



US00D849265S

(12) **United States Design Patent** (10) **Patent No.:** **US D849,265 S**
Wild et al. (45) **Date of Patent:** **** May 21, 2019**

(54) **MICROFLUIDIC CHIP**

(71) Applicant: **Precision NanoSystems Inc.,**
Vancouver (CA)

(72) Inventors: **Andre Wild,** Vancouver (CA); **Timothy Leaver,** Delta (CA); **Shao Fang Shannon Chang,** North Vancouver (CA); **Niklaus Alexander Andre,** Croydon (AU); **Rodney Paul Bucknell,** Berwick (AU); **Andrew Robert Patterson,** Richmond (AU); **Phillip Higgins,** Glen Waverley (AU); **Thomas William Cameron Debenham,** Glen Iris (AU)

(73) Assignee: **PRECISION NANOSYSTEMS INC,**
Vancouver (CA)

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

(21) Appl. No.: **29/601,411**

(22) Filed: **Apr. 21, 2017**

(51) **LOC (11) Cl.** **24-02**

(52) **U.S. Cl.**
USPC **D24/224**

(58) **Field of Classification Search**

USPC D24/224, 169, 216, 223, 225-227, 230, D24/232, 233; D14/435-438, 356, 432, D14/433, 439, 453; D13/118-121, 182, D13/184, 199; D10/81; 422/64, 68.1, 422/72, 73, 400, 401, 404, 408, 412, 417, 422/422, 500, 502-506, 552, 554, 559, 422/562; 436/165, 166, 180, 501, 518; 435/283.1, 287.1, 287.2, 288.5, 288.7, 435/6.11, 289.1, 6.12, 29, 34, 4, 5, 6.19, 435/7.1, 1.2; 204/403.01, 411, 450-453, 204/601, 600; 356/246; 506/7, 9, 13, 18, 506/32, 33, 39; 73/864.91; 604/151, 604/153; 417/540, 542, 559, 413.1, 417; 392/470; 165/169, 170, 46; 137/343

CPC . A01N 1/0247; B01J 19/0046; B01J 19/0093; B01L 9/52; B01L 9/527; B01L 7/52; B01L 7/5255; B01L 3/5027-3/52; B29C 66/61; C12M 23/16; C12Q 1/40; C12Q 1/686; C12Q 1/6837; G01N 15/1484; G01N 21/03; G01N 21/6428; G01N 21/8483; G01N 21/00029; G01N 21/07;
(Continued)

(56) **References Cited**

U.S. PATENT DOCUMENTS

D324,426 S * 3/1992 Fan D24/223
D328,135 S * 7/1992 Fan D24/216
(Continued)

OTHER PUBLICATIONS

U.S. Appl. No. 62/359,123, Precision NanoSystems Inc.
U.S. Appl. No. 29/570,917, Precision NanoSystems Inc.

Primary Examiner — Susan Moon Lee

(74) *Attorney, Agent, or Firm* — Susan M. Tees

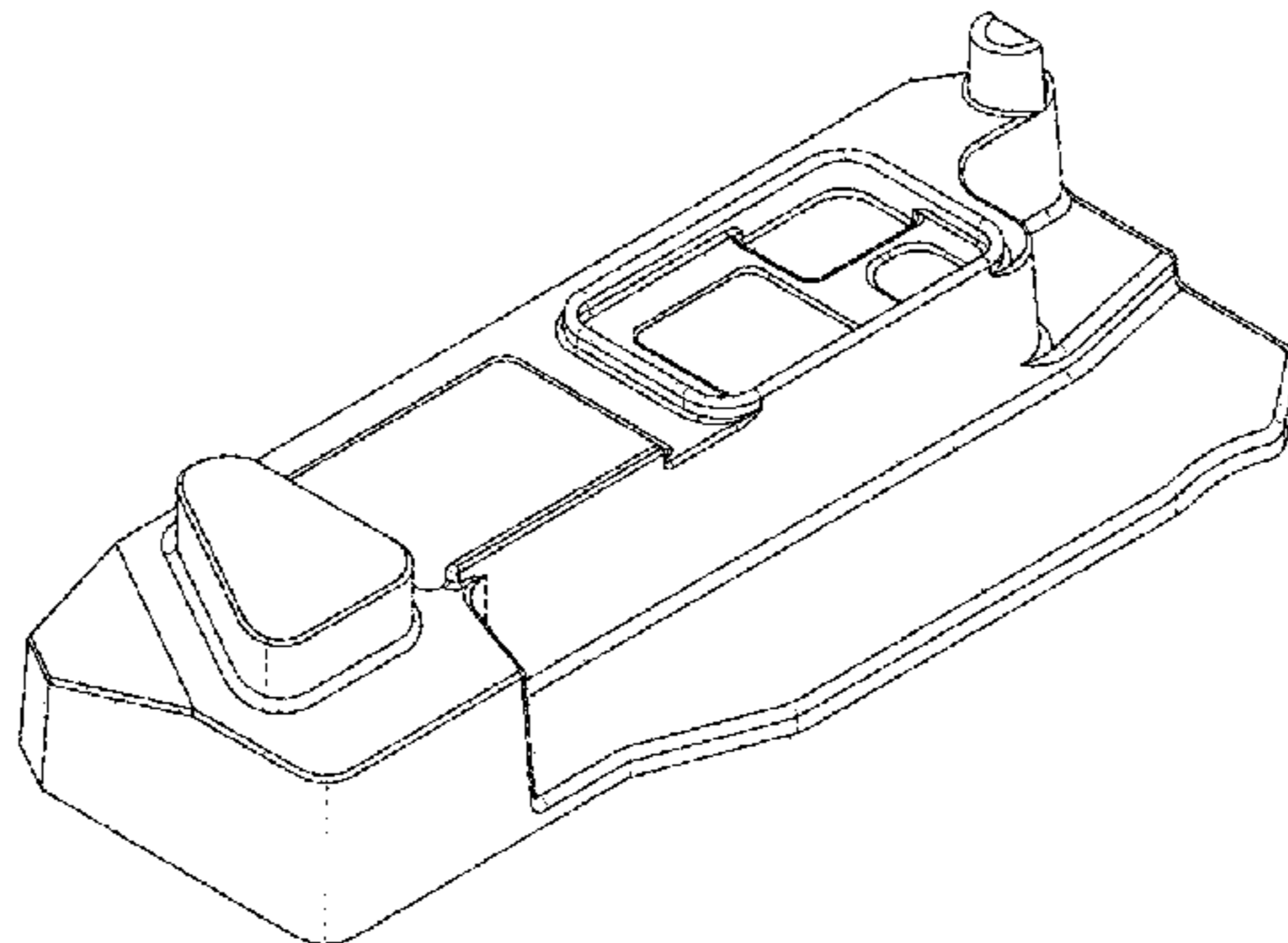
(57) **CLAIM**

The ornamental design for a microfluidic chip, as shown and described.

DESCRIPTION

FIG. 1 is a top front right perspective view of a microfluidic chip showing our new design;
FIG. 2 is a right plan view thereof;
FIG. 3 is a left plan view thereof;
FIG. 4 is a top right perspective view thereof;
FIG. 5 is a top left perspective view thereof;
FIG. 6 is a top front perspective view thereof; and,
FIG. 7 is a bottom rear perspective view thereof.
While the solid lines in the drawings form part of the claimed design, the solid lines provide written description of prospective embodiments that are not claimed when one or more of the solid lines are amended to broken lines.

1 Claim, 6 Drawing Sheets



US D849,265 S

(58) **Field of Classification Search**

CPC .. G01N 21/6452; G01N 21/78; G01N 21/253;
 G01N 33/558; G01N 33/54366; G01N
 33/53; G01N 33/5438; G01N 33/54386;
 G01N 27/4145; A61M 5/14276; A61M
 5/16881; A61M 5/142; A61M 5/14212;
 A61M 39/24; A61M 2039/2406; A61M
 2039/242; A61M 2039/248; A61M
 2039/2473; A61M 2039/2486; F04B
 43/028; F04B 49/22; F04B 19/006

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,192,503 A * 3/1993 McGrath B01F 5/0661
 356/244
 5,358,692 A * 10/1994 Reynolds G01N 1/36
 206/558
 6,048,498 A * 4/2000 Kennedy B01L 3/502715
 204/451
 D438,632 S * 3/2001 Miller D24/216
 D438,633 S * 3/2001 Miller D24/216
 D470,595 S * 2/2003 Crisanti D24/216
 D496,339 S * 9/2004 Stanley D13/182
 D565,742 S * 4/2008 Parunak D24/224
 D566,291 S * 4/2008 Parunak D24/224
 7,442,342 B2 * 10/2008 Anderson B01L 9/52
 422/510
 7,495,210 B2 * 2/2009 Li B01L 3/0268
 250/281
 7,727,371 B2 * 6/2010 Kennedy B01L 9/527
 204/600
 7,959,875 B2 * 6/2011 Zhou B01L 3/5025
 422/501
 7,998,708 B2 * 8/2011 Handique B01L 3/502715
 435/91.2
 8,088,616 B2 * 1/2012 Handique B01L 3/502715
 435/287.1
 D665,095 S * 8/2012 Wilson D24/227
 8,394,341 B2 * 3/2013 Reinhardt B01L 9/527
 239/690
 8,765,062 B2 * 7/2014 Linder B01L 3/5027
 422/82.05
 8,808,641 B2 * 8/2014 Magni B01L 3/502707
 422/500
 8,815,178 B2 * 8/2014 Bishop A61B 5/14532
 422/500
 8,999,263 B2 * 4/2015 Peterman B01L 3/502761
 422/502
 D728,818 S * 5/2015 Burroughs D24/230
 D732,186 S * 6/2015 Burroughs D24/226
 D734,482 S * 7/2015 Peterman D24/216
 9,278,321 B2 * 3/2016 Dale B01F 5/0647
 D758,608 S * 6/2016 Behar D24/223
 9,618,139 B2 * 4/2017 Handique B01L 9/527
 9,651,568 B2 * 5/2017 Putnam G01N 35/00029
 D800,335 S * 10/2017 Chang D24/224
 D800,336 S * 10/2017 Chang D24/224
 D814,652 S * 4/2018 Buxton D24/224
 2002/0127740 A1 * 9/2002 Ho C12Q 1/6837
 436/518
 2004/0071605 A1 * 4/2004 Coonan B01L 3/50855
 422/400
 2004/0175298 A1 * 9/2004 Choikhet B01L 3/502715
 422/400
 2004/0186394 A1 * 9/2004 Roe A61B 5/14532
 600/583
 2004/0238355 A1 * 12/2004 Kimizuka B01F 5/0646
 204/297.01
 2005/0135974 A1 * 6/2005 Harvey B01L 3/50855
 422/400
 2005/0214854 A1 * 9/2005 Dahm B01L 3/502
 435/6.11

2006/0166233 A1 * 7/2006 Wu B01L 3/502707
 435/6.16
 2006/0183216 A1 * 8/2006 Handique B01L 3/502738
 435/287.1
 2006/0257958 A1 * 11/2006 Bruno B82Y 5/00
 435/7.93
 2007/0045273 A1 * 3/2007 French A61M 5/44
 219/216
 2007/0072287 A1 * 3/2007 Morisette B01L 3/502715
 435/287.2
 2008/0047836 A1 * 2/2008 Strand B01L 3/502715
 204/644
 2008/0153152 A1 * 6/2008 Wakabayashi B01F 1/0022
 435/287.2
 2008/0305011 A1 * 12/2008 Hwang B01L 3/502707
 422/400
 2009/0252629 A1 * 10/2009 Kwon F04B 19/006
 417/572
 2009/0253582 A1 * 10/2009 Pena B01L 3/5085
 506/7
 2009/0283844 A1 * 11/2009 Sparks B81C 1/00119
 257/414
 2010/0209304 A1 * 8/2010 Sarofim B01L 3/502707
 422/503
 2011/0003325 A1 * 1/2011 Durack B01L 3/5027
 435/29
 2011/0053806 A1 * 3/2011 Amin B01L 3/502707
 506/33
 2011/0244595 A1 * 10/2011 Chung B01L 3/5027
 436/501
 2011/0300034 A1 * 12/2011 Mair B29C 66/92443
 422/502
 2011/0312699 A1 * 12/2011 Azimi B01L 3/5027
 506/39
 2011/0315227 A1 * 12/2011 Shu B01L 3/50273
 137/1
 2012/0058504 A1 * 3/2012 Li B01L 3/502761
 435/29
 2012/0275972 A1 * 11/2012 Schoen B01L 3/502707
 422/503
 2013/0004385 A1 * 1/2013 Lee B01L 3/502723
 422/502
 2013/0121893 A1 * 5/2013 Delamarche F16K 99/0026
 422/503
 2013/0130262 A1 * 5/2013 Battrell B01L 3/50273
 435/6.12
 2013/0236374 A1 * 9/2013 Edelen B01L 3/0268
 422/502
 2014/0023564 A1 * 1/2014 Rothacher B01L 3/5027
 422/502
 2014/0037515 A1 * 2/2014 Charles B01L 3/502715
 422/502
 2014/0166133 A1 * 6/2014 Fu B01L 3/502738
 137/565.01
 2014/0178267 A1 * 6/2014 Lim C12M 23/16
 422/503
 2015/0025461 A1 * 1/2015 Corso F04B 49/22
 604/151
 2015/0233907 A1 * 8/2015 Gupta G01N 21/6428
 506/9
 2015/0298127 A1 * 10/2015 Asogawa B01J 19/00
 422/502
 2015/0314585 A1 * 11/2015 Karam B32B 43/00
 422/503
 2015/0320348 A1 * 11/2015 Ram A61B 5/157
 600/583
 2015/0336097 A1 * 11/2015 Wang B01L 3/502761
 435/30
 2016/0038938 A1 * 2/2016 Chen B01L 3/502715
 436/180
 2016/0067709 A1 * 3/2016 Sun B01L 3/502707
 422/503
 2016/0175840 A1 * 6/2016 Ingber B01L 3/502707
 422/502
 2016/0375438 A1 * 12/2016 Marcy B01L 3/502738
 506/39

(56)

References Cited

U.S. PATENT DOCUMENTS

2018/0052151 A1* 2/2018 Nikkhah C12M 23/16
2018/0236719 A1* 8/2018 Ren B29C 65/70
2018/0361380 A1* 12/2018 Delamarche B81C 1/00888

* cited by examiner

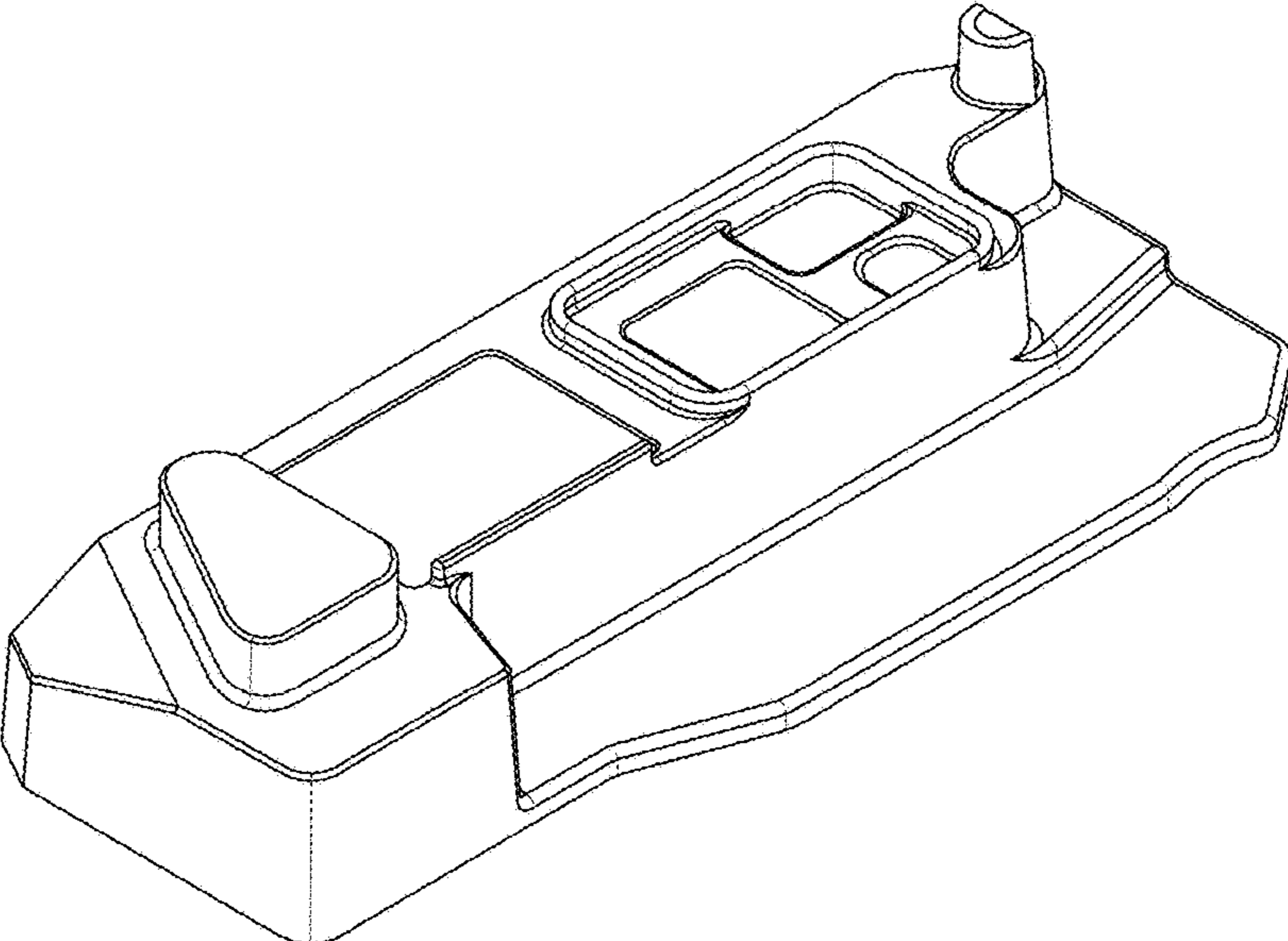


FIG. 1

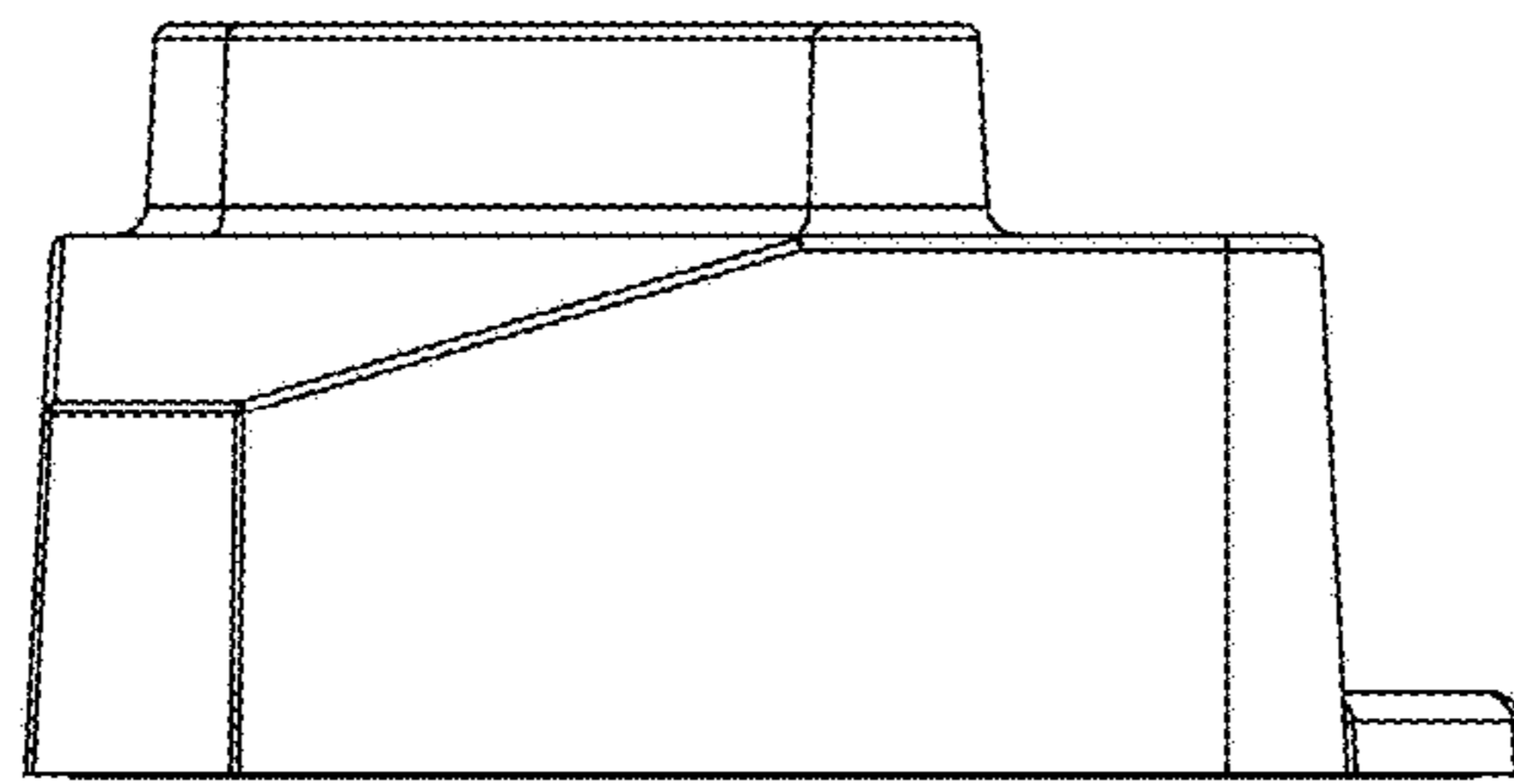


FIG. 2

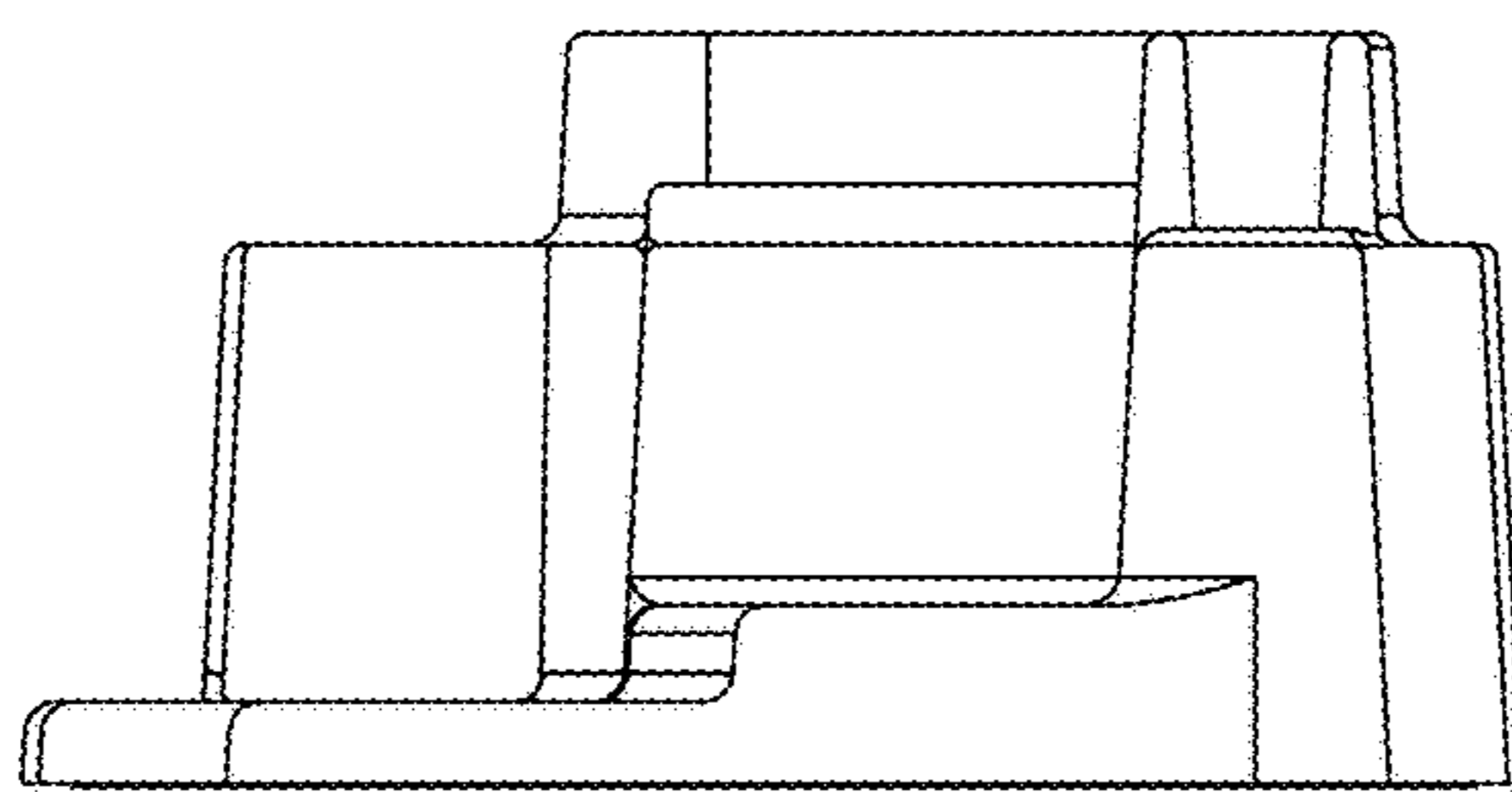


FIG. 3

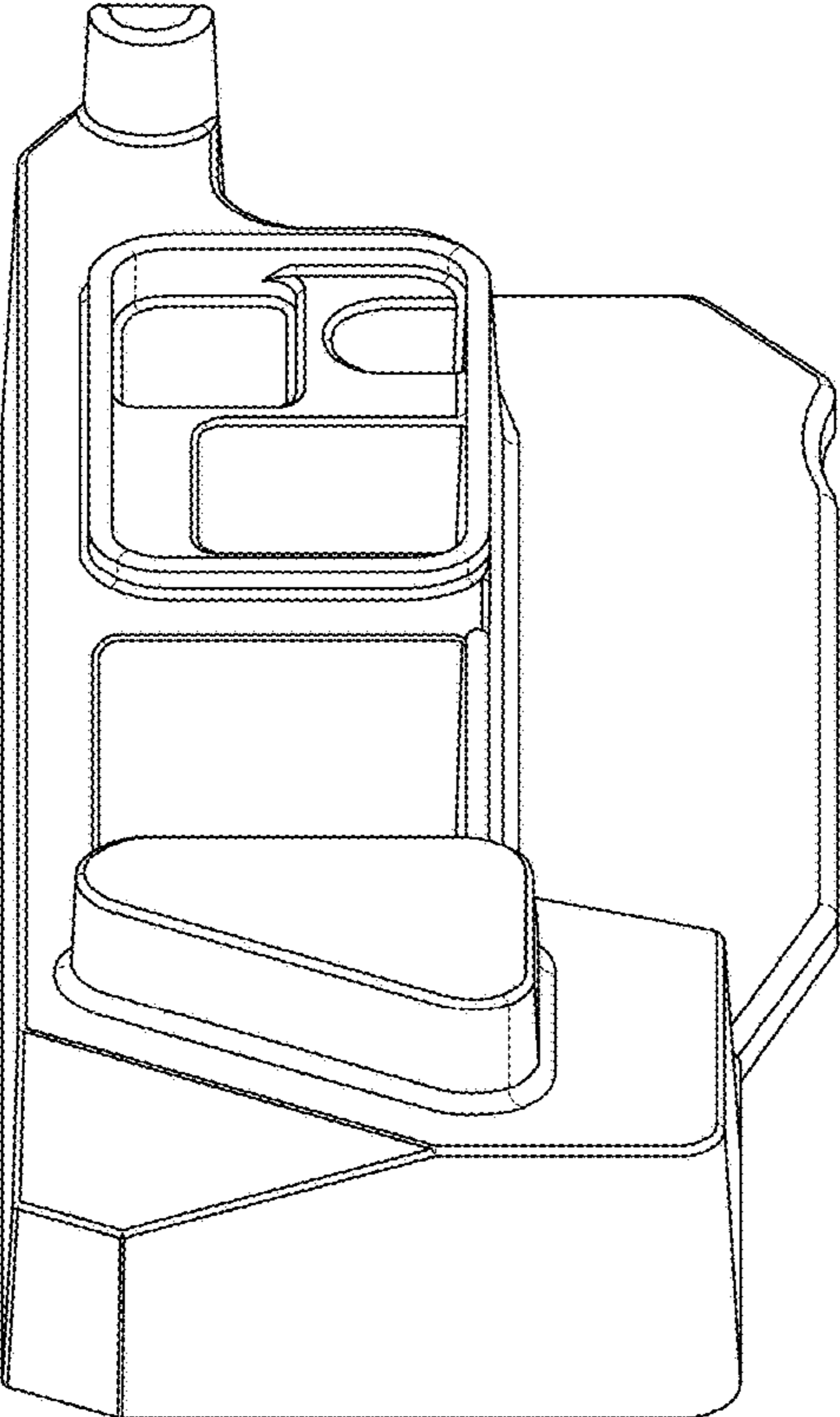


FIG. 4

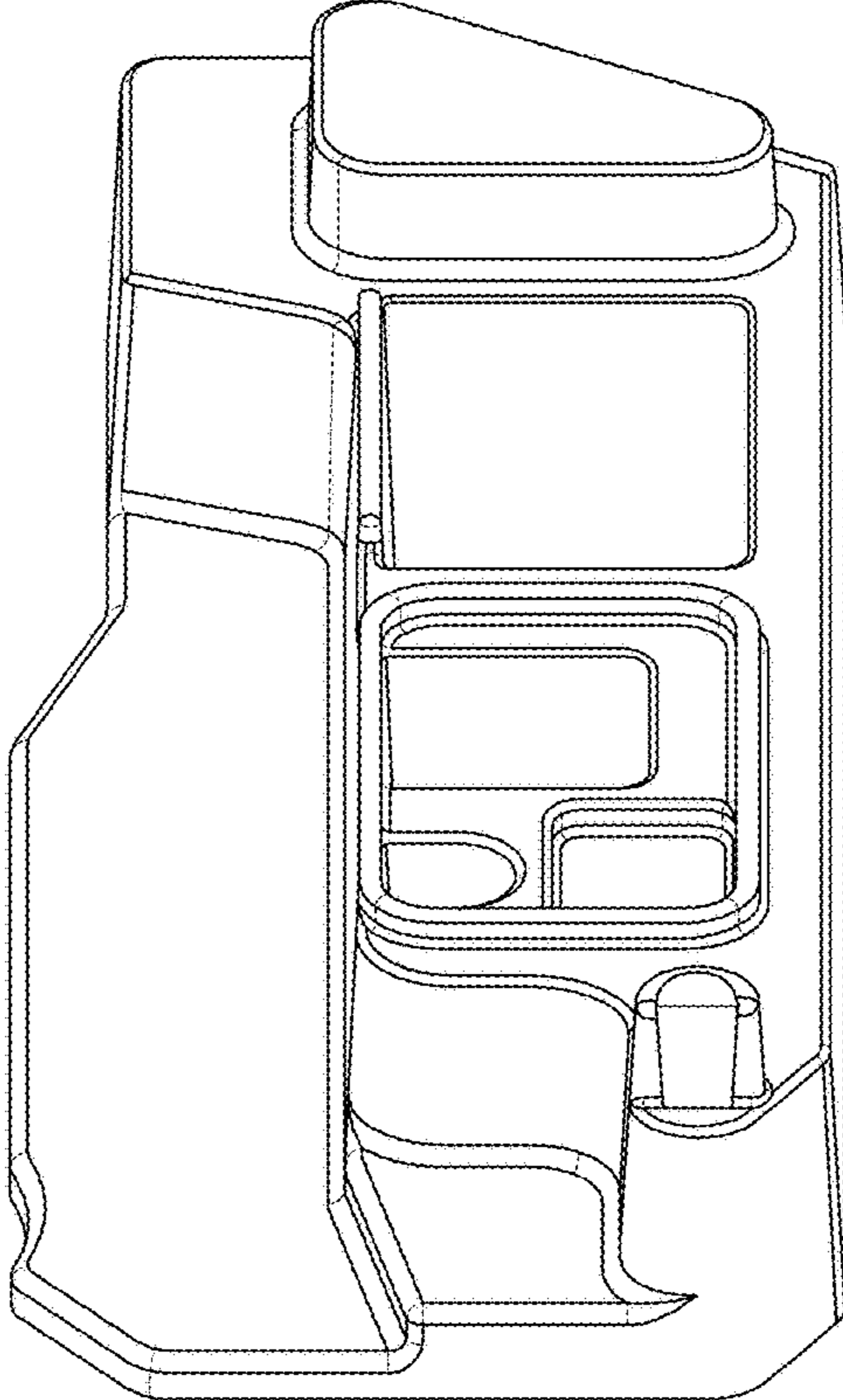


FIG. 5

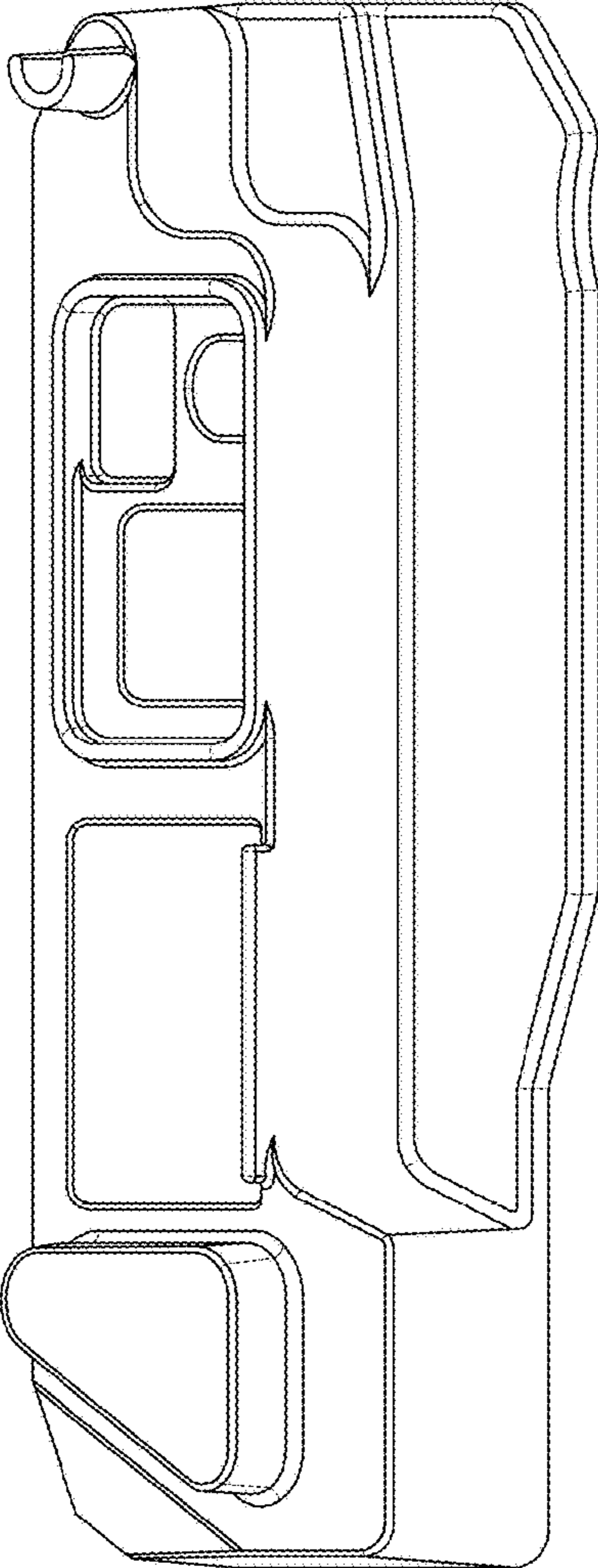


FIG. 6

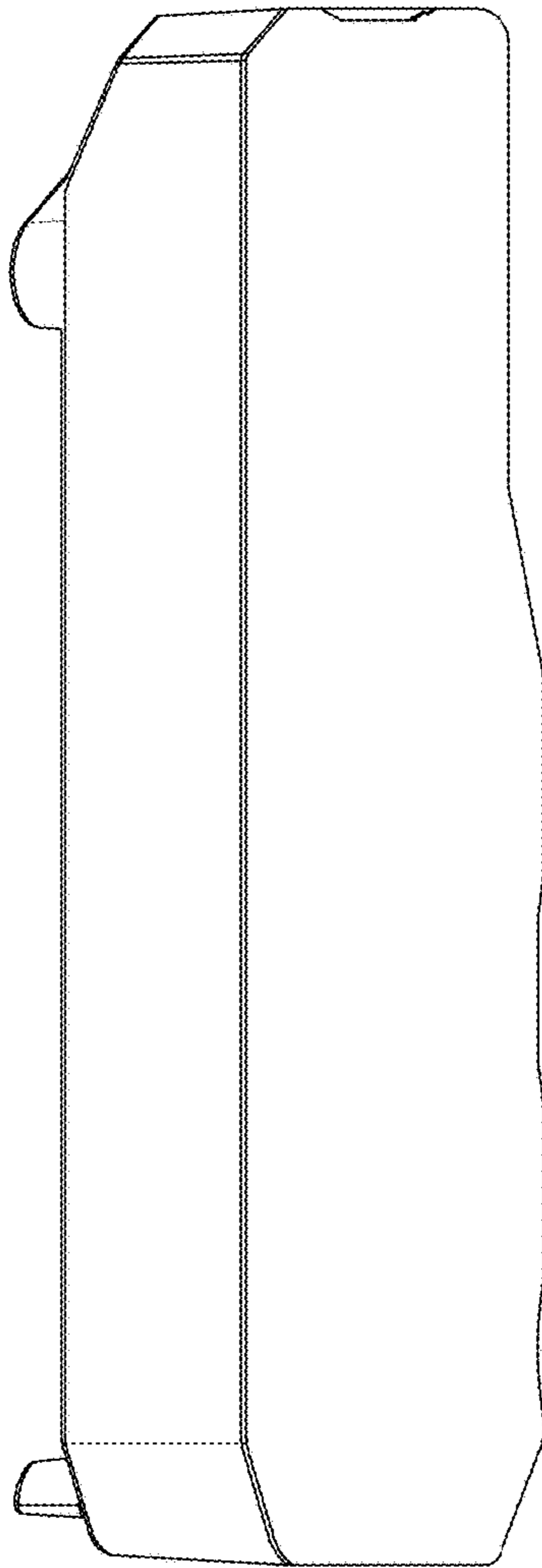


FIG. 7