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

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(54) **UPPER SHIELD WITH SHOWERHEAD FOR A PROCESS CHAMBER**

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

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

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

(58) **Field of Classification Search**
USPC D13/118, 133, 158, 162, 184, 199;
D15/122, 138, 141, 144.1, 144.2, 199;
D23/213; D24/232
CPC H01J 37/32495; H01J 37/3244; H01J
37/32651; H01J 37/32642; H01J
37/32513

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,762,748 A 6/1998 Banholzer et al.
D557,425 S * 12/2007 Nakamura D24/232
7,981,262 B2 7/2011 Pavloff et al.
D642,605 S * 8/2011 Ishikawa D15/144.1

(Continued)

FOREIGN PATENT DOCUMENTS

TW D198930 8/2019
TW D198931 8/2019

OTHER PUBLICATIONS

PCT International Search Report and Written Opinion for PCT/US2021/027957 dated Aug. 6, 2021.

(Continued)

Primary Examiner — Patricia A Palasik

(74) *Attorney, Agent, or Firm* — Moser Taboada

(57) **CLAIM**

The ornamental design for an upper shield with showerhead for a process chamber, as shown and described.

DESCRIPTION

FIG. 1 is a top isometric view of a first embodiment of an upper shield with showerhead for a process chamber.

FIG. 2 is a top plan view thereof.

FIG. 3 is a bottom plan view thereof.

FIG. 4 is a front elevation view thereof.

FIG. 5 is a back elevation view thereof.

FIG. 6 is a left elevation view thereof.

FIG. 7 is a right elevation view thereof.

FIG. 8 is cross-sectional elevation view thereof, taken along line 8-8 of FIG. 2.

FIG. 9 is a top isometric view of a second embodiment of an upper shield with showerhead for a process chamber.

FIG. 10 is a top plan view thereof.

FIG. 11 is a bottom plan view thereof.

FIG. 12 is a front elevation view thereof.

FIG. 13 is a back elevation view thereof.

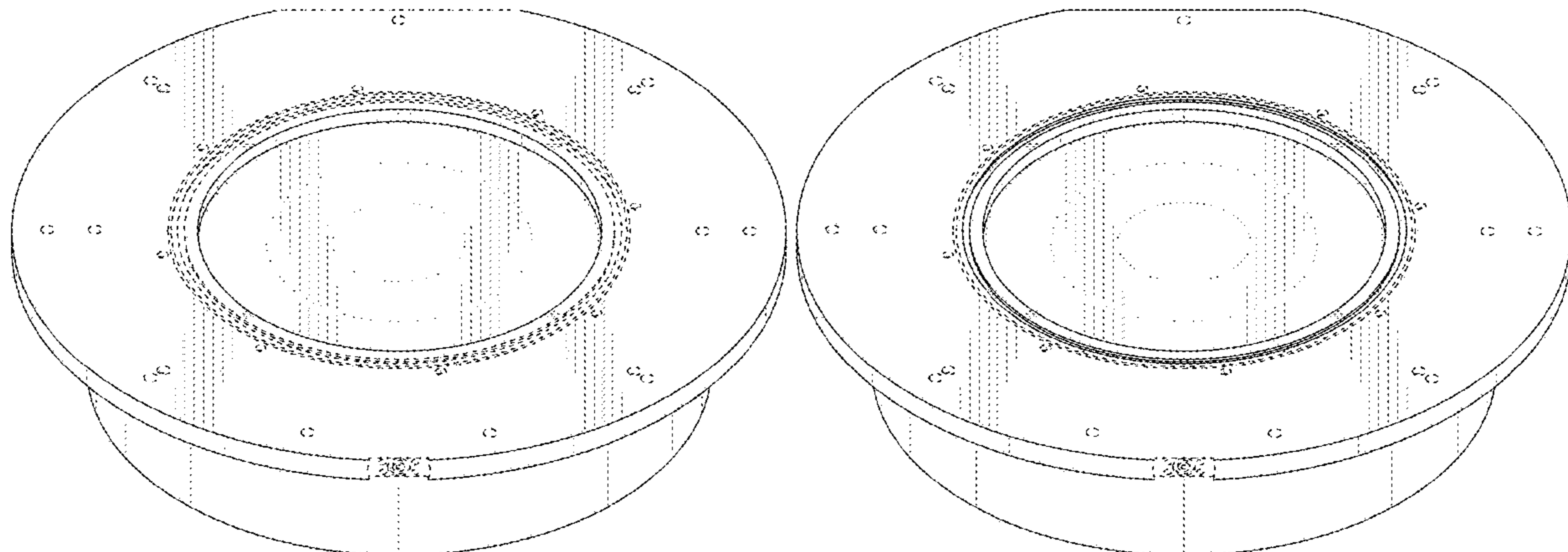
FIG. 14 is a left elevation view thereof.

FIG. 15 is a right elevation view thereof; and,

FIG. 16 is cross-sectional elevation view thereof, taken along line 16-16 of FIG. 10.

The dashed lines in FIGS. 1-16 represent unclaimed environment forming no part of the claimed design.

1 Claim, 12 Drawing Sheets



(56)

References Cited

U.S. PATENT DOCUMENTS

D703,160	S *	4/2014	Tanimura	D13/182
D734,730	S *	7/2015	Yoshida	D13/182
D789,310	S *	6/2017	Kusakabe	D13/182
9,728,380	B2	8/2017	Mohn et al.	
D802,790	S *	11/2017	Tauchi	D24/232
D804,436	S *	12/2017	Tauchi	D15/138
9,865,437	B2	1/2018	Chia et al.	
D827,592	S *	9/2018	Ichino	D13/182
10,577,689	B2	3/2020	Subramani et al.	
D891,382	S *	7/2020	Koppa	D13/182
D913,979	S *	3/2021	Babu	D13/182
D933,725	S *	10/2021	Koppa	D15/138
D940,765	S *	1/2022	Gunther	D15/138
D941,371	S *	1/2022	Lavitsky	D15/138
D941,372	S *	1/2022	Lavitsky	D15/138
D942,516	S *	2/2022	Koppa	D15/138
D946,638	S *	3/2022	Riker	D15/138
2004/0149216	A1 *	8/2004	Osada	C23C 16/5096 118/723 E
2007/0034337	A1	2/2007	Nishimoto et al.	
2010/0291319	A1 *	11/2010	Yamashita	H01J 37/32623 118/723 AN
2012/0305190	A1	12/2012	Kang et al.	
2021/0335581	A1 *	10/2021	Babu	H01J 37/32642
2022/0223367	A1 *	7/2022	Savandaiah	H01J 37/32807

OTHER PUBLICATIONS

Search Report for Taiwan Design Application No. 109305849,
dated Mar. 29, 2021.

* cited by examiner

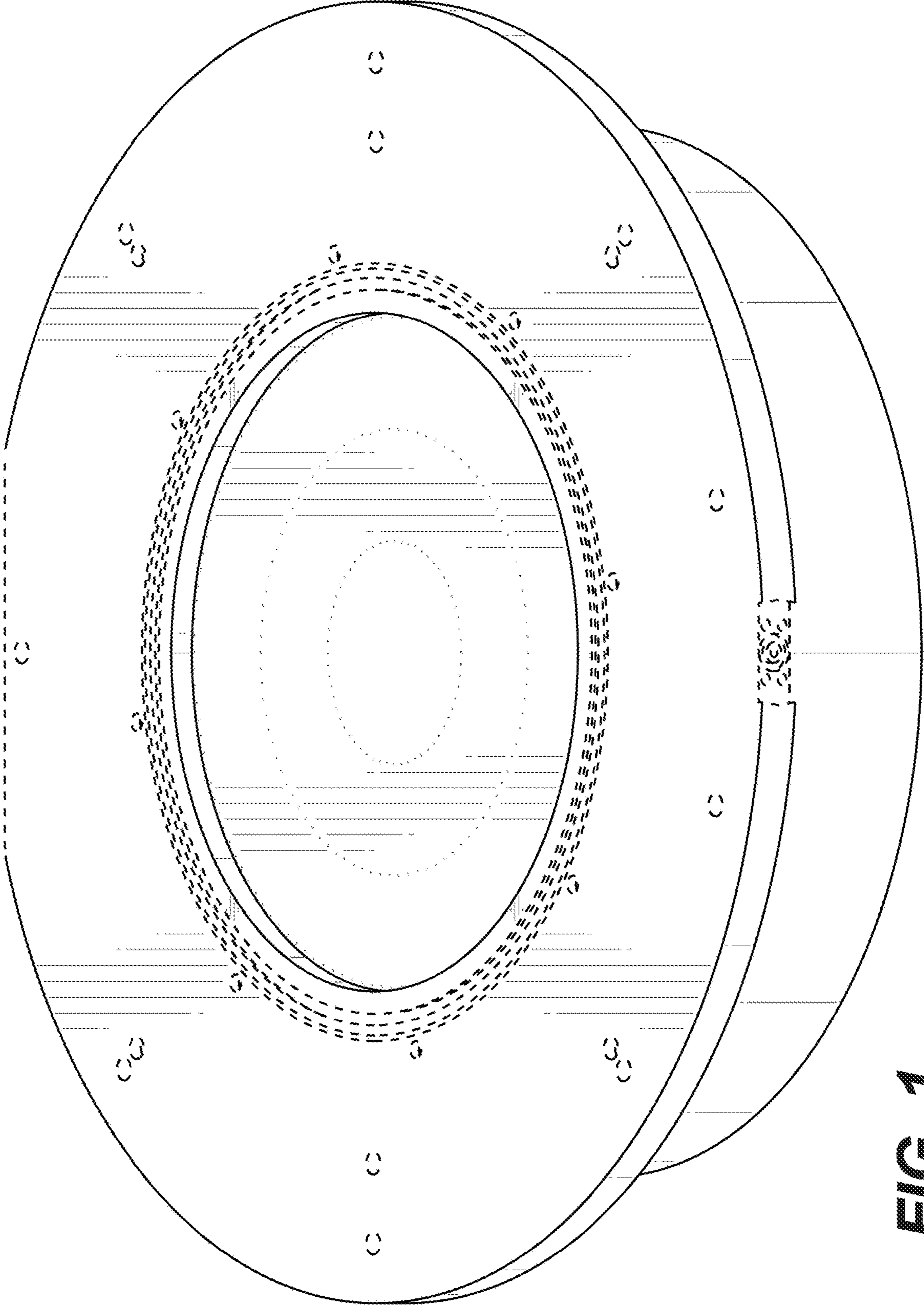


FIG. 1

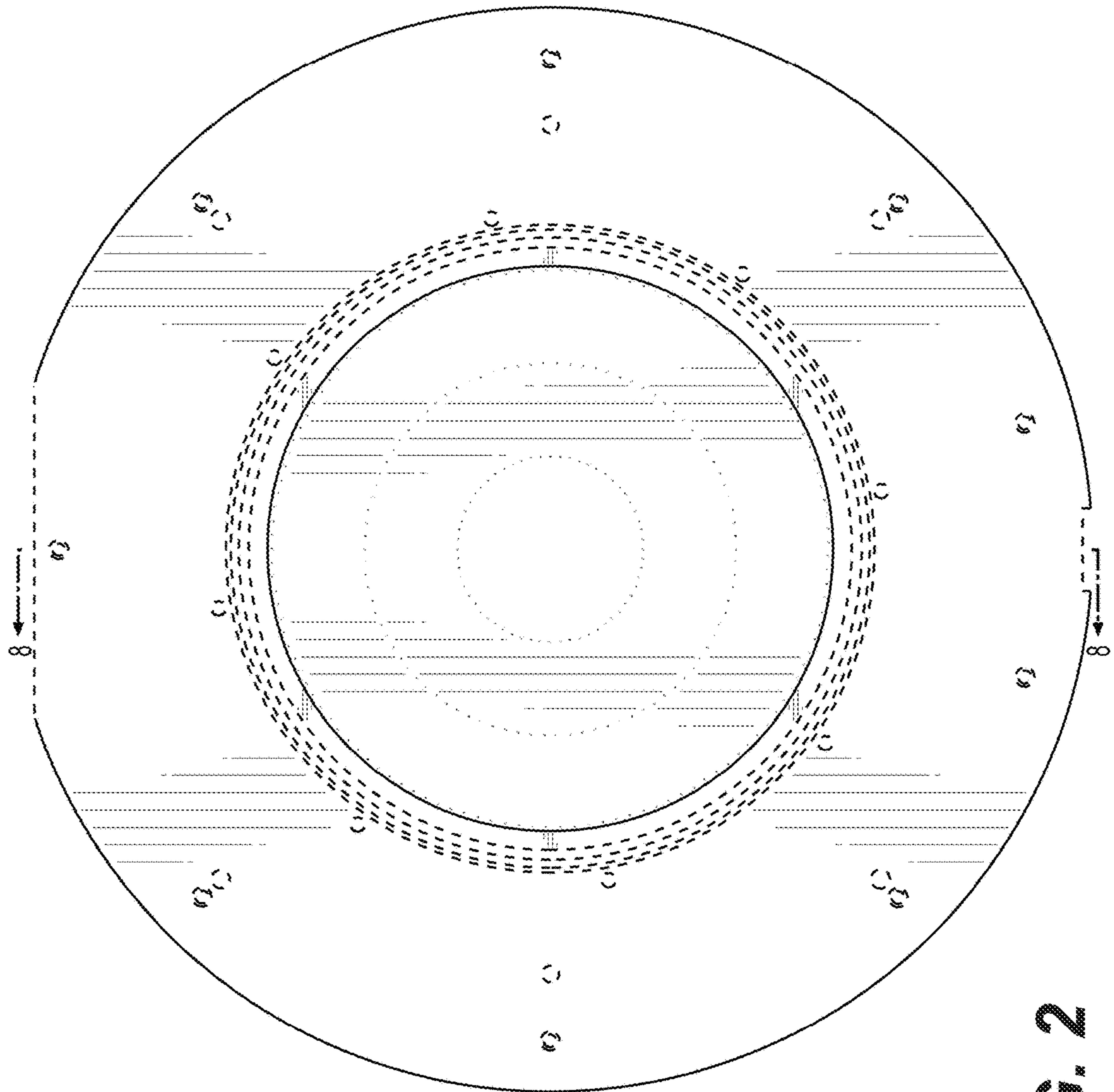


FIG. 2

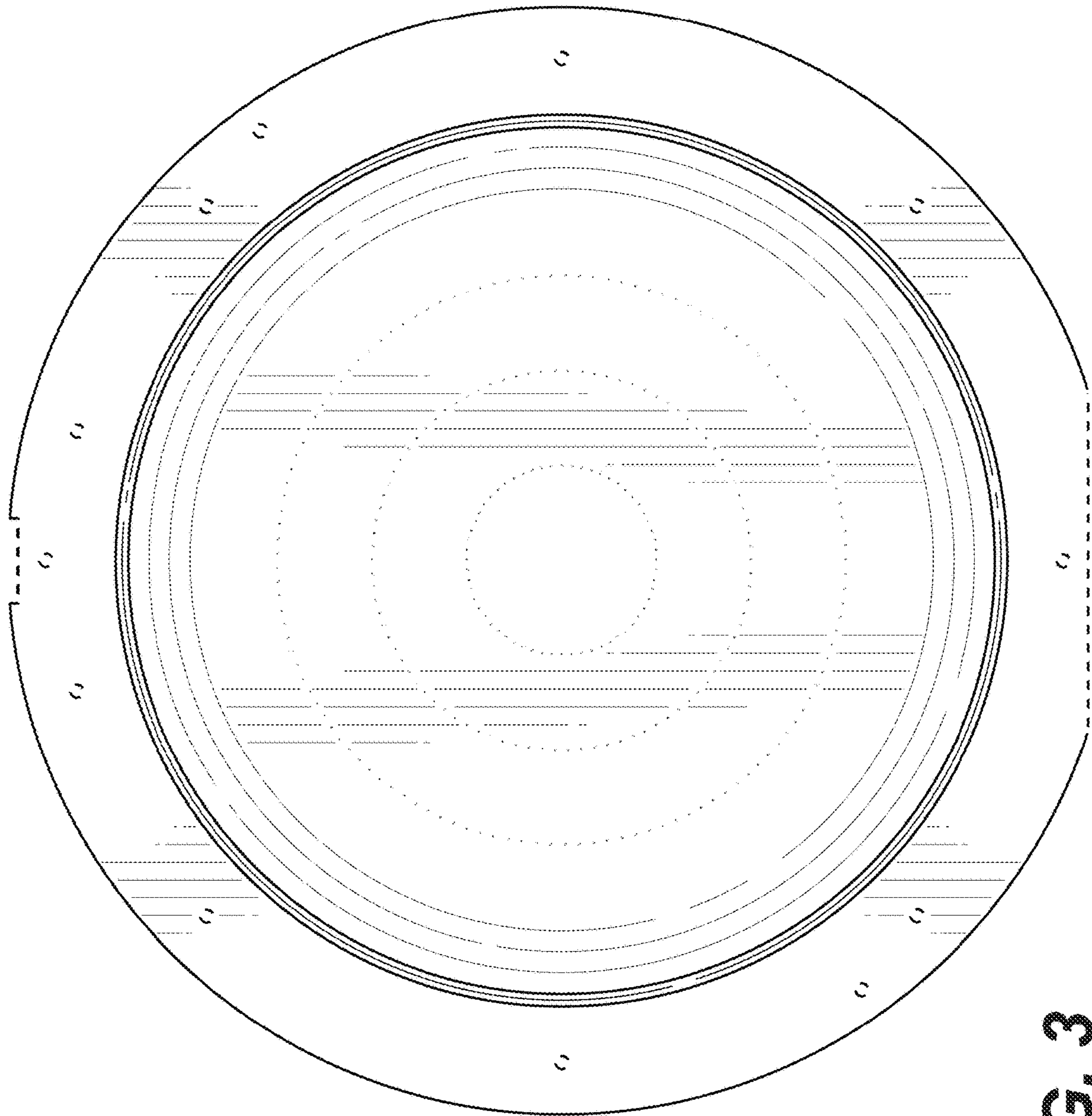


FIG. 3

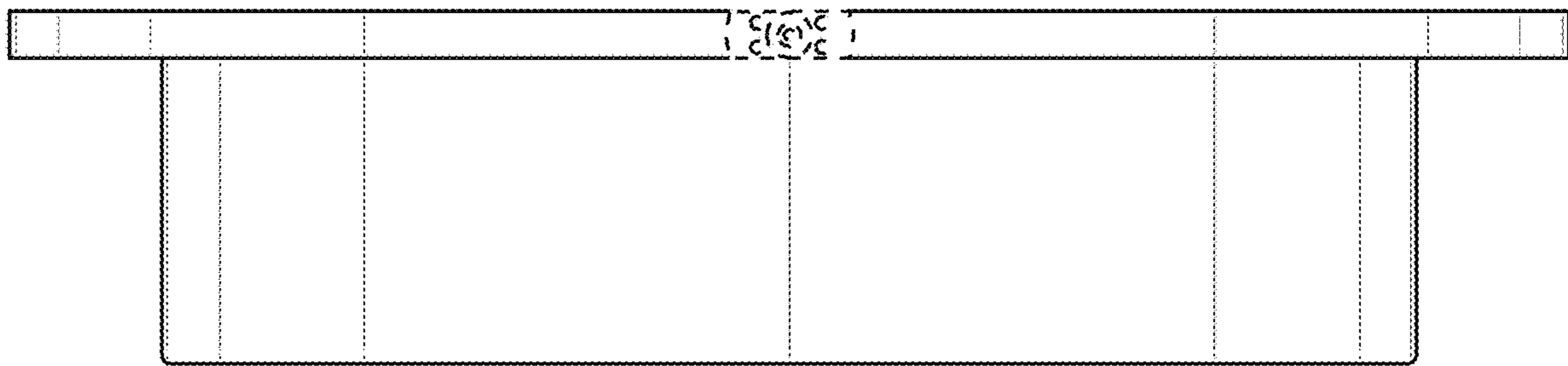


FIG. 4

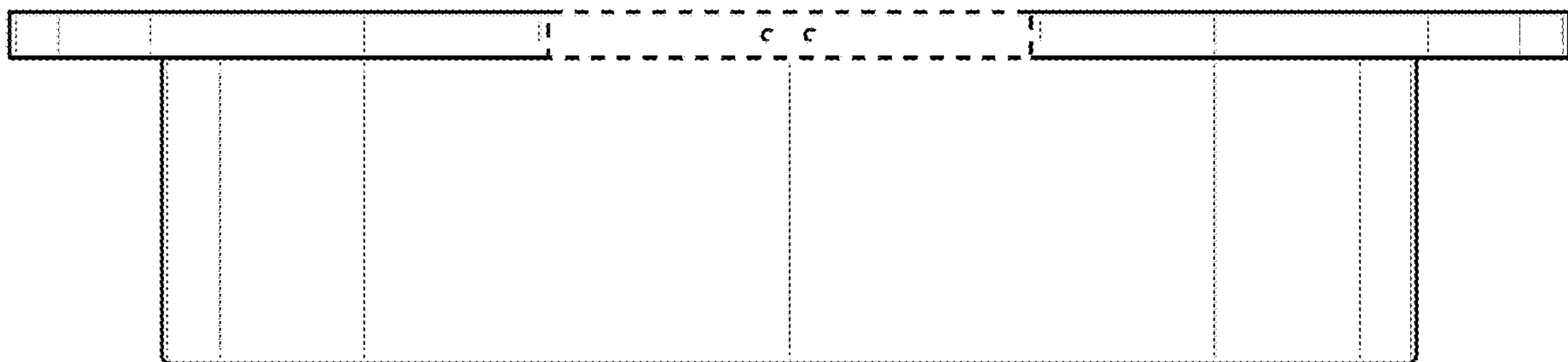


FIG. 5

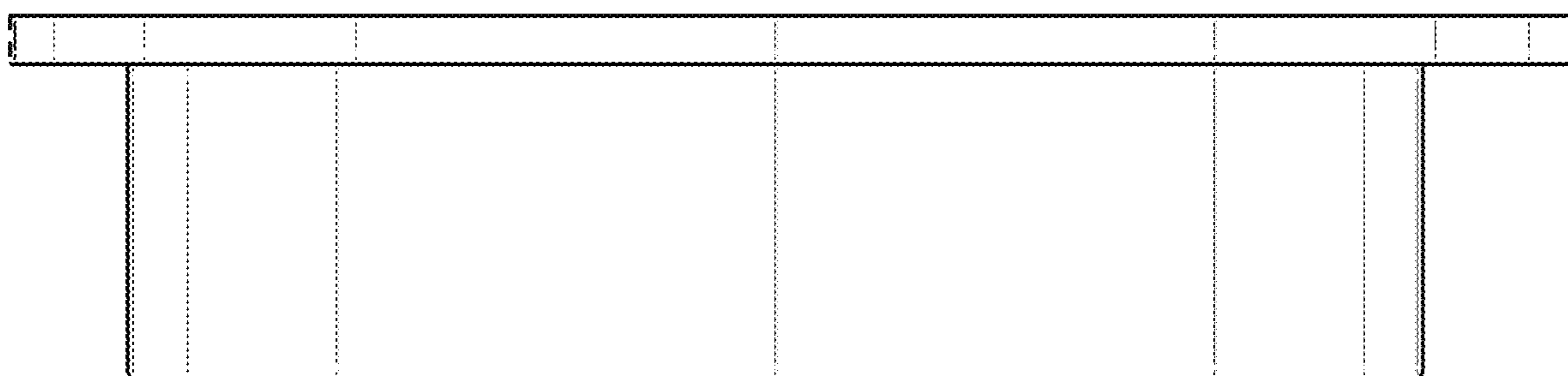


FIG. 6

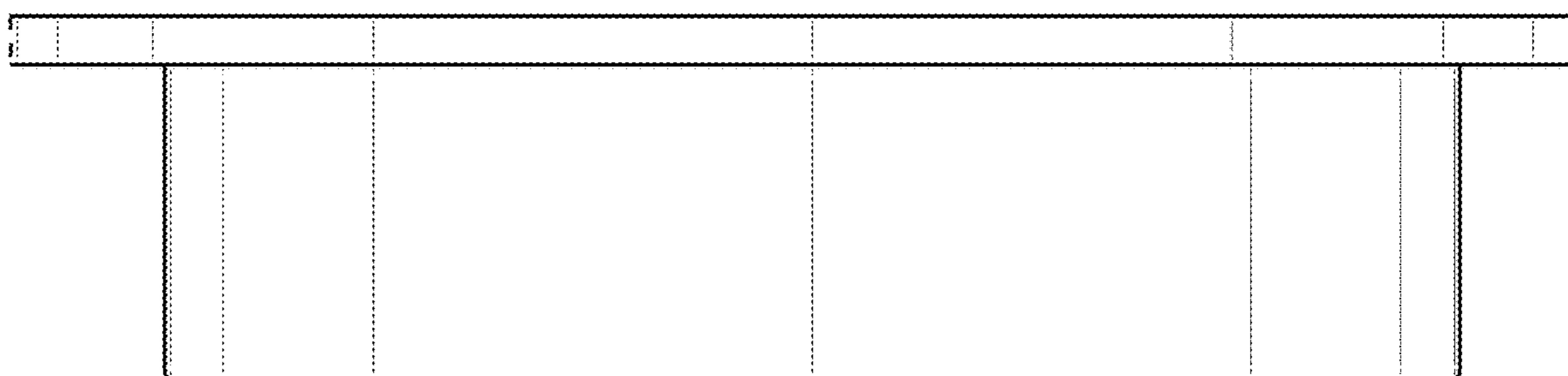


FIG. 7

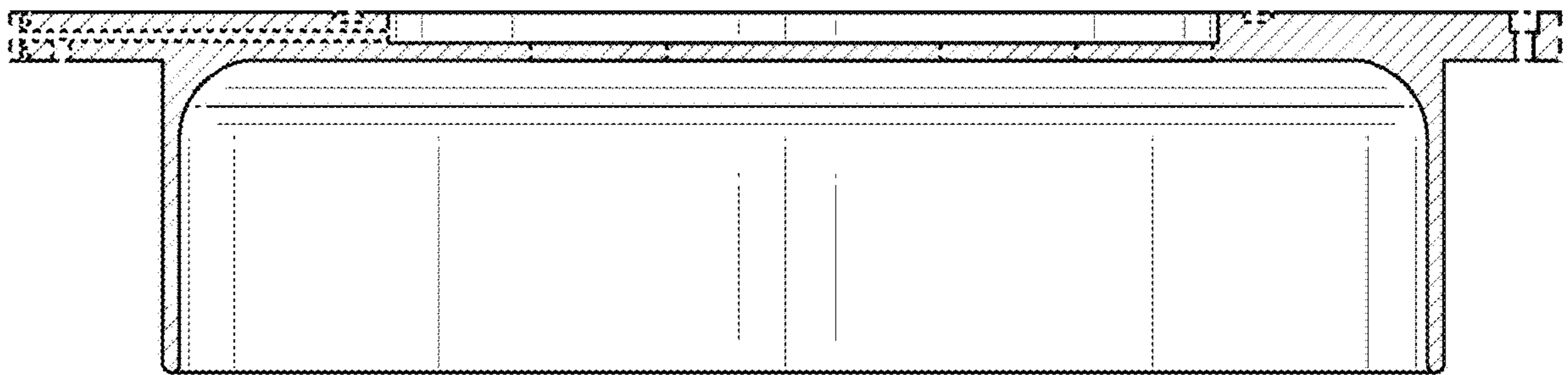


FIG. 8

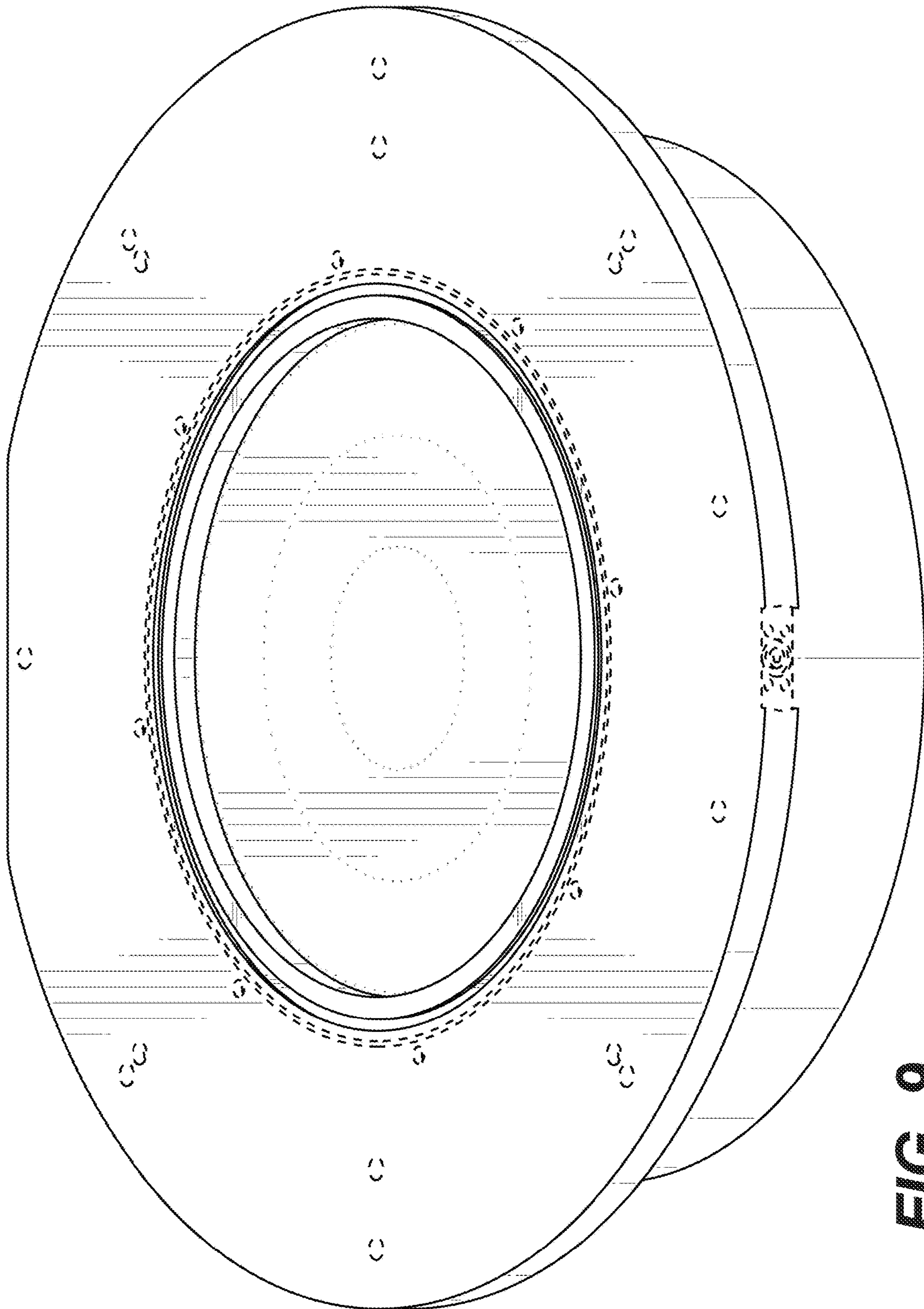


FIG. 9

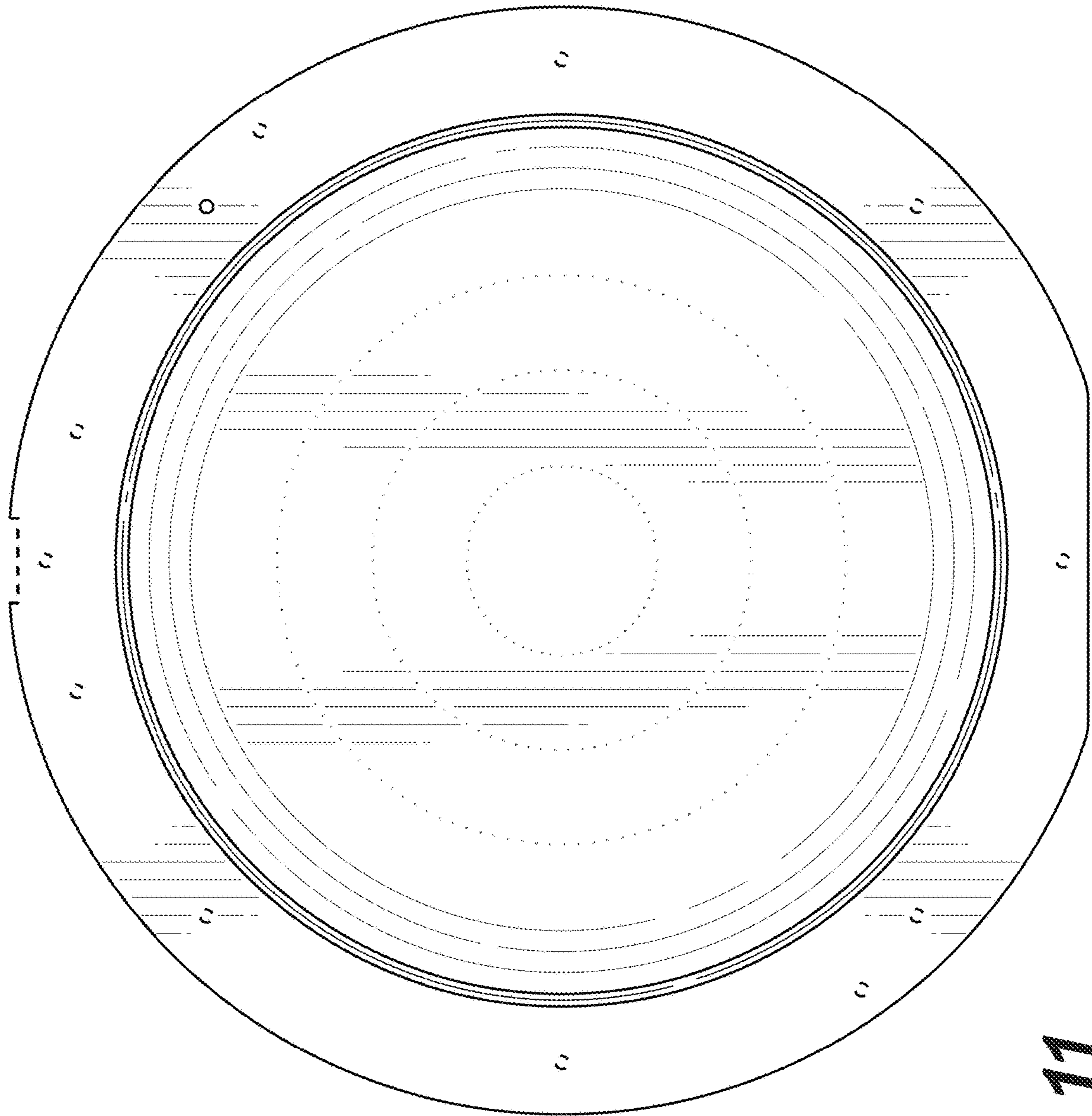


FIG. 11

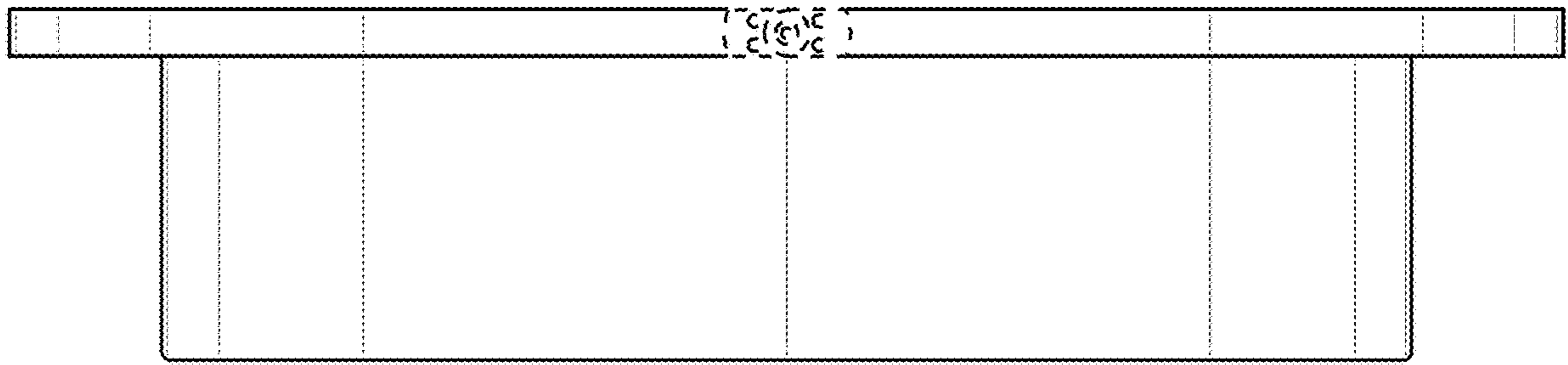


FIG. 12

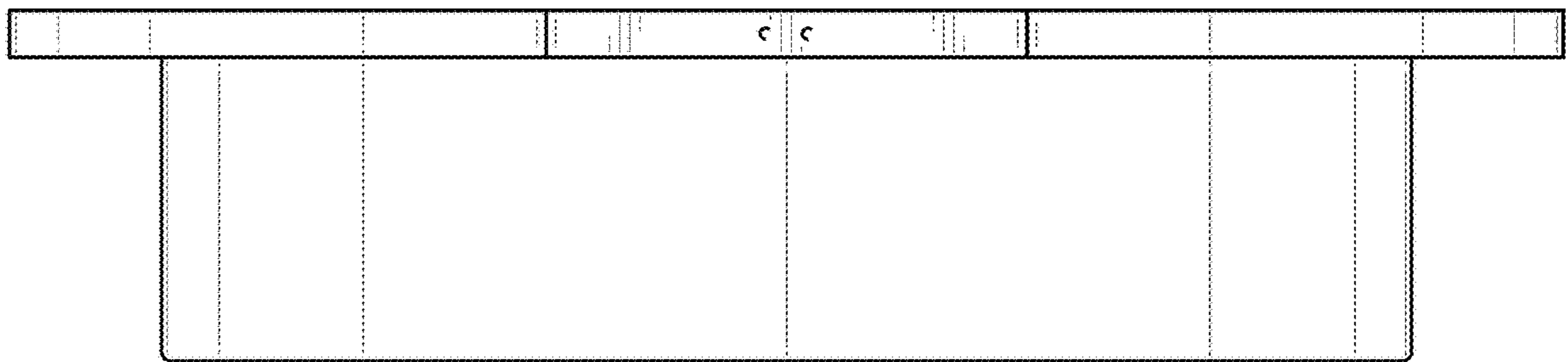


FIG. 13

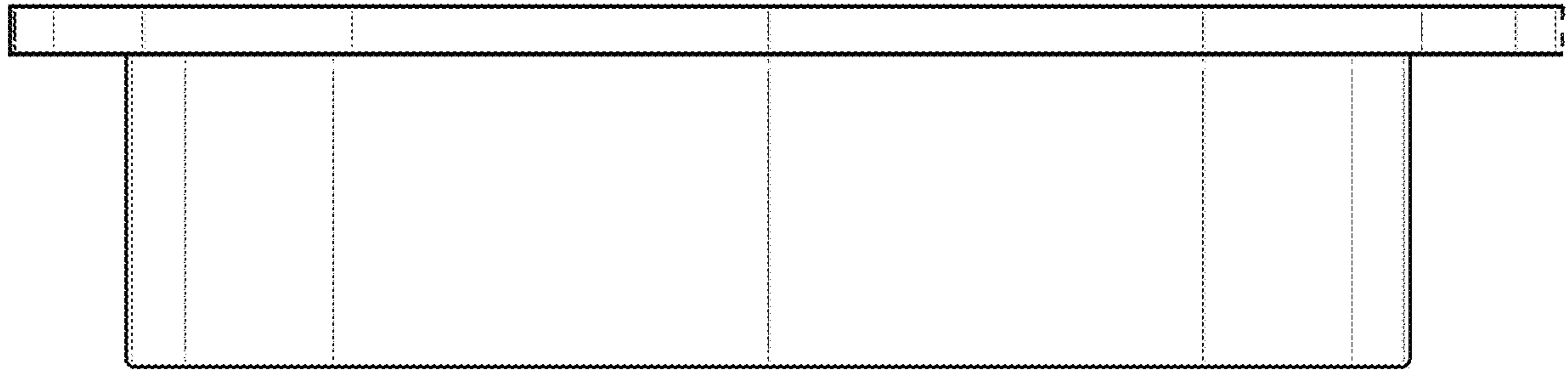


FIG. 14

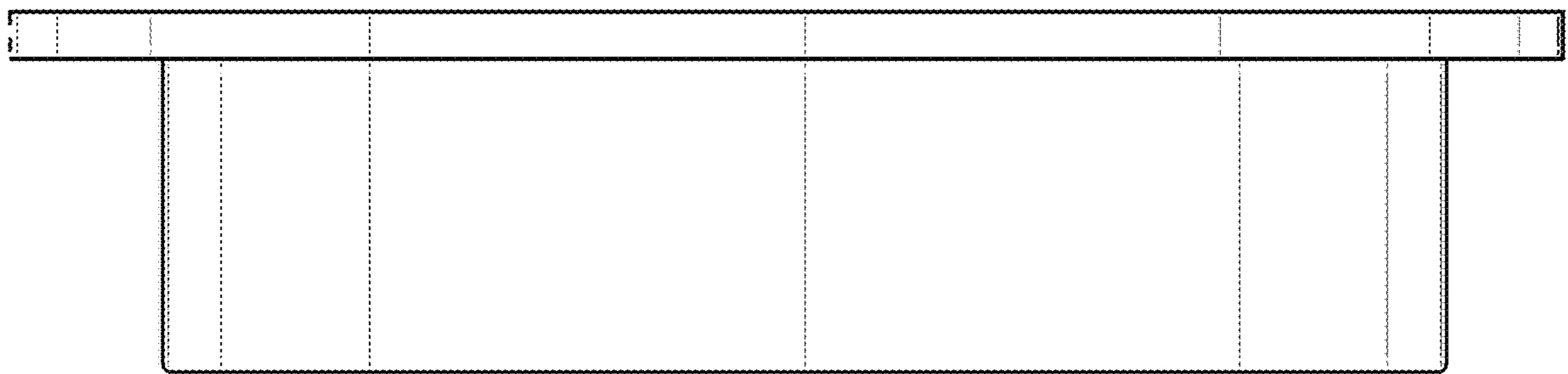


FIG. 15

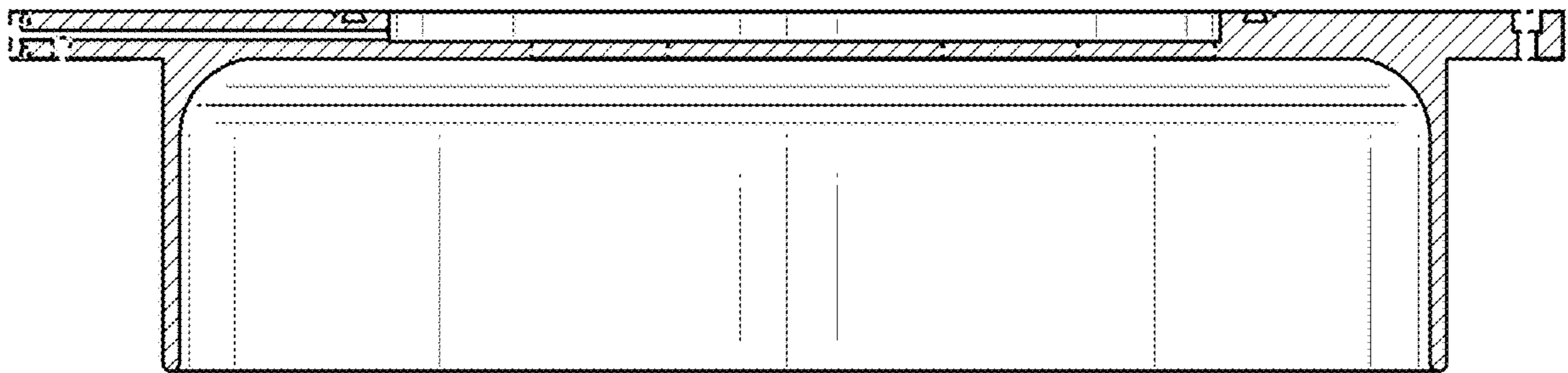


FIG. 16