



US00D742502S

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

(10) **Patent No.:** **US D742,502 S**

(45) **Date of Patent:** **** Nov. 3, 2015**

- (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)

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.
7,527,055	B2	5/2009	McAuliffe et al.
7,597,100	B2	10/2009	Ging et al.

(Continued)

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

FOREIGN PATENT DOCUMENTS

- (21) Appl. No.: **29/461,144**
- (22) Filed: **Jul. 18, 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
CPC ... A61B 5/4818; A61B 5/6819; A61M 16/06;
A61M 16/0683; A61M 16/00; A61M 16/0666;
A61M 16/0672; A61M 2210/0618; A61M
16/0622; A62B 9/00
See application file for complete search history.

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

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,915,105	A *	4/1990	Lee	128/205.27
5,567,127	A	10/1996	Wentz	
5,649,533	A	7/1997	Oren	
5,724,965	A *	3/1998	Handke et al.	128/207.13
6,119,694	A *	9/2000	Correa et al.	128/207.13
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.	
6,823,865	B2	11/2004	Drew et al.	
7,011,090	B2	3/2006	Drew et al.	

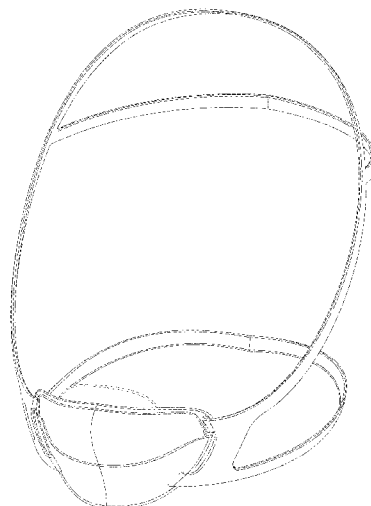
(57) **CLAIM**

The ornamental design for a sleep apnea device, as shown and described herein.

DESCRIPTION

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

1 Claim, 7 Drawing Sheets



(56)

References Cited

U.S. PATENT DOCUMENTS

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.
 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
 2009/0065729 A1 3/2009 Worboys et al.

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.
 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

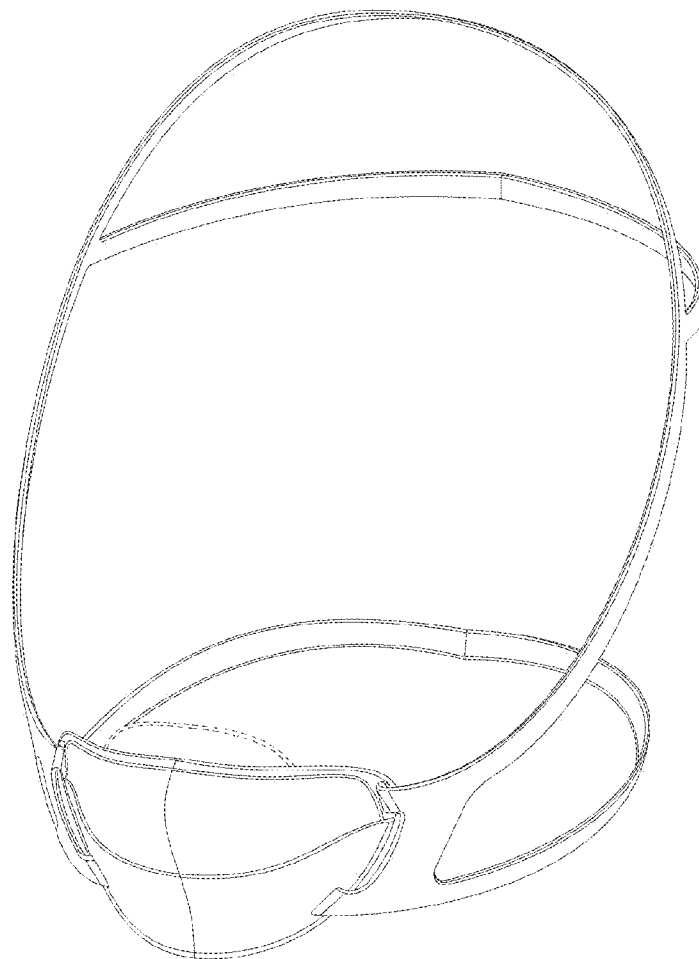


FIG. 1

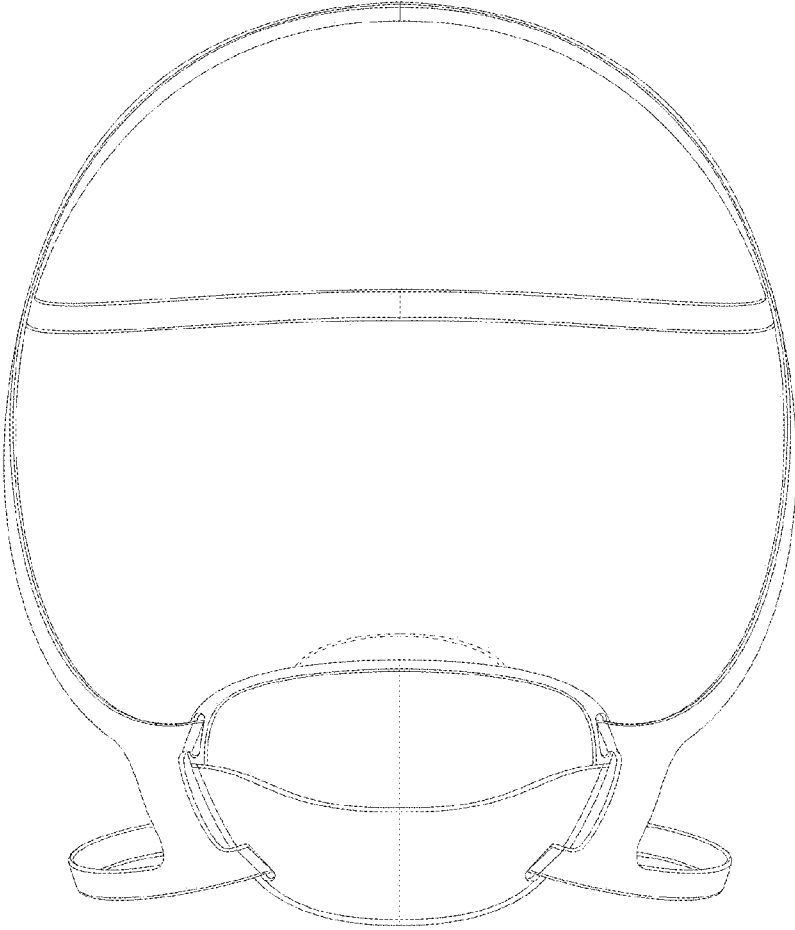


FIG. 2

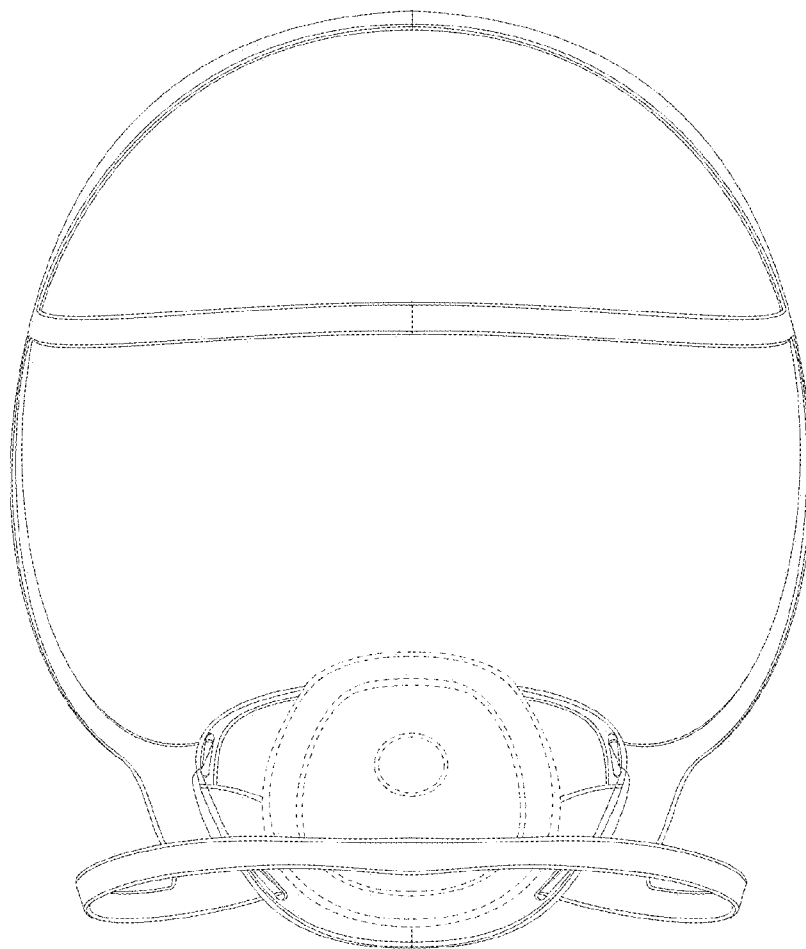


FIG. 3

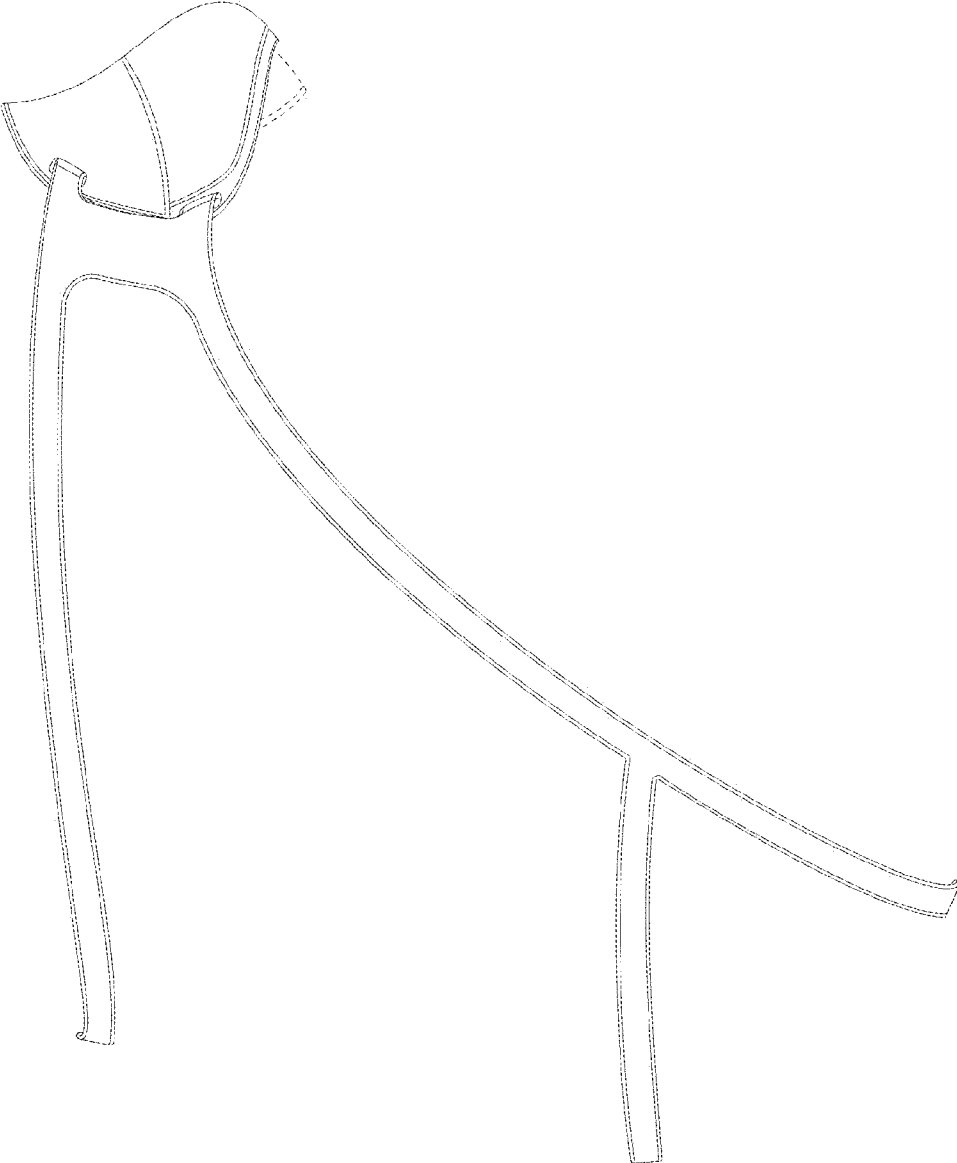


FIG. 4

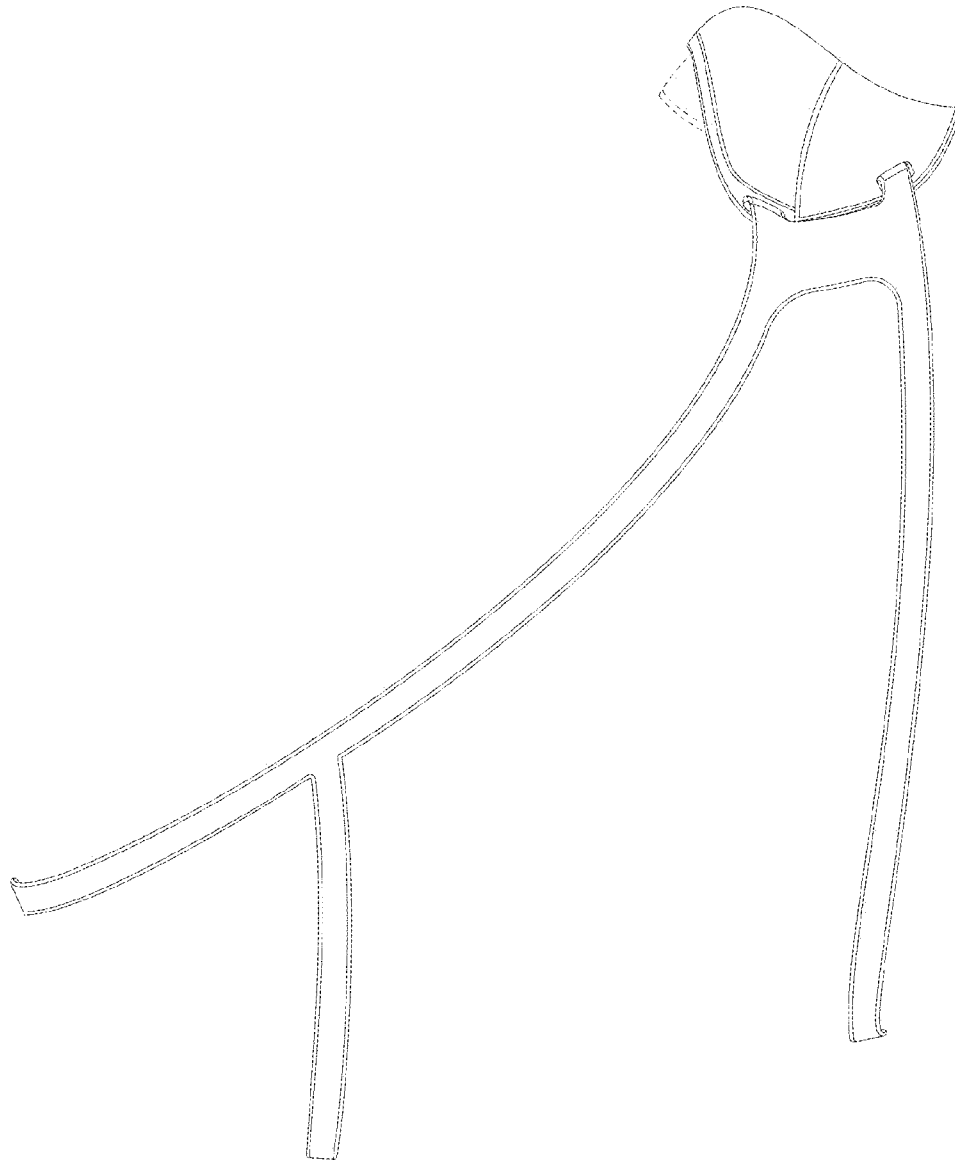


FIG. 5

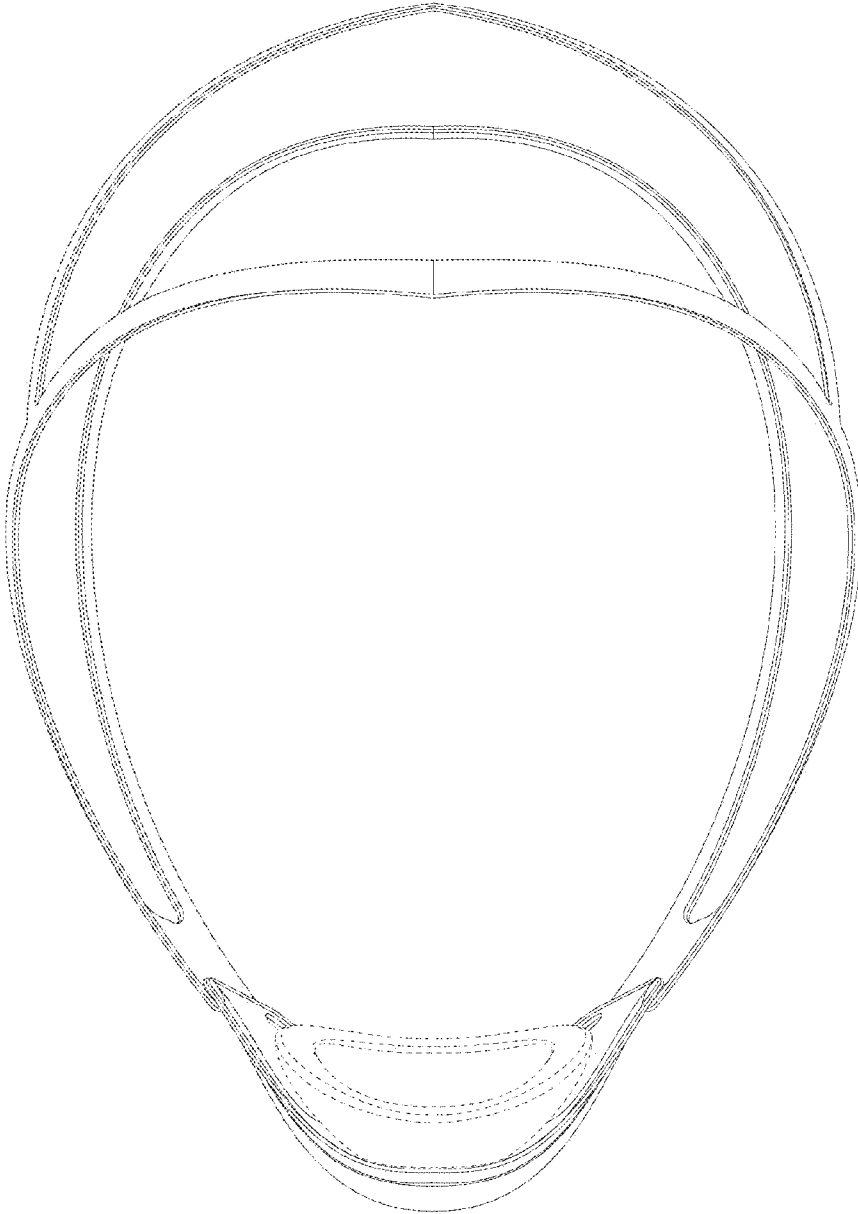


FIG. 6

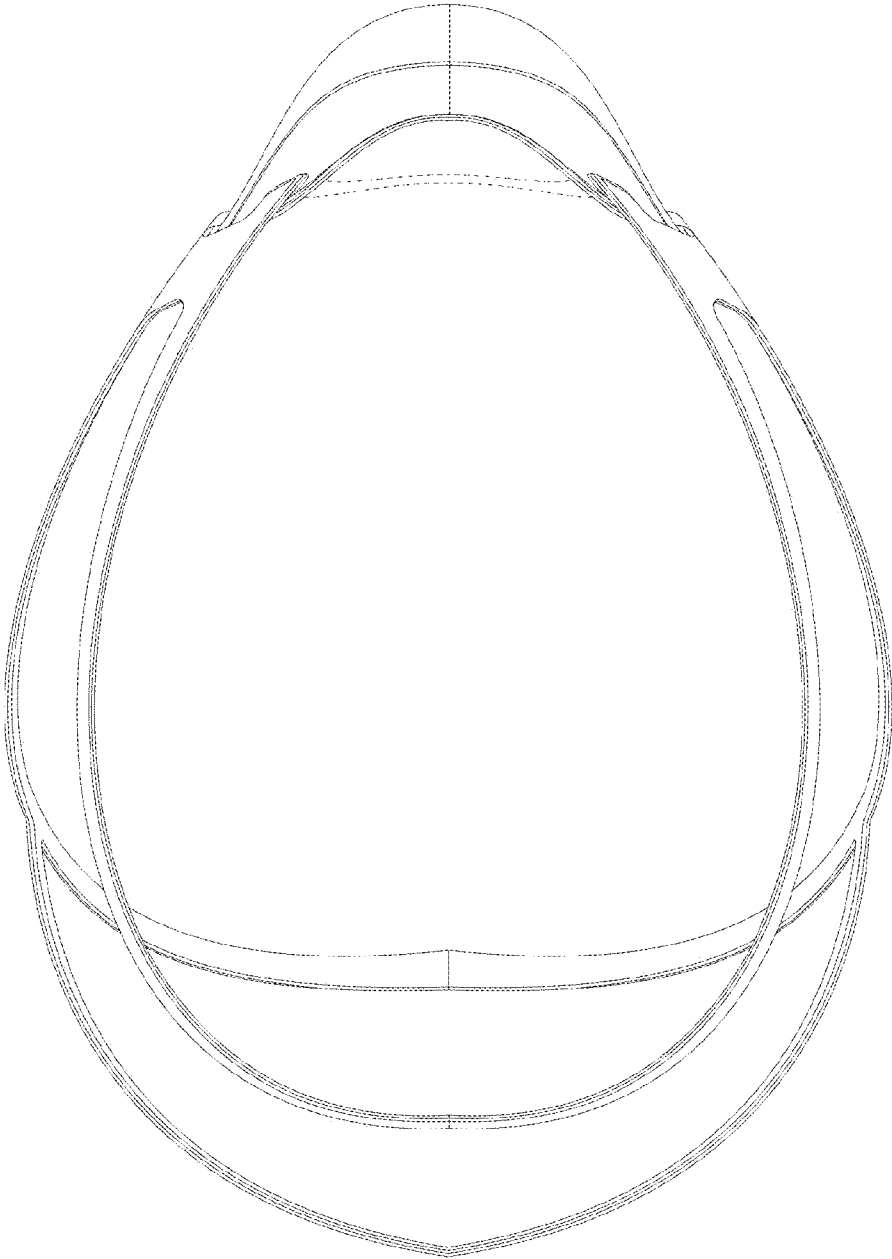


FIG. 7