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(12)

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Riker et al.

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(45)

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(54) PROCESS CHAMBER COLLIMATOR

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(**) Term: 15 Years

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- (51) LOC (15) Cl. 13-03
- (52) U.S. Cl. D13/182
- (58) Field of Classification Search
- USPC D13/182; D15/138, 144, 144.1, 199; D7/667; 204/298.11

(Continued)

(56) References Cited

U.S. PATENT DOCUMENTS

- 5,401,675 A * 3/1995 Lee C23C 14/044 438/668
- 5,624,536 A * 4/1997 Wada H01J 37/3408 204/192.12

(Continued)

FOREIGN PATENT DOCUMENTS

- KR 301316003 * 8/2025
- KR 301316004 * 8/2025
- TW D227585 S 9/2023

OTHER PUBLICATIONS

Applied Materials AMAT 0020-23811 Collimator (For Parts or Not Working),<https://www.novusferro.com/shop/semicon/components/applied-materials-amat-0020-23811-collimator/>,2025. (Year: 2025).*

(Continued)

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(57) CLAIM

The ornamental design for a process chamber collimator, as shown and described.

DESCRIPTION

FIG. 1 is a top, front, left side isometric view of a process chamber collimator, showing our new design.

FIG. 2 is a top, rear, right side isometric view thereof.

FIG. 3 is a bottom, front, left side isometric view thereof.

FIG. 4 is a bottom, rear, right side isometric view thereof.

FIG. 5 is a front elevation view thereof.

FIG. 6 is a rear elevation view thereof.

FIG. 7 is a left side elevation view thereof.

FIG. 8 is a right side elevation view thereof.

FIG. 9 is a top plan view thereof.

FIG. 10 is a bottom plan view thereof.

FIG. 11 is a cross-sectional view taken along line 11-11 in FIG. 9.

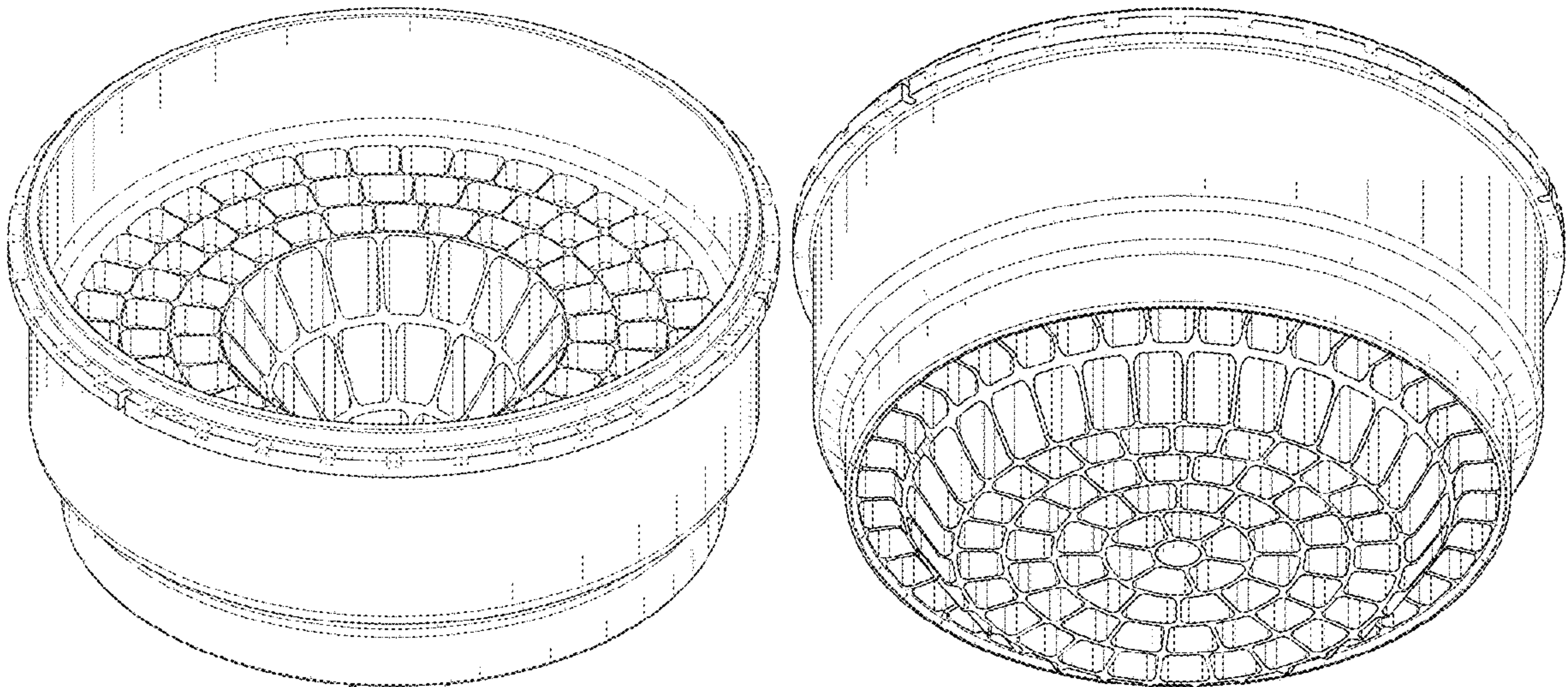
FIG. 12 is a cross-sectional view taken along line 12-12 in FIG. 9.

FIG. 13 is an enlarged portion view of an encircled portion labeled, “FIG. 13” in FIG. 12; and,

FIG. 14 is an enlarged portion view of an encircled portion labeled, “FIG. 14” in FIG. 12.

The dot-dot-dashed broken lines shown in FIGS. 12-14 illustrate the boundary lines of the enlarged portion views of FIGS. 13 and 14 and form no part of the claimed design. The even dashed broken lines shown in the drawings represent portions of the process chamber collimator that form no part of the claimed design.

1 Claim, 13 Drawing Sheets



(58) **Field of Classification Search**
CPC H01J 37/3441; H01J 37/3447; H01J 37/34;
C23C 14/34; C23C 14/04; C23C 14/042;
C23C 14/044; C23C 14/046; C23C 14/35;
C23C 14/3471; C23C 14/22; A61N
5/1045; G01N 2223/055; G01N
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7/1376; H01H 2219/058
See application file for complete search history.

(56) **References Cited**
U.S. PATENT DOCUMENTS

5,705,042 A * 1/1998 Leiphart H01J 37/3447
204/192.12
5,958,193 A * 9/1999 Brugge H01J 37/3408
204/192.12
6,362,097 B1 * 3/2002 Demaray H01L 21/28008
257/E21.414
D598,717 S * 8/2009 Jalet D7/667
D613,829 S * 4/2010 Griffin D23/260
D660,645 S * 5/2012 Zandona D7/400
D721,417 S * 1/2015 Sawchuk D23/249
D746,647 S * 1/2016 Roaks D7/667
D753,449 S * 4/2016 Liebowitz D7/667
D760,180 S * 6/2016 Dempster D13/182
D818,015 S * 5/2018 Karol D15/138
D821,140 S * 6/2018 Mirchandani D7/354
D824,971 S * 8/2018 Karol D15/148
D858,468 S 9/2019 Riker et al.
D859,333 S 9/2019 Riker et al.
D860,279 S * 9/2019 Karol D15/148
D877,220 S * 3/2020 Karol D15/148
D931,919 S * 9/2021 Karol D15/148
D997,111 S 8/2023 Riker et al.
D998,575 S 9/2023 Riker et al.
D1,009,816 S 1/2024 Riker et al.

D1,024,149 S * 4/2024 Riker D13/182
D1,025,935 S * 5/2024 Riker D13/182
D1,025,936 S * 5/2024 Riker D13/182
D1,026,054 S * 5/2024 Riker D13/182
D1,026,839 S * 5/2024 Riker D13/182
D1,038,901 S * 8/2024 Zhang D13/182
2003/0015421 A1 * 1/2003 Cha H01J 37/3441
204/298.11
2007/0102286 A1 * 5/2007 Scheible H01J 37/3441
204/298.01
2008/0121620 A1 * 5/2008 Guo C23C 14/3464
204/192.12
2015/0114823 A1 * 4/2015 Lee C23C 14/042
204/192.12
2016/0145735 A1 * 5/2016 Riker H01J 37/3447
204/298.11
2017/0117121 A1 * 4/2017 Riker H01J 37/34
2017/0301525 A1 * 10/2017 Kato C23C 14/34
2018/0233335 A1 * 8/2018 Kato H01L 21/2855
2018/0237903 A1 * 8/2018 Takeuchi C23C 14/34
2018/0265964 A1 * 9/2018 Kato C23C 14/34
2019/0027346 A1 * 1/2019 Takeuchi C23C 14/564

OTHER PUBLICATIONS

Chinese Office Action dated Apr. 23, 2025 for Application No. 202430600676.9.
Chinese Office Action dated Apr. 23, 2025 for Application No. 202430600737.1.
TW Office Action Search Report dated Mar. 27, 2025 for Application No. 113304672.
JP Office Action dtd Jul. 18, 2025 for JP 2024-018761.
JP Office Action dtd Jul. 18, 2025 for JP 2024-018762.
JP Application No. JP2024-018761 filed Sep. 11, 2024.
TW Office Action dated Mar. 24, 2025 for Application No. 113304728.
Office Action DTD Aug. 15, 2025 For CN 202430600676.9.

* cited by examiner

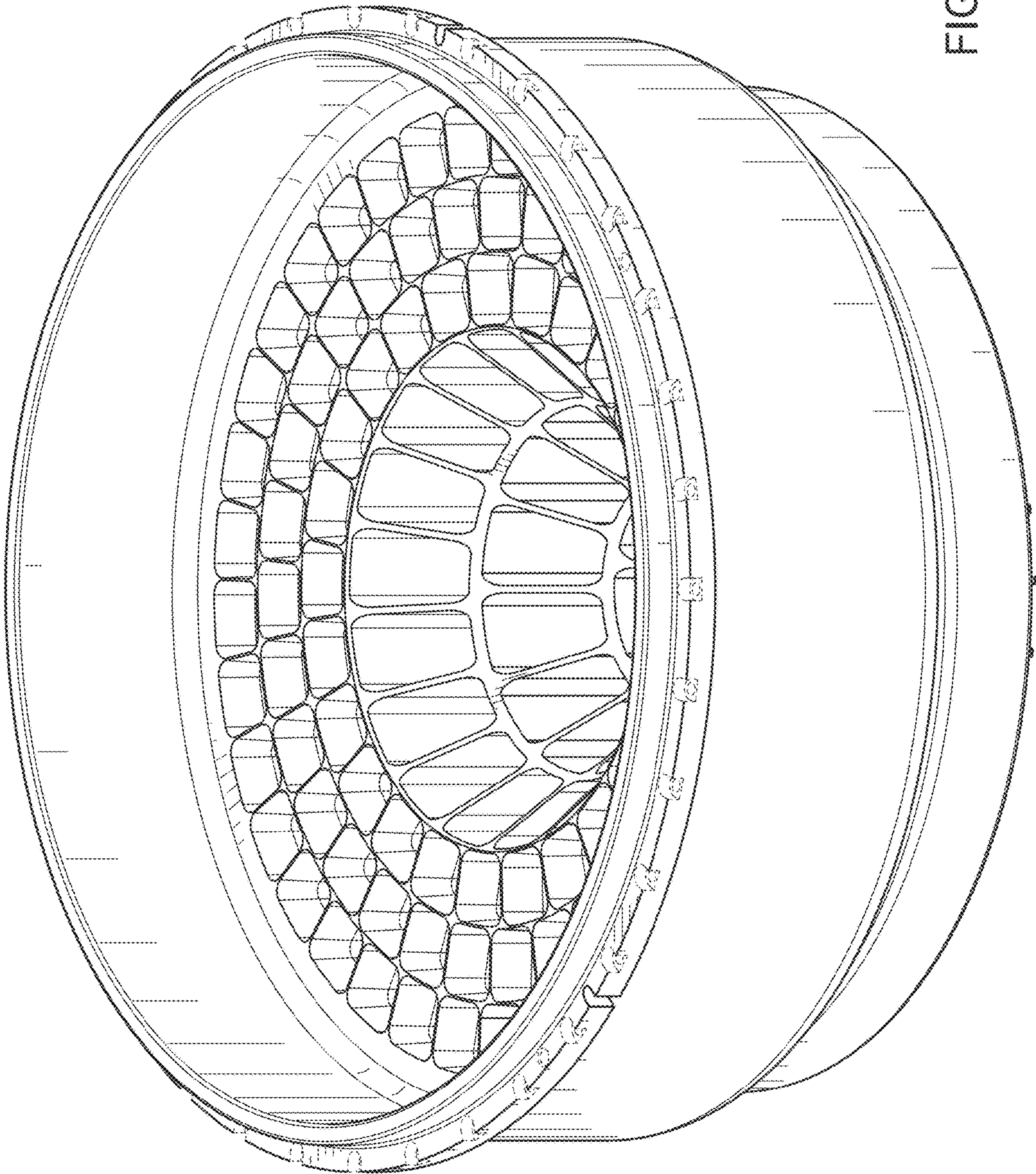


FIG. 1

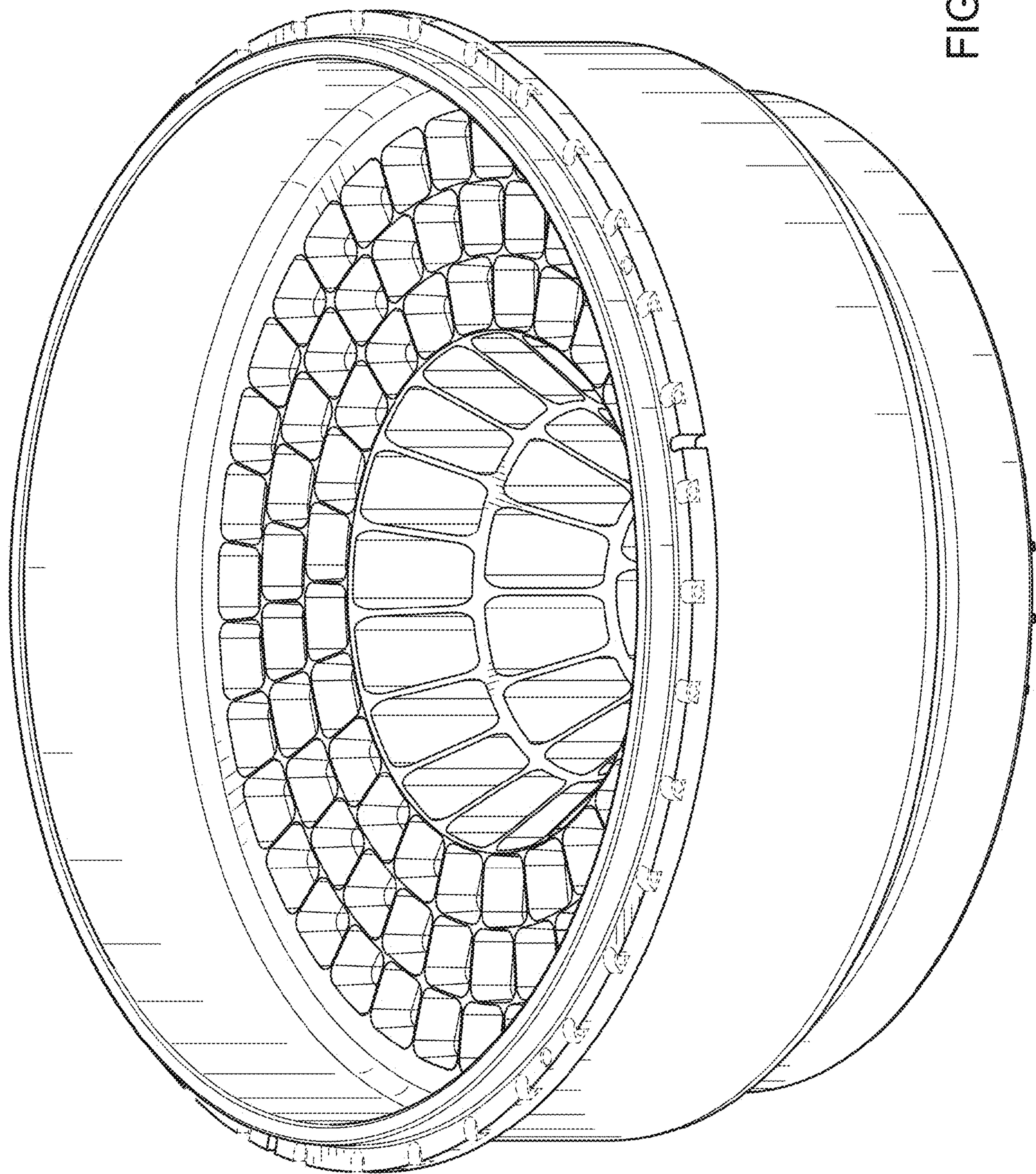


FIG. 2

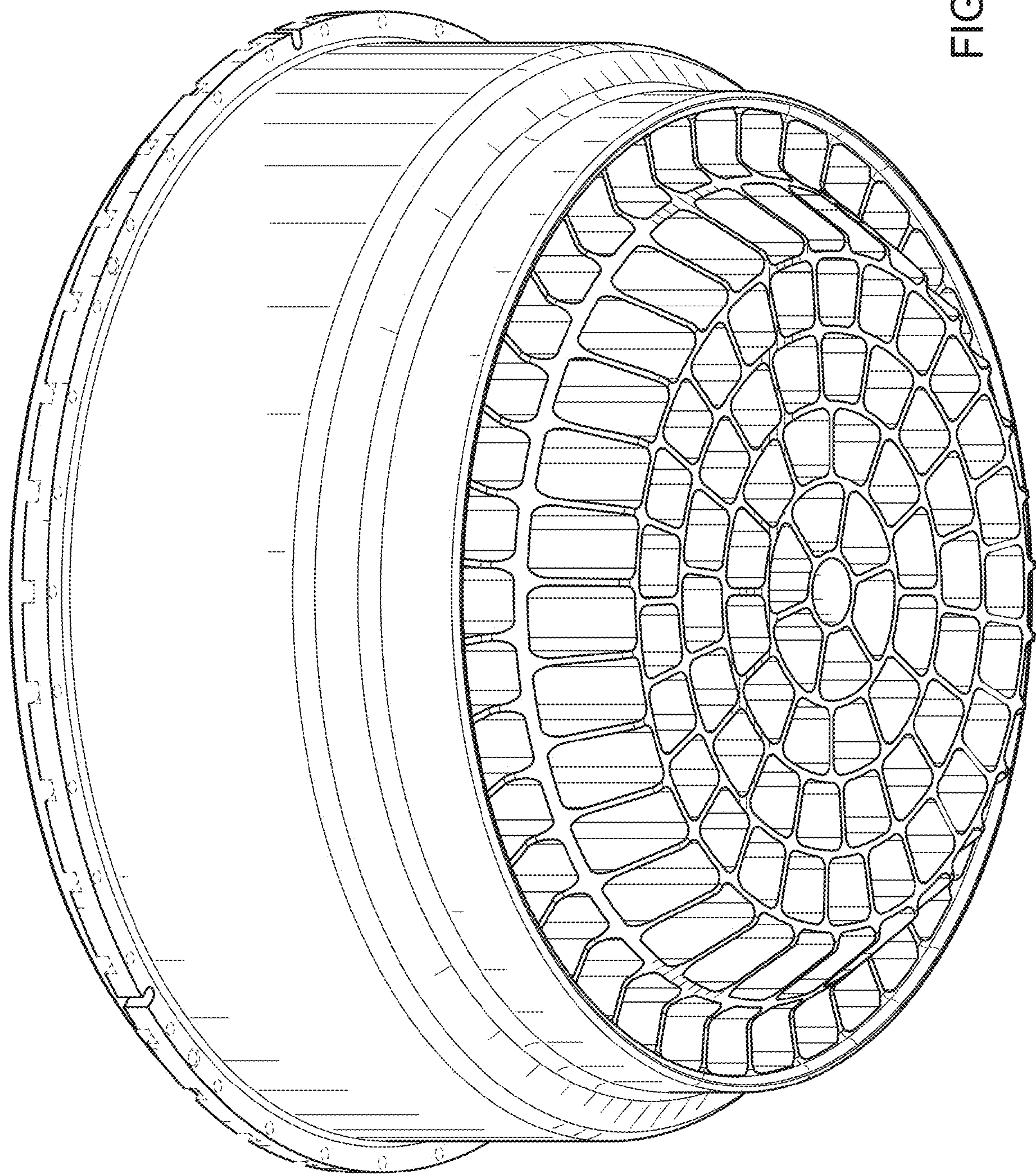


FIG. 3

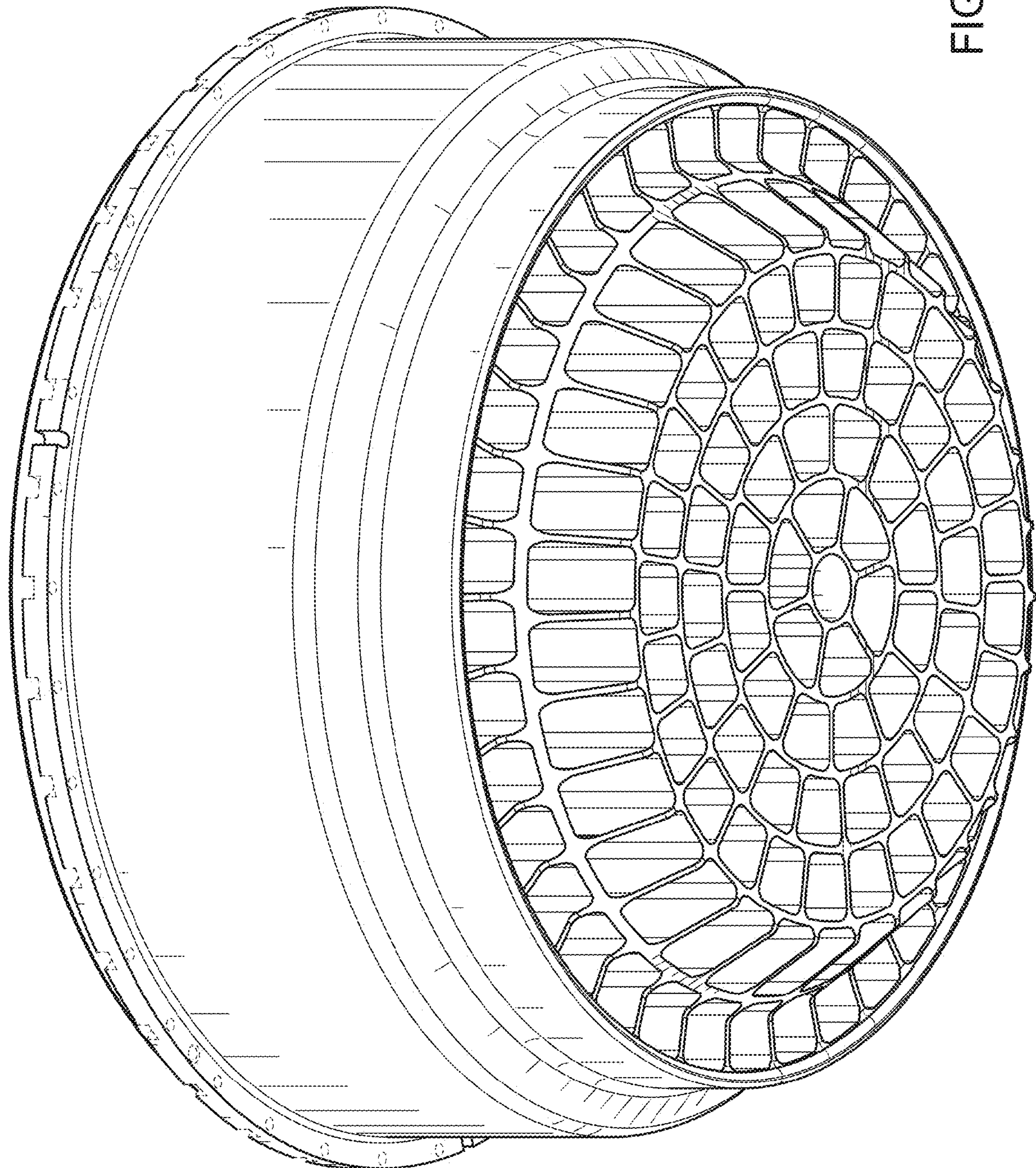


FIG. 4

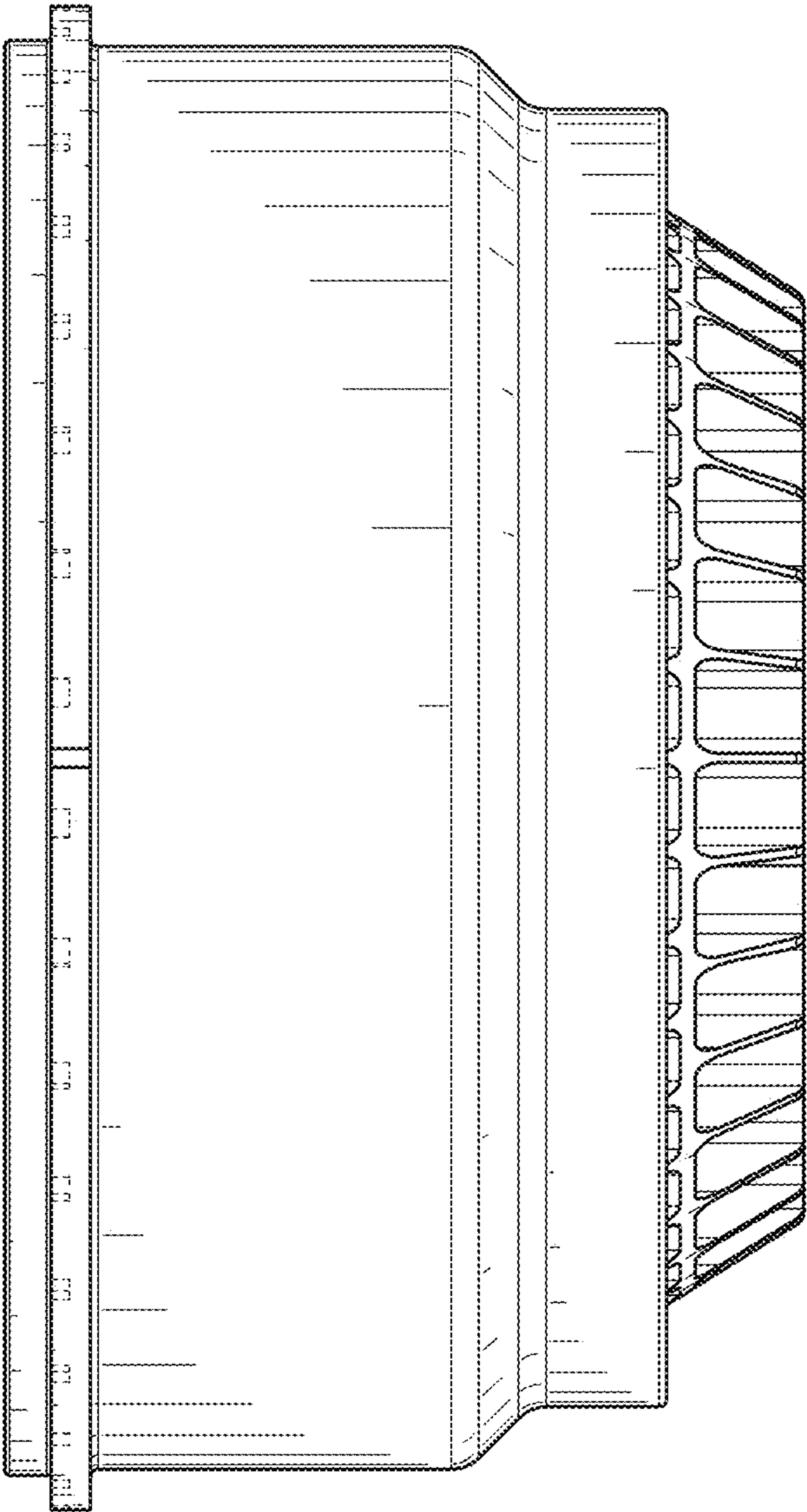


FIG. 5

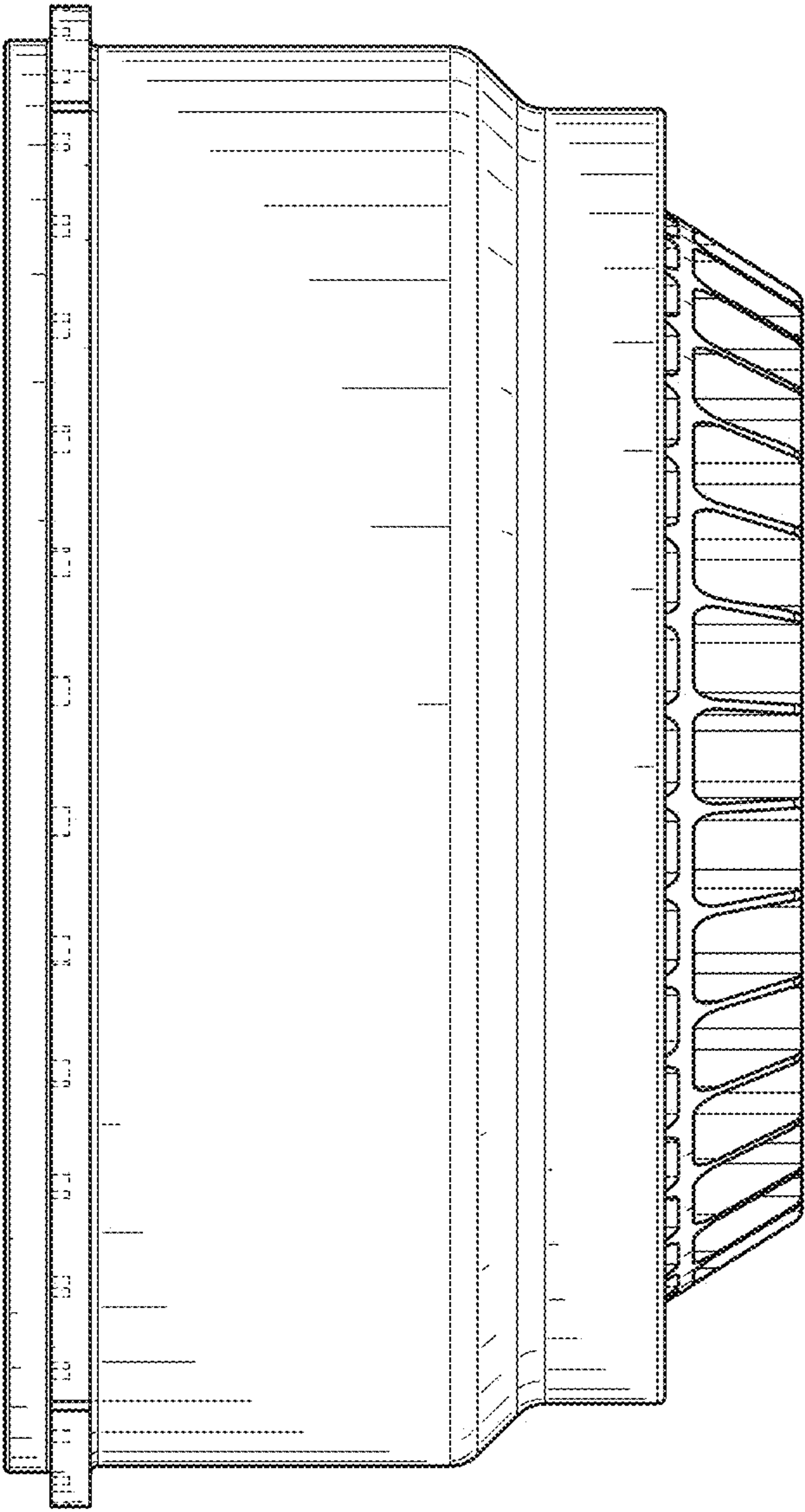


FIG. 6

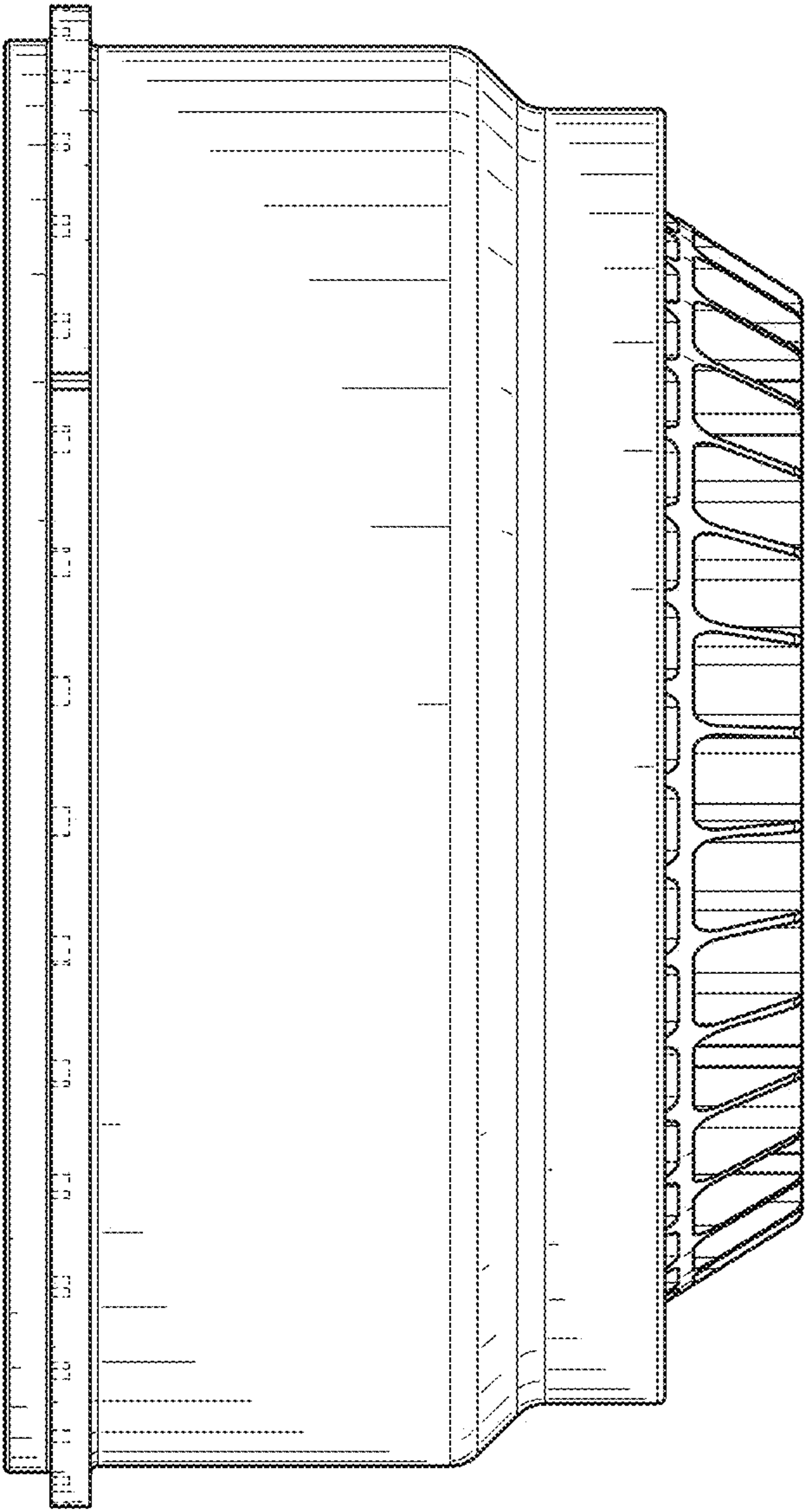


FIG. 7

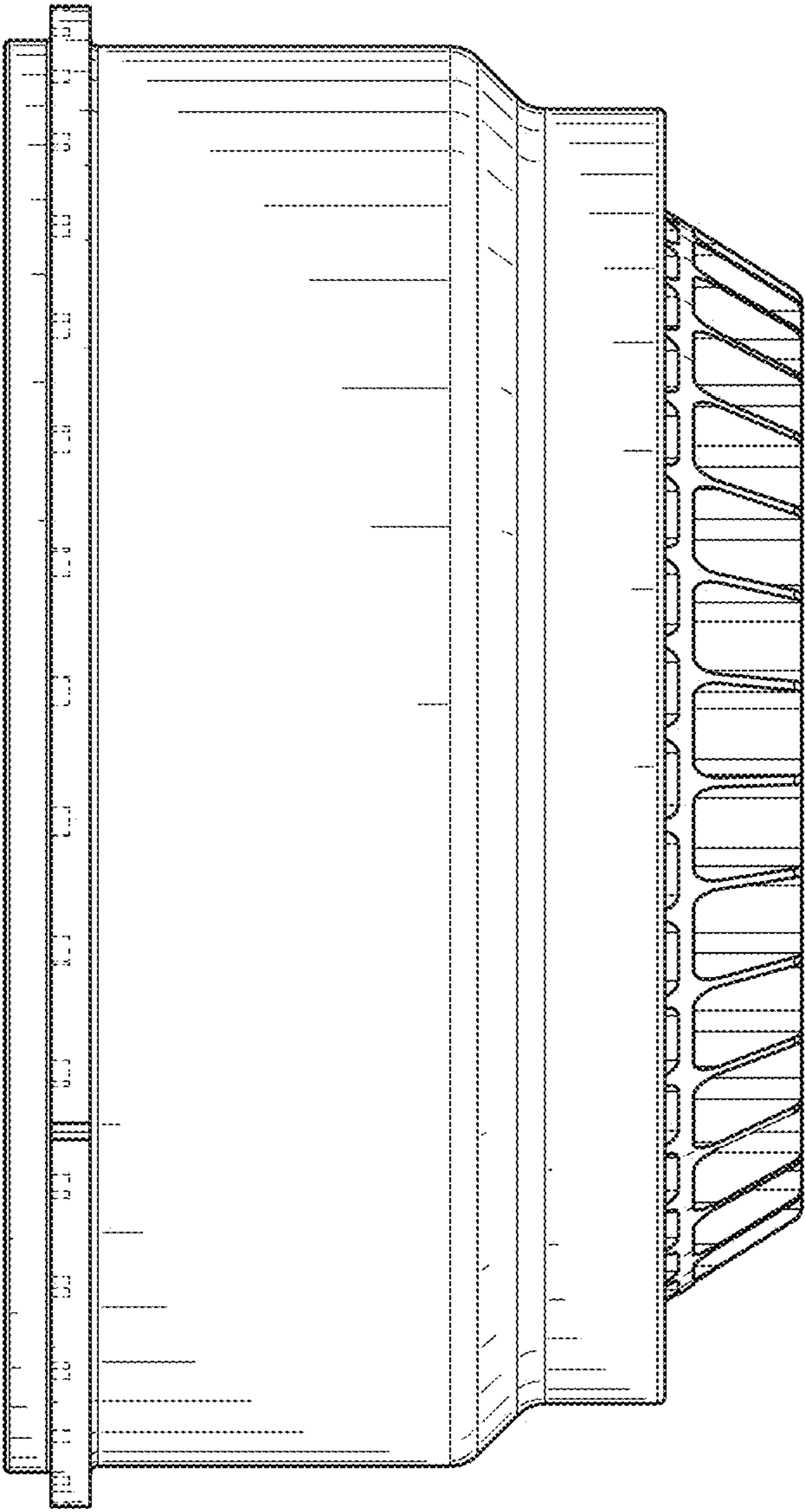


FIG. 8

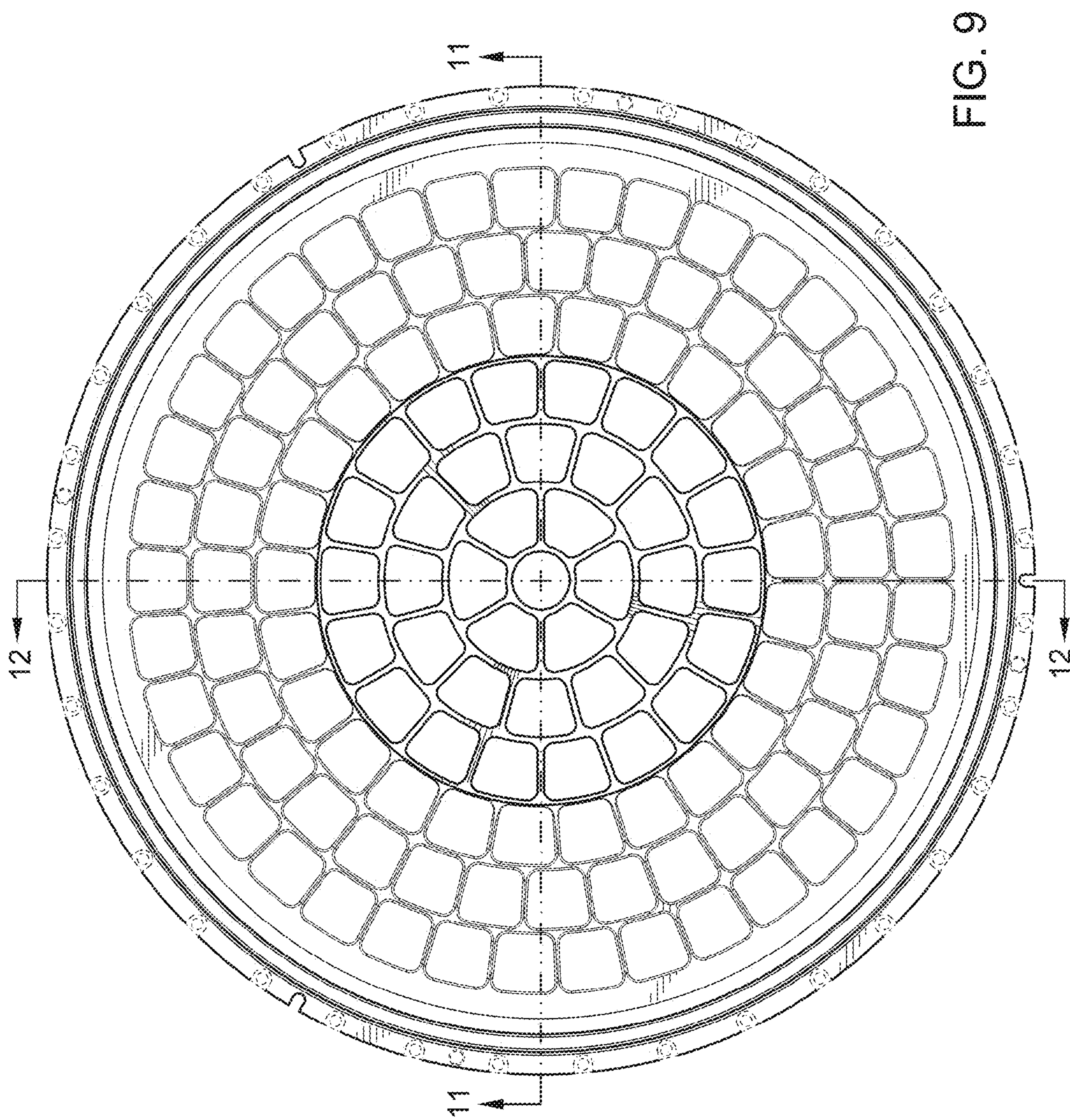


FIG. 9

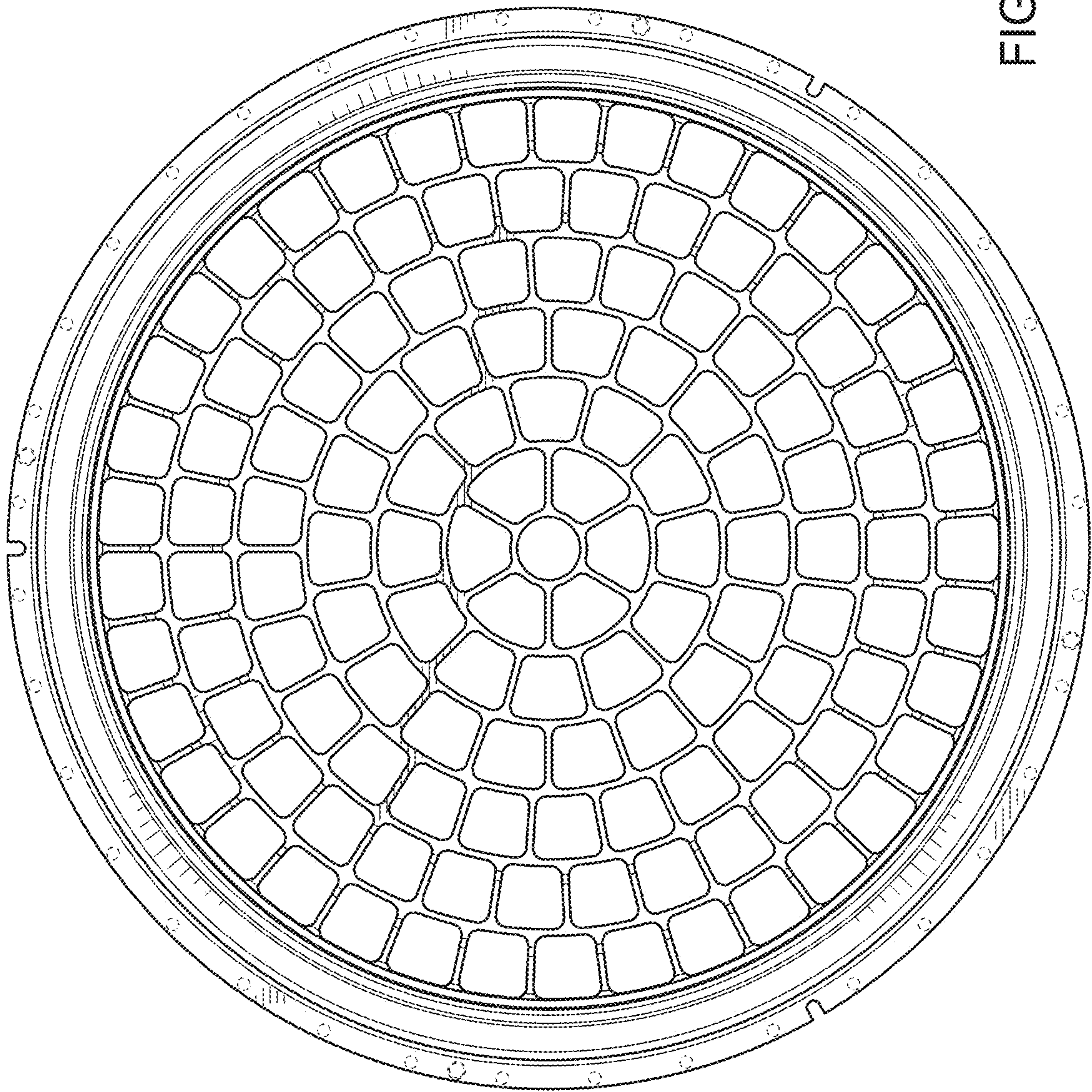


FIG. 10

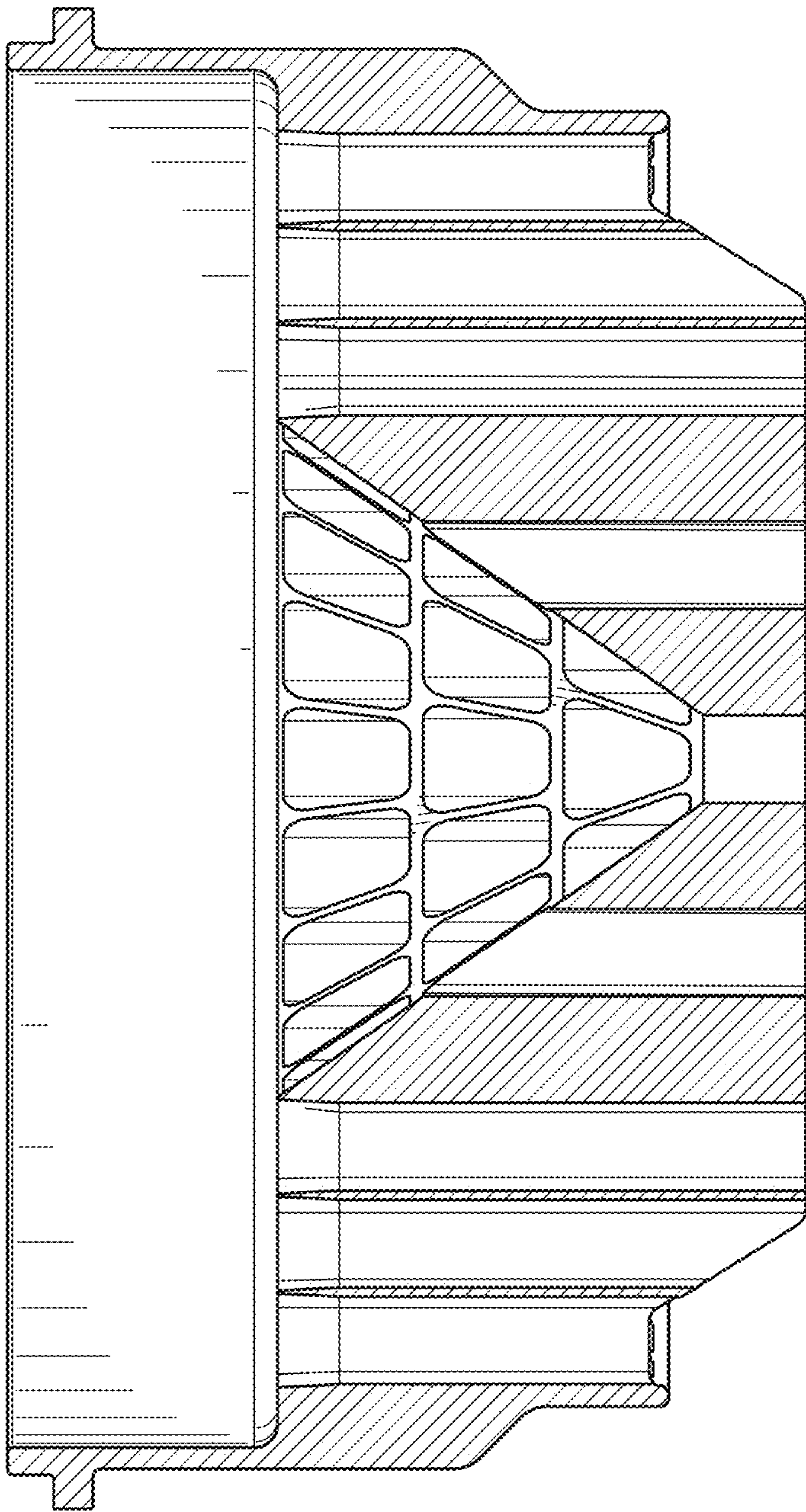


FIG. 11

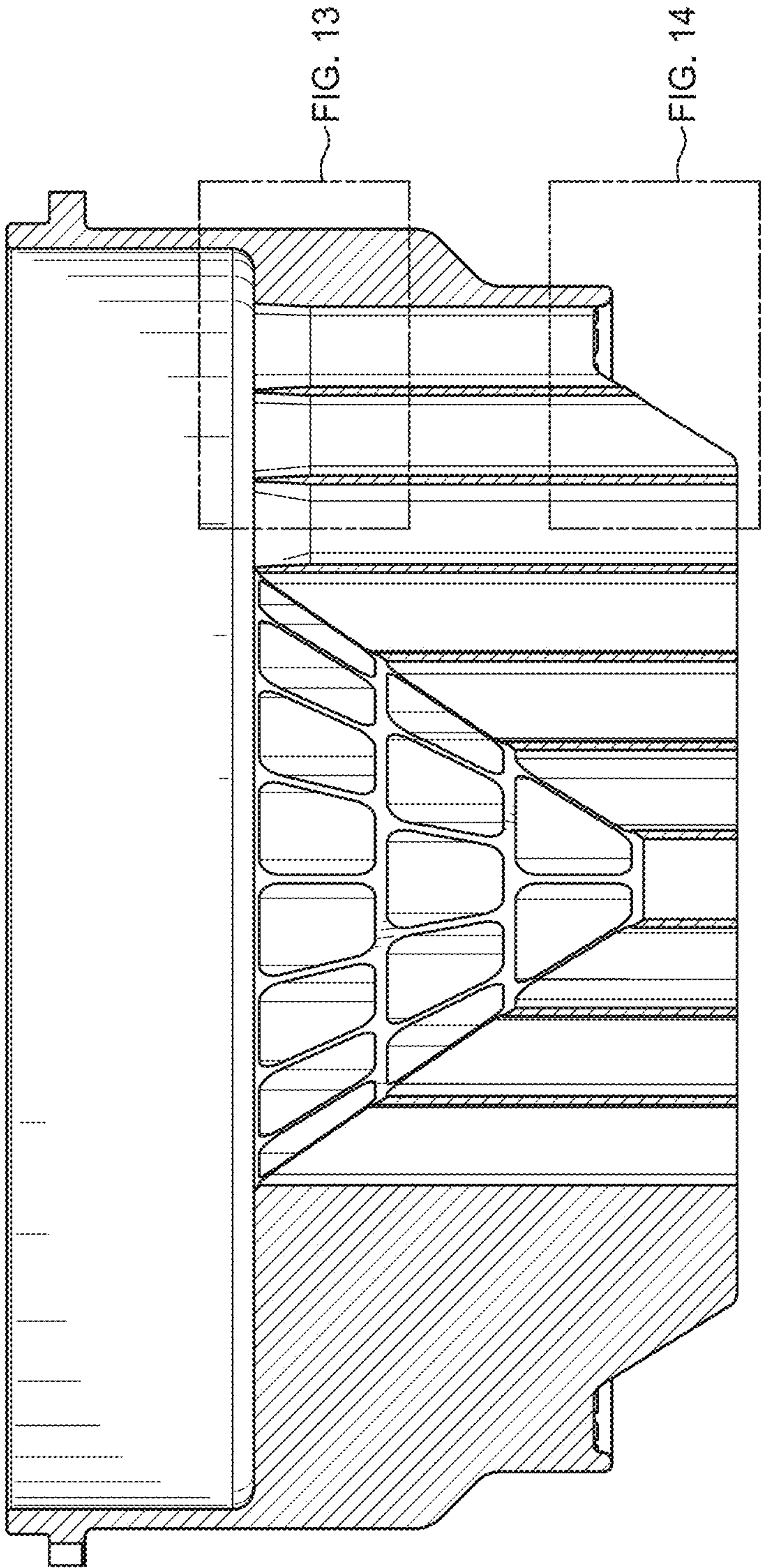


FIG. 12

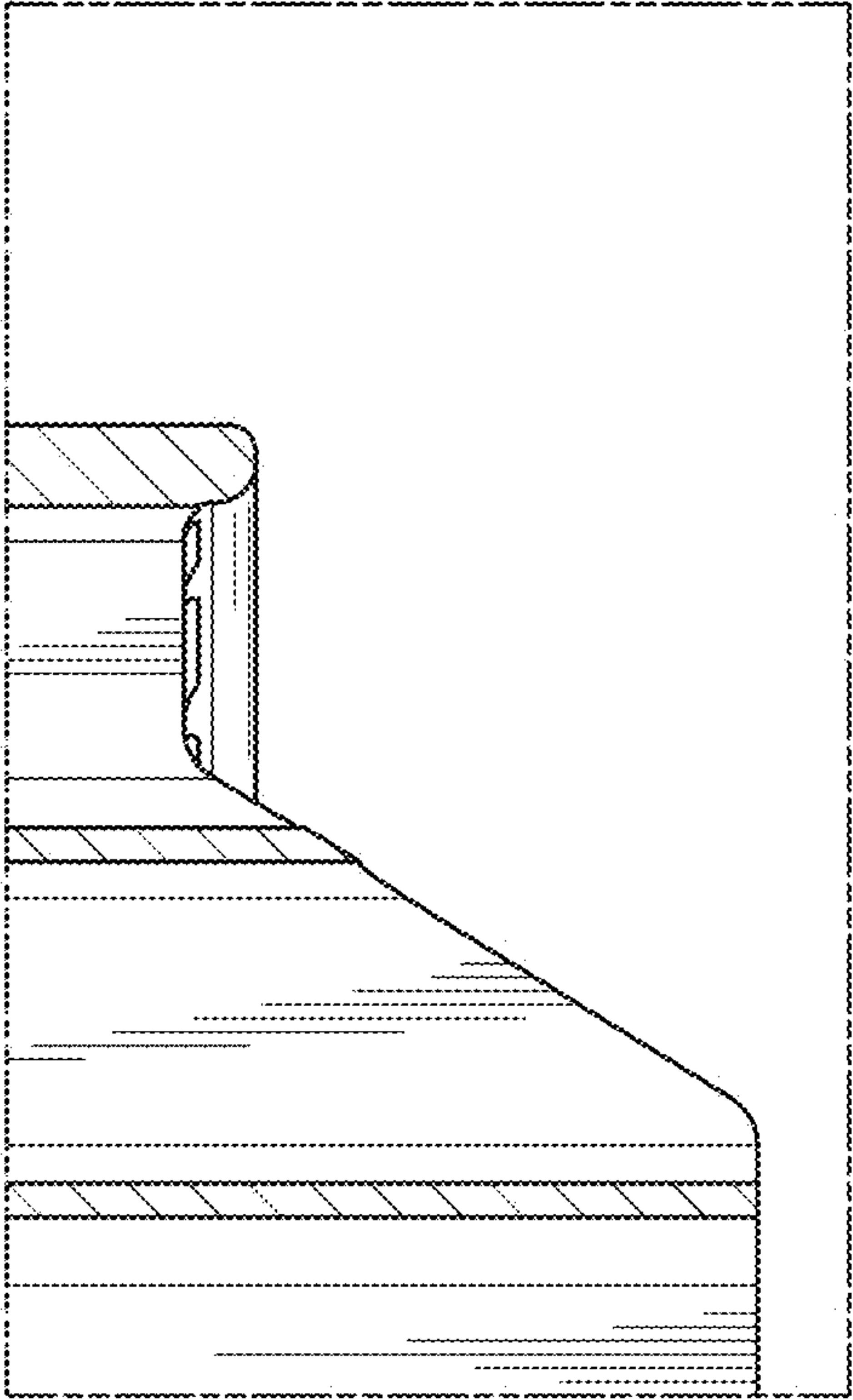


FIG. 14

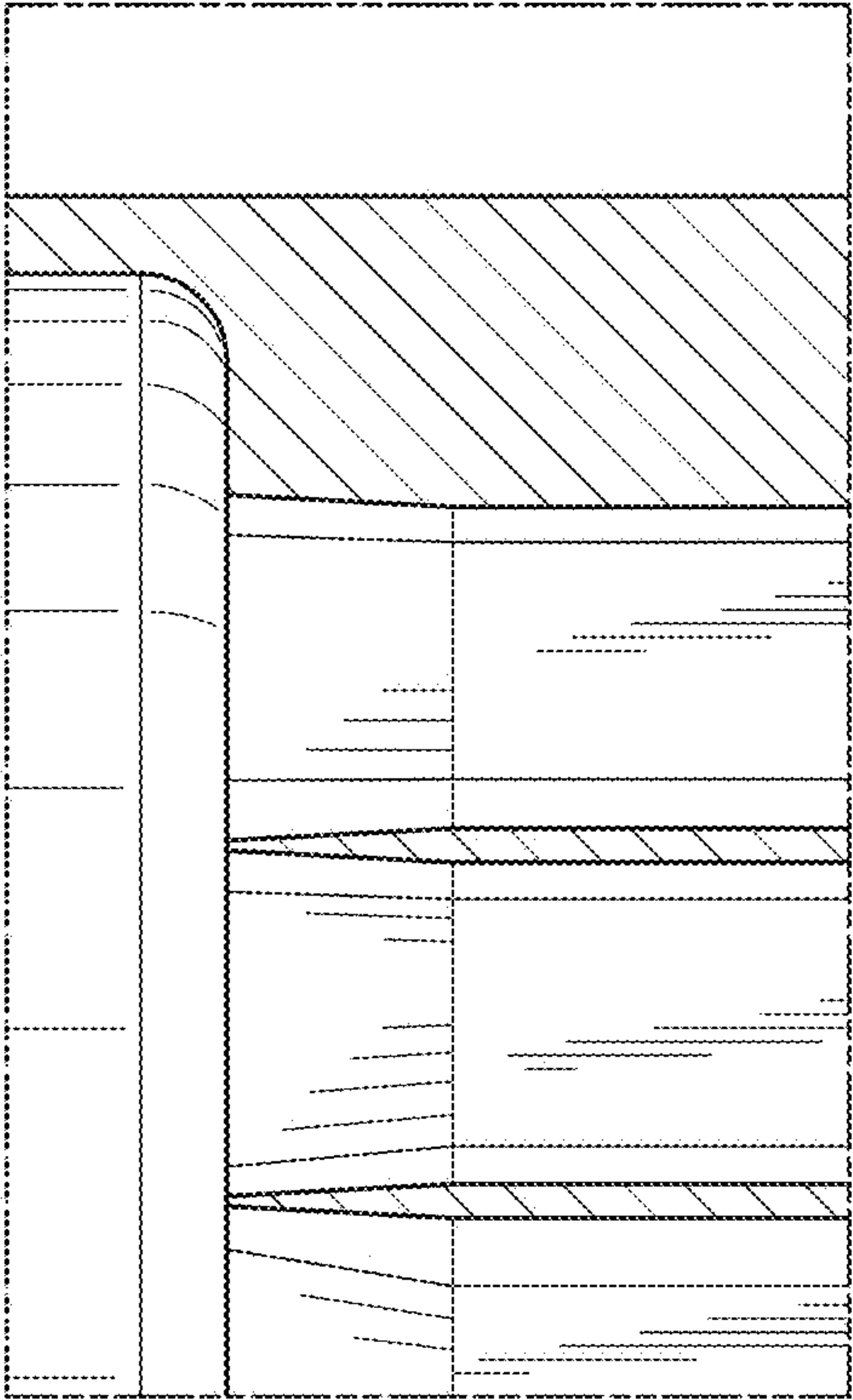


FIG. 13