



US00D862404S

(12) **United States Design Patent**  
Murata et al.(10) Patent No.: **US D862,404 S**  
(45) Date of Patent: \*\* Oct. 8, 2019(54) **SEALING MATERIAL RING FOR A SEMICONDUCTOR MANUFACTURING APPARATUS**(71) Applicants: **KOKUSAI ELECTRIC CORPORATION**, Tokyo (JP); **TOHO KASEI Co., Ltd.**, Nara (JP)(72) Inventors: **Satoru Murata**, Toyama (JP); **Shinya Morita**, Toyama (JP); **Masashi Suzuki**, Yamatokoriyama (JP)(73) Assignees: **KOKUSAI ELECTRIC CORPORATION**, Tokyo (JP); **TOHO KASEI CO., LTD.**, Nara (JP)(\*\*) Term: **15 Years**(21) Appl. No.: **29/601,165**(22) Filed: **Apr. 19, 2017**(30) **Foreign Application Priority Data**Oct. 25, 2016 (JP) ..... 2016-023182  
(51) LOC (12) Cl. ..... 13-03(52) U.S. Cl.  
USPC ..... **D13/182**(58) **Field of Classification Search**USPC ..... D13/182, 184, 199; D15/144, 144.1;  
D30/152; D3/207; D8/399; D11/26  
CPC ..... C25D 17/10; C25D 17/12; C25D 17/14;  
C25D 17/06; C25D 17/08; C25D 7/12;  
C25D 7/10; H01L 21/283; H01H 9/02;  
H01H 9/0214; H01H 9/04; H01H 9/161;  
H01H 13/04; H01H 13/06; H01H 13/023;  
H01H 21/08; H01H 19/025

See application file for complete search history.

(56)

**References Cited**

## U.S. PATENT DOCUMENTS

135,712 A \* 2/1873 Jenks ..... A45C 11/324  
70/456 R  
4,225,162 A \* 9/1980 Dola ..... F16L 25/01  
174/665  
4,447,749 A \* 5/1984 Reeb, Jr. ..... B23B 45/02  
310/50

(Continued)

## FOREIGN PATENT DOCUMENTS

TW 270879 2/1996

## OTHER PUBLICATIONS

DANCO#18 O-Rings (10-Pack), <https://www.homedepot.com/p/DANCO-18-O-Rings-10-Pack-96735/100299374>, copyright 2000, Home Depot Product Authority, LLC. (Year: 2000).\*

(Continued)

*Primary Examiner* — Elizabeth J Oswecki(74) *Attorney, Agent, or Firm* — Fitch, Even, Tabin & Flannery, L.L.P.

(57)

**CLAIM**

The ornamental design for a sealing material ring for a semiconductor manufacturing apparatus, as shown and described.

**DESCRIPTION**FIG. 1 is a front, bottom, and right side perspective view of a sealing material ring for a semiconductor manufacturing apparatus, showing our new design;  
FIG. 2 is a front elevational view thereof;  
FIG. 3 is a rear elevational view thereof;  
FIG. 4 is a top plan view thereof;  
FIG. 5 is a bottom plan view thereof;

(Continued)

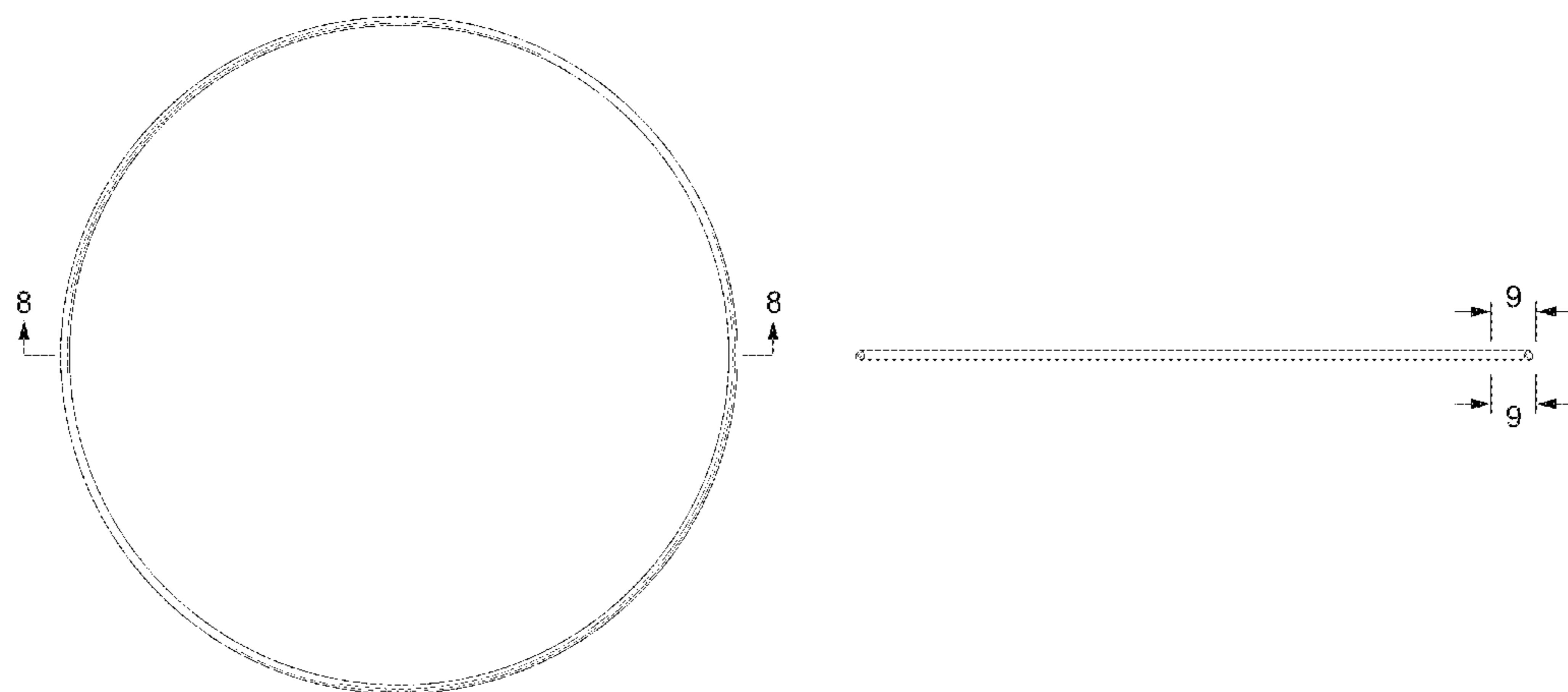


FIG. 6 is a left side elevational view thereof;  
FIG. 7 is a right side elevational view thereof;  
FIG. 8 is a cross-sectional view taken along line 8-8 in FIG.  
2 thereof; and,  
FIG. 9 is an enlarged cross-sectional view taken along line  
9-9 in FIG. 8.

D797,691 S *	9/2017	Joubert .....	D13/182
D803,917 S *	11/2017	Harada .....	D15/144.1
D804,556 S *	12/2017	Harada .....	D15/144.1
D810,705 S *	2/2018	Krishnan .....	D13/182
D827,592 S *	9/2018	Ichino .....	D13/182
D840,364 S *	2/2019	Ichino .....	D13/182

**1 Claim, 5 Drawing Sheets**

(56)

**References Cited****U.S. PATENT DOCUMENTS**

5,302,980 A *	4/1994	Barrett .....	A61B 3/107
			351/212
6,879,023 B1 *	4/2005	Gutierrez .....	H01L 23/562
			257/373
D557,226 S *	12/2007	Uchino .....	D13/182
8,242,586 B2 *	8/2012	Chang .....	H01L 23/5225
			257/501
D770,992 S *	11/2016	Tauchi .....	D13/182

**OTHER PUBLICATIONS**

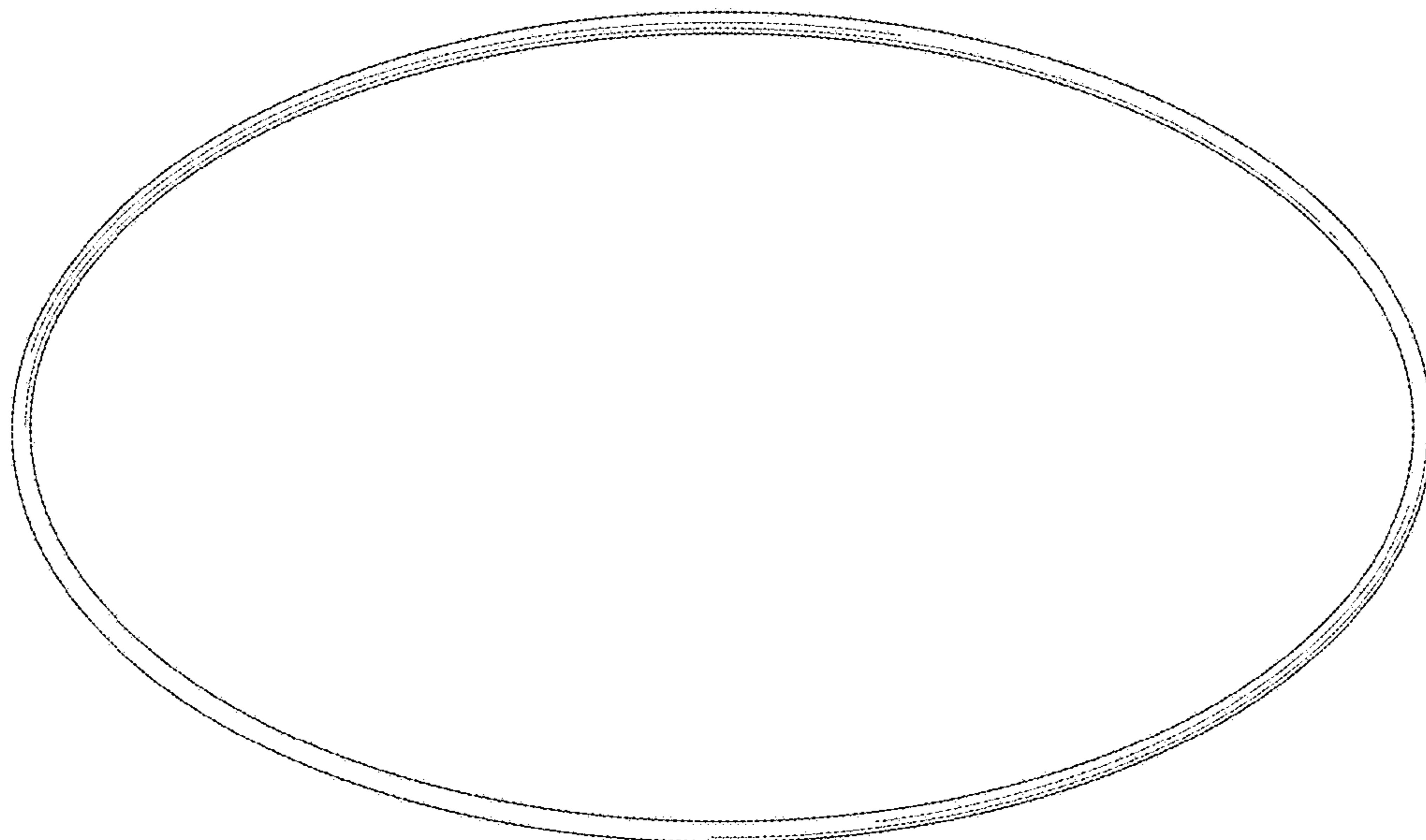
O-Rings-Freudenberg Innovating Together, Sealing Technologies, <https://www.fst.com/products/static-seals/o-rings>, by Freudenberg Sealing Technologies, May 24, 2018. (Year: 2018).\*

Assortment Tray A/C Green Universal O-Rings, 18 Styles-110 PCS, <https://henrysautowarehouse.com/product/assortment-tray-ac-green-universal-o-rings-18-styles-110-pcs/>, copyright 2019 Henry's Automotive Warehouse. (Year: 2019).\*

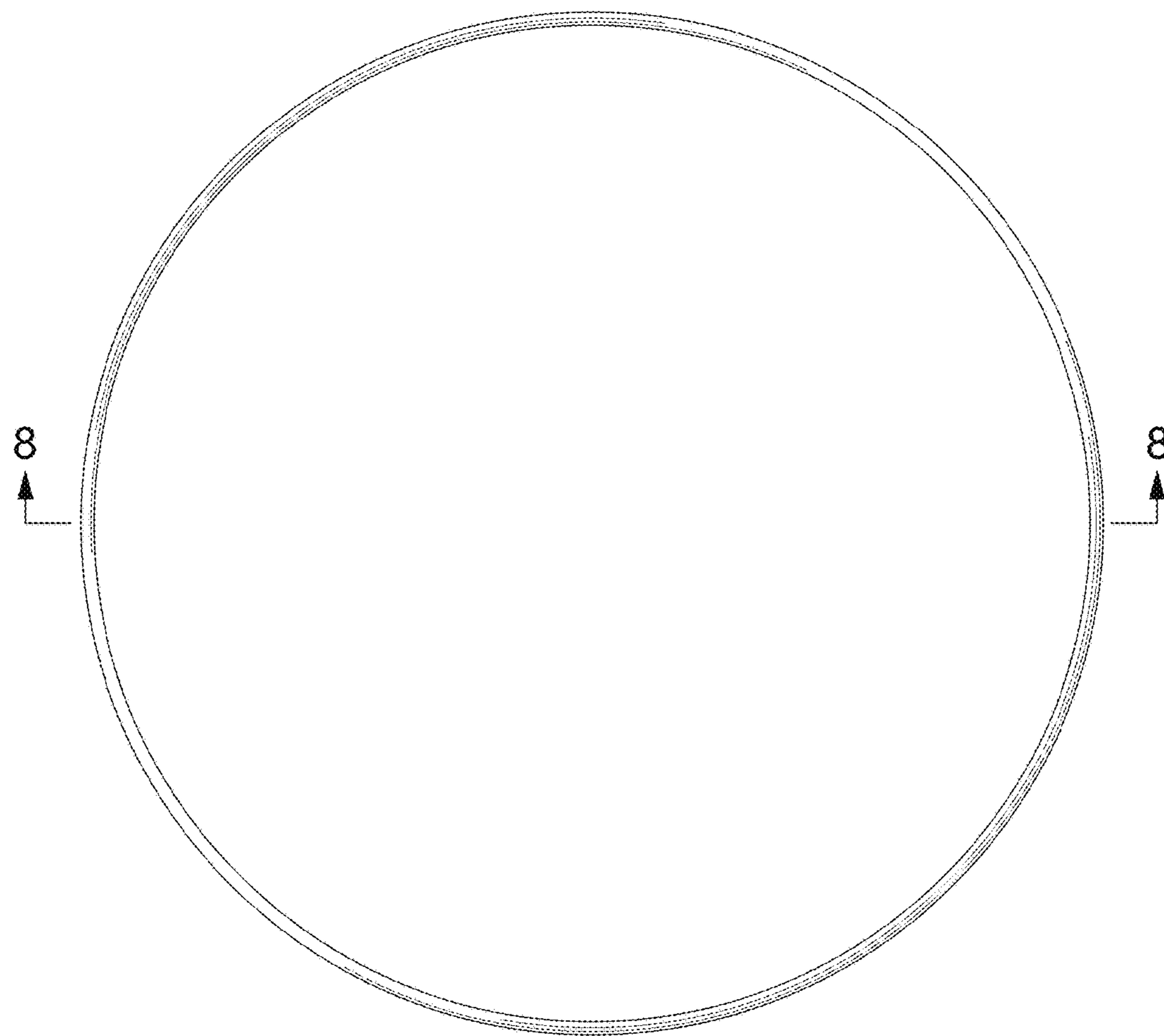
O-Ring, Item #23CJ16, Mfr Model # PP60076G, <https://www.grainger.com/product/DAYTON-O-Ring-for-4ZA35A-23CJ16>, Grainger, copyright 1994. (Year: 1994).\*

Office Action of TW Appln. No. 106301911 dated Sep. 6, 2017, with English translation.

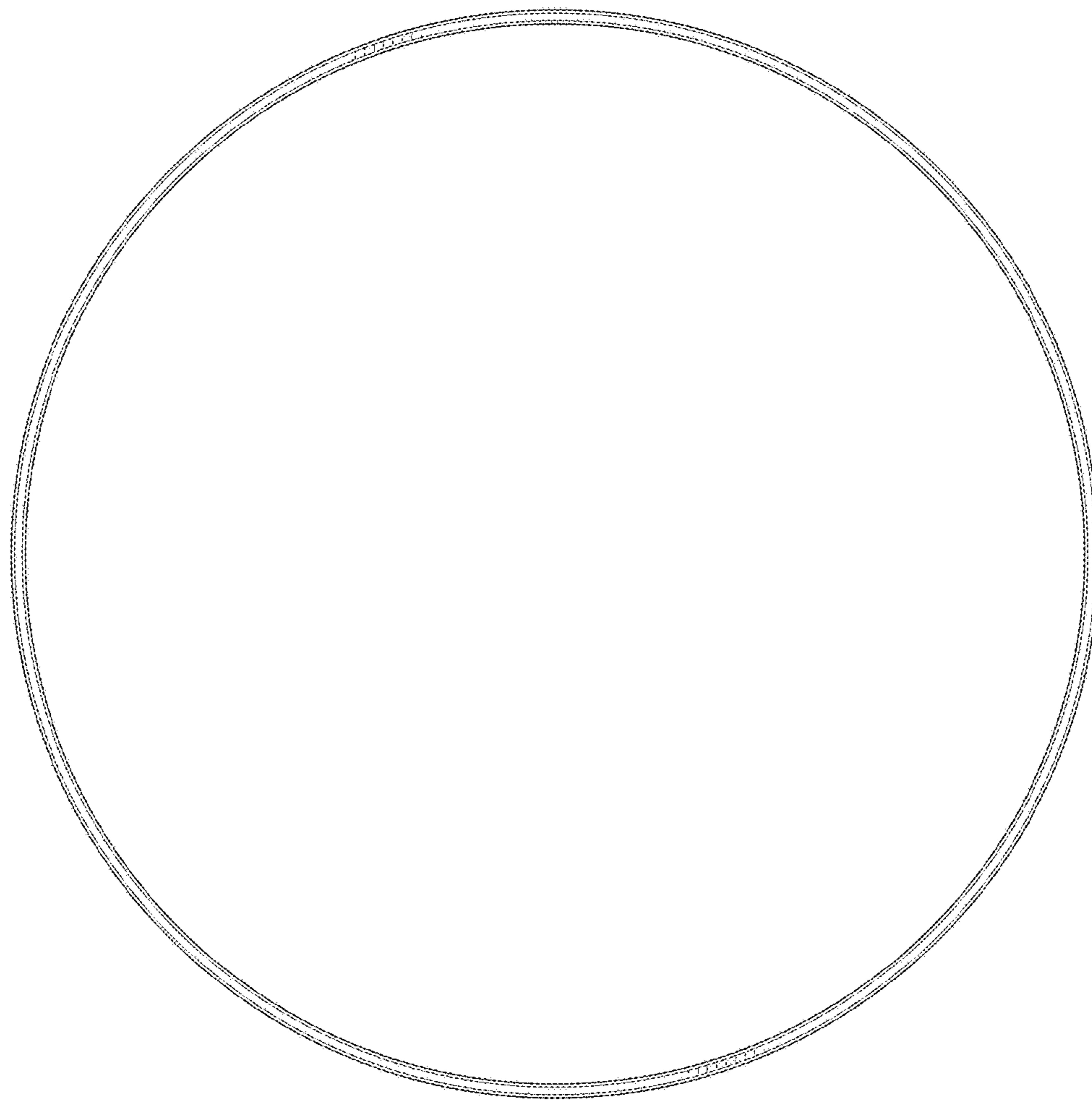
\* cited by examiner



***FIG. 1***



**FIG. 2**



***FIG. 3***

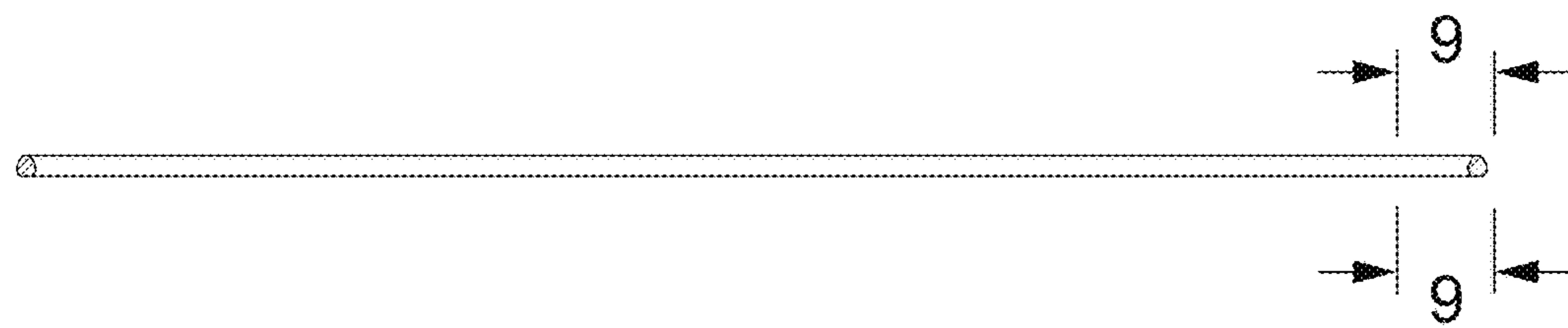
*FIG. 4*

*FIG. 5*

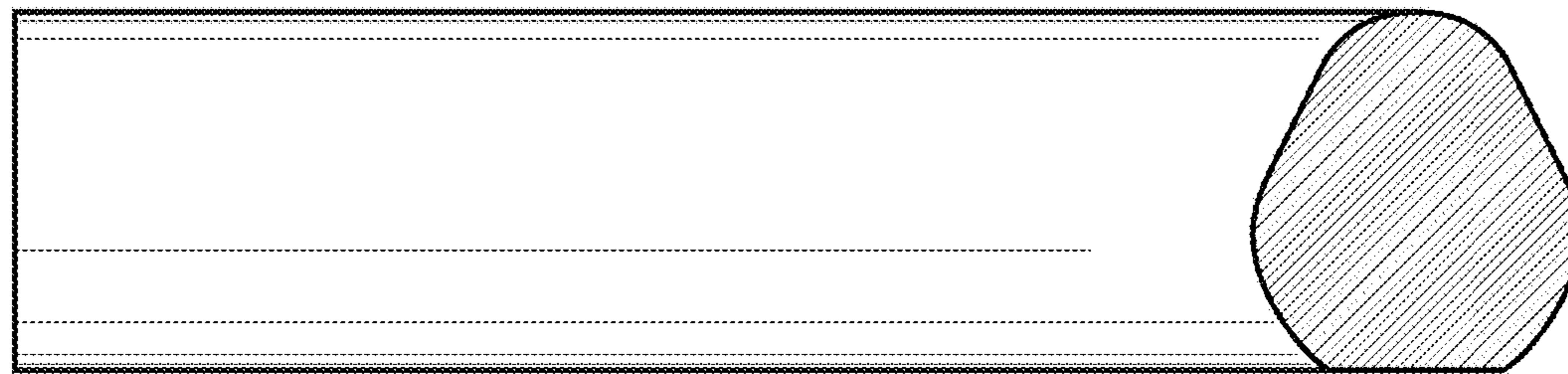


*FIG. 6*

*FIG. 7*



*FIG. 8*



*FIG. 9*