
5,201,717 A	4/1993	Wyatt et al.	5,603,706 A	2/1997	Wyatt et al.
5,201,722 A	4/1993	Moorehead et al.	5,609,584 A	3/1997	Gettig et al.
5,203,775 A	4/1993	Frank et al.	5,616,129 A	4/1997	Mayer
5,211,638 A	5/1993	Dudar et al.	5,616,130 A	4/1997	Mayer
5,215,538 A	6/1993	Larkin	5,617,897 A	4/1997	Myers
5,221,271 A	6/1993	Nicholson et al.	5,620,424 A	4/1997	Abramson
5,224,515 A	7/1993	Foster et al.	5,620,434 A	4/1997	Brony
5,242,393 A	9/1993	Brimhall et al.	5,624,414 A	4/1997	Boettger
5,242,423 A	9/1993	Goodsir et al.	5,632,735 A	5/1997	Wyatt et al.
5,242,425 A	9/1993	White et al.	5,639,810 A	6/1997	Smith, III et al.
5,242,432 A	9/1993	DeFrank	5,660,205 A	8/1997	Epstein
5,251,873 A	10/1993	Atkinson et al.	5,669,891 A	9/1997	Vaillancourt
5,253,842 A	10/1993	Huebscher et al.	5,674,206 A	10/1997	Allton et al.
5,255,676 A	10/1993	Russo	5,676,346 A	10/1997	Leinsing
5,256,155 A	10/1993	Yerlikaya et al.	5,685,866 A	11/1997	Lopez
5,267,966 A	12/1993	Paul	5,690,865 A	11/1997	Kindt-Larsen et al.
5,269,771 A	12/1993	Thomas et al.	5,694,686 A	12/1997	Lopez
5,273,533 A	12/1993	Bonaldo	5,695,466 A	12/1997	Lopez et al.
5,280,876 A	1/1994	Atkins	5,699,821 A	12/1997	Paradis
5,284,475 A	2/1994	Mackal	5,700,248 A	12/1997	Lopez
5,290,254 A	3/1994	Vaillancourt	5,728,751 A	3/1998	Patnaik
5,292,308 A	3/1994	Ryan	5,730,418 A	3/1998	Feith et al.
5,293,902 A	3/1994	Lapierie	5,738,663 A	4/1998	Lopez
5,295,657 A	3/1994	Atkinson	5,749,861 A	5/1998	Guala et al.
5,295,658 A	3/1994	Atkinson et al.	5,769,825 A	6/1998	Lynn
5,301,686 A	4/1994	Newman	5,775,671 A	7/1998	Cote, Sr.
5,306,265 A	4/1994	Ragazzi	5,776,113 A	7/1998	Daugherty et al.
5,312,083 A	5/1994	Ekman	5,782,816 A	7/1998	Werschmidt et al.
5,312,377 A	5/1994	Dalhon	5,788,215 A	8/1998	Ryan
5,322,518 A	6/1994	Schneider	5,797,897 A	8/1998	Jepson et al.
5,324,270 A	6/1994	Kayon et al.	5,806,551 A	9/1998	Meloul et al.
5,342,316 A	8/1994	Wallace	5,806,831 A	9/1998	Paradis
5,344,414 A	9/1994	Lopez et al.	5,807,348 A	9/1998	Zinger et al.
5,348,542 A	9/1994	Ellis	5,820,601 A	10/1998	Mayer
5,353,837 A	10/1994	Faust	5,833,213 A	11/1998	Ryan
5,356,396 A	10/1994	Wyatt et al.	5,836,923 A	11/1998	Mayer
5,360,413 A	11/1994	Leason et al.	5,839,715 A	11/1998	Leinsing
5,380,306 A	1/1995	Brinon	5,846,233 A	12/1998	Lilley et al.
5,389,086 A	2/1995	Attermeier et al.	5,865,807 A	2/1999	Blake, III
5,395,348 A	3/1995	Ryan	5,873,862 A	2/1999	Lopez
5,398,530 A	3/1995	Derman	5,882,348 A	3/1999	Winterton et al.
5,401,245 A	3/1995	Haining	5,899,888 A	5/1999	Jepson et al.
5,402,826 A	4/1995	Molnar et al.	5,911,710 A	6/1999	Barry et al.
5,402,982 A	4/1995	Atkinson et al.	5,928,204 A	7/1999	Lopez
5,407,437 A	4/1995	Heimreid	5,947,954 A	9/1999	Bonaldo
5,409,471 A	4/1995	Atkinson et al.	5,954,313 A	9/1999	Ryan
5,411,483 A	5/1995	Loomas et al.	5,957,898 A	9/1999	Jepson et al.
5,411,499 A	5/1995	Dudar et al.	5,967,490 A	10/1999	Pike
5,417,673 A	5/1995	Gordon	5,979,868 A	11/1999	Wu et al.
5,439,451 A	8/1995	Collinson et al.	5,984,902 A	11/1999	Mooreead
5,439,452 A	8/1995	McCarty	6,009,902 A	1/2000	Troiani et al.
5,441,487 A	8/1995	Vedder	6,029,946 A	2/2000	Doyle
5,442,941 A	8/1995	Kahonen et al.	6,036,171 A	3/2000	Weinheimer et al.
5,456,676 A	10/1995	Nelson et al.	6,039,302 A	3/2000	Cote, Sr. et al.
5,470,319 A	11/1995	Mayer	6,048,335 A	4/2000	Mayer
5,474,544 A	12/1995	Lynn	6,050,978 A	4/2000	Orr et al.
5,480,393 A	1/1996	Bommarito	6,063,062 A	5/2000	Paradis
5,487,731 A	1/1996	Denton	6,079,432 A	6/2000	Paradis
5,501,426 A	3/1996	Atkinson et al.	6,089,541 A	7/2000	Weinheimer et al.
5,509,433 A	4/1996	Paradis	6,113,068 A	9/2000	Ryan
5,514,116 A	5/1996	Vaillancourt et al.	6,116,571 A	9/2000	Hettinger
5,520,665 A	5/1996	Fleetwood	6,117,114 A	9/2000	Paradis
5,522,804 A	6/1996	Lynn	6,142,446 A	11/2000	Leinsing
5,533,708 A	7/1996	Atkinson et al.	6,152,900 A	11/2000	Mayer
5,533,996 A	7/1996	Murphey et al.	6,162,206 A	12/2000	Bindokas et al.
5,535,771 A	7/1996	Purdy et al.	6,162,251 A	12/2000	Kredovski
5,535,785 A	7/1996	Werge et al.	6,170,800 B1	1/2001	Meloul et al.
5,540,661 A	7/1996	Tomisaka et al.	6,171,287 B1	1/2001	Lynn et al.
5,549,566 A	8/1996	Elias et al.	6,177,037 B1	1/2001	Mayer
5,549,577 A	8/1996	Siegel et al.	6,183,448 B1	2/2001	Mayer

US D644,731 S

6,189,859	B1	2/2001	Rohrbough et al.	7,591,449	B2	9/2009	Raines et al.
6,206,861	B1	3/2001	Mayer	7,601,141	B2	10/2009	Dikeman et al.
6,210,624	B1	4/2001	Mayer	7,615,035	B2	11/2009	Peppel
6,213,996	B1	4/2001	Jepson et al.	7,628,774	B2	12/2009	Fangrow et al.
6,228,065	B1	5/2001	Lynn	7,666,170	B2*	2/2010	Guala 604/249
6,228,069	B1	5/2001	Barth et al.	7,753,338	B2	7/2010	Desecki
6,245,048	B1	6/2001	Fangrow, Jr. et al.	7,753,892	B2	7/2010	Newton et al.
6,261,282	B1	7/2001	Jepson et al.	7,758,566	B2	7/2010	Simpson et al.
6,261,630	B1	7/2001	Nazarova et al.	7,784,766	B2*	8/2010	Guala 251/149.6
6,279,783	B1	8/2001	Brown et al.	7,815,168	B2	10/2010	Vangsness et al.
6,290,206	B1	9/2001	Doyle	7,857,285	B2	12/2010	Lee et al.
6,299,131	B1	10/2001	Ryan	2002/0082586	A1	6/2002	Finley et al.
6,299,132	B1	10/2001	Weinheimer	2002/0120333	A1	8/2002	Keogh et al.
6,364,869	B1	4/2002	Bonaldo	2002/0133124	A1	9/2002	Leinsing et al.
6,428,520	B1	8/2002	Lopez et al.	2003/0036735	A1	2/2003	Jepson et al.
6,444,324	B1	9/2002	Yang et al.	2003/0050610	A1	3/2003	Newton et al.
6,482,188	B1	11/2002	Rogers et al.	2003/0098430	A1	5/2003	Leinsing et al.
D468,016	S *	12/2002	Mosler et al. D24/129	2003/0141477	A1	7/2003	Miller
6,541,802	B2	4/2003	Doyle	2003/0199835	A1	10/2003	Leinsing et al.
6,543,745	B1	4/2003	Enerson	2003/0209681	A1*	11/2003	Leinsing et al. 251/149.1
6,572,592	B1	6/2003	Lopez	2004/0199126	A1	10/2004	Harding et al.
6,585,229	B2	7/2003	Cote, Sr. et al.	2005/0020981	A1	1/2005	Kurth
6,595,964	B2	7/2003	Finley et al.	2005/0038397	A1	2/2005	Newton et al.
6,595,981	B2	7/2003	Huet	2005/0059952	A1	3/2005	Giuliano et al.
6,599,273	B1 *	7/2003	Lopez 604/249	2005/0121638	A1	6/2005	Doyle
6,605,076	B1	8/2003	Jepson et al.	2005/0212292	A1	9/2005	Parrino et al.
6,609,696	B2	8/2003	Enerson	2006/0161115	A1	7/2006	Fangrow
6,651,956	B2	11/2003	Miller	2006/0163515	A1	7/2006	Ruschke
6,656,517	B2	12/2003	Michal et al.	2006/0293629	A1	12/2006	Cote, Sr. et al.
6,669,673	B2	12/2003	Lopez	2007/0012893	A1	1/2007	Lee et al.
6,673,053	B2	1/2004	Wang et al.	2007/0088327	A1*	4/2007	Guala 604/533
6,682,509	B2	1/2004	Lopez	2007/0100284	A1	5/2007	Leinsing et al.
6,689,109	B2	2/2004	Lynn	2007/0106205	A1	5/2007	Connell et al.
6,695,817	B1	2/2004	Fangrow, Jr.	2007/0175485	A1	8/2007	Funamura et al.
6,706,022	B1	3/2004	Leinsing et al.	2007/0224865	A1	9/2007	Fangrow
6,712,791	B2	3/2004	Lui et al.	2007/0225425	A1	9/2007	Nash et al.
6,727,294	B2	4/2004	Kanayama et al.	2007/0233046	A1	10/2007	Funamura et al.
6,740,063	B2	5/2004	Lynn	2007/0235675	A1	10/2007	Kimball et al.
6,745,998	B2	6/2004	Doyle	2007/0235676	A1	10/2007	Vangsness et al.
6,755,391	B2	6/2004	Newton et al.	2007/0254000	A1	11/2007	Guo et al.
6,783,709	B2	8/2004	Harreld et al.	2007/0255229	A1	11/2007	Kane et al.
6,802,490	B2	10/2004	Leinsing et al.	2007/0260195	A1	11/2007	Bartholomew et al.
6,840,501	B2	1/2005	Doyle	2007/0270756	A1	11/2007	Peppel et al.
6,848,139	B2	2/2005	Simon et al.	2008/0039802	A1	2/2008	Vangsness et al.
6,866,656	B2	3/2005	Tingey et al.	2008/0086097	A1	4/2008	Rasmussen et al.
6,869,426	B2	3/2005	Ganem	2008/0086099	A1	4/2008	McKinnon et al.
6,871,838	B2	3/2005	Raines et al.	2008/0093571	A1	4/2008	Desecki
6,883,778	B1	4/2005	Newton et al.	2008/0097407	A1	4/2008	Plishka
6,892,998	B2	5/2005	Newton	2008/0103482	A1	5/2008	Fangrow, Jr.
6,908,459	B2	6/2005	Harding et al.	2008/0249508	A1*	10/2008	Lopez et al. 604/533
6,964,406	B2	11/2005	Doyle	2008/0287920	A1*	11/2008	Fangrow et al. 604/535
6,991,215	B2	1/2006	Kiehne	2009/0209922	A1	8/2009	Boisjoly
6,994,315	B2	2/2006	Ryan et al.	2009/0292252	A1	11/2009	Lareau et al.
7,014,169	B2	3/2006	Newton et al.	2010/0036330	A1	2/2010	Plishka et al.
7,025,744	B2	4/2006	Utterberg et al.	2010/0059702	A1	3/2010	Mansour et al.
7,033,339	B1	4/2006	Lynn	2010/0174242	A1	7/2010	Anderson et al.
7,037,302	B2	5/2006	Vaillancourt	2010/0249723	A1*	9/2010	Fangrow, Jr. 604/247
7,044,441	B2	5/2006	Doyle	2010/0249724	A1	9/2010	Cote, Sr. et al.
7,074,216	B2	7/2006	Fowles et al.	2010/0249725	A1	9/2010	Cote, Sr. et al.
7,100,890	B2	9/2006	Cote et al.				
7,104,520	B2	9/2006	Leinsing et al.				
7,114,701	B2	10/2006	Peppel				
7,125,396	B2	10/2006	Leinsing et al.				
7,184,825	B2	2/2007	Leinsing et al.				
7,244,249	B2	7/2007	Leinsing et al.				
7,252,652	B2	8/2007	Moorehead et al.				
7,264,859	B2	9/2007	Souns et al.				
7,306,197	B2	12/2007	Parrino et al.				
7,306,199	B2	12/2007	Leinsing et al.				
7,314,061	B2	1/2008	Peppel				
7,329,249	B2	2/2008	Bonaldo				
7,335,182	B1	2/2008	Hilaire				
7,357,792	B2	4/2008	Newton et al.				
7,396,348	B2	7/2008	Newton et al.				
7,422,369	B2	9/2008	Bergman et al.				
7,470,261	B2	12/2008	Lynn				
7,510,545	B2	3/2009	Peppel				
7,530,546	B2	5/2009	Ryan et al.				
7,563,243	B2	7/2009	Mendels				

FOREIGN PATENT DOCUMENTS

CA	2149725	11/1995
CA	2175021	11/1996
CH	636526	6/1983
CH	670955	A5 7/1989
DE	855 319	9/1952
DE	84 25 197.2	10/1985
DE	37 40 269	A1 6/1989
EP	0 237 321	3/1987
EP	0 240 590	4/1987
EP	0 309 771	3/1988
EP	0 263 789	4/1988
EP	0 399 119	7/1989
EP	0 367 549	10/1989
EP	0 438 909	12/1990
EP	0 446 463	12/1990
EP	1 459 784	9/2004
FR	2 439 022	5/1980
GB	2000685	1/1979

US D644,731 S

Page 5

GB	2 019 219 B	10/1979	Saechtling Tworzywa Sztuczne, WN-T Warszawa, 1999, vol. V Edition, pp. 224-225.
GB	2 034 185 A	6/1980	Ultrasite™ Systems , “How It Works”, at least as early as Mar. 24, 2008.
WO	WO 86/01712	3/1986	International Search Report issued Oct. 5, 2010 to international application No. PCT/2010/028743.
WO	WO 86/03416	6/1986	PASV Valve Connector Brochure.
WO	WO 92/20736	11/1992	LifeShield TKO Anti-Reflux Device Brochure.
WO	WO 97/31676 A2	9/1997	Nexus Medical Nexus TKO.
WO	WO 98/26835	6/1998	“Faulding Inc. receives FDA permission to market patented Safe-Connect Valve”, dated Dec. 2, 1996.
WO	WO 03/018104	3/2003	MicroClave Connector Brochure. The MicroClave was available before Mar. 25, 2008.
WO	WO 03/086528	10/2003	MEDI-4955 Liquid Silicone Rubber from NuSil Silicone Technology, dated Dec. 17, 2010.
WO	WO 2005/011799	2/2005	
WO	WO 2005/115521	12/2005	
WO	WO 2006/013433	2/2006	
WO	WO 2006/062912	6/2006	
WO	WO 2008/048777	4/2008	
WO	WO 2010/111546	9/2010	

OTHER PUBLICATIONS

F.D.A. 510(k) Summary of Safety and Effectiveness, Nov. 17, 1997.

* cited by examiner

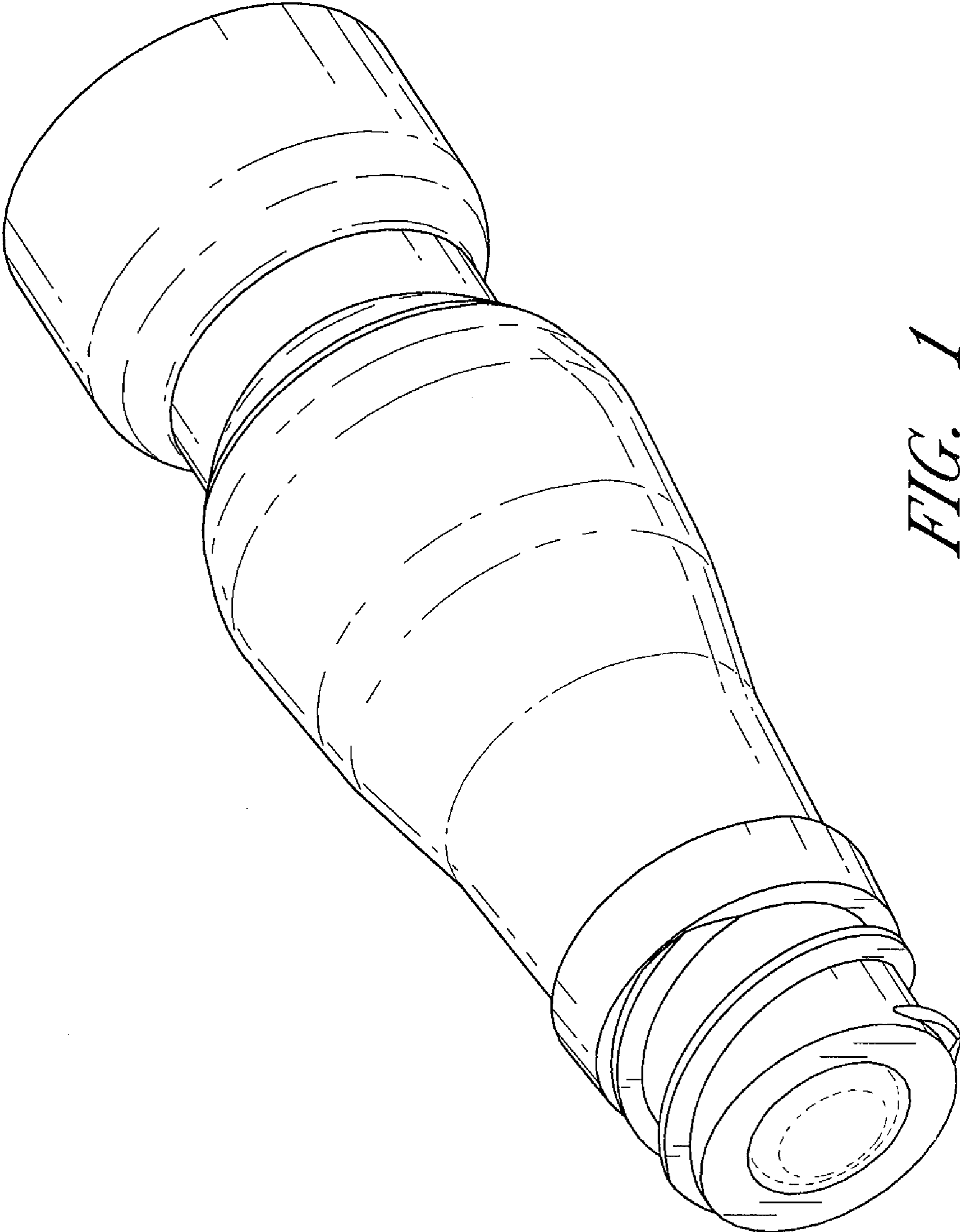


FIG. 1

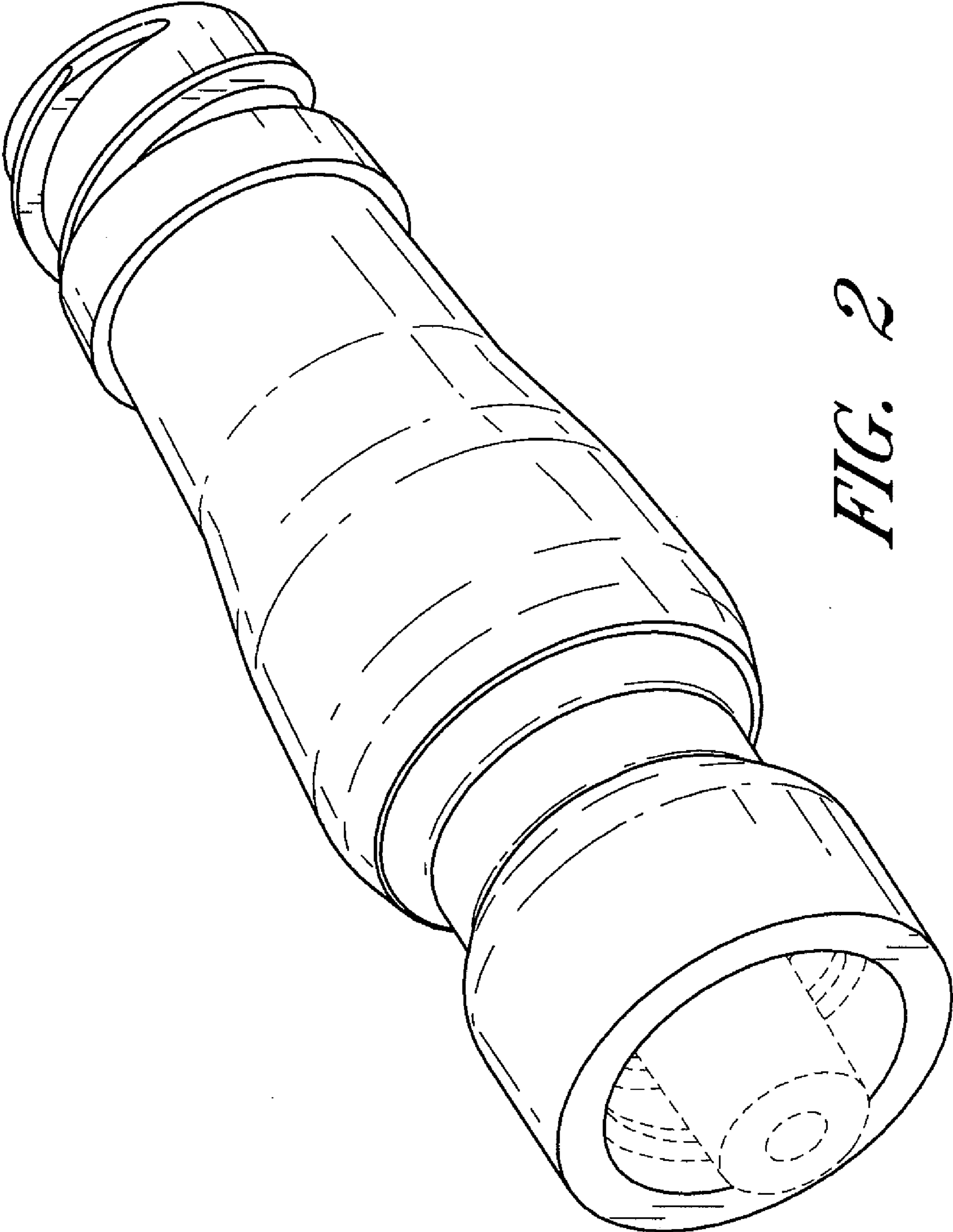


FIG. 2

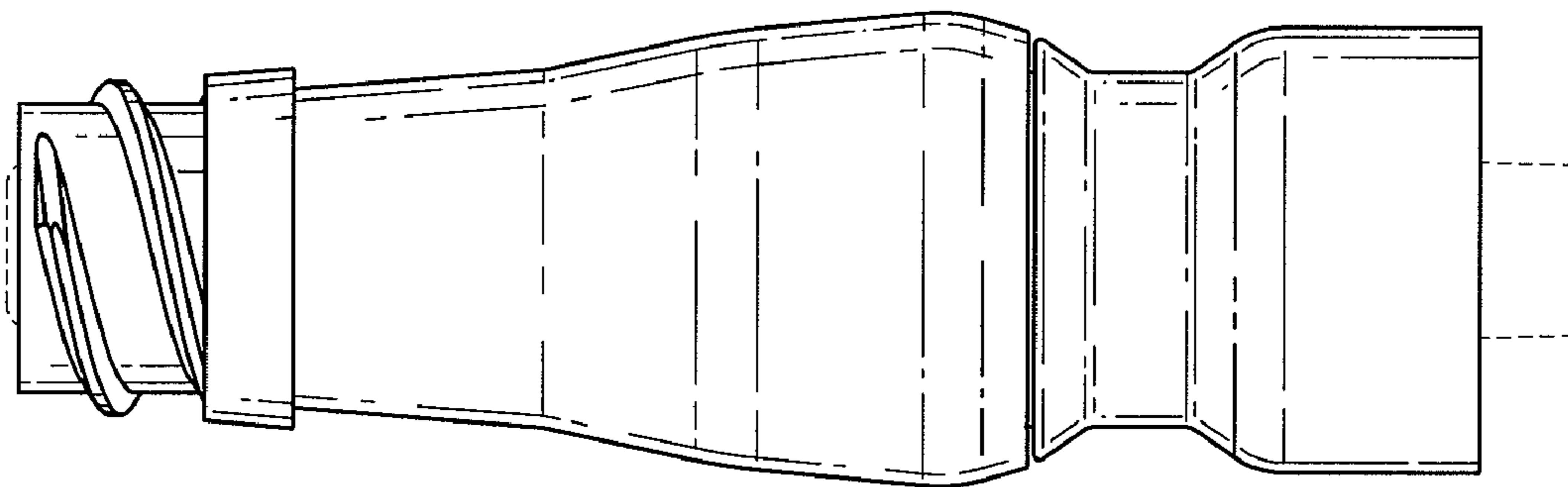


FIG. 3

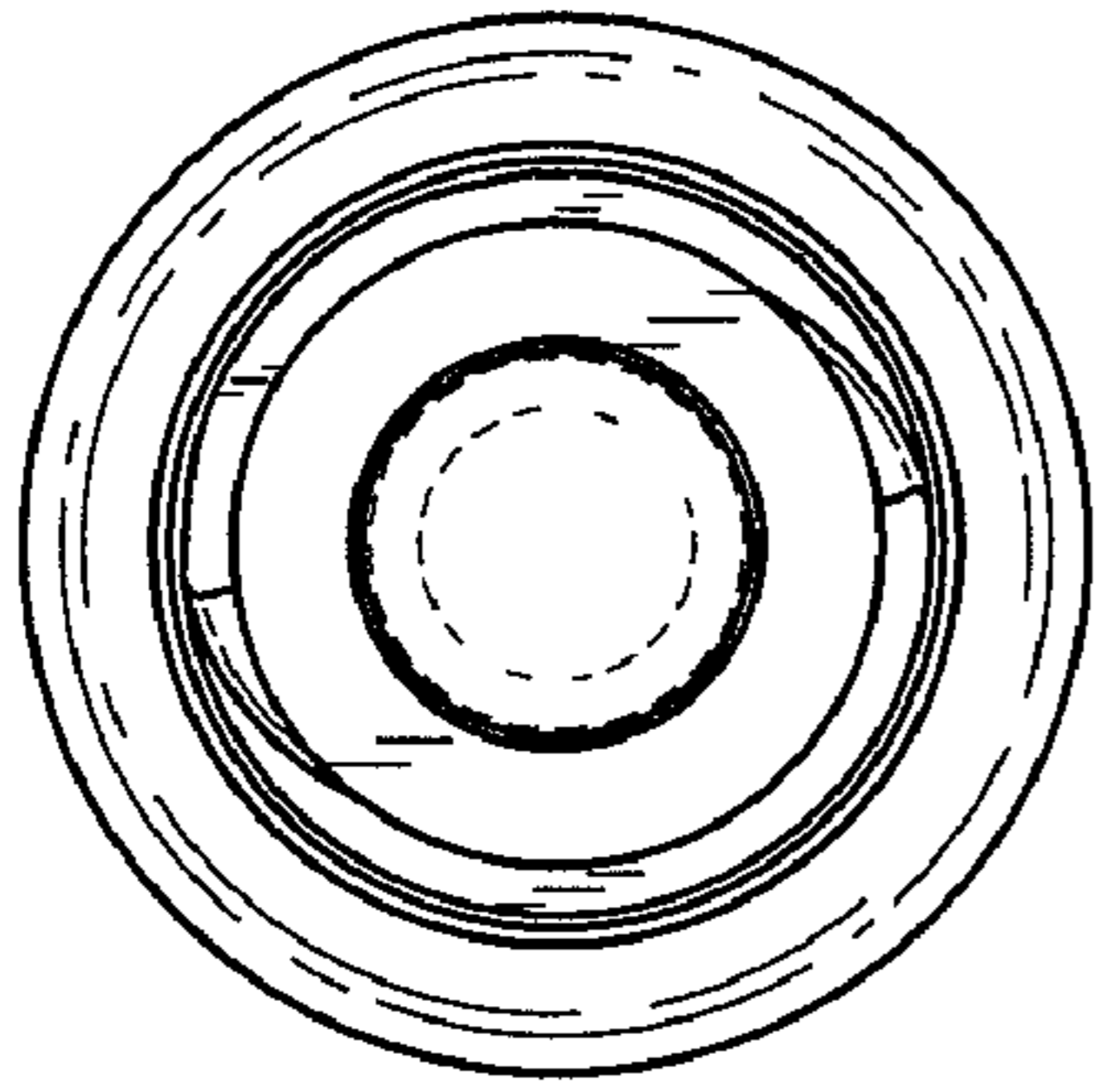


FIG. 4

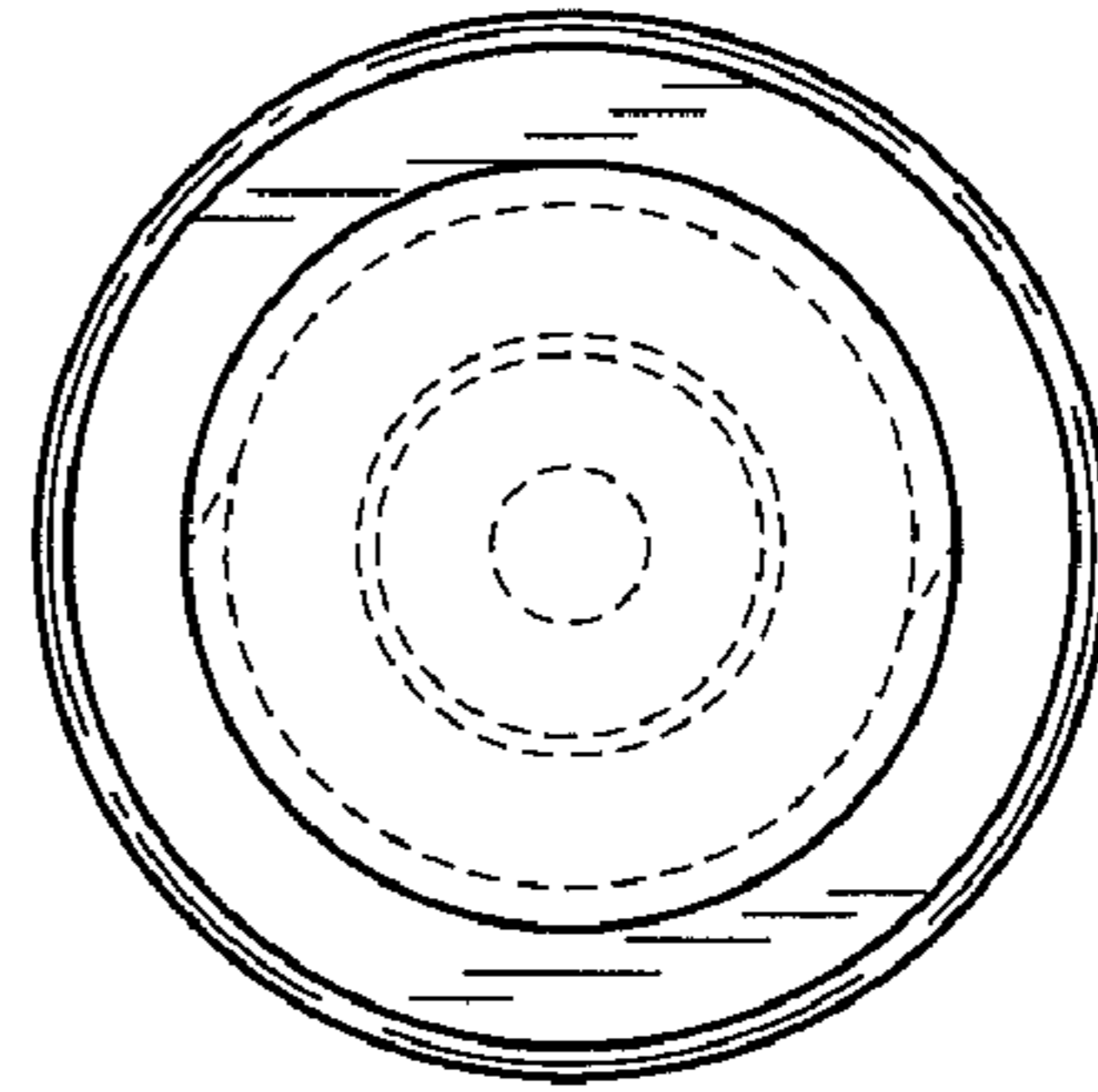


FIG. 5