

US00D810676S

(12) **United States Design Patent** (10) **Patent No.:** **US D810,676 S**  
**Detrick et al.** (45) **Date of Patent:** **\*\* Feb. 20, 2018**

(54) **SOLAR CELL ARTICLE**  
(71) Applicant: **SOLARIA CORPORATION**, Fremont, CA (US)  
(72) Inventors: **Adam Detrick**, Fremont, CA (US); **Kevin R. Gibson**, Redwood City, CA (US)  
(73) Assignee: **SOLARIA CORPORATION**, Fremont, CA (US)  
(\*\*) Term: **15 Years**  
(21) Appl. No.: **29/574,246**  
(22) Filed: **Aug. 12, 2016**  
(51) **LOC (11) Cl.** ..... **13-02**  
(52) **U.S. Cl.**  
USPC ..... **D13/102**  
(58) **Field of Classification Search**  
USPC ..... D3/5; D6/302, 405, 407, 675, 691.8, D6/705, 706; D12/183, 345; D13/101, D13/102, 103, 107, 118, 119, 184, 187, D13/199; D25/30, 47.1, 48.7, 48.8, 60, D25/119, 122, 124, 125, 138, 140, 144, D25/153, 156, 167  
CPC . H01L 31/00; H01L 31/042; H01L 31/02021; H01L 31/02008; H01L 31/043; H01L 31/0508; H02S 10/00; H02S 20/00; Y02B 10/00; Y02E 10/00; Y02E 10/40; Y02E 10/41; Y02E 10/42; Y02E 10/43; Y02E 10/44; Y02E 10/45; Y02E 10/46; Y02E 10/47; Y02E 10/50; Y02E 10/51; Y02E 10/52; Y02E 10/544; Y10S 136/292; B64G 1/443  
See application file for complete search history.

8,951,825 B1 \* 2/2015 Limb ..... H01L 31/18 438/71  
D762,163 S \* 7/2016 Parilla ..... D13/102  
D763,787 S \* 8/2016 Parilla ..... D13/102  
D784,254 S \* 4/2017 Parilla ..... D13/102  
(Continued)

**OTHER PUBLICATIONS**

Imec demonstrates highly efficient bifacial solar cells, posted at Phys.org, posted on Jun. 20, 2016, [online], [site visited Aug. 29, 2017]. Available from Internet, <<https://phys.org/news/2016-06-imec-highly-efficient-bifacial-solar.html>>.\*  
(Continued)

*Primary Examiner* — Mary Ann Calabrese  
*Assistant Examiner* — Catherine Ho

(57) **CLAIM**

The ornamental design for solar cell article, as shown and described.

**DESCRIPTION**

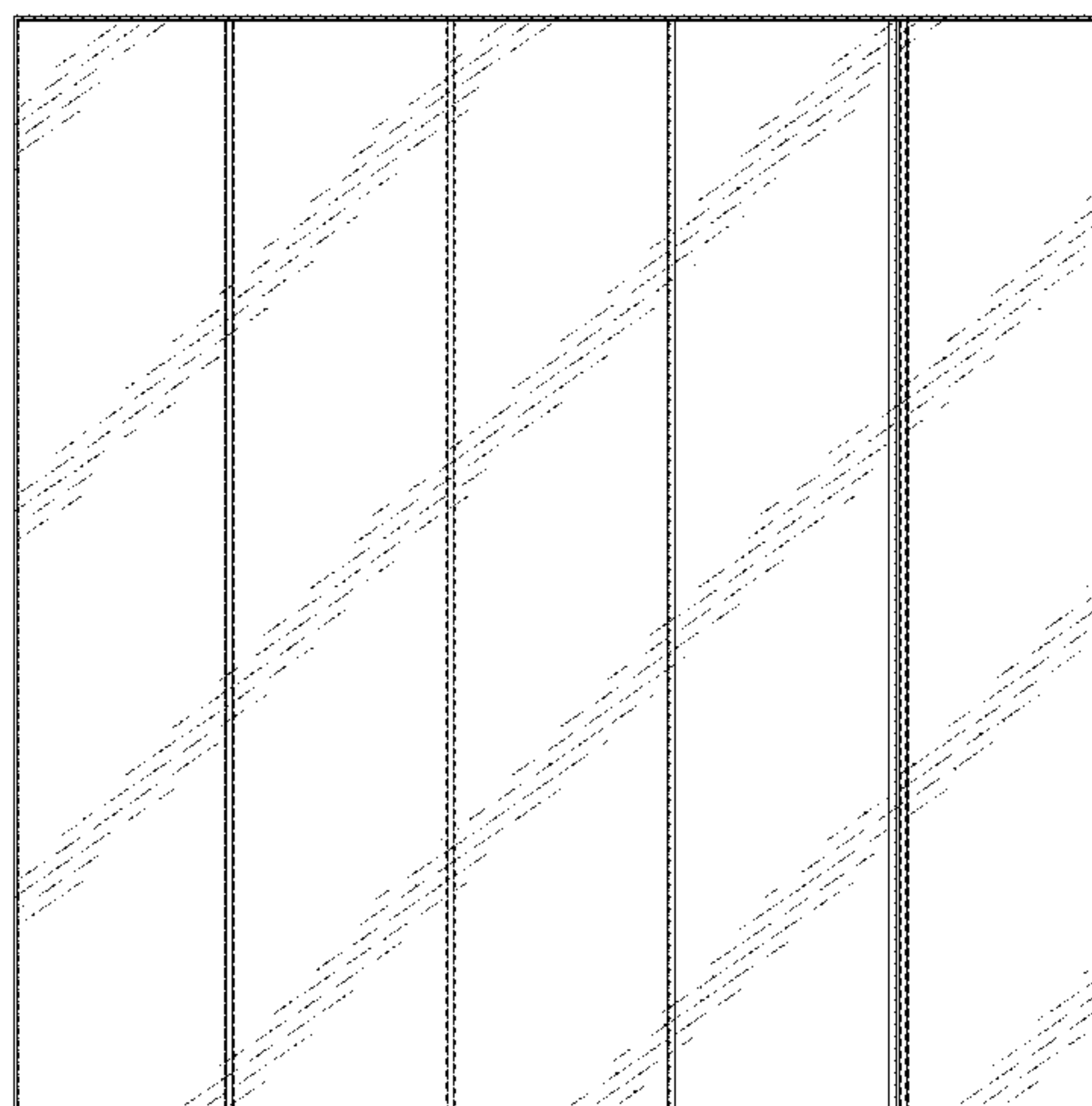
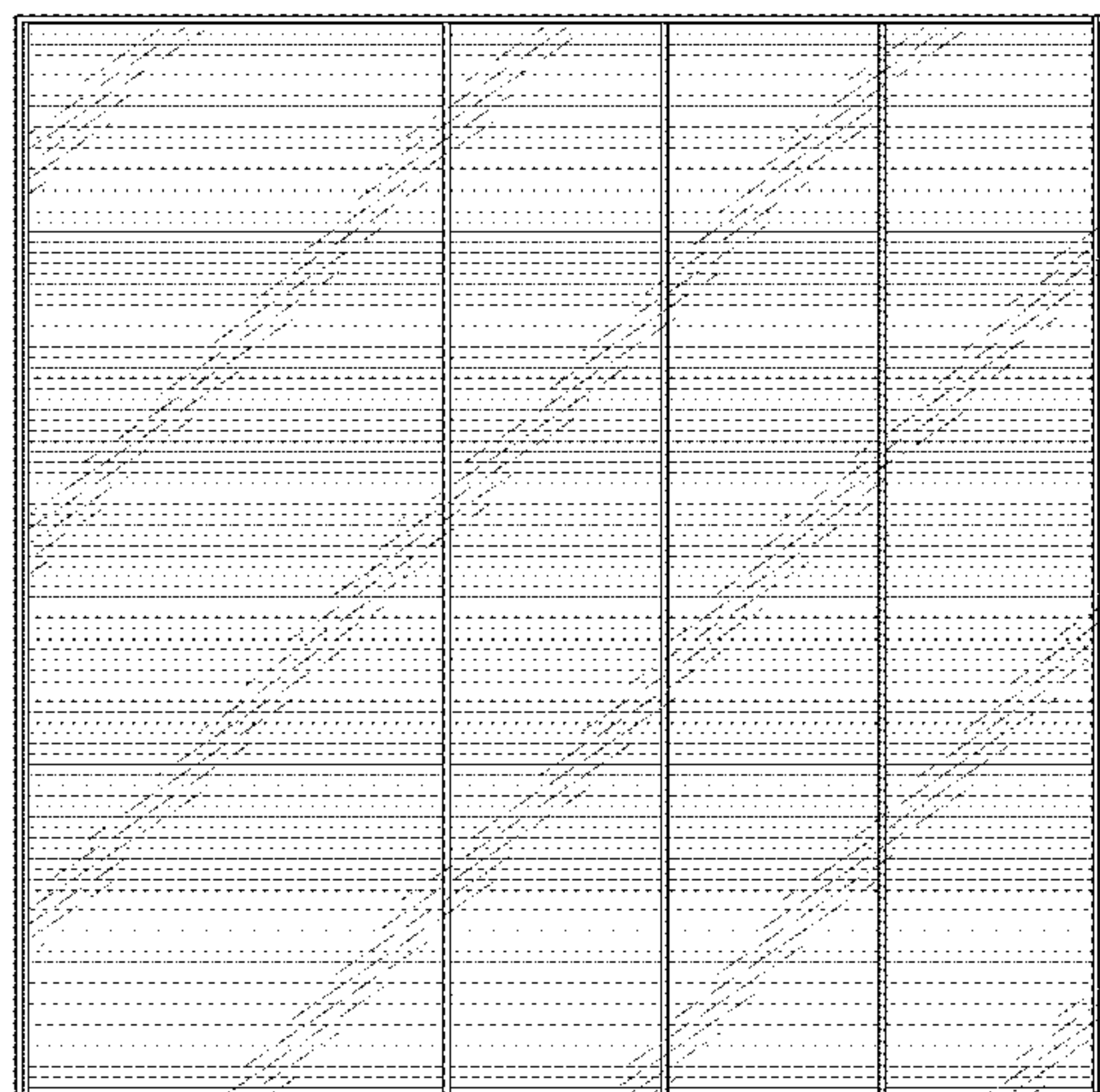
FIG. 1 is a front perspective view of a solar cell article showing our new design;  
FIG. 2 is back perspective view thereof;  
FIG. 3 is a front view thereof;  
FIG. 4 is a back view thereof;  
FIG. 5 is a top view thereof;  
FIG. 6 is a bottom view thereof;  
FIG. 7 is a first side view thereof;  
FIG. 8 is a second side view thereof; and  
FIG. 9 is an enlarged detailed view of the off-set bus bar strips indicated by the encircled area 9 in FIG. 5; and,  
FIG. 10 is an enlarged detailed view of a pair of adjacent bus bar strips indicated by the encircled area 10 in FIG. 5.  
The broken line portion of the figure drawings is included to show portions of the article that form no part of the claimed design.

**1 Claim, 6 Drawing Sheets**

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

5,800,631 A \* 9/1998 Yamada ..... H01L 31/048 136/251  
D442,139 S \* 5/2001 Sasaoka ..... D13/102



(56)

References Cited

U.S. PATENT DOCUMENTS

2006/0213548 A1\* 9/2006 Bachrach ..... H01L 31/048  
136/251  
2009/0025710 A1\* 1/2009 Hogan ..... F24J 2/045  
126/652  
2010/0126554 A1\* 5/2010 Morgan ..... H02S 40/425  
136/246  
2010/0243040 A1\* 9/2010 Kim ..... H01L 31/02245  
136/255  
2011/0279544 A1\* 11/2011 Dovrat ..... B41J 3/543  
347/40  
2012/0125396 A1\* 5/2012 Taira ..... H01L 31/022433  
136/244  
2012/0247532 A1\* 10/2012 Liu ..... H01L 31/0543  
136/246  
2013/0152994 A1\* 6/2013 Schaarschmidt ..... H01L 31/18  
136/244  
2014/0124013 A1\* 5/2014 Morad ..... H01L 31/0504  
136/246  
2014/0124014 A1\* 5/2014 Morad ..... H01L 31/042  
136/246  
2015/0075613 A1\* 3/2015 Narita ..... H01L 31/022483  
136/258  
2016/0093758 A1\* 3/2016 Fujishima ..... H01L 31/0516  
136/244  
2016/0111573 A1\* 4/2016 Meyer ..... H01L 31/049  
136/251  
2016/0126375 A1\* 5/2016 Morikawa ..... H01L 31/022425  
136/244  
2016/0247950 A1\* 8/2016 Kobamoto ..... H01L 31/0224  
2017/0033243 A1\* 2/2017 Lee ..... H01L 31/022425  
2017/0077343 A1\* 3/2017 Morad ..... H01L 31/186  
2017/0148942 A1\* 5/2017 Van Roosmalen . H01L 31/0547  
2017/0170338 A1\* 6/2017 Matsuo ..... H01L 31/0201  
2017/0179323 A1\* 6/2017 Hishida ..... H01L 31/05

OTHER PUBLICATIONS

Improved Efficiency for Black Silicon Solar Cells, posted at Prescouter.com, posted on Apr. 5, 2013, [online], [site visited Aug. 29, 2017]. Available from Internet, <<https://prescouter.com/2013/04/improved-efficiency-for-black-silicon-solar-cells-by-18-7/>>.\*  
File:Silicon solar cell (PERC), posted at Commons.Wikimedia.org, posted on Apr. 17, 2014, [online], [site visited Aug. 29, 2017]. Available from Internet, <[https://commons.wikimedia.org/wiki/File:Silicon\\_solar\\_cell\\_\(PERC\)\\_front\\_and\\_back.jpg](https://commons.wikimedia.org/wiki/File:Silicon_solar_cell_(PERC)_front_and_back.jpg)>.\*  
Image analysis of polycrystalline solar cells, posted at Sciencedirect.com, posted on Sep. 2014, [online], [site visited Aug. 29, 2017]. Available from Internet, <<http://www.sciencedirect.com/science/article/pii/S0955221914000260>>.\*  
ECEEN Folding Solar Panel Phone Charger, posted at Amazon.com, posted on Feb. 17, 2016, [online], [site visited Aug. 29, 2017]. Available from Internet, <<https://www.amazon.com/ECEEN-Folding-Charger-Smartphones-USB-Charging/dp/B01BBCVIAQ/>>.\*  
Mono poly multi crystalline 125x125mm, posted at Alibaba.com, posted on Mar. 13, 2015, [online], [site visited Aug. 29, 2017]. Available from Internet, <[https://www.alibaba.com/product-detail/Mono-poly-multi-crystalline-125x125mm-156x156mm\\_60489803181.html](https://www.alibaba.com/product-detail/Mono-poly-multi-crystalline-125x125mm-156x156mm_60489803181.html)>.\*  
A Grade 4.3W Monocrystalline Silicon Solar Cells, posted at Marsrock.com.cn, posted on Jul. 7, 2013, [online], [site visited Aug. 29, 2017]. Available from Internet, <[http://www.marsrock.com.cn/product/523735512-220292227/A\\_Grade\\_4\\_3W\\_Monocrystalline\\_Silicon\\_Solar\\_Cells\\_156\\_x\\_156\\_for\\_Solar\\_Panels.html](http://www.marsrock.com.cn/product/523735512-220292227/A_Grade_4_3W_Monocrystalline_Silicon_Solar_Cells_156_x_156_for_Solar_Panels.html)>.\*  
bSolar Introduces High-Efficiency Bifacial Silicon Solar Cells, posted at Greenbuildingelements.com, posted on Sep. 11, 2012, [online], [site visited Aug. 29, 2017]. Available from Internet, <<https://greenbuildingelements.com/2012/09/11/bsolar-introduces-high-efficiency-bifacial-silicon-solar-cells-and-modules-in-the-us/>>.\*

\* cited by examiner



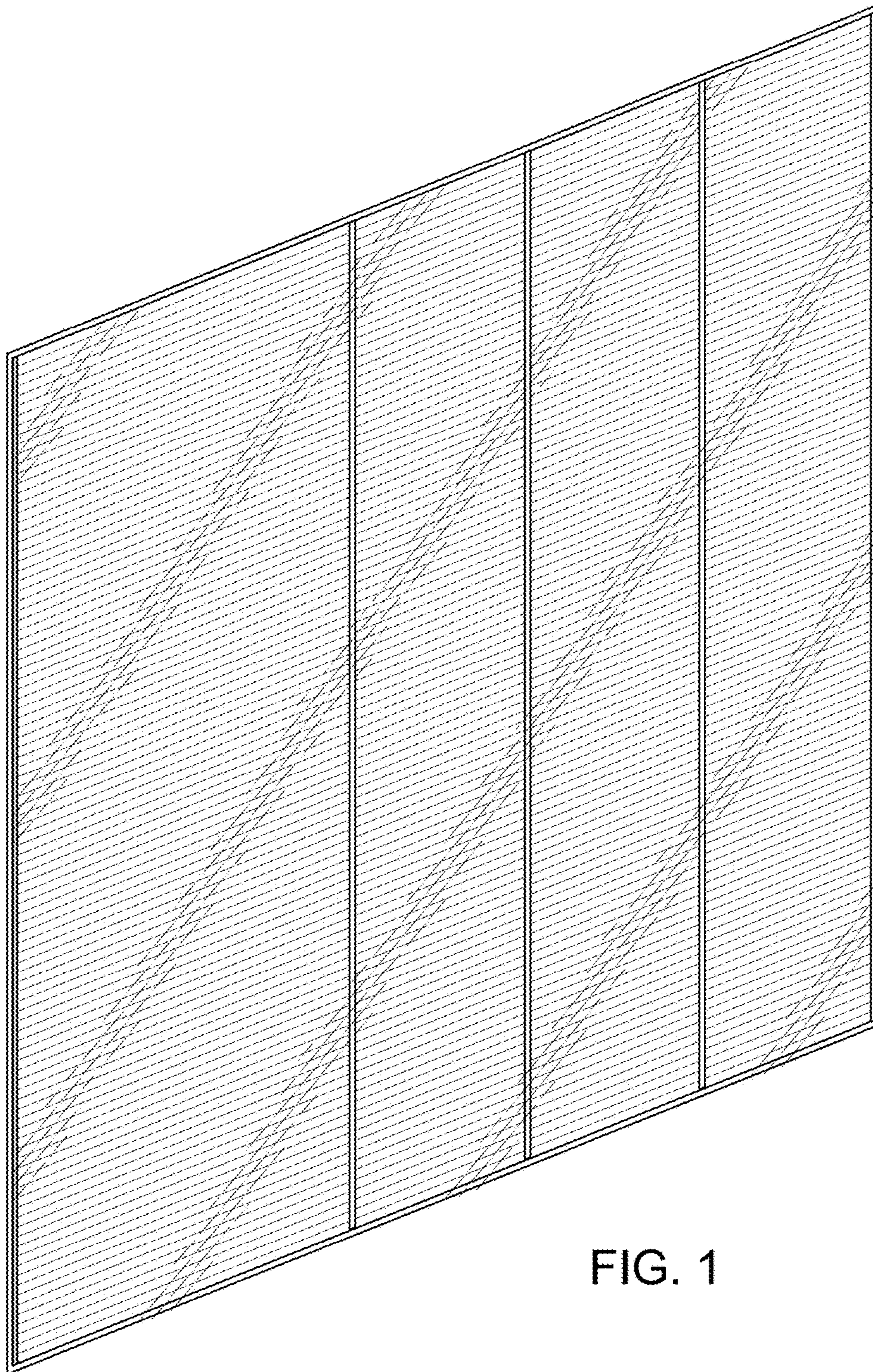


FIG. 1



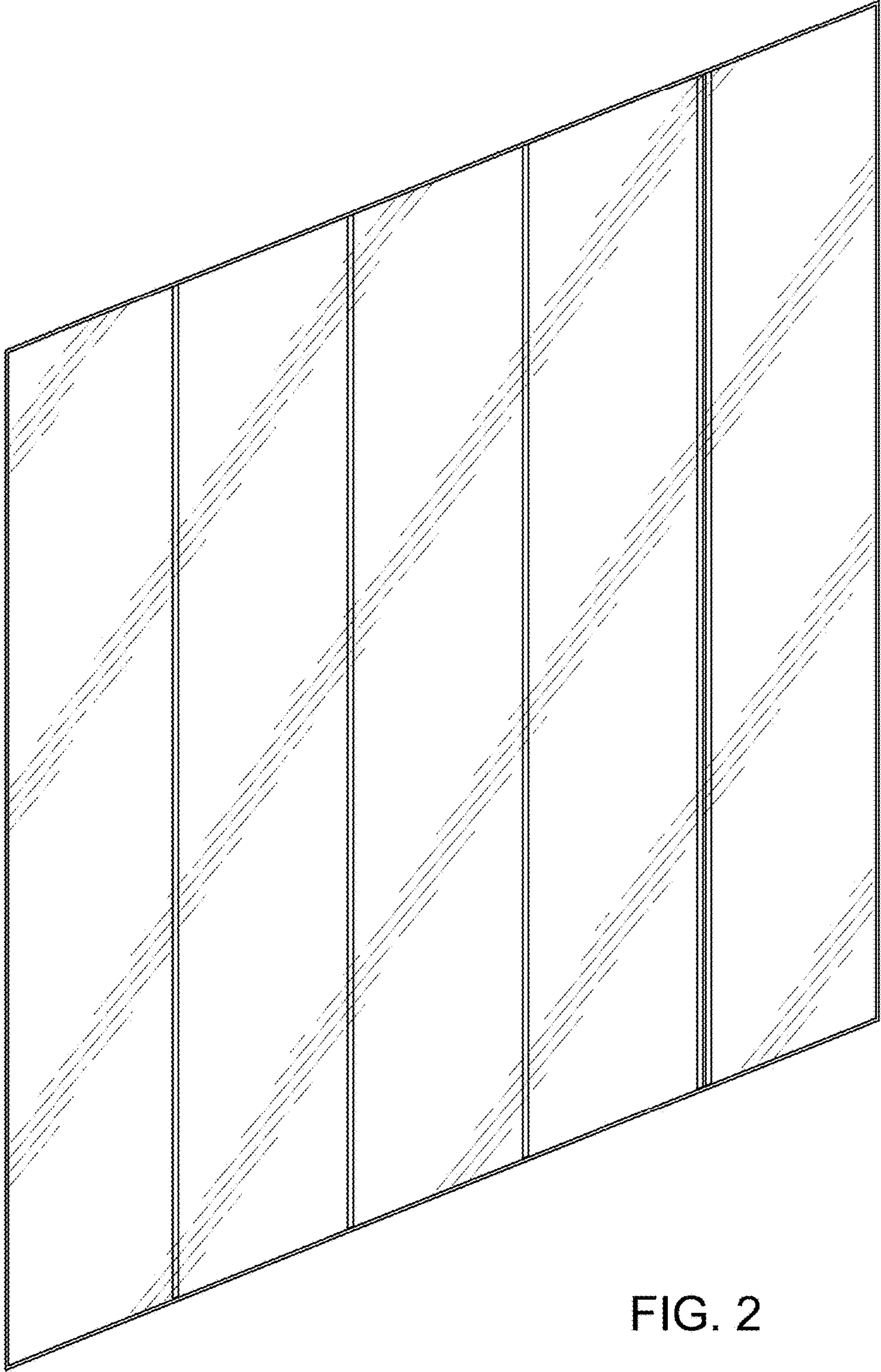


FIG. 2

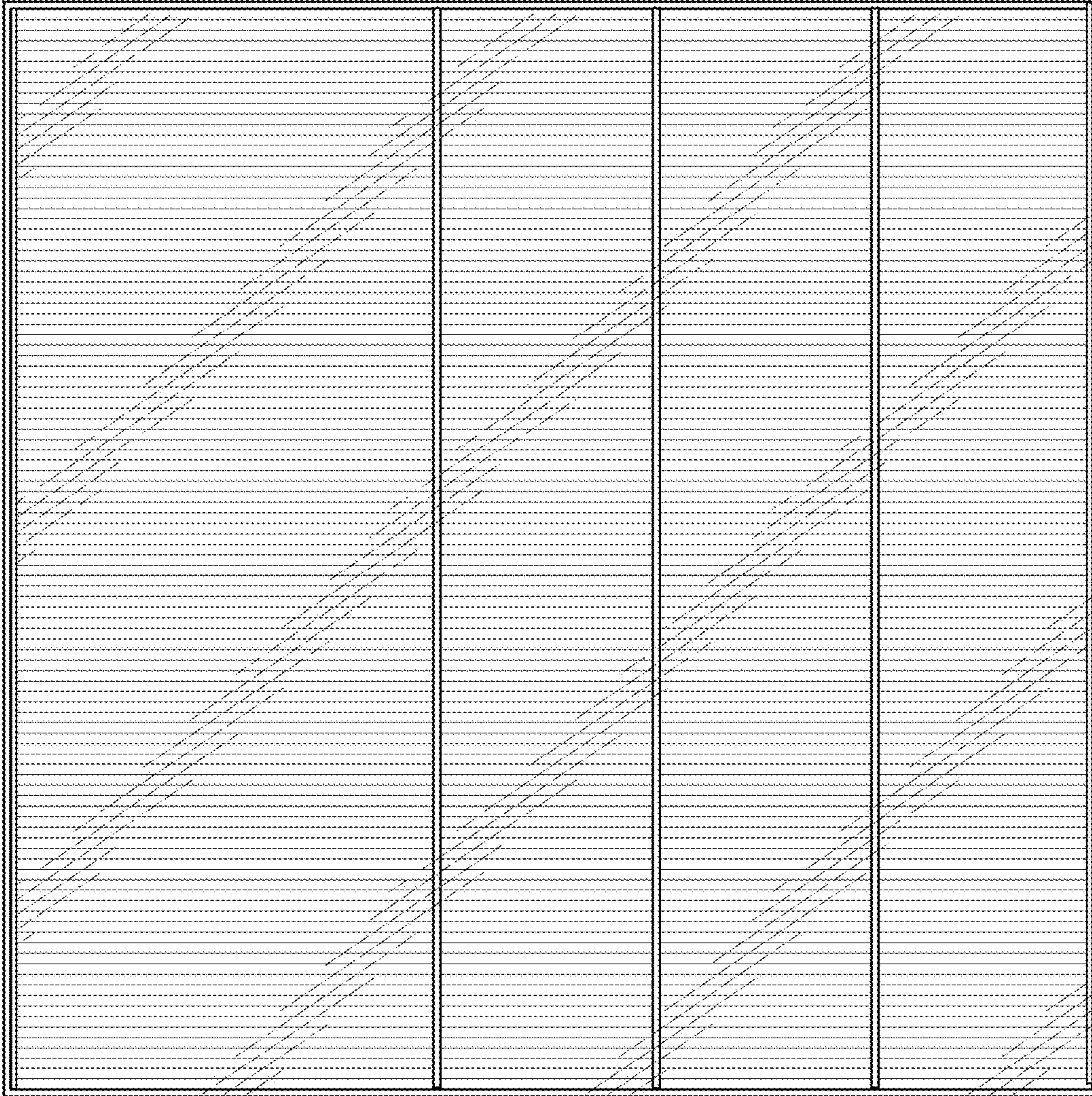


FIG. 3

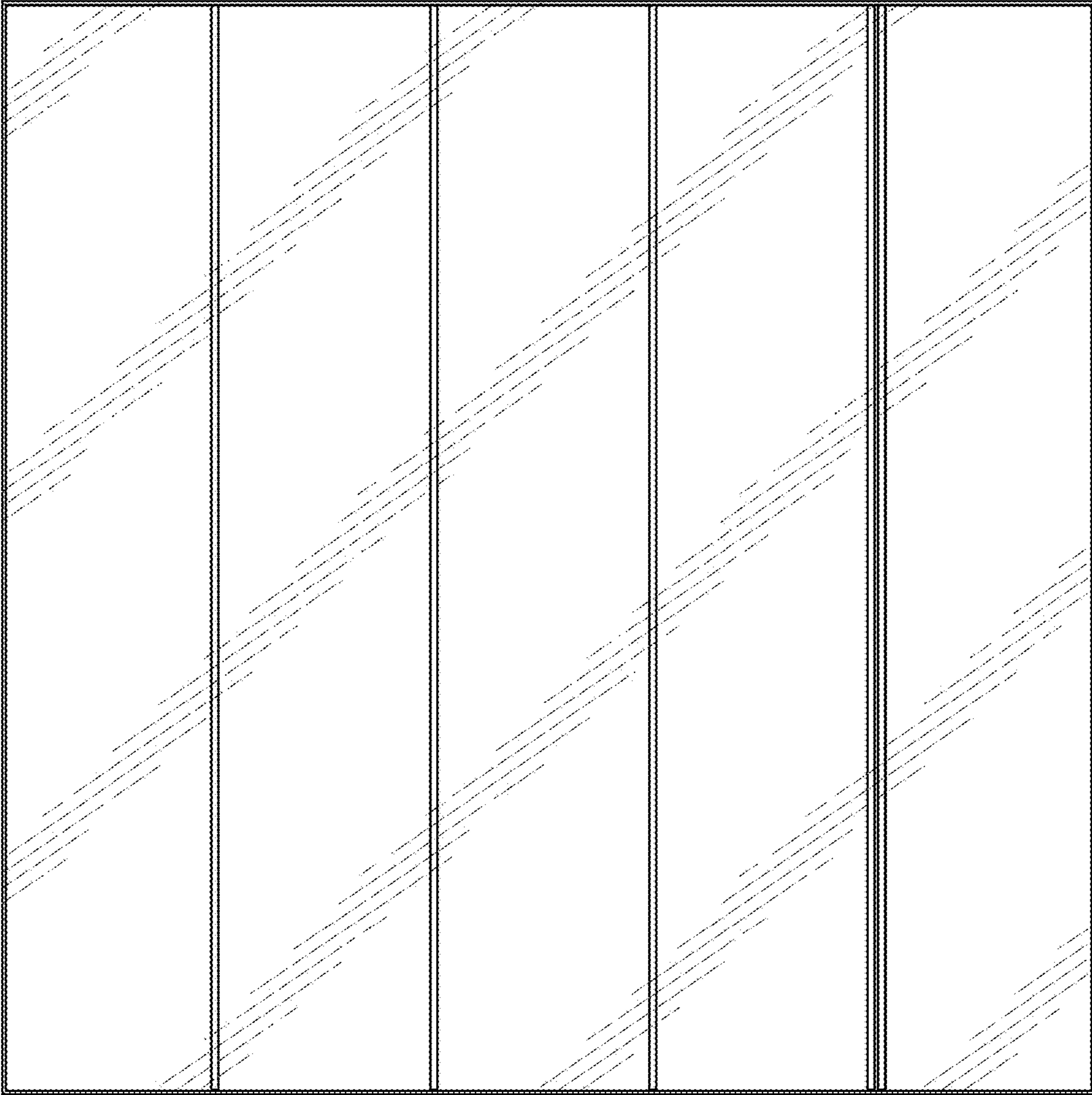


FIG. 4



FIG. 5



FIG. 7



FIG. 8



FIG. 6



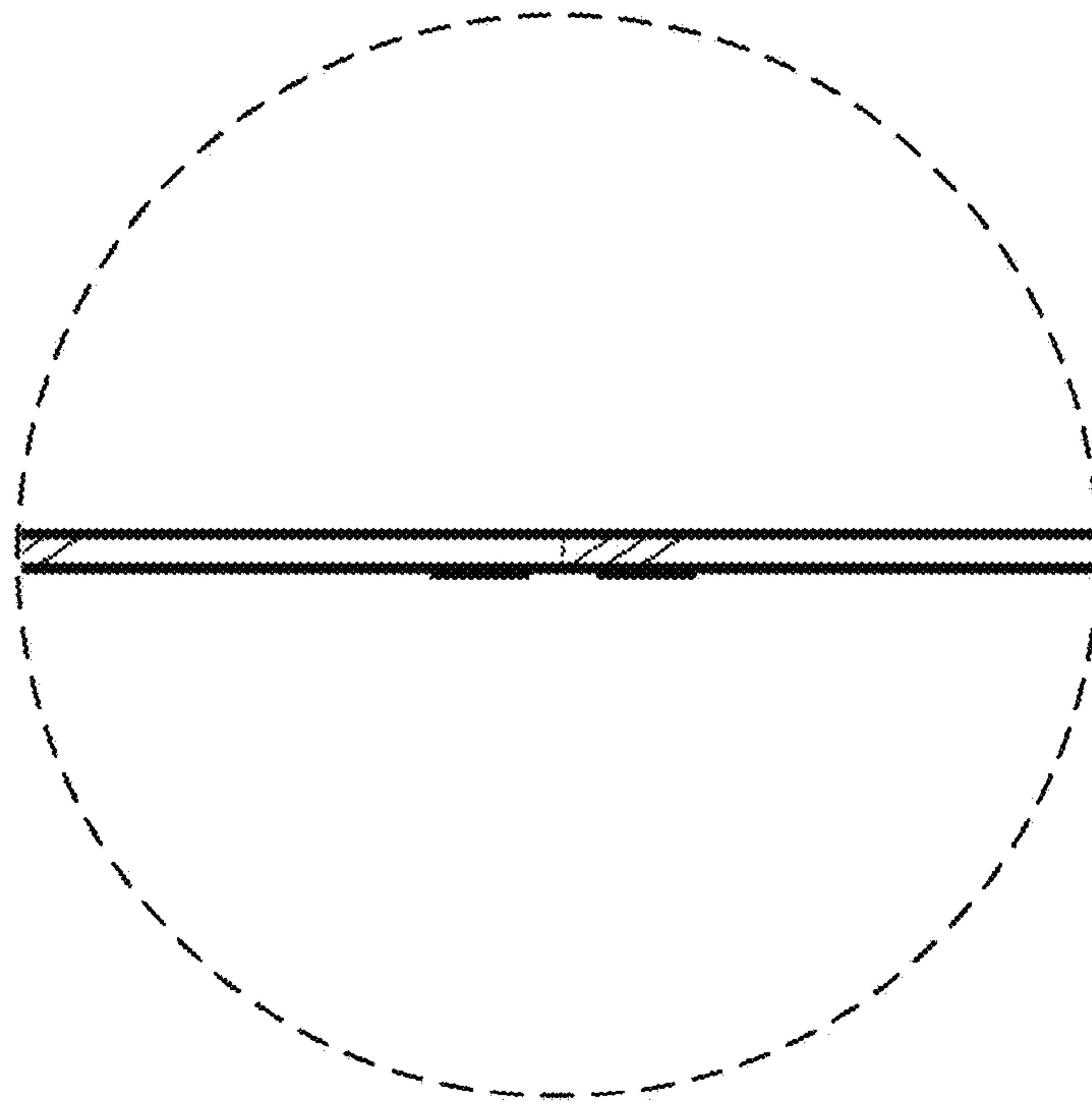


FIG. 9

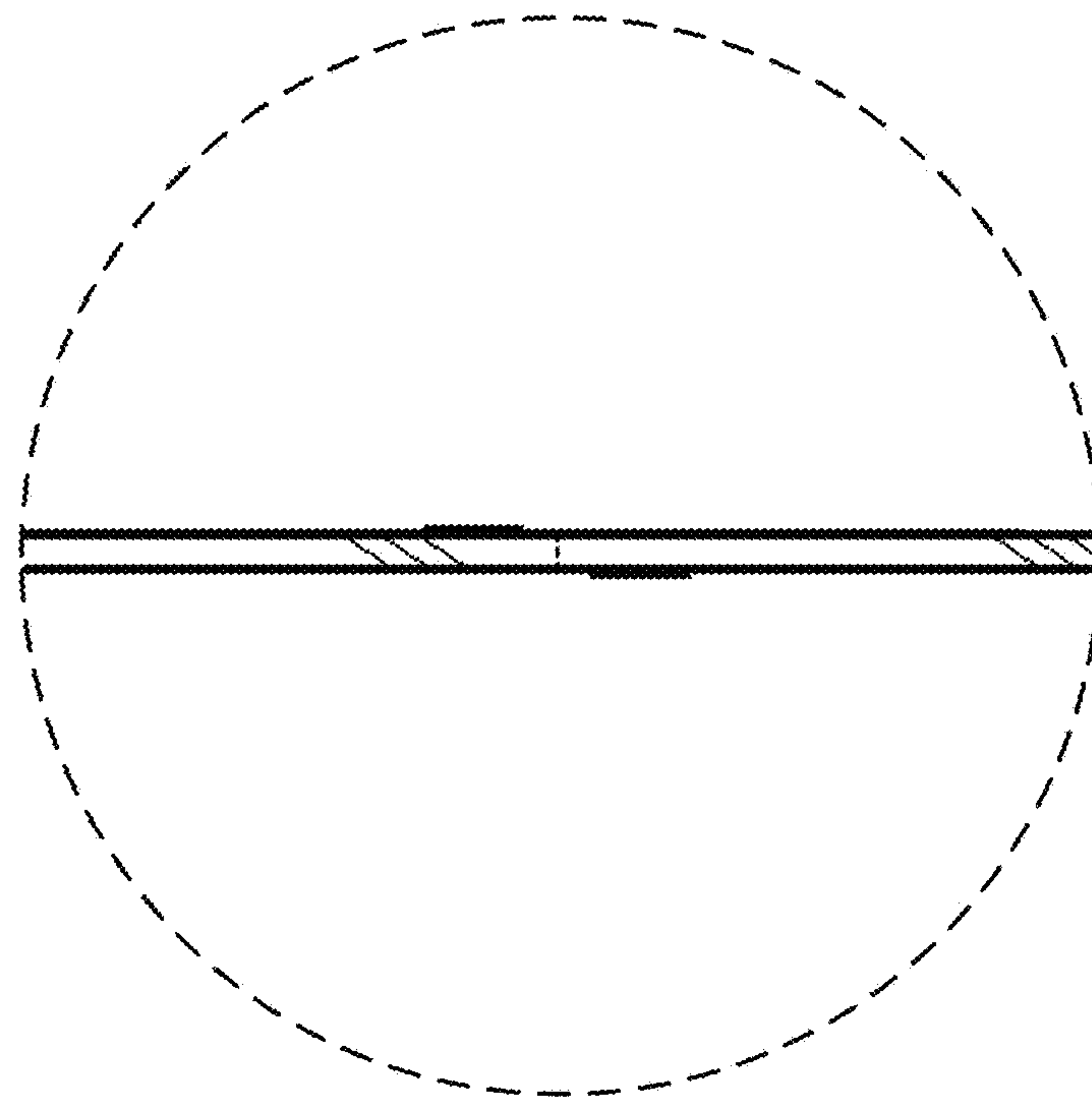


FIG. 10