



US00D749205S

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

(10) **Patent No.:** **US D749,205 S**
(45) **Date of Patent:** **** Feb. 9, 2016**

- (54) **SLEEP APNEA DEVICE**
- (71) Applicant: **Fresca Medical, Inc.**, San Clemente, CA (US)
- (72) Inventors: **Eugene G. Chen**, Carlsbad, CA (US);
Alan M. Gordon, Del Mar, CA (US);
Samuel C. Wu, Cerritos, CA (US)
- (73) Assignee: **Fresca Medical, Inc.**, San Clemente, CA (US)
- (**) Term: **14 Years**
- (21) Appl. No.: **29/448,107**
- (22) Filed: **Mar. 8, 2013**
- (51) **LOC (10) Cl.** **29-02**
- (52) **U.S. Cl.**
USPC **D24/110**
- (58) **Field of Classification Search**
USPC D24/107, 110, 110.1, 110.2, 110.4,
D24/110.5, 127, 164; 128/205.24, 848
CPC A61M 16/208; A61M 16/06; A61M 16/0057
See application file for complete search history.

- 7,066,178 B2 6/2006 Gunaratnam et al.
- 7,159,587 B2 1/2007 Drew et al.
- 7,207,335 B2 4/2007 Kwok et al.
- D542,912 S * 5/2007 Gunaratnam et al. D24/110.5
- 7,341,060 B2 3/2008 Ging et al.
- D591,419 S * 4/2009 Chandran et al. D24/110.1
- 7,523,753 B2 4/2009 Gunaratnam et al.

(Continued)

FOREIGN PATENT DOCUMENTS

- EP 1893267 A1 11/2011
- EP 2287471 B1 6/2012
- EP 2530327 A2 12/2012

OTHER PUBLICATIONS

CPAP Systems and Accessories: Comfort Accuracy and High Flows. Vital Signs, Inc. General Electric Healthcare Company. 2009, 2 pages.

(Continued)

Primary Examiner — Deanna L Pratt
Assistant Examiner — Lilyana Bekic
(74) *Attorney, Agent, or Firm* — Manuel de la Cerra

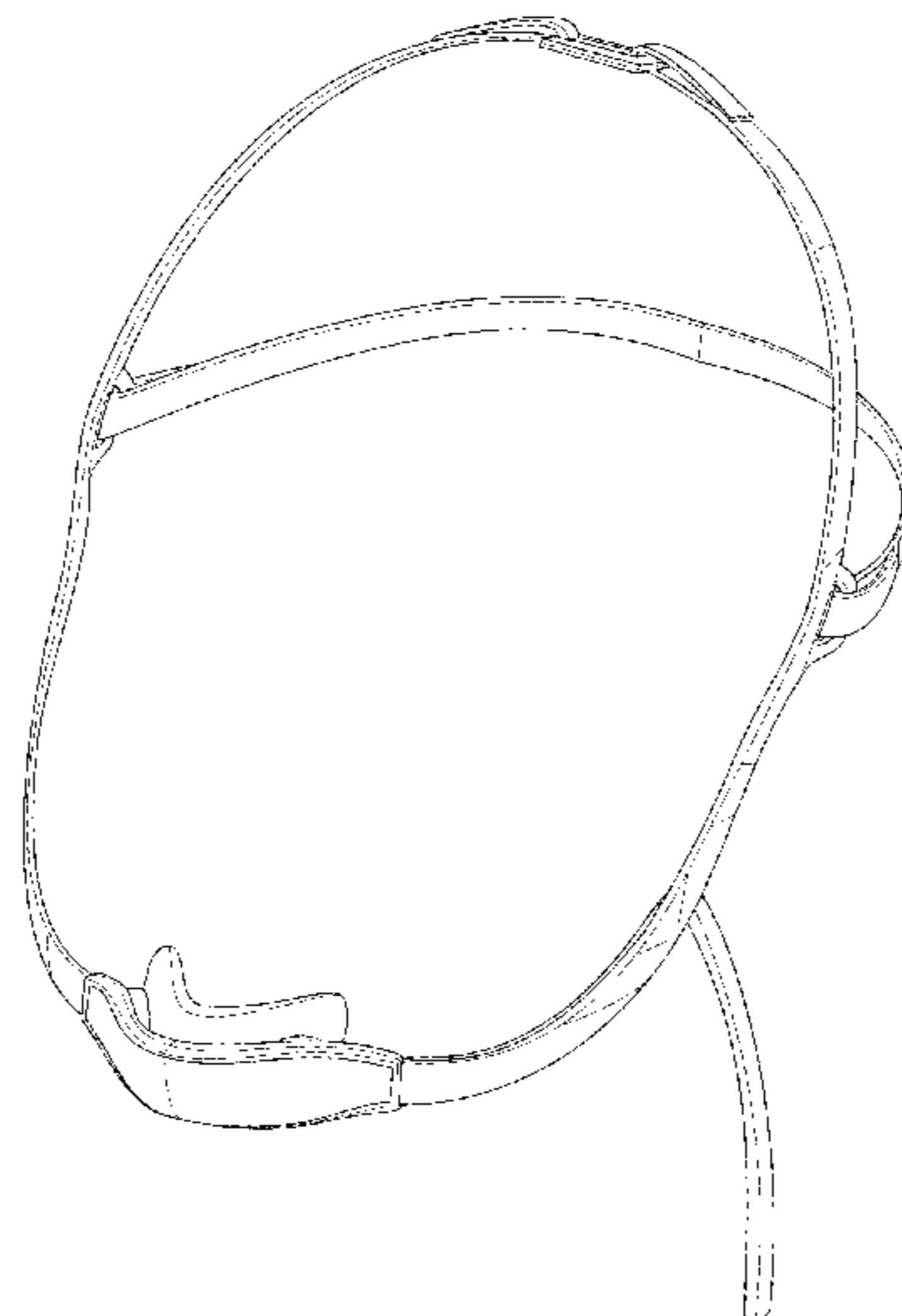
(57) **CLAIM**
The ornamental design for a sleep apnea device, as shown and described.

DESCRIPTION

FIG. 1 is a perspective view of a sleep apnea device according to the present design;
FIG. 2 is a front view thereof;
FIG. 3 is a back view thereof;
FIG. 4 is a right-side view thereof;
FIG. 5 is a left-side view thereof;
FIG. 6 is a top view thereof;
FIG. 7 is a bottom view thereof; and,
FIG. 8 is an alternate perspective view thereof.

1 Claim, 8 Drawing Sheets

- (56) **References Cited**
- U.S. PATENT DOCUMENTS
- 4,915,105 A * 4/1990 Lee 128/205.27
- 5,301,689 A 4/1994 Wennerholm
- 5,567,127 A 10/1996 Wentz
- 5,649,533 A 7/1997 Oren
- 6,123,071 A 9/2000 Berthon-Jones et al.
- 6,182,657 B1 2/2001 Brydon et al.
- 6,526,974 B1 3/2003 Brydon et al.
- 6,561,190 B1 5/2003 Kwok
- 6,561,191 B1 5/2003 Kwok
- 6,581,594 B1 6/2003 Drew et al.
- 6,691,707 B1 2/2004 Gunaratnam et al.
- 6,752,150 B1 6/2004 Remmers et al.
- 6,823,865 B2 11/2004 Drew et al.
- 7,011,090 B2 3/2006 Drew et al.



(56)

References Cited

U.S. PATENT DOCUMENTS

7,527,055 B2 5/2009 McAuliffe et al.
 7,597,100 B2 10/2009 Ging et al.
 7,735,492 B2 6/2010 Doshi et al.
 7,806,120 B2 10/2010 Loomas et al.
 7,845,354 B2 12/2010 Kwok et al.
 7,856,979 B2 12/2010 Doshi et al.
 7,874,293 B2 1/2011 Gunaratnam et al.
 7,878,199 B2 2/2011 Ging et al.
 7,926,487 B2 4/2011 Drew et al.
 7,934,501 B2 5/2011 Fu et al.
 7,942,150 B2 5/2011 Guney et al.
 7,967,013 B2 6/2011 Ging et al.
 7,992,564 B2 8/2011 Doshi et al.
 8,011,369 B2 9/2011 Gunaratnam et al.
 8,042,542 B2 * 10/2011 Ging et al. 128/207.11
 D653,748 S * 2/2012 Henry et al. D24/110.5
 8,122,884 B2 2/2012 Daly et al.
 8,122,886 B2 2/2012 Kwok et al.
 D656,607 S * 3/2012 Gunaratnam et al. D24/110.5
 8,136,524 B2 3/2012 Ging et al.
 8,215,308 B2 7/2012 Doshi et al.
 8,235,046 B2 8/2012 Doshi et al.
 8,240,309 B2 8/2012 Doshi et al.
 8,286,636 B2 10/2012 Gunaratnam et al.
 8,297,285 B2 * 10/2012 Henry et al. 128/207.18
 8,337,145 B2 12/2012 Frater et al.
 8,397,727 B2 3/2013 Ng et al.
 8,402,972 B2 3/2013 Lang et al.
 8,439,039 B2 5/2013 Gunaratnam et al.
 D685,463 S * 7/2013 Veliss et al. D24/110.1
 D704,329 S * 5/2014 Collazo et al. D24/110.4
 2004/0221850 A1 * 11/2004 Ging et al. 128/206.27
 2009/0065729 A1 3/2009 Worboys et al.
 2009/0133700 A1 5/2009 Martin et al.
 2009/0183739 A1 * 7/2009 Wondka 128/207.18
 2010/0018534 A1 * 1/2010 Veliss et al. 128/206.24
 2010/0132716 A1 * 6/2010 Selvarajan et al. 128/207.18
 2011/0000492 A1 * 1/2011 Veliss et al. 128/207.13
 2011/0011400 A1 1/2011 Gentner et al.
 2011/0114098 A1 * 5/2011 McAuley et al. 128/207.18
 2011/0155140 A1 * 6/2011 Ho et al. 128/207.18
 2011/0232649 A1 * 9/2011 Collazo et al. 128/207.18
 2012/0132209 A1 * 5/2012 Rummery et al. 128/205.25
 2012/0234323 A1 9/2012 Connor
 2013/0220327 A1 * 8/2013 Barlow et al. 128/205.25
 2013/0220340 A1 * 8/2013 DeRiso et al. 128/848
 2013/0312757 A1 * 11/2013 Cragg et al. 128/205.24
 2014/0000614 A1 * 1/2014 Chang 128/205.25

2014/0246024 A1 * 9/2014 Cragg et al. 128/204.19
 2014/0246025 A1 * 9/2014 Cragg et al. 128/204.19
 2014/0283843 A1 * 9/2014 Eves et al. 128/206.24

OTHER PUBLICATIONS

Deegan, P., et al. Effects of positive airway pressure on upper airway dilator muscle activity and ventilatory timing. *Journal of Applied Physiol.* Jul. 1996; 81(1): 470-9.
 Duncan, A., et al. PEEP and CPAP. *Anaesth Intensive Care.* Aug. 1986; 14(3): 236-50.
 Garrard, C., et al. The effects of expiratory positive airway pressure on functional residual capacity in normal subjects. *Crit Care Med.* Sep.-Oct. 1978; 6(5): 320-2.
 Gillick, JS. Spontaneous positive end-expiratory pressure (sPEEP). *Anesthesia & Analgesia.* Sep.-Oct. 1977; 56(5): 627-32. PubMed PMID: 333990.
 Heinzer R, et al. Effect of expiratory positive airway pressure on sleep disordered breathing. *Sleep.* Mar. 2008; 31(3): 429-32.
 Juhász, J. et al. Proportional positive airway pressure: a new concept to treat obstructive sleep apnoea. *European Respiratory Journal.* 2001; 17: 467-473.
 Layon, J., et al. Continuous positive airway pressure and expiratory positive airway pressure increase functional residual capacity equivalently. *Chest.* Apr. 1986;89(4):517-21.
 Resta, O., et al. The role of the expiratory phase in obstructive sleep apnoea. *Respir Med.* Mar. 1999; 93(3):190-5.
 Sanders, M., et al. Obstructive sleep apnea treated by independently adjusted inspiratory and expiratory positive airway pressures via nasal mask. *Physiologic and clinical implications.* *Chest.* Aug. 1990; 98(2): 317-24.
 Schlobohm, R., et al. Lung volumes, mechanics, and oxygenation during spontaneous positive-pressure ventilation: the advantage of CPAP over EPAP. *Anesthesiology.* Oct. 1981;55(4):416-22.
 Schmidt, G., et al. EPAP without intubation. *Crit Care Med.* Jul.-Aug. 1977; 5(4): 207-9.
 Search Report and Written Opinion issued in PCT/US13/36246 mailed Sep. 6, 2013.
 Sériès, F., et al. Changes in upper airway resistance with lung inflation and positive airway pressure. *American Physiological Society.* Mar. 1990; 68(3): 1075-1079.
 Sturgeon, C. Jr, et al. PEEP and CPAP: cardiopulmonary effects during spontaneous ventilation. *Anesth Analg.* Sep.-Oct. 1977; 56(5):633-41. PubMed PMID: 20822.
 Tummons, J. A positive end-expiratory pressure-nasal-assist device (PEEP-NAD) for treatment of respiratory distress syndrome. *Anesthesiology.* Jun. 1973; 38(6):592-5.

* cited by examiner

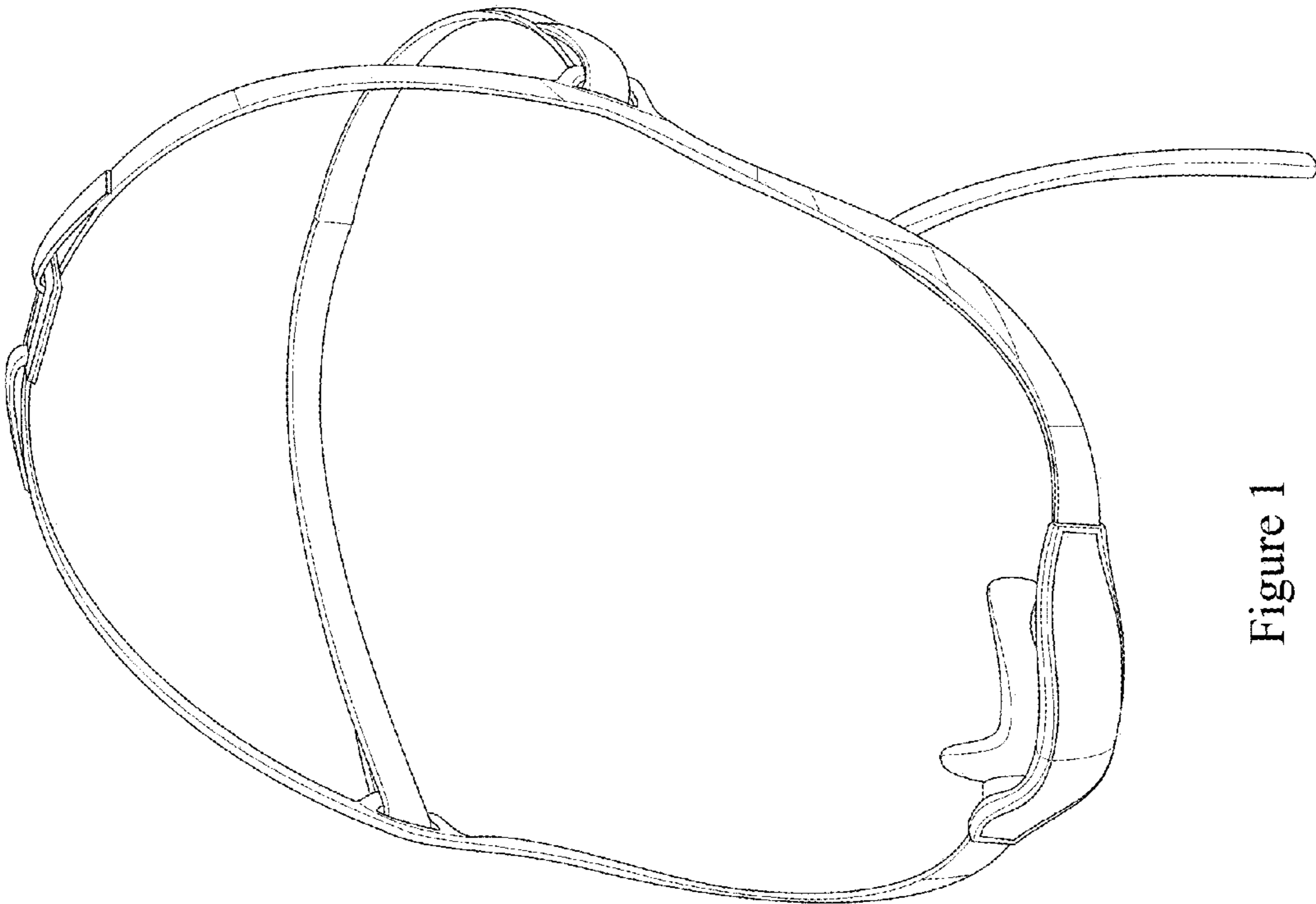


Figure 1

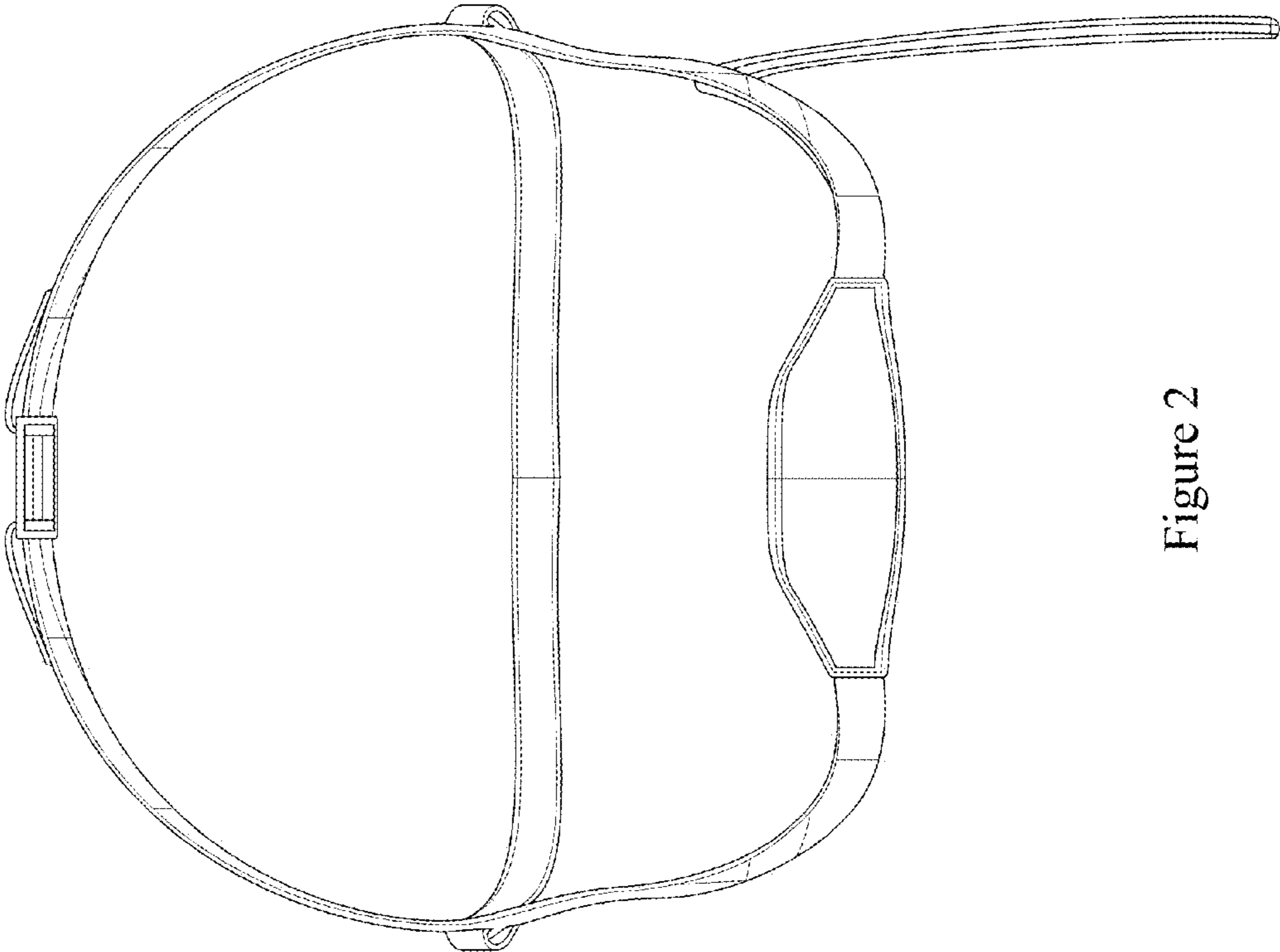


Figure 2

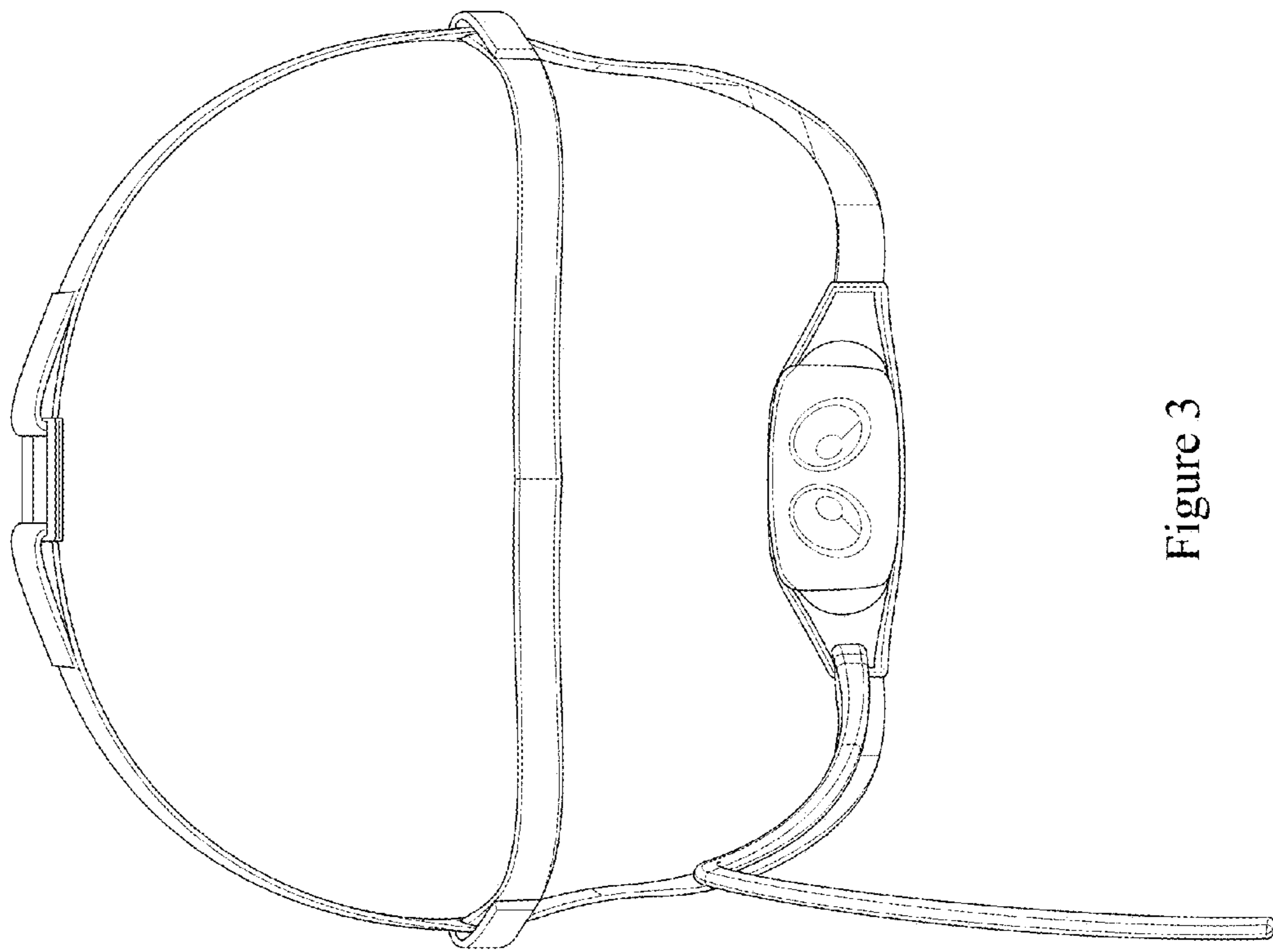


Figure 3

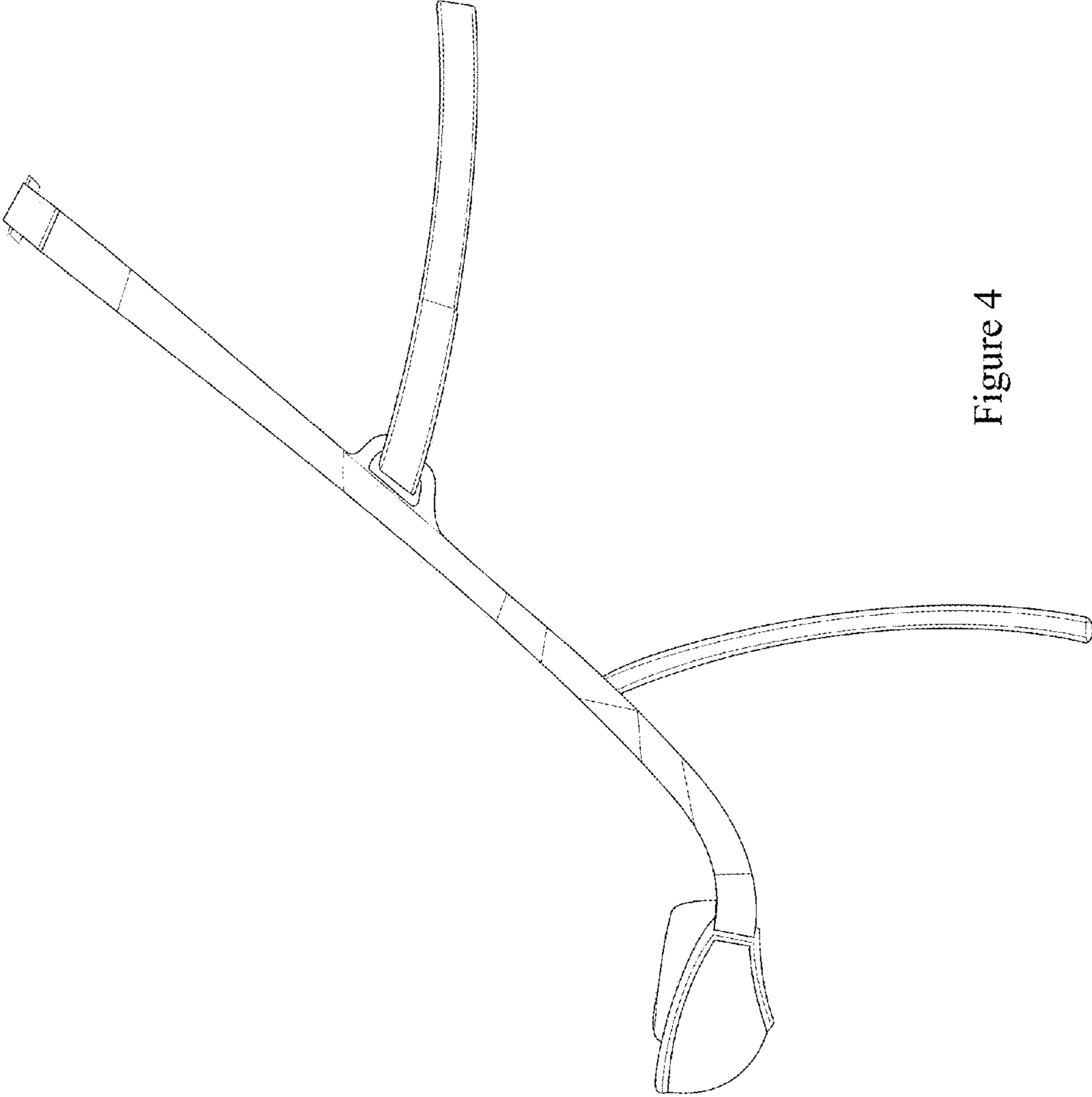


Figure 4

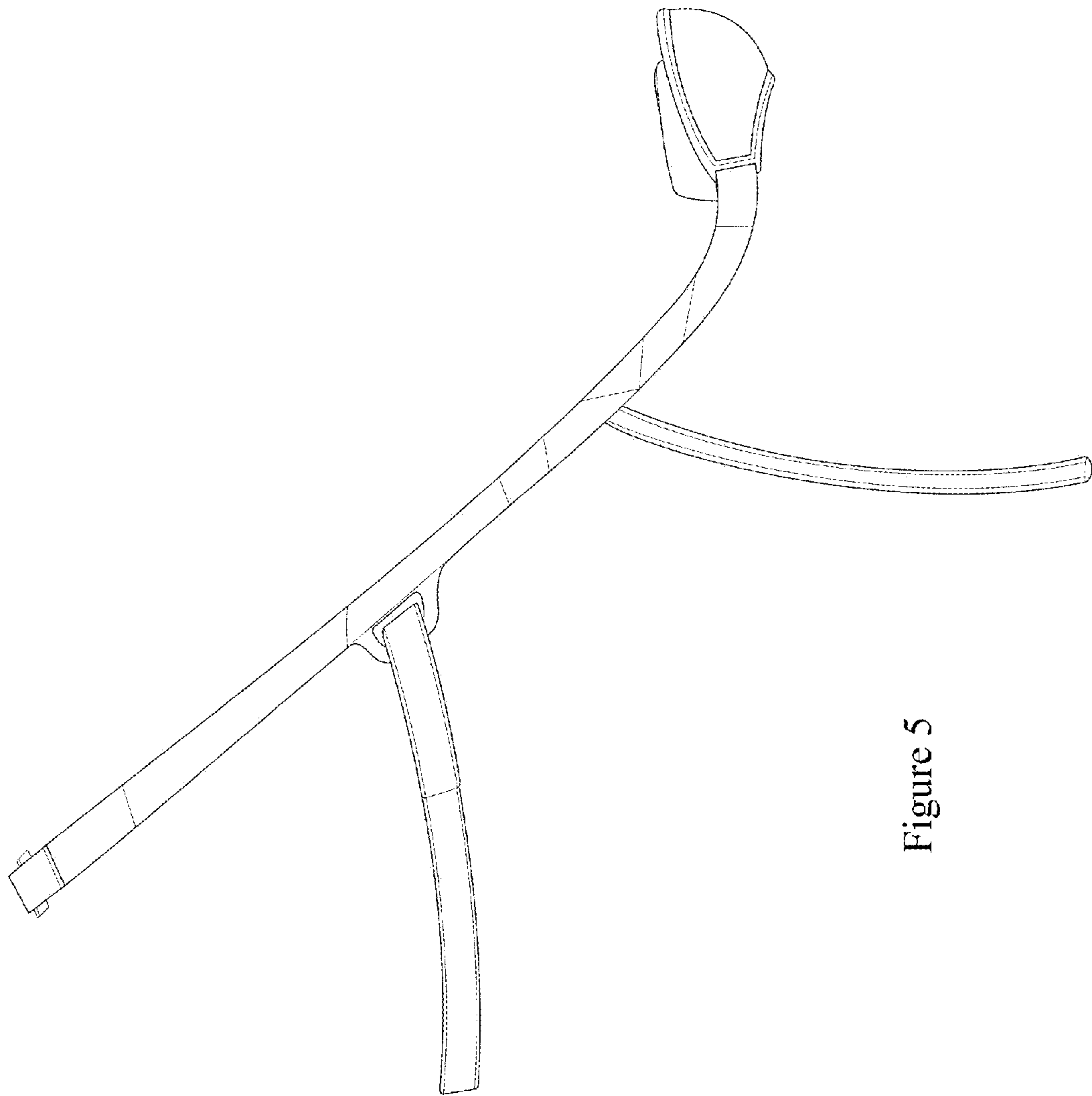


Figure 5

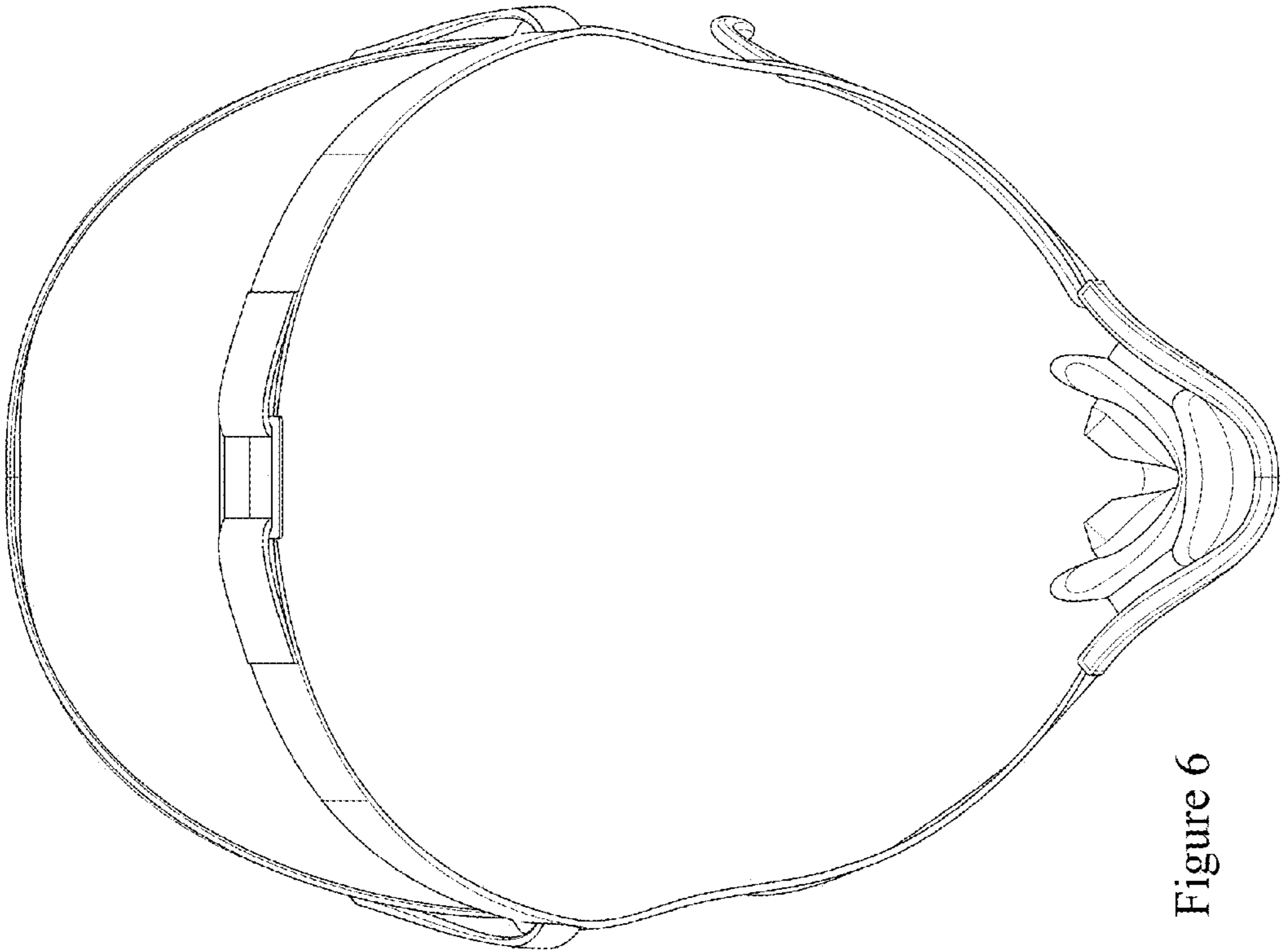


Figure 6

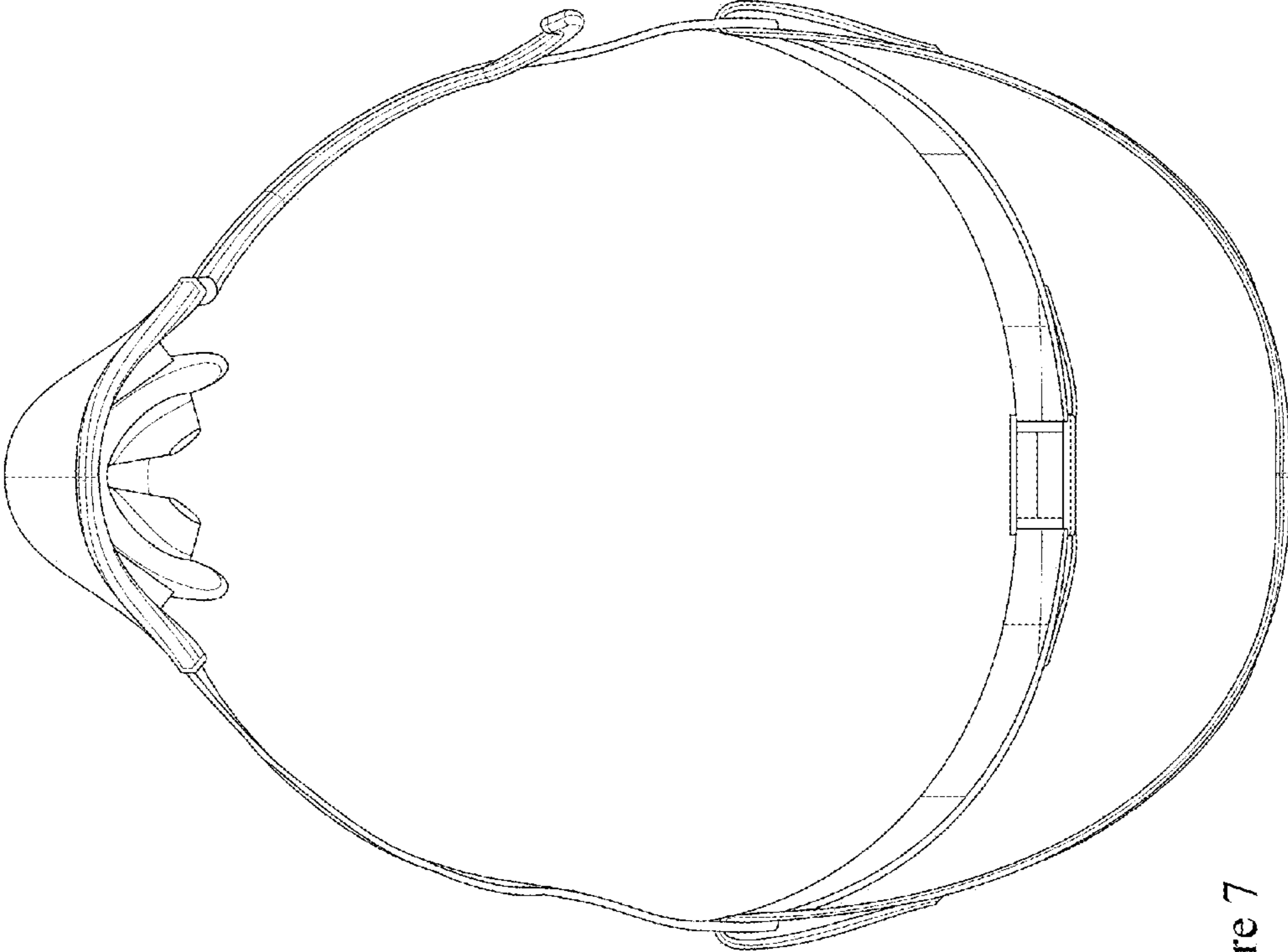


Figure 7

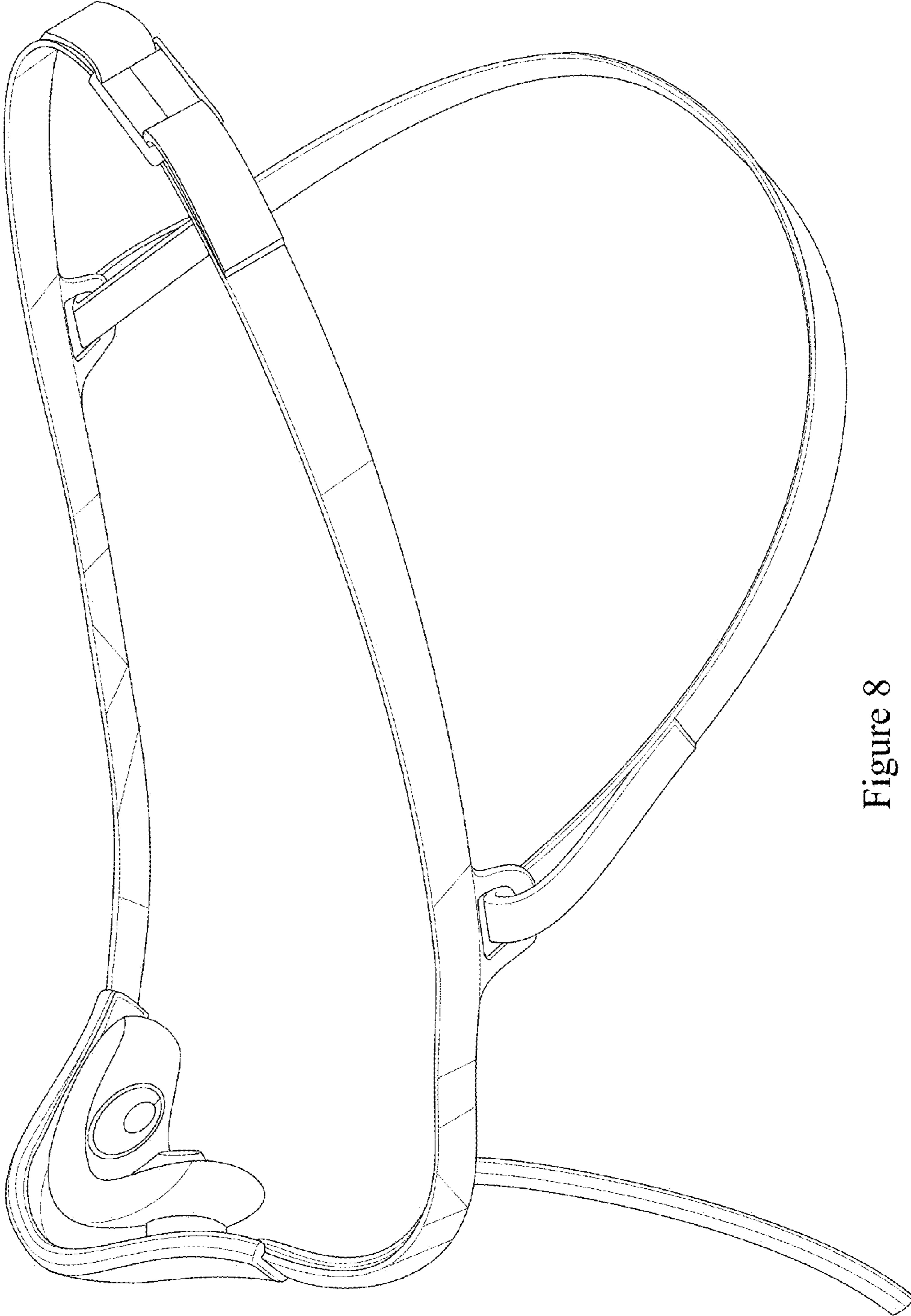


Figure 8