



US00D767542S

(12) **United States Design Patent** (10) **Patent No.:** **US D767,542 S**
Chang et al. (45) **Date of Patent:** **** Sep. 27, 2016**

(54) **ANTENNA**

FOREIGN PATENT DOCUMENTS

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CN 302703462 * 1/2014
CN 302857080 * 6/2014
JP D1145610 * 7/2002

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OTHER PUBLICATIONS

M2M: Why paying for an embedded GSM antenna if you can get the antenna for free?, post date Dec. 10, 2011, online, <http://m2m.com/thread/1751>, [site visited Nov. 30, 2015 7:06:11 PM].*

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

Assistant Examiner — John R Yeh

(21) Appl. No.: **29/504,610**

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(22) Filed: **Oct. 8, 2014**

(51) **LOC (10) Cl.** **14-03**

(57) **CLAIM**

(52) **U.S. Cl.**
USPC **D14/230**

The ornamental design for an antenna, as shown and described.

(58) **Field of Classification Search**
USPC D14/230, 299, 358, 427, 459-460, 344,
D14/203.5

DESCRIPTION

CPC H01Q 1/38; H01Q 1/24; H01Q 9/04;
H01Q 9/24; H01Q 9/16; H01Q 5/00; H01Q
9/28; H01Q 1/50

See application file for complete search history.

FIG. 1 is a front elevational view of an antenna with a cover in broken lines.

FIG. 2 is a side elevational view of the antenna of FIG. 1 with a cover in broken lines.

FIG. 3 is a bottom plan view of the antenna of FIG. 1 with a cover in broken lines;

FIG. 4 is a rear elevational plan view of the antenna of FIG. 1 with a cover in broken lines.

FIG. 5 is a top perspective view of the antenna of FIG. 1 with a cover in broken lines.

FIG. 6 is a front elevational view of the antenna of FIG. 1.

FIG. 7 is a side elevational view of the antenna of FIG. 1; and,

FIG. 8 is a bottom plan view of the antenna of FIG. 1. The broken lines are for illustration purposes only and form no part of the claimed invention.

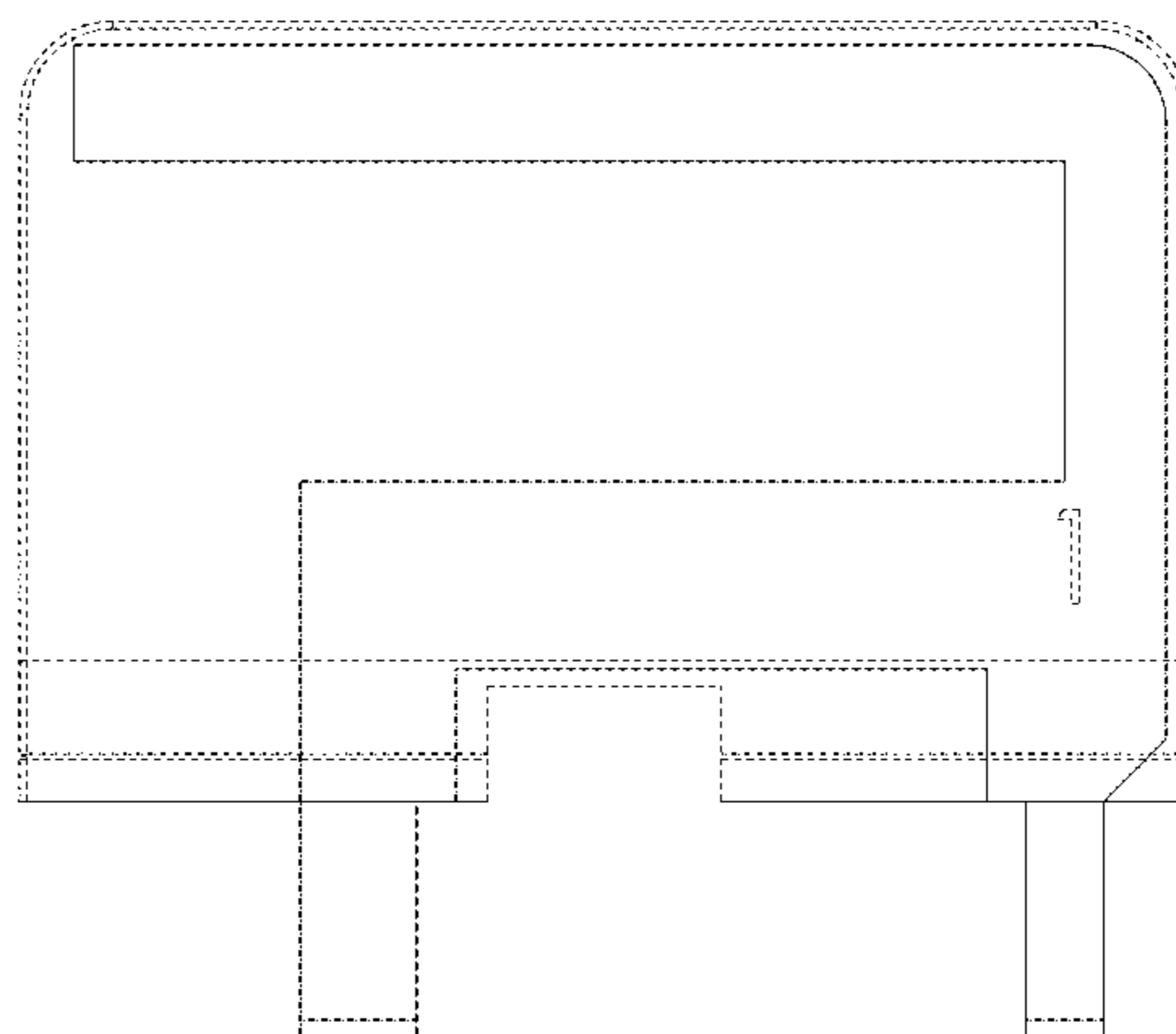
(56) **References Cited**

U.S. PATENT DOCUMENTS

1,765,438 A * 6/1930 Meissner H01Q 9/28
333/27
7,061,437 B2 6/2006 Lin et al.
7,148,849 B2 12/2006 Lin
7,215,296 B2 5/2007 Abramov et al.
D546,821 S 7/2007 Oliver
D549,696 S 8/2007 Oshima et al.
7,333,067 B2 2/2008 Hung et al.
7,336,959 B2 2/2008 Khitrik et al.
D573,589 S 7/2008 Montgomery et al.
7,405,704 B1 7/2008 Lin et al.
7,477,195 B2 1/2009 Vance

(Continued)

1 Claim, 8 Drawing Sheets



(56)

References Cited

U.S. PATENT DOCUMENTS

D589,035 S * 3/2009 Hellgren D14/230
 D592,195 S 5/2009 Wu et al.
 D594,445 S * 6/2009 Kato D14/230
 7,570,215 B2 8/2009 Abramov et al.
 D599,334 S * 9/2009 Chiang D14/230
 D606,053 S 12/2009 Wu et al.
 D607,442 S 1/2010 Su et al.
 D608,769 S 1/2010 Bufe
 D612,368 S 3/2010 Yang et al.
 7,705,783 B2 4/2010 Rao et al.
 7,729,662 B2 6/2010 Abramov et al.
 D621,819 S 8/2010 Tsai et al.
 7,843,390 B2 11/2010 Liu
 D633,483 S 3/2011 Su et al.
 D635,127 S 3/2011 Tsai et al.
 7,907,971 B2 3/2011 Salo et al.
 D635,560 S 4/2011 Tsai et al.
 D635,963 S * 4/2011 Podduturi D14/230
 D635,964 S 4/2011 Podduturi
 D635,965 S 4/2011 Mi et al.
 D636,382 S 4/2011 Podduturi
 7,965,242 B2 6/2011 Abramov et al.
 D649,962 S 12/2011 Tseng et al.
 D651,198 S 12/2011 Mi et al.
 D654,059 S 2/2012 Mi et al.
 D654,060 S 2/2012 Ko et al.
 D658,639 S 5/2012 Huang et al.
 D659,129 S 5/2012 Mi et al.
 D659,685 S 5/2012 Huang et al.
 D659,688 S 5/2012 Huang et al.
 8,175,036 B2 5/2012 Visuri et al.
 8,184,601 B2 5/2012 Abramov et al.
 D662,916 S 7/2012 Huang et al.
 8,248,970 B2 8/2012 Abramov et al.
 D671,097 S * 11/2012 Mi D14/230
 8,310,402 B2 11/2012 Yang
 D676,429 S 2/2013 Gosalia et al.
 D678,255 S 3/2013 Ko et al.
 8,423,084 B2 4/2013 Abramov et al.
 D684,565 S 6/2013 Wei
 D685,352 S 7/2013 Wei
 D685,772 S 7/2013 Zheng et al.
 D686,600 S 7/2013 Yang
 D689,474 S 9/2013 Yang et al.
 D692,870 S 11/2013 He
 D694,738 S 12/2013 Yang
 D695,279 S 12/2013 Yang et al.
 D695,280 S 12/2013 Yang et al.
 D703,195 S 4/2014 Zheng
 D703,196 S 4/2014 Zheng

D706,247 S 6/2014 Zheng et al.
 D706,750 S 6/2014 Bringuir
 D706,751 S 6/2014 Chang et al.
 8,760,357 B2 * 6/2014 Kim H01Q 1/243
 343/700 MS
 D708,602 S 7/2014 Gosalia et al.
 D709,053 S 7/2014 Chang et al.
 D710,832 S 8/2014 Yang
 D710,833 S * 8/2014 Zheng D14/230
 8,854,265 B1 10/2014 Yang et al.
 D716,775 S 11/2014 Bidermann
 2002/0003499 A1 1/2002 Kouarn et al.
 2004/0075611 A1 * 4/2004 Kenoun H01Q 1/243
 343/702
 2004/0222936 A1 * 11/2004 Hung H01Q 1/38
 343/795
 2005/0073462 A1 4/2005 Lin et al.
 2005/0190108 A1 9/2005 Lin et al.
 2006/0132365 A1 * 6/2006 Chou H01Q 1/243
 343/702
 2006/0208900 A1 9/2006 Tavassoli Hozouri
 2007/0030203 A1 2/2007 Tsai et al.
 2007/0205949 A1 * 9/2007 Enoshima H01Q 1/38
 343/702
 2008/0136711 A1 * 6/2008 Lai H01Q 1/243
 343/700 MS
 2008/0143630 A1 * 6/2008 Kato G06K 19/07749
 343/795
 2008/0150829 A1 6/2008 Lin et al.
 2008/0158085 A1 * 7/2008 Lu H01Q 1/36
 343/793
 2009/0002244 A1 * 1/2009 Woo H01Q 1/38
 343/702
 2009/0058739 A1 * 3/2009 Konishi G06F 1/1616
 343/702
 2009/0135072 A1 5/2009 Ke et al.
 2009/0262028 A1 10/2009 Murnbru et al.
 2010/0079350 A1 * 4/2010 Lai H01Q 1/243
 343/843
 2010/0188297 A1 7/2010 Chen et al.
 2010/0214180 A1 * 8/2010 Krogerus H01Q 1/243
 343/702
 2010/0309067 A1 12/2010 Tsou et al.
 2011/0006950 A1 1/2011 Park et al.
 2011/0012789 A1 * 1/2011 Yang H01Q 1/38
 343/700 MS
 2012/0038514 A1 2/2012 Bang
 2012/0229348 A1 9/2012 Chiang
 2012/0242546 A1 9/2012 Hu et al.
 2013/0335280 A1 * 12/2013 Chen, III H01Q 21/28
 343/725

* cited by examiner

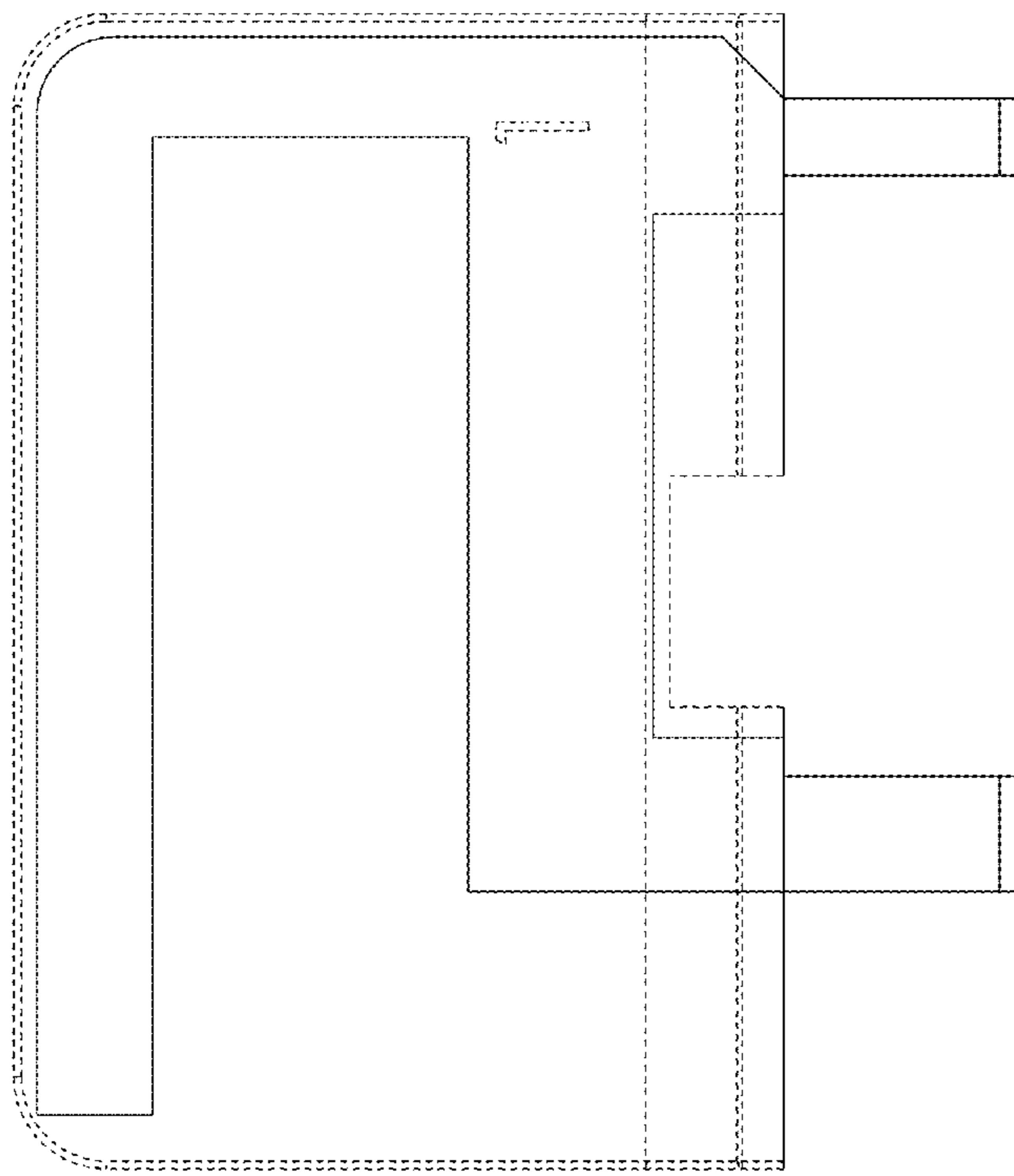


FIG. 1

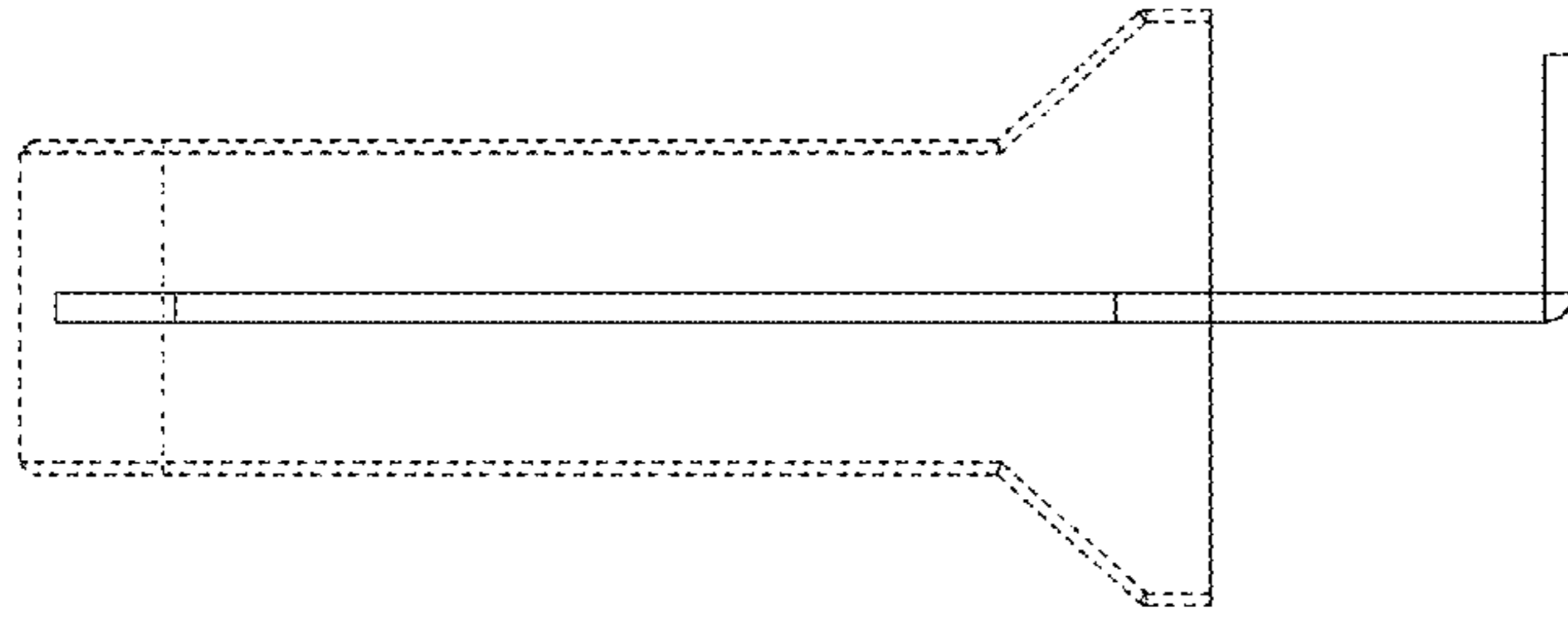


FIG. 2

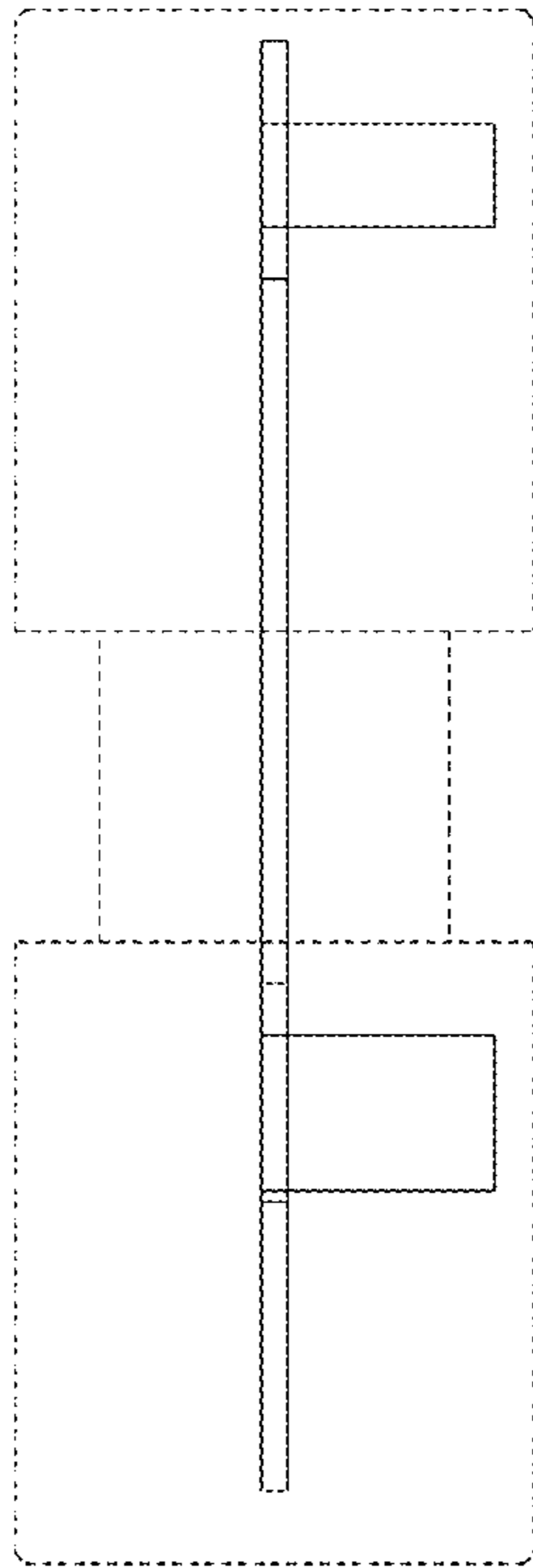


FIG. 3

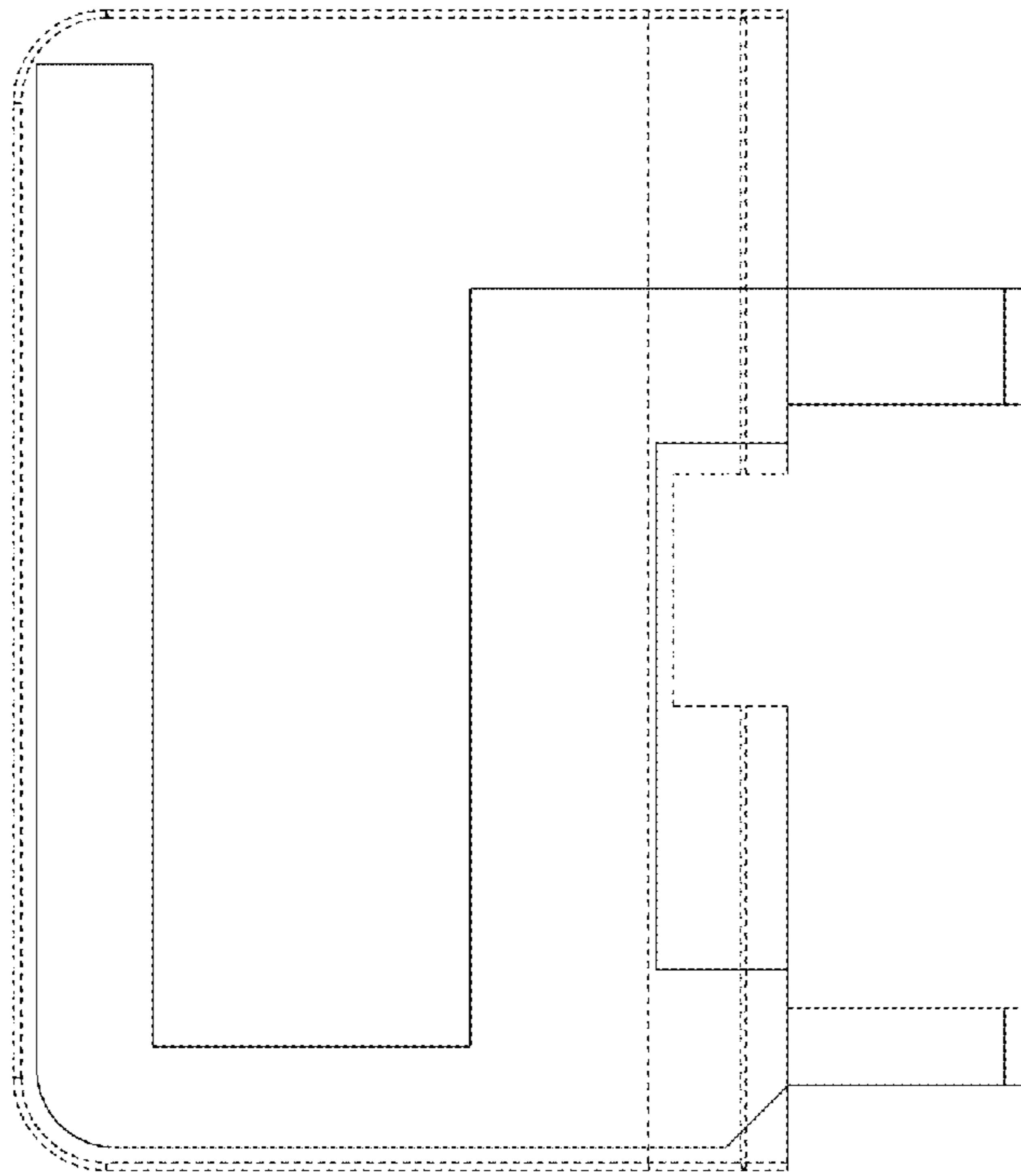


FIG. 4

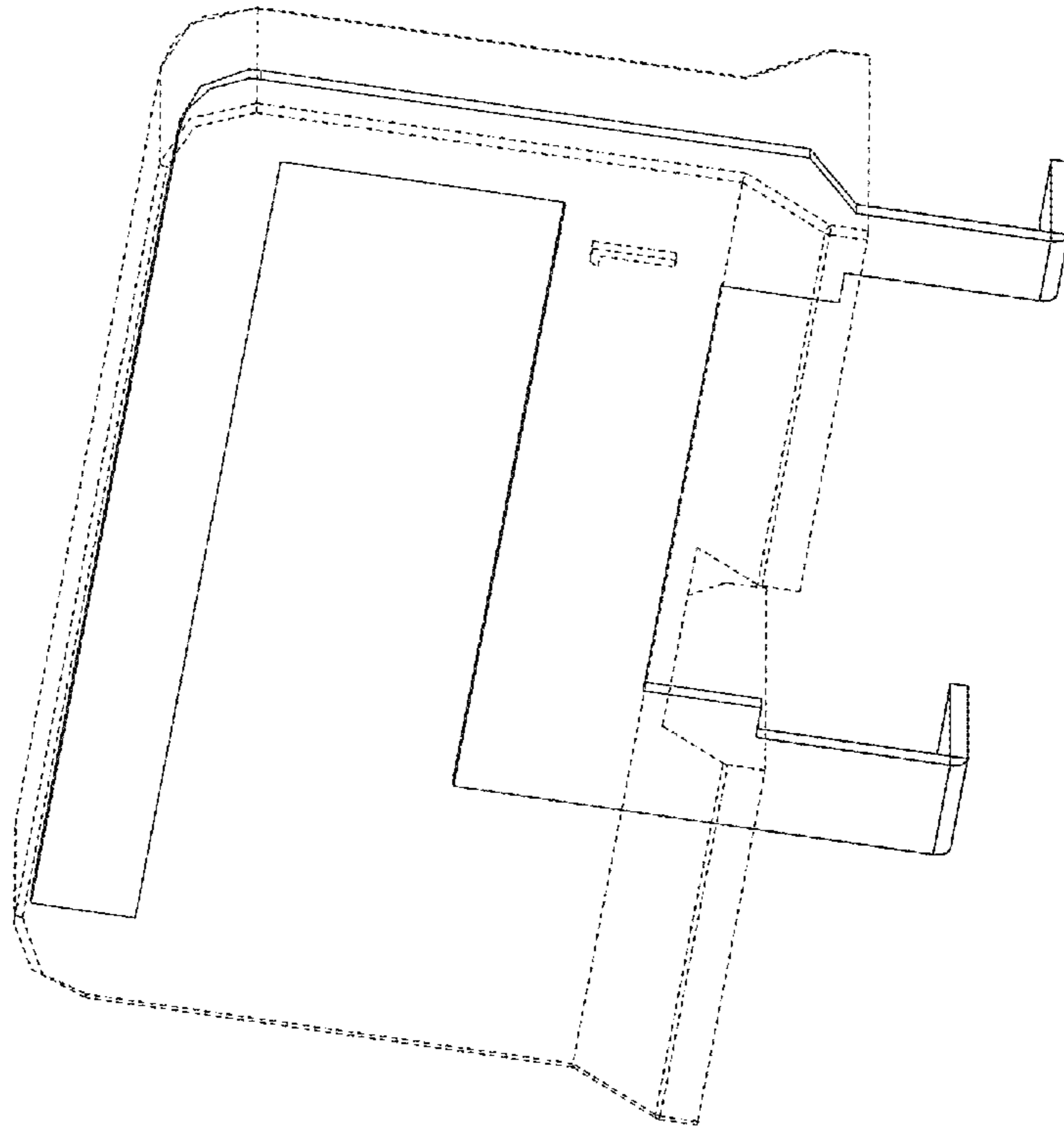


FIG. 5

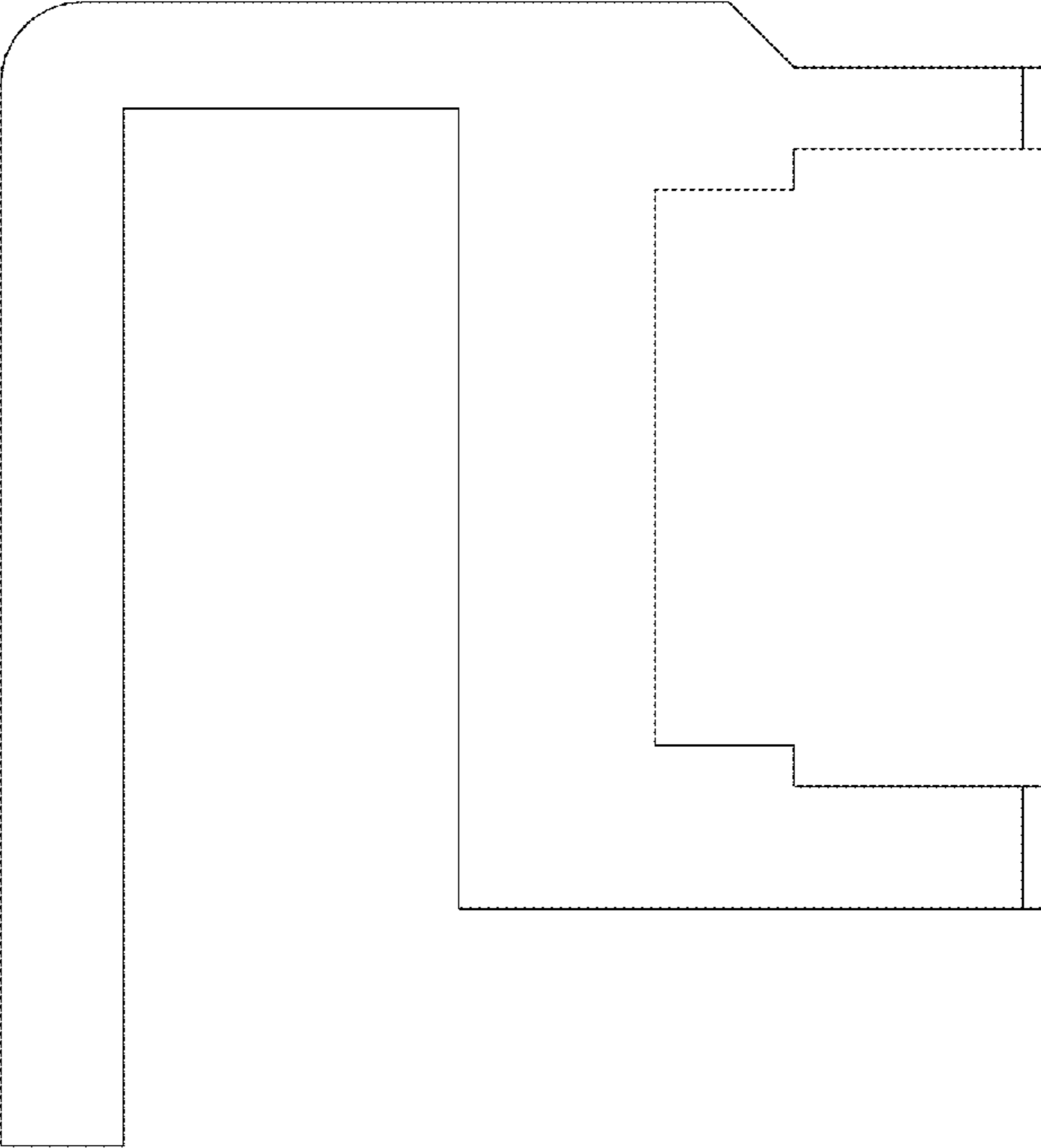


FIG. 6

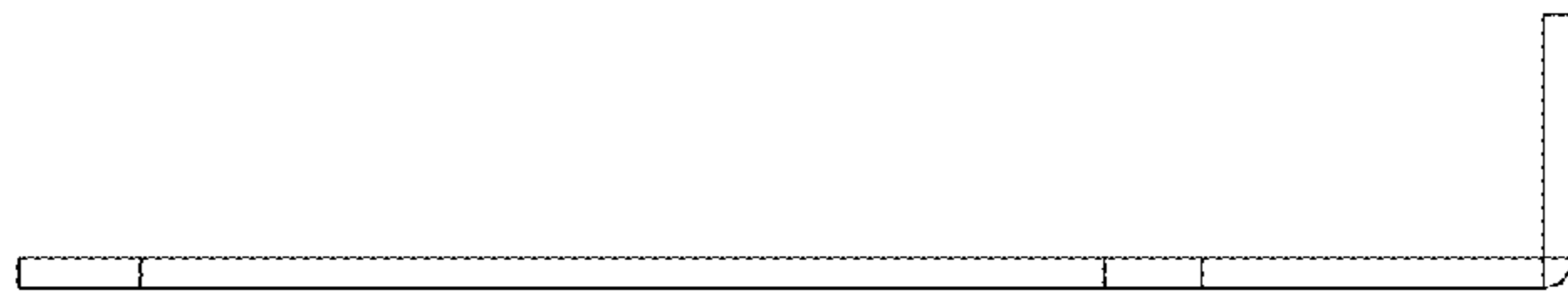


FIG. 7

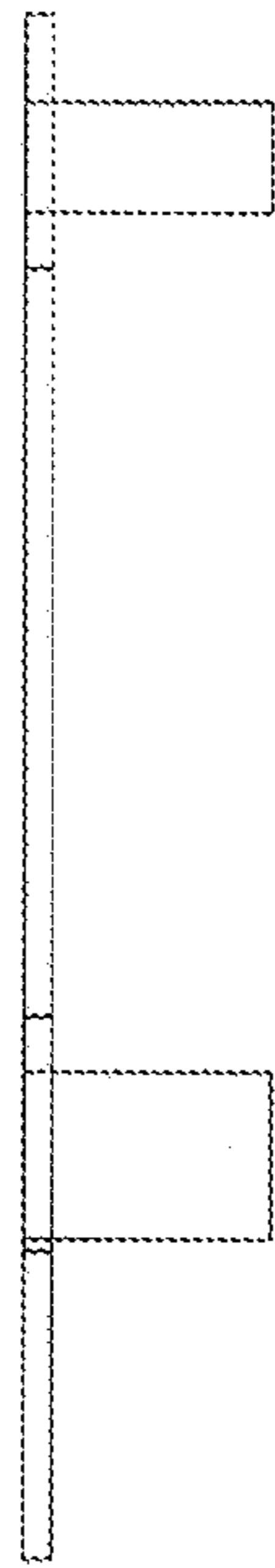


FIG. 8