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(12) **United States Design Patent** (10) **Patent No.:** **US D870,889 S**
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(54) **CUTOUT AIRWAY STENT**
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9,308,060 B2 4/2016 Ali
9,339,279 B2 5/2016 Dubois et al.
9,364,896 B2 6/2016 Christensen et al.
9,370,426 B2 6/2016 Gabbrielli et al.
9,421,108 B2 8/2016 Hunt
9,433,510 B2 9/2016 Lechmann et al.
9,433,707 B2 9/2016 Swords et al.
9,545,317 B2 1/2017 Hunt
9,549,823 B2 1/2017 Hunt et al.

(Continued)

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

OTHER PUBLICATIONS

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Anat Ratnovsky et al., Mechanical Properties of Different Airway Stents, Med. Eng'g. Physics, Mar. 2011, at 408., [http://www.medengphys.com/article/S1350-4533\(15\)00042-9/fulltext](http://www.medengphys.com/article/S1350-4533(15)00042-9/fulltext).

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(52) **U.S. Cl.**
USPC **D24/155**

(58) **Field of Classification Search**
USPC D24/155, 156
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See application file for complete search history.

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(57) **CLAIM**

The ornamental design for a cutout airway stent, as shown and described.

(56) **References Cited**

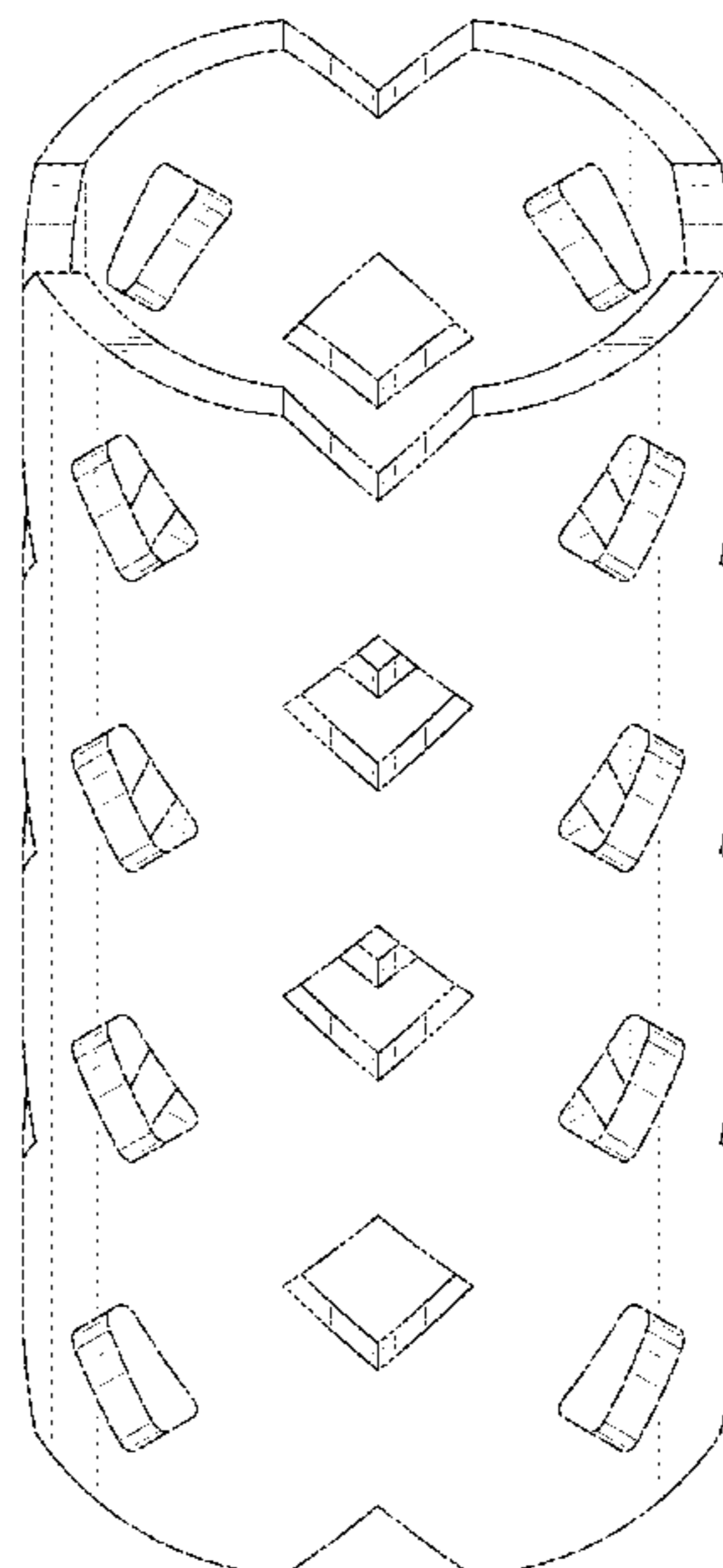
U.S. PATENT DOCUMENTS

7,001,672 B2 2/2006 Justin et al.
7,632,575 B2 12/2009 Justin et al.
7,666,522 B2 2/2010 Justin et al.
8,142,886 B2 3/2012 Noble et al.
8,430,930 B2 4/2013 Hunt
8,457,930 B2 6/2013 Schroeder
8,485,820 B1 7/2013 Ali
8,551,173 B2 10/2013 Lechmann et al.
8,775,133 B2 7/2014 Schroeder
8,828,311 B2 9/2014 Medina et al.
8,843,229 B2 9/2014 Vanasse et al.
8,888,485 B2 11/2014 Ali
9,180,029 B2 * 11/2015 Hollister A61F 2/848
9,186,257 B2 11/2015 Geisler et al.
9,271,845 B2 3/2016 Hunt et al.
9,295,562 B2 3/2016 Lechmann et al.

DESCRIPTION

FIG. 1 is a perspective view of an exemplary cutout airway stent;
FIG. 2 is a front view of an exemplary cutout airway stent;
FIG. 3 is a rear view of an exemplary cutout airway stent;
FIG. 4 is a right side view of an exemplary cutout airway stent;
FIG. 5 is a left side view of an exemplary cutout airway stent;
FIG. 6 is a top view of an exemplary cutout airway stent;
and,
FIG. 7 is a bottom view of an exemplary cutout airway stent.

1 Claim, 7 Drawing Sheets



(56)

References Cited

U.S. PATENT DOCUMENTS

9,561,115 B2 2/2017 Elahinia et al.
 9,572,669 B2 2/2017 Hunt et al.
 9,597,197 B2 3/2017 Lechmann et al.
 9,636,226 B2 5/2017 Hunt
 9,649,178 B2 5/2017 Ali
 9,662,157 B2 5/2017 Schneider et al.
 9,662,226 B2 5/2017 Wickham
 9,668,863 B2 6/2017 Sharp et al.
 9,675,465 B2 6/2017 Padovani et al.
 9,715,563 B1 7/2017 Schroeder
 9,757,235 B2 9/2017 Hunt et al.
 9,757,245 B2 9/2017 O'Neil et al.
 9,782,270 B2 10/2017 Wickham
 9,788,972 B2 10/2017 Flickinger et al.
 9,907,670 B2 3/2018 Deridder et al.
 9,918,849 B2* 3/2018 Morris A61F 2/30744
 10,183,442 B1* 1/2019 Miller B29C 64/118
 2004/0148032 A1* 7/2004 Rutter A61F 2/04
 623/23.7
 2007/0118243 A1 5/2007 Schroeder et al.
 2008/0206297 A1 8/2008 Roeder et al.
 2009/0093668 A1* 4/2009 Marten A61F 2/04
 600/7
 2010/0137990 A1 6/2010 Apatsidis et al.
 2010/0286791 A1* 11/2010 Goldsmith A61B 17/12022
 623/23.7
 2011/0144752 A1 6/2011 Defelice et al.
 2011/0224796 A1 9/2011 Weiland et al.
 2011/0230974 A1* 9/2011 Musani A61B 17/0401
 623/23.7
 2012/0064288 A1 3/2012 Nakano et al.
 2012/0215310 A1 8/2012 Sharp et al.
 2013/0123935 A1 5/2013 Hunt et al.
 2013/0197657 A1* 8/2013 Anca A61F 2/07
 623/23.7
 2013/0218282 A1 8/2013 Hunt
 2014/0107786 A1 4/2014 Geisler et al.
 2014/0236299 A1 8/2014 Roeder et al.
 2014/0277443 A1* 9/2014 Fleury A61L 31/10
 623/9
 2014/0288650 A1 9/2014 Hunt
 2014/0336680 A1 11/2014 Medina et al.
 2014/0371863 A1 12/2014 Vanasse et al.
 2015/0105858 A1 4/2015 Papay et al.
 2015/0282945 A1 10/2015 Hunt
 2015/0282946 A1 10/2015 Hunt
 2015/0335434 A1 11/2015 Patterson et al.
 2015/0343709 A1 12/2015 Gerstle et al.
 2015/0351915 A1 12/2015 Defelice et al.
 2016/0051371 A1 2/2016 Defelice et al.
 2016/0089138 A1 3/2016 Early et al.
 2016/0193055 A1 7/2016 Ries
 2016/0199193 A1 7/2016 Willis et al.
 2016/0213485 A1 7/2016 Schaufler et al.
 2016/0213486 A1 7/2016 Nunley et al.

2016/0213487 A1 7/2016 Wilson et al.
 2016/0213488 A1 7/2016 Moore et al.
 2016/0220288 A1 8/2016 Dubois et al.
 2016/0256279 A1 9/2016 Sanders et al.
 2016/0270931 A1 9/2016 Trieu
 2016/0287388 A1 10/2016 Hunt et al.
 2016/0374829 A1 12/2016 Vogt et al.
 2017/0014169 A1 1/2017 Dean et al.
 2017/0020685 A1 1/2017 Geisler et al.
 2017/0042697 A1 2/2017 McShane, III et al.
 2017/0056178 A1 3/2017 Sharp et al.
 2017/0056179 A1 3/2017 Lorio
 2017/0105844 A1 4/2017 Kuyler et al.
 2017/0156880 A1 6/2017 Halverson et al.
 2017/0165085 A1 6/2017 Lechmann et al.
 2017/0165790 A1 6/2017 McCarthy et al.
 2017/0172758 A1 6/2017 Field et al.
 2017/0182222 A1 6/2017 Paddock et al.
 2017/0209274 A1 7/2017 Beerens et al.
 2017/0216035 A1 8/2017 Hunt
 2017/0216036 A1 8/2017 Cordaro
 2017/0239054 A1 8/2017 Engstrand et al.
 2017/0239064 A1 8/2017 Cordaro
 2017/0245998 A1 8/2017 Padovani et al.
 2017/0252165 A1 9/2017 Sharp et al.
 2017/0258606 A1 9/2017 Afzal
 2017/0282455 A1 10/2017 Defelice et al.
 2017/0296244 A1 10/2017 Schneider et al.
 2017/0319344 A1 11/2017 Hunt
 2017/0323037 A1 11/2017 Schroeder
 2017/0333205 A1 11/2017 Joly et al.
 2017/0354510 A1 12/2017 O'Neil et al.
 2017/0354513 A1 12/2017 Maglaras et al.
 2017/0355815 A1 12/2017 Becker et al.
 2017/0360488 A1 12/2017 Kowalczyk et al.
 2017/0360563 A1 12/2017 Hunt et al.
 2017/0367843 A1 12/2017 Eisen et al.
 2017/0367844 A1 12/2017 Eisen et al.
 2017/0367845 A1 12/2017 Eisen et al.
 2018/0064540 A1 3/2018 Hunt
 2018/0085230 A1 3/2018 Hunt
 2018/0104063 A1 4/2018 Asaad
 2018/0110593 A1 4/2018 Khalil
 2018/0110626 A1 4/2018 McShane, III et al.
 2018/0110627 A1 4/2018 Sack
 2018/0147319 A1 5/2018 Colucci-Mizenko et al.
 2018/0289515 A1* 10/2018 Nemes A61F 2/88

OTHER PUBLICATIONS

Andrew T. Miller et al., Fatigue of Injection Molded and 3D Printed Polycarbonate Urethane in Solution, 108 Polymer 121 (2017).
 Andrew T. Miller et al., Deformation and Fatigue of Tough 3D Printed Elastomer Scaffolds Processed by Fused Deposition Modeling and Continuous Liquid Interface Production, 75 J. Mechanical Behavior Biomedical Materials 1 (2017).

* cited by examiner

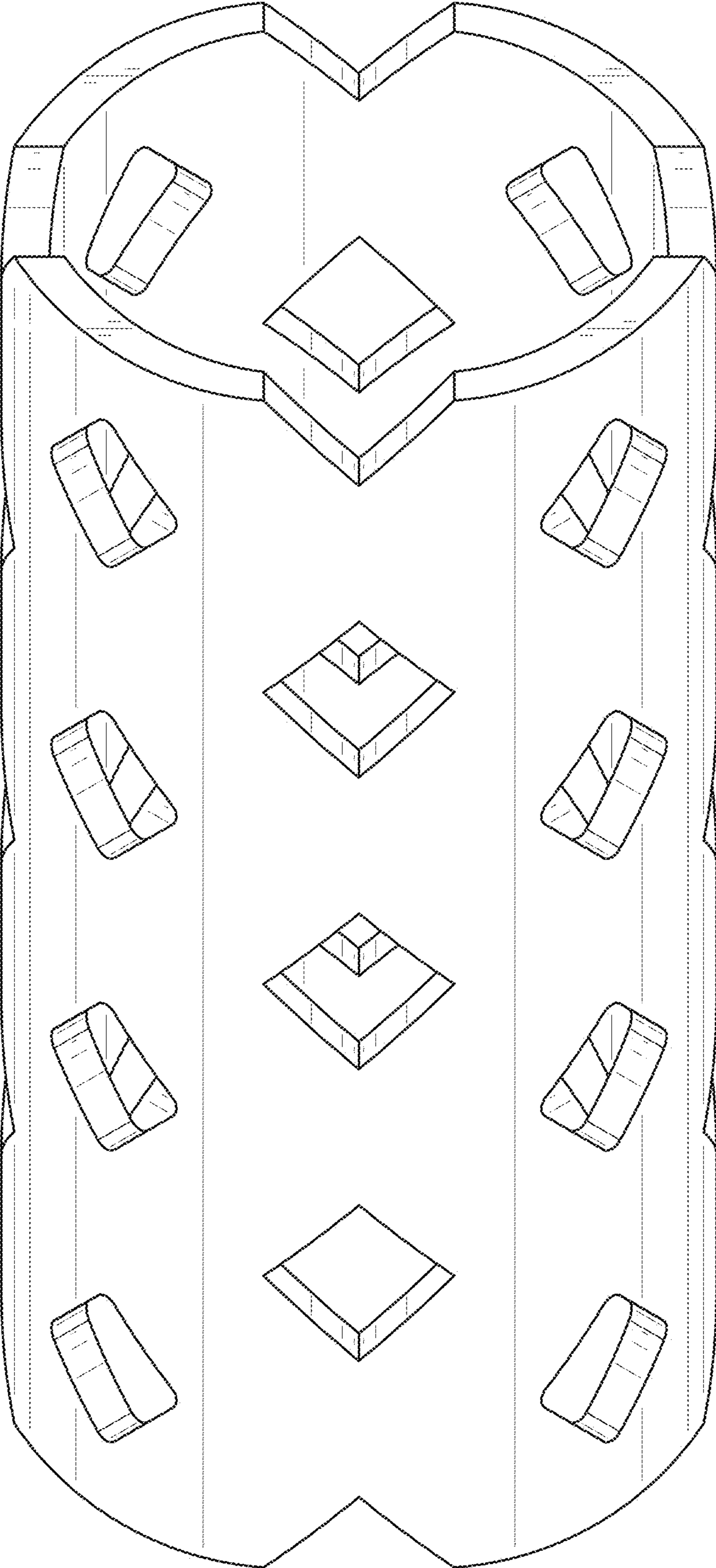


FIG. 1

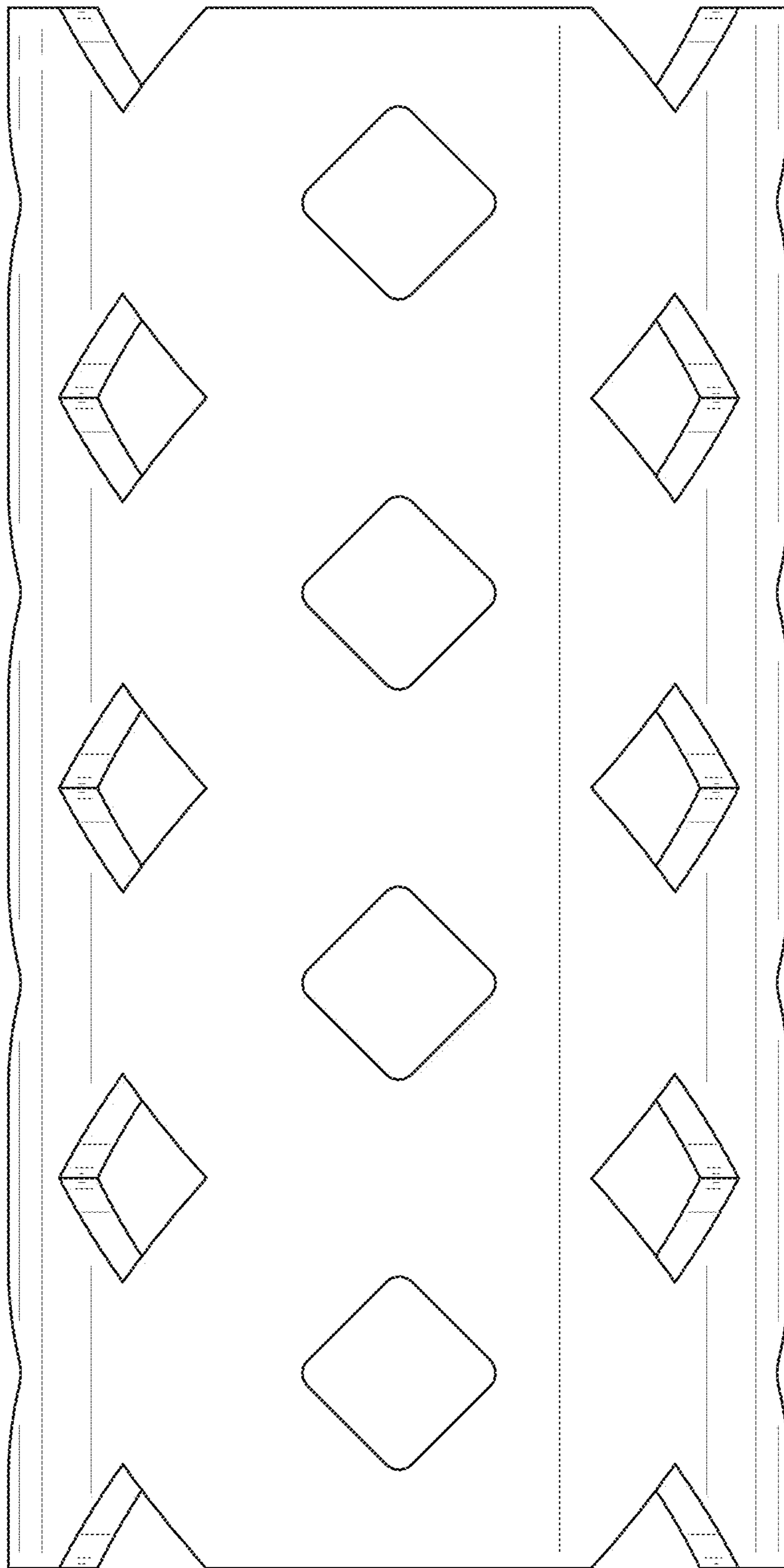


FIG. 2

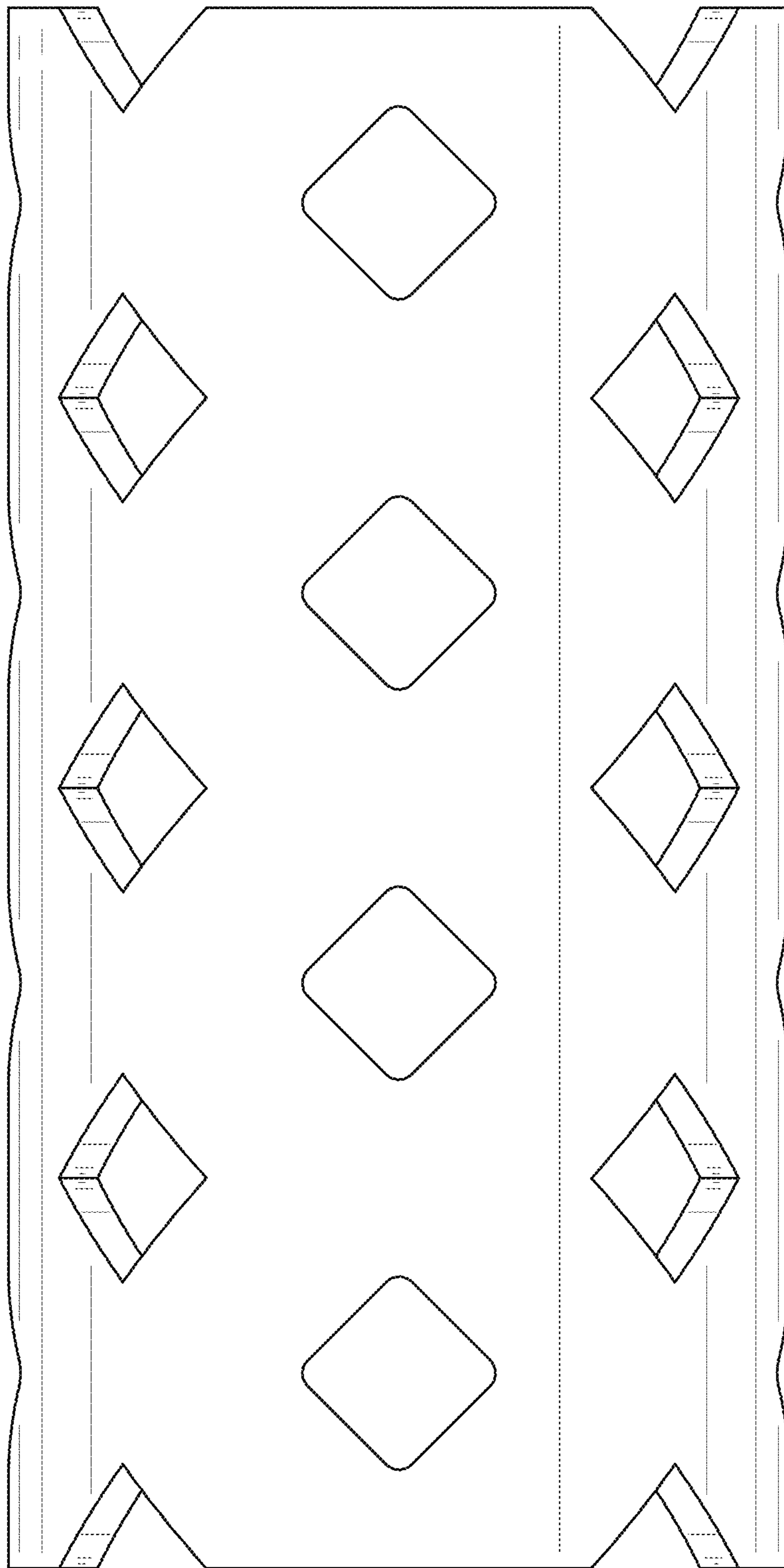


FIG. 3

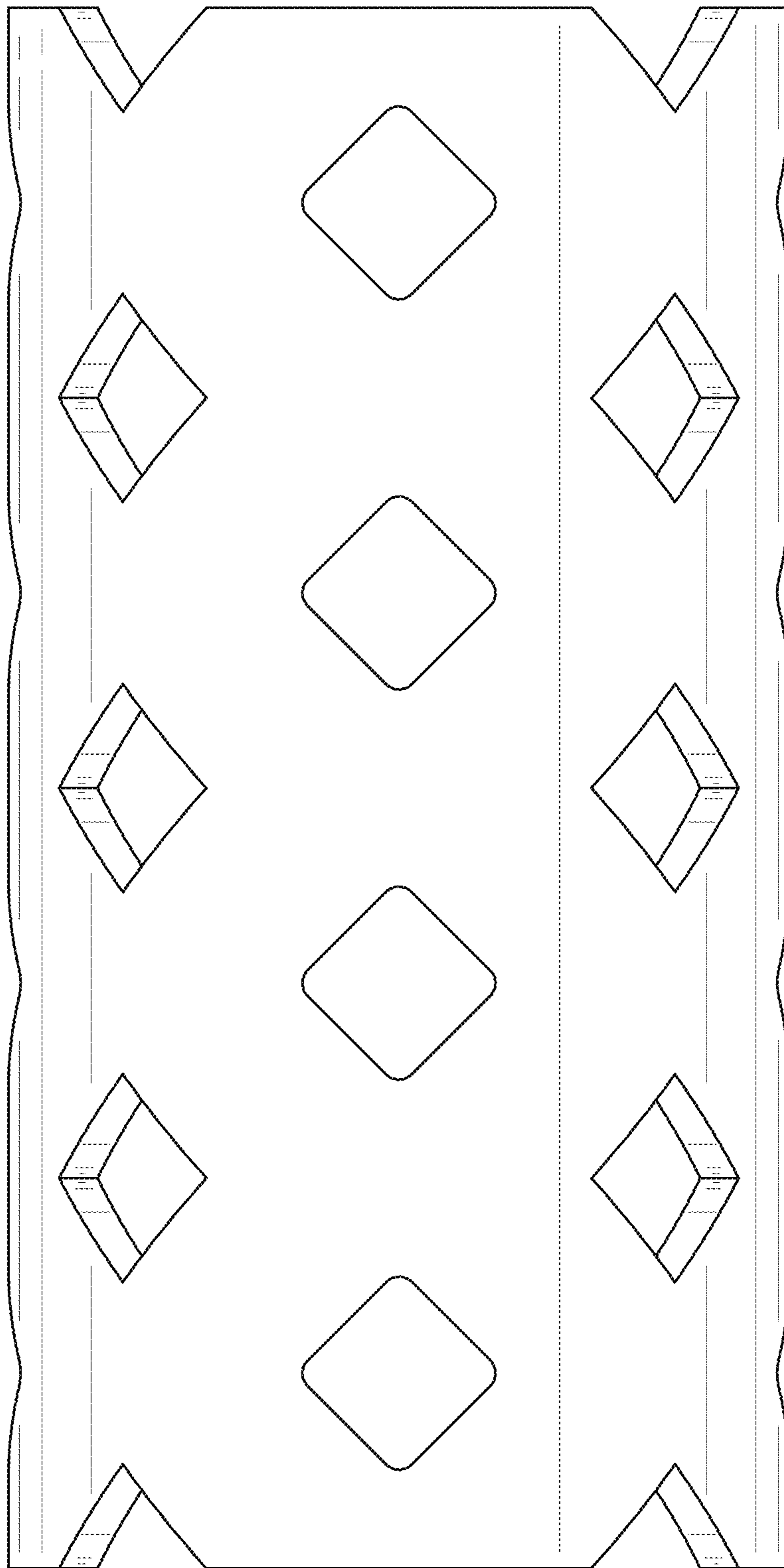


FIG. 4

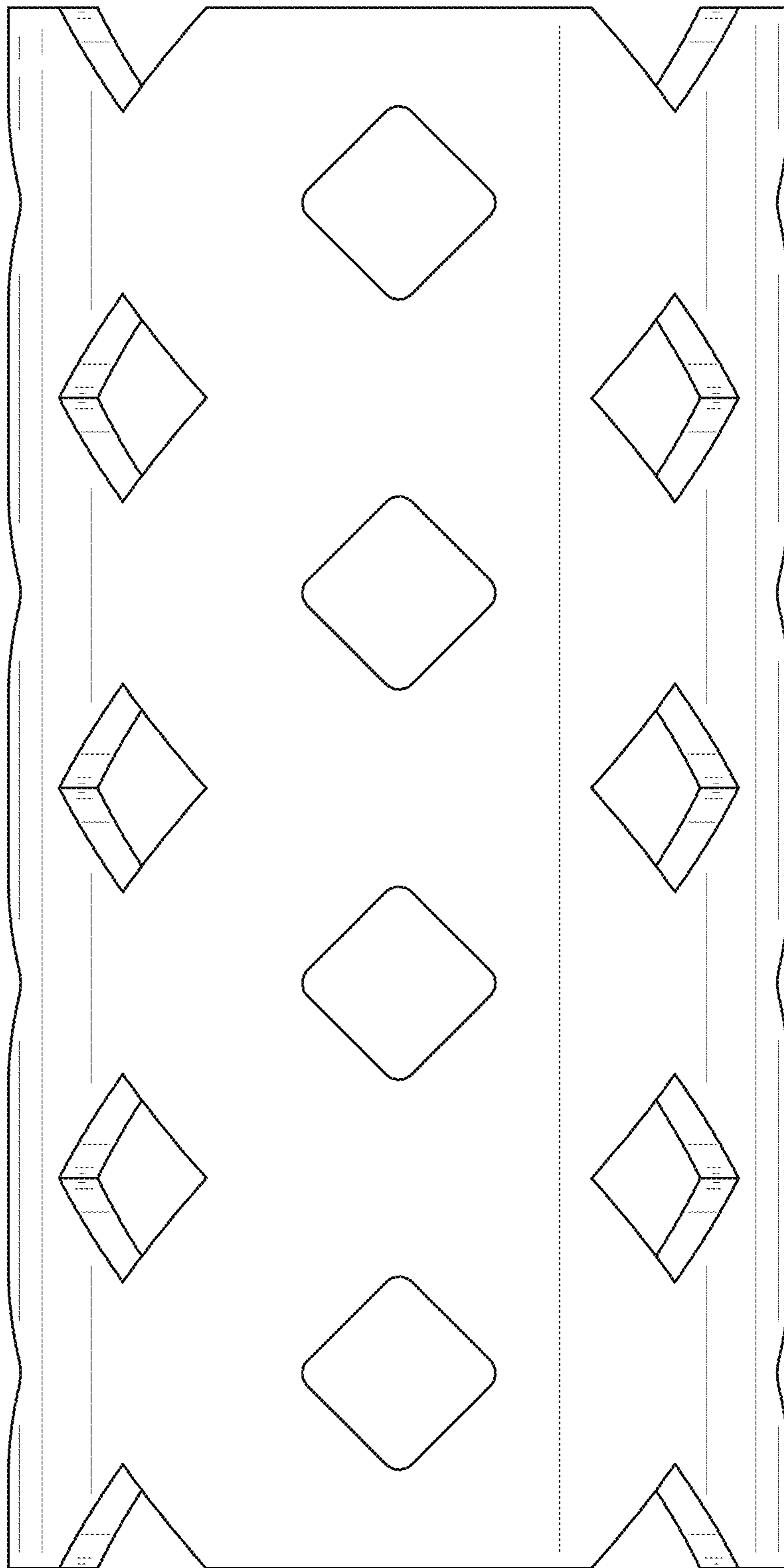


FIG. 5

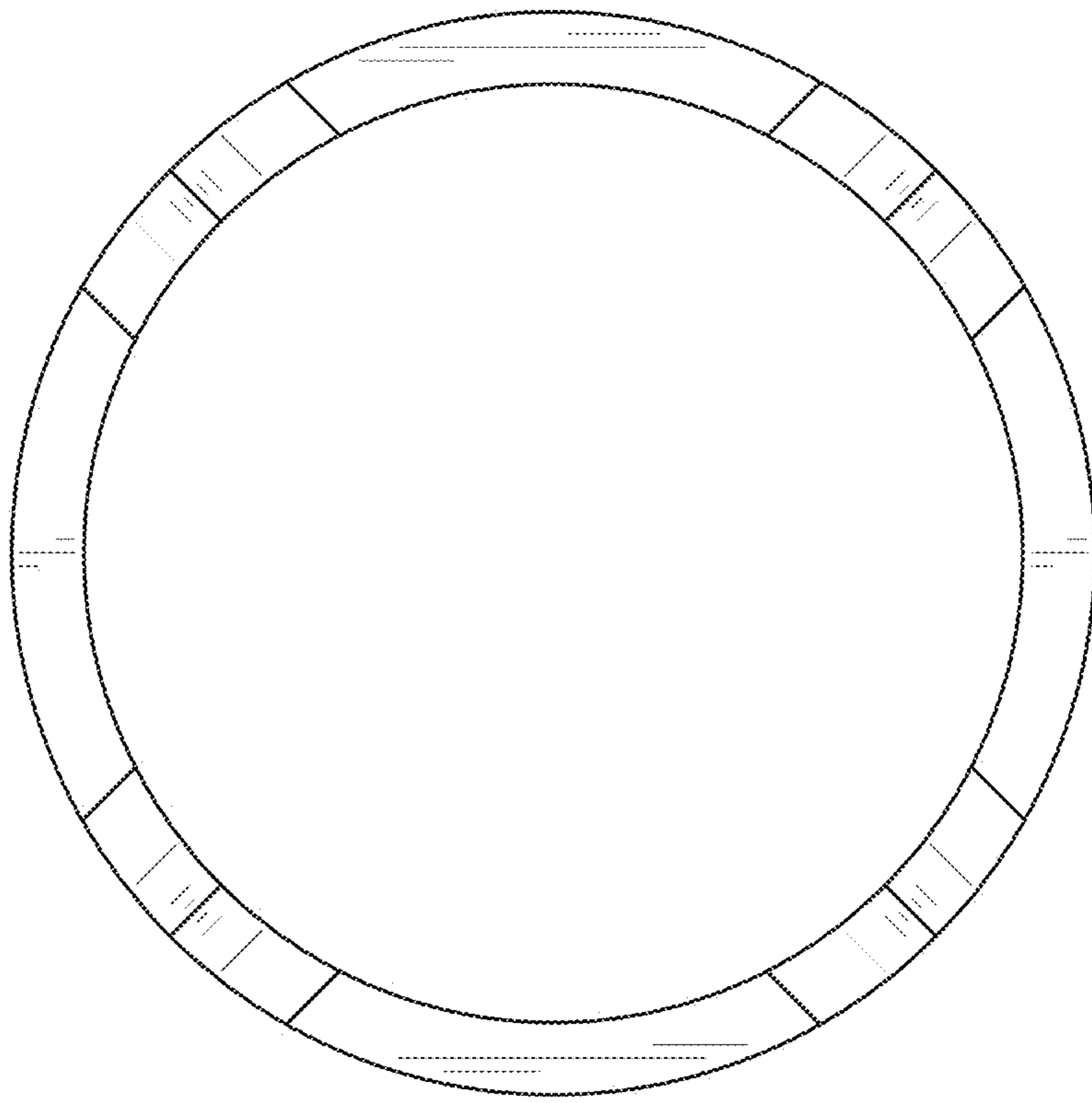


FIG. 6

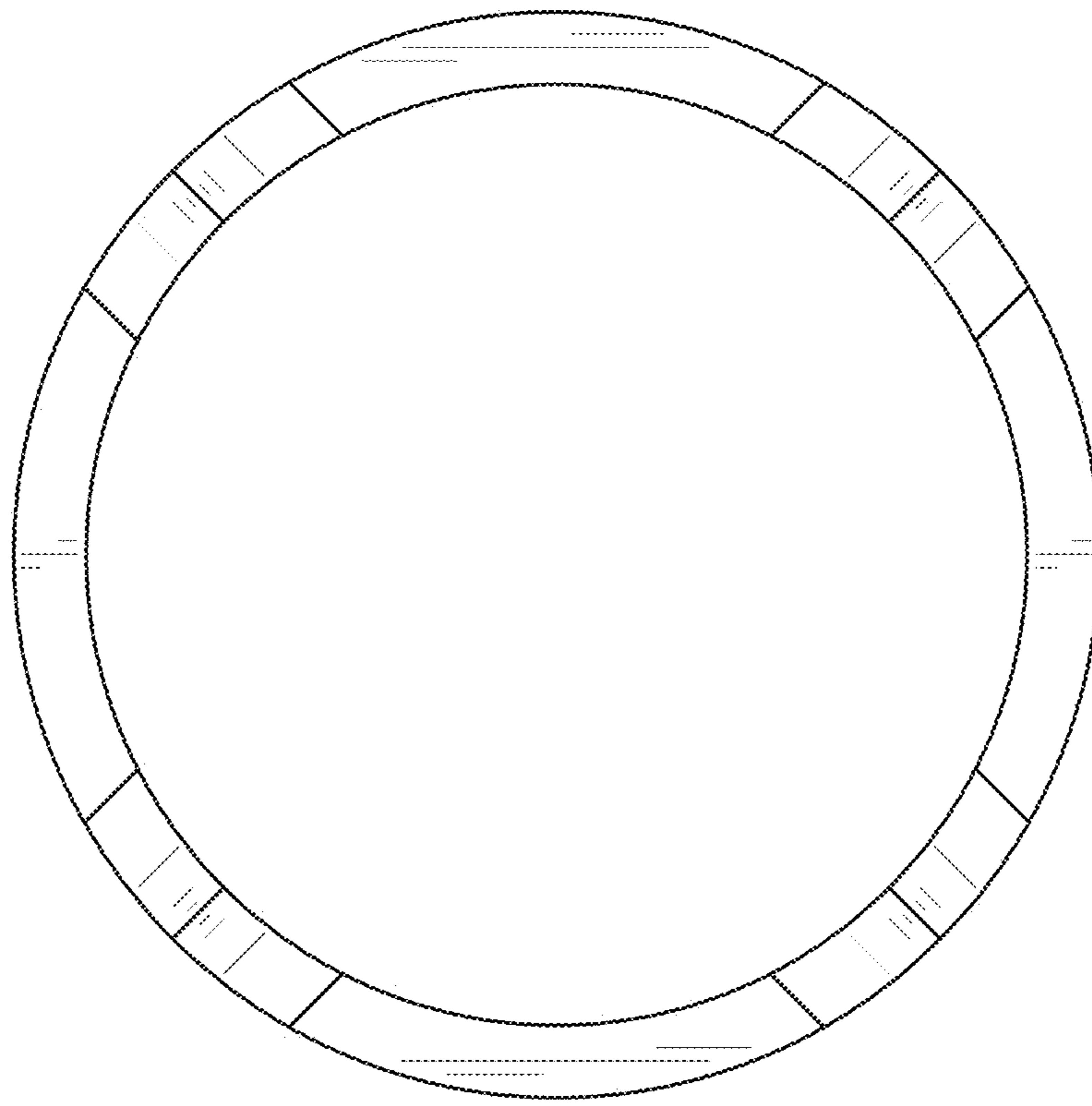


FIG. 7