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Frey et al.

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(54) **THORACIC SURGICAL GUIDE**

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filed on Sep. 18, 2012, now Pat. No. Des. 705,929.

(51) **LOC (10) Cl.** **24-02**

(52) **U.S. Cl.**
USPC **D24/140**

(58) **Field of Classification Search**
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606/96-103, 246, 248; 623/17.11, 17.16;
600/410

CPC A61C 1/085; A61C 8/0092; A61C 1/084;
A61C 8/0089; A61C 13/0003; A61C 8/0048;
A61C 8/005; A61B 17/1635; A61B 17/14;
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See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,151,392 A 10/1964 Chambers
5,201,734 A 4/1993 Cozad et al.
D359,557 S 6/1995 Hayes
D403,066 S 12/1998 DeFonzo

(Continued)

FOREIGN PATENT DOCUMENTS

CN 201275138 7/2009
CN 201404283 2/2010

(Continued)

OTHER PUBLICATIONS

U.S. Appl. No. 14/298,634, filed Jun. 6, 2014, Frey et al.
(Continued)

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(57) **CLAIM**

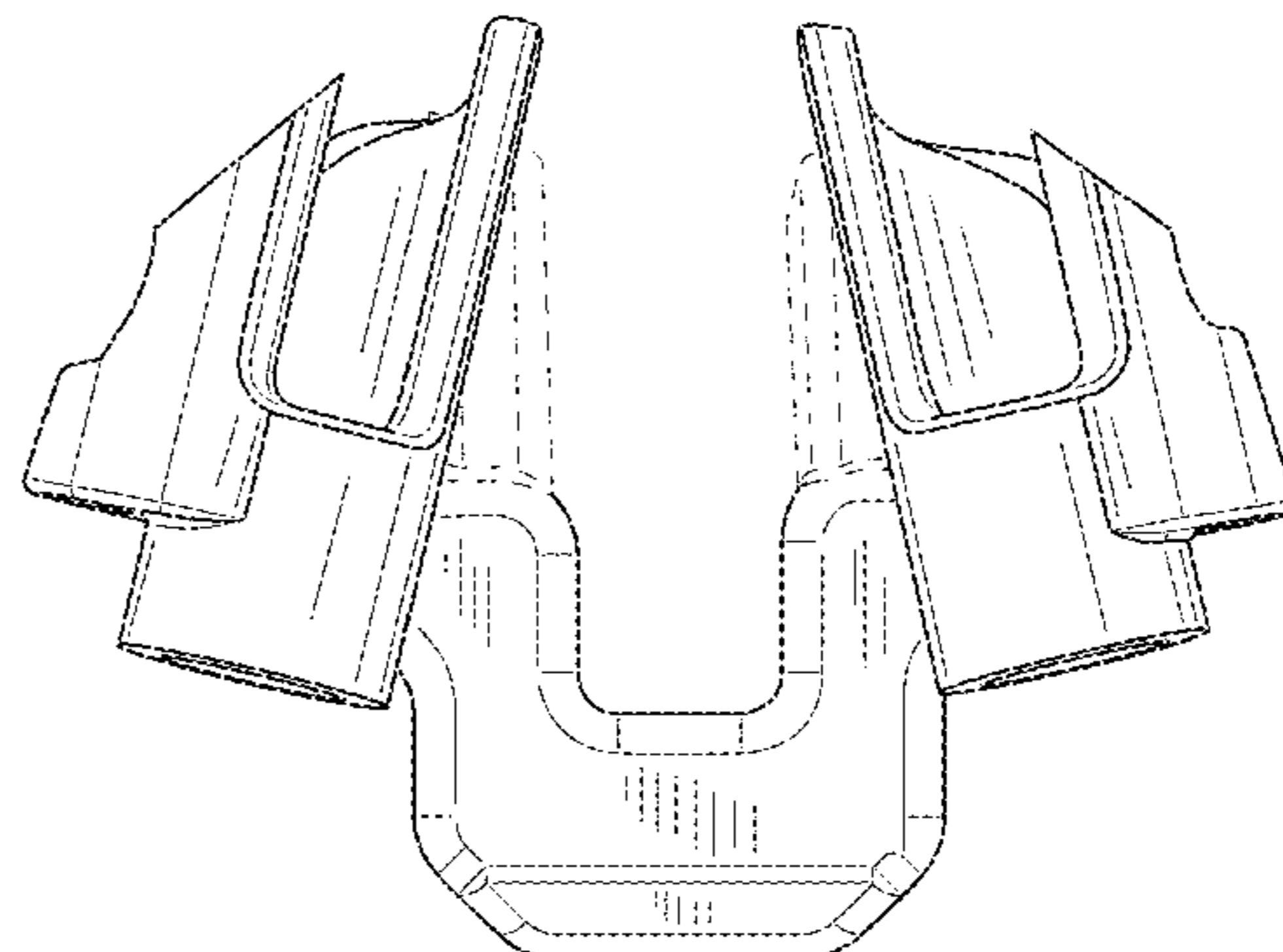
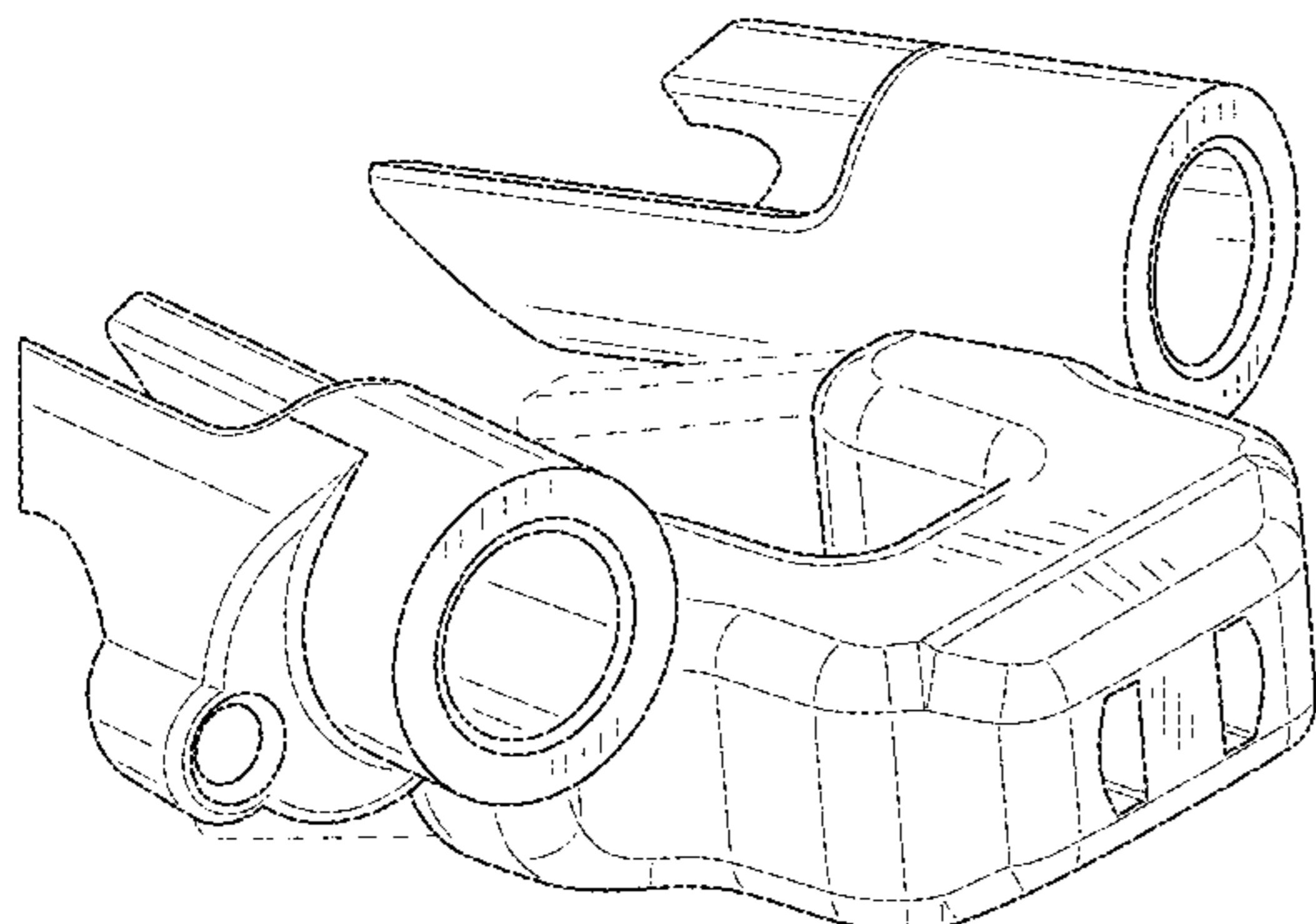
The ornamental design for a thoracic surgical guide, as shown and described.

DESCRIPTION

FIG. 1 is a perspective view of a thoracic surgical guide, showing our new design;
FIG. 2 is a front elevation view of the thoracic surgical guide illustrated in FIG. 1;
FIG. 3 is a rear elevation view of the thoracic surgical guide illustrated in FIG. 1;
FIG. 4 is a right elevation view of the thoracic surgical guide illustrated in FIG. 1;
FIG. 5 is a left elevation view of the thoracic surgical guide illustrated in FIG. 1;
FIG. 6 is a top plan view of the thoracic surgical guide illustrated in FIG. 1; and,
FIG. 7 is a bottom plan view of the thoracic surgical guide illustrated in FIG. 1.

The broken lines immediately adjacent the shaded areas represent the bounds of the claimed design while all other broken lines are directed to environment; the broken lines form no part of the claimed design.

1 Claim, 4 Drawing Sheets



(56)

References Cited

U.S. PATENT DOCUMENTS

D412,032 S 7/1999 Mikula-Curtis et al.
 D420,132 S 2/2000 Bucholz et al.
 D428,989 S 8/2000 Segermark et al.
 6,711,432 B1 3/2004 Weiss et al.
 6,755,839 B2 6/2004 Van Hoeck et al.
 D532,515 S 11/2006 Buttler et al.
 D533,664 S 12/2006 Buttler et al.
 7,235,076 B2 6/2007 Pacheco
 7,491,180 B2 2/2009 Pacheco
 7,623,902 B2 11/2009 Pacheco
 D606,195 S 12/2009 Eisen et al.
 7,658,610 B2 2/2010 Knopp
 D618,796 S 6/2010 Cantu et al.
 7,844,356 B2 11/2010 Matov et al.
 7,957,824 B2 6/2011 Boronvinskih et al.
 8,159,753 B2 4/2012 Ojeda et al.
 8,167,884 B2 5/2012 Pacheco
 8,206,396 B2 6/2012 Trabish
 8,214,014 B2 7/2012 Pacheco
 8,257,083 B2 9/2012 Berckmans et al.
 D669,176 S 10/2012 Frey
 8,277,461 B2 10/2012 Pacheco
 D672,038 S 12/2012 Frey
 8,419,740 B2 4/2013 Aram et al.
 D705,929 S * 5/2014 Frey D24/140
 8,758,357 B2 * 6/2014 Frey A41B 17/15
 600/424
 D718,862 S * 12/2014 Matheny D24/155
 D718,863 S * 12/2014 Matheny D24/155
 D718,864 S * 12/2014 Matheny D24/155
 D726,914 S * 4/2015 Matheny D24/155
 D738,498 S * 9/2015 Frey D24/140
 2004/0097925 A1 5/2004 Boehm et al.
 2005/0148843 A1 7/2005 Roose
 2006/0084986 A1 4/2006 Grinberg et al.
 2006/0095044 A1 5/2006 Grady, Jr. et al.
 2006/0149375 A1 7/2006 Yuan et al.
 2006/0241385 A1 10/2006 Dietz
 2007/0288030 A1 12/2007 Metzger et al.
 2008/0114370 A1 5/2008 Schoenefeld
 2008/0161815 A1 7/2008 Schoenefeld et al.
 2008/0183214 A1 7/2008 Copp et al.
 2008/0257363 A1 10/2008 Schoenefeld et al.
 2008/0275452 A1 11/2008 Lang et al.
 2008/0312659 A1 12/2008 Metzger et al.
 2008/0319491 A1 12/2008 Schoenefeld
 2009/0087276 A1 4/2009 Rose
 2009/0088674 A1 4/2009 Caillouette et al.
 2009/0088761 A1 4/2009 Roose et al.
 2009/0088763 A1 4/2009 Aram et al.
 2009/0093816 A1 4/2009 Roose et al.
 2009/0099567 A1 4/2009 Zajac
 2009/0110498 A1 4/2009 Park
 2009/0138020 A1 5/2009 Park et al.
 2009/0187194 A1 7/2009 Hamada
 2009/0198277 A1 8/2009 Gordon et al.
 2009/0254093 A1 10/2009 White et al.
 2009/0270868 A1 10/2009 Park et al.
 2010/0016984 A1 1/2010 Trabish
 2010/0049195 A1 2/2010 Park et al.
 2010/0082035 A1 4/2010 Keefer
 2010/0087829 A1 4/2010 Metzger et al.
 2010/0100193 A1 4/2010 White
 2010/0152782 A1 6/2010 Stone et al.
 2010/0191244 A1 7/2010 White et al.
 2010/0217270 A1 8/2010 Polinski et al.
 2010/0217336 A1 8/2010 Crawford et al.
 2010/0305700 A1 12/2010 Ben-Arye et al.
 2010/0324692 A1 12/2010 Uthgenannt et al.
 2011/0015636 A1 1/2011 Katrana et al.
 2011/0015639 A1 1/2011 Metzger et al.
 2011/0046735 A1 2/2011 Metzger et al.
 2011/0054478 A1 3/2011 Vanasse et al.
 2011/0071533 A1 3/2011 Metzger et al.
 2011/0093023 A1 4/2011 Lee et al.

2011/0093086 A1 4/2011 Witt et al.
 2011/0160736 A1 6/2011 Meridew et al.
 2011/0160867 A1 6/2011 Meridew et al.
 2011/0166578 A1 7/2011 Stone et al.
 2011/0184419 A1 7/2011 Meridew et al.
 2011/0184526 A1 7/2011 White et al.
 2011/0190899 A1 8/2011 Pierce et al.
 2011/0213376 A1 9/2011 Maxson et al.
 2011/0218545 A1 9/2011 Catanzarite et al.
 2011/0224674 A1 9/2011 White et al.
 2011/0288433 A1 11/2011 Kelleher et al.
 2011/0319745 A1 12/2011 Frey
 2012/0041445 A1 2/2012 Roose et al.
 2012/0130434 A1 5/2012 Stemniski
 2012/0179259 A1 7/2012 McDonough et al.
 2012/0215315 A1 8/2012 Hochschuler et al.
 2013/0218163 A1 8/2013 Frey

FOREIGN PATENT DOCUMENTS

CN 101390773 11/2010
 CN 101953713 1/2011
 EM 002483651-0001 * 7/2014
 EM 002483693-0001 * 7/2014
 EM 002483784-0001 * 7/2014
 EM 002609743-0001 * 2/2015
 EP 2168507 3/2010
 JP D1508406 * 10/2014
 WO WO 2007/145937 12/2007
 WO WO 2008/027549 3/2008
 WO WO 2009/129063 10/2009
 WO WO 2010/033431 3/2010
 WO WO 2010/148103 12/2010
 WO WO 2011/041398 4/2011
 WO WO 2011/080260 7/2011
 WO WO 2011/106711 9/2011
 WO WO 2011/109260 9/2011

OTHER PUBLICATIONS

U.S. Appl. No. 29/496,231, filed Jul. 10, 2014, Frey et al.
 Official Action for China Patent Application No. 201180029692.7, mailed Oct. 8, 2014 12 pages.
 Official Action for U.S. Appl. No. 13/841,069, mailed Jul. 31, 2014 9 pages.
 Notice of Allowance for U.S. Appl. No. 13/841,069, mailed Sep. 18, 2014 7 pages.
 Brussel et al. "Medical Image-Based Design of an Individualized Surgical Guide for Pedicle Screw Insertion." 18th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Amsterdam 1996, pp. 225-226.
 Partial Search Report for European Patent Application No. 11804191.2, dated Jan. 20, 2015 6 pages.
 International Preliminary Report on Patentability for International (PCT) Patent Application No. PCT/US2013/036535, mailed Oct. 30, 2014 7 pages.
 International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2014/041379, mailed Oct. 28, 2014 7 pages.
 Official Action for Australian Patent Application No. 2011276468 dated Apr. 10, 2013, 3 pages.
 Official Action for U.S. Appl. No. 13/172,683, mailed Feb. 24, 2014, 10 pages.
 U.S. Appl. No. 29/432,668, filed Sep. 18, 2012, Frey.
 U.S. Appl. No. 29/476,699, filed Dec. 16, 2013, Frey et al.
 U.S. Appl. No. 29/476,709, filed Dec. 16, 2013, Frey et al.
 Lu et al. "A novel computer-assisted drill guide template for lumbar pedicle screw placement: a cadaveric and clinical study." The International Journal of Medical Robotics and Computer Assisted Surgery, Jun. 2009, vol. 5, No. 2, pp. 184-191, (Abstract Only).
 Lu et al. "A Novel Patient-Specific Navigational Template for Cervical Pedicle Screw Placement," Spine, Dec. 15, 2009, vol. 34, No. 26, pp. E959-E966 (Abstract Only).
 Owen et al. "Rapid prototype patient-specific drill template for cervical pedicle screw placement." Computer Aided Surgery, Sep. 2007, vol. 12, No. 5, pp. 303-308 (Abstract Only).

(56)

References Cited

OTHER PUBLICATIONS

Ryken et al. "Image-based drill templates for cervical pedicle screw placement Laboratory investigation," Journal of Neurosurgery, Jan. 2009, vol. 10, No. 1 (Abstract Only).

Yin et al. "Computer aid designed digital targeting template of pedicle of vertebral arch for atlantoaxial nailing," IT in Medicine & Education, 2009. ITIME '09. Aug. 14-16, 2009, vol. 1 (Abstract Only).

International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US11/42412 mailed Nov. 8, 2011, 8 pages.

International Preliminary Report on Patentability for International (PCT) Patent Application No. PCT/US11/42412 mailed Jan. 17, 2013, 7 pages.

International Search Report and Written Opinion for International (PCT) Patent Application No. PCT/US2013/036535, mailed Jun. 26, 2013 8 pages.

Official Action for U.S. Appl. No. 13/172,683, mailed Sep. 10, 2013 7 pages.

Notice of Allowance for U.S. Appl. No. 29/409,734, mailed May 11, 2012 8 pages.

Notice of Allowance for U.S. Appl. No. 29/427,918, mailed Oct. 15, 2012 9 pages.

Notice of Allowance for U.S. Appl. No. 29/432,668 mailed Nov. 27, 2013, 11 pages.

Notice of Allowance for U.S. Appl. No. 13/172,683 mailed Apr. 23, 2014, 7 pages.

Official Action for U.S. Appl. No. 13/841,069 mailed Jul. 8, 2014, 6 pages.

* cited by examiner

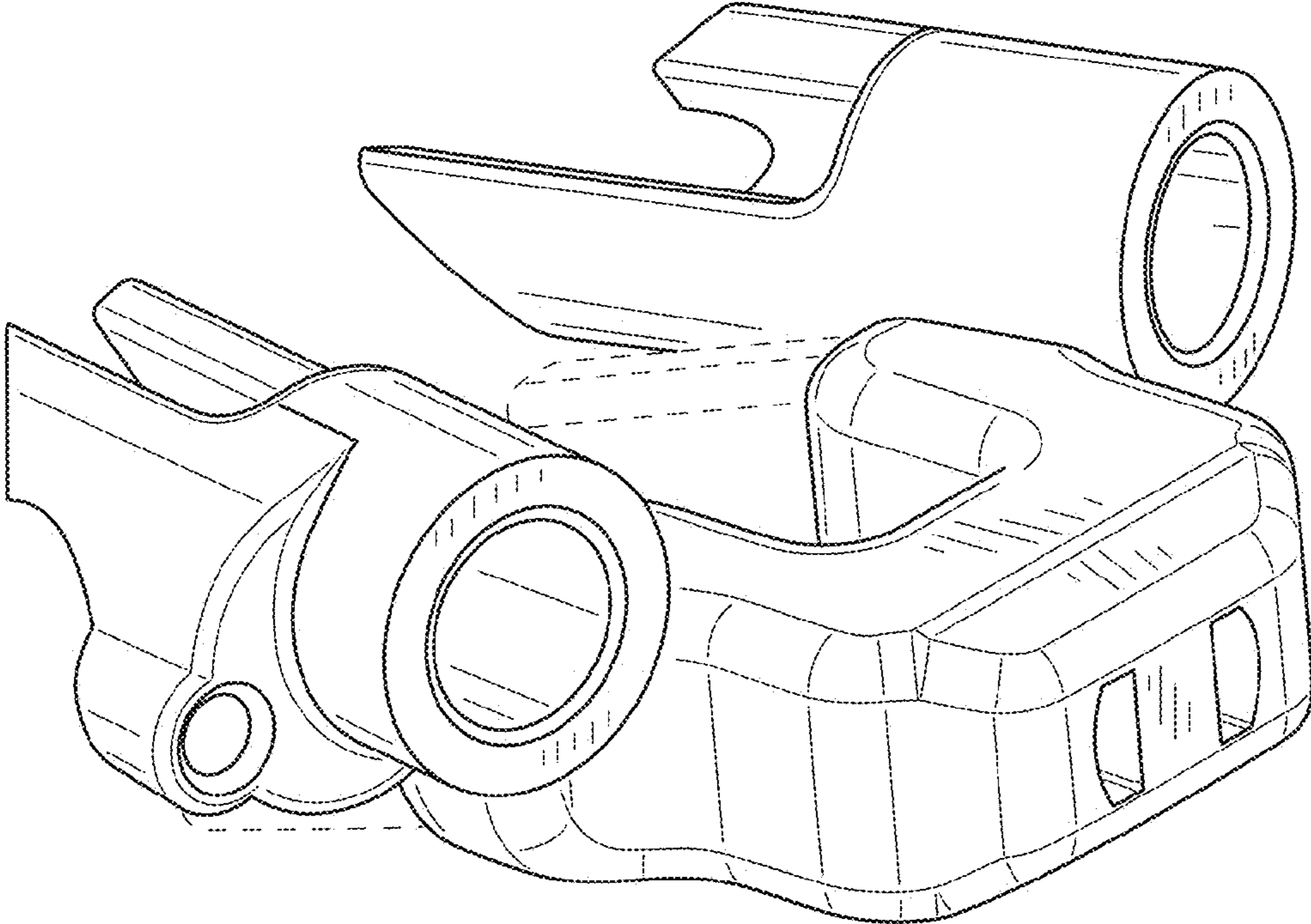


FIG.1

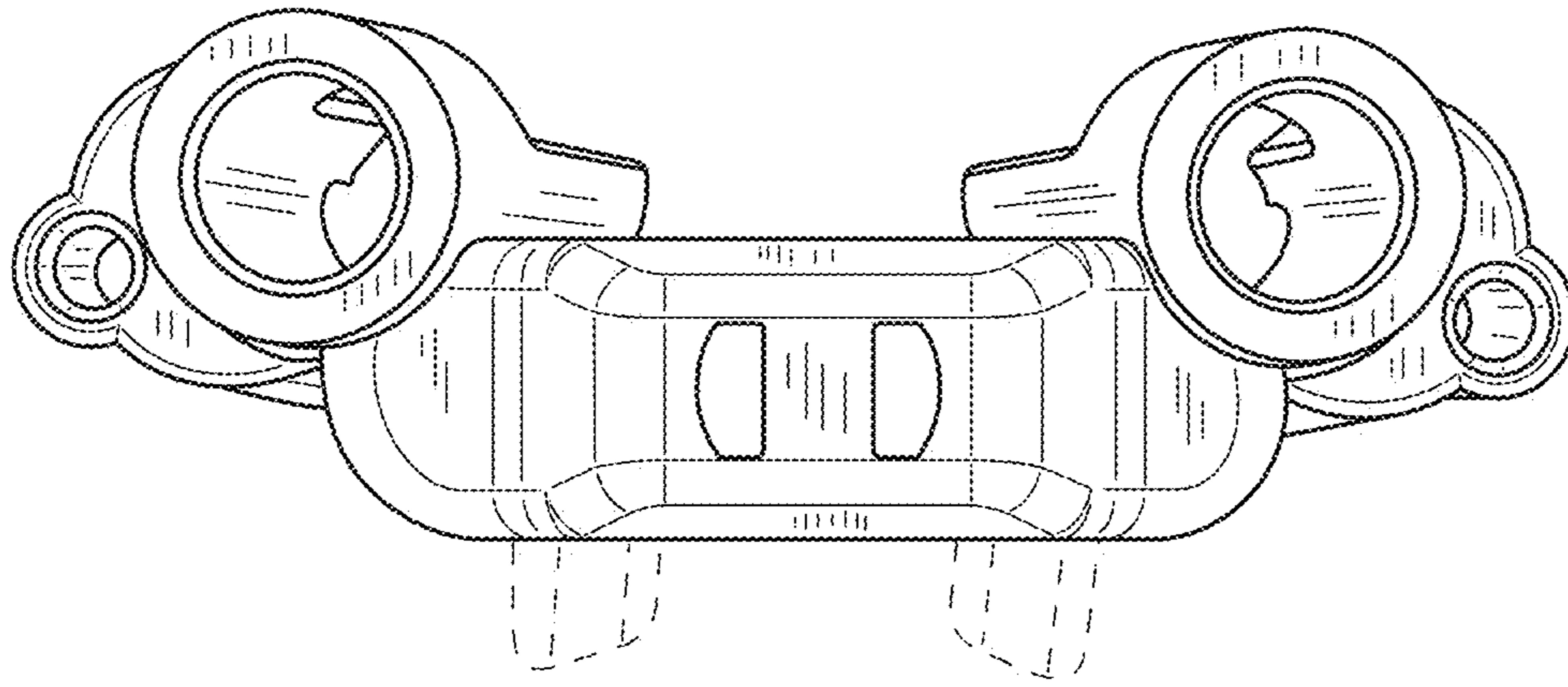


FIG. 2

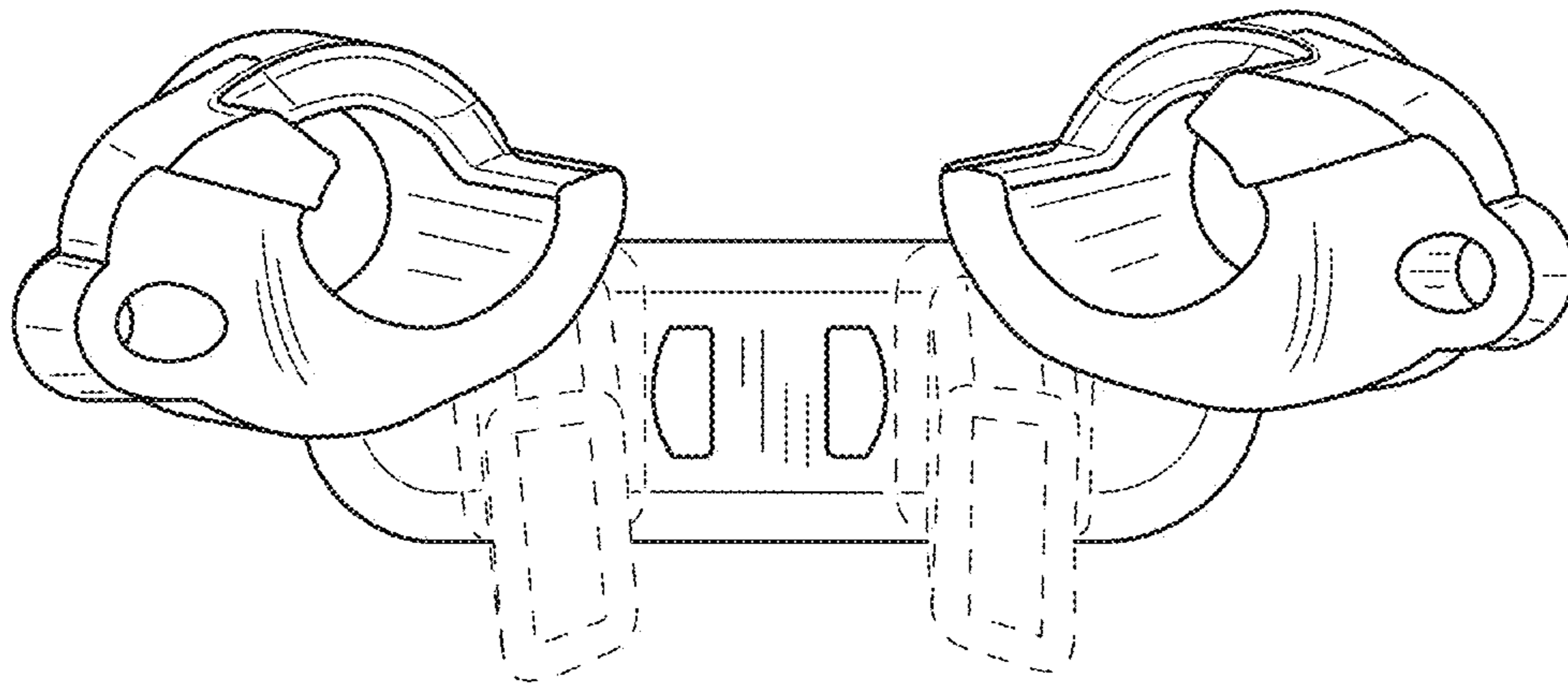


FIG. 3

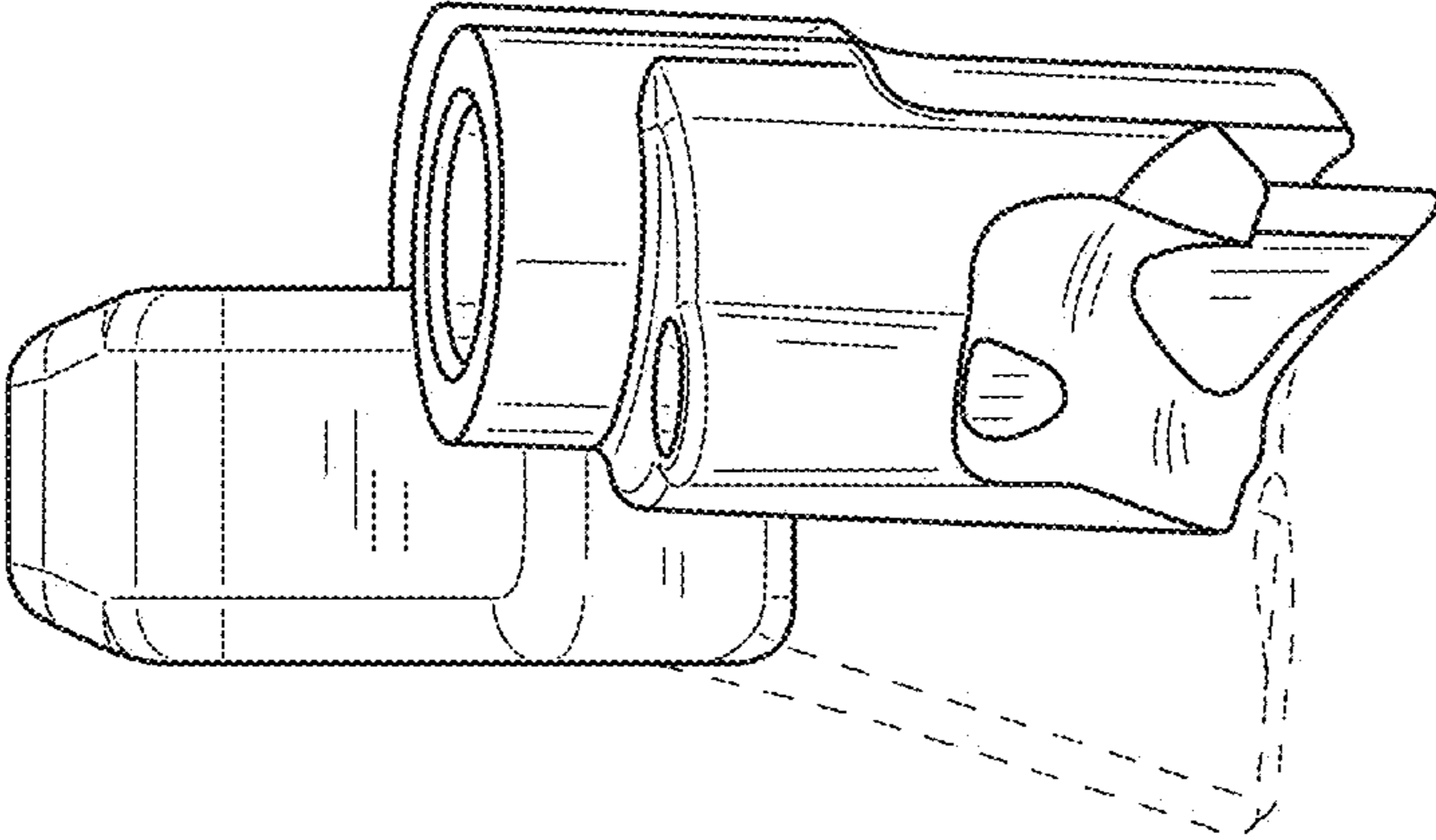


FIG. 4

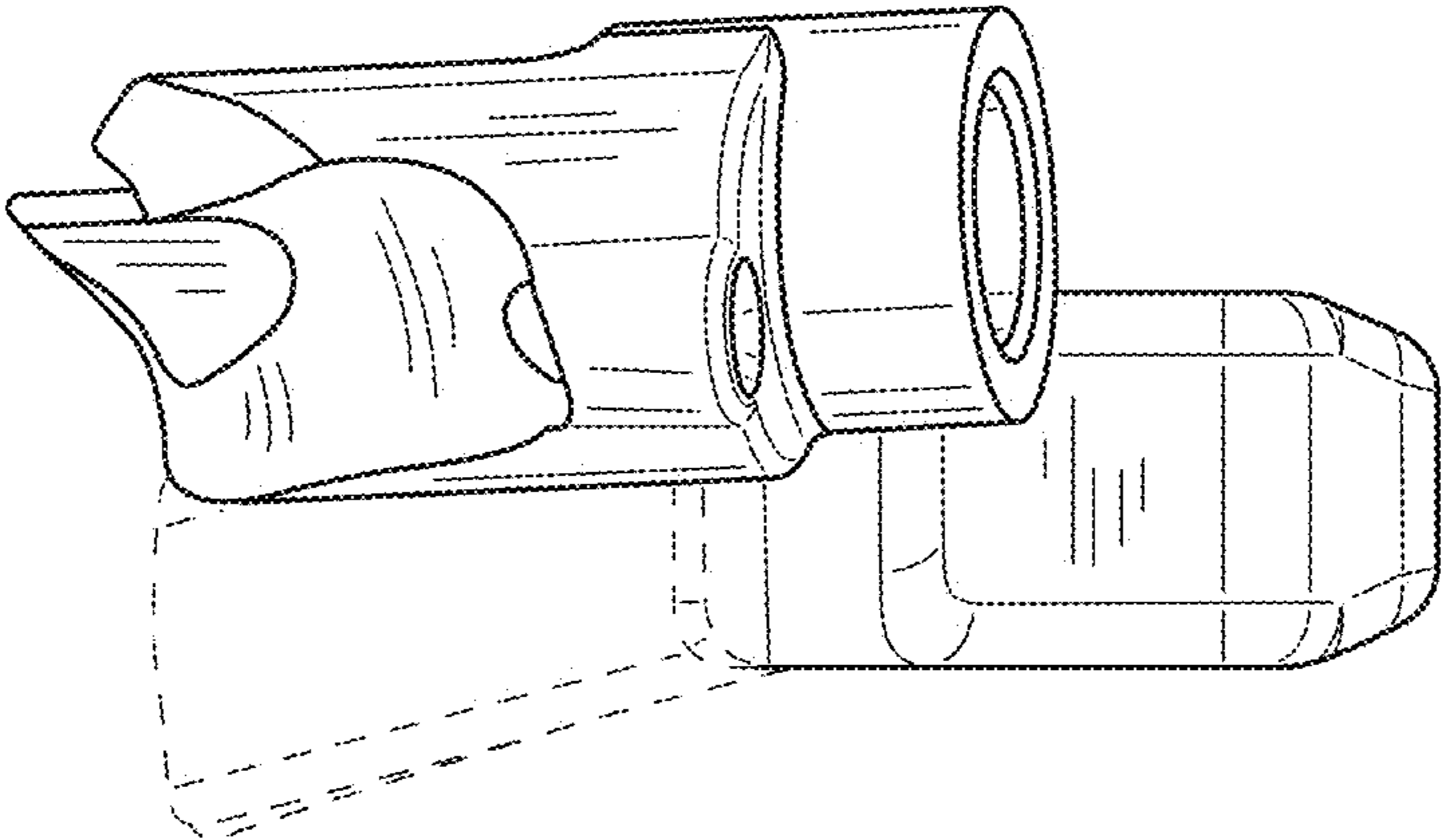


FIG. 5

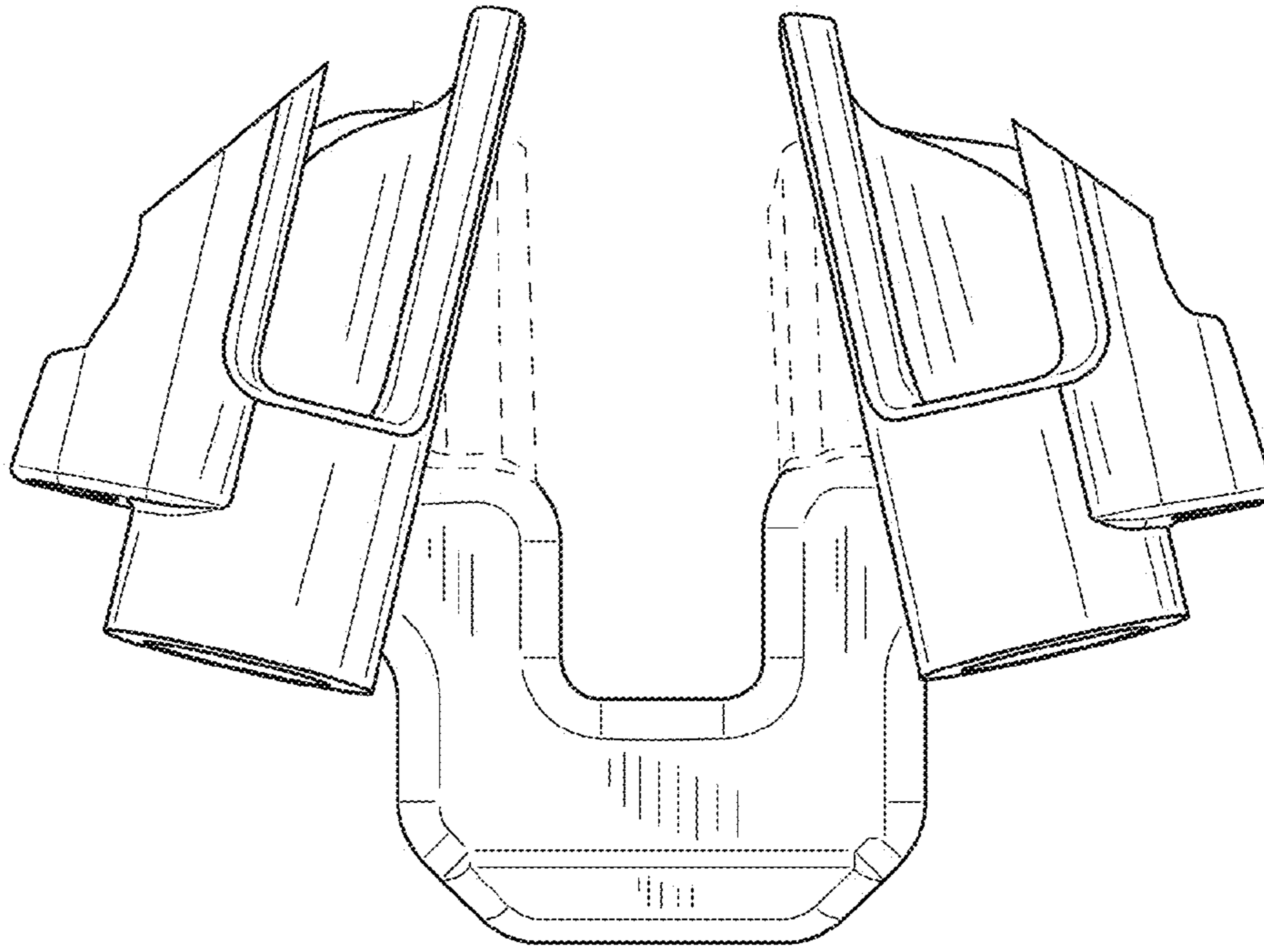


FIG. 6

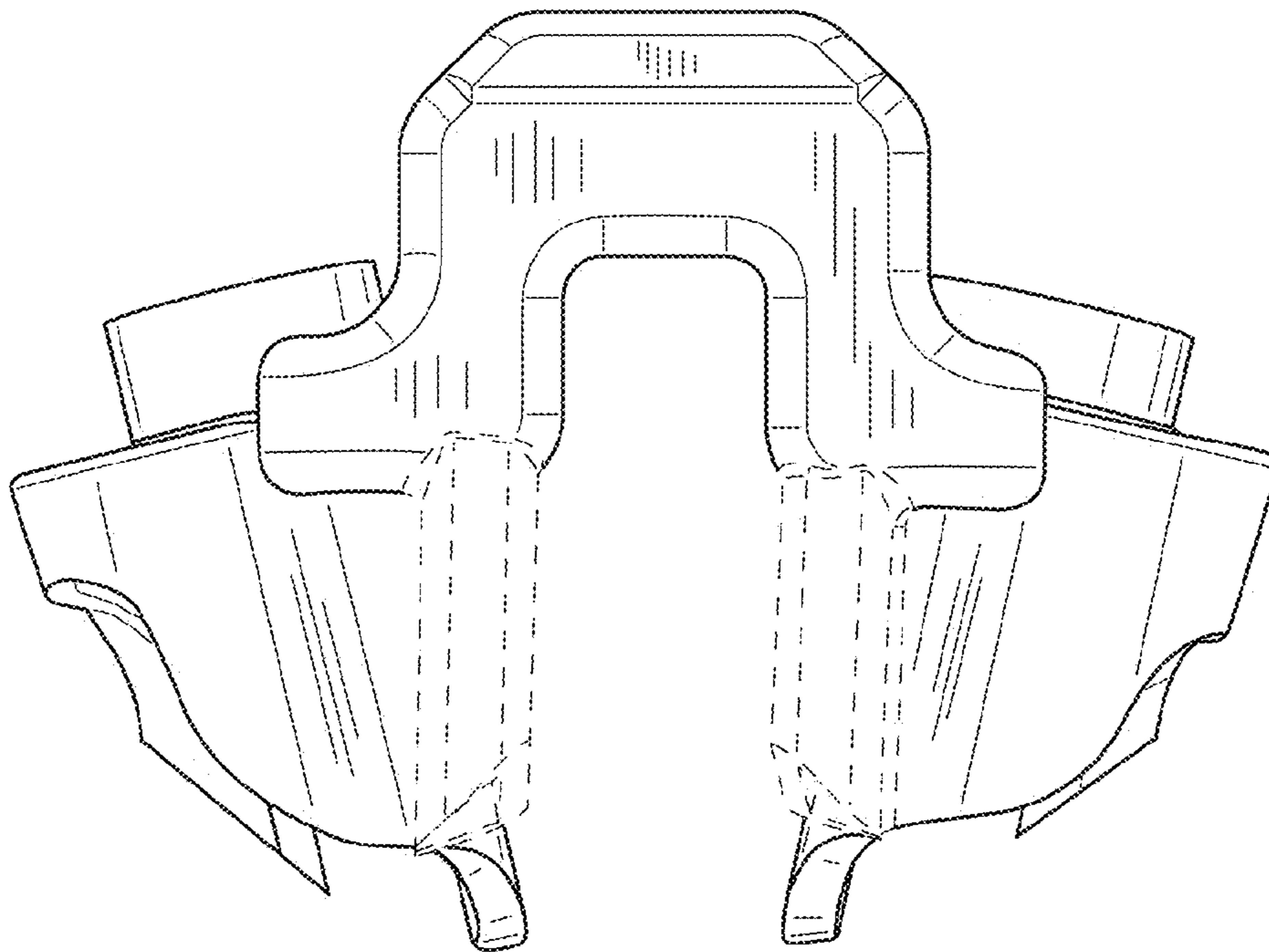


FIG. 7