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(12) **United States Design Patent**
Witkowski et al.

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- (54) **SEAL ASSEMBLY**
- (71) Applicant: **S.P.M. Flow Control, Inc.**, Forth Worth, TX (US)
- (72) Inventors: **Brian Witkowski**, Weatherford, TX (US); **Nuder Said**, Fort Worth, TX (US)
- (73) Assignee: **S.P.M. Flow Control, Inc.**, Fort Worth, TX (US)

- 1,201,022 A 10/1916 Conniff
- 1,379,092 A 5/1921 Fraccascia
- 1,452,603 A 4/1923 Nimes
- 1,473,634 A 11/1923 Loudon
- 1,483,001 A 2/1924 Kurre
- 1,488,211 A 3/1924 Loeffler
- 1,543,637 A 6/1925 Woll

(Continued)

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FOREIGN PATENT DOCUMENTS

- AU 1320088 A 9/1988
- AU 649744 B2 6/1994

(Continued)

OTHER PUBLICATIONS

Brazil Office Action, dated Jun. 3, 2014, re App No. BR3020130006611.

(Continued)

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- (51) **LOC (10) Cl.** **23-01**
- (52) **U.S. Cl.**
USPC **D23/249**
- (58) **Field of Classification Search**
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Primary Examiner — Cynthia Ramirez

(74) *Attorney, Agent, or Firm* — Gardere Wynne Sewell LLP

(57) **CLAIM**

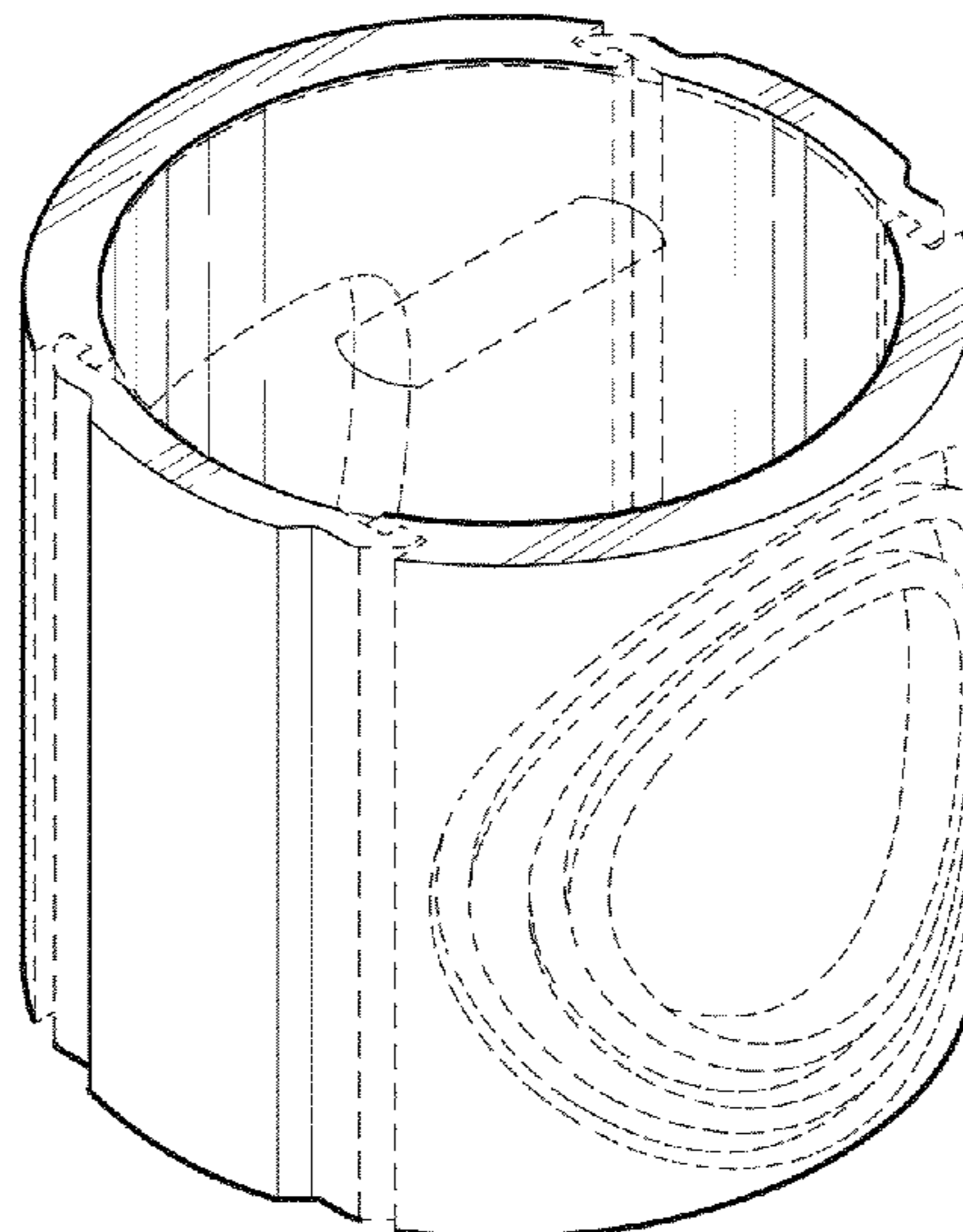
The ornamental design for a seal assembly, as shown and described.

DESCRIPTION

FIG. 1 is a front perspective view of a seal assembly;
 FIG. 2 is a top view of the seal assembly, the bottom view being a mirror image thereof;
 FIG. 3 is a front elevation view of the seal assembly, the rear view being a mirror image thereof; and,
 FIG. 4 is right side elevation view of the seal assembly, the left side being a mirror image thereof.
 The broken lines in the figures are included for the purpose of illustrating environment and form no part of the claimed design.

- (56) **References Cited**
U.S. PATENT DOCUMENTS
345,420 A 7/1886 Eskholme et al.
375,464 A 12/1887 Thacher et al.
580,226 A 4/1897 Sanford
741,477 A 10/1903 Flinn

1 Claim, 1 Drawing Sheet



(56)

References Cited

U.S. PATENT DOCUMENTS

1,607,463 A	11/1926	Kent	3,901,259 A	8/1975	Banbury
1,664,493 A	4/1928	Smith	3,916,950 A	11/1975	Mongerson et al.
1,675,808 A	7/1928	Kliss	3,933,172 A	1/1976	Allen
1,764,936 A	6/1930	Dean	3,934,608 A	1/1976	Guyton
1,798,498 A	3/1931	Riley	3,937,240 A	2/1976	Nanny
D86,952 S	5/1932	Garrison	3,942,551 A	3/1976	Schuller et al.
1,889,256 A	11/1932	Lipscomb	3,967,842 A	7/1976	Kendrick
1,990,090 A	2/1935	Packard	3,972,364 A	8/1976	Brumm
2,197,320 A	4/1940	Shenton	3,974,848 A	8/1976	Wheatley
2,310,583 A	2/1943	Johnson	4,022,427 A	5/1977	Read
2,310,813 A	2/1943	Sellmeyer	4,027,696 A	6/1977	Guyton
2,339,287 A	1/1944	Neef, Jr.	4,046,164 A	9/1977	Pool
2,354,161 A	7/1944	Waterman	4,059,872 A	11/1977	Delesandri
2,361,881 A	10/1944	Sheppard	4,085,770 A	4/1978	Woronowicz
2,391,266 A	12/1945	Parker	4,086,803 A	5/1978	Wheeler
2,404,142 A	7/1946	Parker	4,093,180 A	6/1978	Strabala
D150,466 S	8/1948	Schuler	4,113,228 A	9/1978	Frye
2,506,162 A	5/1950	Metzgar	4,146,047 A	3/1979	Wood et al.
2,576,431 A	11/1951	White	4,150,847 A	4/1979	De Cenzo
2,587,212 A	2/1952	Placette	4,171,095 A	10/1979	Filan et al.
2,589,144 A	3/1952	Russell et al.	4,218,080 A	8/1980	Kendrick
2,606,068 A	8/1952	Bonacor	4,221,204 A	9/1980	Meyer
2,612,340 A	9/1952	Laurent	4,254,793 A	3/1981	Scaramucci
2,663,458 A	12/1953	Macglashan	4,261,387 A	4/1981	Cohn
2,694,503 A	11/1954	Young	4,274,434 A	6/1981	Hafele
2,717,001 A	9/1955	Perrault	4,286,621 A	9/1981	Glahn
2,746,773 A	5/1956	Bily	4,321,945 A	3/1982	Chabat-Courrede
2,766,999 A	10/1956	Watts	4,327,768 A	5/1982	Behle
2,795,459 A	6/1957	Cornelius	4,332,370 A	6/1982	Williams
2,923,317 A	2/1960	McInerney	4,338,707 A	7/1982	Byerly
2,925,827 A	2/1960	Anderson et al.	4,367,571 A	1/1983	Speirs et al.
2,969,492 A	1/1961	Wheatley et al.	4,378,849 A	4/1983	Wilks
3,024,047 A	3/1962	Schmohl	4,399,830 A	8/1983	Brodie
3,060,961 A	10/1962	Conley	4,445,255 A	5/1984	Olejak
3,061,267 A	10/1962	Hamer et al.	4,448,148 A	5/1984	Gain, Jr.
3,064,940 A	11/1962	Anderson	4,478,388 A	10/1984	George
3,072,379 A	1/1963	Hamer	4,485,530 A	12/1984	Begley et al.
3,108,939 A	10/1963	Sabins et al.	4,485,843 A	12/1984	Wolff
3,113,792 A	12/1963	Brown	4,497,344 A	2/1985	Kisiel
3,150,681 A	9/1964	Hansen	4,501,291 A	2/1985	Siegrist
3,160,426 A	12/1964	Faeser	4,506,696 A	3/1985	Von Pechmann
3,204,484 A	9/1965	Gustafson et al.	4,511,120 A	4/1985	Conley et al.
3,216,746 A	11/1965	Watts	4,524,599 A	6/1985	Bailey
3,228,334 A	1/1966	Oss	4,531,542 A	7/1985	Looney
3,238,687 A	3/1966	Tisbo	4,590,957 A	5/1986	McFarlane
3,241,567 A	3/1966	Pusch	4,597,505 A	7/1986	Mozley et al.
3,294,425 A	12/1966	Franck	4,605,036 A	8/1986	Smith et al.
3,341,232 A	9/1967	Deakins	4,616,803 A	10/1986	Schils
3,343,802 A	9/1967	Schuilwerve	4,667,570 A	5/1987	Jensen, Jr. et al.
3,346,002 A	10/1967	Thompson, Jr. et al.	4,705,306 A	11/1987	Guido et al.
3,357,679 A	12/1967	Gulick	4,716,930 A	1/1988	Richmond et al.
3,403,931 A	10/1968	Crain	4,732,215 A	3/1988	Hopper
3,404,698 A	10/1968	Dorch	4,836,240 A	6/1989	Elliott
3,425,661 A	2/1969	Mayo	4,842,014 A	6/1989	Strelow et al.
3,439,897 A	4/1969	Priese	4,848,398 A	7/1989	Leach
3,455,534 A	7/1969	Scaramucci	4,864,696 A	9/1989	Mittermaier et al.
3,467,224 A	9/1969	Curtis	4,896,367 A	1/1990	Newton et al.
3,472,479 A	10/1969	Sherwood	4,915,418 A	4/1990	Palatchy
3,554,581 A	1/1971	Mason	4,969,482 A	11/1990	Perrin et al.
3,556,474 A	1/1971	Domer Scaramucci	4,993,489 A	2/1991	McLeod
3,561,727 A	2/1971	Scaramucci	5,025,865 A	6/1991	Caldwell et al.
3,571,896 A	3/1971	Wilkerson	5,046,525 A	9/1991	Powell
3,594,835 A	7/1971	Wilson	5,056,548 A	10/1991	Mills
3,630,483 A	12/1971	Canalizo	5,143,112 A	9/1992	Scaramucci
3,680,188 A	8/1972	Mason et al.	5,161,566 A	11/1992	Scaramucci
3,687,415 A	8/1972	Turkot	5,161,570 A	11/1992	Scaramucci
3,712,585 A	1/1973	Grenier	5,165,478 A	11/1992	Wilson
3,726,314 A	4/1973	Moen	5,178,185 A	1/1993	Stehling et al.
3,789,872 A	2/1974	Elliott	5,199,464 A	4/1993	Savard
3,813,733 A	6/1974	Flohr	5,307,835 A	5/1994	Scaramucci
3,840,048 A	10/1974	Moen	5,341,840 A	8/1994	Manson et al.
3,845,876 A	11/1974	Needham et al.	5,386,847 A	2/1995	Scaramucci
3,845,879 A	11/1974	Dernbach et al.	5,417,402 A	5/1995	Speybroeck
3,881,480 A	5/1975	Lafourcade	D360,728 S	7/1995	Nozaki
3,894,718 A	7/1975	Koch et al.	5,439,027 A	8/1995	Layton et al.
			5,441,072 A	8/1995	Indey et al.
			5,443,088 A	8/1995	Hoch et al.
			5,462,413 A	10/1995	Schroeder
			5,477,752 A	12/1995	West et al.

(56)

References Cited

U.S. PATENT DOCUMENTS

5,507,533 A 4/1996 Mumma
 5,522,420 A 6/1996 Martin
 5,526,883 A 6/1996 Breaux
 5,538,296 A 7/1996 Horton
 5,544,675 A 8/1996 Dean
 5,584,315 A 12/1996 Powell
 5,603,485 A 2/1997 Schwarz
 5,676,348 A 10/1997 Ungchusri et al.
 5,685,334 A 11/1997 Hagan
 5,689,862 A 11/1997 Hayes et al.
 5,755,427 A 5/1998 Koskinas
 5,787,926 A 8/1998 Mukumoto et al.
 5,791,693 A 8/1998 Crawford
 5,832,947 A 11/1998 Niemczyk
 5,947,152 A 9/1999 Martin et al.
 5,957,592 A 9/1999 Yamanaka
 5,971,007 A 10/1999 Harcourt et al.
 5,983,826 A 11/1999 Lohde
 6,003,837 A 12/1999 Raymond, Jr. et al.
 6,029,693 A 2/2000 Nakanishi et al.
 6,079,439 A 6/2000 Hartley
 6,082,707 A 7/2000 Hosie et al.
 6,085,572 A 7/2000 McGuire, Sr. et al.
 6,089,531 A 7/2000 Young
 6,155,091 A 12/2000 Hayes et al.
 6,164,707 A 12/2000 Ungchusri et al.
 6,209,561 B1 4/2001 Kugelev et al.
 6,230,733 B1 5/2001 Strelow et al.
 6,240,951 B1 6/2001 Yori
 6,250,605 B1 6/2001 Young
 6,290,237 B1 9/2001 Graupner
 6,361,051 B1* 3/2002 Babin 277/607
 6,371,527 B1 4/2002 Ungchusri et al.
 6,382,247 B1 5/2002 Gundry
 6,387,226 B1 5/2002 Persson
 6,450,477 B1 9/2002 Young
 6,554,024 B2 4/2003 Mefford et al.
 6,554,249 B2 4/2003 Pang et al.
 6,742,538 B1 6/2004 Aderholt et al.
 6,752,377 B1 6/2004 Taylor et al.
 6,770,177 B2 8/2004 Keller et al.
 6,843,265 B2 1/2005 Taylor
 6,854,704 B1 2/2005 Young
 6,880,567 B2 4/2005 Klaver et al.
 6,880,568 B1 4/2005 Taylor
 6,886,593 B2 5/2005 Madden et al.
 6,945,569 B1 9/2005 Diaz et al.
 6,948,526 B2 9/2005 Seder et al.
 6,978,799 B2 12/2005 Kugelev et al.
 7,004,445 B2 2/2006 Lymberopoulos
 7,028,778 B2 4/2006 Krywitsky
 7,028,986 B2 4/2006 Young
 7,204,525 B2 4/2007 Matzner
 RE39,695 E 6/2007 Ungchusri et al.
 7,228,869 B2 6/2007 Wilhelm
 D549,850 S 8/2007 Perlman
 7,264,059 B2 9/2007 Akselberg
 7,285,190 B2 10/2007 Martin, Jr.
 7,302,961 B2 12/2007 Martin et al.
 D570,501 S 6/2008 Janesz et al.
 7,398,796 B2 7/2008 Hjorth et al.
 7,401,819 B2 7/2008 Gibb et al.
 7,451,959 B2 11/2008 Matzner
 7,458,212 B2 12/2008 Koizumi et al.
 7,516,941 B2 4/2009 Combs
 7,549,681 B1 6/2009 Matzner
 7,677,526 B2 3/2010 Lymberopoulos
 7,819,386 B2 10/2010 Combs
 7,823,265 B2 11/2010 Matzner et al.
 7,890,276 B2 2/2011 Killion et al.
 7,950,409 B2 5/2011 Stokes et al.
 8,000,909 B2 8/2011 Danzy
 8,051,875 B2 11/2011 Edwards
 D660,461 S 5/2012 Kotin et al.
 D660,984 S 5/2012 Kotin et al.

8,196,229 B1 6/2012 Hickok
 D666,326 S 8/2012 Sims
 8,261,771 B2 9/2012 Witkowski et al.
 D675,750 S 2/2013 King
 8,376,046 B2 2/2013 Broussard, II
 8,465,001 B2 6/2013 Witkowski et al.
 8,469,108 B2 6/2013 Kajaria et al.
 8,474,521 B2 7/2013 Kajaria et al.
 8,490,949 B2 7/2013 Lanning et al.
 D703,294 S* 4/2014 Witkowski et al. D23/233
 D707,332 S* 6/2014 Witkowski et al. D23/249
 D707,797 S 6/2014 Wilkowski et al.
 2002/0179876 A1 12/2002 Pang et al.
 2002/0185867 A1 12/2002 Stachowiak
 2002/0186910 A1 12/2002 Maret
 2003/0047944 A1 3/2003 Ungchusri et al.
 2003/0178067 A1 9/2003 Fredrickson et al.
 2004/0163716 A1 8/2004 Madden et al.
 2005/0121073 A1 6/2005 Carroll
 2005/0199286 A1 9/2005 Appleford et al.
 2006/0091339 A1 5/2006 Young
 2006/0185731 A1 8/2006 Grable et al.
 2006/0266422 A1 11/2006 Feenstra et al.
 2006/0283513 A1 12/2006 Kurian et al.
 2007/0029090 A1 2/2007 Andreychuk et al.
 2007/0051411 A1 3/2007 Scaramucci et al.
 2007/0205387 A1 9/2007 Grau et al.
 2007/0262029 A1 11/2007 Yoshida et al.
 2007/0272308 A1 11/2007 Spears et al.
 2008/0039802 A1 2/2008 Vangsness et al.
 2008/0054204 A1 3/2008 Zhou
 2008/0142752 A1 6/2008 Matzner
 2008/0196773 A1 8/2008 Franconi
 2008/0264649 A1 10/2008 Crawford
 2008/0295910 A1 12/2008 Aleksandersen et al.
 2008/0308159 A1 12/2008 Stunkard
 2009/0008934 A1 1/2009 Matzner et al.
 2010/0154894 A1 6/2010 Kotapish et al.
 2010/0258200 A1 10/2010 Walker et al.
 2010/0326541 A1 12/2010 Kugelev et al.
 2011/0036415 A1 2/2011 Lymberopoulos
 2011/0061871 A1 3/2011 Omvik
 2011/0240126 A1 10/2011 Lymberopoulos et al.
 2011/0316274 A1 12/2011 Gronlund et al.
 2012/0025114 A1 2/2012 Lymberopoulos et al.
 2012/0031494 A1 2/2012 Lymberopoulos
 2012/0073670 A1 3/2012 Lymberopoulos
 2012/0085541 A1 4/2012 Love et al.
 2012/0091743 A1 4/2012 Ohman, III et al.
 2012/0181015 A1 7/2012 Kajaria et al.
 2012/0181016 A1 7/2012 Kajaria et al.
 2012/0219354 A1 8/2012 Bauer et al.
 2012/0227983 A1 9/2012 Lymberopoulos et al.
 2012/0255734 A1 10/2012 Coli et al.
 2012/0298213 A1 11/2012 Forster et al.
 2012/0325332 A1 12/2012 Ball et al.
 2013/0000745 A1 1/2013 Witkowski et al.
 2013/0020519 A1 1/2013 Lymberopoulos
 2013/0037125 A1 2/2013 Drake et al.
 2013/0248182 A1 9/2013 Chong et al.
 2013/0299727 A1 11/2013 Witkowski et al.
 2014/0048158 A1 2/2014 Baca et al.
 2014/0048255 A1 2/2014 Baca et al.
 2014/0048734 A1 2/2014 Witkowski et al.

FOREIGN PATENT DOCUMENTS

AU 348253 5/2013
 CA 2485817 A1 4/2005
 CA 2490664 A1 10/2005
 CA 2503231 A1 10/2005
 CA 2612397 A1 6/2008
 CA 2636751 A1 1/2009
 CN 2118877 U 10/1992
 CN 1137309 A 12/1996
 CN 1225298 A 8/1999
 CN 2426550 Y 4/2001
 CN 1548701 A 11/2004
 CN 2901281 Y 5/2007

(56)

References Cited

FOREIGN PATENT DOCUMENTS		
CN	200999609	Y 1/2008
CN	201043685	Y 4/2008
CN	101205798	A 6/2008
CN	101258350	A 9/2008
CN	101303033	A 11/2008
CN	101367099	A 2/2009
CN	201206648	Y 3/2009
CN	201262043	Y 6/2009
CN	101539218	A 9/2009
CN	101722221	A 6/2010
CN	201496006	U 6/2010
CN	201545914	U 8/2010
CN	201650157	U 11/2010
CN	201739525	2/2011
CN	201747313	U 2/2011
CN	202047762	U 11/2011
CN	102323158	A 1/2012
CN	202144943	U 2/2012
CN	202208237	U 5/2012
CN	202255848	U 5/2012
CN	202255937	U 5/2012
CN	202718658	U 2/2013
CN	ZL2013300399164	9/2013
CN	ZL201330441389	4/2014
CN	ZL201080025350.3	5/2014
CN	ZL201330441241.6	5/2014
DE	1166571	B 3/1964
DE	2415732	A1 10/1974
DE	2358756	A1 3/1975
DE	2558272	A1 7/1977
DE	2642743	A1 3/1978
DE	218416	A1 2/1985
DE	3341643	A1 5/1985
DE	19707228	A1 8/1998
DE	102004033453	A1 1/2006
EA	201171356	A1 5/2012
EM	002185371-0001	2/2013
EM	002307421-0001	9/2013
EM	002307421-0002	9/2013
EP	44619	A1 1/1982
EP	0559131	A1 9/1993
EP	1219942	A1 7/2002
EP	1488867	A1 12/2004
FR	2635476	A1 2/1990
GB	255970	8/1926
GB	578008	A 6/1946
GB	619950	3/1949
GB	731895	A 6/1955
GB	1536728	A 12/1978
GB	2056626	A 3/1981
GB	2117822	A 10/1983
GB	2140338	A 11/1984
GB	2185287	A 7/1987
GB	2228885	A 9/1990
GB	2312728	B 5/2000
GB	2355510	A 4/2001
GB	2408562	A 6/2005
GB	2416574	B 8/2008
GB	2413606	B 3/2009
GB	2444822	B 6/2011
GB	2452801	B 4/2012
GB	2493900	A 2/2013
IN	251691	8/2012
JP	53108873	A 9/1978
JP	53125261	A 11/1978
JP	57073187	5/1982
JP	57079400	5/1982
JP	61093344	5/1986
JP	08075022	3/1996
JP	08128536	5/1996
JP	08291543	A 11/1996
JP	08300052	11/1996
JP	10175026	6/1998
JP	2000330646	11/2000
JP	2001355774	A 12/2001

JP	2002098068	4/2002
JP	2004190769	A 7/2004
JP	200619433	7/2006
JP	D1285004	9/2006
JP	2008215626	A 9/2008
JP	4996990	B2 8/2012
JP	05033883	9/2012
KR	100540389	B1 12/2005
KR	100540390	B1 12/2005
KR	100540392	B1 12/2005
KR	100621158	B1 8/2006
KR	100716760	B1 5/2007
KR	100832065	B1 5/2008
KR	101191630	B1 10/2012
MX	2011011007	A 2/2012
MX	2011012944	A 6/2012
MX	40533	12/2013
RU	1466084	C 6/1995
RU	1417281	C 7/1995
RU	02088831	C1 8/1997
RU	2242313	C2 12/2004
RU	2367770	C1 9/2009
RU	2367771	C1 9/2009
SG	175263	A1 11/2011
SG	176534	A1 1/2012
SG	D2013186	G 4/2013
SU	567001	A1 7/1977
SU	585898	A1 12/1977
SU	1391769	A1 4/1988
SU	1721368	A1 3/1992
WO	WO-9713398	A2 4/1997
WO	WO-2009023042	A1 2/2009
WO	WO-2010080636	A2 7/2010
WO	WO-2010123889	A2 10/2010
WO	WO-2010141651	A2 12/2010
WO	WO-2010151680	A2 12/2010
WO	WO-2011095453	A1 8/2011
WO	WO-2013023154	A1 2/2013
WO	WO-2014028498	A2 2/2014
WO	WO-2014028795	A2 2/2014

OTHER PUBLICATIONS

Canadian Examination Report, by CIPO, mailed Feb. 10, 2014, re App No. 152956.

Canadian Examination Report dated Apr. 28, 2014, by the CIPO, re App No. 2764310.

Canadian Examination Report dated Feb. 7, 2014, by the CIPO re App No. 149748.

Canadian Examiner's Report issued Feb. 10, 2014, by CIPO, re App No. 152957.

Second Written Opinion, by the IPEA/US, mailed Jul. 28, 2014, re PCT/US2013/054741.

Eurasian Office Action issued Nov. 19, 2013, by The Eurasian Patent Office, re App No. 201171356.

European Exam Report, by the EPO, dated Apr. 8, 2014, re App No. 10784052.2.

Final Office Action mailed Apr. 25, 2014, by the USPTO, re App No. 13/608,562.

Final Office Action mailed Feb. 28, 2014, by the USPTO, re App No. 12/165,680.

International Search Report and Written Opinion by the ISA/US, mailed Feb. 7, 2014, re PCT/US2013/054741.

Notice of Allowance mailed Feb. 7, 2014, by the USPTO, re U.S. Appl. No. 29/449,852.

Notice of Allowance mailed Feb. 7, 2014, by the USPTO, re U.S. Appl. No. 29/449,867.

Notice of Allowance mailed Jan. 16, 2014, by the USPTO, re U.S. Appl. No. 29/453,837.

Notice of Allowance mailed Jun. 25, 2014, by the USPTO, re U.S. Appl. No. 12/165,680.

Notice of Allowance mailed Nov. 22, 2013, by the USPTO, re U.S. Appl. No. 12/822,900.

Notice of Allowance mailed Nov. 26, 2013, by the USPTO, re U.S. Appl. No. 29/429,809.

(56)

References Cited

OTHER PUBLICATIONS

Office Action mailed Jun. 18, 2014, by the USPTO, re U.S. Appl. No. 13/572,293.
 Office Action mailed Mar. 27, 2014, by the USPTO, re U.S. Appl. No. 13/918,479.
 Russian Office Action, issued by the Russian Patent Office, re App No. 2013500548.
 4" Halliburton Big Inch Clamp Connection spec sheet (1 page).
 BJ 285959—3 Inch 15,000 PSi Popoff Valve, Mar. 26, 2004 (1 page).
 BS&B Safety Systems "An Introduction to Rupture Disk Technology," Catalog 77/1001 (3 pages).
 CN OA 2010800253503 mailed Jun. 5, 2013 (8 pages).
 EP Search Report mailed Jan. 30, 2013 for EP09838004.1 (4 pages).
 Grayloc(r) Products, 3" flange diameter, Jul. 24, 2006 (2 pages).
 Harrisburg, Inc., "Reset Relief Valves" brochure, © 1982) (2 pages).
 HP70-001 OA for U.S. Appl. No. 06/419,141 mailed Nov. 17, 1983 (4 pages).
 HP70-006 OA for U.S. Appl. No. 08/643,239 mailed Dec. 30, 1996 (11 pages).
 HP70-011 NOA for U.S. Appl. No. 10/690,888 mailed Aug. 29, 2005 (7 pages).
 HP70-016 NOA for U.S. Appl. No. 10/833,859 mailed Jul. 6, 2005 (4 pages).
 HP70-016 OA for U.S. Appl. No. 10/833,859 mailed Dec. 22, 2004 (5 pages).
 HP70-021 NOA for U.S. Appl. No. 11/013,486 mailed Feb. 12, 2007 (4 pages).
 HP70-021 NOA for U.S. Appl. No. 11/414,984 mailed Feb. 11, 2009 (8 pages).
 HP70-021 OA for U.S. Appl. No. 11/013,486 mailed Aug. 30, 2005 (12 pages).
 HP70-022 NOA for U.S. Appl. No. 11/354,663 mailed Jun. 29, 2010 (4 pages).
 HP70-022 OA for U.S. Appl. No. 11/354,663 mailed Jan. 8, 2010 (6 pages).
 HP70-022 U.S. Appl. No. 60/653,014 (16 pages).
 HP70-023 CA 2612397 NOA mailed Dec. 20, 2012 (1 page).
 HP70-023 NOA for U.S. Appl. No. 11/638,965 mailed Sep. 23, 2008 (6 pages).
 HP70-023 OA for U.S. Appl. No. 11/638,965 mailed Apr. 4, 2008 (10 pages).
 HP70-024 Advisory Action mailed May 20, 2013 for U.S. Appl. No. 12/165,680 (3 pages).
 HP70-024 Final Office Action dated Jan. 31, 2012 for U.S. Appl. No. 12/165,680 (28 pages).
 HP70-024 Final Office Action dated Mar. 7, 2013 for U.S. Appl. No. 12/165,680 (23 pages).
 HP70-024 Office Action mailed Aug. 9, 2011 for U.S. Appl. No. 12/165,680 (18 pages).
 HP70-024 Office Action mailed Jul. 12, 2013 for U.S. Appl. No. 12/165,680 (24 pages).
 HP70-024 Office Action mailed May 31, 2011 for GB 0812086.7 (2 pages).
 HP70-024 U.S. Appl. No. 60/947,738 (12 pages).
 HP70-029 ISR and W(for PCT/US2009/068822 mailed Aug. 9, 2010 (7 pages).

HP70-029 OA for U.S. Appl. No. 12/642,541 mailed Mar. 19, 2012 (15 pages).
 HP70-036 EP Extended SR for EP10767632.2 mailed Mar. 14, 2013 (6 pages).
 HP70-036 EP SR for EP10767632.2 mailed Mar. 14, 2013 (6 pages).
 HP70-036 ISR and WO for PCT/US2010/031738 mailed Dec. 27, 2010 (7 pages).
 HP70-036 NOA for U.S. Appl. No. 12/763,786 mailed May 16, 2012 (6 pages).
 HP70-036 OA for U.S. Appl. No. 12/763,786 mailed Oct. 11, 2011 (9 pages).
 HP70-036 U.S. Appl. No. 61/170,917 (9 pages).
 HP70-036 OA for U.S. Appl. No. 13/608,562 mailed Sep. 13, 2013 (12 pages).
 HP70-037 EP Extended SR for EP10784052.2 mailed Jul. 4, 2013 (7 pages).
 HP70-037 ISR and WO for PCTUS2010/037156 mailed Jan. 13, 2011 (8 pages).
 HP70-037 NOA for U.S. Appl. No. 12/793,194 mailed Feb. 19, 2013 (10 pages).
 HP70-037 OA for U.S. Appl. No. 12/793,194 mailed Oct. 25, 2012 (8 pages).
 HP70-039 FOA for U.S. Appl. No. 12/822,900 mailed Aug. 16, 2013 (15 pages).
 HP70-039 ISR and WO for PCT/US2010/039834 Feb. 8, 2011 (6 pages).
 HP70-039 OA for U.S. Appl. No. 12/822,900 mailed Dec. 6, 2012 (20 pages).
 HP70-039 U.S. Appl. No. 61/220,067 (12 pages).
 HP70-072 IPRP for PCT/US2012/050376 mailed Jul. 15, 2013 (28 pages).
 HP70-072 ISR and WO for PCT/US2012/050376 mailed Oct. 26, 2012 (2 pages).
 HP70-072 U.S. Appl. No. 61/522,234 (23 pages).
 HP70-714 in Exam Report for IN Design 251691 mailed Jun. 26, 2013 (2 pages).
 HP70-714 Design U.S. Appl. No. 29/429,809 (4 pages).
 HP70-715 Design U.S. Appl. No. 29/449,852 (7 pages).
 HP70-720 Design U.S. Appl. No. 29/453,837 (8 pages).
 HP70-716 Design U.S. Appl. No. 29/449,867 (8 pages).
 S.P.M. Flow Control, Inc. (Weir SPM), "Long Radius Swivel Joints," 2007 (5 pages).
 S.P.M. Flow Control, Inc., "4-Inch Integral Swivel Joint" (1 page).
 S.P.M. Flow Control, Inc., "Flow Control Products and Drilling Equipment for the Worldwide Petroleum Industry," [online] Jan. 8, 2007, <URL:www.spmflo.com>.
 S.P.M. Flow Control, Inc., "High-Pressure Long Radius Swivel Joints," 2002, www.spmflo.com (1 page).
 S.P.M. Flow Control, Inc., "Long Radius Swivel Joints, H2S, Operating and Maintenance Instructions," 1999 (6 pages).
 S.P.M. Flow Control, Inc., "Long Radius Swivel Joints, Operating and Maintenance Instructions," 2004 (4 pages).
 S.P.M. Flow Control, Inc., "Long Radius Swivel Joints, Operating and Maintenance Instructions," 2006 (6 pages).
 S.P.M. Flow Control, Inc., "Swivel Joints," 1999 (1 page).
 S.P.M. Flow Control, Inc., Valve Illustration Retsco (1 page).
 SPM "Emergency Relief Valve Brochure" 1997 (4 pages).
 Venture Oilfield Services, Ltd., Oilfield Drawing (1 page).

* cited by examiner

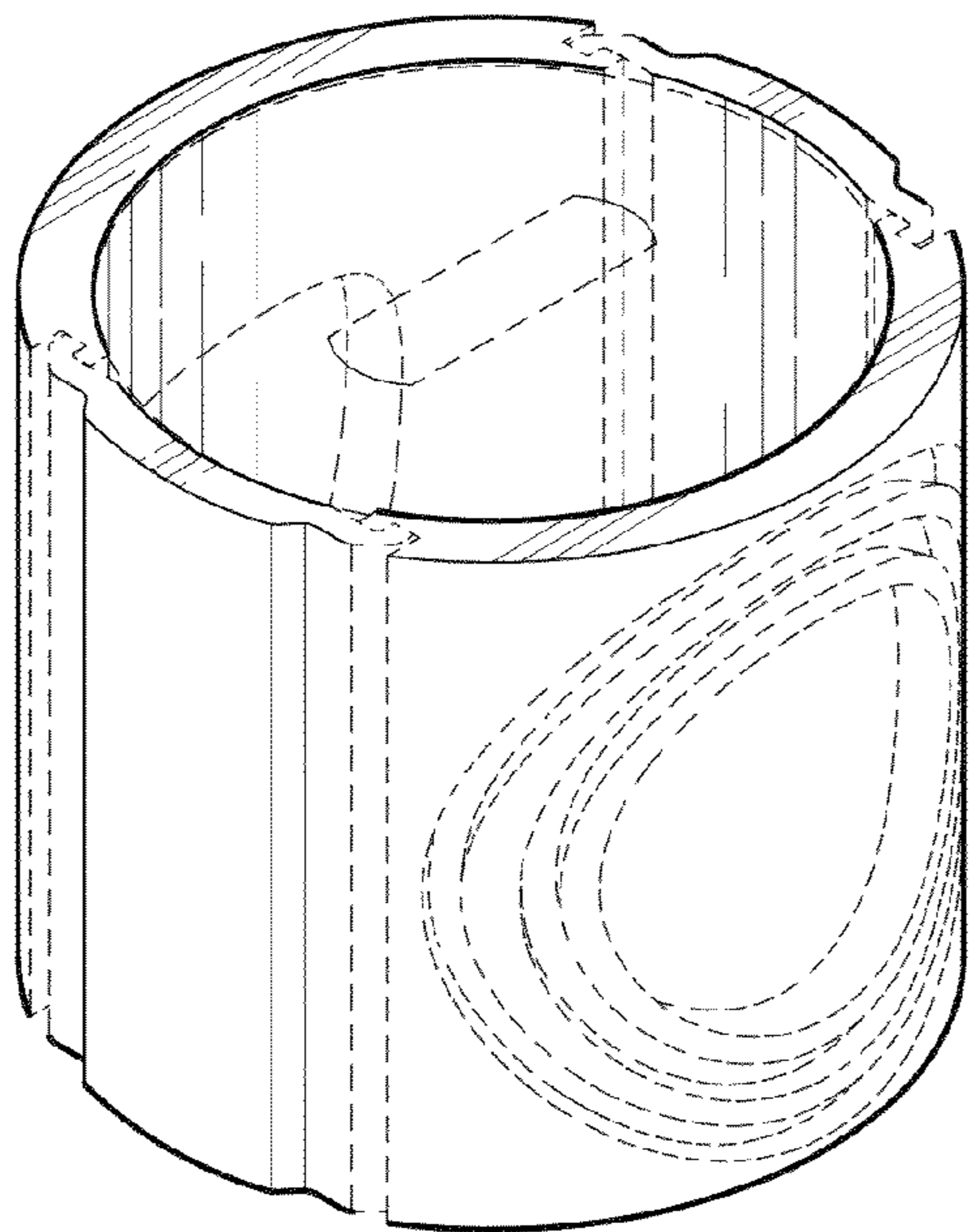


FIG. 1

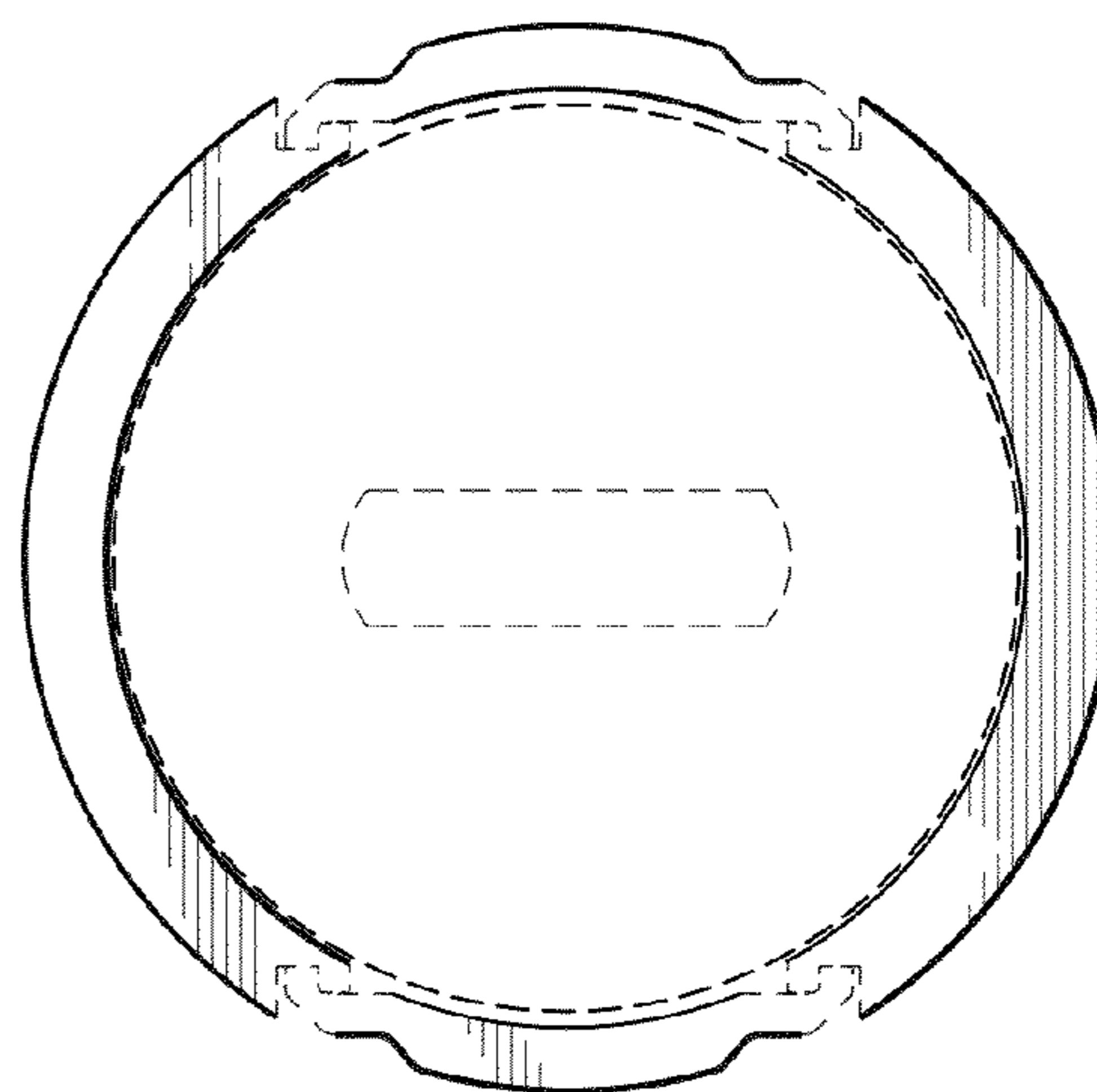


FIG. 2

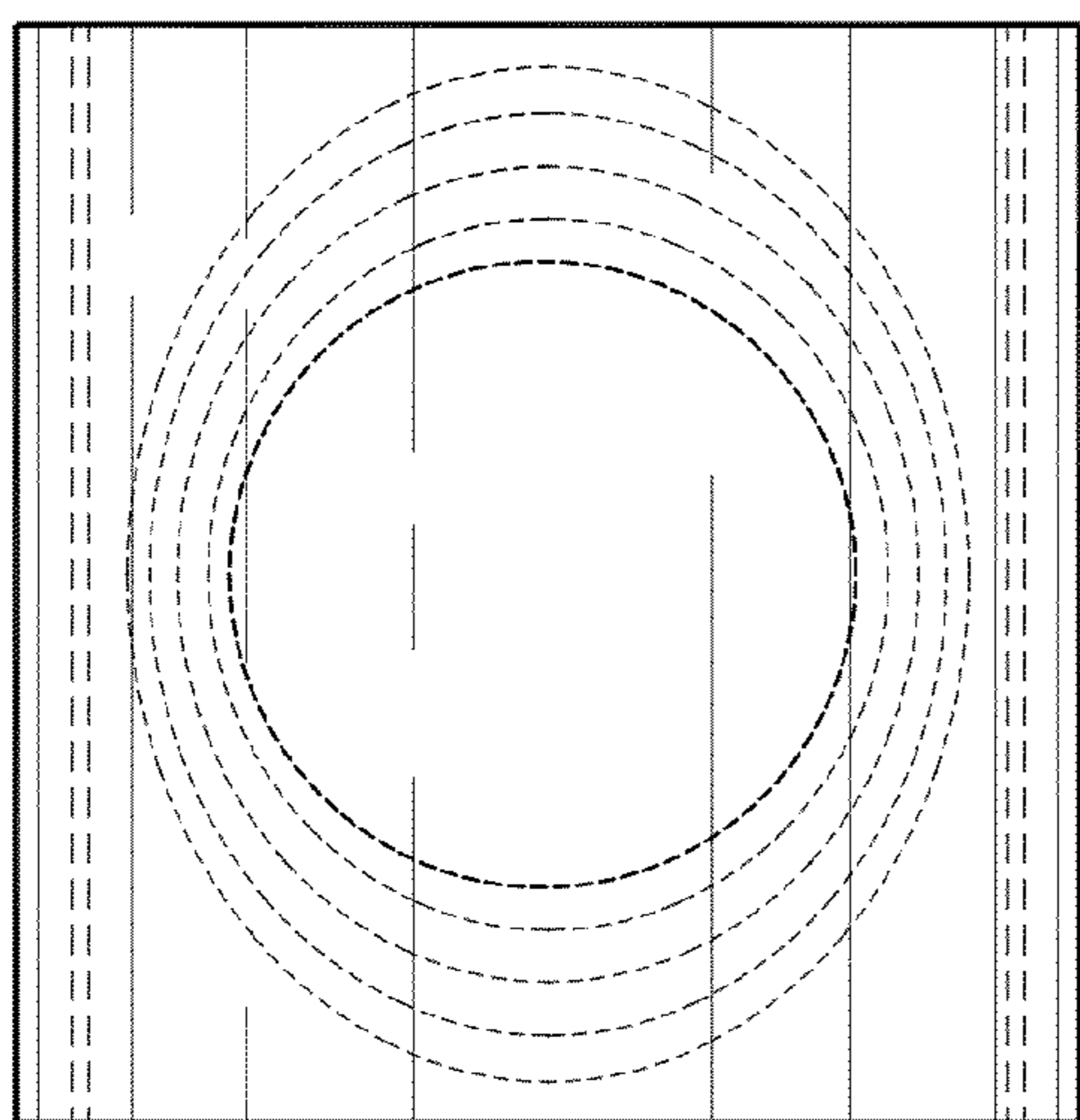


FIG. 3

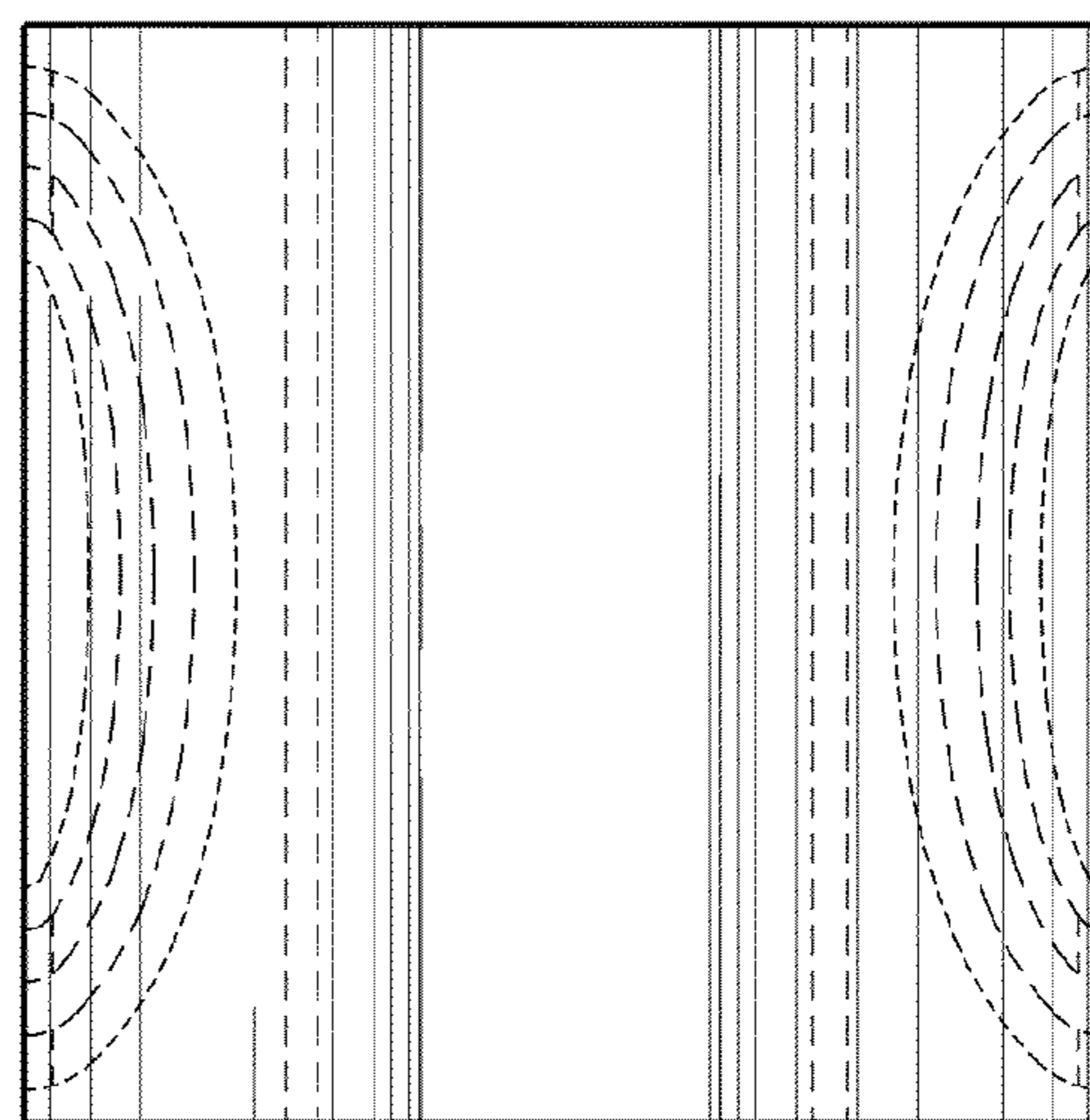


FIG. 4