



US00D812023S

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

(10) **Patent No.:** **US D812,023 S**
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(54) **FLEXIBLE PRINTED WIRING BOARD**

FOREIGN PATENT DOCUMENTS

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JP 1267522 S 4/2006
KR 300415642 S 6/2006

(Continued)

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OTHER PUBLICATIONS

Japanese Office Action for related Japanese Design Patent Application No. 2014-011387 dated Feb. 9, 2015, 2 Pages.

(Continued)

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

(21) Appl. No.: **29/586,565**

(57) **CLAIM**

The ornamental design for a flexible printed wiring board, as shown and described.

(22) Filed: **Dec. 5, 2016**

Related U.S. Application Data

DESCRIPTION

(62) Division of application No. 29/507,516, filed on Oct. 28, 2014, now Pat. No. Des. 785,575.

FIG. 1 is a front view of a flexible printed wiring board showing our new design;

FIG. 2 is a rear view thereof;

FIG. 3 is a top plan view thereof;

FIG. 4 is a bottom plan view thereof;

FIG. 5 is a right side view thereof;

FIG. 6 is a left side view thereof;

FIG. 7 is an enlarged top plan view of the portion taken along line 7-7 of FIG. 3;

FIG. 8 is a bottom plan view of FIG. 7;

FIG. 9 is a front view of FIG. 7;

FIG. 10 is a rear view of FIG. 7;

FIG. 11 is a right side view of FIG. 7;

FIG. 12 is a left side view of FIG. 7;

FIG. 13 is a front, top, and right side perspective view of FIG. 7;

FIG. 14 is a rear, bottom, and left side perspective view of FIG. 7; and,

FIG. 15 is another perspective view of FIG. 7 shown in a used condition with a Photovoltaic module, junction box and Fresnel lens shown in broken lines.

(Continued)

(30) **Foreign Application Priority Data**

May 28, 2014 (JP) 2014-011387

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(51) **LOC (11) Cl.** **13-03**

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

USPC **D13/182**

(58) **Field of Classification Search**

USPC D13/155, 182; 174/68.1, 68.2, 68.3, 250, 174/253, 254, 255, 256, 257, 258, 260

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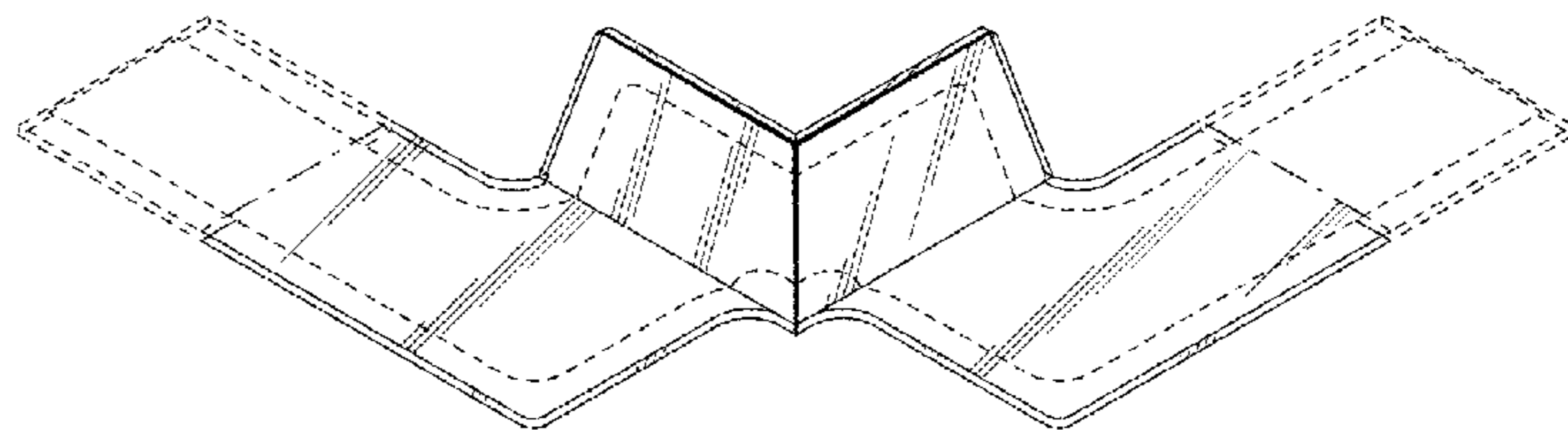
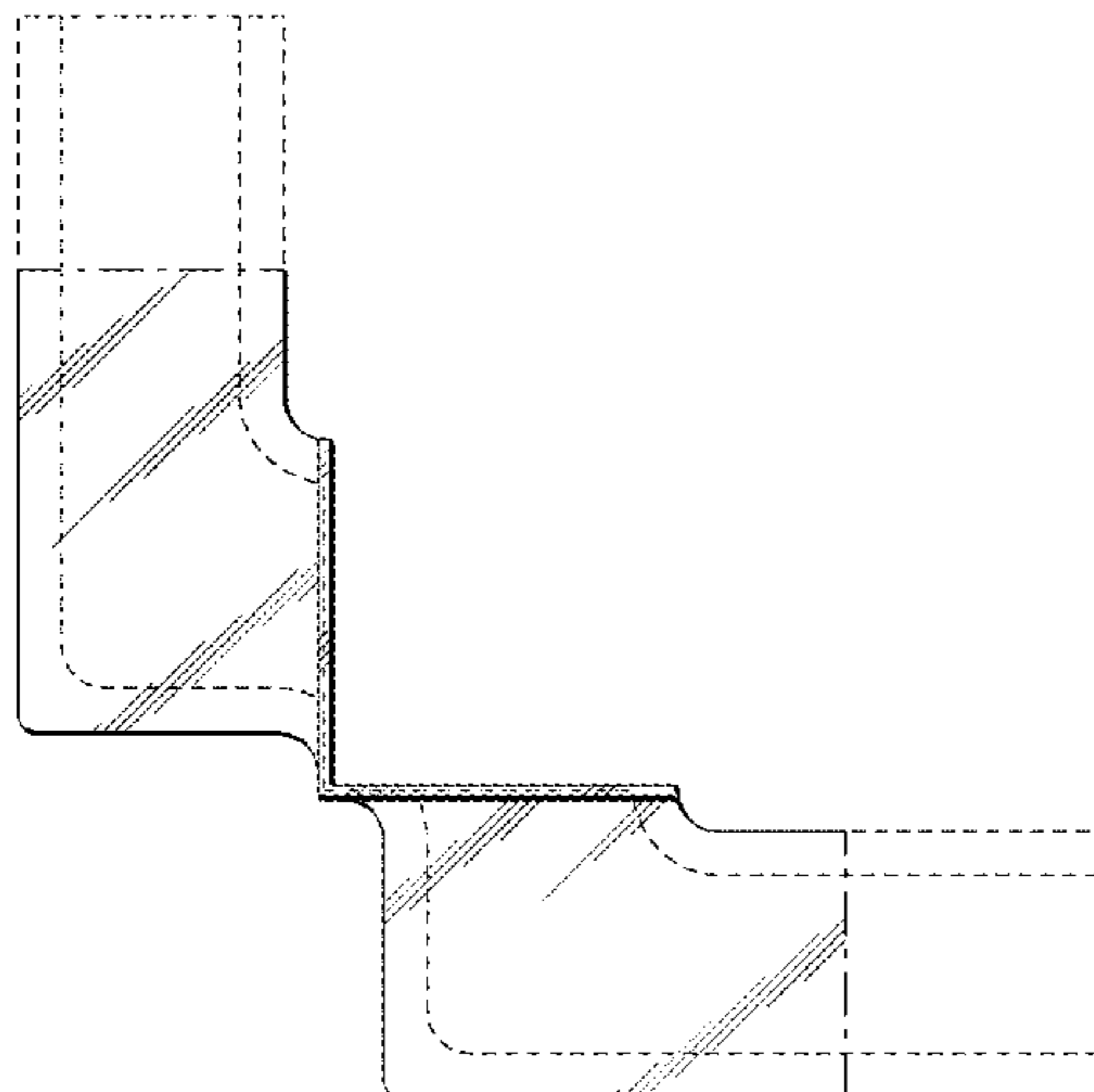
(56) **References Cited**

U.S. PATENT DOCUMENTS

3,646,399 A 2/1972 Mars et al.

3,777,221 A 12/1973 Tatusko et al.

(Continued)



The even dashed broken lines shown in the drawings represent portions of the flexible printed wiring board that form no part of the claimed design. The dashed-dot-dashed lines indicate the boundary lines between the claimed and unclaimed surface areas.

1 Claim, 7 Drawing Sheets

(30) **Foreign Application Priority Data**

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(58) **Field of Classification Search**

CPC H05K 3/36; H05K 3/361; H05K 3/363;
 H05K 3/365; H05K 3/40; H05K 3/4007;
 H05K 3/4015; H05K 3/0052; H05K 3/28;
 H05K 3/281; H05K 2201/0999; H05K
 2201/09818; H05K 2201/04; H05K
 2201/05; H05K 2201/051; H05K
 2201/052; H05K 2201/053; H05K
 2201/055; H05K 2201/056; H05K
 2201/057; H05K 2201/058; H05K
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 H05K 1/028; H05K 1/0281; H05K
 1/0283

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

D363,920 S 11/1995 Roberts et al.
 D397,093 S 8/1998 Kim
 7,067,912 B2 * 6/2006 Takeuchi H01L 23/49827
 174/255
 D548,201 S 8/2007 Jones
 7,405,479 B2 * 7/2008 Kanagawa G11B 5/4846
 257/738
 7,466,519 B2 * 12/2008 Wakaki G11B 5/486
 174/255
 D601,520 S 10/2009 Yokota et al.
 7,616,452 B2 11/2009 Wehrly, Jr. et al.

D605,613 S 12/2009 Carter et al.
 7,626,125 B2 * 12/2009 Nakamura H01L 21/76843
 174/256
 7,660,126 B2 2/2010 Cho et al.
 D612,347 S 3/2010 Yokota et al.
 D615,506 S 5/2010 Eide et al.
 7,732,900 B2 * 6/2010 Kanagawa G11B 5/4833
 257/676
 D637,566 S 5/2011 Cleghorn et al.
 D656,111 S 3/2012 Kajiya et al.
 D656,112 S 3/2012 Kajiya et al.
 8,134,080 B2 * 3/2012 Ishii H05K 3/38
 174/255
 D661,265 S 6/2012 Kajiya et al.
 8,266,794 B2 * 9/2012 Ishii G11B 5/486
 29/602.1
 D669,045 S 10/2012 Kajiya et al.
 D669,046 S 10/2012 Kajiya et al.
 D687,397 S 8/2013 Kajiya et al.
 8,760,815 B2 * 6/2014 Ishii G11B 5/484
 360/245.8
 8,866,027 B2 * 10/2014 Oka H05K 3/44
 174/262
 D757,666 S 5/2016 Yokoo
 D784,936 S * 4/2017 Mori D13/182
 D785,575 S * 5/2017 Mori D13/182

FOREIGN PATENT DOCUMENTS

KR 300681061 S 3/2013
 TW D159654 S 4/2014
 TW D160046 S 4/2014

OTHER PUBLICATIONS

Japanese Office Action for related Japanese Patent Application No. 2014-011389 dated Feb. 9, 2015, 2 Pages.
 Japanese Office Action for related Japanese Patent Application No. 2014-011390 dated Feb. 9, 2015, 2 Pages.
 Japanese Office Action for related Japanese Patent Application No. 2014-011391 dated Feb. 9, 2015, 2 Pages.
 Japanese Office Action for related Japanese Patent Application No. 2014-011392 dated Feb. 9, 2015, 2 Pages.
 Japanese Office Action for related Japanese Patent Application No. 2014-011393 dated Feb. 9, 2015, 2 Pages.
 Japanese Office Action for related Japanese Design Patent Application No. 2014-011388 dated Jul. 6, 2015, 2 Pages.
 Oki Electric Cable, "Oki Electric Cable Develops Industry's First FPC for Three-dimension Wiring", Jun. 11, 2008, 5 Pages.

* cited by examiner

FIG.1

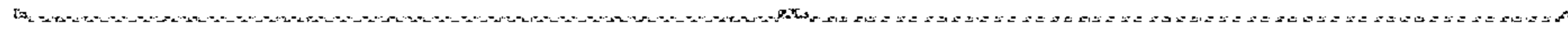


FIG.2

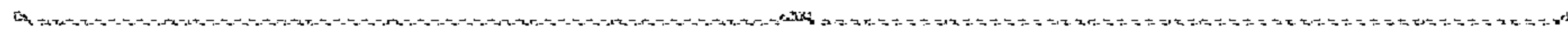


FIG.3

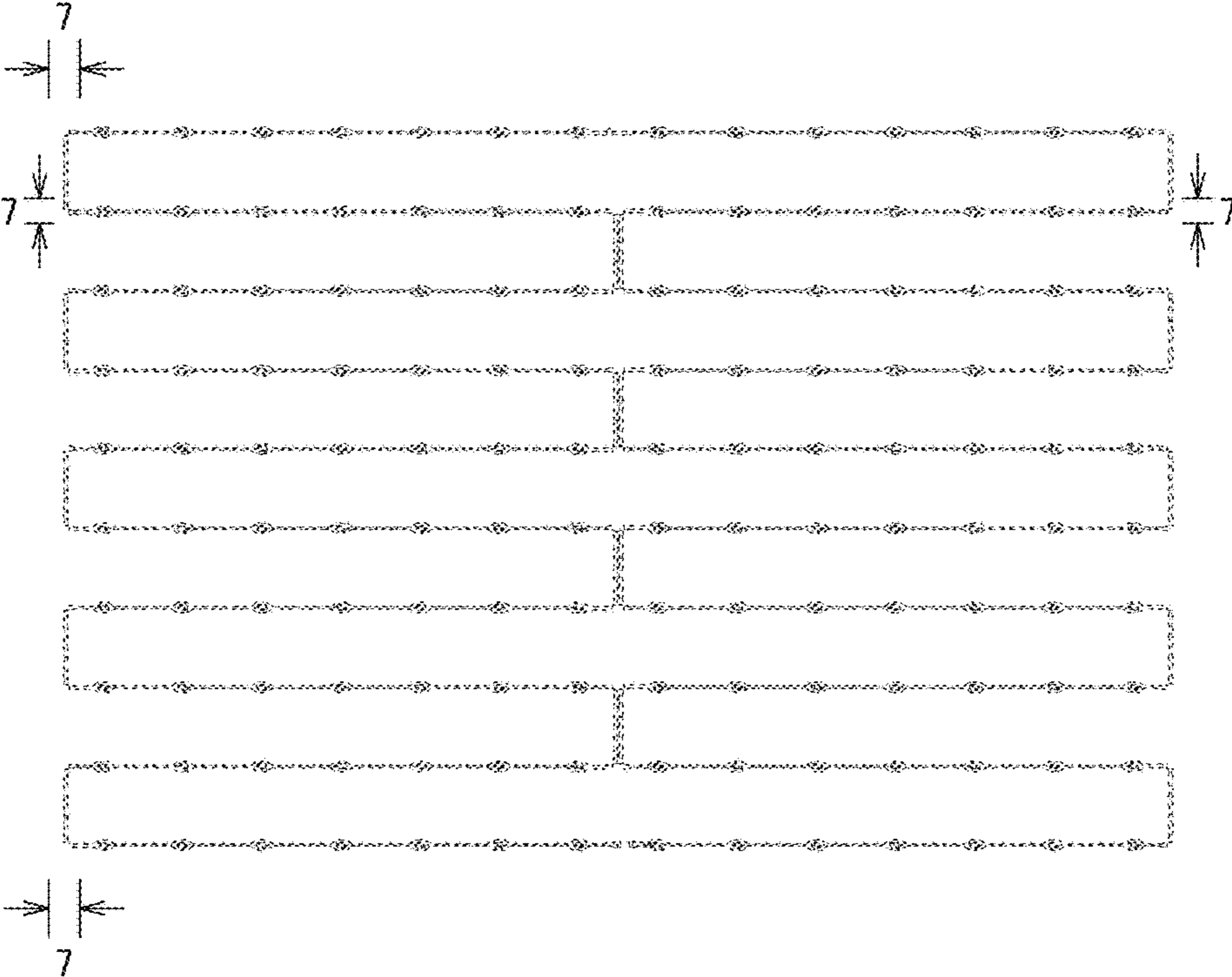


FIG.4

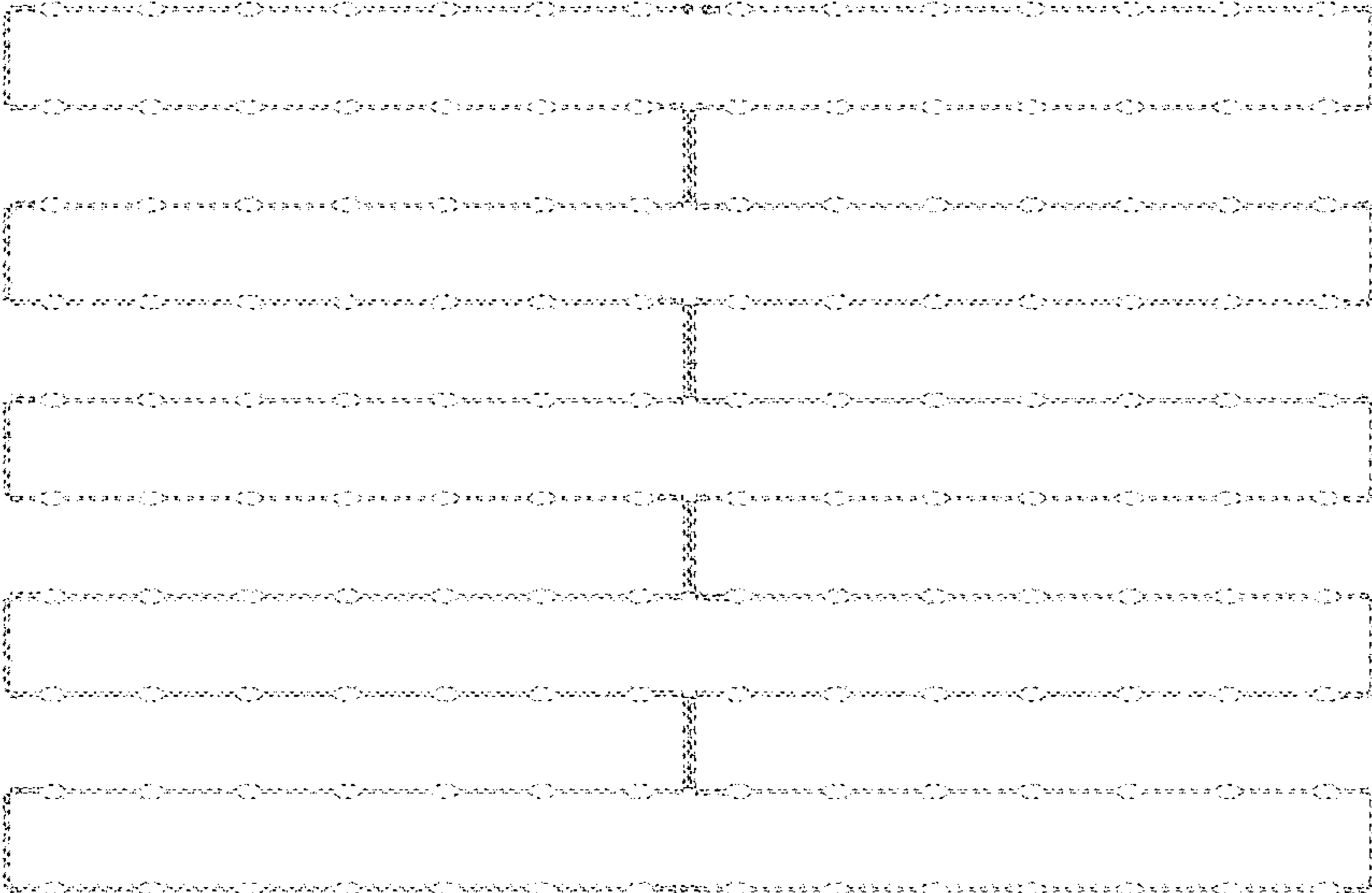


FIG.5

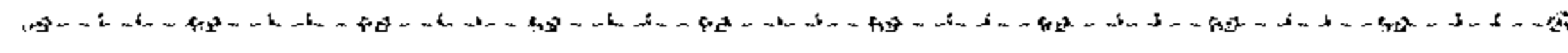


FIG.6

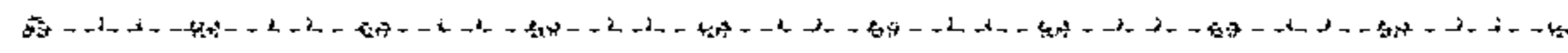


FIG.7

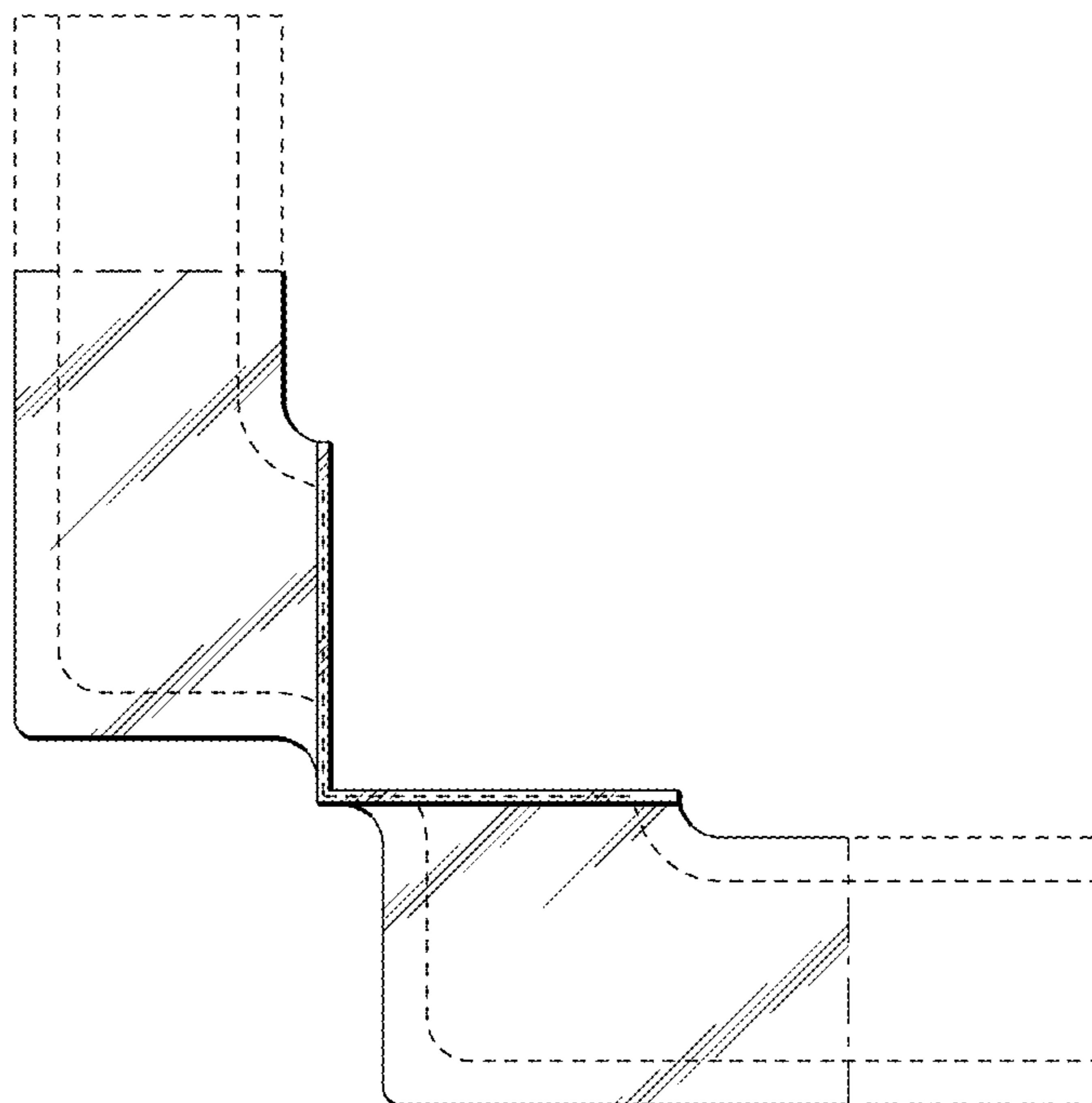


FIG.8

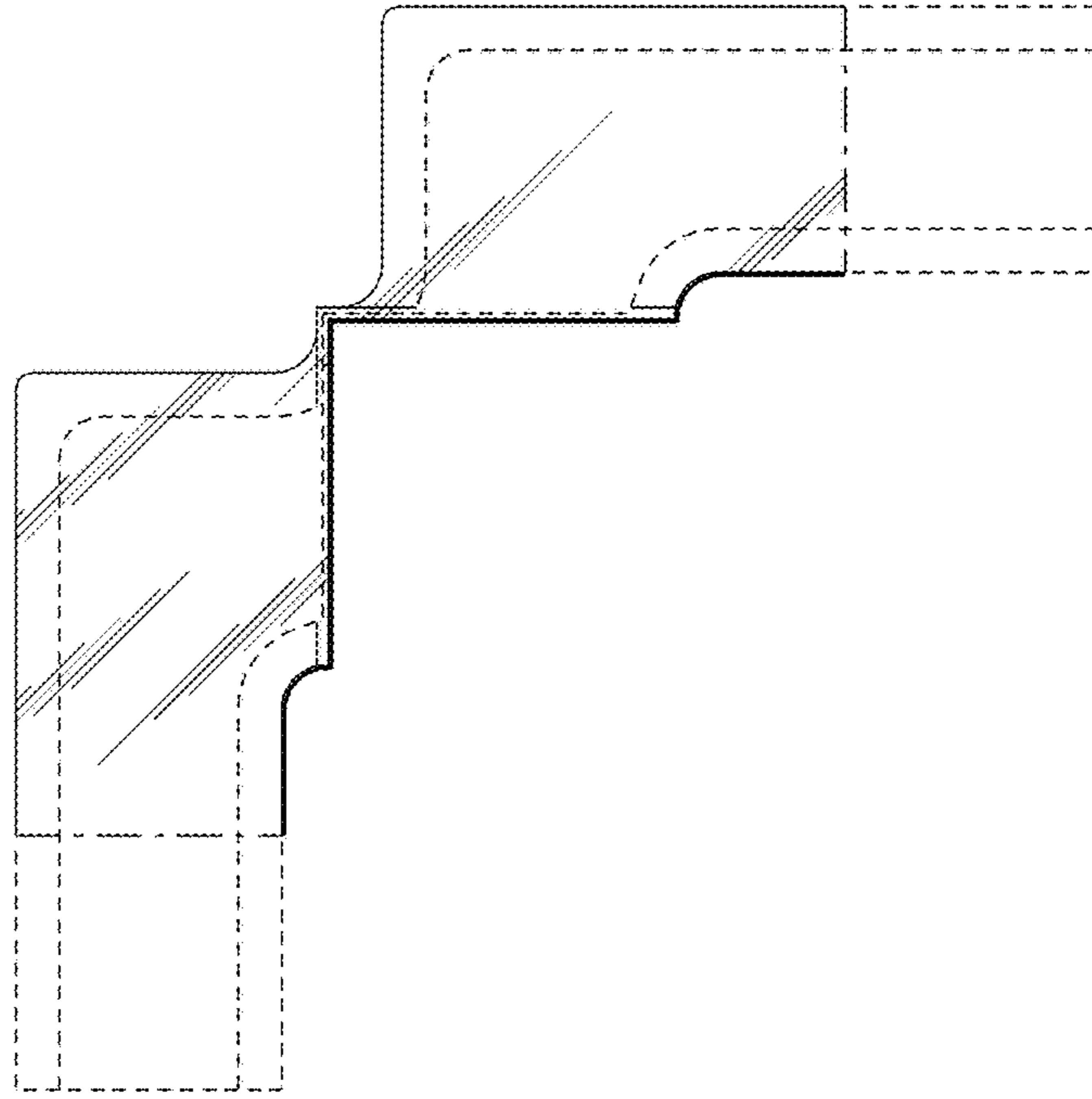


FIG.9

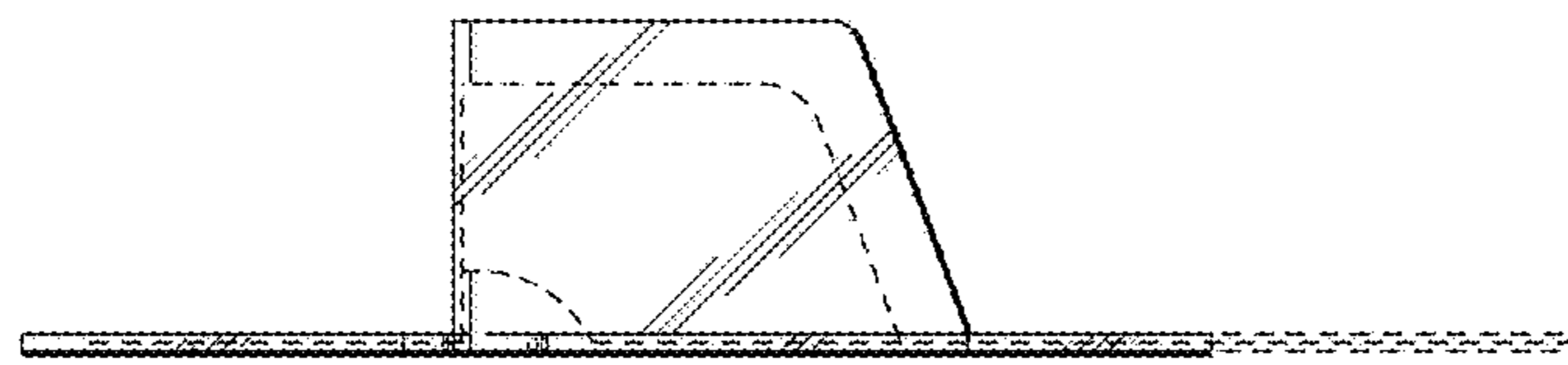


FIG.10

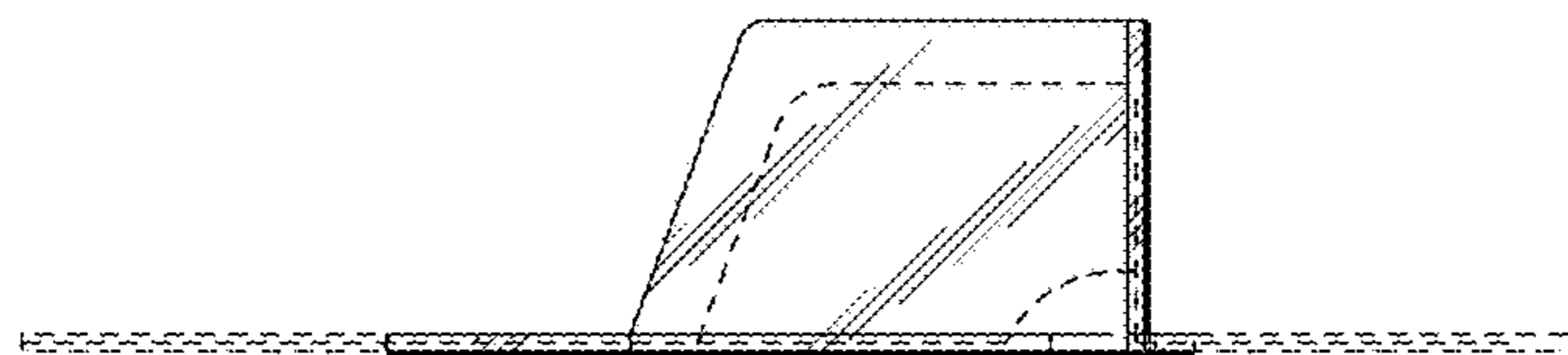


FIG.11

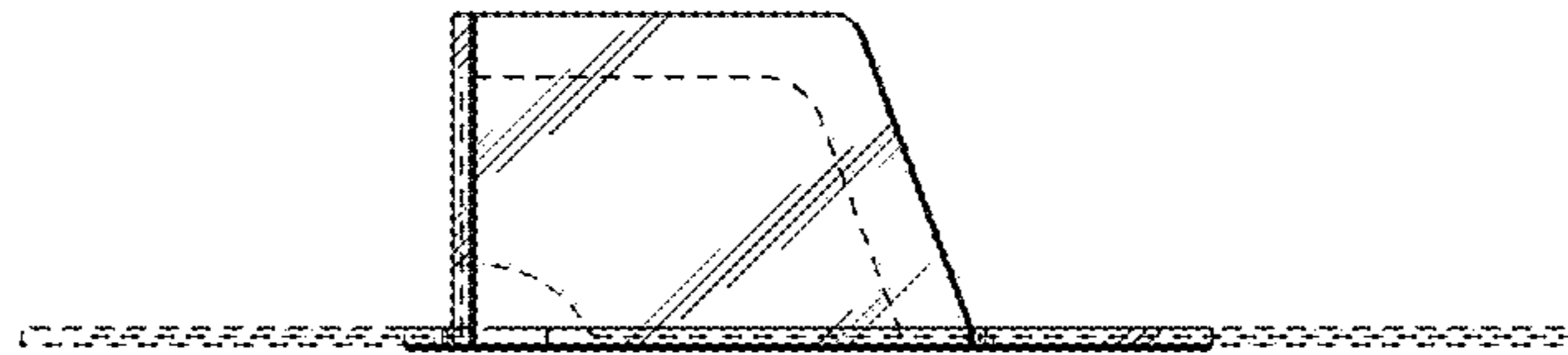


FIG.12

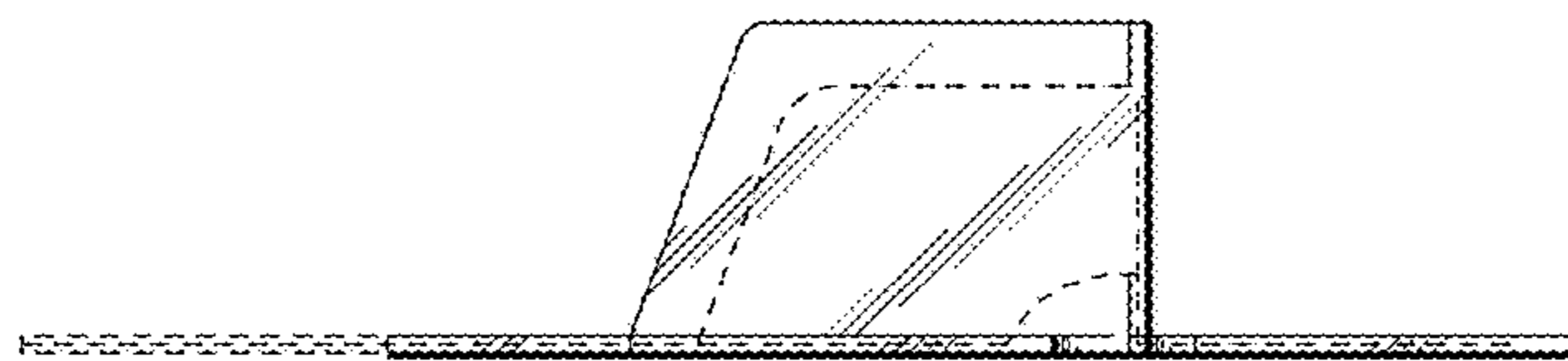


FIG.13

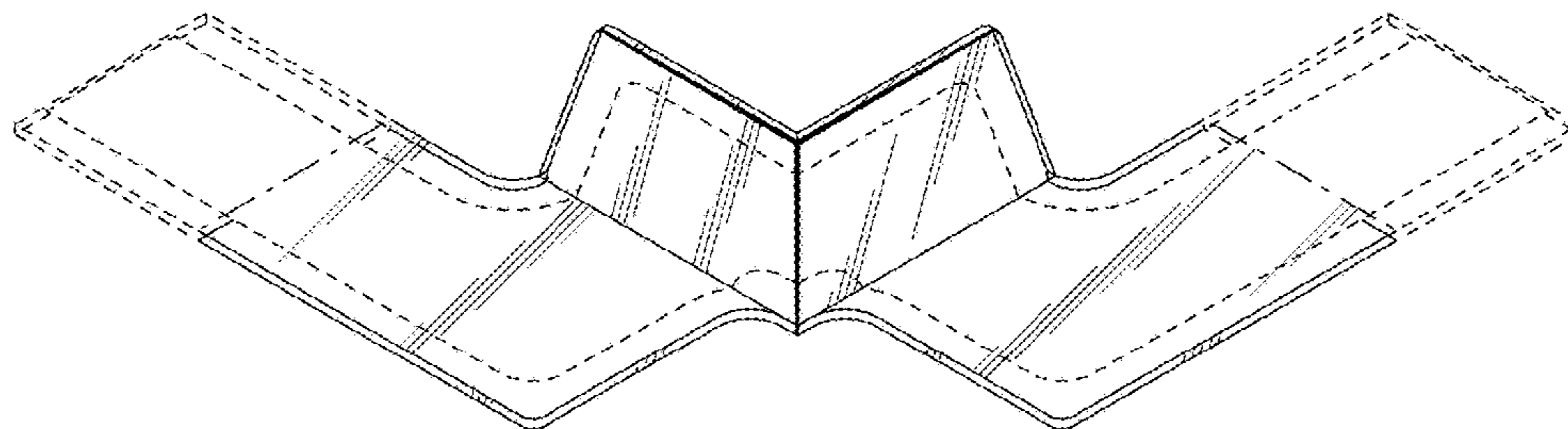


FIG.14

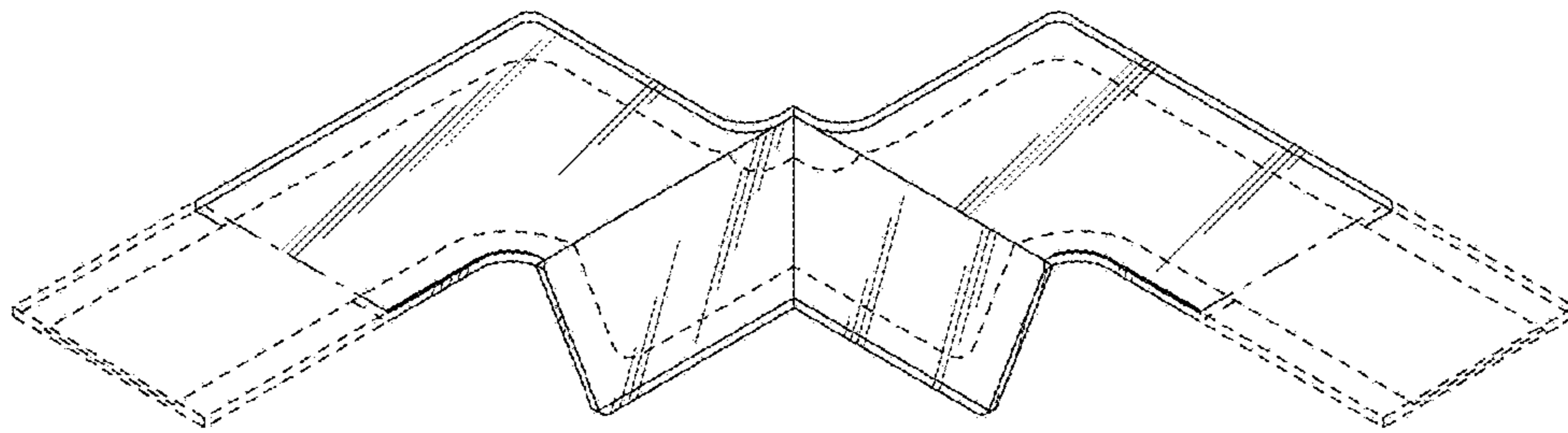


FIG.15

