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(12) **United States Design Patent** (10) **Patent No.:** **US D937,411 S**
Powell et al. (45) **Date of Patent:** **** Nov. 30, 2021**

(54) **UNIT END CONNECTOR**
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3,990,727 A 11/1976 Gallagher
4,177,945 A 12/1979 Schwartz et al.
4,458,719 A 7/1984 Strybel
4,541,658 A 9/1985 Bartholomew
4,592,349 A 6/1986 Bird
4,621,632 A 11/1986 Bartels et al.
4,653,542 A 3/1987 Tascher
4,844,512 A 7/1989 Gahwiler
4,941,689 A 7/1990 Sjoberg
4,967,744 A 11/1990 Chua

(Continued)

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FOREIGN PATENT DOCUMENTS

AU 6379594 10/1994
AU 2013257505 10/2013

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

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OTHER PUBLICATIONS

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(51) **LOC (13) Cl.** **24-02**

(52) **U.S. Cl.**

USPC **D24/129**; D24/110

(58) **Field of Classification Search**

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604/164.01-164.11, 187, 93.01; 600/101,
600/139, 143; 128/200.24, 207.14,
128/207.15, 202.27, 205.24, 912, 911,
128/203.12, 204.18; D23/263, 264, 260
CPC A61M 25/00; A61M 39/00; A61M 27/00;
A61M 25/0043; A61M 25/0067; A61M
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See application file for complete search history.

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(57)

CLAIM

The ornamental design for a unit end connector, as shown
and described.

DESCRIPTION

FIG. 1 is a rear, top, and left side perspective view of a unit
end connector embodying our new design;
FIG. 2 is a rear view thereof;
FIG. 3 is a front view thereof;
FIG. 4 is a left side view thereof;
FIG. 5 is a right side view thereof;
FIG. 6 is a top view thereof; and,
FIG. 7 is a bottom view thereof.

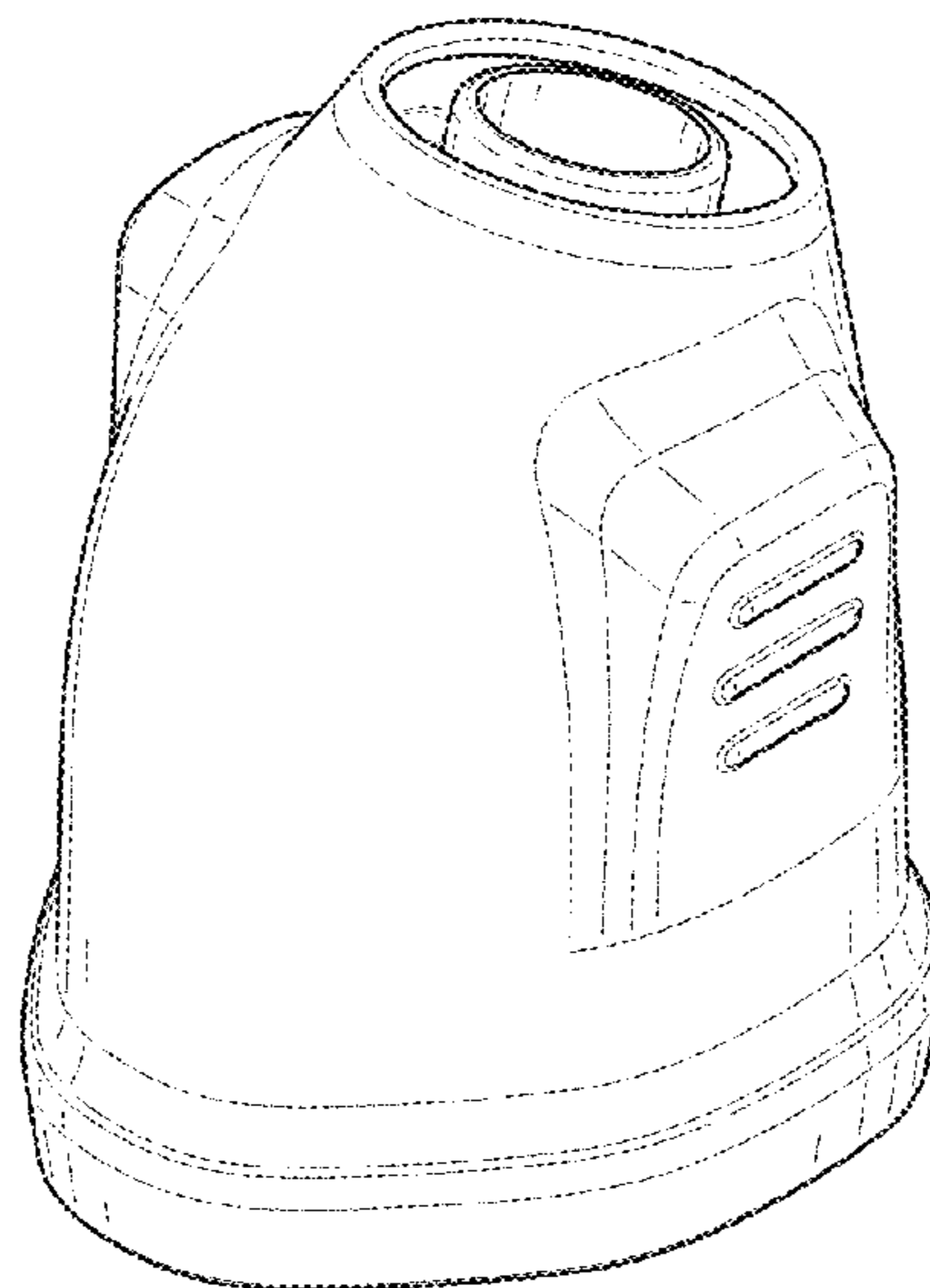
Broken lines are used to illustrate portions of the unit end
connector that form no part of the claimed design.

(56) **References Cited**

U.S. PATENT DOCUMENTS

1,542,335 A 6/1925 Cardarelli
2,224,057 A 12/1940 Mejean et al.
2,302,707 A 11/1942 Mejean et al.
3,826,523 A 7/1974 Eschbaugh

1 Claim, 7 Drawing Sheets



(56)

References Cited

U.S. PATENT DOCUMENTS

5,213,376 A 5/1993 Szabo
 5,377,670 A 1/1995 Smith
 5,447,337 A 9/1995 Ruckwardt
 5,600,752 A 2/1997 Lopatinsky
 5,640,951 A 6/1997 Huddart et al.
 5,676,133 A 10/1997 Hickle et al.
 5,794,986 A 8/1998 Gansel et al.
 5,799,986 A 9/1998 Corbett et al.
 6,907,882 B2 6/2005 Ging et al.
 6,953,354 B2 10/2005 Edirisuriya et al.
 7,047,972 B2 5/2006 Ging et al.
 7,354,079 B2 4/2008 Rehder et al.
 7,390,028 B2 6/2008 Blazek
 D596,739 S 7/2009 Ng et al.
 D628,288 S 11/2010 Row et al.
 7,878,199 B2 2/2011 Ging et al.
 7,918,243 B2 4/2011 Diodati et al.
 7,997,267 B2 8/2011 Ging et al.
 8,113,197 B2 2/2012 Smart et al.
 8,291,906 B2 10/2012 Kooij et al.
 8,297,285 B2 10/2012 Henry et al.
 8,522,784 B2 9/2013 Ng et al.
 8,573,201 B2 11/2013 Rummery et al.
 8,596,273 B2 12/2013 Burz et al.
 8,631,789 B2 1/2014 Virr et al.
 8,733,349 B2 5/2014 Bath et al.
 8,770,190 B2 7/2014 Doherty et al.
 8,875,709 B2 11/2014 Davidson et al.
 9,044,564 B2 6/2015 Dravitzki et al.
 D733,879 S * 7/2015 Mueller D24/147
 9,132,252 B2 9/2015 Barlow et al.
 9,227,033 B2 1/2016 Smart
 9,248,248 B2 2/2016 Virr et al.
 9,295,805 B2 3/2016 Worboys et al.
 D754,327 S 4/2016 Row
 D762,843 S 8/2016 Formica et al.
 9,402,970 B2 8/2016 Virr et al.
 9,427,545 B2 8/2016 Eves et al.
 9,480,809 B2 11/2016 Guney et al.
 9,526,857 B2 12/2016 Rummery et al.
 9,533,117 B2 1/2017 Gray
 9,572,949 B2 2/2017 Vos et al.
 D800,895 S * 10/2017 Prentice D24/110.4
 9,784,387 B2 10/2017 Kaye et al.
 9,802,015 B2 10/2017 Virr et al.
 9,808,612 B2 11/2017 Gulliver et al.
 9,878,117 B2 1/2018 Crumblin et al.
 9,903,371 B2 2/2018 Row et al.
 D820,441 S * 6/2018 Ketelhohn A61M 1/0058
 D824,020 S * 7/2018 Bornholdt D24/110.4
 D824,022 S * 7/2018 Prentice D24/110.4
 10,058,666 B2 8/2018 Kwok et al.
 10,092,720 B2 10/2018 Kooij et al.
 D848,607 S * 5/2019 Walls D24/110.4
 D849,931 S * 5/2019 Prentice D24/110.1
 D851,749 S * 6/2019 Siew D24/110.1
 10,328,226 B2 * 6/2019 Allan A61M 16/0616

D856,510 S * 8/2019 Scheirlinck D24/110.4
 D875,924 S * 2/2020 Prentice D24/110.4
 D883,474 S * 5/2020 Tipsmark D24/113
 D908,207 S * 1/2021 Prentice D24/110.4
 2003/0196662 A1 10/2003 Ging et al.
 2003/0236015 A1 12/2003 Edirisuriya et al.
 2007/0025811 A1 2/2007 Wilhelm
 2011/0067704 A1 3/2011 Kooij et al.
 2011/0265796 A1 11/2011 Amarasinghe et al.
 2013/0280055 A1 10/2013 Daly et al.
 2015/0258324 A1 9/2015 Chida et al.
 2015/0320960 A1 11/2015 Barlow et al.
 2016/0325067 A1 11/2016 Harwood et al.
 2018/0043125 A1 2/2018 Bencke et al.
 2018/0142690 A1 5/2018 Row et al.
 2018/0296787 A1 10/2018 Maurer

FOREIGN PATENT DOCUMENTS

AU 2013257426 11/2013
 AU 2015202999 6/2015
 BE 883615 10/1980
 CN 2207505 U 9/1995
 CN 205411878 U 8/2016
 DE 20003212 5/2000
 DE 10021783 11/2000
 DE 10049869 4/2002
 DE 10229004 1/2004
 DE 102008061415 6/2010
 EP 0928620 12/1998
 EP 1265666 B1 2/2001
 EP 0845277 11/2003
 EP 1478424 A2 11/2004
 EP 1741462 11/2007
 EP 2465564 12/2010
 EP 1716358 B1 4/2011
 EP 2729208 7/2012
 EP 2780065 11/2012
 EP 2954918 11/2014
 EP 2877224 6/2015
 EP 2882482 A1 6/2015
 EP 2968843 A2 1/2016
 EP 2022528 3/2016
 EP 3082920 10/2016
 EP 1369141 8/2017
 EP 2469146 B1 8/2017
 EP 2992921 B1 9/2017
 EP 3013402 4/2018
 GB 2451891 2/2009
 IT MI930305 10/1994
 NZ 595424 12/2012
 WO WO199617646 6/1996
 WO WO2000067827 1/2000
 WO WO2006019323 8/2005
 WO WO2012164407 12/2012
 WO WO2013022356 2/2013
 WO WO2018053589 3/2018
 WO WO2018064712 4/2018
 WO WO2018126295 7/2018

* cited by examiner

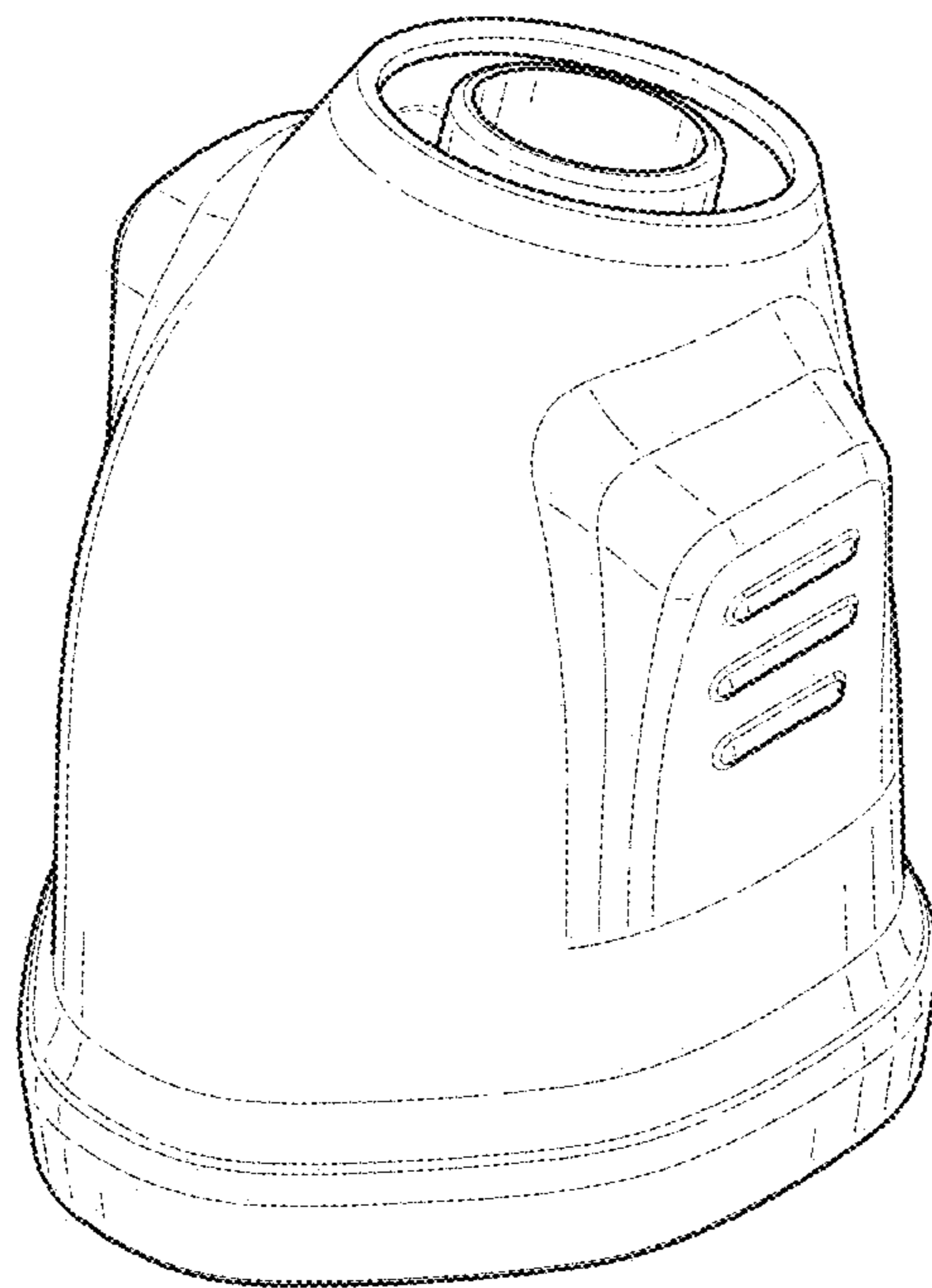


FIG. 1

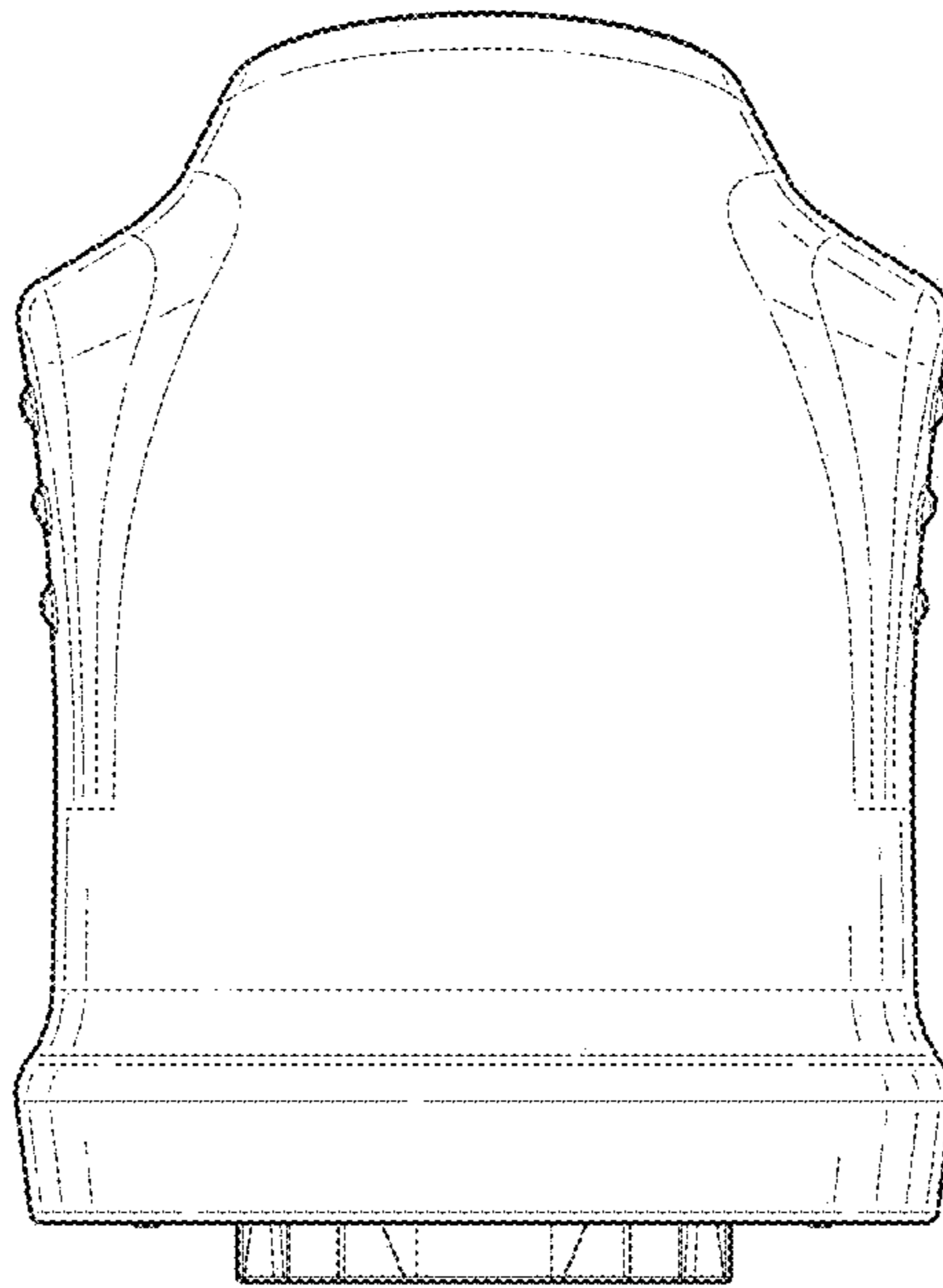


FIG. 2

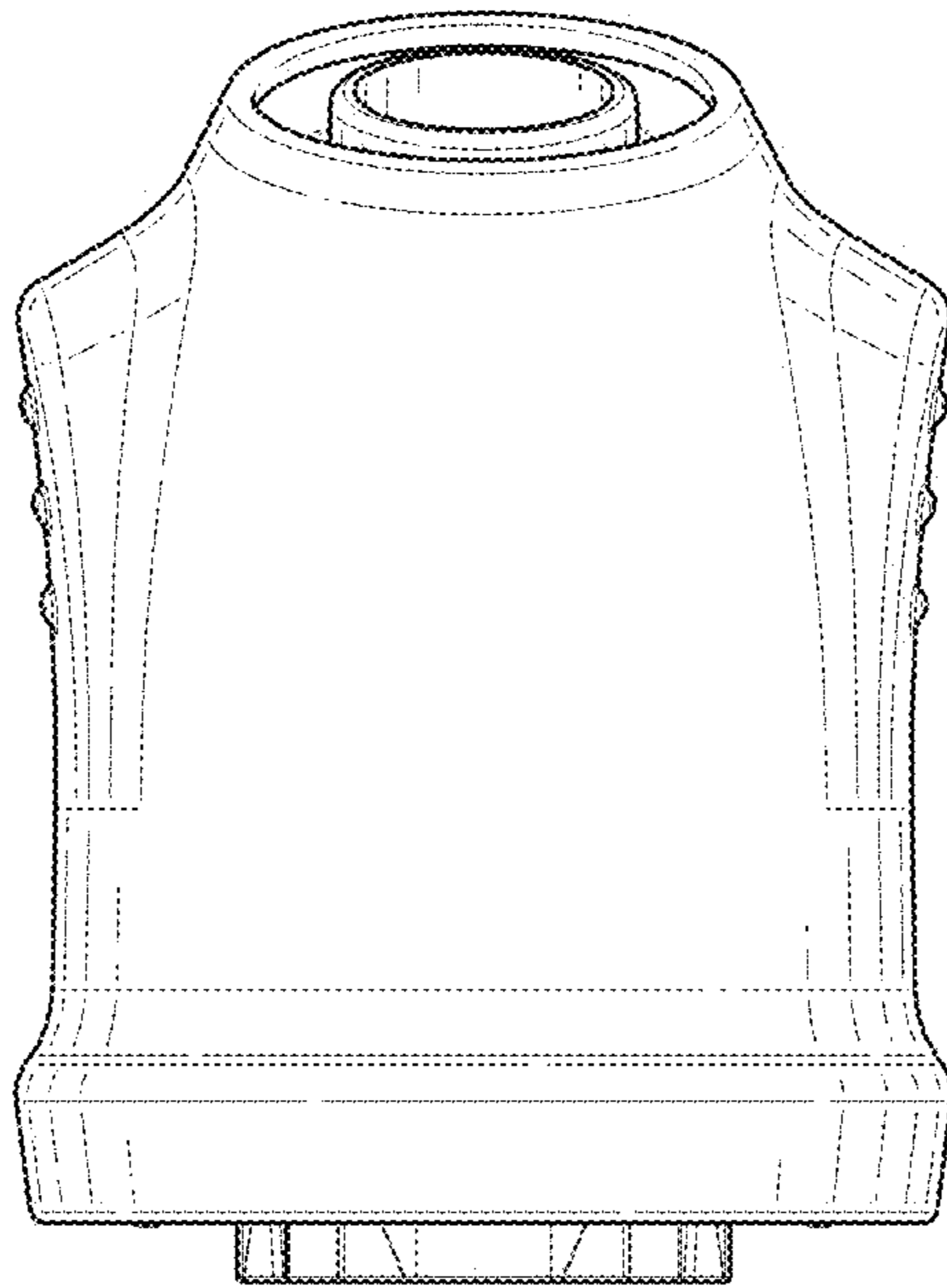


FIG. 3

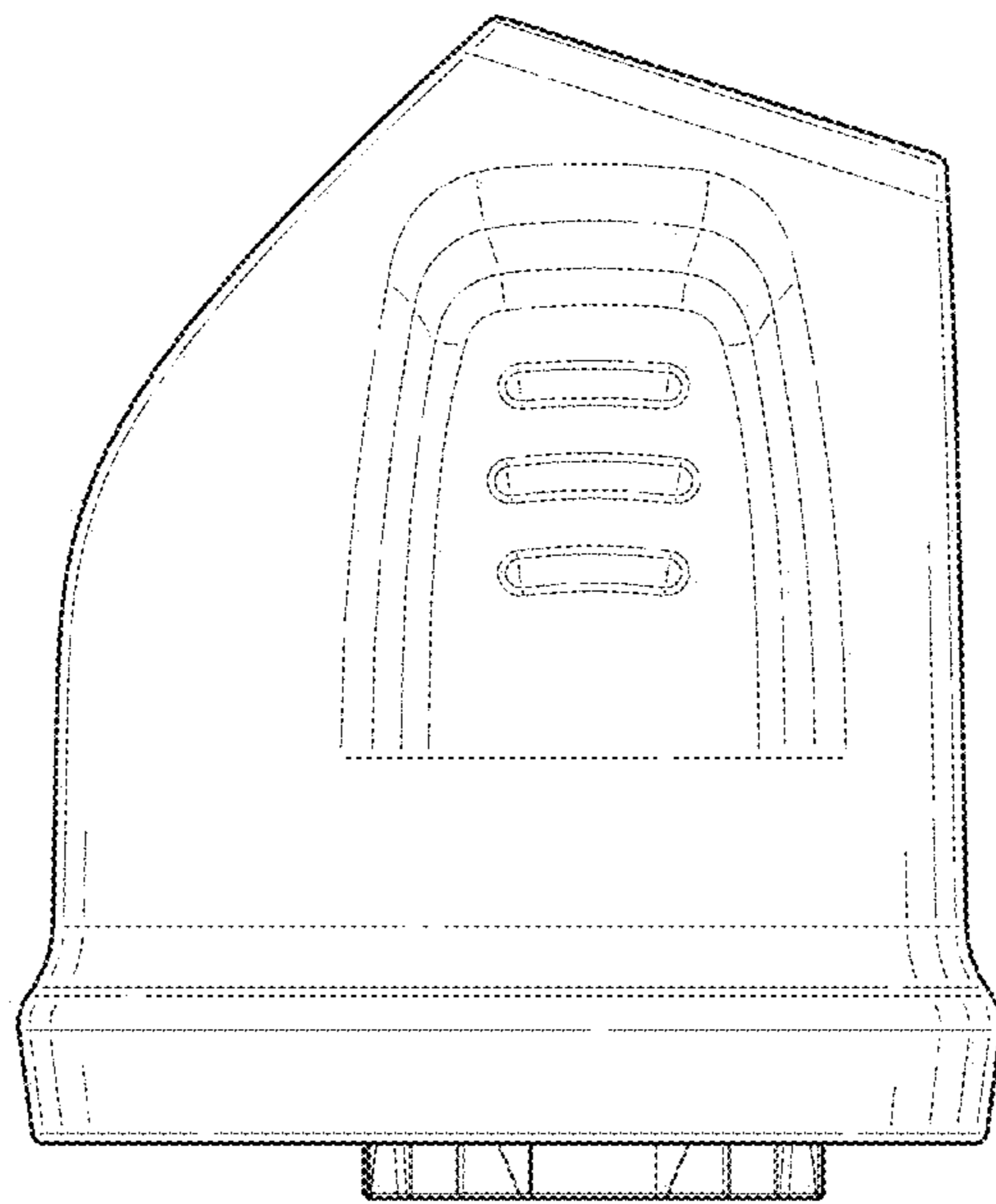


FIG. 4

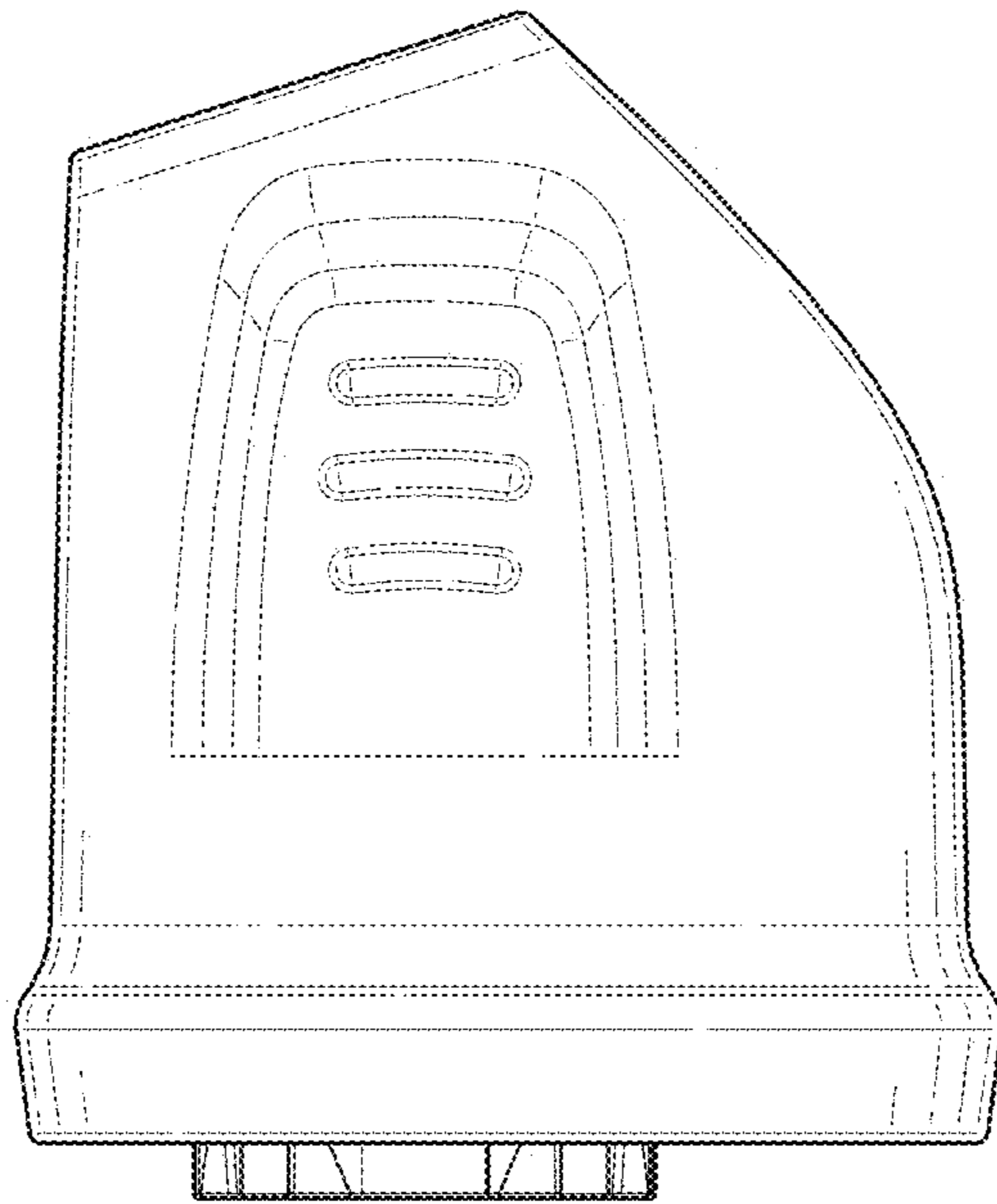


FIG. 5

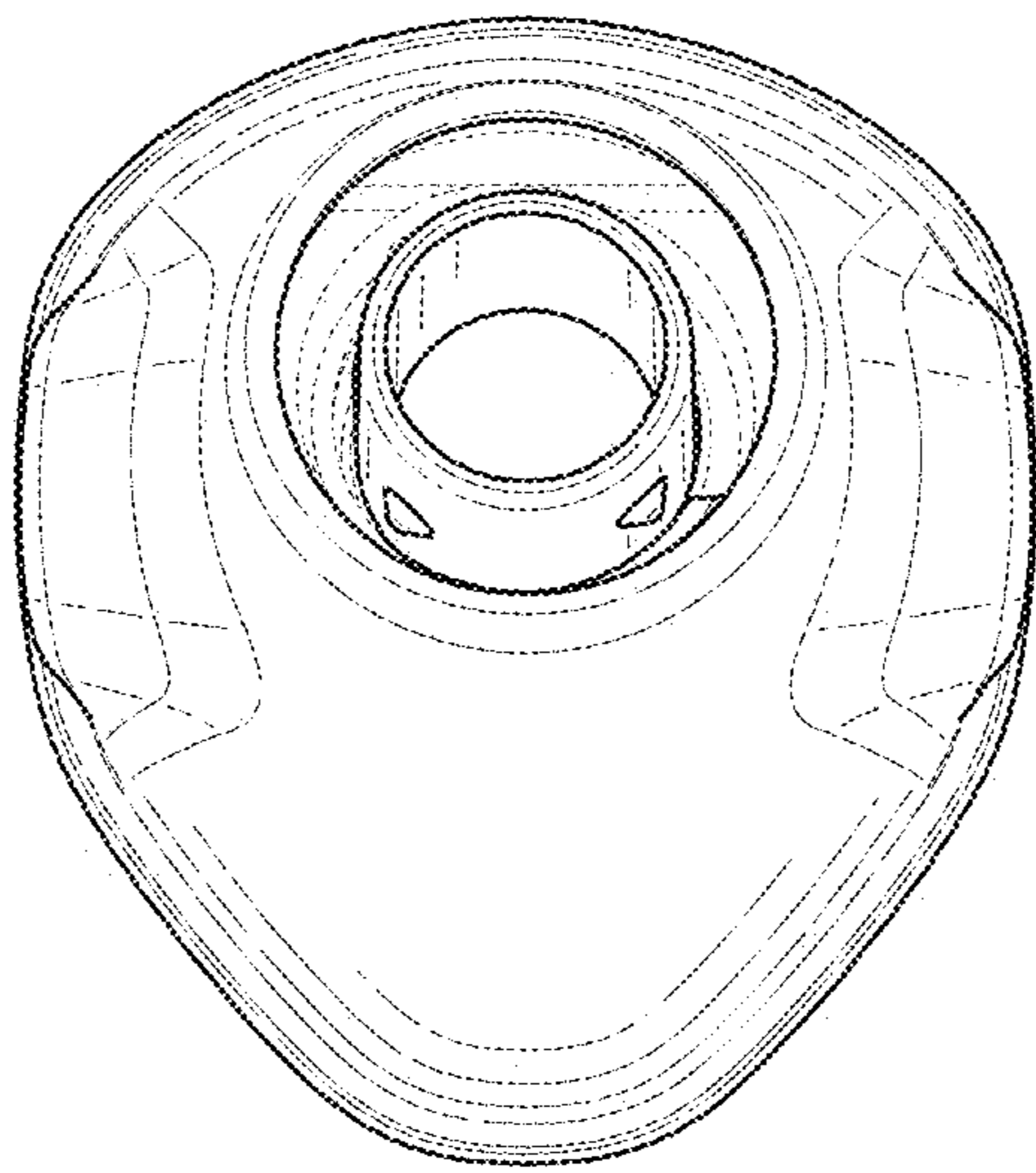


FIG. 6

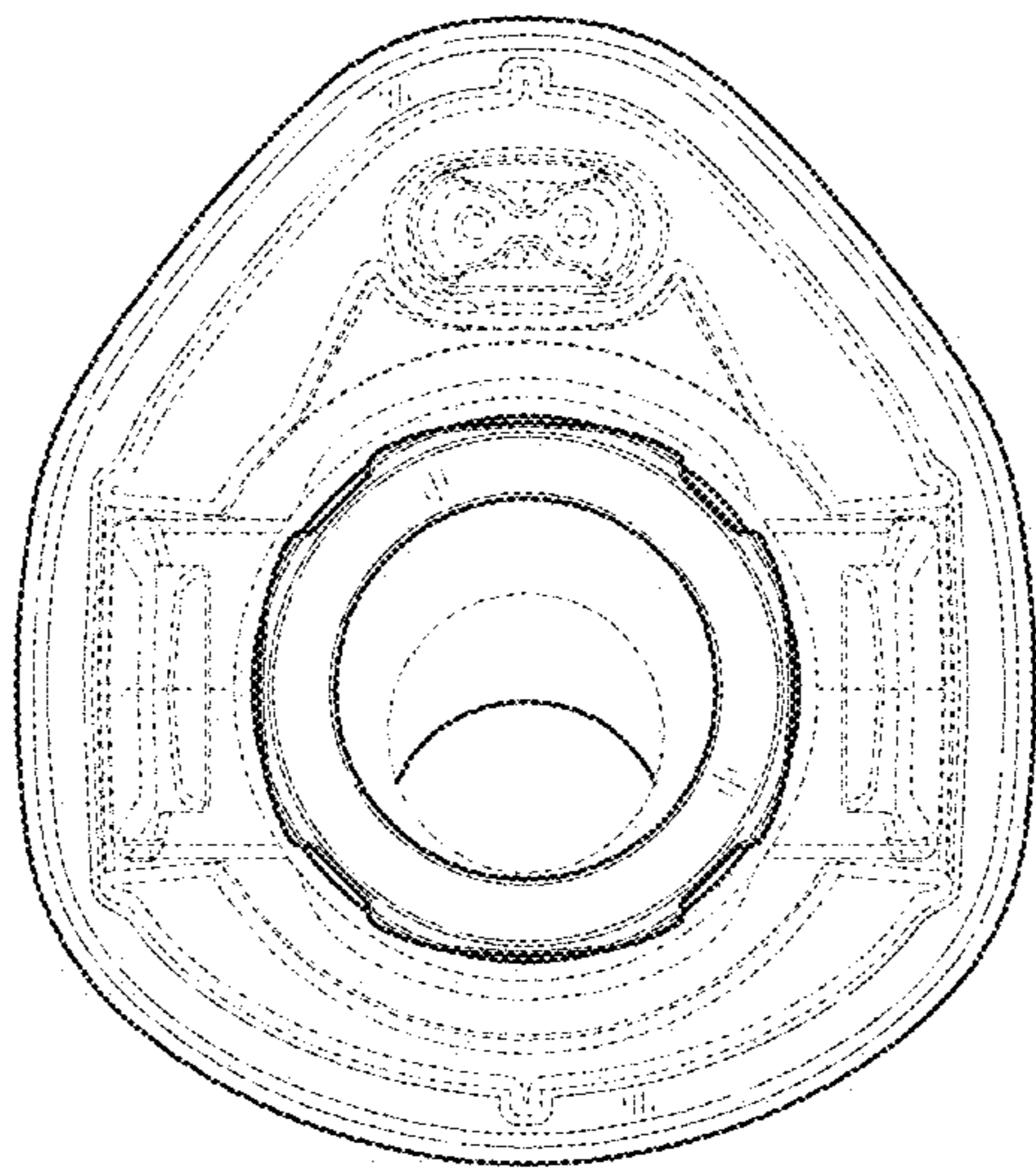


FIG. 7