



US00D785218S

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

(10) **Patent No.:** **US D785,218 S**
(45) **Date of Patent:** **** Apr. 25, 2017**

(54) **LED LUMINAIRE HAVING A MOUNTING SYSTEM**

3,220,471 A 11/1965 Coe
3,247,368 A 4/1966 McHugh
D205,082 S * 6/1966 Morgan, Jr. D26/63
3,435,891 A 4/1969 Parrish
D214,582 S 7/1969 Routh
(Continued)

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

(21) Appl. No.: **29/532,383**

(22) Filed: **Jul. 6, 2015**

(51) **LOC (10) Cl.** **26-05**

(52) **U.S. Cl.**
USPC **D26/63; D26/67**

(58) **Field of Classification Search**
USPC D26/60, 63, 67-71, 138
CPC F21V 3/0445; F21V 21/32; F21V 21/0824;
F21S 6/003; F21S 6/005; F21S 6/0032;
F21S 8/081; F21S 8/083; F21S 8/085;
F21S 8/088; F21W 2131/103; F21W
2131/109

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

D122,711 S * 9/1940 May D26/109
2,430,472 A 11/1947 Levy
D149,124 S 3/1948 Hewitt
D152,113 S 12/1948 Mehr
2,458,967 A 1/1949 Wiedenhoef
2,678,380 A 5/1954 Westby
2,702,378 A 2/1955 Talty
D191,734 S 11/1961 Daher
3,040,170 A 6/1962 Chwan
3,078,366 A 2/1963 Winkler
3,120,929 A 2/1964 Henning

FOREIGN PATENT DOCUMENTS

CA 2623604 A1 8/2009
CN 1536686 A 10/2004
(Continued)

OTHER PUBLICATIONS

Acuity Brands, "Acuity Brands Introduces Luminaire for Tunable White Technology," downloaded from <http://news.acuitybrands.com/US/acuity-brands-introduces-luminaires-with-tunable-white-technology/s/54ae242f-1222-4b8b-be0d-36637bde8cd2> on May 28, 2014, 2pp.

(Continued)

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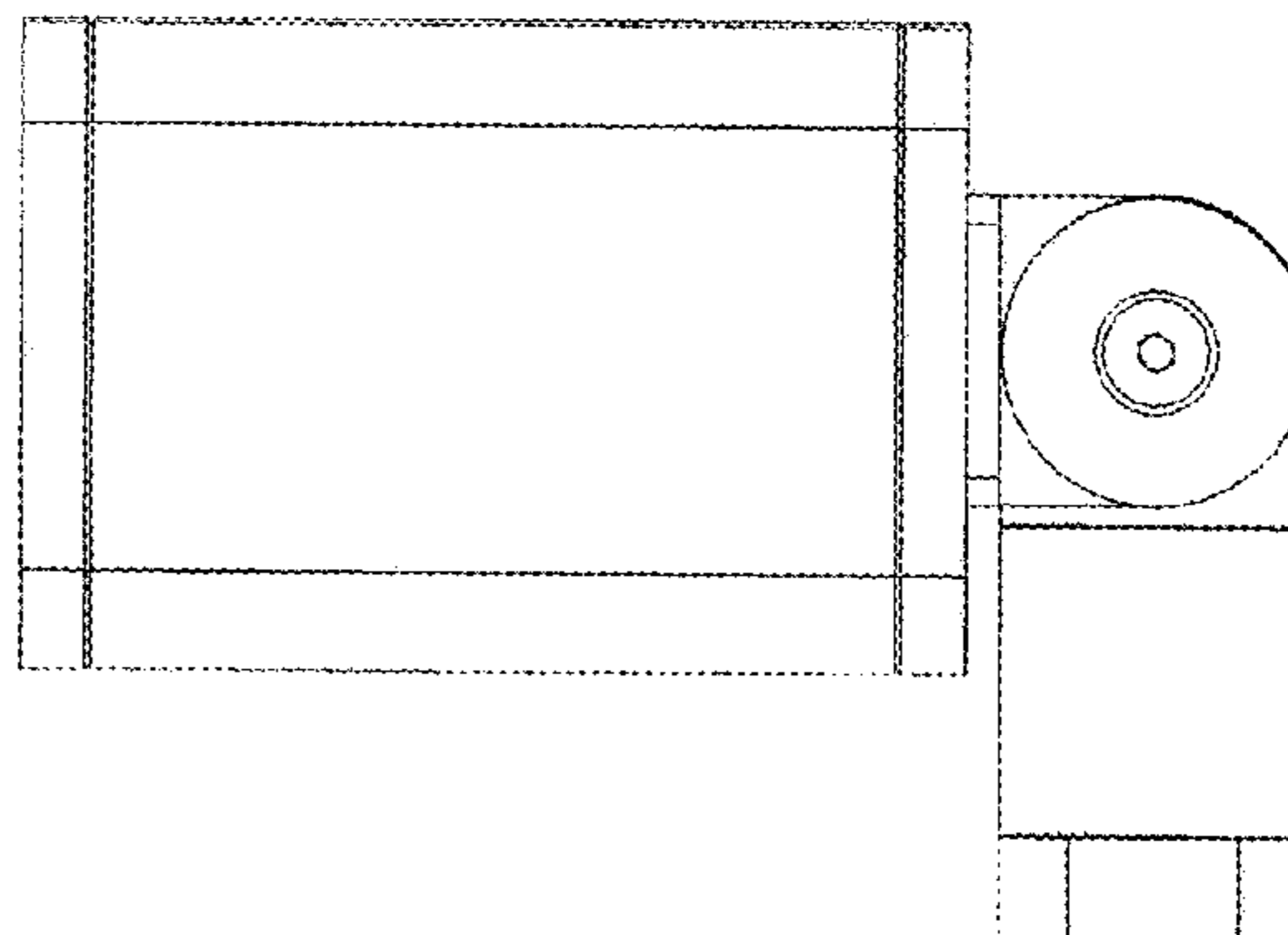
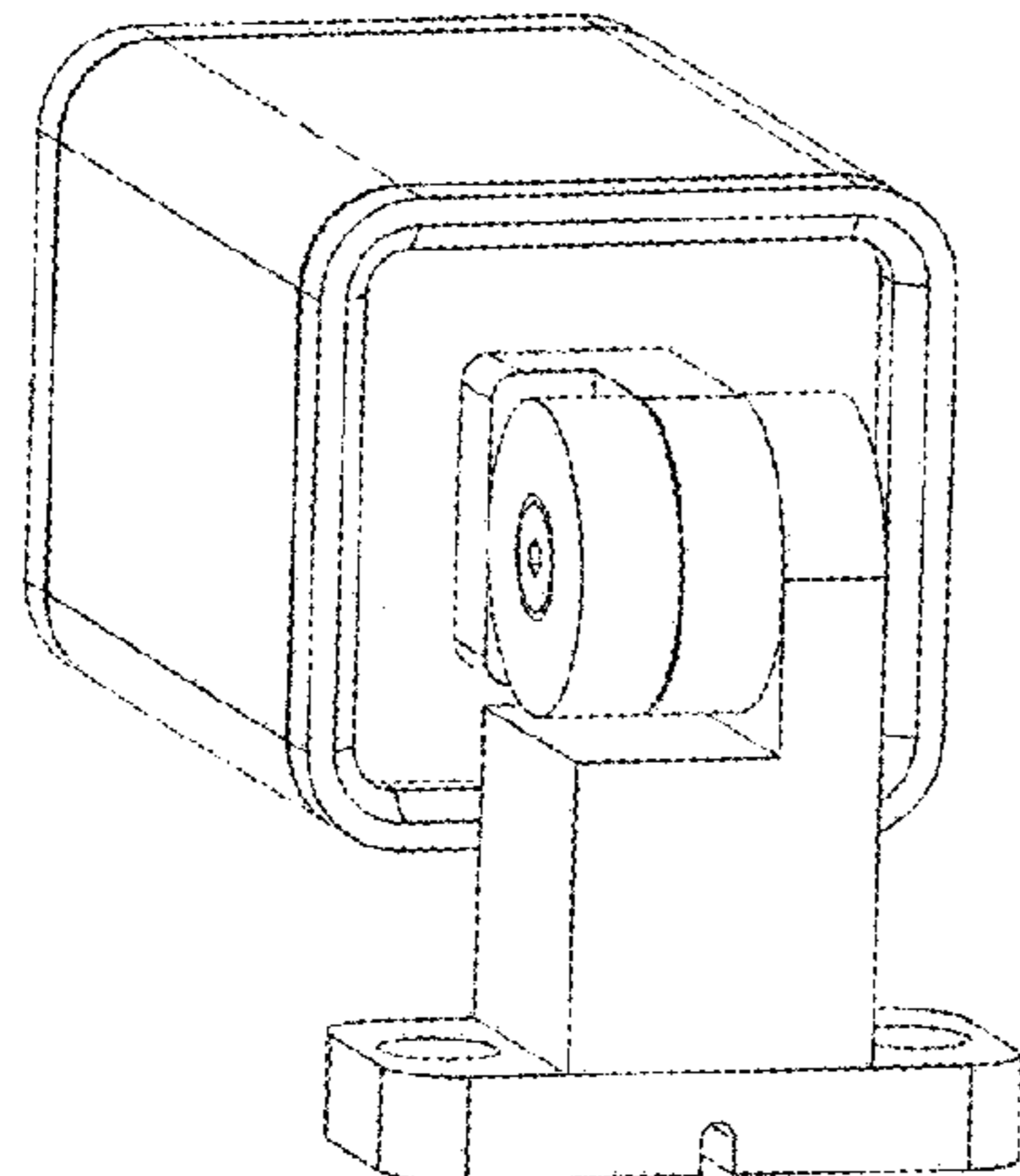
(57) **CLAIM**

The ornamental design for a LED luminaire having a mounting system, as shown and described.

DESCRIPTION

FIG. 1 is a front elevational view of the LED luminaire having a mounting system, of the present invention; FIG. 2 is a back elevational view thereof; FIG. 3 is a top, back, left perspective view thereof; FIG. 4 is a top, back, right perspective view thereof; FIG. 5 is a left elevational view thereof; FIG. 6 is a right elevational view thereof; FIG. 7 is a top plan view thereof; and, FIG. 8 is a bottom plan view thereof, wherein the elements that are shown in broken lines are disclaimed.

1 Claim, 8 Drawing Sheets



(56)

References Cited

U.S. PATENT DOCUMENTS

D217,096 S	4/1970	Birns	5,416,342 A	5/1995	Edmond et al.
3,538,321 A	11/1970	Longenecker	5,436,809 A	7/1995	Brassier
3,639,751 A	2/1972	Pichel	5,440,466 A	8/1995	Belisle
3,643,038 A	2/1972	Sato	5,450,303 A	9/1995	Markiewicz et al.
D231,559 S	4/1974	Darling	5,490,048 A	2/1996	Brassier
D234,712 S	4/1975	Kennedy	5,504,665 A	4/1996	Osteen et al.
3,989,976 A	11/1976	Tabor	5,515,253 A	5/1996	Sjobom
4,090,210 A	5/1978	Wehling et al.	5,516,390 A	5/1996	Tomita et al.
4,091,444 A	5/1978	Mori	5,523,589 A	6/1996	Edmond et al.
4,138,716 A	2/1979	Muhlethaler et al.	D373,437 S	9/1996	Kira
D251,500 S	4/1979	Aigner	5,584,574 A	12/1996	Haddad
D258,314 S *	2/1981	Leon D26/63	5,599,091 A	2/1997	Kira
4,258,413 A	3/1981	Mausser	5,604,135 A	2/1997	Edmond et al.
4,345,306 A	8/1982	Summey	5,628,557 A	5/1997	Huang
4,414,489 A	11/1983	Young	5,631,190 A	5/1997	Negley
4,420,207 A	12/1983	Nishikawa	5,632,551 A	5/1997	Roney
4,423,471 A	12/1983	Gordin et al.	5,634,822 A	6/1997	Gunell
4,445,164 A	4/1984	Giles, III	5,655,832 A	8/1997	Pelka
4,453,203 A	6/1984	Pate	5,658,066 A	8/1997	Hirsch
4,467,403 A	8/1984	May	D383,236 S	9/1997	Krogman
4,473,873 A	9/1984	Quiogue	D384,336 S	9/1997	Gerber
4,564,888 A	1/1986	Lewin	5,676,453 A	10/1997	Parkyn, Jr.
4,578,742 A	3/1986	Klein	D390,992 S	2/1998	Shemitz
4,580,859 A	4/1986	Frano	5,713,662 A	2/1998	Kira
4,609,979 A	9/1986	Kristofek	5,739,554 A	4/1998	Edmond et al.
4,674,015 A	6/1987	Smith	5,757,144 A	5/1998	Nilssen
4,727,648 A	3/1988	Savage	5,788,533 A	8/1998	Alvarado-Rodriguez
4,733,335 A	3/1988	Serizawa	5,794,685 A	8/1998	Dean
D296,244 S *	6/1988	Donato D26/63	5,800,050 A	9/1998	Leadford
D296,717 S	7/1988	Kane	5,806,955 A	9/1998	Parkyn, Jr.
4,755,918 A	7/1988	Pristash	D408,823 S	4/1999	Kirby
4,757,431 A	7/1988	Cross	5,890,793 A	4/1999	Stephens
4,761,721 A	8/1988	Willing	5,894,196 A	4/1999	McDermott
D300,876 S	4/1989	Sakai	5,898,267 A	4/1999	McDermott
4,833,579 A	5/1989	Skegin	5,909,955 A	6/1999	Roorda
4,837,927 A	6/1989	Savage	5,912,477 A	6/1999	Negley
4,870,327 A	9/1989	Jorgensen	5,938,316 A	8/1999	Yan
4,872,097 A	10/1989	Miller	6,022,130 A	2/2000	Donato
4,882,667 A	11/1989	Skegin	6,051,940 A	4/2000	Arun
4,918,497 A	4/1990	Edmond	6,072,160 A	6/2000	Bahl
D307,640 S *	5/1990	Titmarsh D26/24	6,079,851 A	6/2000	Altman
D308,114 S	5/1990	Shemitz	6,083,021 A	7/2000	Lau
D308,260 S	5/1990	Shemitz	6,104,536 A	8/2000	Eckhardt
4,966,862 A	10/1990	Edmond	6,120,600 A	9/2000	Edmond et al.
D315,030 S	2/1991	Jacobs	6,124,673 A	9/2000	Bishop
D316,303 S	4/1991	Layne	6,149,112 A	11/2000	Thieltges
D316,306 S	4/1991	Shemitz	6,149,288 A	11/2000	Huang
5,027,168 A	6/1991	Edmond	6,176,594 B1	1/2001	Yarconi
D319,512 S	8/1991	Lettenmayer	D437,449 S	2/2001	Soller
D322,862 S	12/1991	Miller	D437,652 S	2/2001	Uhler
5,087,212 A	2/1992	Hanami	6,187,606 B1	2/2001	Edmond et al.
D325,645 S	4/1992	Grange	6,198,233 B1	3/2001	McConaughy
5,140,507 A	8/1992	Harwood	6,201,262 B1	3/2001	Edmond et al.
D330,944 S	11/1992	Wereley	6,201,262 B1	3/2001	Edmond et al.
5,174,649 A	12/1992	Alston	D443,710 S	6/2001	Chiu
5,177,404 A	1/1993	Cohen	6,244,877 B1	6/2001	Asao
5,210,051 A	5/1993	Carter, Jr.	6,249,375 B1	6/2001	Silhengst
D336,536 S	6/1993	Shaanan	D445,936 S	7/2001	Mier-Langner et al.
5,235,470 A	8/1993	Cheng	6,260,981 B1	7/2001	Fiene
D340,514 S	10/1993	Liao	D446,592 S	8/2001	Leen
5,253,152 A	10/1993	Yang	6,273,588 B1	8/2001	Arakelian
5,282,364 A	2/1994	Cech	D448,508 S	9/2001	Benghozi
5,303,124 A	4/1994	Wrobel	6,312,787 B1	11/2001	Hayashi et al.
5,324,213 A	6/1994	Frantz	6,318,883 B1	11/2001	Sugiyama et al.
5,325,281 A	6/1994	Harwood	D452,843 S	1/2002	Henrici
D348,744 S *	7/1994	Johnson D26/63	6,341,523 B2	1/2002	Lynam
5,335,159 A	8/1994	Chen et al.	D457,673 S	5/2002	Martinson
5,337,225 A	8/1994	Brookman	6,386,723 B1	5/2002	Eberlein et al.
5,338,944 A	8/1994	Edmond et al.	6,390,646 B1	5/2002	Yan
5,359,345 A	10/1994	Hunter	6,392,360 B2	5/2002	McConaughy
5,367,229 A	11/1994	Yang	6,426,704 B1	7/2002	Hutchison
5,381,323 A	1/1995	Osteen et al.	6,435,693 B1	8/2002	Fiene
5,387,901 A	2/1995	Hardt	6,439,736 B1	8/2002	Fiene
5,393,993 A	2/1995	Edmond et al.	6,439,743 B1	8/2002	Hutchison
5,410,462 A	4/1995	Wolfe	6,439,749 B1	8/2002	Miller et al.
			6,441,943 B1	8/2002	Roberts
			D462,801 S	9/2002	Huang
			6,450,662 B1	9/2002	Hutchison
			6,450,664 B1	9/2002	Kelly
			D464,455 S	10/2002	Fong

(56)

References Cited

U.S. PATENT DOCUMENTS

D464,939	S	10/2002	Chuang	7,112,916	B2	9/2006	Goh	
D465,046	S	10/2002	Layne	D530,683	S	10/2006	Rivas	
6,473,002	B1	10/2002	Hutchison	7,131,749	B2	11/2006	Wimberly	
6,474,839	B1	11/2002	Hutchison	7,132,804	B2	11/2006	Lys	
6,478,453	B2	11/2002	Lammers	7,138,667	B2	11/2006	Barnett	
6,488,386	B1	12/2002	Yan	7,149,089	B2	12/2006	Blasko	
6,508,567	B1	1/2003	Fiene	7,150,553	B2	12/2006	English	
D470,962	S	2/2003	Chen	D535,774	S	1/2007	Weston et al.	
6,525,939	B2	2/2003	Liang	7,159,997	B2	1/2007	Reo et al.	
D472,339	S	3/2003	Russello et al.	7,160,004	B2	1/2007	Peck	
6,527,422	B1	3/2003	Hutchison	7,172,319	B2	2/2007	Holder et al.	
6,530,674	B2	3/2003	Grierson et al.	D538,951	S	3/2007	Maxik	
D473,529	S	4/2003	Feinbloom	D539,459	S	3/2007	Benghozi	
6,540,382	B1	4/2003	Simon	7,198,386	B2	4/2007	Zampini	
6,561,690	B2	5/2003	Balestriero et al.	7,207,696	B1	4/2007	Lin	
D476,439	S	6/2003	O'Rourke	D541,957	S	5/2007	Wang	
6,600,175	B1	7/2003	Baretz et al.	7,210,957	B2	5/2007	Mrakovich et al.	
6,601,970	B2	8/2003	Ueda	7,213,940	B1	5/2007	Van De Ven et al.	
6,618,231	B2	9/2003	McConaughy	7,221,374	B2	5/2007	Dixon	
6,632,006	B1	10/2003	Rippel	D544,110	S	6/2007	Hooker	
6,636,003	B2	10/2003	Rahm et al.	D545,457	S	6/2007	Chen	
D482,476	S	11/2003	Kwong	7,234,950	B1	6/2007	Wickett	
6,641,284	B2	11/2003	Stopa et al.	7,237,930	B2	7/2007	Onishi et al.	
6,662,211	B1	12/2003	Weller	D548,691	S	8/2007	Krieger	
6,682,211	B2	1/2004	English	D551,372	S *	9/2007	Korpi D26/63	
6,683,419	B2	1/2004	Kriparos	7,273,299	B2	9/2007	Parkyn et al.	
6,691,768	B2	2/2004	Hsieh	D552,779	S *	10/2007	Starck D26/63	
6,703,640	B1	3/2004	Hembree	D552,782	S *	10/2007	Korpi D26/63	
6,733,164	B1	5/2004	Smith, Jr.	7,282,840	B2	10/2007	Chih	
D491,306	S	6/2004	Zucker	7,286,296	B2	10/2007	Chaves	
6,744,693	B2	6/2004	Brockmann	7,288,902	B1	10/2007	Melanson	
6,752,645	B2	6/2004	Nakamura	7,293,908	B2	11/2007	Beeson et al.	
6,773,138	B2	8/2004	Coushaine	7,303,301	B2	12/2007	Koren	
6,787,999	B2	9/2004	Stimac	D561,924	S	2/2008	Yiu	
6,788,510	B2	9/2004	McConaughy	D563,013	S	2/2008	Levine	
6,791,119	B2	9/2004	Slater, Jr. et al.	7,329,907	B2	2/2008	Pang et al.	
6,814,462	B1	11/2004	Fiene	D564,119	S	3/2008	Metlen	
6,824,296	B2	11/2004	Souza	7,344,279	B2	3/2008	Mueller	
6,824,390	B2	11/2004	Brown	7,344,296	B2	3/2008	Matsui	
6,827,469	B2	12/2004	Coushaine	7,357,534	B2	4/2008	Snyder	
6,853,010	B2	2/2005	Slater, Jr. et al.	7,358,657	B2	4/2008	Koelger	
6,860,617	B2	3/2005	Fiene	7,358,679	B2	4/2008	Lys et al.	
6,863,424	B2	3/2005	Smith	7,360,925	B2	4/2008	Coushaine	
6,864,513	B2	3/2005	Lin	D568,829	S	5/2008	Yamashita	
6,869,206	B2	3/2005	Zimmerman	7,369,386	B2	5/2008	Rasmussen	
6,871,993	B2	3/2005	Hecht	D570,505	S	6/2008	Maxik	
D504,967	S	5/2005	Kung	7,381,942	B2	6/2008	Chin et al.	
6,893,144	B2	5/2005	Fan	D574,095	S	7/2008	Hill	
D506,065	S	6/2005	Sugino	7,396,139	B2	7/2008	Savage	
6,902,200	B1	6/2005	Beadle	7,396,146	B2	7/2008	Wang	
6,902,291	B2	6/2005	Rizkin	D574,987	S *	8/2008	Waldmann D26/63	
6,903,380	B2	6/2005	Barnett	7,413,326	B2	8/2008	Tain	
6,905,232	B2	6/2005	Lin	D576,545	S	9/2008	Mandel	
6,946,806	B1	9/2005	Choi	D576,964	S	9/2008	Shaner	
6,958,497	B2	10/2005	Emerson et al.	D577,453	S	9/2008	Metlen	
6,966,677	B2	11/2005	Galli	D577,836	S	9/2008	Engebriksen	
6,979,097	B2	12/2005	Elam	7,422,347	B2	9/2008	Miyairi et al.	
D516,020	S	2/2006	Wong	D579,421	S	10/2008	Chu	
D516,229	S	2/2006	Tang	D581,080	S	11/2008	Mier-Langner	
6,998,650	B1	2/2006	Wu	D581,554	S	11/2008	To	
7,040,774	B2	5/2006	Beeson et al.	D581,583	S	11/2008	Peng	
7,063,130	B2	6/2006	Huang	7,452,115	B2	11/2008	Alcelik	
7,063,440	B2	6/2006	Mohacsi et al.	7,456,499	B2	11/2008	Loh et al.	
7,066,617	B2	6/2006	Mandy	D583,975	S *	12/2008	Kushinskaya D26/63	
D524,975	S	7/2006	Oas	7,458,820	B2	12/2008	Ohta	
7,070,301	B2	7/2006	Magarill	7,467,888	B2	12/2008	Fiene	
7,077,546	B2	7/2006	Yamauchi	D585,588	S	1/2009	Alexander	
D527,119	S	8/2006	Maxik	D585,589	S	1/2009	Alexander	
D527,131	S	8/2006	McCarthy, III	7,481,552	B2	1/2009	Mayfield, III et al.	
7,093,958	B2	8/2006	Coushaine	D586,498	S	2/2009	Wu	
7,095,056	B2	8/2006	Vitta et al.	D587,389	S	2/2009	Benensohn	
7,097,332	B2	8/2006	Vamberi	7,494,248	B2	2/2009	Li	
7,098,397	B2	8/2006	Lange	7,497,581	B2	3/2009	Beeson et al.	
7,111,963	B2	9/2006	Zhang	D590,085	S *	4/2009	Irvine D26/63	
7,111,971	B2	9/2006	Coushaine	7,513,675	B2	4/2009	Mier-Langner	
				D591,894	S	5/2009	Flank	
				D592,799	S	5/2009	Scott	
				7,532,324	B2	5/2009	Liu et al.	
				7,537,464	B2	5/2009	Brandenburg	

(56)

References Cited

U.S. PATENT DOCUMENTS

7,539,028 B2	5/2009	Baurle et al.	7,914,198 B2	3/2011	Mier-Langner
D593,512 S	6/2009	Lin	7,918,581 B2	4/2011	Van De Ven
7,540,761 B2	6/2009	Weber	7,918,589 B2	4/2011	Mayfield, III et al.
7,549,786 B2	6/2009	Higley	7,922,364 B2	4/2011	Tessnow
D597,246 S	7/2009	Meyer, IV	7,923,907 B2	4/2011	Tessnow
D597,247 S	7/2009	Meyer, IV	7,942,559 B2	5/2011	Holder et al.
7,559,784 B2	7/2009	Hsiao	7,952,114 B2	5/2011	Gingrich, III
7,564,180 B2	7/2009	Brandes	7,965,494 B1	6/2011	Morris
D597,704 S	8/2009	Peng	7,972,038 B2	7/2011	Albright
D599,040 S	8/2009	Alexander	7,972,054 B2	7/2011	Alexander
7,575,332 B2	8/2009	Cok	7,976,194 B2	7/2011	Wilcox et al.
7,575,338 B1	8/2009	Verfuert	7,985,005 B2	7/2011	Alexander
7,580,192 B1	8/2009	Chu	7,988,336 B1	8/2011	Harbers
D601,276 S	9/2009	Grajcar	7,993,031 B2	8/2011	Grajcar
7,591,572 B1	9/2009	Levine	8,002,438 B2	8/2011	Ko
7,594,738 B1	9/2009	Lin	8,007,131 B2	8/2011	Liu et al.
D602,868 S	10/2009	Vogt	D645,007 S	9/2011	Alexander
7,604,365 B2	10/2009	Chang	D645,183 S *	9/2011	Cucinella D26/63
7,607,802 B2	10/2009	Kang	D645,594 S	9/2011	Grawe
7,621,770 B1	11/2009	Finizio	8,021,008 B2	9/2011	Ramer
7,626,345 B2	12/2009	Young	8,029,157 B2	10/2011	Li et al.
7,628,506 B2	12/2009	Verfuert	8,033,680 B2	10/2011	Sharrah
7,637,635 B2	12/2009	Xiao	8,052,310 B2	11/2011	Gingrich, III
D608,043 S	1/2010	Ko	8,066,403 B2	11/2011	Sanfilippo et al.
D610,543 S	2/2010	Coushaine	D650,504 S	12/2011	Kim et al.
D610,723 S	2/2010	Grajcar	D650,935 S	12/2011	Beghelli
D610,729 S	2/2010	Kushinskaya	8,080,819 B2	12/2011	Mueller et al.
7,665,862 B2	2/2010	Villard	8,083,364 B2	12/2011	Allen
7,674,018 B2	3/2010	Holder et al.	8,096,668 B2	1/2012	Abu-Geel
7,679,281 B2	3/2010	Kim et al.	8,100,560 B2	1/2012	Ahland, III et al.
7,686,481 B1	3/2010	Condon et al.	8,100,564 B2	1/2012	Ono
7,690,810 B2	4/2010	Saitoh et al.	8,102,167 B2	1/2012	Irissou et al.
7,703,951 B2	4/2010	Piepgas	8,102,683 B2	1/2012	Gaknoki et al.
7,722,227 B2	5/2010	Zhang	D654,207 S *	2/2012	Fletcher D26/63
D618,374 S *	6/2010	Guercio D26/128	D654,607 S	2/2012	Kim et al.
7,727,009 B2	6/2010	Goto	8,118,450 B2	2/2012	Villard
7,731,395 B2	6/2010	Parkyn et al.	8,118,454 B2	2/2012	Rains, Jr. et al.
7,731,396 B2	6/2010	Fay	8,123,376 B2	2/2012	Van De Ven et al.
7,736,029 B2	6/2010	Chen et al.	8,125,776 B2	2/2012	Alexander
7,737,634 B2	6/2010	Leng et al.	D655,432 S	3/2012	Beghelli
7,740,380 B2	6/2010	Thraillkill	D655,840 S	3/2012	Heaton
7,744,259 B2	6/2010	Walczak	D655,842 S	3/2012	Sabernig
7,744,266 B2	6/2010	Higley	8,129,669 B2	3/2012	Chen et al.
7,748,870 B2	7/2010	Chang	8,136,958 B2	3/2012	Verfuert
7,759,881 B1	7/2010	Melanson	8,138,690 B2	3/2012	Chemel et al.
7,766,508 B2	8/2010	Villard et al.	8,142,047 B2	3/2012	Acampora
7,766,518 B2	8/2010	Piepgas	8,143,803 B2	3/2012	Beij et al.
7,784,966 B2	8/2010	Verfuert	8,152,336 B2	4/2012	Alexander
7,785,124 B2	8/2010	Lin	8,154,864 B1	4/2012	Nearman
D625,870 S	10/2010	Feigenbaum	8,162,498 B2	4/2012	Ramer et al.
D626,094 S	10/2010	Alexander	D659,871 S	5/2012	Lee
7,806,562 B2	10/2010	Behr	D660,229 S	5/2012	Tseng
7,810,951 B1	10/2010	Lee et al.	8,172,425 B2	5/2012	Wen et al.
7,810,955 B2	10/2010	Stimac et al.	8,172,436 B2	5/2012	Coleman
7,810,995 B2	10/2010	Fadler et al.	8,177,395 B2	5/2012	Alexander
7,813,111 B2	10/2010	Anderson	8,182,122 B2	5/2012	Chiu
7,819,549 B2	10/2010	Narendran et al.	8,191,613 B2	6/2012	Yuan
D627,507 S	11/2010	Lai	8,193,738 B2	6/2012	Chu et al.
D627,727 S	11/2010	Alexander	8,201,965 B2	6/2012	Yamada
D628,156 S	11/2010	Alexander	8,205,998 B2	6/2012	Ramer et al.
7,828,576 B2	11/2010	Lin	8,210,722 B2	7/2012	Holder et al.
7,837,348 B2	11/2010	Narendran et al.	8,212,469 B2	7/2012	Rains, Jr. et al.
7,841,753 B2	11/2010	Liu	8,215,798 B2	7/2012	Rains, Jr. et al.
D629,365 S	12/2010	Garcia De Vicuna	8,232,745 B2	7/2012	Chemel et al.
7,845,393 B2	12/2010	Kao	D665,340 S	8/2012	Obata
7,857,482 B2	12/2010	Reo et al.	8,242,766 B2	8/2012	Gaknoki et al.
7,857,498 B2	12/2010	Smith	8,292,482 B2	10/2012	Harbers
7,866,850 B2	1/2011	Alexander	8,297,788 B2	10/2012	Bishop
7,874,700 B2	1/2011	Patrick	8,297,792 B1	10/2012	Wang
D633,244 S	2/2011	Kramer et al.	8,297,808 B2	10/2012	Yuan
D633,248 S	2/2011	Alexander	8,319,437 B2	11/2012	Carlin
7,889,421 B2	2/2011	Narendran	8,324,838 B2	12/2012	Shah et al.
7,896,517 B2	3/2011	Mandy	8,330,378 B2	12/2012	Maehara et al.
7,901,108 B2	3/2011	Kabuki et al.	8,337,043 B2	12/2012	Verfuert
7,914,162 B1	3/2011	Huang	8,344,602 B2	1/2013	Lai
			8,360,609 B2	1/2013	Lee et al.
			8,360,621 B2	1/2013	Avila
			8,385,071 B2	2/2013	Lin
			8,403,541 B1	3/2013	Rashidi

(56)

References Cited

U.S. PATENT DOCUMENTS

8,410,716 B2	4/2013	Yao et al.	8,816,593 B2	8/2014	Lys et al.
8,414,178 B2	4/2013	Alexander	8,820,964 B2	9/2014	Gould
8,434,898 B2	5/2013	Sanfilippo et al.	8,836,226 B2	9/2014	Mercier et al.
8,436,556 B2	5/2013	Eisele et al.	8,840,278 B2	9/2014	Pickard
8,454,193 B2	6/2013	Simon et al.	8,847,515 B2	9/2014	King et al.
8,459,841 B2	6/2013	Huang	8,853,958 B2	10/2014	Athalye et al.
8,462,523 B2	6/2013	Gaknoki et al.	8,858,028 B2	10/2014	Kim
8,469,542 B2	6/2013	Zampini, II et al.	8,876,322 B2	11/2014	Alexander
8,503,083 B2	8/2013	Seo	8,888,315 B2	11/2014	Edwards et al.
8,529,102 B2	9/2013	Pickard et al.	8,888,506 B2	11/2014	Nishimura
8,531,134 B2	9/2013	Chemel et al.	8,901,838 B2	12/2014	Akiyama et al.
8,536,802 B2	9/2013	Chemel et al.	8,944,647 B2	2/2015	Bueeler
8,536,805 B2	9/2013	Shah et al.	D724,773 S	3/2015	Ryu
8,543,249 B2	9/2013	Chemel et al.	8,970,101 B2	3/2015	Sutardja
D690,859 S	10/2013	Mollaghaffari	9,010,967 B2	4/2015	Jensen
8,545,045 B2	10/2013	Tress	9,052,100 B2	6/2015	Blackstone
8,545,049 B2	10/2013	Davis et al.	9,307,588 B2	4/2016	Li
8,547,034 B2	10/2013	Melanson et al.	2001/0006463 A1	7/2001	Fischer
8,552,664 B2	10/2013	Chemel et al.	2001/0053628 A1	12/2001	Hayakawa
8,556,469 B2	10/2013	Pickard	2002/0046826 A1	4/2002	Kao
8,558,518 B2	10/2013	Irissou et al.	2002/0067613 A1	6/2002	Grove
8,562,180 B2	10/2013	Alexander	2002/0106925 A1	8/2002	Yamagishi
8,569,972 B2	10/2013	Melanson	2002/0117692 A1	8/2002	Lin
8,573,807 B2	11/2013	Borkar et al.	2003/0058658 A1	3/2003	Lee
8,573,816 B2	11/2013	Negley et al.	2003/0072156 A1	4/2003	Pohlert
8,575,858 B2	11/2013	Policy et al.	2003/0128543 A1	7/2003	Rekow
8,579,467 B1	11/2013	Szeto	2003/0174517 A1	9/2003	Kiraly et al.
8,581,504 B2	11/2013	Kost et al.	2003/0185005 A1	10/2003	Sommers
8,581,521 B2	11/2013	Welten et al.	2003/0209963 A1	11/2003	Altgilbers
8,585,245 B2	11/2013	Black et al.	2004/0005800 A1	1/2004	Hou
8,587,211 B2	11/2013	Melanson	2004/0090781 A1	5/2004	Yeoh
8,593,074 B2	11/2013	Hatley et al.	2004/0090784 A1	5/2004	Ward
8,593,129 B2	11/2013	Gaknoki et al.	2004/0212991 A1	10/2004	Galli
8,593,814 B2	11/2013	Ji	2004/0218372 A1	11/2004	Hamasaki
D694,925 S	12/2013	Fukasawa	2005/0032402 A1	2/2005	Takanashi
8,598,809 B2	12/2013	Negley et al.	2005/0047170 A1	3/2005	Hilburger
8,602,591 B2	12/2013	Lee	2005/0083698 A1	4/2005	Zampini
8,610,364 B2	12/2013	Melanson et al.	2005/0122713 A1	6/2005	Hutchins
8,610,365 B2	12/2013	King et al.	2005/0130336 A1	6/2005	Collins, III
8,611,106 B2	12/2013	Fang	2005/0146884 A1	7/2005	Scheithauer
8,616,724 B2	12/2013	Pickard	2005/0174780 A1	8/2005	Park
8,624,505 B2	1/2014	Huang	2005/0205878 A1	9/2005	Kan
D699,179 S	2/2014	Alexander	2005/0242362 A1	11/2005	Shimizu
8,643,038 B2	2/2014	Collins	2005/0269060 A1	12/2005	Ku
8,646,944 B2	2/2014	Villard	2005/0270775 A1	12/2005	Harbers
8,646,949 B2	2/2014	Brunt, Jr. et al.	2005/0286265 A1	12/2005	Zampini et al.
8,652,357 B2	2/2014	Ryu	2006/0001381 A1	1/2006	Robinson
8,653,750 B2	2/2014	Deurenberg et al.	2006/0039156 A1	2/2006	Chen
D700,728 S	3/2014	Fukasawa	2006/0062019 A1	3/2006	Young
8,684,556 B2	4/2014	Negley et al.	2006/0076672 A1	4/2006	Petroski
8,684,569 B2	4/2014	Pickard et al.	2006/0141851 A1	6/2006	Matsui
8,690,383 B2	4/2014	Zampini, II et al.	2006/0146422 A1	7/2006	Koike
8,698,421 B2	4/2014	Ludorf	2006/0146531 A1	7/2006	Reo et al.
D704,369 S	5/2014	Lindsley et al.	2006/0152140 A1	7/2006	Brandes
8,723,427 B2	5/2014	Collins et al.	2006/0221272 A1	10/2006	Negley et al.
8,740,444 B2	6/2014	Reynolds et al.	2006/0262544 A1	11/2006	Piepgas
8,742,684 B2	6/2014	Melanson	2006/0262545 A1	11/2006	Piepgas
8,749,131 B2	6/2014	Rains, Jr. et al.	2007/0025103 A1	2/2007	Chan
8,749,173 B1	6/2014	Melanson et al.	2007/0064428 A1	3/2007	Beauchamp
8,757,840 B2	6/2014	Pickard et al.	2007/0096057 A1	5/2007	Hampden-Smith
8,760,073 B2	6/2014	Ko	2007/0109795 A1	5/2007	Gabrieus
8,760,080 B2	6/2014	Yu	2007/0139923 A1	6/2007	Negley et al.
8,764,225 B2	7/2014	Narendran et al.	2007/0153521 A1	7/2007	Konuma
8,777,455 B2	7/2014	Pickard et al.	2007/0158668 A1	7/2007	Tarsa et al.
8,783,938 B2	7/2014	Alexander	2007/0170447 A1	7/2007	Negley et al.
8,786,201 B2	7/2014	Hamamoto et al.	2007/0223219 A1	9/2007	Medendorp, Jr.
8,786,210 B2	7/2014	Delucia	2007/0238327 A1	10/2007	Hsu
8,786,211 B2	7/2014	Gilliom	2007/0242461 A1	10/2007	Reisenauer
8,786,212 B2	7/2014	Terazawa	2007/0253201 A1	11/2007	Blincoe
8,786,213 B2	7/2014	Yang et al.	2007/0253202 A1	11/2007	Wu
8,791,642 B2	7/2014	Van De Ven	2007/0253209 A1	11/2007	Loh et al.
8,794,792 B1	8/2014	Moghal	2007/0268698 A1	11/2007	Chen et al.
8,796,948 B2	8/2014	Weaver	2007/0269915 A1	11/2007	Leong et al.
8,810,227 B2	8/2014	Flaibani et al.	2007/0275576 A1	11/2007	Yang
8,814,385 B2	8/2014	Onaka et al.	2007/0285028 A1	12/2007	Tsinker et al.
			2007/0295969 A1	12/2007	Chew et al.
			2007/0297177 A1	12/2007	Wang
			2008/0012036 A1	1/2008	Loh et al.
			2008/0013316 A1	1/2008	Chiang

(56)

References Cited

U.S. PATENT DOCUMENTS

2008/0043470	A1	2/2008	Wimberly	2010/0296289	A1	11/2010	Villard et al.
2008/0076272	A1	3/2008	Hsu	2010/0301360	A1	12/2010	Van De Ven
2008/0080190	A1	4/2008	Walczak	2010/0301774	A1	12/2010	Chemel et al.
2008/0084700	A1	4/2008	Van De Ven	2010/0308742	A1	12/2010	Melanson
2008/0106907	A1	5/2008	Trott	2010/0319953	A1	12/2010	Yochum
2008/0112121	A1	5/2008	Cheng	2011/0013397	A1	1/2011	Catone et al.
2008/0117500	A1	5/2008	Narendran et al.	2011/0043129	A1	2/2011	Koolen
2008/0121921	A1	5/2008	Loh et al.	2011/0044046	A1	2/2011	Abu-Ageel
2008/0130275	A1	6/2008	Higley	2011/0049749	A1	3/2011	Bailey
2008/0142194	A1	6/2008	Zhou	2011/0050100	A1	3/2011	Bailey
2008/0157112	A1	7/2008	He	2011/0050101	A1	3/2011	Bailey
2008/0158881	A1	7/2008	Liu	2011/0050124	A1	3/2011	Bailey
2008/0158887	A1	7/2008	Zhu	2011/0051407	A1	3/2011	St. Ives et al.
2008/0165530	A1	7/2008	Hendrikus	2011/0051414	A1	3/2011	Bailey
2008/0173884	A1	7/2008	Chitnis et al.	2011/0090684	A1	4/2011	Logan et al.
2008/0179611	A1	7/2008	Chitnis et al.	2011/0097921	A1	4/2011	Hsu
2008/0192478	A1	8/2008	Chen	2011/0103070	A1	5/2011	Zhang et al.
2008/0198112	A1	8/2008	Roberts	2011/0115381	A1	5/2011	Carlin
2008/0219002	A1	9/2008	Sommers et al.	2011/0122643	A1	5/2011	Spork
2008/0219303	A1	9/2008	Chen et al.	2011/0134634	A1	6/2011	Gingrich, III
2008/0224598	A1	9/2008	Baretz	2011/0136374	A1	6/2011	Mostoller
2008/0224631	A1	9/2008	Melanson	2011/0140620	A1	6/2011	Lin et al.
2008/0274641	A1	11/2008	Weber	2011/0180841	A1	7/2011	Chang
2008/0308825	A1	12/2008	Chakraborty et al.	2011/0193490	A1	8/2011	Kumar
2009/0021936	A1	1/2009	Stimac et al.	2011/0210360	A1	9/2011	Negley
2009/00226913	A1	1/2009	Mrakovich	2011/0222270	A1	9/2011	Porciatti
2009/0034283	A1	2/2009	Albright	2011/0222277	A1	9/2011	Negley
2009/0046464	A1	2/2009	Liu	2011/0253358	A1	10/2011	Huang
2009/0050907	A1	2/2009	Yuan et al.	2011/0255287	A1	10/2011	Li
2009/0050908	A1	2/2009	Yuan et al.	2011/0273079	A1	11/2011	Pickard
2009/0052158	A1	2/2009	Bierhuizen	2011/0279015	A1	11/2011	Negley
2009/0080185	A1	3/2009	McMillan	2011/0285308	A1	11/2011	Crystal
2009/0086474	A1	4/2009	Chou	2011/0285314	A1	11/2011	Carney et al.
2009/0091935	A1	4/2009	Tsai	2011/0292483	A1	12/2011	Pakhchyan et al.
2009/0103299	A1	4/2009	Boyer et al.	2011/0306219	A1	12/2011	Swanger
2009/0129084	A1	5/2009	Tsao	2011/0309773	A1	12/2011	Beers
2009/0141500	A1	6/2009	Peng	2011/0316441	A1	12/2011	Huynh
2009/0154166	A1	6/2009	Zhang	2011/0316446	A1	12/2011	Kang et al.
2009/0167203	A1	7/2009	Dahlman et al.	2012/0002417	A1	1/2012	Li
2009/0180276	A1	7/2009	Benitez	2012/0014115	A1	1/2012	Park et al.
2009/0184616	A1	7/2009	Van De Ven et al.	2012/0018754	A1	1/2012	Lowes
2009/0195168	A1	8/2009	Greenfeld	2012/0019127	A1	1/2012	Hirosaki
2009/0225551	A1	9/2009	Chang et al.	2012/0021623	A1	1/2012	Gorman
2009/0236997	A1	9/2009	Liu	2012/0025729	A1	2/2012	Melanson et al.
2009/0294114	A1	12/2009	Yang	2012/0038280	A1	2/2012	Zoorob et al.
2009/0296388	A1	12/2009	Wu et al.	2012/0038291	A1	2/2012	Hasnain
2009/0310354	A1	12/2009	Zampini, II et al.	2012/0051048	A1	3/2012	Smit
2009/0317988	A1	12/2009	Lin	2012/0051056	A1	3/2012	Derks
2010/0015821	A1	1/2010	Hsu	2012/0051068	A1	3/2012	Pelton
2010/0019697	A1	1/2010	Korsunsky	2012/0092860	A1	4/2012	Blackstone
2010/0026158	A1	2/2010	Wu	2012/0106152	A1	5/2012	Zheng
2010/0027258	A1	2/2010	Maxik	2012/0112661	A1	5/2012	Van De Ven
2010/0060202	A1	3/2010	Melanson et al.	2012/0119658	A1	5/2012	McDaniel
2010/0072505	A1	3/2010	Gingrich, III	2012/0140468	A1	6/2012	Chang
2010/0073783	A1	3/2010	Sun	2012/0140474	A1	6/2012	Jurik et al.
2010/0073884	A1	3/2010	Pelozza	2012/0146519	A1	6/2012	Briggs
2010/0091487	A1	4/2010	Shin	2012/0169242	A1	7/2012	Olson
2010/0091497	A1	4/2010	Chen	2012/0175653	A1	7/2012	Weber
2010/0102696	A1	4/2010	Sun	2012/0187830	A1	7/2012	Shum
2010/0110684	A1	5/2010	Abdelsamed et al.	2012/0223657	A1	9/2012	Van De Ven
2010/0110728	A1	5/2010	Dubrow et al.	2012/0224177	A1	9/2012	Harbers et al.
2010/0128484	A1	5/2010	Peng	2012/0236553	A1	9/2012	Cash
2010/0132918	A1	6/2010	Lin	2012/0250309	A1	10/2012	Handsaker
2010/0141173	A1	6/2010	Negrete	2012/0268894	A1	10/2012	Alexander
2010/0142189	A1	6/2010	Hong	2012/0286304	A1	11/2012	Letoquin
2010/0149818	A1	6/2010	Ruffin	2012/0286319	A1	11/2012	Lee
2010/0157605	A1	6/2010	Chang	2012/0287642	A1	11/2012	Zeng
2010/0174345	A1	7/2010	Ashdown	2012/0292660	A1	11/2012	Kanno
2010/0195323	A1	8/2010	Schaefer et al.	2012/0307487	A1	12/2012	Eckel
2010/0230709	A1	9/2010	Kanno	2012/0307494	A1	12/2012	Zlotnikov et al.
2010/0238630	A1	9/2010	Xu	2012/0313124	A1	12/2012	Clatterbuck
2010/0243219	A1	9/2010	Yang	2013/0002167	A1	1/2013	Van De Ven
2010/0246179	A1	9/2010	Long	2013/0003370	A1	1/2013	Watanabe
2010/0260945	A1	10/2010	Kites	2013/0003388	A1	1/2013	Jensen
2010/0284181	A1	11/2010	O'Brien et al.	2013/0026942	A1	1/2013	Ryan
				2013/0042510	A1	2/2013	Nall et al.
				2013/0049602	A1	2/2013	Raj
				2013/0049603	A1	2/2013	Bradford
				2013/0049627	A1	2/2013	Roberts

(56)

References Cited

U.S. PATENT DOCUMENTS

2013/0069561 A1 3/2013 Melanson et al.
 2013/0070441 A1 3/2013 Moon
 2013/0070442 A1 3/2013 Negley
 2013/0082612 A1 4/2013 Kim
 2013/0083510 A1 4/2013 Park
 2013/0094225 A1 4/2013 Leichner
 2013/0095673 A1 4/2013 Brandon
 2013/0140490 A1 6/2013 Fujinaga
 2013/0162140 A1 6/2013 Shamoto et al.
 2013/0170220 A1 7/2013 Bueeler
 2013/0170221 A1 7/2013 Isogai et al.
 2013/0176728 A1 7/2013 Bizzotto et al.
 2013/0193869 A1 8/2013 Hong et al.
 2013/0221489 A1 8/2013 Cao et al.
 2013/0229114 A1 9/2013 Eisele et al.
 2013/0229804 A1 9/2013 Holder et al.
 2013/0235555 A1 9/2013 Tanaka
 2013/0235579 A1 9/2013 Smith
 2013/0235580 A1 9/2013 Smith
 2013/0241392 A1 9/2013 Pickard et al.
 2013/0241440 A1 9/2013 Gaknoki et al.
 2013/0249434 A1 9/2013 Medendorp
 2013/0250573 A1 9/2013 Taskar et al.
 2013/0250581 A1 9/2013 Tang et al.
 2013/0258636 A1 10/2013 Rettke
 2013/0265777 A1 10/2013 Zollers et al.
 2013/0300303 A1 11/2013 Liu
 2013/0301252 A1 11/2013 Hussell et al.
 2013/0322072 A1 12/2013 Pu et al.
 2014/0015419 A1 1/2014 Shah et al.
 2014/0016318 A1 1/2014 Pokrajac
 2014/0036510 A1 2/2014 Preston et al.
 2014/0043813 A1 2/2014 Dube' et al.
 2014/0048743 A1 2/2014 Le-Mercier
 2014/0049241 A1 2/2014 Gaknoki et al.
 2014/0049962 A1 2/2014 Holder et al.
 2014/0055038 A1 2/2014 Cappitelli et al.
 2014/0055054 A1 2/2014 Borkar et al.
 2014/0062330 A1 3/2014 Neundorfer
 2014/0063779 A1 3/2014 Bradford
 2014/0071685 A1 3/2014 Black et al.
 2014/0071696 A1 3/2014 Park, II et al.
 2014/0078715 A1 3/2014 Pickard et al.
 2014/0078722 A1 3/2014 Caldwell et al.
 2014/0078746 A1 3/2014 Caldwell et al.
 2014/0103796 A1 4/2014 Jansen
 2014/0126205 A1 5/2014 Davis et al.
 2014/0126224 A1 5/2014 Brunt, Jr. et al.
 2014/0134880 A1 5/2014 Yeh
 2014/0140052 A1 5/2014 Villard
 2014/0159077 A1 6/2014 Kuenzler
 2014/0159600 A1 6/2014 Sutardja
 2014/0167601 A1 6/2014 Harry
 2014/0167646 A1 6/2014 Zukauskas et al.
 2014/0176016 A1 6/2014 Li
 2014/0198531 A1 7/2014 Iwasaki
 2014/0217433 A1 8/2014 Tudorica
 2014/0217907 A1 8/2014 Harris
 2014/0218909 A1 8/2014 Tetsuo et al.
 2014/0225511 A1 8/2014 Pickard et al.
 2014/0225532 A1 8/2014 Groeneveld
 2014/0233193 A1 8/2014 Alexander
 2014/0268631 A1 9/2014 Pickard
 2014/0268724 A1 9/2014 Yanping
 2014/0268737 A1 9/2014 Athalye et al.
 2014/0286016 A1 9/2014 Montagne
 2014/0286018 A1 9/2014 Zhang et al.
 2014/0361701 A1 12/2014 Siessegger et al.
 2014/0367633 A1 12/2014 Bibl
 2015/0002034 A1 1/2015 Van De Ven
 2015/0029717 A1 1/2015 Shen et al.
 2015/0036339 A1 2/2015 Ashdown et al.
 2015/0043218 A1 2/2015 Hu
 2015/0060922 A1 3/2015 Wilcox

2015/0236225 A1 8/2015 David
 2015/0295144 A1 10/2015 Weiler
 2016/0174319 A1 6/2016 Li

FOREIGN PATENT DOCUMENTS

CN 201739849 A 2/2011
 CN 202040752 A 11/2011
 CN 102269351 A 12/2011
 GB 2457016 A 8/2009
 JP 61-070306 U 5/1986
 JP 2003-092022 A 3/2003
 JP 2004-179048 A 6/2004
 JP 2004-265626 A 9/2004
 JP 2005-017554 A 1/2005
 JP 2005-071818 A 3/2005
 JP 2005-235778 A 9/2005
 JP 2005-267964 A 9/2005
 JP 2006-236796 A 9/2006
 JP 2006-253274 A 9/2006
 JP 2006-310138 A 11/2006
 JP D1307268 B 8/2007
 JP D1307434 B 8/2007
 JP 2007-273205 A 10/2007
 JP 2007-273209 A 10/2007
 JP 2011-508406 A 3/2011
 JP 2011-204495 A 10/2011
 JP 2011-204658 A 10/2011
 KR 1020070039683 A 4/2007
 KR 1020090013704 A 2/2009
 KR 100974942 B1 8/2010
 KR 1020120050280 A 5/2012
 TW 2004-25542 A 11/2004
 TW 290967 M 5/2006
 TW 296481 M 8/2006
 TW 1273858 B 2/2007
 TW 1318461 B 12/2009
 WO DM/057383 B 9/2001
 WO 02/12788 A1 2/2002
 WO 02/15281 A2 2/2002
 WO 2004/071143 A1 8/2004
 WO 2005/093862 A2 10/2005
 WO 2006/066531 A1 6/2006
 WO 2006/066531 A1 6/2006
 WO 2007/128070 A1 11/2007
 WO 2008/108832 A1 9/2008
 WO 2009/044330 A1 4/2009
 WO 2009/108799 A1 9/2009
 WO 2009/120555 A1 10/2009
 WO 2010/016002 A1 2/2010
 WO 2010/059647 A1 5/2010
 WO 2011/019945 A1 2/2011
 WO 2013/059298 A1 4/2013
 WO 2013/192014 A2 12/2013
 WO 2013/192014 A3 12/2013
 WO 2014/099681 A2 6/2014
 WO 2014/099681 A3 12/2014

OTHER PUBLICATIONS

Acuity Brands Lighting Inc. Product Catalog, downloaded from www.acuitybrands.com, dated Apr. 2013, 90pp.
 Acuity Brands, "A Guided Tour of Area Light Sources—Past, Present and Future," downloaded from www.acuitybrands.com, version dated Jun. 20, 2013, 72pp.
 Alanod GmbH, "WhiteOptics," downloaded from www.alanod.com, dated Apr. 2014, 12pp.
 Altman Lighting, "Spectra Cube," downloaded from <http://altmanstagelighting.com/altman-led-green-lighting/led-spectra-cube/Altman-Spectra-Cube-Data-Sheet-v3.pdf> on May 28, 2014, 1p.
 Bega Lighting, "In-ground luminaire RGBW IP 67 Product data sheet," downloaded from http://www.bega.com/download/datenblaetter/en/7926_pdf on May 28, 2014, 1p.
 CORM 2011 Conference, Gaithersburg, MD, "Calculation of CCT and Duv and Practical Conversion Formulae," dated May 3-5, 2011, National Institute of Standards and Technology, 28pp.

(56)

References Cited

OTHER PUBLICATIONS

Lumitronix, "Carclo lens for side emitting 360 degrees," downloaded from <http://www.leds.de/en/High-Power-LEDs/Lenses-and-optics/Carclo-lens-for-side-emitting-360.html> on May 28, 2014, 2pp.

"Introduction to Catmull-Rom Splines," downloaded on Aug. 7, 2015 from www.mvps.org/directx/articles/catmull/, 2pp.

Wikipedia, "CIE 1931 color space," version dated Apr. 23, 2014, downloaded from www.wikipedia.org, 12pp.

Osram Sylvania, "ColorCalculator User Guide", downloaded on Jun. 3, 2014 from www.sylvania.com, 44pp.

Osram Sylvania, "ColorCalculator User Guide", downloaded on Oct. 19, 2015 from www.sylvania.com, 50pp.

Kenneth Kelly, "Color Designations for Lights," U.S. Department of Commerce, National Bureau of Standards, Research Paper RP1565, Journal of Research of the National Bureau of Standards, vol. 31, Nov. 1943, pp. 271-278.

Philips Color Kinetics, "LED Cove Lighting," downloaded on May 28, 2014 from <http://www.colorkinetics.com/ls/guides-brochures/pck-led-cove-lighting.pdf>, 32pp.

Philips Color Kinetics, "IntelliWhite LED Lighting Systems," downloaded on May 28, 2014 from <http://www.colorkinetics.com/ls/intelliwhite/>, 2pp.

Philips Color Kinetics, "Color-Changing LED Lighting Systems," downloaded on May 27, 2014 from <http://www.colorkinetics.com/ls/rgb/>, 2pp.

Wikipedia, "Color temperature," version dated May 21, 2014, downloaded on Jun. 3, 2014 from www.wikipedia.org, 17pp.

Cree, "LED Color Mixing: Basics and Background," downloaded on Sep. 24, 2014 from www.cree.com, 24pp.

Cree, "Cree(r) LMH2 LED Modules," Product Family Data Sheet, downloaded on May 27, 2014 from http://www.cree.com/~media/Files/Cree/LED%20Components%20and%20Modules/Modules/Data%20Sheets/LEDModules_LMH2.pdf, 18pp.

"Dialight ES Series RGB LED Luminaire," downloaded on May 28, 2014 from http://www.dialight.com/Assets/Brochures_And_Catalogs/Illumination/MDEXESTEMORGB_A.pdf, 2pp.

Naomi Miller, "Color Spaces and Planckian Loci: Understanding all those Crazy Color Metrics," U.S. Department of Energy, Pacific Northwest National Laboratory, Portland, Oregon, downloaded on May 30, 2014, 49pp.

Kahen, Keith, "High-Efficiency Colloidal Quantum Dot Phosphors," University at Buffalo, Suny, Doe SSL R&D Workshop, Long Beach, California, Jan. 29-31, 2013, 12pp.

Bush, Steve, "Chip gives dim-to-warm LED lighting without MCU," dated Apr. 1, 2014, downloaded from <http://www.electronicweekly.com/news/components/led-lighting/chip-gives-dim-warm-led-lighting-without-mcu-2014-04/>, 6pp.

"Ecosense to reveal new TROV LED Linear Platform at 2015 Lightfair International in New York City," May 4, 2015, blog downloaded from www.ecosense.com, 3pp.

"Ecosense to reveal new TROV LED Linear Platform at 2015 Lightfair International in New York City," May 4, 2015, press release downloaded from www.ecosense.com, 2pp.

Freyssinier, Jean P. et al., "Class A Color Designation for Light Sources Used in General Illumination," J. Light & Vis. Env., vol. 37, Nos. 2-3, Nov. 7, 2013, pp. 10-14.

Freyssinier, Jean P. et al., "White Lighting: A Provisional Model for Predicting Perceived Tint in 'White' Illumination," Color Res. & App'n, vol. 39, No. 5, Oct. 2014, pp. 466-479.

Freyssinier, Jean P. et al., "The Class A Color Designation for Light Sources," Rensselaer Polytechnic Institute, 2013 DOE Solid-State Lighting R&D Workshop, Hilton Long Beach, California, Jan. 29-31, 2013, 26pp.

Freyssinier, Jean P. et al., "Class A Lighting," Rensselaer Polytechnic Institute, Strategies in Light 2012, 27 pp.

Freyssinier, Jean P. et al., "White Lighting," Color Res. & App'n, (volume unknown), Sep. 3, 2011, downloaded from http://www.Irc.rpi.edu/programs/solidstate/assist/pdf/SIL-2012_FreyssinierRea_WhiteLighting.pdf, 12pp.

Rea et al., "White lighting for residential applications," Lighting Res. Technol., Mar. 27, 2012, downloaded from www.sagepublications.com at <http://irt.sagepub.com/content/early/2012/03/27/1477153512442936>, 15pp.

Oh, Jeong et al., "Full down-conversion of amber-emitting phosphor-converted light-emitting diodes with powder phosphors and a long-wave pass filter," vol. 18, No. 11, May 24, 2010, pp. 11063-11072.

"Microcellular Reflective Sheet MCPET," downloaded on Feb. 3, 2015 from www.furukawa.co.jp/foam/, 6pp.

"Aculux—Black Body Dimming and Tunable White Responsive Technologies," downloaded on May 28, 2014 from <http://www.junolightinggroup.com/literature/LIT-AX-LED-BBD-TW.pdf>, 28pp.

"Khatod—Symmetric & Asymmetric Strip Lens," downloaded on May 5, 2015 from www.khatod.com, 3pp.

"KKDC Catalog 2.0," downloaded on May 28, 2014 from <http://www.kkdc.co.uk/media/kkdc-catalogue.pdf>, 134pp.

"KKDC UK—Linear LED Lighting," downloaded from www.kkdc.co.uk/application/interior.php on Oct. 22, 2015, 5pp.

Overton, Gail, "LEDs: White LED comprises blue LED and inexpensive dye," LaserFocusWorld, Feb. 12, 2013, downloaded from <http://www.laserfocusworld.com/articles/print/volume-49/issue-02/world-news/leds--white-led-comprises-blue-led-and-inexpensive-dye.html>, 5pp.

"LEDIL TIR Lens Guide," downloaded from www.ledil.com on Jan. 22, 2015, 8pp.

"LED Linear—linear lighting solutions, product overview," downloaded on May 28, 2014 from <http://www.led-linear.com/en/product-overview/system-catalogue/>, 3pp.

"LEDnovation—BR30 Warm Dimming," downloaded on May 28, 2014 from www.lednovation.com/products/BR30_LED.asp, 2pp.

Wikipedia, "Lenticular lens," downloaded on Feb. 18, 2015 from www.wikipedia.org, 5pp.

"Lenticular Sheets," downloaded on Feb. 24, 2015 from www.lenticular-sheets.lpcurope.eu/, 2pp.

Unzner, Norbert, "Light Analysis in lighting technology," B&S Electronische Gerate GmbH, 2001, 14pp.

"Lightolier—Solid-State Lighting," downloaded on May 28, 2014 from http://www.lightolier.com/prospots/leds_solidstate.jsp, 1p.

Wikipedia, "Line of purples," downloaded on Oct. 20, 2015 from www.wikipedia.org, 2pp.

"Lumenbeam Catalog," downloaded on May 27, 2014 from [11_160_en_lumenpulse_lumenbeam_rgb_lbl_rgb_brochure.zip](http://www.lumenpulse.com/en/product/11_160_en_lumenpulse_lumenbeam_rgb_lbl_rgb_brochure.zip), 63pp.

"Lumenetix—Araya Technology," downloaded on May 28, 2014 from www.lumenetix.com/araya-technology, 3pp.

"Lumenpulse—Lumenbeam Large Color Changing," downloaded on May 27, 2014 from www.lumenpulse.com/en/product/11_lumenbeam-large-color-changing, 4pp.

"Lumenpulse—Lumencove Family," downloaded on May 28, 2014 from <http://www.lumenpulse.com/en/products#!3/0/0/0/0>, 2pp.

PCT/US2007/023110, Journee Lighting Inc., International Preliminary Report on Patentability Dated Sep. 8, 2009.

PCT/US2009/035321, Journee Lighting Inc., International Preliminary Report on Patentability Dated Aug. 31, 2010.

PCT/US2009/064858, Journee Lighting Inc., International Preliminary Report on Patentability Dated May 24, 2011.

PCT/US2010/045361, Journee Lighting Inc., International Preliminary Report on Patentability Dated Feb. 14, 2012.

PCT/US2012/060588, Ecosense Lighting Inc., Filed on Oct. 17, 2012.

PCT/US2012/060588, Ecosense Lighting Inc., International Search Report and Opinion Dated Mar. 29, 2013.

PCT/US2012/060588, Ecosense Lighting Inc., International Preliminary Report on Patentability Dated Apr. 22, 2014.

PCT/US2013/045708, Journee Lighting Inc., International Search Report and Opinion Dated Nov. 27, 2013.

PCT/US2013/045708, Journee Lighting Inc., International Preliminary Report on Patentability Dated May 12, 2015.

PCT/US2013/075172, Ecosense Lighting Inc., Filed on Dec. 13, 2013.

(56)

References Cited

OTHER PUBLICATIONS

PCT/US2013/075172, Ecosense Lighting Inc., International Search Report and Opinion Dated Sep. 26, 2014.

PCT/US2013/075172, Ecosense Lighting Inc., International Preliminary Report on Patentability Dated Jun. 23, 2015.

PCT/US2016/020521, Ecosense Lighting Inc., Filed on Mar. 2, 2016.

PCT/US2016/020521, Ecosense Lighting Inc., International Search Report and Opinion Dated May 3, 2016.

PCT/US2016/016972, Ecosense Lighting Inc., Filed on Feb. 8, 2016.

PCT/US2016/016972, Ecosense Lighting Inc., International Search Report and Opinion Dated Apr. 11, 2016.

PCT/US2016/030613, Ecosense Lighting Inc., Filed on May 3, 2016.

PCT/US2016/020523, Ecosense Lighting Inc., Filed on Mar. 2, 2016.

PCT/US2016/020523, Ecosense Lighting Inc., International Search Report and Opinion Dated May 6, 2016.

PCT/US2016/015470, Ecosense Lighting Inc., Filed on Jan. 28, 2016, Entitled "Zoned Optical Cup."

Petluri et al., U.S. Appl. No. 62/288,368, filed Jan. 28, 2016, entitled "Multizone Mixing Cup".

PCT/US2016/015473, Ecosense Lighting Inc., Filed on Jan. 28, 2016, Entitled "Illuminating With a Multizone Mixing Cup."

PCT/US2016/015473, Ecosense Lighting Inc., International Search Report and Opinion Mailed on Apr. 22, 2016.

Petluri et al., U.S. Appl. No. 15/170,806, filed Jun. 1, 2016, entitled "Illuminating With a Multizone Mixing Cup."

PCT/US2016/015318, Ecosense Lighting Inc., Filed on Jan. 28, 2016, Entitled "Compositions or LED Light Conversions."

PCT/US2016/015318, Ecosense Lighting Inc., International Search Report and Opinion, Mailed on Apr. 11, 2016.

PCT/US2016/015348, Ecosense Lighting Inc., Filed on Jan. 28, 2016, Entitled "Systems for Providing Tunable White Light With High Color Rendering."

PCT/US2016/015348, Ecosense Lighting Inc., International Search Report and Opinion Mailed on Apr. 11, 2016.

PCT/US2016/015368, Ecosense Lighting Inc., Filed on Jan. 28, 2016, Entitled "Systems for Providing Tunable White Light With High Color Rendering."

PCT/US2016/015368, Ecosense Lighting Inc., International Search Report and Opinion Mailed on Apr. 19, 2016.

Petluri et al., U.S. Appl. No. 15/173,538, filed Jun. 3, 2016, entitled "System for Providing Tunable White Light With High Color Rendering."

Petluri et al., U.S. Appl. No. 15/173,554, filed Jun. 3, 2016, entitled "System for Providing Tunable White Light With High Color Rendering."

PCT/US2016/015385, Ecosense Lighting Inc., Filed on Jan. 28, 2016, Entitled "Methods for Generating Tunable White Light With High Color Rendering."

PCT/US2016/015402, Ecosense Lighting Inc., Filed on Jan. 28, 2016, Entitled "Methods for Generating Tunable White Light With High Color Rendering."

PCT/US2016/015435, Ecosense Lighting Inc., Filed on Jan. 28, 2016, Entitled "Methods for Generating Melatonin-Response-Tuned White Light With High Color Rendering."

PCT/US2016/015437, Ecosense Lighting Inc., Filed on Jan. 28, 2016, Entitled "Methods for Generating Melatonin-Response-Tuned White Light With High Color Rendering."

PCT/US2016/015441, Ecosense Lighting Inc., Filed on Jan. 28, 2016, Entitled "Methods for Generating Melatonin-Response-Tuned White Light With High Color Rendering."

Petluri et al., U.S. Appl. No. 15/176,083, filed Jun. 7, 2016, entitled "Compositions for LED Light Conversions."

Petluri et al., U.S. Appl. No. 14/526,504, filed Oct. 28, 2014, entitled "Lighting Systems Having Multiple Light Sources," 92pp.

Petluri et al., U.S. Appl. No. 14/636,204, filed Mar. 3, 2015, entitled "Lighting Systems Including Lens Modules for Selectable Light Distribution," 119pp.

Pickard et al., U.S. Appl. No. 14/617,849, filed Feb. 9, 2015, entitled "Lighting Systems Generating Controlled and Wavelength-Converted Light Emissions," 83pp.

Rodgers et al., U.S. Appl. No. 14/702,800, filed May 4, 2015, entitled "Lighting Systems Including Asymmetric Lens Modules for Selectable Light Distribution," 116pp.

Pickard et al., U.S. Appl. No. 14/636,205, filed Mar. 3, 2015, entitled "Low-Profile Lighting System Having Pivotal Lighting Enclosure," 56pp.

Fletcher et al., U.S. Appl. No. 14/702,765, filed May 4, 2015, entitled "Lighting System Having a Sealing System," 92pp.

Fletcher et al., U.S. Appl. No. 29/519,149, filed Mar. 3, 2015, entitled "LED Luminaire," 8pp.

Fletcher et al., U.S. Appl. No. 29/519,153, filed Mar. 3, 2015, entitled "LED Luminaire," 8pp.

Fletcher et al., U.S. Appl. No. 14/816,827, filed Aug. 3, 2015, entitled "Lighting System Having a Mounting Device," 126pp.

Rodgers et al., U.S. Appl. No. 62/202,936, filed Aug. 10, 2015, entitled "Optical Devices and Systems Having a Converging Lens With Grooves," 133pp.

Fletcher et al., U.S. Appl. No. 29/533,666, filed Jul. 20, 2015, entitled "LED Luminaire Having a Mounting System," 10pp.

Knight, Colette, "Xicato—Investigations on the use of LED modules for optimized color appearance in retail applications," downloaded on May 28, 2014 from http://www.xicato.com/sites/default/files/documents/Summary_investigations_on_the_use_of_LED_modules_for_optimized_color_appearance_in_retail_applications.pdf, 5pp.

"Zumtobel—IYON Tunable White," downloaded on Oct. 19, 2015 from http://www.zumtobel.com/tunablewhite/en/index.html#topic_04, 1p.

"Zumtobel—IYON LED Spotlight Catalog," downloaded on Oct. 19, 2015 from <http://www.zumtobel.com/PDB/Ressource/teaser/en/com/lyon.pdf>, 40pp.

"Lumenpulse—Lumenbeam Large Pendant Dynamic White," downloaded on May 28, 2014 from <http://www.lumenpulse.com/en/product/72/lumenbeam-large-pendant-dynamic-white>, 1p.

"Lumileds Application Brief AB08—Optical Testing for SuperFlux, SnapLED and Luxeon Emitters," downloaded on Sep. 24, 2014 from www.lumileds.com, 15pp.

"CandlePowerForums—SOLD: Luxeon III side-emitter white LED," downloaded on May 28, 2014 from <http://www.candlepowerforums.com/vb/showthread.php?140276-SOLD-Luxeon-III-side-emitter-white-LED>, 4pp.

"Lumileds Luxeon Z," downloaded on May 2, 2015 from www.lumileds.com, 2pp.

"Alanod MIRO Catalog," downloaded on Jan. 30, 2015 from www.alanod.com, 8pp.

"Nanoco Group—Cadmium Free Quantum Dots," downloaded on May 30, 2014 from www.nanocotechnologies.com/what-we-do/products/cadmium-free-quantum-dots, 3pp.

"Nanosys—Quantum Dots," downloaded on May 30, 2014 from www.nanosysinc.com/what-we-do/quantum-dots/, 3pp.

"Ocean NanoTech—Products," downloaded on May 30, 2014 from www.oceananotech.com/Products.php, 1p.

"NNCrystal—blog post—May 17, 2010," downloaded from <http://led-lights-led.blogspot.com/2010/05/nncrystal-us-corporation-to-supply.html>, 4pp.

"A Warmer, Cozier White Light: NXP Transforms LED Color Quality," dated Jan. 9, 2013, downloaded from <http://www.nxp.com/news/press-releases/2013/01/a-warmer-cozier-white-light-nxp-transforms-led-color-quality.html>, 2pp.

"Lighting Global Technical Notes, Optical Control Techniques for Off-grid Lighting Products," Jul. 2011 and May 2012, 6pp.

"Pacific Light Technologies—Quantum Dots in Solid State Lighting," downloaded on Oct. 23, 2015 from www.pacificlighttech.com/quantum-dots-in-ssl/, 2pp.

"Philips Lighting—Dim Tone," downloaded on May 27, 2014 from www.usa.lighting.philips.com/lightcommunity/trends/led/dimtone/, 1p.

(56)

References Cited

OTHER PUBLICATIONS

“Philips—Dimmable to warm light for the perfect ambience,” downloaded on May 27, 2014 from www.usa.lighting.philips.com, 2pp.

“Philips—Turn up Ambience and Tone Down Energy Use with Philips BR30 DimTone,” downloaded on May 27, 2014 from www.usa.lighting.philips.com, 11pp.

Wikipedia, “Planckian locus,” downloaded on May 30, 2014 from www.wikipedia.org, 5pp.

Wikipedia, “Quantum dot,” downloaded on May 30, 2014 from http://en.wikipedia.org/wiki/Quantum_dot, 15pp.

“Phosphortech—Flexible Phosphor Sheet—RadiantFlex Datasheet,” Aug. 2014, downloaded from www.phosphortech.com, 10pp.

Wikipedia, “Reflectivity,” downloaded on Jan. 22, 2015 from www.wikipedia.org, 3pp.

“Refraction by lenses,” downloaded on Feb. 17, 2015 from www.physicsclassroom.com, 5pp.

“RTLED—White Paper: Binning and LED,” downloaded on Oct. 13, 2014 from www.rtle.com, 3pp.

Near, AI, “Seeing Beyond CRI,” LED Testing & Application, Nov. 2011, downloaded from www.ies.org/lda/hottopiciled/4.pdf, 2pp.

“Selux—Olivio luminaire,” press release dated Mar. 26, 2014, downloaded from <http://www.selux.com/be/en/news/press/press-detail/article/evolutionary-progress-the-olivio-family-of-system-luminaires-now-with-premium-quality-white-and.html>, 3pp.

“LEDIL—Strada-F Series,” downloaded on May 5, 2015 from www.ledil.com, 7pp.

“Sylvania—ULTRA SE(tm) LED Lamp Family,” downloaded on May 27, 2014 from www.sylvania.com, 3pp.

“Sylvania ULTRA SE(tm) LED Light Bulbs with Color Dimming Sunset Effects,” downloaded on May 27, 2014 from <https://www.youtube.com/watch?v=oZEc-VfJ8EU>, 2pp.

Wikipedia, “Transmittance,” downloaded on Jan. 22, 2015 from www.wikipedia.org, 4pp.

“United Lumen—A Volumetric Displaced Phosphor Light Engine which elegantly and efficiently distributes light in a pattern similar to an incandescent bulb,” downloaded on Jul. 9, 2014 from www.unitedlumen.com, 1p.

“United Lumen—Solid State Volumetric Technology,” downloaded on Jul. 9, 2014 from www.unitedlumen.com, 1p.

“United Lumen—High Brightness V-LED Technology,” downloaded on May 15, 2014 from www.unitedlumen.com, 1p.

“USAI Lighting Catalog,” downloaded on May 27, 2014 from http://www.usaillumination.com/pdf/Warm_Glow_Dimming_pdf, 50pp.

“Winona—Parata 700 Series Cove,” downloaded on May 28, 2014 from www.acuitybrands.com, 2pp.

“Winona Parata Catalog,” downloaded on May 28, 2014 from www.acuitybrands.com, 24pp.

PCT/US2016/030613, Ecosense Lighting Inc., International Search Report and Opinion Dated Aug. 5, 2016.

PCT/US2016/046245, Ecosense Lighting Inc., Filed on Aug. 10, 2016.

PCT/US2016/015470, Ecosense Lighting Inc., International Search Report and Opinion Dated Jul. 8, 2016.

PCT/US2016/015385, Ecosense Lighting Inc., International Search Report and Opinion Dated Apr. 8, 2016.

PCT/US2016/015402, Ecosense Lighting Inc., International Search Report and Opinion Dated Apr. 22, 2016.

PCT/US2016/015435, Ecosense Lighting Inc., International Search Report and Opinion Dated Mar. 31, 2016.

PCT/US2016/015437, Ecosense Lighting Inc., International Search Report and Opinion Dated Mar. 31, 2016.

PCT/US2016/015441, Ecosense Lighting Inc., International Search Report and Opinion Dated Mar. 31, 2016.

Fletcher et al., U.S. Appl. No. 14/816,827, filed Aug. 3, 2015, entitled “Lighting System Having a Mounting Device,” 126pp.

Fletcher et al., U.S. Appl. No. 29/533,667, filed Jul. 20, 2015, entitled “LED Luminaire Having a Mounting System,” 10pp.

Fletcher et al., U.S. Appl. No. 29/533,635, filed Jul. 20, 2015, entitled “LED Luminaire Having a Mounting System,” 10pp.

Fletcher et al., U.S. Appl. No. 15/268,781, filed Sep. 19, 2016, entitled “Lighting System Having a Mounting Device,” 93pp.

Fletcher et al., U.S. Appl. No. 29/578,082, filed Sep. 19, 2016, entitled “LED Luminaire Having a Mounting System,” 10pp.

Fletcher et al., U.S. Appl. No. 29/578,086, filed Sep. 19, 2016, entitled “LED Luminaire Having a Mounting System,” 10pp.

Fletcher et al., U.S. Appl. No. 29/578,094, filed Sep. 19, 2016, entitled “LED Luminaire Having a Mounting System,” 10pp.

Fletcher et al., U.S. Appl. No. 29/578,095, filed Sep. 19, 2016, entitled “LED Luminaire Having a Mounting System,” 10pp.

* cited by examiner

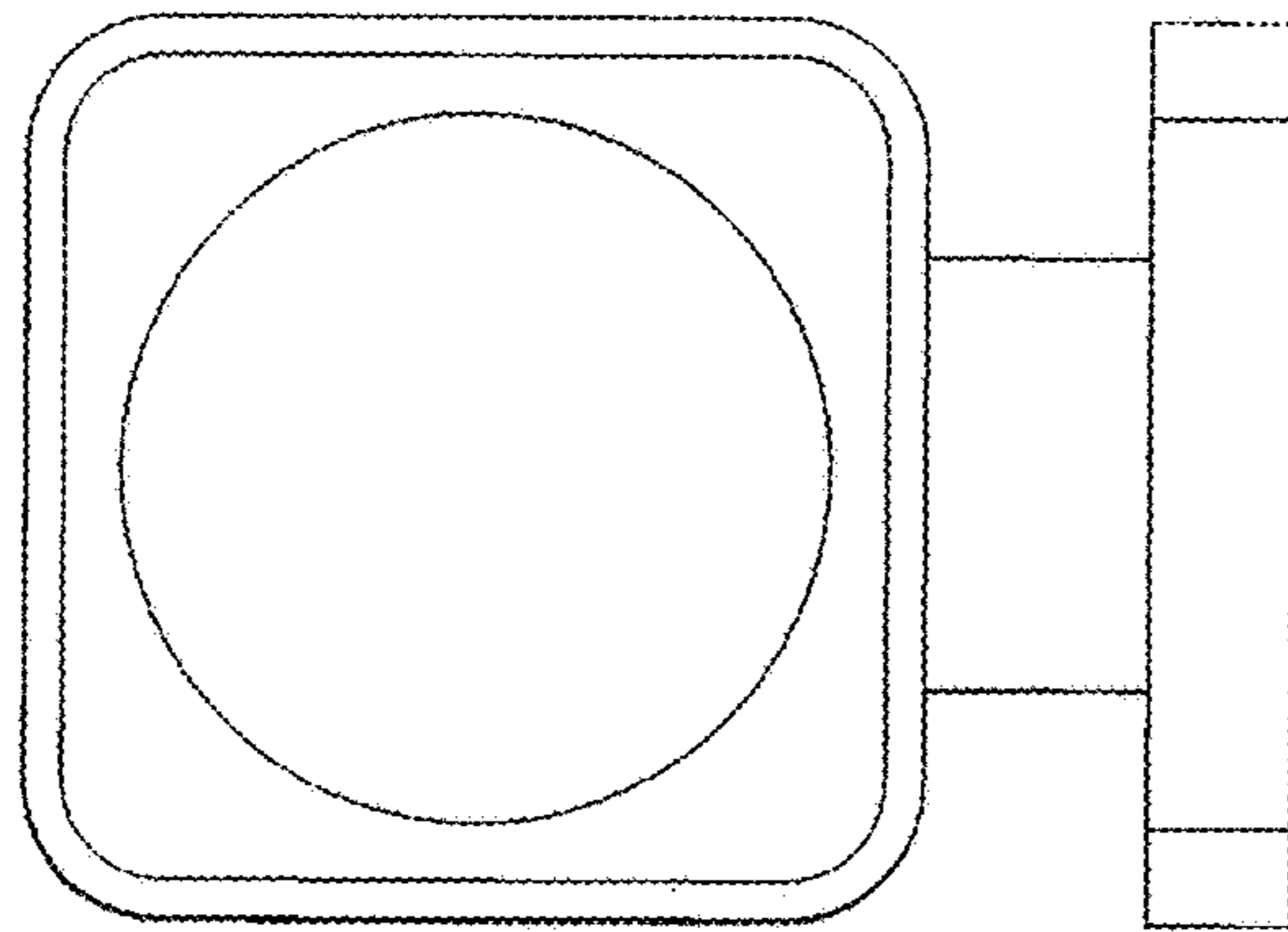


FIG. 1

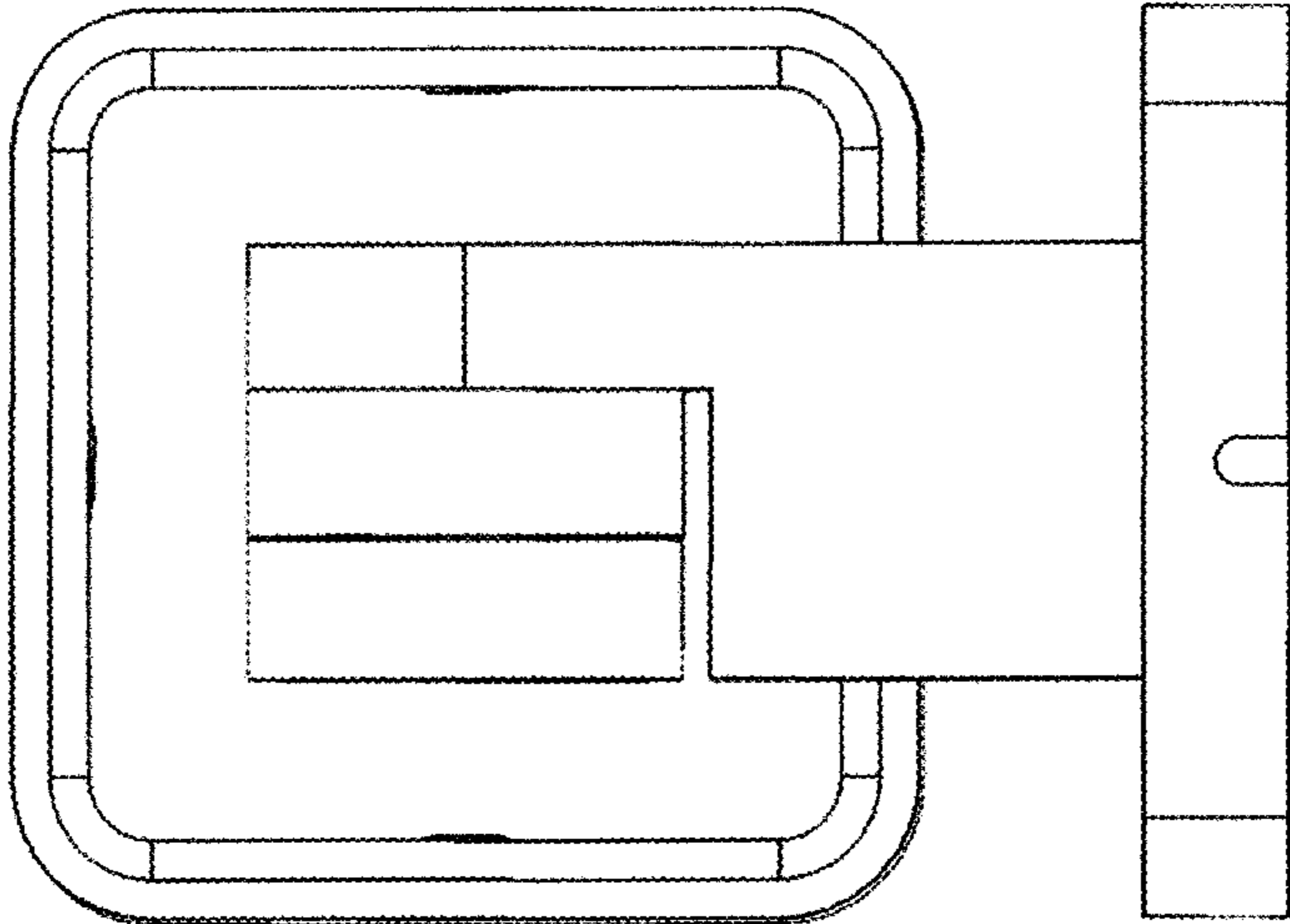


FIG. 2

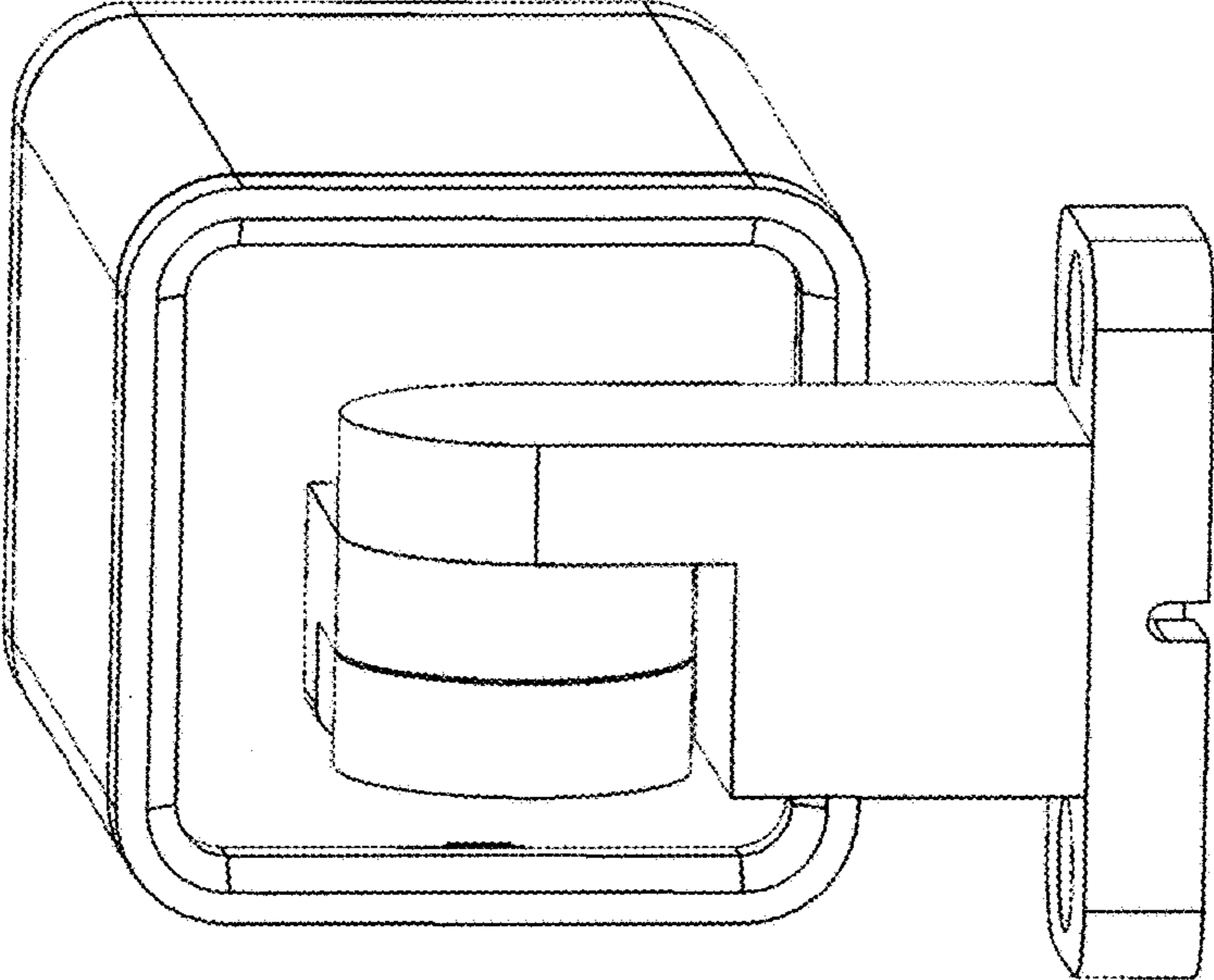


FIG. 3

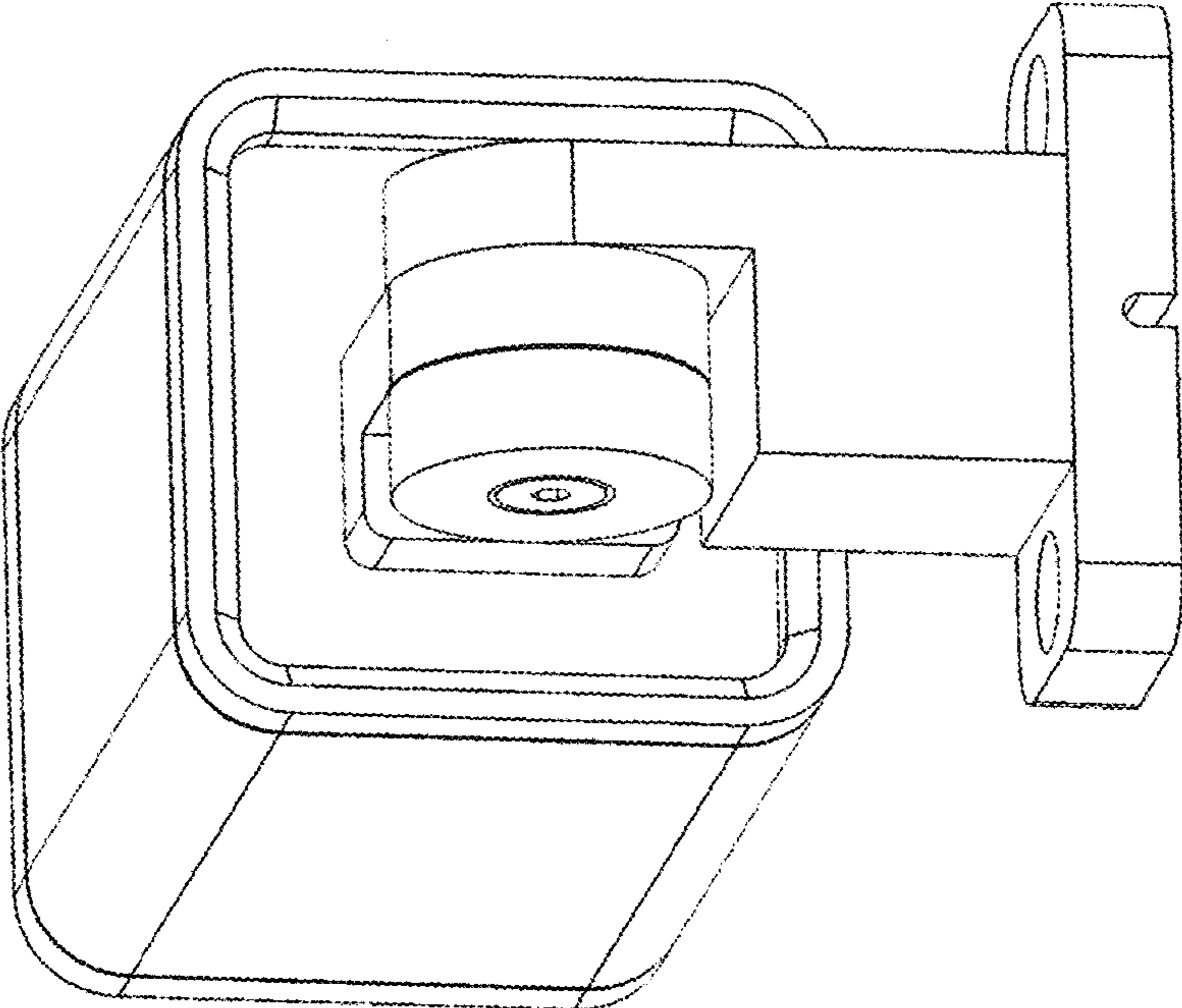


FIG. 4

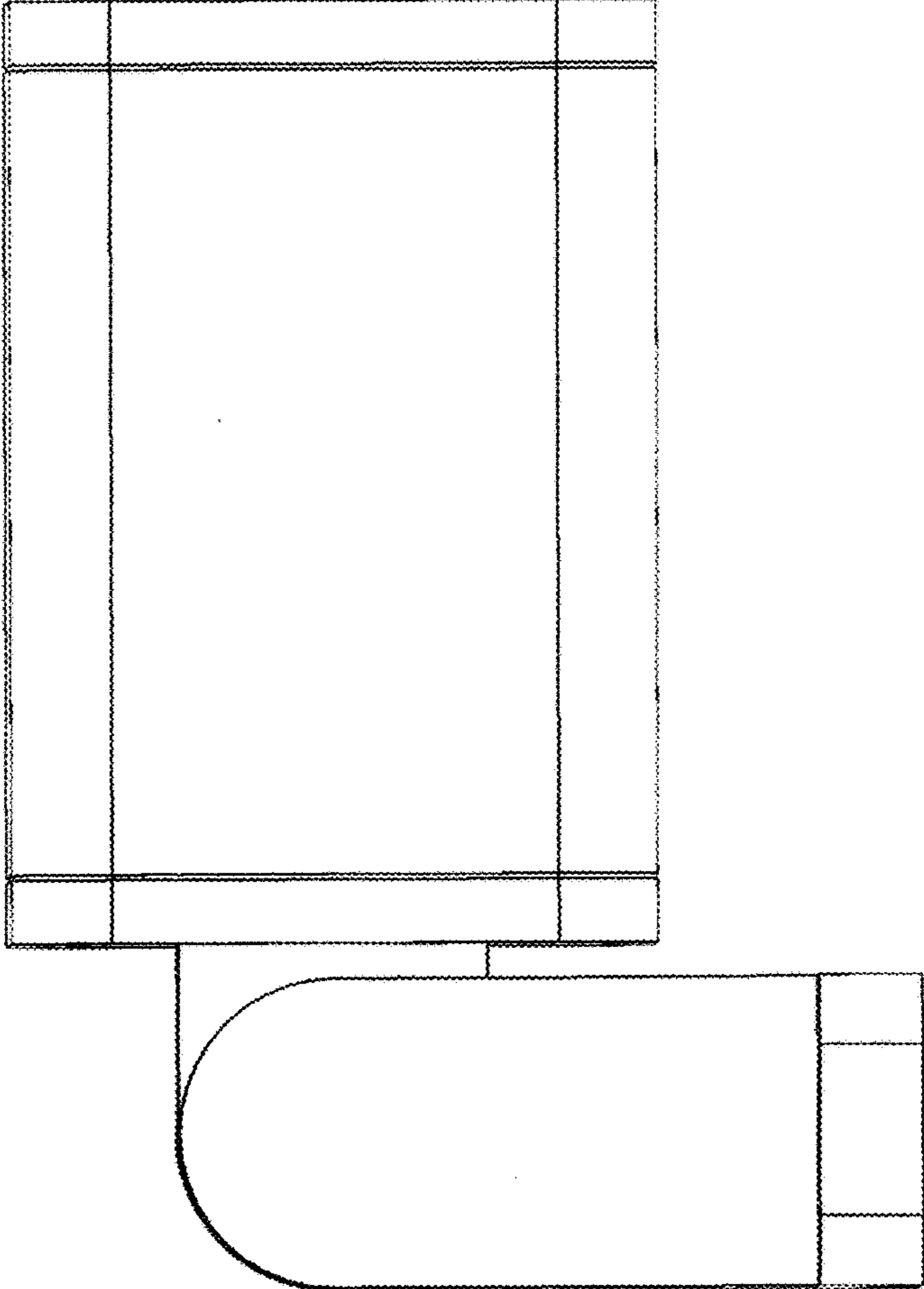


FIG. 5

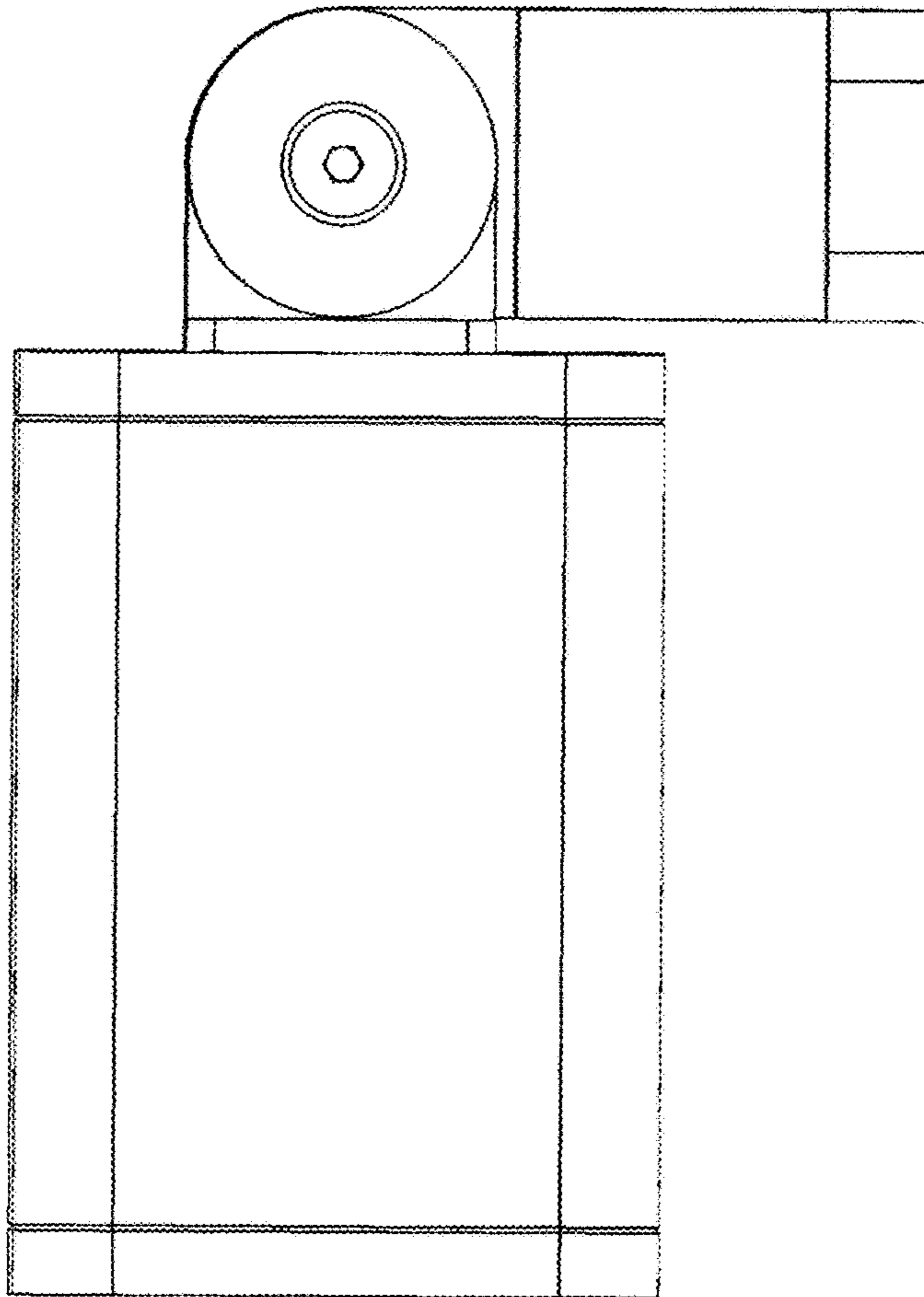


FIG. 6

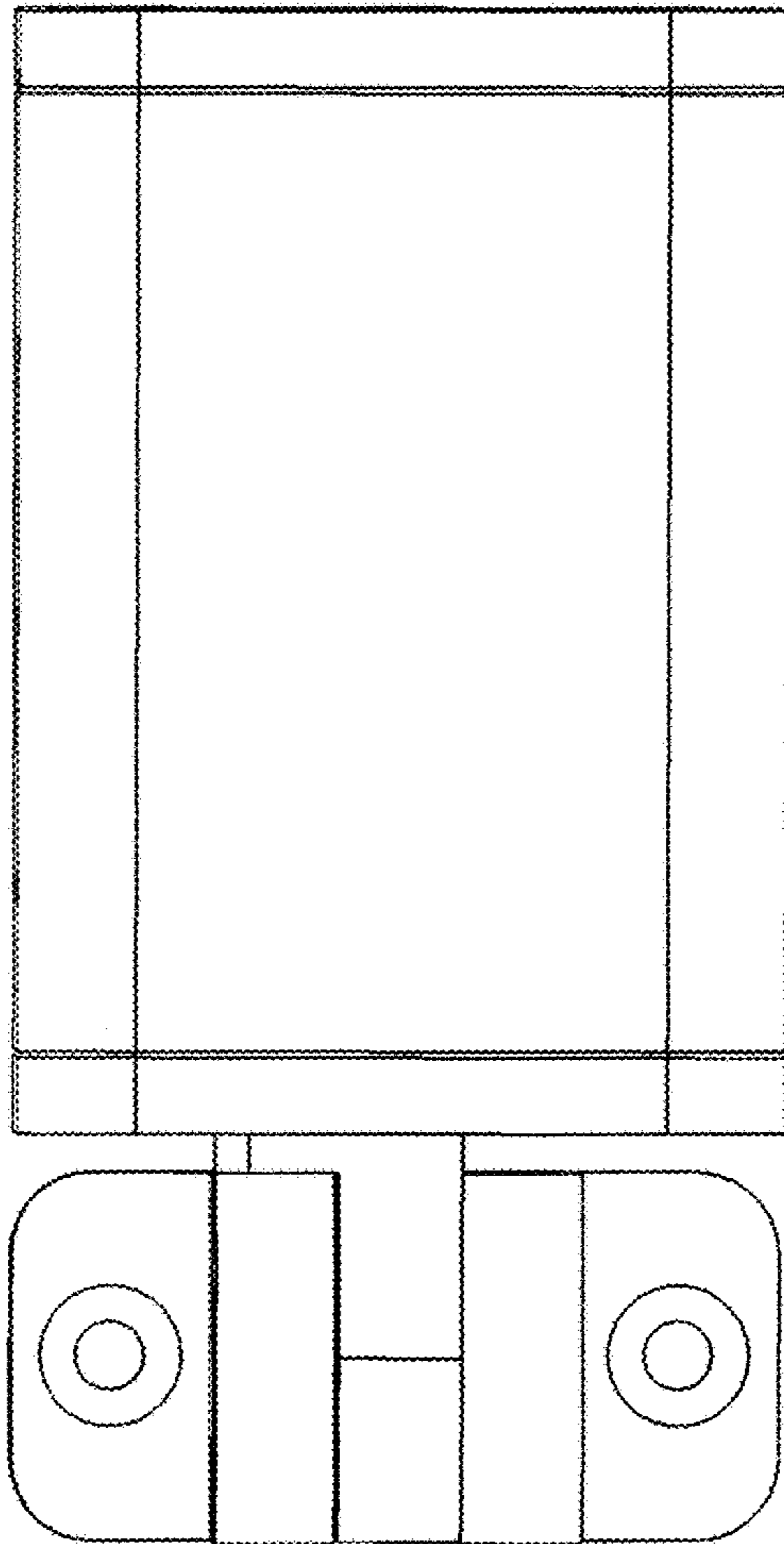


FIG. 7

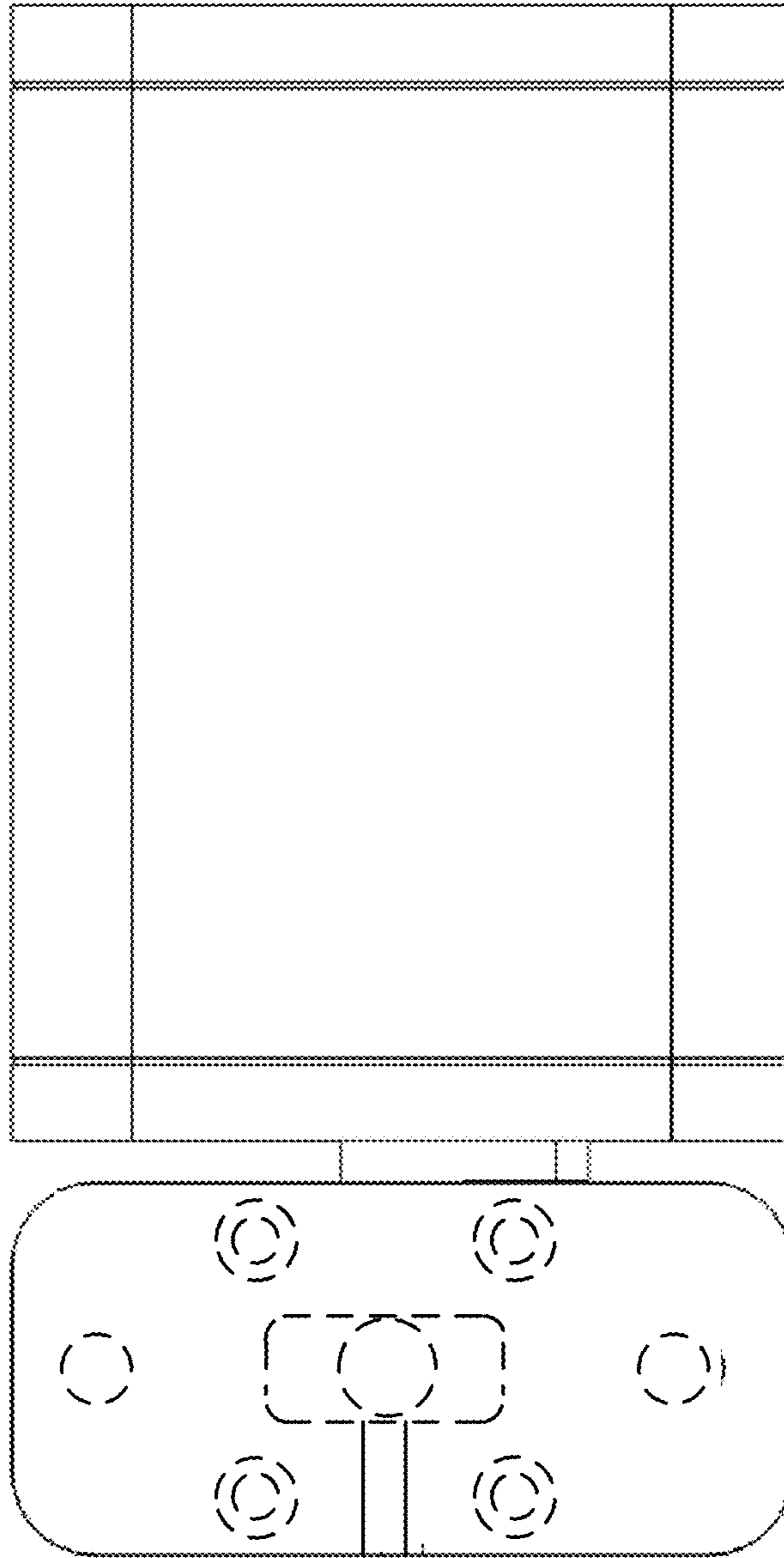


FIG. 8