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

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(45) **Date of Patent: ** Oct. 18, 2016**

(54) **ELASTIC MEMBRANE FOR SEMICONDUCTOR WAFER POLISHING APPARATUS**

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

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May 15, 2013 (JP) 2013-10674
May 15, 2013 (JP) 2013-10675
May 15, 2013 (JP) 2013-10676
May 15, 2013 (JP) 2013-10677
May 15, 2013 (JP) 2013-10678

(51) **LOC (10) Cl.** **13-03**

(52) **U.S. Cl.**
USPC **D13/182**

(58) **Field of Classification Search**
USPC D13/182; 451/66, 288, 289
CPC B24B 37/30; B24B 41/061; B24B 49/16
See application file for complete search history.

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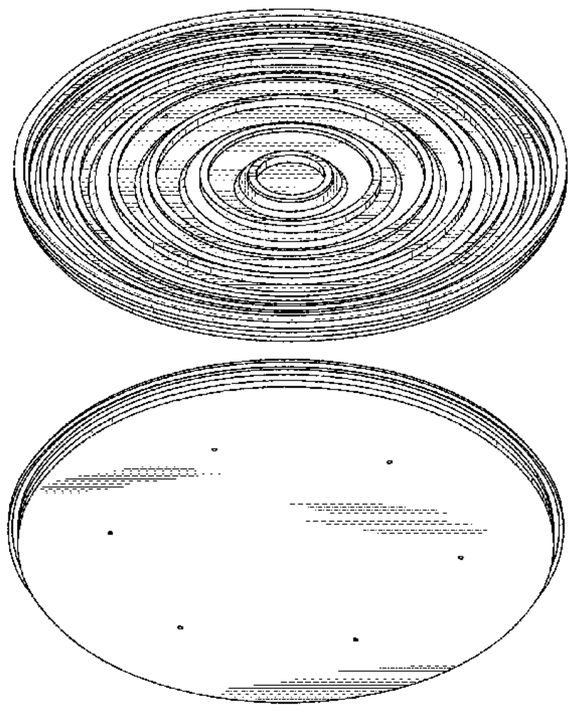
Primary Examiner — Elizabeth J Oswecki

(74) *Attorney, Agent, or Firm* — Pearne & Gordon LLP

(57) **CLAIM**

The ornamental design for an elastic membrane for semiconductor wafer polishing apparatus, as shown and described.



DESCRIPTION

FIG. **1** is a top perspective view a first embodiment of an elastic membrane for semiconductor wafer polishing apparatus showing our new design;
FIG. **2** is a bottom perspective view thereof;
FIG. **3** is a top plan view thereof;
FIG. **4** is a bottom plan view thereof;
FIG. **5** is a side view thereof, with the apparatus being radially symmetrical about a vertical axis;
FIG. **6** is a cross sectional view taken along section line **6-6** in FIG. **3**;
FIG. **7** is an enlarged portion view taken along line **7-7** in FIG. **6**;
FIG. **8** is a top perspective view a second embodiment of an elastic membrane for semiconductor wafer polishing apparatus showing our new design;
FIG. **9** is a bottom perspective view thereof;
FIG. **10** is a top plan view thereof;
FIG. **11** is a bottom plan view thereof;
FIG. **12** is a side view thereof, with the apparatus being radially symmetrical about a vertical axis;
FIG. **13** is a cross sectional view taken along section line **13-13** in FIG. **10**;
FIG. **14** is an enlarged portion view taken along line **14-14** in FIG. **13**;
FIG. **15** is a top perspective view a third embodiment of an elastic membrane for semiconductor wafer polishing apparatus showing our new design;
FIG. **16** is a bottom perspective view thereof;
FIG. **17** is a top plan view thereof;
FIG. **18** is a bottom plan view thereof;
FIG. **19** is a side view thereof, the apparatus being radially symmetrical about a vertical axis;
FIG. **20** is a cross sectional view taken along section line **20-20** in FIG. **17**;
FIG. **21** is an enlarged portion view taken along line **21-21** in FIG. **20**;
FIG. **22** is a top perspective view a fourth embodiment of an elastic membrane for semiconductor wafer polishing apparatus showing our new design;
FIG. **23** is a bottom perspective view thereof;
FIG. **24** is a top plan view thereof;
FIG. **25** is a bottom plan view thereof;
FIG. **26** is a side view thereof, the apparatus being radially symmetrical about a vertical axis;
FIG. **27** is a cross sectional view taken along line **27-27** in FIG. **24**; and,
FIG. **28** is an enlarged portion view taken along line **28-28** in FIG. **27**.
The broken lines shown in the drawings represent portions of the elastic membrane for semiconductor wafer polishing apparatus that form no part of the claimed design.

1 Claim, 16 Drawing Sheets

FIG. 1

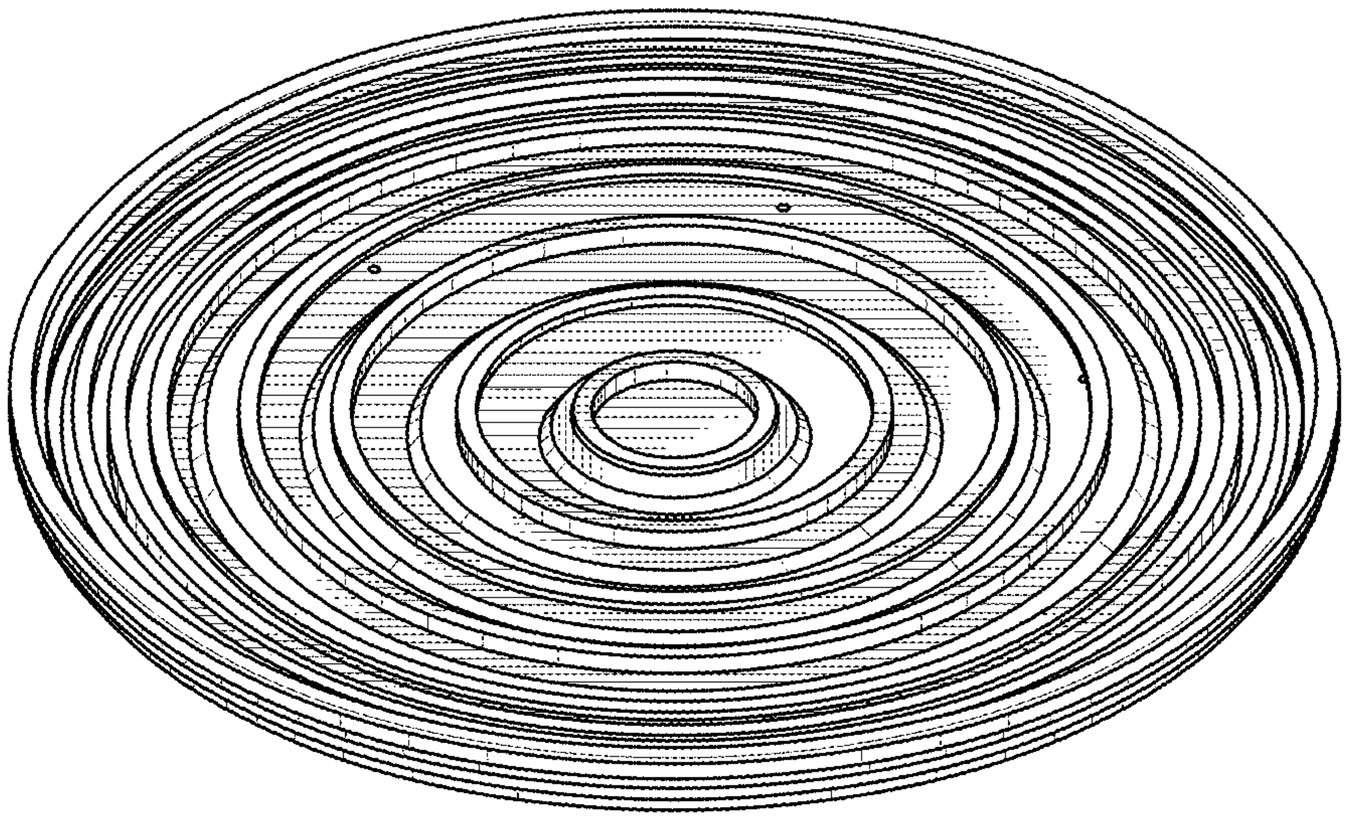


FIG. 2

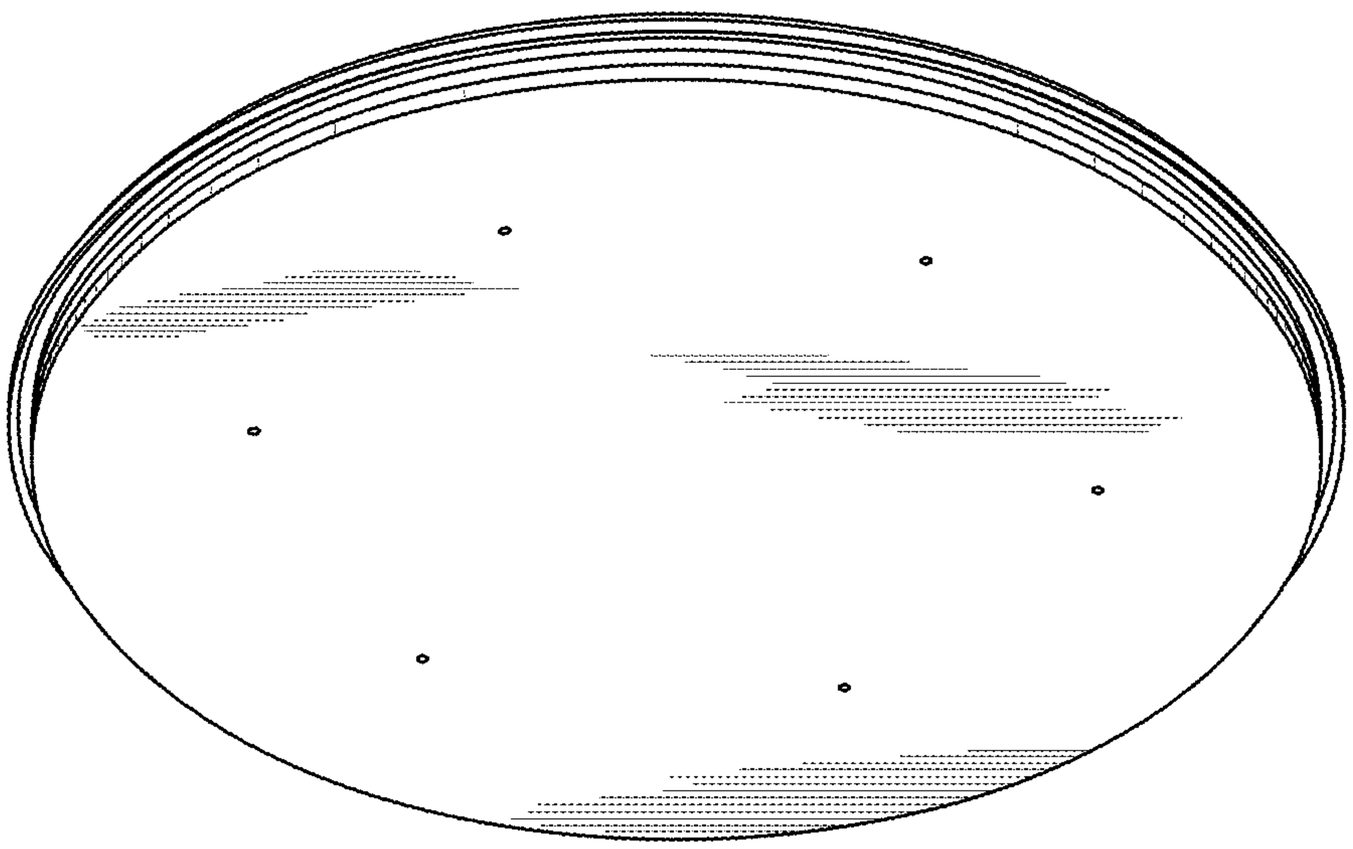


FIG. 3

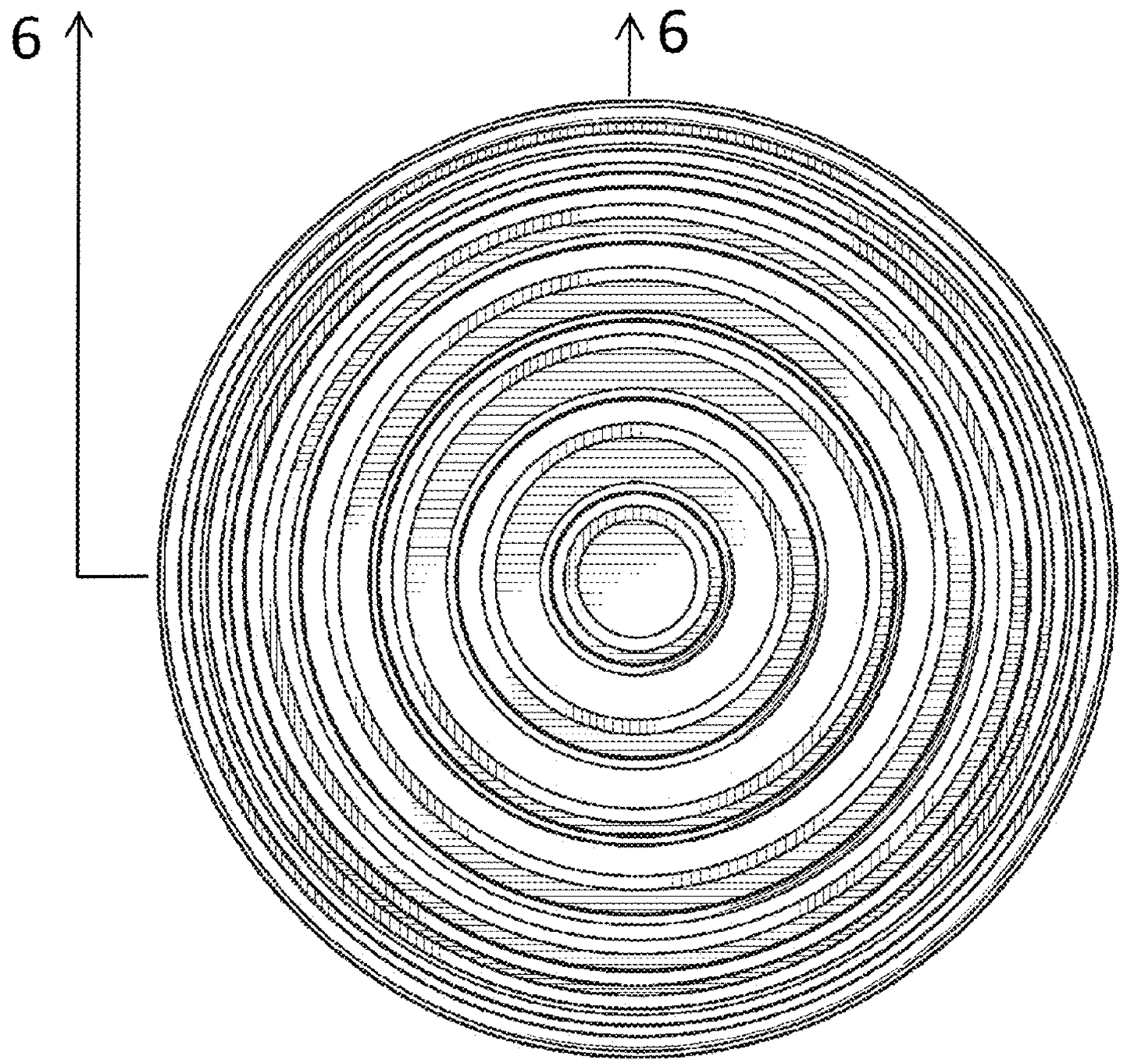


FIG. 4

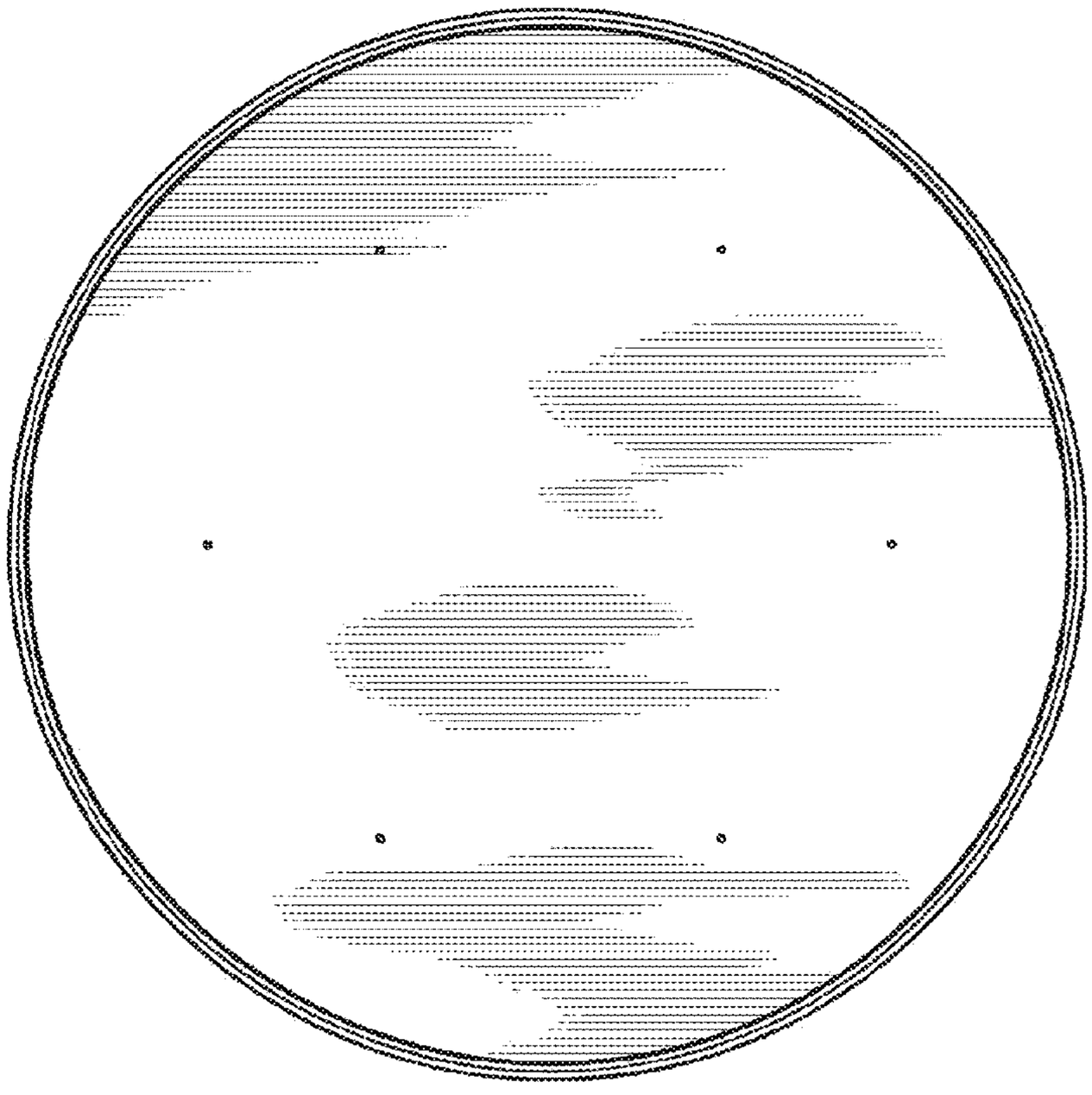


FIG. 5

FIG. 6

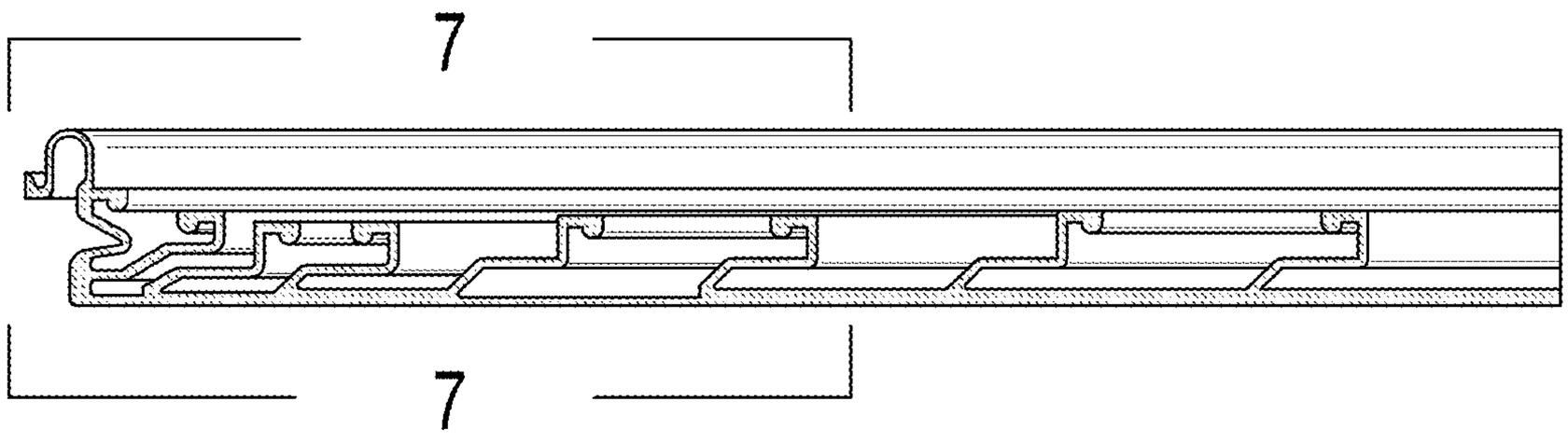


FIG. 7

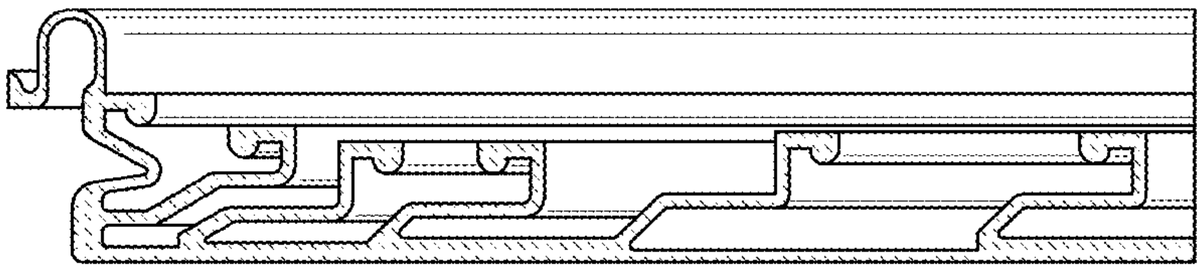


FIG. 8

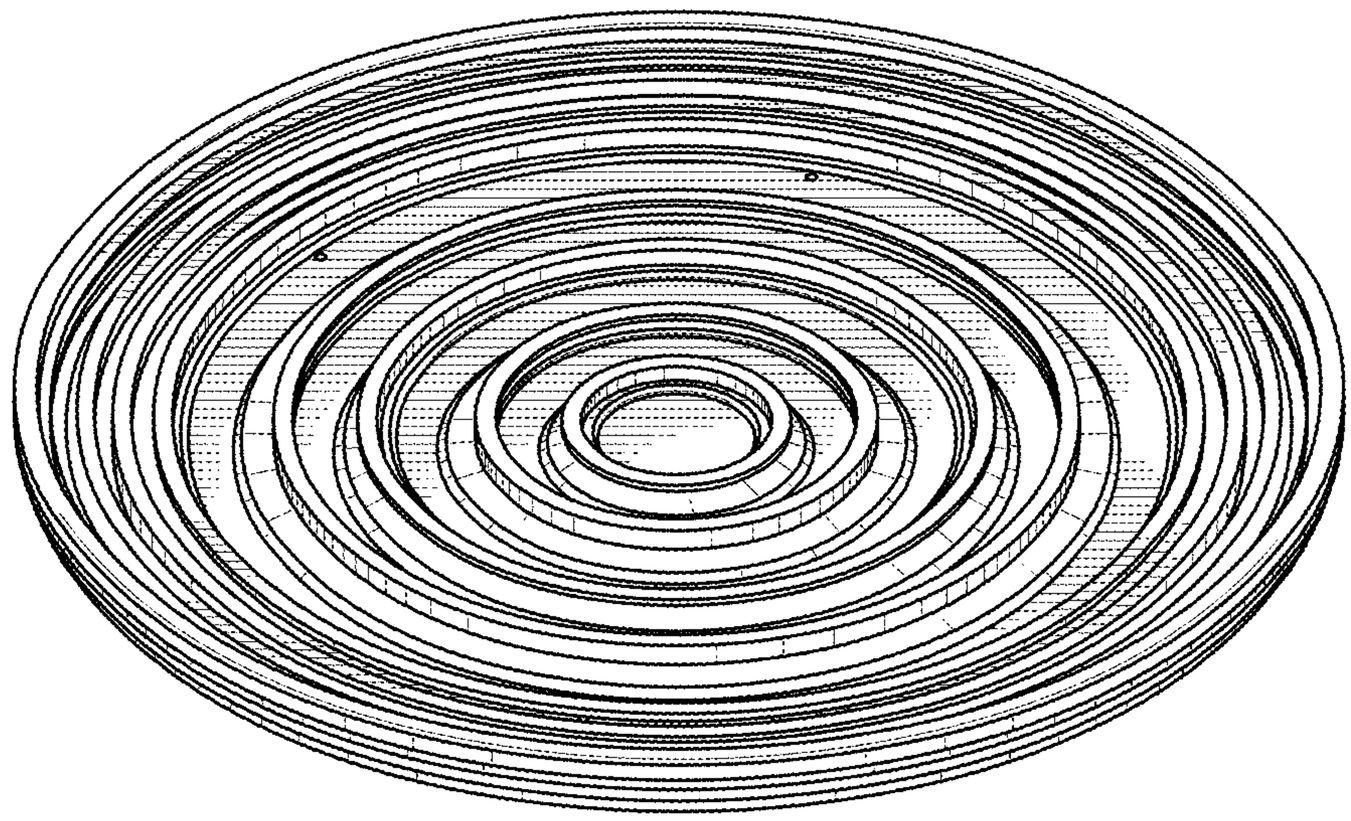


FIG. 9

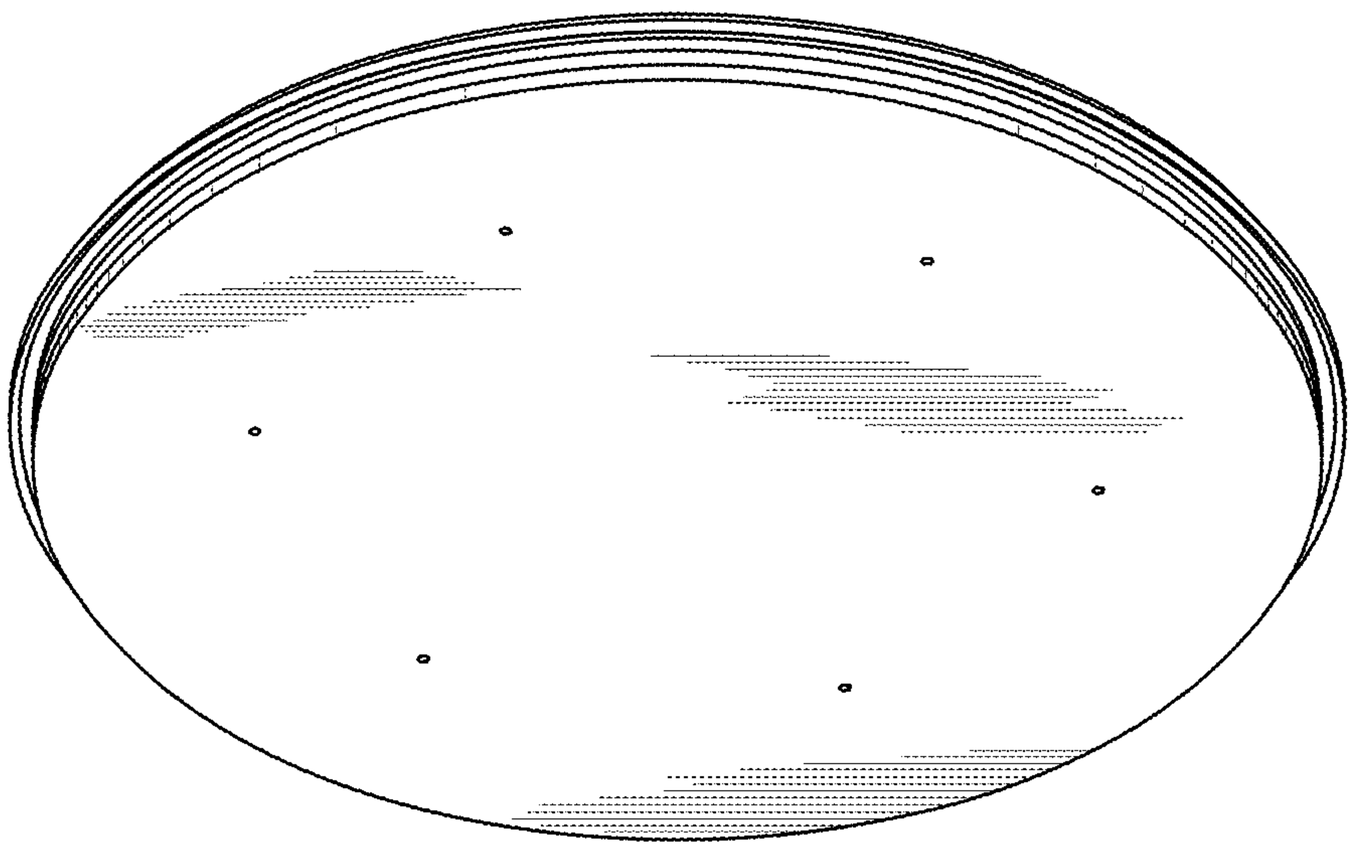


FIG. 10

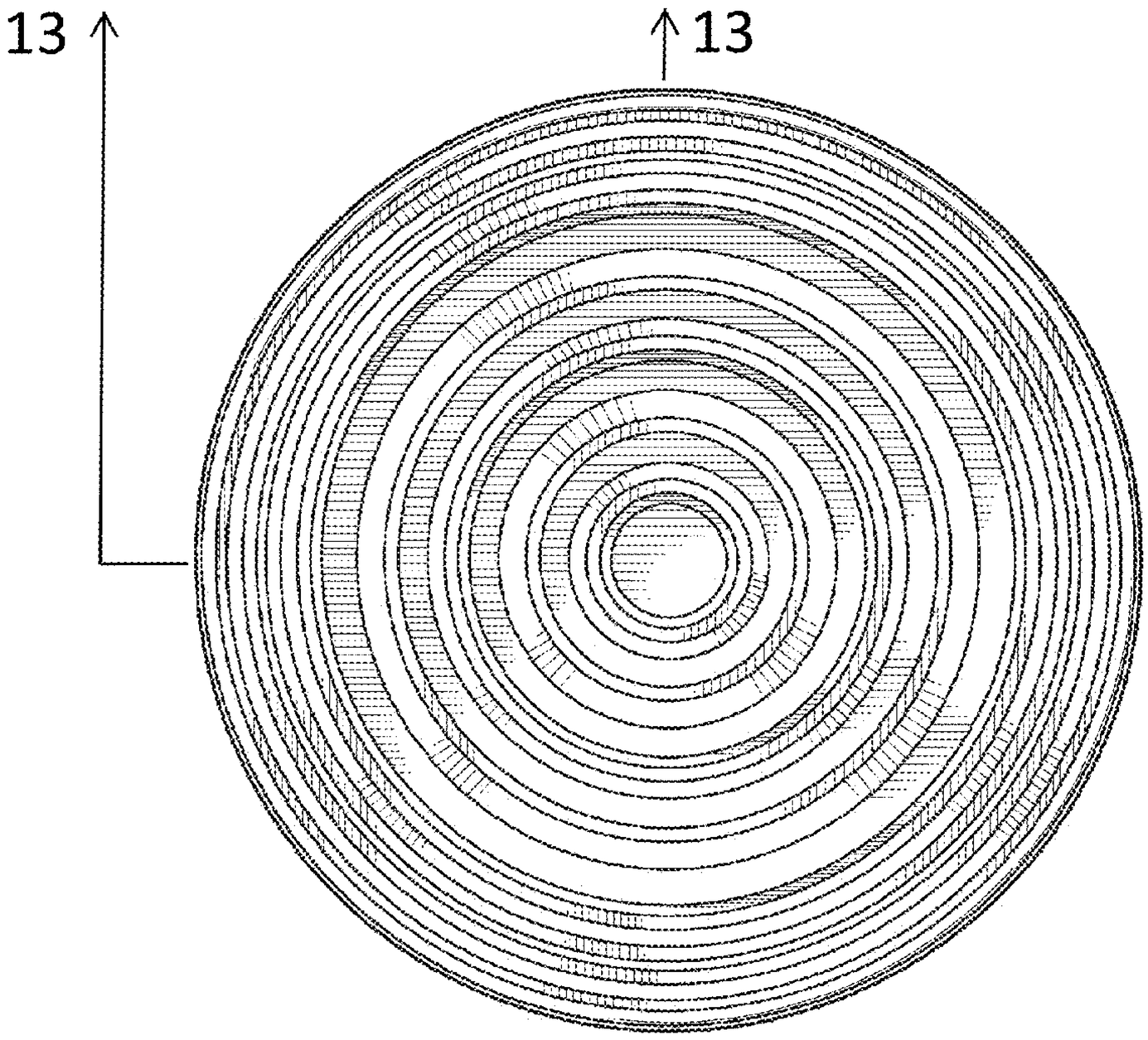


FIG. 11

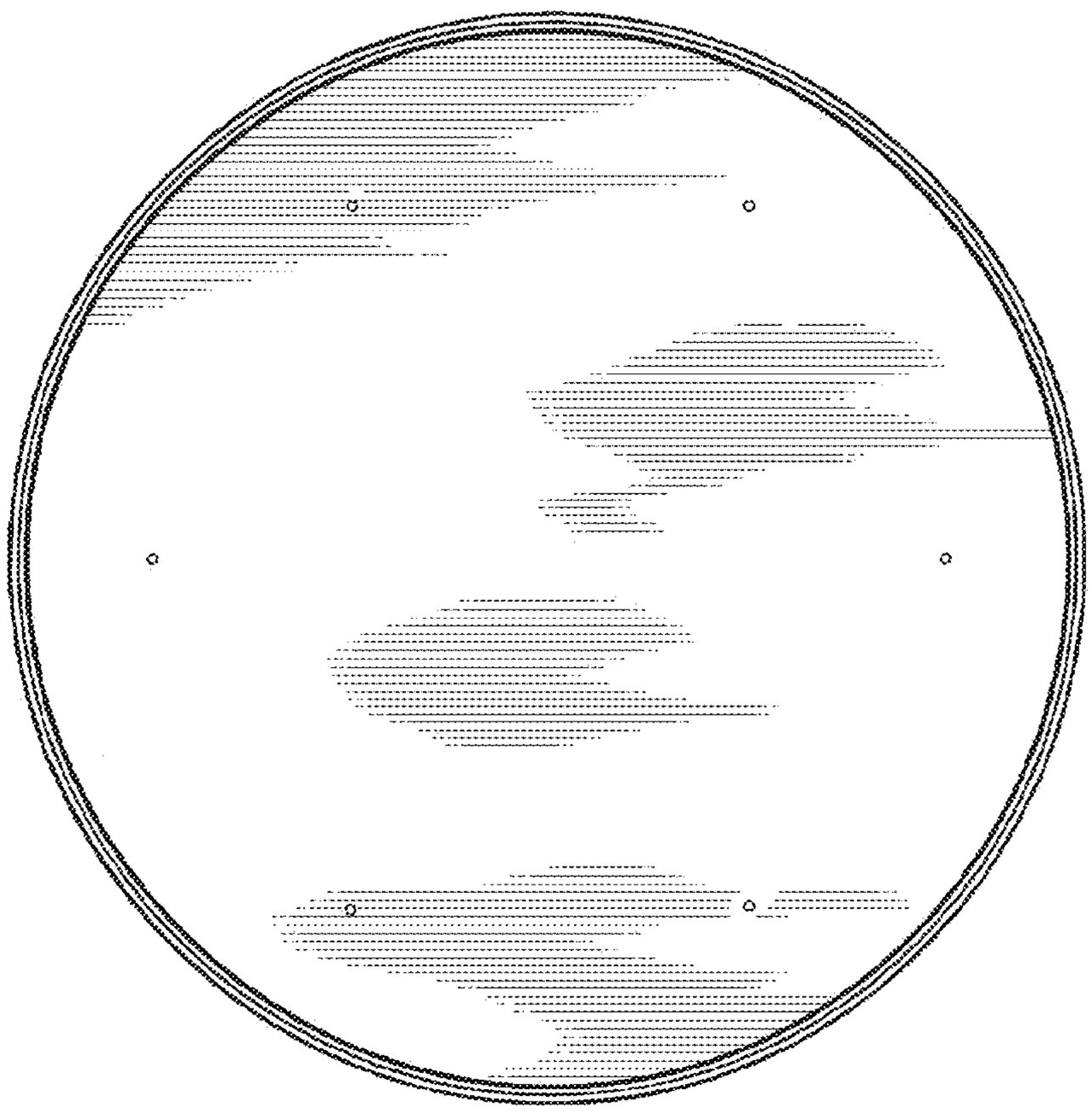


FIG. 12

FIG. 13

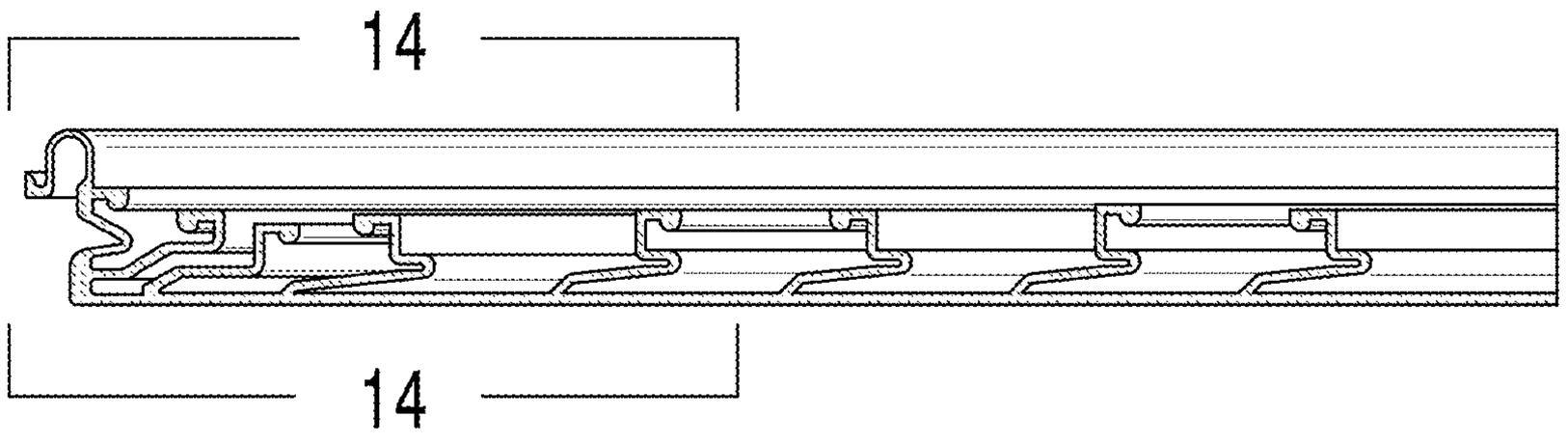


FIG. 14

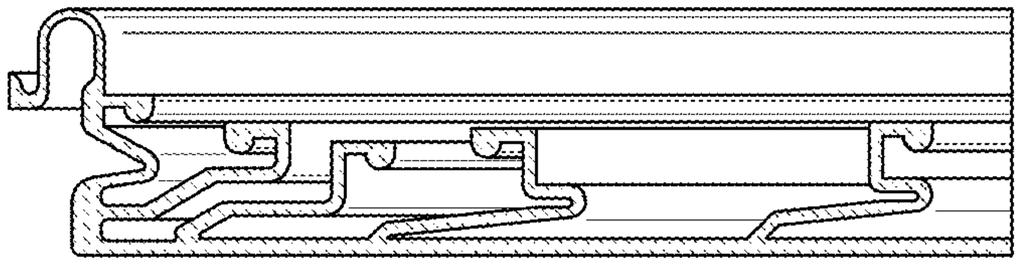


FIG. 15

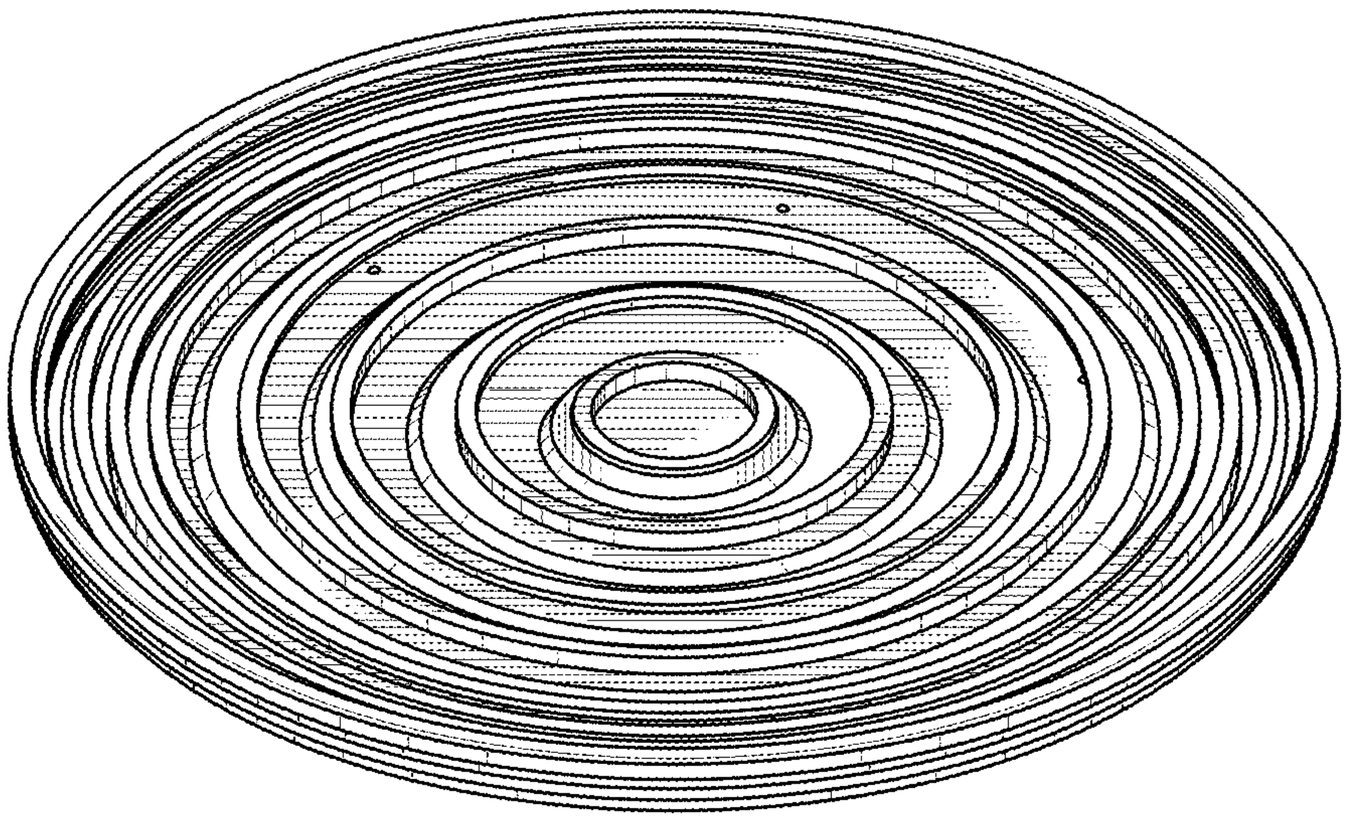


FIG. 16

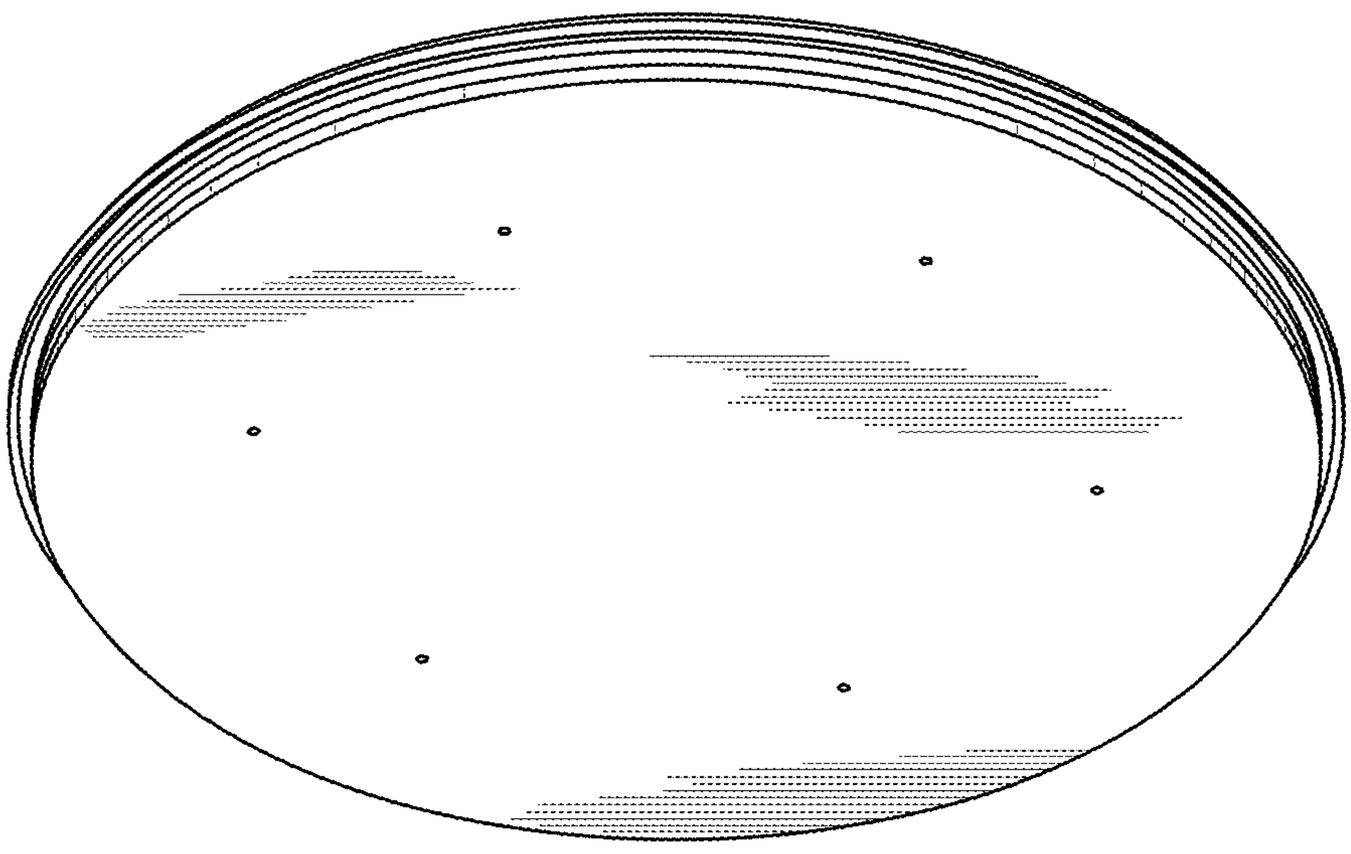


FIG. 17

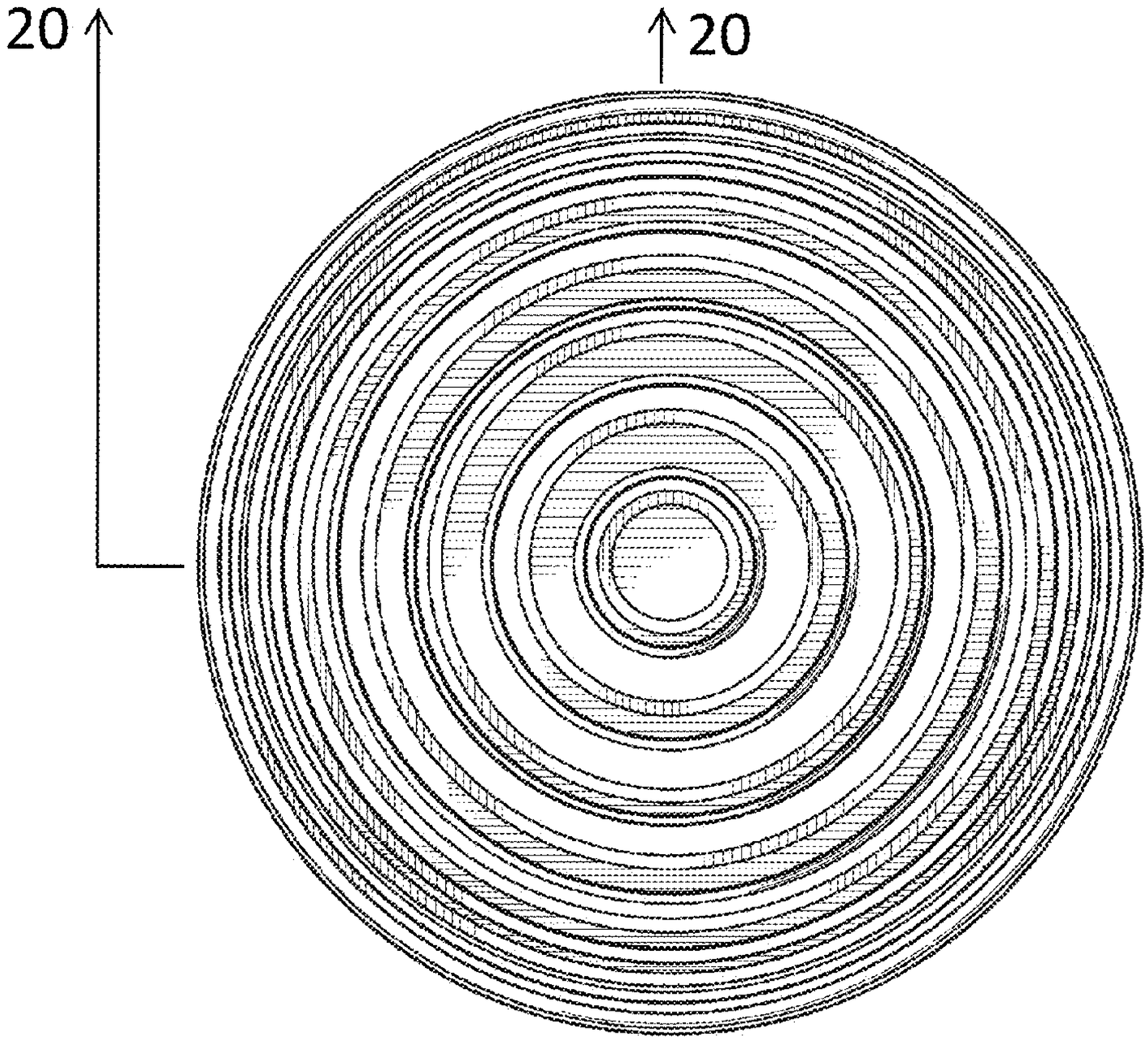


FIG. 18

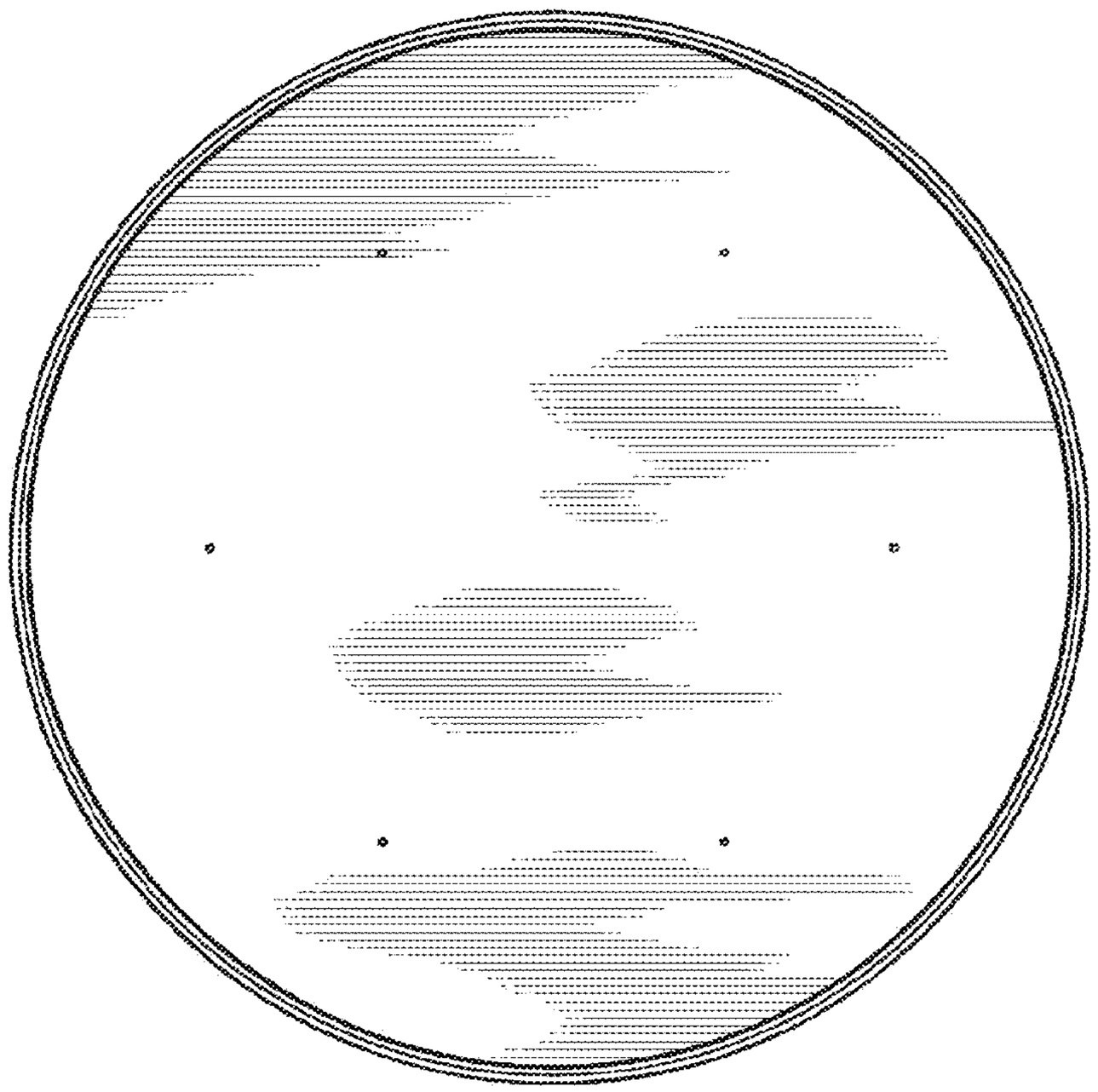


FIG. 19

FIG. 20

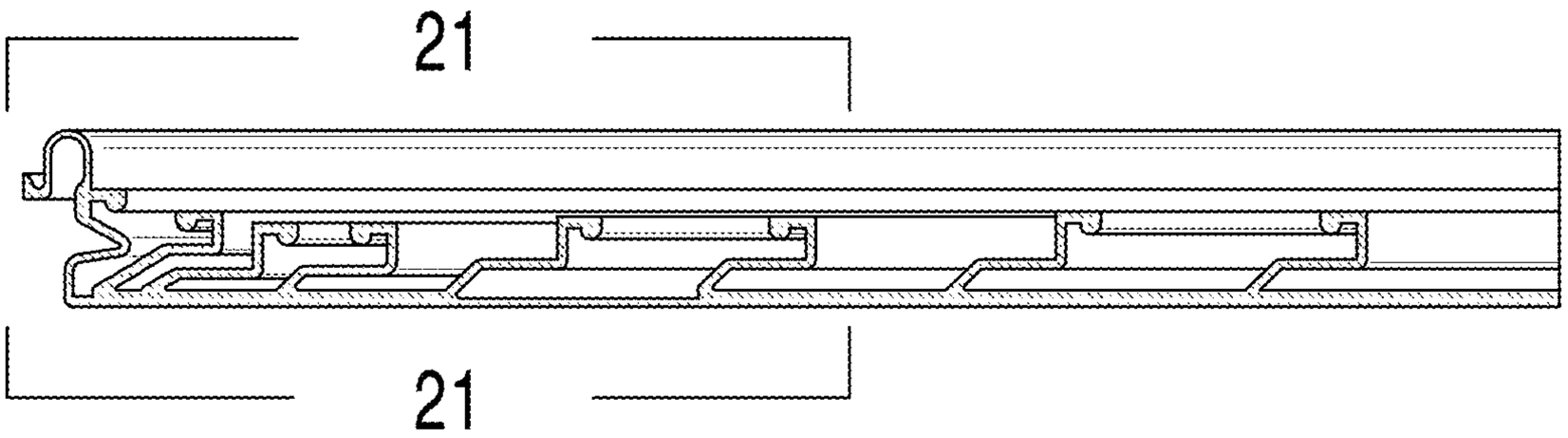


FIG. 21

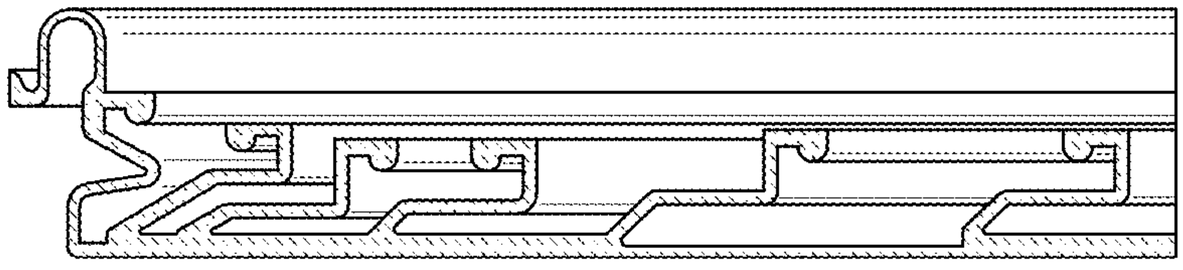


FIG. 22

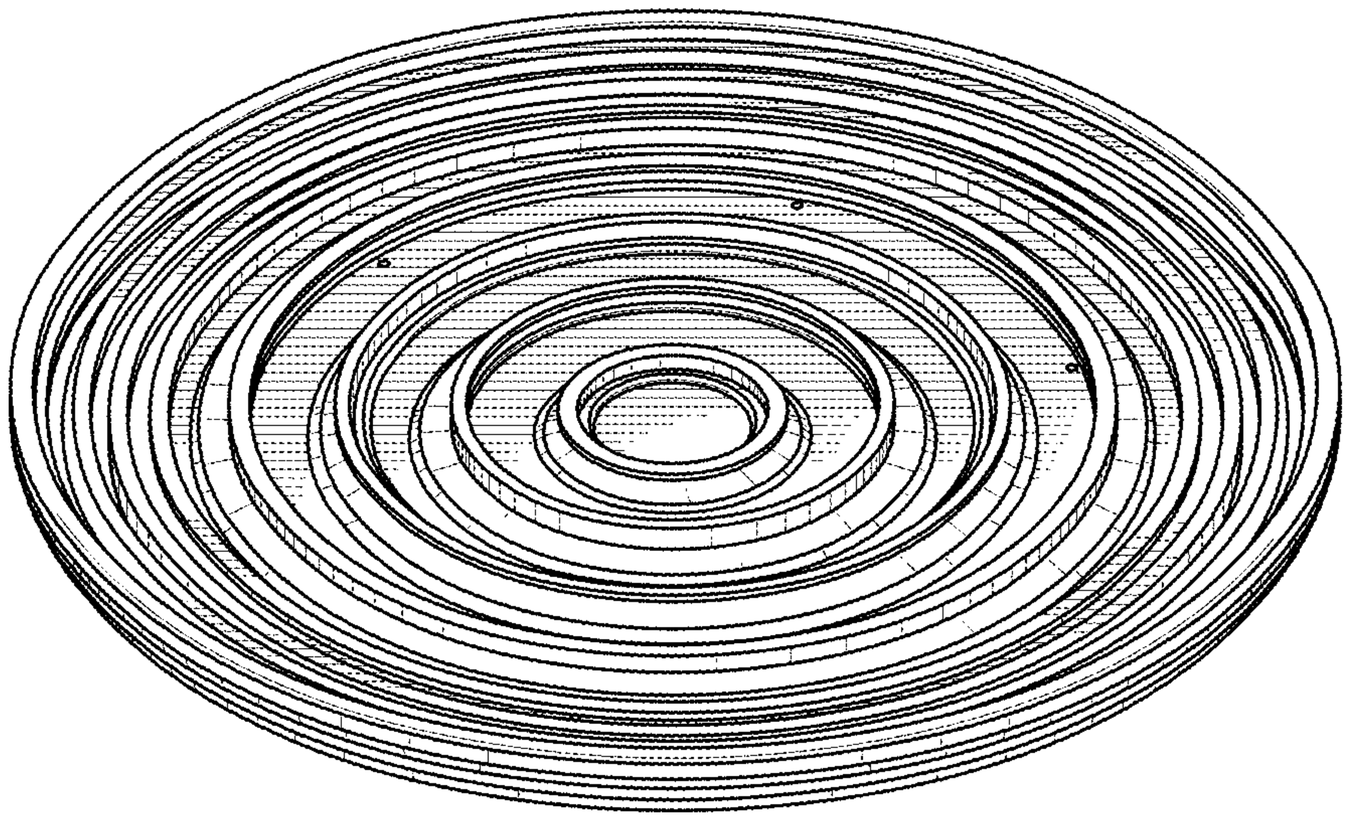


FIG. 23

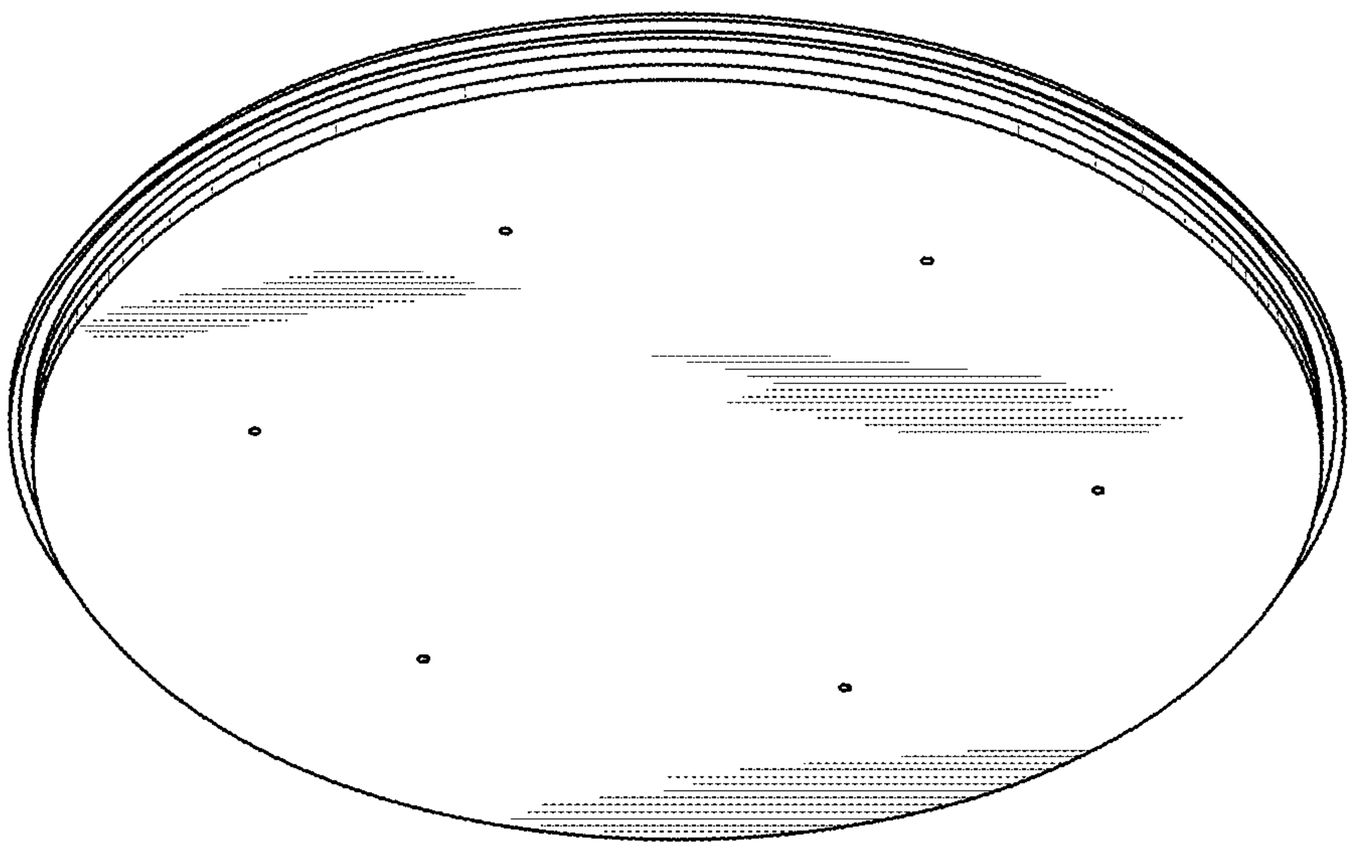


FIG. 24

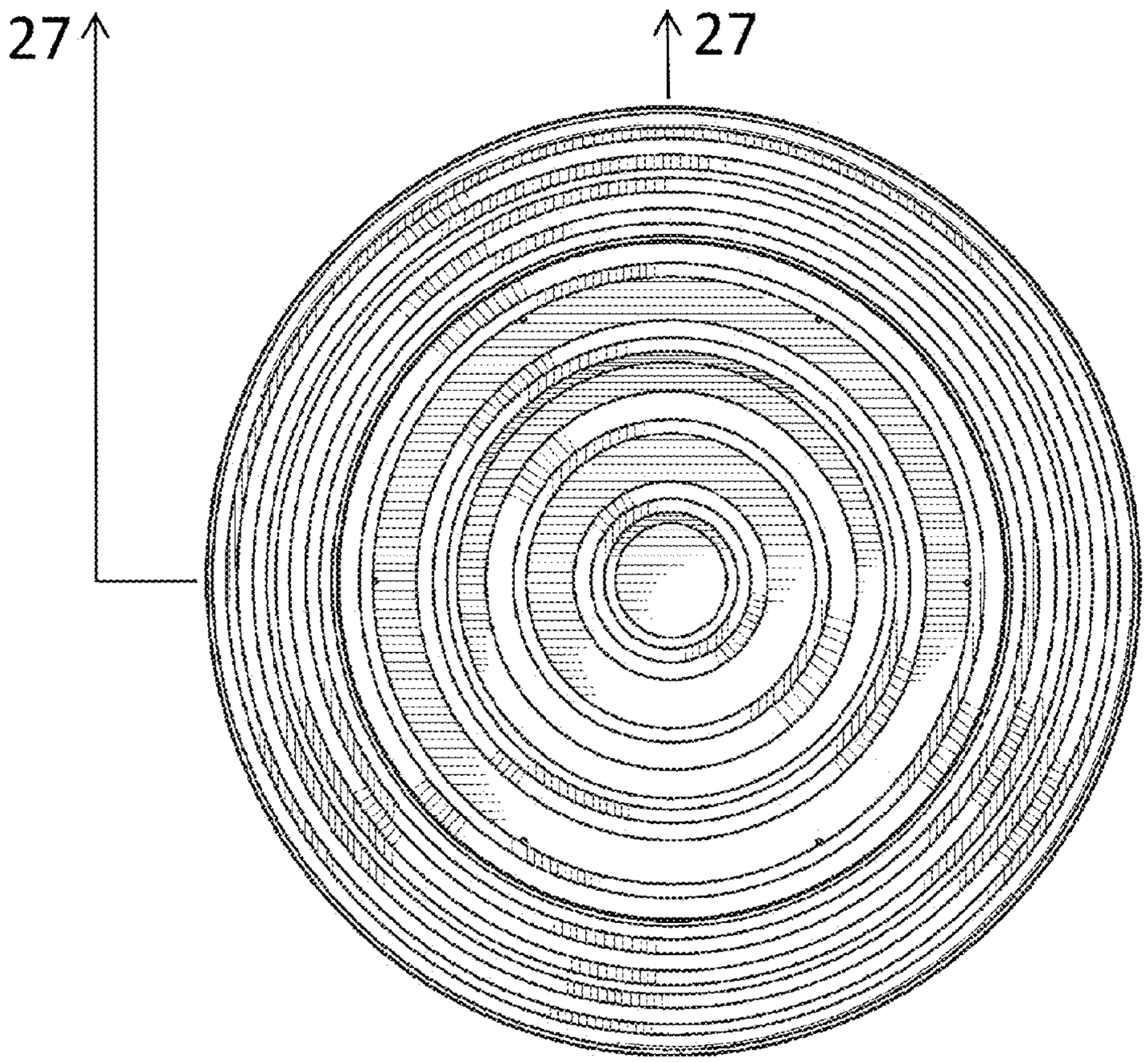


FIG. 25

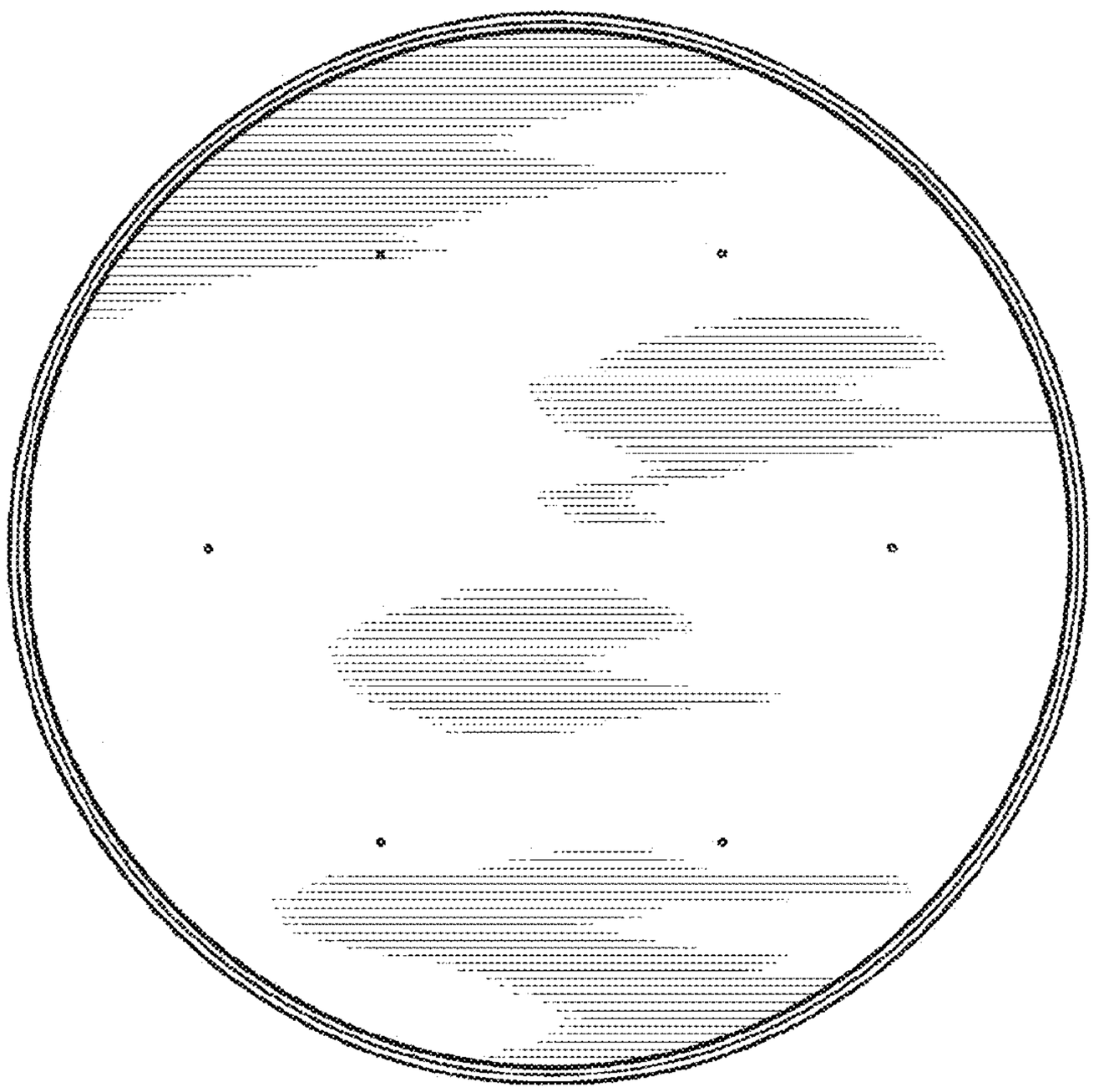


FIG. 26

FIG. 27

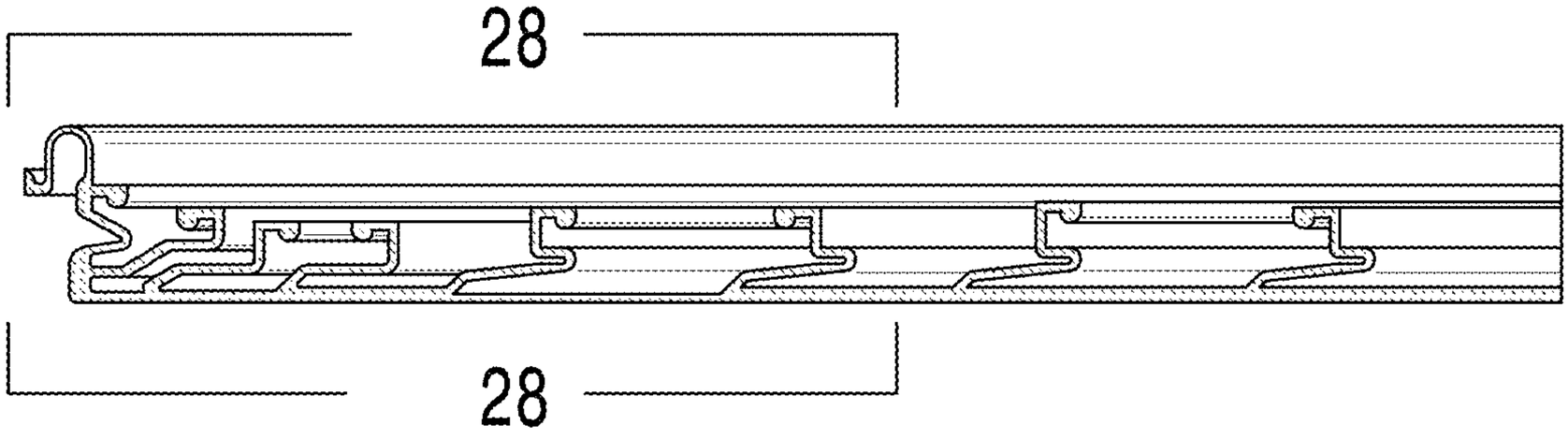


FIG. 28