

US00D960043S

(12) **United States Design Patent** (10) **Patent No.:** **US D960,043 S**
Desberg (45) **Date of Patent:** **** Aug. 9, 2022**

- (54) **TWO WHEELED BOARD**
- (71) Applicant: **RAZOR USA LLC**, Cerritos, CA (US)
- (72) Inventor: **Ian Desberg**, Cerritos, CA (US)
- (73) Assignee: **Razor USA LLC**, Cerritos, CA (US)
- (**) Term: **15 Years**
- (21) Appl. No.: **29/680,089**
- (22) Filed: **Feb. 13, 2019**

4,874,055 A 10/1989 Beer
 4,991,861 A 2/1991 Carn et al.
 5,011,171 A 4/1991 Cook
 (Continued)

FOREIGN PATENT DOCUMENTS

CA 2903571 A1 12/2015
 CN 2486450 Y 4/2002
 (Continued)

OTHER PUBLICATIONS

Alex Banks, Everything You Need To Know About The Hoverboard Craze, highsnobiety.com, Oct. 14, 2015, <http://www.highsnobiety.com/2015/10/14/hoverboard-history>.

(Continued)

Primary Examiner — Ania Aman
 (74) *Attorney, Agent, or Firm* — Knobbe, Martens, Olson & Bear, LLP

Related U.S. Application Data

- (62) Division of application No. 29/571,694, filed on Jul. 20, 2016, now Pat. No. Des. 840,872.
- (51) **LOC (13) Cl.** **12-13**
- (52) **U.S. Cl.**
USPC **D12/1; D21/763**
- (58) **Field of Classification Search**
USPC D12/1; D21/763, 760, 419, 421, 423, D21/426, 765, 766, 769, 771, 776
CPC A63C 17/01; A63C 17/12; A63C 2203/00; A63C 2203/012; A63C 2203/40; A63C 2203/52; B62D 51/02; B62K 2202/00
See application file for complete search history.

(57) **CLAIM**

The ornamental design for a two wheeled board, as shown and described.

DESCRIPTION

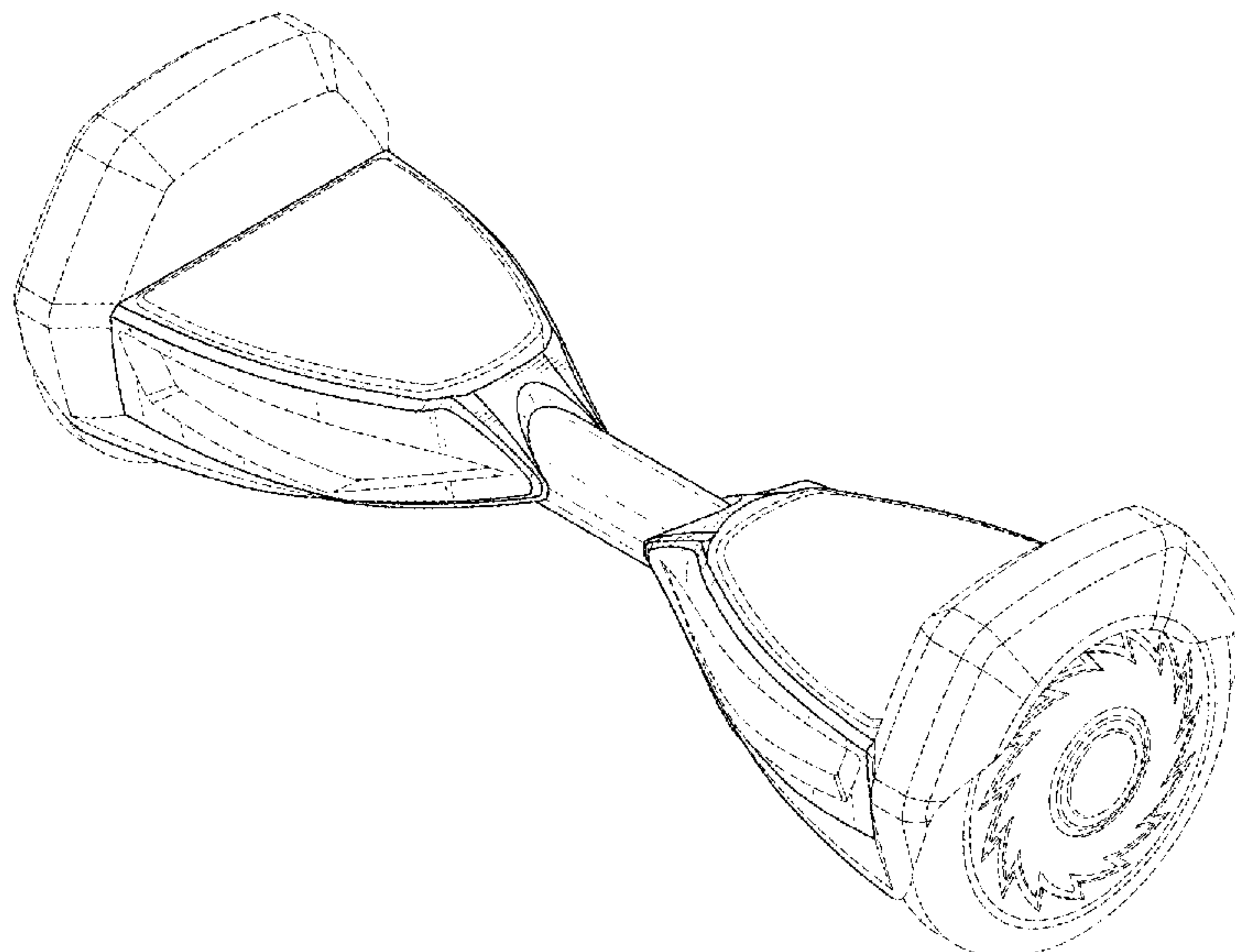
FIG. 1 is a front, top, left-side perspective view of a two wheeled board showing my new design;
 FIG. 2 is a front, bottom, left-side perspective view thereof;
 FIG. 3 is a front view thereof;
 FIG. 4 is a rear view thereof;
 FIG. 5 is a left-side view thereof;
 FIG. 6 is a right-side view thereof;
 FIG. 7 is a top view thereof; and,
 FIG. 8 is a bottom view thereof.
 The broken lines shown in the drawings are for the purpose of illustrating portions of the article that form no part of the claimed design.

1 Claim, 5 Drawing Sheets

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,860,264 A 1/1975 Douglas et al.
 4,065,146 A 12/1977 Denzer
 4,076,270 A 2/1978 Winchell
 4,151,892 A 5/1979 Francken
 4,281,734 A 8/1981 Johnston
 4,325,565 A 4/1982 Winchell
 4,354,569 A 10/1982 Eichholz
 4,484,648 A 11/1984 Jephcott
 4,556,997 A 12/1985 Takamiya et al.
 4,624,469 A 11/1986 Bourne, Jr.
 4,712,806 A 12/1987 Patrin



(56)

References Cited

U.S. PATENT DOCUMENTS

| | | | | | |
|--------------|---------|-------------------|--------------|---------|------------------|
| 5,165,711 A | 11/1992 | Tsai | 7,083,178 B2 | 8/2006 | Potter |
| D355,148 S | 2/1995 | Orsolini | 7,090,040 B2 | 8/2006 | Kamen et al. |
| 5,522,568 A | 6/1996 | Kamen et al. | 7,091,724 B2 | 8/2006 | Heinzmann et al. |
| 5,571,892 A | 11/1996 | Fuji et al. | D528,468 S | 9/2006 | Arling et al. |
| 5,695,021 A | 12/1997 | Schaffner et al. | 7,130,702 B2 | 10/2006 | Morrell |
| 5,701,965 A | 12/1997 | Kamen et al. | 7,131,706 B2 | 11/2006 | Kamen et al. |
| 5,701,968 A | 12/1997 | Wright-Ott et al. | 7,157,875 B2 | 1/2007 | Kamen et al. |
| 5,775,452 A | 7/1998 | Patmont | 7,174,976 B2 | 2/2007 | Kamen et al. |
| 5,791,425 A | 8/1998 | Kamen et al. | 7,178,614 B2 | 2/2007 | Ishii |
| 5,794,730 A | 8/1998 | Kamen | 7,182,166 B2 | 2/2007 | Gray et al. |
| 5,848,660 A | 12/1998 | McGreen | 7,195,259 B2 | 3/2007 | Gang |
| 5,954,349 A | 9/1999 | Rutzel | 7,210,544 B2 | 5/2007 | Kamen et al. |
| 5,971,091 A | 10/1999 | Kamen et al. | 7,243,572 B1 | 7/2007 | Arling et al. |
| 5,975,225 A | 11/1999 | Kamen et al. | 7,263,453 B1 | 8/2007 | Gansler et al. |
| 6,050,357 A | 4/2000 | Staelin et al. | D551,592 S | 9/2007 | Chang et al. |
| 6,052,647 A | 4/2000 | Parkinson et al. | D551,722 S | 9/2007 | Chang et al. |
| 6,062,600 A | 5/2000 | Kamen et al. | 7,273,116 B2 | 9/2007 | Kamen et al. |
| 6,070,494 A | 6/2000 | Hornig | 7,275,607 B2 | 10/2007 | Kamen et al. |
| 6,223,104 B1 | 4/2001 | Kamen et al. | 7,303,032 B2 | 12/2007 | Kahlert et al. |
| D444,184 S | 6/2001 | Kettler | 7,338,056 B2 | 3/2008 | Chen et al. |
| 6,273,212 B1 | 8/2001 | Husted et al. | 7,357,202 B2 | 4/2008 | Kamen et al. |
| 6,288,505 B1 | 9/2001 | Heinzmann et al. | 7,363,993 B2 | 4/2008 | Ishii |
| 6,302,230 B1 | 10/2001 | Kamen et al. | 7,367,572 B2 | 5/2008 | Jiang |
| 6,332,103 B1 | 12/2001 | Stenson et al. | 7,370,713 B1 | 5/2008 | Kamen |
| 6,357,544 B1 | 3/2002 | Kamen et al. | 7,407,175 B2 | 8/2008 | Kamen et al. |
| 6,367,817 B1 | 4/2002 | Kamen et al. | 7,424,927 B2 | 9/2008 | Hiramatsu |
| 6,386,576 B1 | 5/2002 | Kamen et al. | 7,437,202 B2 | 10/2008 | Morrell |
| 6,405,816 B1 | 6/2002 | Kamen et al. | 7,467,681 B2 | 12/2008 | Hiramatsu |
| 6,408,240 B1 | 6/2002 | Morrell et al. | 7,469,760 B2 | 12/2008 | Kamen et al. |
| 6,415,879 B2 | 7/2002 | Kamen et al. | 7,479,872 B2 | 1/2009 | Kamen et al. |
| 6,435,535 B1 | 8/2002 | Field et al. | 7,481,291 B2 | 1/2009 | Nishikawa |
| 6,443,250 B1 | 9/2002 | Kamen et al. | 7,546,889 B2 | 6/2009 | Kamen et al. |
| 6,538,411 B1 | 3/2003 | Field et al. | 7,587,334 B2 | 9/2009 | Walker et al. |
| 6,543,564 B1 | 4/2003 | Kamen et al. | 7,592,900 B2 | 9/2009 | Kamen et al. |
| 6,547,026 B2 | 4/2003 | Kamen et al. | D601,922 S | 10/2009 | Imai et al. |
| 6,553,271 B1 | 4/2003 | Morrell | 7,597,334 B2 | 10/2009 | Chen |
| 6,561,294 B1 | 5/2003 | Kamen et al. | 7,643,834 B2 | 1/2010 | Loppe et al. |
| 6,575,539 B2 | 6/2003 | Reich | 7,681,895 B2 | 3/2010 | Chen |
| 6,581,714 B1 | 6/2003 | Kamen et al. | 7,690,447 B2 | 4/2010 | Kamen et al. |
| 6,598,941 B2 | 7/2003 | Field et al. | 7,690,452 B2 | 4/2010 | Kamen et al. |
| 6,651,763 B1 | 11/2003 | Kamen et al. | 7,703,568 B2 | 4/2010 | Ishii |
| 6,651,766 B2 | 11/2003 | Kamen et al. | 7,708,094 B2 | 5/2010 | Kamen et al. |
| D489,027 S | 4/2004 | Waters | 7,717,439 B2 | 5/2010 | Chen |
| D489,029 S | 4/2004 | Waters | 7,740,099 B2 | 6/2010 | Field et al. |
| 6,715,845 B2 | 4/2004 | Kamen et al. | 7,757,794 B2 | 7/2010 | Heinzmann |
| D489,300 S | 5/2004 | Chang et al. | 7,766,351 B2 | 8/2010 | Chen et al. |
| D493,127 S | 7/2004 | Waters et al. | 7,775,534 B2 | 8/2010 | Chen et al. |
| D493,128 S | 7/2004 | Waters et al. | 7,779,939 B2 | 8/2010 | Kamen et al. |
| D493,129 S | 7/2004 | Waters et al. | 7,783,392 B2 | 8/2010 | Oikawa |
| D493,392 S | 7/2004 | Waters et al. | 7,789,174 B2 | 9/2010 | Kamen et al. |
| D494,099 S | 8/2004 | Maurer et al. | 7,812,715 B2 | 10/2010 | Kamen et al. |
| 6,779,621 B2 | 8/2004 | Kamen et al. | 7,857,088 B2 | 12/2010 | Field et al. |
| 6,789,640 B1 | 9/2004 | Arling et al. | 7,891,680 B2 | 2/2011 | Chen et al. |
| 6,796,396 B2 | 9/2004 | Kamen et al. | 7,900,725 B2 | 3/2011 | Heinzmann et al. |
| 6,799,649 B2 | 10/2004 | Kamen et al. | 7,938,207 B2 | 5/2011 | Kamen et al. |
| 6,815,919 B2 | 11/2004 | Field et al. | 7,950,123 B2 | 5/2011 | Arling et al. |
| 6,827,163 B2 | 12/2004 | Amsbury et al. | 7,958,956 B2 | 6/2011 | Kakinuma et al. |
| 6,837,327 B2 | 1/2005 | Heinzmann | 7,962,256 B2 | 6/2011 | Sterns et al. |
| 6,866,107 B2 | 3/2005 | Heinzmann et al. | 7,979,179 B2 | 7/2011 | Gansler |
| 6,868,931 B2 | 3/2005 | Morrell et al. | 7,980,568 B2 | 7/2011 | Chen |
| 6,874,591 B2 | 4/2005 | Morrell et al. | 8,014,923 B2 | 9/2011 | Ishii et al. |
| 6,889,784 B2 | 5/2005 | Troll | 8,016,060 B2 | 9/2011 | Miki et al. |
| 6,907,949 B1 | 6/2005 | Wang | 8,028,777 B2 | 10/2011 | Kakinuma et al. |
| D507,206 S | 7/2005 | Wang | 8,047,556 B2 | 11/2011 | Jang et al. |
| 6,920,947 B2 | 7/2005 | Kamen et al. | 8,073,575 B2 | 12/2011 | Tachibana et al. |
| 6,929,080 B2 | 8/2005 | Kamen et al. | 8,074,388 B2 | 12/2011 | Trainer |
| 6,965,206 B2 | 11/2005 | Kamen et al. | 8,091,672 B2 | 1/2012 | Gutsch et al. |
| 6,969,079 B2 | 11/2005 | Kamen et al. | 8,113,524 B2 | 2/2012 | Karpman |
| 6,979,003 B2 | 12/2005 | Adams | 8,146,696 B2 | 4/2012 | Kaufman |
| 6,992,452 B1 | 1/2006 | Sachs et al. | 8,157,274 B2 | 4/2012 | Chen |
| 7,000,933 B2 | 2/2006 | Arling et al. | 8,162,089 B2 | 4/2012 | Shaw |
| 7,004,271 B1 | 2/2006 | Kamen et al. | 8,165,771 B2 | 4/2012 | Doi |
| 7,006,901 B2 | 2/2006 | Wang | 8,170,780 B2 | 5/2012 | Field et al. |
| 7,017,686 B2 | 3/2006 | Kamen et al. | 8,186,462 B2 | 5/2012 | Kamen et al. |
| 7,023,330 B2 | 4/2006 | Kamen et al. | 8,225,891 B2 | 7/2012 | Takenaka et al. |
| | | | 8,248,222 B2 | 8/2012 | Kamen et al. |
| | | | 8,271,185 B2 | 9/2012 | Doi |
| | | | 8,285,474 B2 | 10/2012 | Doi |
| | | | 8,301,354 B2 | 10/2012 | Doi |

(56)

References Cited

U.S. PATENT DOCUMENTS

| | | | | | |
|---------------|---------|----------------------|-----------------|---------|---------------------|
| 8,322,477 B2 | 12/2012 | Kamen et al. | D899,540 S | 10/2020 | Desberg |
| 8,381,847 B2 | 2/2013 | Polutnik | D899,541 S | 10/2020 | Desberg |
| 8,408,565 B2 | 4/2013 | An | D928,264 S * | 8/2021 | Ke D21/763 |
| 8,417,404 B2 | 4/2013 | Yen et al. | 11,141,647 B2 * | 10/2021 | Li A63C 17/12 |
| 8,453,340 B2 | 6/2013 | Van der Merwe et al. | D944,349 S * | 2/2022 | Zhao D21/763 |
| 8,453,768 B2 | 6/2013 | Kamen et al. | 2002/0008361 A1 | 1/2002 | Smith |
| 8,459,667 B2 | 6/2013 | Ungar et al. | 2002/0063006 A1 | 5/2002 | Kamen et al. |
| 8,459,668 B2 | 6/2013 | Yoon | 2002/0149172 A1 | 10/2002 | Field et al. |
| 8,467,941 B2 | 6/2013 | Field et al. | 2003/0155167 A1 | 8/2003 | Kamen et al. |
| 8,469,376 B2 | 6/2013 | Kristiansen | 2004/0005958 A1 | 1/2004 | Kamen et al. |
| 8,490,723 B2 | 7/2013 | Heinzmann et al. | 2004/0007399 A1 | 1/2004 | Heinzmann et al. |
| 8,532,877 B2 | 9/2013 | Oikawa | 2004/0007644 A1 | 1/2004 | Phelps, III et al. |
| 8,579,769 B2 | 11/2013 | Sans | 2004/0055796 A1 | 1/2004 | Heinzmann et al. |
| 8,584,782 B2 | 11/2013 | Chen | 2004/0050611 A1 | 3/2004 | Kamen et al. |
| 8,606,468 B2 | 12/2013 | Kosaka | 2004/0201271 A1 | 10/2004 | Kakinuma et al. |
| 8,616,313 B2 | 12/2013 | Simeray et al. | 2004/0262871 A1 | 12/2004 | Schreuder et al. |
| 8,684,123 B2 | 4/2014 | Chen | 2005/0126832 A1 | 6/2005 | Amsbury et al. |
| 8,688,303 B2 | 4/2014 | Stevens et al. | 2005/0134014 A1 | 6/2005 | Xie |
| 8,738,278 B2 | 5/2014 | Chen | 2006/0202439 A1 | 9/2006 | Kahlert et al. |
| 8,763,733 B2 | 7/2014 | Hamaya et al. | 2006/0260857 A1 | 11/2006 | Kakinuma et al. |
| 8,807,250 B2 | 8/2014 | Chen | 2007/0051543 A1 | 3/2007 | Kamen et al. |
| 8,830,048 B2 | 9/2014 | Kamen et al. | 2007/0158117 A1 | 7/2007 | Alexander |
| 8,860,362 B2 | 10/2014 | Kamen et al. | 2007/0273118 A1 | 11/2007 | Conrad |
| 8,978,791 B2 | 3/2015 | Ha et al. | 2008/0105471 A1 | 1/2008 | Nakashima et al. |
| 9,045,190 B2 | 6/2015 | Chen | 2008/0029985 A1 | 2/2008 | Chen |
| 9,101,817 B2 | 8/2015 | Doerksen | 2008/0147281 A1 | 6/2008 | Ishii et al. |
| D737,723 S | 9/2015 | Ying et al. | 2008/0284130 A1 | 11/2008 | Kamen et al. |
| D738,256 S | 9/2015 | Ying et al. | 2009/0032323 A1 | 2/2009 | Kakinuma et al. |
| D739,906 S | 9/2015 | Chen | 2009/0055033 A1 | 2/2009 | Gansler et al. |
| 9,239,158 B2 | 1/2016 | Rothschild | 2009/0078485 A1 | 3/2009 | Gutsch et al. |
| 9,376,155 B2 | 6/2016 | Ying et al. | 2009/0105908 A1 | 4/2009 | Casey et al. |
| 9,403,573 B1 | 8/2016 | Mazzei | 2009/0115149 A1 | 5/2009 | Wallis et al. |
| 9,434,438 B1 | 9/2016 | Kim et al. | 2009/0200746 A1 | 8/2009 | Yamamoto |
| 9,452,802 B2 | 9/2016 | Ying et al. | 2009/0315293 A1 | 12/2009 | Kosaka |
| D778,782 S | 2/2017 | Chen et al. | 2010/0025139 A1 | 2/2010 | Kosaka et al. |
| D779,375 S | 2/2017 | Zeng | 2010/0033315 A1 | 2/2010 | Kamen et al. |
| D780,626 S | 3/2017 | Li et al. | 2010/0114468 A1 | 5/2010 | Field et al. |
| 9,604,692 B1 | 3/2017 | Kim | 2010/0121538 A1 | 5/2010 | Ishii et al. |
| D783,452 S | 4/2017 | Ying | 2010/0168993 A1 | 7/2010 | Doi et al. |
| D783,751 S | 4/2017 | Yao | 2010/0207564 A1 | 8/2010 | Robinson |
| D784,195 S | 4/2017 | Ying | 2010/0217497 A1 | 8/2010 | Kamen et al. |
| D784,196 S | 4/2017 | Ying | 2010/0222994 A1 | 9/2010 | Field et al. |
| D784,197 S | 4/2017 | Ying | 2010/0225080 A1 | 9/2010 | Smith |
| D784,198 S | 4/2017 | Zhu | 2010/0237645 A1 | 9/2010 | Trainer |
| D785,112 S | 4/2017 | Ying | 2011/0131759 A1 | 6/2011 | An |
| D785,113 S | 4/2017 | Ying | 2011/0209929 A1 | 9/2011 | Heinzmann et al. |
| D785,114 S | 4/2017 | Ying | 2011/0220427 A1 | 9/2011 | Heinzmann et al. |
| D785,115 S | 4/2017 | Ying | 2011/0221160 A1 | 9/2011 | Shaw et al. |
| D785,736 S | 5/2017 | Ying | 2011/0238247 A1 | 9/2011 | Yen et al. |
| D786,130 S | 5/2017 | Huang | 2011/0282532 A1 | 11/2011 | Kosaka et al. |
| D786,994 S | 5/2017 | Chen | 2012/0035809 A1 | 2/2012 | Kosaka |
| 9,638,285 B2 | 5/2017 | Huang | 2012/0205176 A1 | 8/2012 | Ha et al. |
| 9,656,713 B1 | 5/2017 | Ryan et al. | 2012/0239284 A1 | 9/2012 | Field et al. |
| 9,688,340 B1 | 6/2017 | Kroymann | 2012/0290162 A1 | 11/2012 | Stevens et al. |
| 9,745,013 B2 | 8/2017 | Wood | 2012/0310464 A1 | 12/2012 | Kamen et al. |
| D803,722 S | 11/2017 | Ying | 2013/0010825 A1 | 1/2013 | Kamen et al. |
| D803,963 S | 11/2017 | Desberg | 2013/0032422 A1 | 2/2013 | Chen |
| D805,429 S | 12/2017 | Cao | 2013/0032423 A1 | 2/2013 | Chen |
| 9,840,302 B2 | 12/2017 | Zeng | 2013/0092461 A1 | 4/2013 | Kamen et al. |
| D807,457 S | 1/2018 | Desberg | 2013/0099565 A1 | 4/2013 | Sachs et al. |
| D808,300 S | 1/2018 | Cao | 2013/0105239 A1 | 5/2013 | Fung |
| D808,855 S | 1/2018 | Zhang et al. | 2013/0186702 A1 | 7/2013 | Hadley et al. |
| D808,856 S | 1/2018 | Zhang et al. | 2013/0228385 A1 | 9/2013 | Chen |
| D808,857 S | 1/2018 | Zhang | 2013/0238231 A1 | 9/2013 | Chen |
| D810,618 S | 2/2018 | Li | 2013/0268145 A1 | 10/2013 | Kamen et al. |
| D812,521 S | 3/2018 | Yao | 2014/0091622 A1 | 4/2014 | Lucas et al. |
| D817,811 S * | 5/2018 | Wang D21/760 | 2014/0163855 A1 | 6/2014 | Field et al. |
| RE46,964 E | 7/2018 | Chen | 2014/0188316 A1 | 7/2014 | Heinzmann et al. |
| 10,059,397 B2 | 8/2018 | Ying et al. | 2014/0222267 A1 | 8/2014 | Stevens et al. |
| D837,322 S | 1/2019 | Desberg | 2014/0339003 A1 | 11/2014 | Kamen et al. |
| D837,323 S | 1/2019 | Desberg | 2015/0096820 A1 | 4/2015 | Strack |
| D840,872 S | 2/2019 | Desberg | 2015/0175202 A1 | 6/2015 | MacGregor et al. |
| D850,326 S | 6/2019 | Zheng | 2016/0121198 A1 | 5/2016 | Doerksen et al. |
| D865,095 S | 10/2019 | Desberg | 2016/0129963 A1 | 5/2016 | Ying et al. |
| D865,890 S | 11/2019 | Desberg | 2016/0185411 A1 | 6/2016 | Hadley et al. |
| | | | 2016/0207584 A1 | 7/2016 | Ying et al. |
| | | | 2016/0325803 A1 | 11/2016 | Waxman |
| | | | 2017/0088211 A1 | 3/2017 | Jiang |
| | | | 2017/0088212 A1 | 3/2017 | Edney |

(56)

References Cited

U.S. PATENT DOCUMENTS

2017/0106931 A1 4/2017 Wood
 2017/0144718 A1 5/2017 Tinaphong
 2017/0158275 A1 6/2017 Yang
 2017/0166278 A1 6/2017 Lu
 2017/0183053 A1 6/2017 Zeng
 2017/0217529 A1 8/2017 Chen
 2017/0297653 A1 10/2017 Zheng
 2017/0349230 A1 12/2017 Doerksen et al.
 2018/0037290 A1 2/2018 Ying
 2018/0037293 A1 2/2018 Chen
 2019/0077479 A1 3/2019 Chen
 2019/0193803 A1 6/2019 Desberg et al.

FOREIGN PATENT DOCUMENTS

CN 101148184 A 3/2008
 CN 101157376 A 4/2008
 CN 100431906 C 11/2008
 CN 101353070 A 1/2009
 CN 201205442 Y 3/2009
 CN 201283206 Y 8/2009
 CN 201350326 Y 11/2009
 CN 201419008 Y 3/2010
 CN 201423155 Y 3/2010
 CN 201431762 Y 3/2010
 CN 101920728 12/2010
 CN 101565073 B 1/2011
 CN 201824899 U 5/2011
 CN 101513569 B 7/2011
 CN 301604610 S 7/2011
 CN 201978449 U 9/2011
 CN 202201103 U 4/2012
 CN 102514662 A 6/2012
 CN 102602481 A 7/2012
 CN 102616310 A 8/2012
 CN 103246288 A 8/2013
 CN 203158157 U 8/2013
 CN 203381739 U 1/2014
 CN 104014123 A 9/2014
 CN 104029769 A 9/2014
 CN 203844875 U 9/2014
 CN 203996649 U 12/2014
 CN 204050913 U 12/2014
 CN 102514662 B 4/2015
 CN 102514663 B 5/2015
 CN 104859773 A 8/2015
 CN 104922891 A 9/2015
 CN 104922893 A 9/2015
 CN 104954476 A 9/2015
 CN 204699363 U 10/2015
 CN 105151181 A 12/2015
 CN 105172959 A 12/2015
 CN 204864865 U 12/2015
 CN 204952213 U 1/2016
 CN 205005082 U 1/2016
 CN 105329386 A 2/2016
 CN 105329387 A 2/2016
 CN 105329388 A 2/2016
 CN 105346606 A 2/2016
 CN 105346607 A 2/2016
 CN 105346643 A 2/2016
 CN 105346649 A 2/2016
 CN 105346650 A 2/2016
 CN 105346651 A 2/2016
 CN 105416464 A 3/2016
 CN 105416484 A 3/2016
 CN 105416485 A 3/2016
 CN 105416486 A 3/2016
 CN 205150007 U 4/2016
 CN 205150114 U 4/2016
 CN 205160428 U 4/2016
 CN 205186320 U 4/2016
 CN 205186321 U 4/2016
 CN 205186322 U 4/2016
 CN 105539659 A 5/2016

CN 105539664 A 5/2016
 CN 105539665 A 5/2016
 CN 105539666 A 5/2016
 CN 105539695 A 5/2016
 CN 105730576 A 7/2016
 CN 105905205 A 8/2016
 CN 205469471 U 8/2016
 CN 205906129 U 1/2017
 CN 107512347 A 12/2017
 DE 3411489 10/1984
 DE 44 04 594 8/1995
 DE 19642333 A1 4/1998
 DE 10209093 9/2003
 DE 202014010564 U1 1/2016
 EP 1791609 B1 11/2011
 EP 2987712 A1 2/2016
 GB 2529565 A 2/2016
 JP 52-044933 4/1977
 JP 57-87766 6/1982
 JP 57-110569 7/1982
 JP 59-73372 4/1984
 JP 61-31685 2/1986
 JP 62-12810 1/1987
 JP 63-305082 6/1987
 JP 2-190277 7/1990
 JP 4-201793 7/1992
 JP 5-213240 8/1993
 JP 6-105415 4/1994
 JP 6-171562 6/1994
 JP 10-023613 1/1998
 JP H03-070015 5/2000
 JP 2001-178863 A 7/2001
 JP 2004-359094 A 12/2004
 JP 2005-094898 A 4/2005
 JP 2005-335471 A 12/2005
 JP 2006-001384 A 1/2006
 JP 2006-001385 A 1/2006
 JP 2006-008013 A 1/2006
 JP 2010-030436 A 2/2010
 JP 2010-030437 A 2/2010
 JP 2010-030438 A 2/2010
 JP 2010-030568 A 2/2010
 JP 2010-030569 A 2/2010
 JP 2010-035330 A 2/2010
 JP 2010-254216 A 11/2010
 JP 2011-131620 A 7/2011
 JP 6086636 B1 3/2017
 TW M516550 U 2/2016
 TW M531423 U 11/2016
 WO WO 86/05752 10/1986
 WO WO 89/06117 7/1989
 WO WO 96/23478 8/1996
 WO WO 98/46474 10/1998
 WO WO 00/75001 12/2000
 WO WO 2003/68342 2/2003
 WO WO 2004/07264 1/2004
 WO WO 2004/108513 A1 12/2004
 WO WO 2009/120157 A1 10/2009
 WO WO 2015/188599 A1 12/2015
 WO WO 2017/092163 8/2017

OTHER PUBLICATIONS

John D. Bash, How Do Self Balancing Scooters Work?, bestelectrichoverboard.com (Nov. 12, 2015), <https://bestelectrichoverboard.com/hoverboard-faq/how-do-selfbalancing-scooters-work/>.

Blankespoor et al., Experimental Verification of the Dynamic Model for a Quarter Size Self-Balancing Wheelchair, *Proceeding of the 2004 American Control Conference*, Boston, MA, vol. 1, pp. 488-492.

CNET, Screenshots of "First look at the Razor Hovertrax 2.0 with Jake Krol" video, posted on Jul. 13, 2016, in 28 pages.

Ben Detrick, Celebrities On Scooters (Catch Them If You Can), *The New York Times* Aug. 15, 2015, http://www.nytimes.com/2015/08/16/fashion/cara-delevingne-justinbieber-mEEK-mill-stephen-curry-on-scooters.html?_r=%200.

(56)

References Cited

OTHER PUBLICATIONS

- Hu et al., Self-balancing Control and Manipulation of a Glove Puppet Robot on a Two-Wheel Mobile Platform, 2009 IEEE/RSJ International Conference on Intelligent Robots and Systems, St. Louis, MO, 2009, pp. 424-425.
- IO Hawk—Intelligent Personal Mobility Device, <https://web.archive.org/web/20150718144409/http://iohawk.com>, Jul. 18, 2015, in 9 pages.
- Inventist, Inc. “Hovertrax Guide and Manual,” 2014, in 15 pages.
- “Inventist Inc , Solo Wheel, Orbit wheel @ Toy Fair 2013” <https://www.youtube.com/watch?v=w8rHKCjLAWI>, Feb. 10, 2013.
- Alex Kantrowitz, Everything You Need To Know About The Hoverboard Craze, *buzzfeed.com* Aug. 27, 2015, https://www.buzzfeed.com/alexkantrowitz/a-crash-course-inhoverboards?utm_term=.qw5Z9x47Z#.oc1W1v56W.
- Kawaji, S., Stabilization of Unicycle Using Spinning Motion, *Denki Gakkai Ronbunshi*, D, vol. 107, Issue 1, Japan (1987), pp. 21-28.
- Kickstarter, Comments on Hovertrax by Inventist, <https://www.kickstarter.com/projects/687658339/hovertrax/comments>, apparently available Oct. 2014, in 16 pages.
- Kickstarter, “Hovertrax by Inventist,” <https://web.archive.org/web/20130504083823/http://kickstarter.com/projects/687658339/hovertrax/>, May 4, 2013, in 11 pages.
- Kim et al., Development of a Two-Wheeled Mobile Tilting & Balancing (MTB) Robot, 2011 11th International Conference on Control, Automation and Systems (ICCAS), Gyeonggi-do, 2011, pp. 1-6.
- Li et al., A coaxial couple wheeled equilibrium robot with T-S fuzzy equilibrium control, *Industrial Robot: An International Journal*, vol. 38, Issue 3, pp. 292-300, 2011.
- Mike Murphy, Everything You’ve Ever Wanted To Know About The Hoverboard Craze, *QUARTZ* Nov. 11, 2015, <http://qz.com/495935/everything-youve-ever-wanted-to-know-about-the-hoverboard-craze/>.
- Mandy Robinson, Hoverboard Black Friday Sales: Best Places To Get One Before Christmas, *INQUISITR.COM*, Nov. 24, 2015, <http://www.inquisitr.com/2589773/hoverboard-black-friday-sales-best-10107994-iv-places-to-get-one-before-christmas/>.
- Sasaki et al., Forward and Backward Motion Control of Personal Riding-type Wheeled Mobile Platform, *Proceedings of the 2004 IEEE International Conference on Robotics and Automation*, vol. 4, pp. 3331-3336.
- Sasaki, Makiko et al., “Steering Control of the Personal Riding-type Wheeled Mobile Platform (PMP),” vol. 4 of 4, IEEE, RSJ International Conference on Intelligent Robots and Systems, Aug. 2-6, 2005, in 60 pages.
- Schoonwinkel, A, Design and Test of a Computer-Stabilized Unicycle, Stanford University (1988), UMI Dissertation Services.
- Sino US Times, Interview of Mr. Ying, <http://www.chic-robot.com/index.php/news/info/54>, Jan. 26, 2016, in 15 pages.
- Tsai et al., Development of a Self-Balancing Human Transportation Vehicle for the Teaching of Feedback Control, *IEEE Transactions on Education*, vol. 52, No. 1, Feb. 2009.
- Vos, D., Dynamics and Nonlinear Adaptive Control of an Autonomous Unicycle, Massachusetts Institute of Technology, 1989.
- Vos, D., Nonlinear Control of an Autonomous Unicycle Robot: Practical Issues, Massachusetts Institute of Technology, 1992.
- Georgia Wells, What It’s Like To Have Wheels For Feet: Test Driving The Latest ‘Hoverboards’, *The Wall Street Journal* (Oct. 28, 2015), <http://www.wsj.com/articles/what-its-like-to-have-wheels-forfeet-test-driving-the-latest-hoverboards-1446055640>.
- Yu et al., Development of a Omni-directional Self-Balancing Robot Wheelchair, *Journal of Korea Robotics Society*, vol. 8, Iss. 4, pp. 229-237 (2013).
- ‘They’re Completely Different Products’: IO Hawk President John Soibatian Not Concerned About Infringing Hovertrax Patent, *hoverguru.com* (2015), <http://hoverguru.com/posts/theyrecompletely-different-products-io-hawk-president-john-soibatian-notconcerned-about-infringing-on-hovertrax-patent/> (last visited Dec. 27, 2016).
- Abeygunawardhana et al., Vibration Suppression of Two-Wheel Mobile Manipulator Using Resonance-Ratio-Control-Based NullSpace Control, *IEEE Transactions on Industrial Electronics*, vol. 57, No. 12, pp. 4137-4146 (2010).
- Azizan et al., Fuzzy Control Based on LMI Approach and Fuzzy Interpretation of the Rider Input for Two Wheeled Balancing Human Transporter, 2010 8th IEEE International Conference on Control and Automation, Xiamen, 2010, pp. 192-197.
- Cardozo et al., Prototype for a Self-Balanced Personal Transporter, 2012 Workshop on Engineering Applications (WEA), Bogota, 2012, pp. 1-6.
- Chiu et al., Design and implement of the self-dynamic controller for two-wheel transporter, 2006 IEEE International Conference on Fuzzy Systems, Vancouver, BC, 2006, pp. 480-483.
- Choi et al., Four and Two Wheel Transformable Dynamic Mobile Platform, 2011 IEEE International Conference on Robotics and Automation (ICRA), Shanghai, pp. 1-4.
- Clark, et al. “Edgar, A Self-Balancing Scooter Final Report” (2005). (Divided in to 2 parts for submission).
- Coelho et al., Development of a Mobile Two-Wheel Balancing Platform for Autonomous Applications, 15th International conference on Mechatronics and Machine Vision in Practice, Auckland, 2008, pp. 575-580.
- Akio Gotoh and Masaaki Yamaoka, “Personal Mobility Robot,” *Robot*, Issue No. 199, Mar. 2011, pp. 28-31.
- Hornyak, Tim, Robot roller skates less bulky than Segway, *www.cnet.com*, Nov. 27, 2009.
- Li et al., Controller Design of a Two-Wheeled Inverted Pendulum Mobile Robot, 2008 IEEE International Conference on Mechatronics and Automation, Takarnatsu, pp. 7-12.
- Li et al., Mechanical Design and Dynamic Modeling of a TwoWheeled Inverted Pendulum Mobile Robot, *Proceedings of the 2007 IEEE International Conference on Automation and Logistics*, Jinan, 2007, pp. 1614-1619.
- Lin et al., Adaptive Robust Self-Balancing and Steering of a Two-Wheeled Human Transportation Vehicle, 62 *J Intell Robot Syst*, pp. 103-123 (2011) (first published online Aug. 27, 2010).
- Quick, Darren, Nissan Joins Personal Mobility Field with “Segwayskis”, <http://www.gizmag.com/nissan-personal-mobility-device/13210/>, *New Atlas*, Urban Transport, Oct. 27, 2009, pp. 1-9.
- Quirk, Trevor, “Why you shouldn’t expect a hoverboard any time soon,” *Christian Science Monitor*, URL~<https://www.csmonitor.com/Science/2012/0213/Why-you-shouldn-t-expect-a-hoverboardany-time-soon>, Feb. 13, 2012, Web. Jul. 5, 2016, pp. 1-5.
- Seo et al., Simulation of Attitude Control of a Wheeled Inverted Pendulum, *International Conference on Control, Automation, and Systems*, 2007, Seoul, pp. 2264-2269.
- Long Tran, “More Weird Ways to Skate the Streets,” *Yanko Design*, Sep. 7, 2007.
- Tsai et al., Intelligent Adaptive Motion Control Using Fuzzy Basis Function Networks for Self-Balancing Two-Wheeled Transporters, 2010 IEEE Conference on Fuzzy Systems, Barcelona, 2010.

* cited by examiner

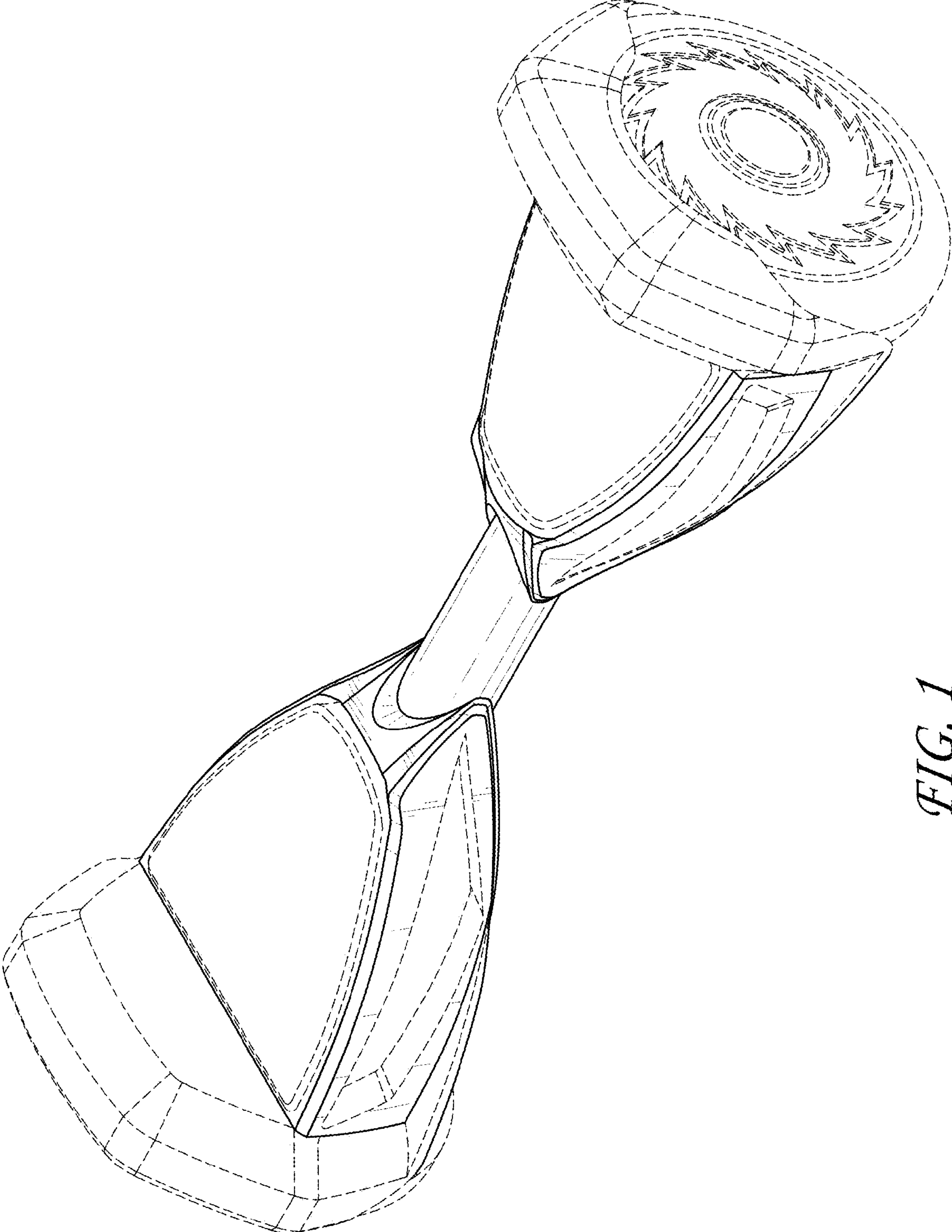


FIG. 1

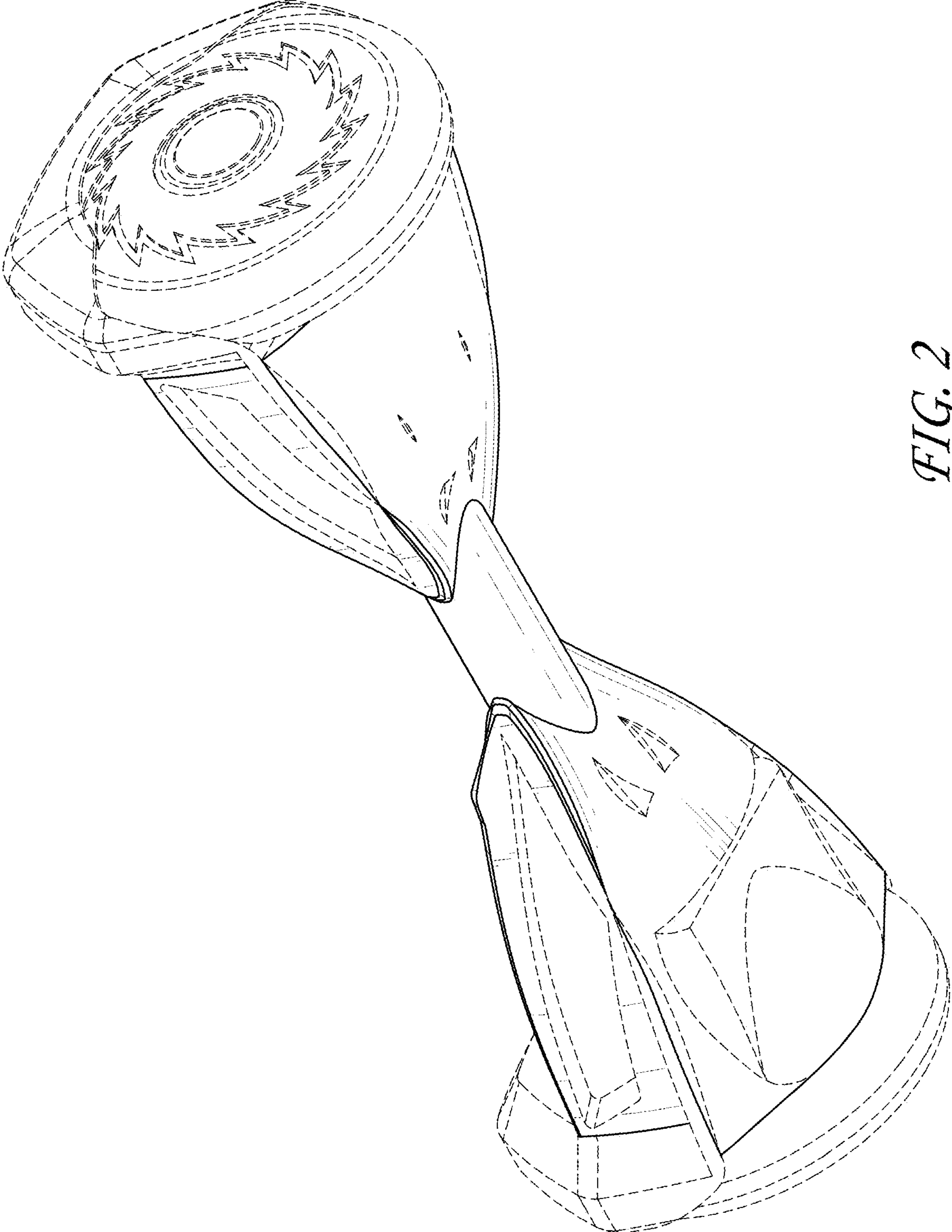


FIG. 2

FIG. 3

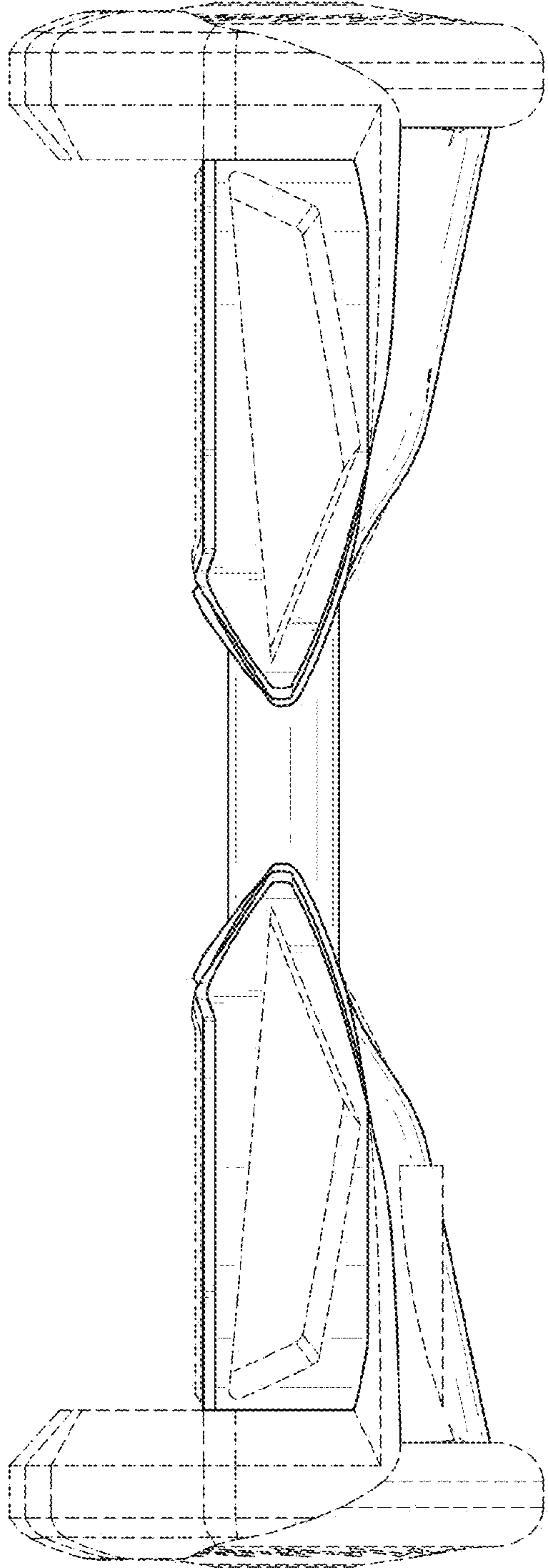
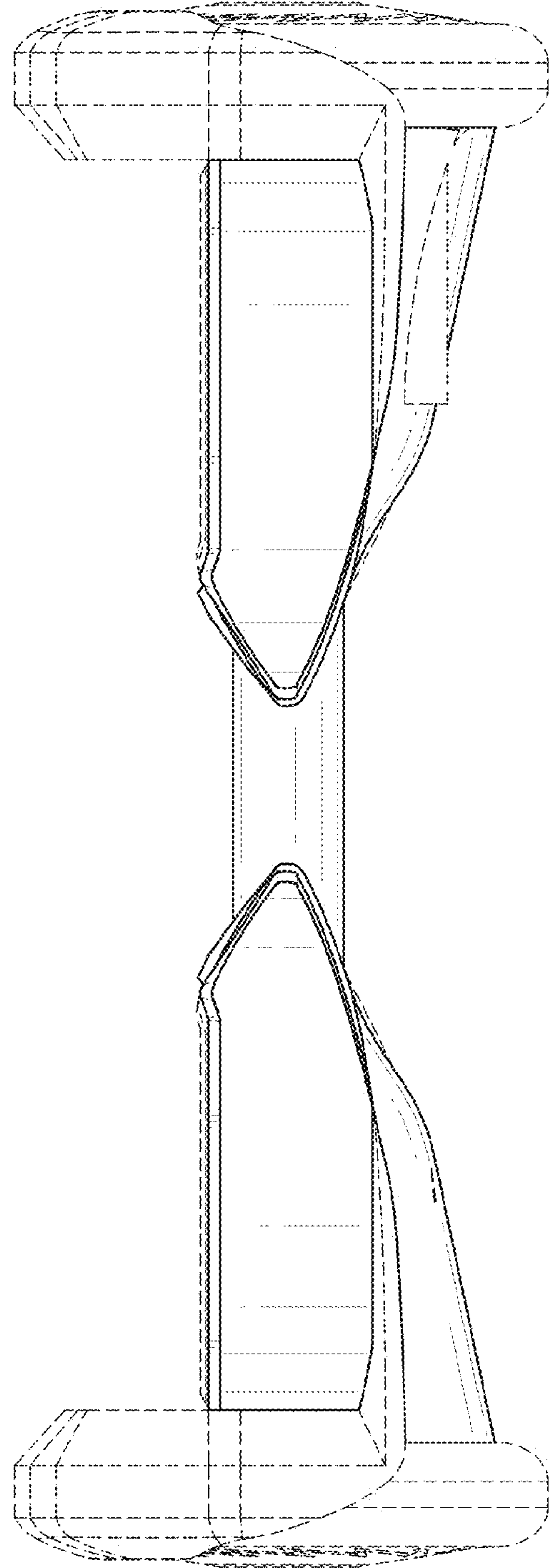


FIG. 4



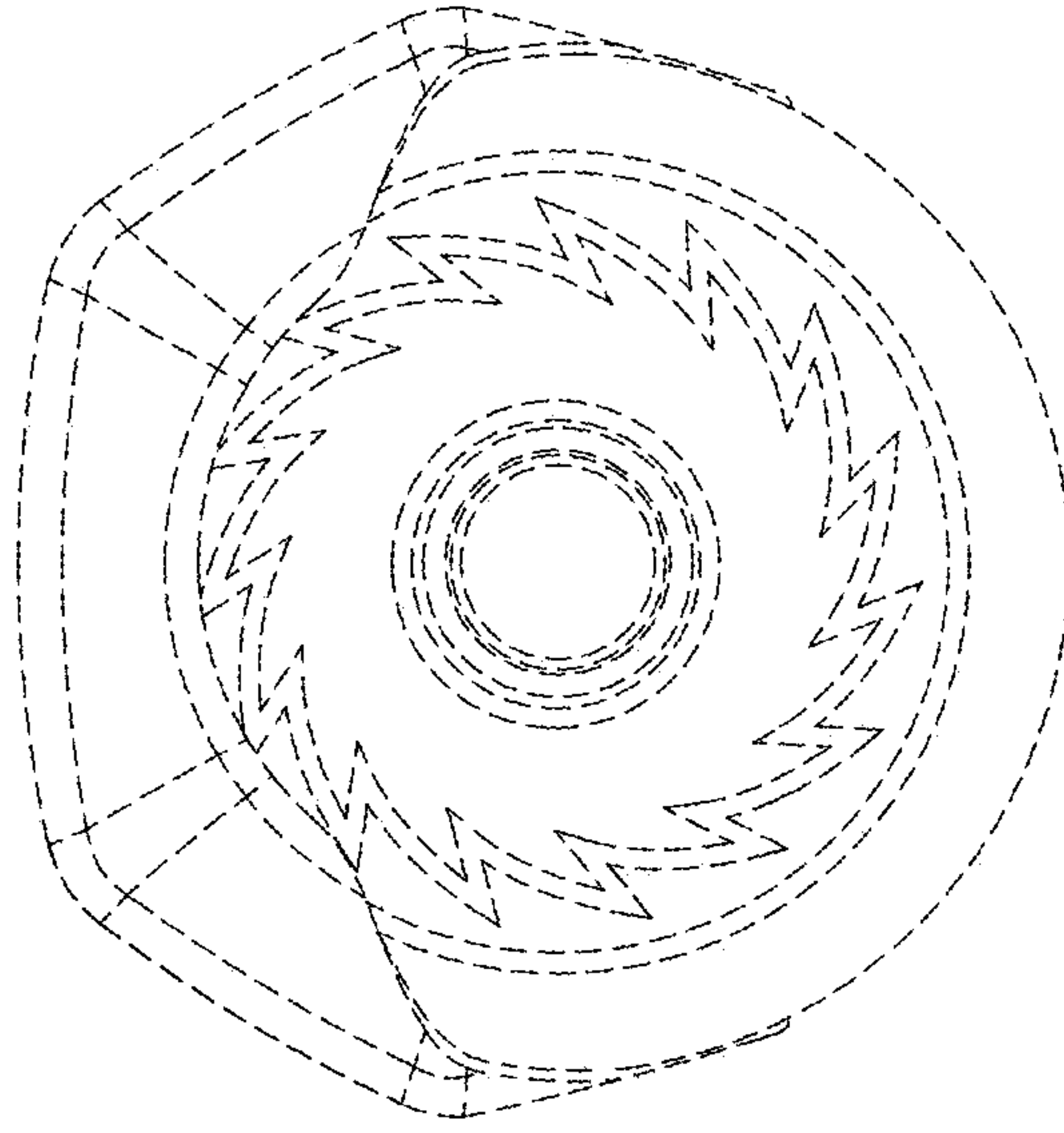


FIG. 5

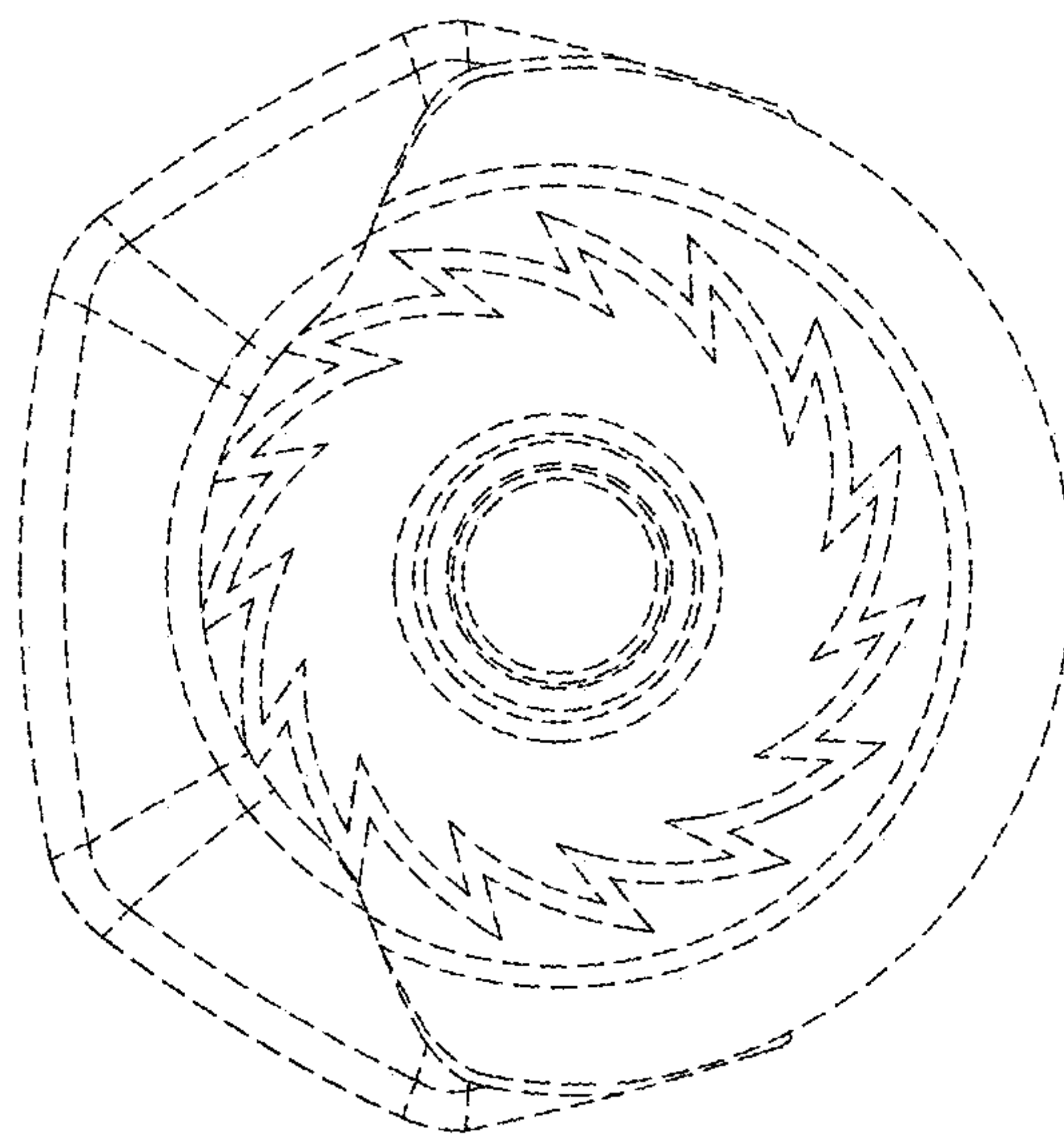


FIG. 6

FIG. 7

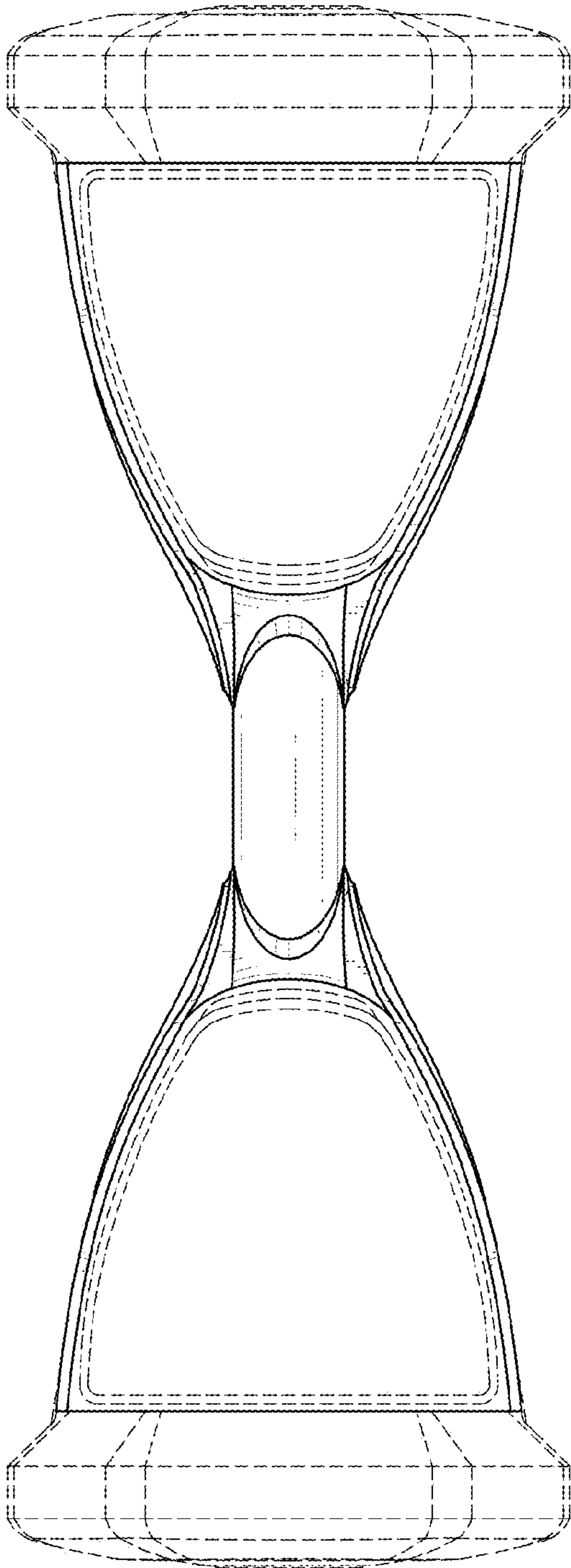


FIG. 8

