



US00D935574S

(12) **United States Design Patent** (10) **Patent No.:** **US D935,574 S**  
**Eitschberger et al.** (45) **Date of Patent:** **\*\* Nov. 9, 2021**

(54) **INNER RETENTION RING**

- (71) Applicant: **DynaEnergetics Europe GmbH**, Troisdorf (DE)
- (72) Inventors: **Christian Eitschberger**, Munich (DE); **Thilo Scharf**, Letterkenny (IE); **Gernot Uwe Burmeister**, Austin, TX (US)
- (73) Assignee: **DynaEnergetics Europe GmbH**, Troisdorf (DE)
- (\*\*) Term: **15 Years**
- (21) Appl. No.: **29/781,925**
- (22) Filed: **May 3, 2021**

**Related U.S. Application Data**

- (63) Continuation of application No. 29/755,354, filed on Oct. 20, 2020, now Pat. No. Des. 921,858, which is a (Continued)
- (51) **LOC (13) Cl.** ..... **23-01**
- (52) **U.S. Cl.**  
USPC ..... **D23/262**
- (58) **Field of Classification Search**  
USPC ..... D15/126, 138-139, 143-144; D22/112; D8/382, 387, 394, 396-397;  
(Continued)

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

- 2,147,544 A \* 2/1939 Potts ..... E21B 47/024 166/66
- 2,296,198 A \* 9/1942 Boynton ..... E21B 17/046 285/91

(Continued)

**FOREIGN PATENT DOCUMENTS**

- CA 2821506 A1 1/2015
  - CA 3022946 A1 11/2017
- (Continued)

**OTHER PUBLICATIONS**

United States Patent and Trademark Office, Final Written Decision of Case IPR2018-00600 for U.S. Pat. No. 9,581,422 B2, Paper No. 42, dated Aug. 20, 2019, 31 pgs.  
(Continued)

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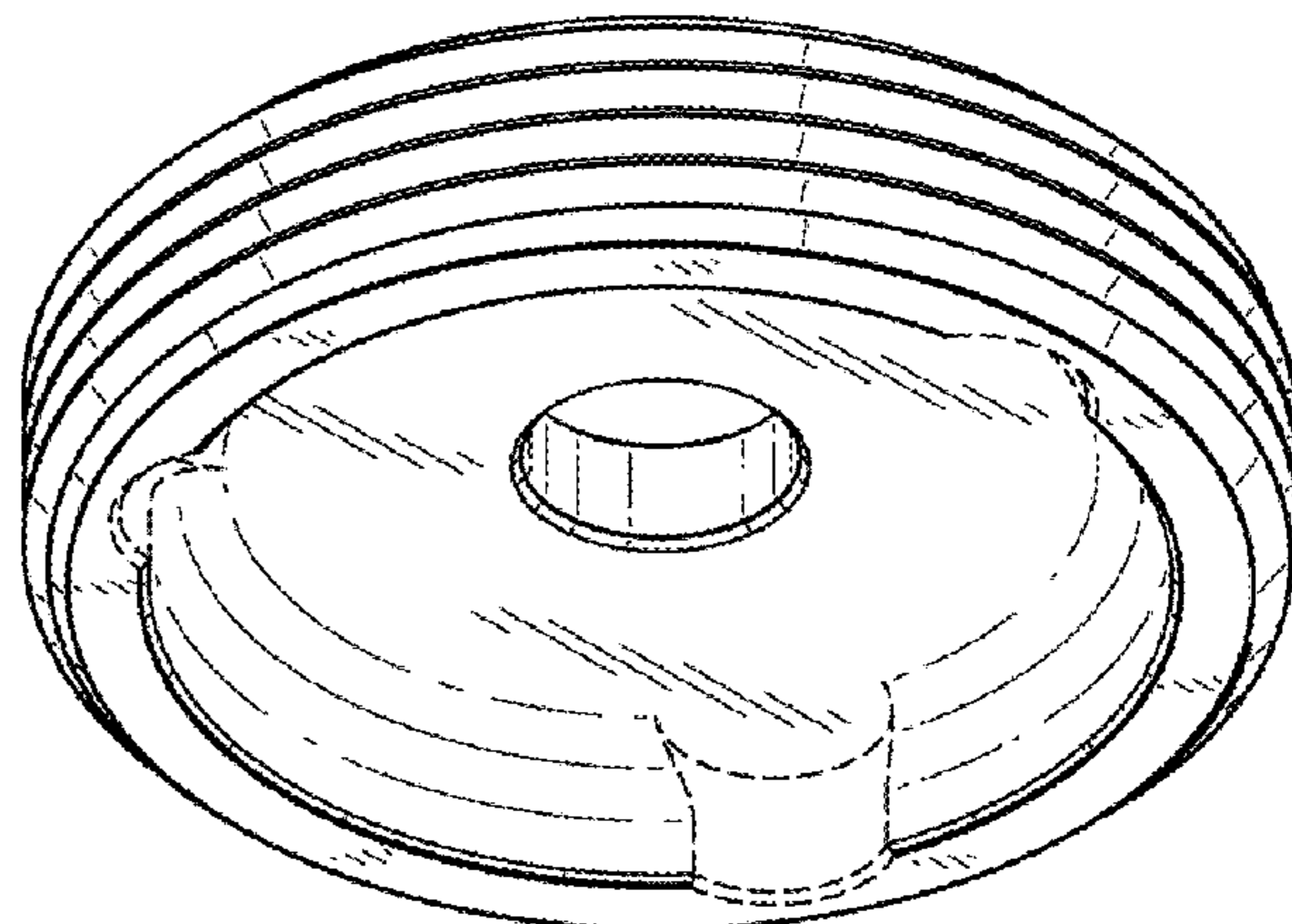
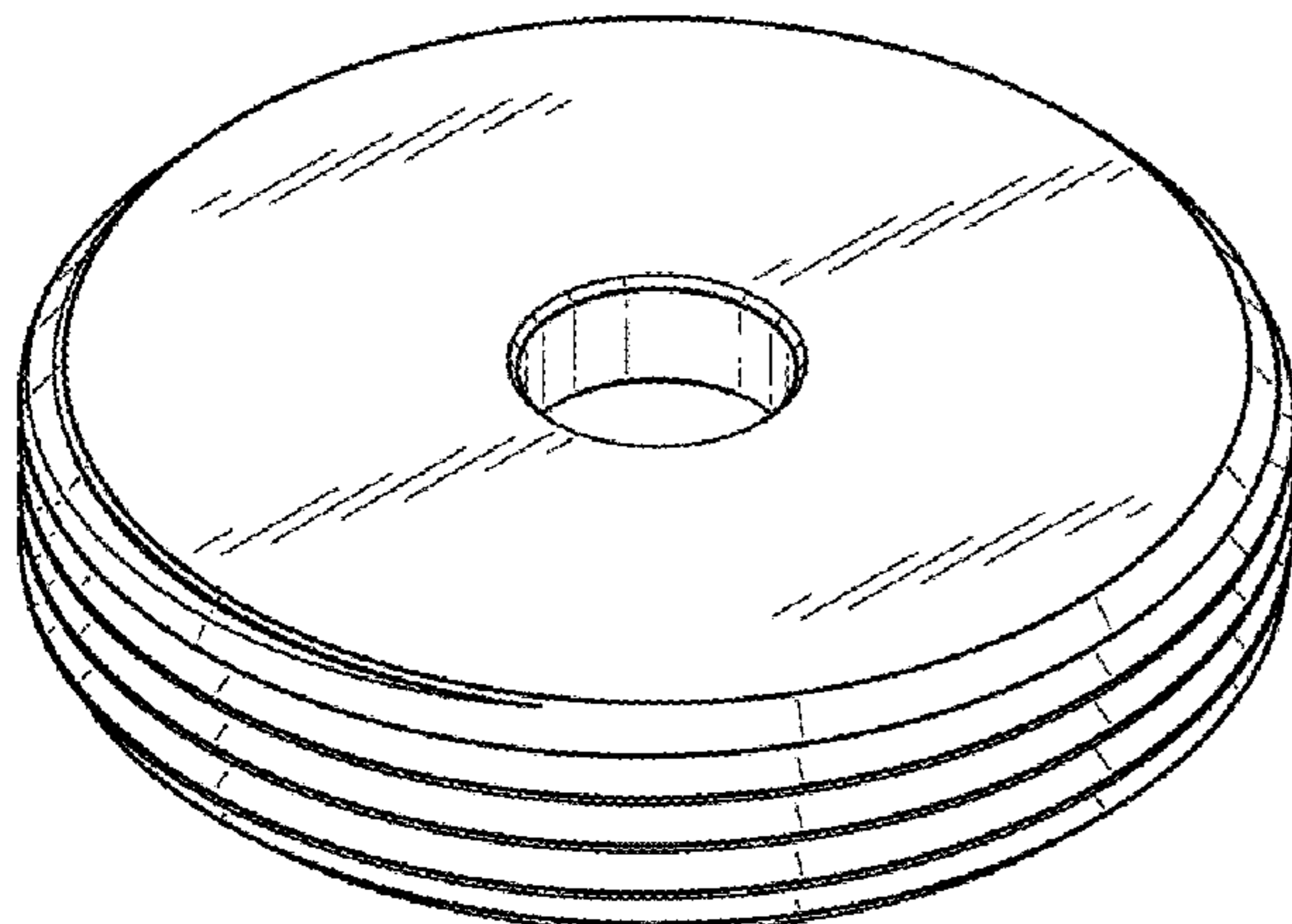
(57) **CLAIM**

We claim the ornamental design of an inner retention ring, as shown and described.

**DESCRIPTION**

FIG. 1 is a front, top perspective view of an inner retention ring showing our new design;  
FIG. 2 is a front, bottom perspective view of the inner retention ring of FIG. 1;  
FIG. 3 is a front elevated view of the inner retention ring of FIG. 1;  
FIG. 4 is a rear elevated view of the inner retention ring of FIG. 1;  
FIG. 5 is a left -side elevated view of the inner retention ring of FIG. 1;  
FIG. 6 is a right-side elevated view of the inner retention ring of FIG. 1;  
FIG. 7 is a top plan view of the inner retention ring of FIG. 1;  
FIG. 8 is a bottom plan view of the inner retention ring of FIG. 1; and,  
FIG. 9 is a cross-section view of the inner retention ring of FIG. 1, taken along line 9-9 of FIG. 7.  
The broken lines consisting of dashes show an environment that forms no part of the claimed design.

**1 Claim, 3 Drawing Sheets**



**Related U.S. Application Data**

continuation-in-part of application No. 29/729,981, filed on Mar. 31, 2020, now Pat. No. Des. 903,064, which is a continuation of application No. 16/511,495, filed on Jul. 15, 2019, now Pat. No. 10,920,543, which is a continuation of application No. 16/272,326, filed on Feb. 11, 2019, now Pat. No. 10,458,213.

(58) **Field of Classification Search**

USPC ..... D23/259–260, 262, 264–266; 285/402; D9/439

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2,708,408 A 5/1955 Sweetman  
 3,154,632 A 10/1964 Browne  
 3,327,792 A 6/1967 Boop  
 3,504,723 A \* 4/1970 Cushman ..... F16B 5/025  
 411/82.1  
 D227,763 S 7/1973 Hand  
 3,927,791 A \* 12/1975 Hershberger ..... F22B 37/46  
 220/89.4  
 4,411,491 A 10/1983 Larkin et al.  
 D274,701 S \* 7/1984 Burrill ..... D9/439  
 4,491,185 A 1/1985 McClure  
 4,541,486 A 9/1985 Wetzal et al.  
 4,574,892 A 3/1986 Grigar et al.  
 4,660,910 A 4/1987 Sharp et al.  
 4,676,528 A 6/1987 Gray  
 4,747,201 A 5/1988 Donovan et al.  
 4,776,393 A 10/1988 Forehand et al.  
 4,830,120 A 5/1989 Stout  
 4,850,438 A 7/1989 Regalbutto  
 5,027,708 A 7/1991 Gonzalez et al.  
 5,050,691 A 9/1991 Moses  
 5,052,489 A 10/1991 Carisella et al.  
 5,088,413 A 2/1992 Huber  
 5,322,019 A 6/1994 Hyland  
 5,358,418 A 10/1994 Carmichael  
 5,436,791 A 7/1995 Turano et al.  
 5,603,384 A 2/1997 Bethel et al.  
 5,775,426 A 7/1998 Snider et al.  
 5,780,764 A \* 7/1998 Welch ..... C06C 5/06  
 102/318  
 5,911,277 A 6/1999 Hromas et al.  
 5,992,289 A 11/1999 George et al.  
 5,992,523 A 11/1999 Burleson et al.  
 D418,210 S 12/1999 Roesch  
 6,050,353 A 4/2000 Logan et al.  
 6,158,532 A 12/2000 Logan et al.  
 6,257,792 B1 \* 7/2001 Read, Jr. .... E21B 17/046  
 166/242.6  
 6,298,915 B1 10/2001 George  
 6,516,901 B1 2/2003 Falgout  
 6,820,693 B2 11/2004 Hales et al.  
 6,851,471 B2 2/2005 Barlow et al.  
 6,902,414 B2 6/2005 Dopf et al.  
 7,013,977 B2 3/2006 Nordaas  
 7,074,064 B2 7/2006 Wallace  
 D532,947 S 11/2006 Muscarella  
 7,193,527 B2 3/2007 Hall  
 7,237,626 B2 7/2007 Gurjar et al.  
 7,255,183 B2 8/2007 Cramer  
 7,278,491 B2 10/2007 Scott  
 7,451,703 B1 \* 11/2008 Dabiri ..... F42B 39/20  
 102/200  
 7,591,212 B2 9/2009 Myers, Jr. et al.  
 7,661,474 B2 2/2010 Campbell et al.  
 7,726,396 B2 6/2010 Briquet et al.  
 7,748,447 B2 7/2010 Moore  
 7,762,351 B2 7/2010 Vidal  
 8,181,718 B2 5/2012 Burleson et al.  
 8,182,212 B2 5/2012 Parcell

8,186,259 B2 5/2012 Burleson et al.  
 8,408,286 B2 4/2013 Rodgers et al.  
 D682,384 S 5/2013 Jaureguizar  
 8,490,686 B2 7/2013 Rodgers et al.  
 D712,013 S 8/2014 Mather et al.  
 8,869,887 B2 10/2014 Deere et al.  
 8,875,787 B2 11/2014 Tassaroli  
 9,206,675 B2 12/2015 Hales et al.  
 9,270,051 B1 2/2016 Christiansen et al.  
 9,466,916 B2 10/2016 Li et al.  
 9,494,021 B2 11/2016 Parks et al.  
 9,581,422 B2 2/2017 Preiss et al.  
 9,587,439 B2 3/2017 Lamik-Thonhauser et al.  
 9,593,548 B2 3/2017 Hill et al.  
 9,605,937 B2 3/2017 Eitschberger et al.  
 D787,025 S \* 5/2017 Taylor ..... D23/260  
 9,677,363 B2 6/2017 Schacherer et al.  
 9,689,223 B2 6/2017 Schacherer et al.  
 9,695,673 B1 7/2017 Latiolais  
 9,702,680 B2 7/2017 Parks et al.  
 9,784,549 B2 10/2017 Eitschberger  
 9,822,618 B2 \* 11/2017 Eitschberger ..... E21B 43/1185  
 9,915,366 B2 \* 3/2018 Kendricks ..... B60T 17/043  
 9,926,750 B2 3/2018 Ringgenberg  
 10,066,917 B1 \* 9/2018 Youn ..... F42B 39/20  
 10,066,921 B2 9/2018 Eitschberger  
 10,077,641 B2 9/2018 Rogman et al.  
 10,151,152 B2 12/2018 Wight et al.  
 10,273,788 B2 4/2019 Bradley et al.  
 10,309,199 B2 6/2019 Eitschberger  
 10,352,136 B2 7/2019 Goyeneche  
 10,385,629 B2 8/2019 Spence et al.  
 10,428,595 B2 10/2019 Bradley et al.  
 10,429,161 B2 10/2019 Parks et al.  
 10,458,213 B1 10/2019 Eitschberger et al.  
 10,472,901 B2 11/2019 Engel et al.  
 10,472,938 B2 11/2019 Parks et al.  
 D877,286 S \* 3/2020 Hartman ..... D22/112  
 10,594,102 B2 3/2020 Pratt et al.  
 D892,278 S 8/2020 Eitschberger  
 10,844,697 B2 11/2020 Preiss et al.  
 D904,475 S 12/2020 Preiss  
 2005/0279513 A1 12/2005 Eppink  
 2006/0082152 A1 4/2006 Neves  
 2007/0084336 A1 4/2007 Neves  
 2008/0264639 A1 10/2008 Parrott et al.  
 2009/0301723 A1 12/2009 Gray  
 2010/0024674 A1 \* 2/2010 Peeters ..... F42D 1/043  
 102/275.4  
 2011/0024116 A1 2/2011 McCann et al.  
 2012/0152542 A1 6/2012 Le  
 2012/0177879 A1 \* 7/2012 Cripsey ..... B21H 5/025  
 428/134  
 2012/0241169 A1 9/2012 Hales et al.  
 2012/0247769 A1 10/2012 Schacherer et al.  
 2013/0008639 A1 1/2013 Tassaroli et al.  
 2013/0118342 A1 \* 5/2013 Tassaroli ..... E21B 43/119  
 89/1.15  
 2013/0126237 A1 5/2013 Burton et al.  
 2013/0199843 A1 8/2013 Ross  
 2016/0084048 A1 3/2016 Harrigan et al.  
 2016/0108722 A1 4/2016 Whitsitt et al.  
 2016/0168961 A1 6/2016 Parks et al.  
 2016/0202033 A1 7/2016 Shahinpour et al.  
 2016/0281466 A1 9/2016 Richards  
 2016/0290084 A1 \* 10/2016 LaGrange ..... E21B 29/02  
 2016/0333675 A1 11/2016 Wells et al.  
 2016/0356132 A1 12/2016 Burmeister et al.  
 2017/0016705 A1 \* 1/2017 Jung ..... F42B 39/20  
 2017/0052011 A1 \* 2/2017 Parks ..... F42D 1/02  
 2017/0211363 A1 7/2017 Bradley et al.  
 2017/0241244 A1 8/2017 Barker et al.  
 2017/0268320 A1 9/2017 Angman et al.  
 2017/0268860 A1 9/2017 Eitschberger  
 2017/0314373 A9 11/2017 Bradley et al.  
 2018/0119529 A1 5/2018 Goyeneche  
 2018/0202789 A1 7/2018 Parks et al.  
 2018/0202790 A1 7/2018 Parks et al.  
 2018/0252054 A1 9/2018 Stokes

(56)

**References Cited**

## U.S. PATENT DOCUMENTS

2018/0318770	A1	11/2018	Eitschberger et al.	
2019/0040722	A1*	2/2019	Yang .....	E21B 43/117
2019/0048693	A1	2/2019	Henke et al.	
2019/0049225	A1	2/2019	Eitschberger	
2019/0153827	A1	5/2019	Goyeneche	
2019/0162056	A1	5/2019	Sansing	
2019/0195054	A1	6/2019	Bradley et al.	
2019/0211655	A1	7/2019	Bradley et al.	
2019/0219375	A1	7/2019	Parks et al.	
2019/0234188	A1*	8/2019	Goyeneche .....	E21B 43/119
2019/0257158	A1	8/2019	Langford et al.	
2019/0366272	A1	12/2019	Eitschberger et al.	
2020/0032626	A1	1/2020	Parks et al.	
2020/0048996	A1	2/2020	Anthony et al.	
2020/0063553	A1	2/2020	Zemla et al.	
2020/0072029	A1	3/2020	Anthony et al.	
2020/0199983	A1	6/2020	Preiss et al.	
2020/0217635	A1	7/2020	Eitschberger	
2020/0248535	A1	8/2020	Goyeneche	
2020/0362652	A1	11/2020	Eitschberger et al.	
2020/0362654	A1	11/2020	Eitschberger et al.	
2020/0399995	A1	12/2020	Preiss et al.	

## FOREIGN PATENT DOCUMENTS

CN	201209435	3/2009
CN	201428439	3/2010
CN	103485750 A	1/2014
CN	103993861 A	8/2014
CN	208870580 U	5/2019
CN	110424930 A	11/2019
EP	0180520 B1	5/1991
GB	2548101 A	9/2017
JP	1363909	5/2009
JP	1387855	4/2010
KR	3008491620000	4/2016
WO	2018213768 A1	11/2018

## OTHER PUBLICATIONS

United States Patent and Trademark Office, U.S. Pat. No. 10,429,161; 263 pages.

United States Patent and Trademark Office, U.S. Pat. No. 10,472,938; 485 pages.

United States Patent and Trademark Office; Notice of Allowance for U.S. Appl. No. 29/755,354 dated Feb. 11, 2021; 6 pages.

United States Patent and Trial Appeal Board; Final Written Decision on IPR2018-00600; dated Aug. 20, 2019; 31 pages.

United States Patent Trial and Appeal Board; Decision Denying Institution of Post-Grant Review; PGR No. 2020-00072; dated Jan. 19, 2021; 38 pages.

Yellow Jacket Oil Tools, Orienting Sub, 2019, 2 pgs., <https://www.yjoiltools.com/Wireline-Subs/Orienting-Sub>.

Yellow Jacket Oil Tools; Tandem Sub; 2019; 3 pages.

3M, CTC Medical Repair, Inc.; Threaded Retaining Ring for 3M K220 Sagittal Saw Attachment; dated Jul. 12, 2010; 1 page; URL: [http://www.ctcmedrepair.com/sales/index.php?main\\_page=product\\_info&cPath=2\\_3&products\\_id=323](http://www.ctcmedrepair.com/sales/index.php?main_page=product_info&cPath=2_3&products_id=323).

Amit Govil, Selective Perforation: A Game Changer in Perforating Technology—Case Study, presented at the 2012 European and West African Perforating Symposium, Schlumberger, Nov. 7-9, 2012, 14 pgs.

Anu Industries; Retainer Ring—Metal Retainer Ring Manufacturer from Coimbatore; dated Jun. 28, 2012; 3 pages; URL: <https://www.indiamart.com/anuindustries-coimbatore/retainer-ring.html>.

Core Lab, Zero180™ Gun System Assembly and Arming Procedures, 2015, 33 pgs., <https://www.corelab.com/owen/CMS/docs/Manuals/gunsys/zero180/MAN-Z180-000.pdf>.

Dynaenergetics Europe GMBH; Patent Owner's Preliminary Response for PGR2020-00072; dated Oct. 23, 2020; 108 pages.

Dynaenergetics Europe GMBH; Patent Owner's Preliminary Response for PGR2020-00080; dated Nov. 18, 2020; 119 pages.

Dynaenergetics Europe; Complaint and Demand for Jury Trial, Civil Action No. 6:20-cv-00069; dated Jan. 30, 2020; 9 pages.

Dynaenergetics Europe; Complaint and Demand for Jury Trial, Civil Action No. 6:20-cv-01201; dated Dec. 30, 2020; 12 pages.

Dynaenergetics Europe; Complaint and Demand for Jury Trial, Civil Action No. 4:17-cv-03784; dated Dec. 14, 2017; 7 pages.

Dynaenergetics Europe; DynaEnergetics exhibition and product briefing; 2013; 15 pages.

Dynaenergetics Europe; Plaintiffs' Motion to Dismiss Defendants' Counterclaim and to strike Affirmative Defenses, Civil Action No. 4:17-cv-03784; dated Feb. 20, 2018; 9 pages.

Dynaenergetics Europe; Plaintiffs' Preliminary Claim Constructions and Identification of Extrinsic Evidence Civil Action No. 4:17-cv-03784; dated Aug. 3, 2018; 9 pages.

Dynaenergetics Europe; Plaintiffs' Preliminary Infringement Contentions, Civil Action No. 6:20-cv-00069-ADA; dated Apr. 22, 2020; 32 pages.

Dynaenergetics Europe; Plaintiffs' Response to Defendants' Answer to Second Amended Complaint Civil Action No. 6:20-cv-00069-ADA; dated May 26, 2020; 18 pages.

G&H Diversified Manufacturing, LP; Complaint for Declaratory Judgment for Civil Action No. 3:20-cv-00376; dated Dec. 14, 2020; 7 pages.

GE Oil & Gas, Addressable Downhole Release Tools, Mar. 23, 2018, 5 pgs., <https://www.bhge.com/upstream/evaluation/wireline-products-and-equipment/downhole-equipment/addressable-downhole-release-tools>.

Hunting Titan Division, Marketing White Paper: H-1® Perforating Gun System, Jan. 2017, 5 pgs., [http://www.hunting-intl.com/media/2674690/White%20Paper%20-%20H-1%20Perforating%20Gun%20Systems\\_January%202017.pdf](http://www.hunting-intl.com/media/2674690/White%20Paper%20-%20H-1%20Perforating%20Gun%20Systems_January%202017.pdf).

Hunting Titan Ltd.; Defendants' Answer and Counterclaims, Civil Action No. 4:19-cv-01611, consolidated to Civil Action No. 4:17-cv-03784; dated May 28, 2019; 21 pages.

Hunting Titan Ltd.; Petition for Inter Partes Review of U.S. Pat. No. 9,581,422 Case No. IPR2018-00600 dated Feb. 16, 2018; 93 pages.

Hunting Titan Ltd.; Defendants' Answer and Counterclaims, Civil Action No. 6:20-cv-00069; dated Mar. 17, 2020; 30 pages.

Hunting Titan Ltd.; Defendants' Answer to First Amended Complaint and Counterclaims, Civil Action No. 6:20-cv-00069; dated Apr. 6, 2020; 30 pages.

Hunting Titan Ltd.; Defendants' Answer to Second Amended Complaint and Counterclaims, Civil Action No. 6:20-cv-00069; dated May 12, 2020; 81 pages.

Hunting Titan Ltd.; Defendants Invalidation Contentions Pursuant to Patent Rule 3-3, Civil Action No. 4:17-cv-03784; dated Jul. 6, 2018; 29 pages.

Hunting Titan Ltd.; Defendants' Objections and Responses to Plaintiffs' First Set of Interrogatories, Civil Action No. 4:17-cv-03784; dated Jun. 11, 2018.

Hunting Titan Ltd.; Defendants' Opposition to Plaintiffs' Motion to Dismiss and Strike Defendants' Amended Counterclaim and Affirmative Defenses for Unenforceability due to Inequitable Conduct for Civil Action No. 4:17-cv-03784; dated Apr. 24, 2018; 8 pages.

Hunting Titan, T-Set Setting Tool Product Catalog, 2015, 87 pgs., [http://www.hunting-intl.com/media/1872254/AMG-1054.HT\\_T-Set\\_Catalog\\_LowRes.pdf](http://www.hunting-intl.com/media/1872254/AMG-1054.HT_T-Set_Catalog_LowRes.pdf).

Jet Research Center, Velocity™ Perforating System Plug and Play Guns For Pumpdown Operation, Ivarado, Texas, Jul. 2019, 8 pgs., <https://www.jetresearch.com/content/dam/jrc/Documents/Brochures/jrc-velocity-perforating-system.pdf>.

Owens Oil Tools, E & B Select Fire Side Port Tandem Sub Assembly, 2009, 9 pgs., <https://www.corelab.com/owen/CMS/docs/Manuals/gunsys/MAN-30-XXX-0002-96-R00.pdf>.

Parrot, Robert; Declaration, PGR 2020-00080; dated Aug. 11, 2020; 400 pages.

Patent Trial and Appeal Board; Decision Granting Patent Owner's Request for Rehearing and Motion to Amend for IPR2018-00600; dated Jul. 6, 2020; 27 pages.

(56)

**References Cited**

## OTHER PUBLICATIONS

Pool Supply World; Paramount—Threaded Nozzle Retainer Ring for Pool Valet, White; dated May 9, 2021; 3 pages; URL: <https://poolsupplyworld.com/301817.html#description-btn-div>.

Preiss Frank et al.; Lowering Total Cost of Operations Through Higher Perforating Efficiency while simultaneously enhancing safety; 26 pages.

Rodgers, John; Declaration for PGR2020-00072; dated Oct. 23, 2020; 116 pages.

Rodgers, John; Declaration for PGR2020-00080; dated Nov. 18, 2020; 142 pages.

Scharf Thilo; Declaration for PGR2020-00080; dated Nov. 16, 2020; 16 pages.

Scharf, Thilo; Declaration for PGR2020-00072; dated Oct. 22, 2020; 13 pages.

Schlumberger, Perforating Services Catalog, 2008, 521 pages.

Schlumberger; Selective Perforation: A Game Changer in Perforating Technology—Case Study; issued 2012; 14 pages.

United States Patent and Trademark Office, Case IPR2018-00600 for U.S. Pat. No. 9,581,422 B2, Reply In Support of Patent Owner's Motion to Amend, dated Mar. 21, 2019, 15 pgs.

United States Patent and Trademark Office, Case IPR2018-00600 for U.S. Pat. No. 9,581,422 B2, DynaEnergetics GmbH & Co. KG's Patent Owner Preliminary Response, dated May 22, 2018, 47 pgs.

United States Patent and Trademark Office, Case IPR2018-00600 for U.S. Pat. No. 9,581,422 B2, Order Granting Precedential Opinion Panel, Paper No. 46, dated Nov. 7, 2019, 4 pgs.

United States Patent and Trademark Office, Case IPR2018-00600 for U.S. Pat. No. 9,581,422 B2, Patent Owner's Motion to Amend, dated Dec. 6, 2018, 53 pgs.

United States Patent and Trademark Office, Case IPR2018-00600 for U.S. Pat. No. 9,581,422 B2, Patent Owner's Opening Submission to Precedential Opinion Panel, dated Dec. 20, 2019, 21 pgs.

United States Patent and Trademark Office, Case IPR2018-00600 for U.S. Pat. No. 9,581,422 B2, Patent Owner's Request for Hearing, dated Sep. 18, 2019, 19 pgs.

United States Patent and Trademark Office, Case IPR2018-00600 for U.S. Pat. No. 9,581,422 B2, Patent Owner's Responsive Submission to Precedential Opinion Panel, dated Jan. 6, 2020, 16 pgs.

United States Patent and Trademark Office, Case IPR2018-00600 for U.S. Pat. No. 9,581,422 B2, Patent Owner's Sur-reply, dated Mar. 21, 2019, 28 pgs.

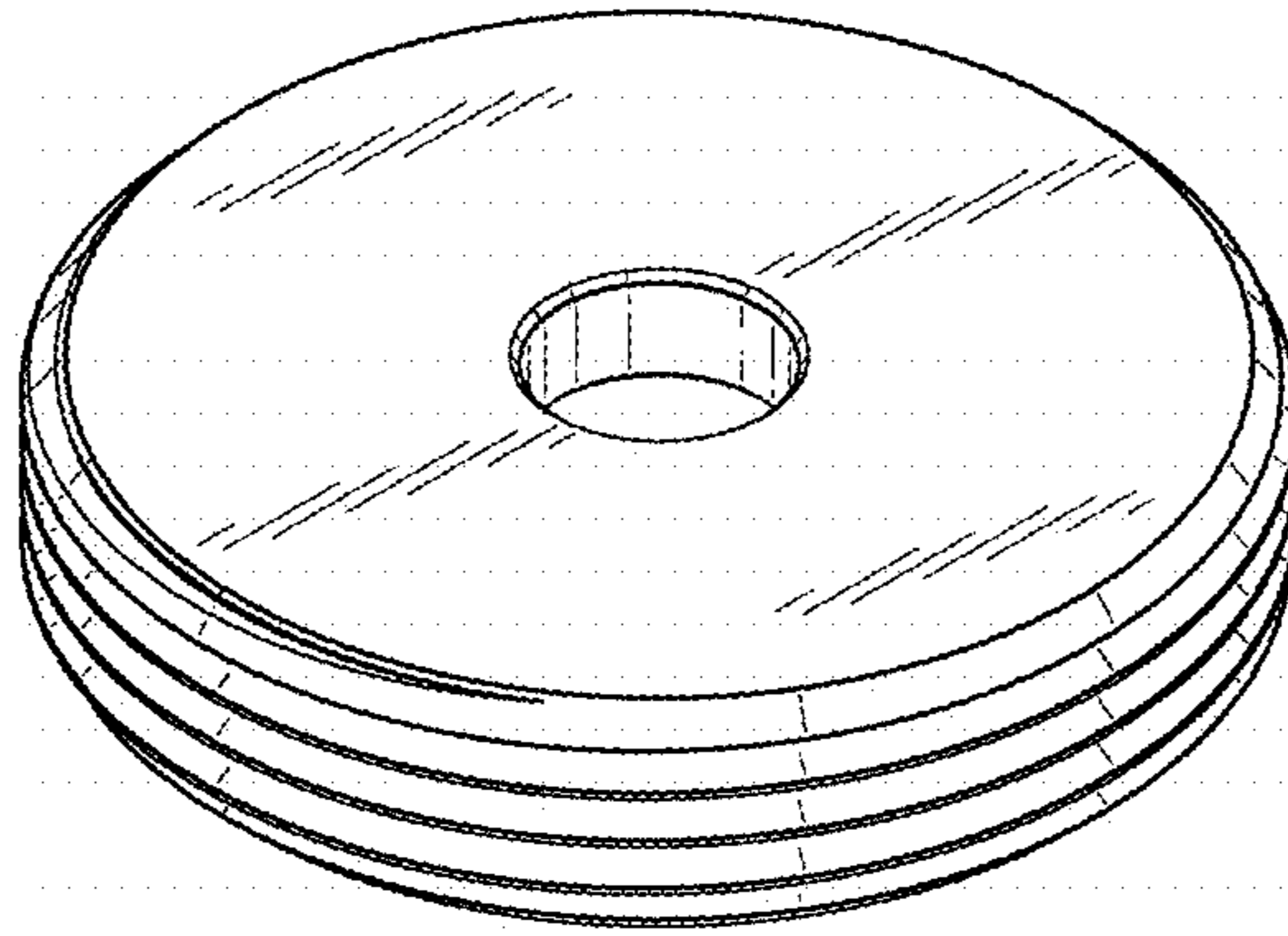
United States Patent and Trademark Office, Case IPR2018-00600 for U.S. Pat. No. 9,581,422 B2, Petitioner's Additional Briefing to the Precedential Opinion Panel, dated Dec. 20, 2019, 23 pgs.

United States Patent and Trademark Office, Case IPR2018-00600 for U.S. Pat. No. 9,581,422 B2, Petitioner's Opposition to Patent Owner's Motion to Amend, dated Mar. 7, 2019, 30 pgs.

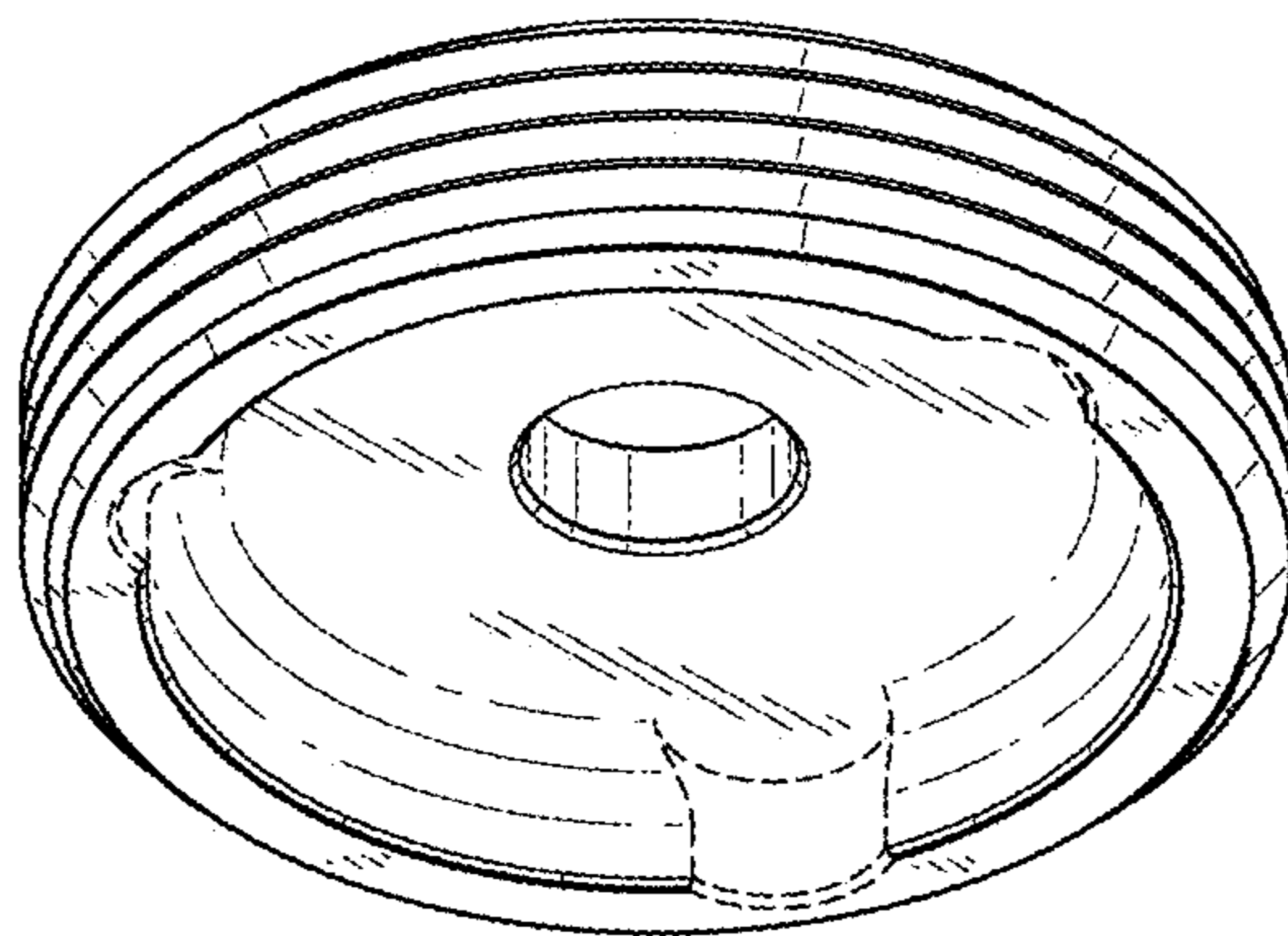
United States Patent and Trademark Office, Case IPR2018-00600 for U.S. Pat. No. 9,581,422 B2, Petitioner's Reply Briefing to the Precedential Opinion Panel, dated Jan. 6, 2020, 17 pgs.

United States Patent and Trademark Office, Case IPR2018-00600 for U.S. Pat. No. 9,581,422 B2, Petitioner's Reply in Inter Partes Review of Patent No. 9,581,422, dated Mar. 7, 2019, 44 pgs.

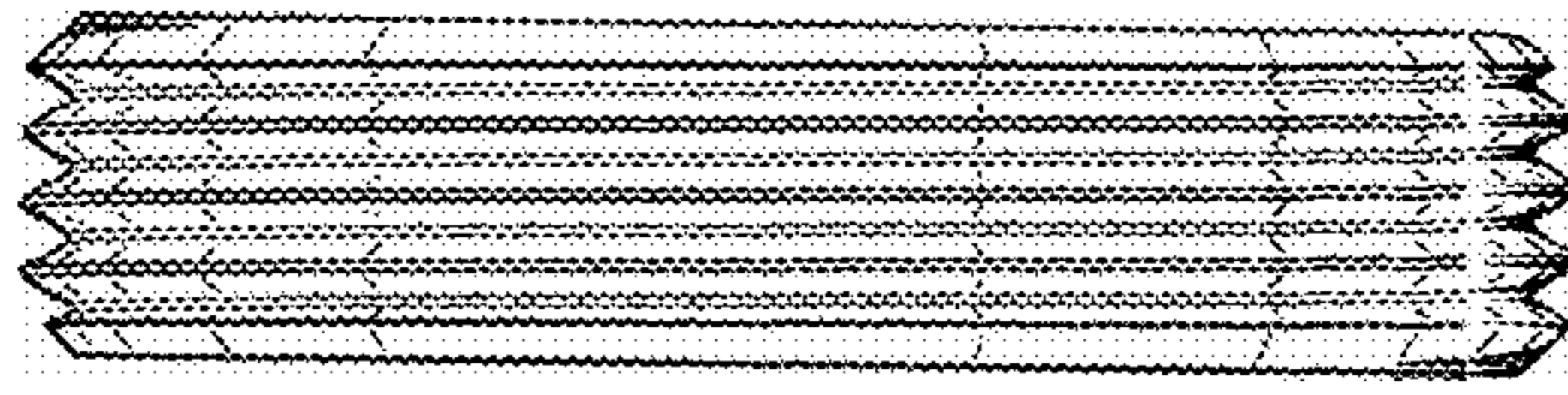
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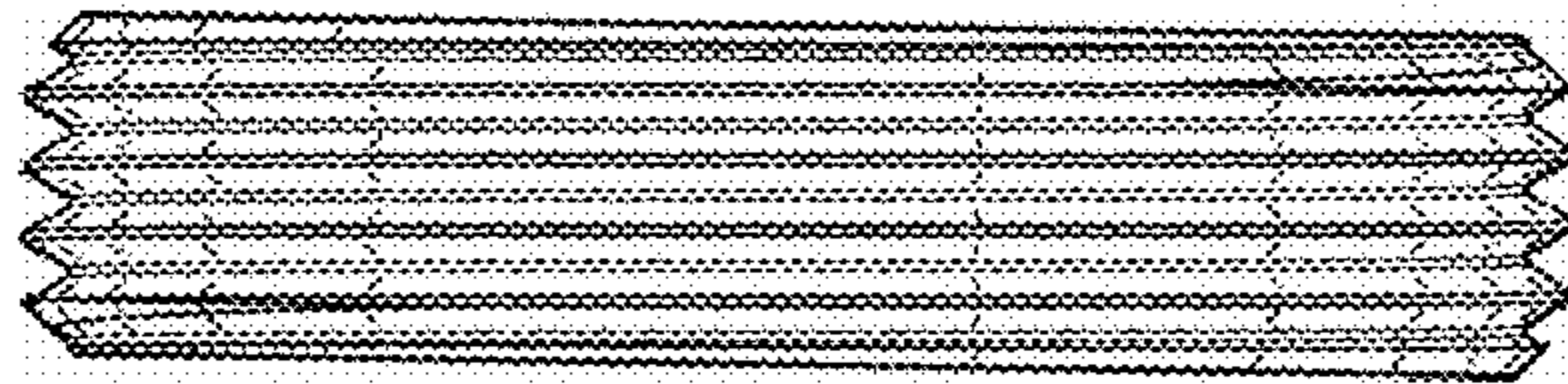
**FIG. 1**



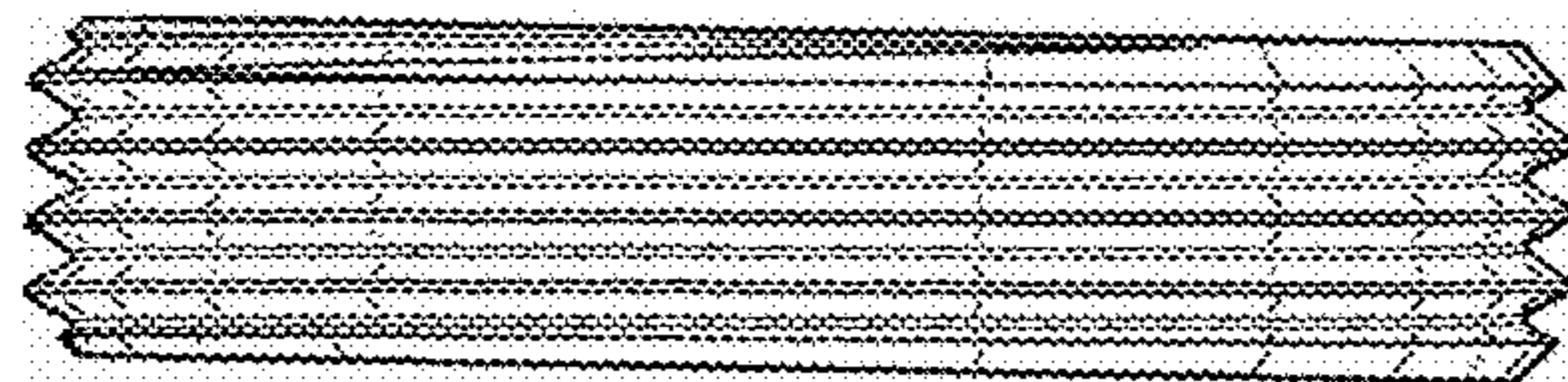
**FIG. 2**



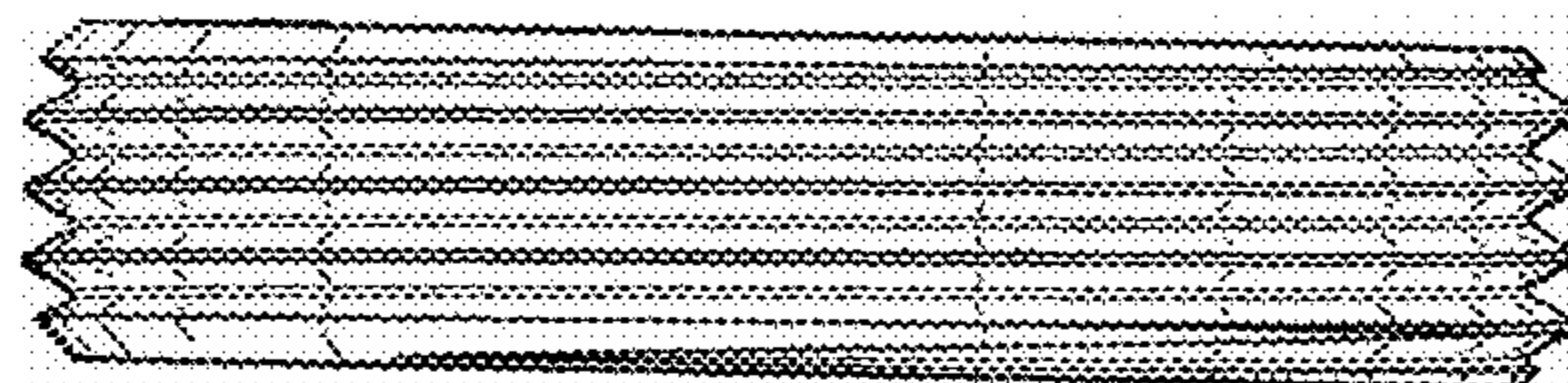
**FIG. 3**



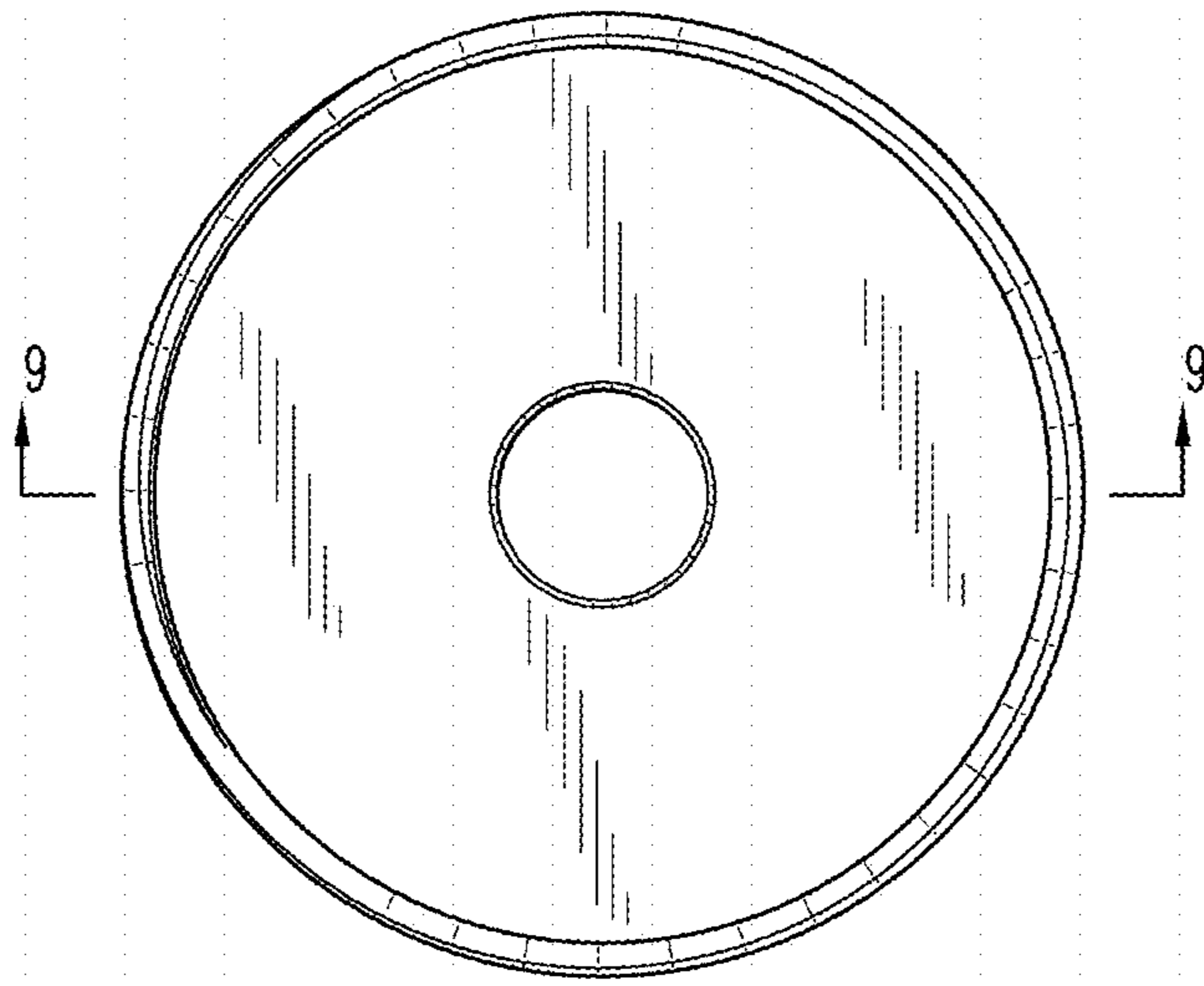
**FIG. 4**



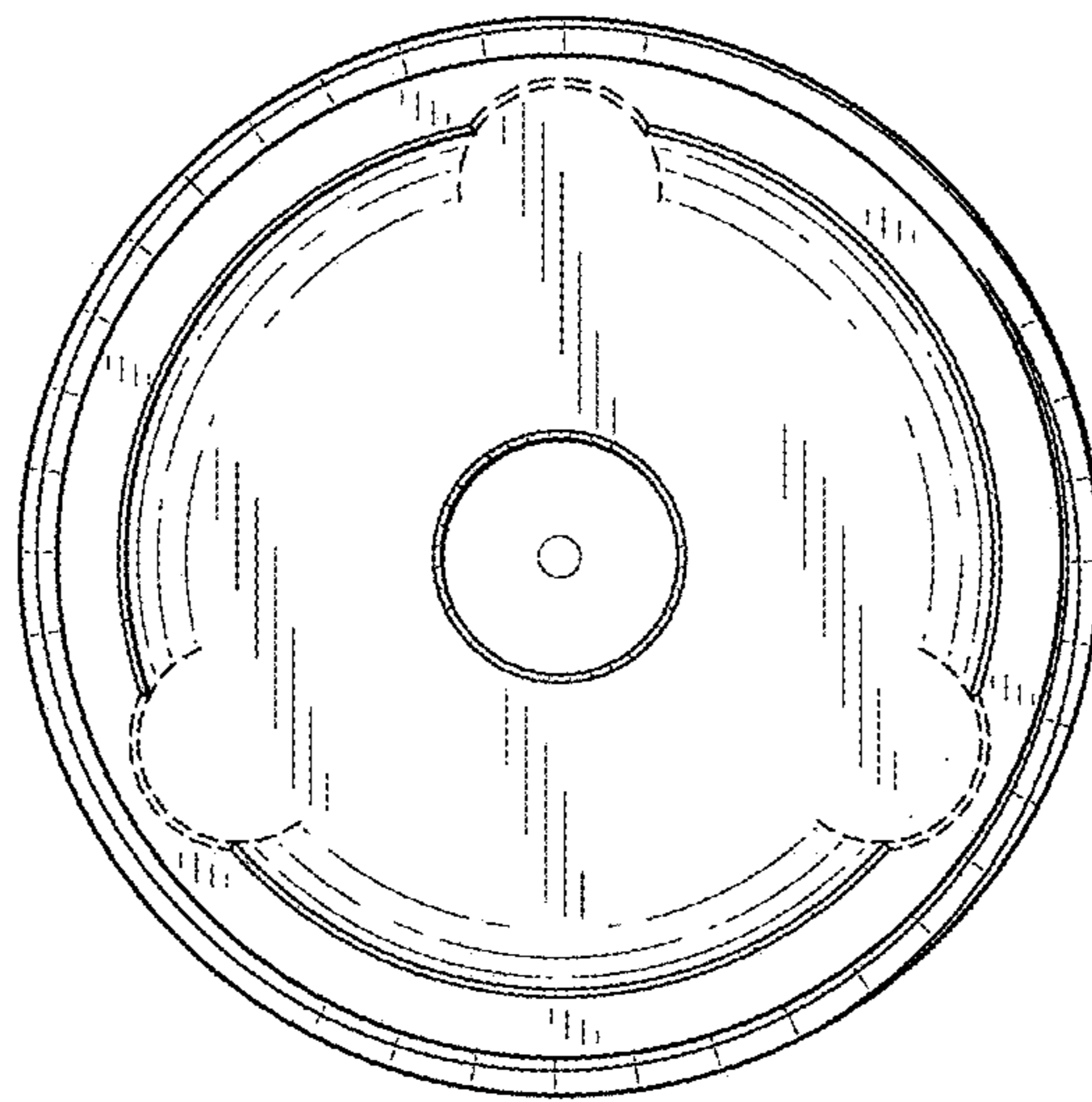
**FIG. 5**



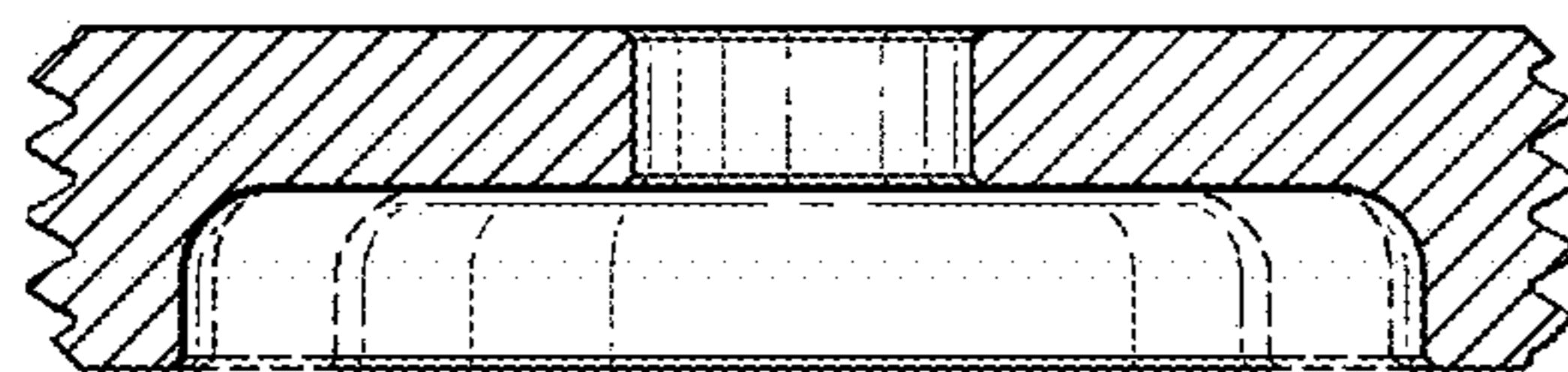
**FIG. 6**



**FIG. 7**



**FIG. 8**



**FIG. 9**