



US00D943003S

(12) **United States Design Patent** (10) **Patent No.:** **US D943,003 S**  
**Boyce** (45) **Date of Patent:** **\*\* Feb. 8, 2022**

(54) **ROTARY ATOMIZER** 3,535,875 A ‡ 10/1970 William ..... F23R 3/38  
60/738  
(71) Applicant: **HOTSTART, Inc.**, Spokane, WA (US) 3,983,694 A 10/1976 Bracken, Jr.  
4,040,251 A ‡ 8/1977 Heitmann ..... F02C 3/08  
60/804  
(72) Inventor: **Benjamin J. Boyce**, Spokane, WA (US) 4,148,185 A 4/1979 Somers  
4,314,443 A ‡ 2/1982 Barbeau ..... F02C 7/18  
60/751  
(73) Assignee: **HotStart, Inc.**, Spokane, WA (US) D266,922 S \* 11/1982 Reynolds ..... D12/180  
4,414,918 A 11/1983 Nelson Holland et al.  
4,425,892 A 1/1984 Firey  
(\*\*) Term: **15 Years**  
(21) Appl. No.: **29/766,134**  
(22) Filed: **Jan. 13, 2021**

FOREIGN PATENT DOCUMENTS

GB 2026904 A 2/1980

OTHER PUBLICATIONS

Non Final Office Action dated May 12, 2020 for U.S. Appl. No. 16/051,168 "Combustor Systems" Boyce, 17 pages. ‡  
(Continued)

*Primary Examiner* — Rebecca Tsehaye  
(74) *Attorney, Agent, or Firm* — Lee & Hayes, P.C.

(57) **CLAIM**

The ornamental design for a rotary atomizer, as shown and described.

**DESCRIPTION**

FIG. 1 is a front perspective view of a rotary atomizer;  
FIG. 2 is a front view thereof;  
FIG. 3 is a back view thereof;  
FIG. 4 is a left-side view thereof;  
FIG. 5 is a right-side view thereof;  
FIG. 6 is a top view thereof; and,  
FIG. 7 is a bottom view thereof.  
The dashed broken lines depict portions of the rotary atomizer that form no part of the claimed design.

**1 Claim, 7 Drawing Sheets**

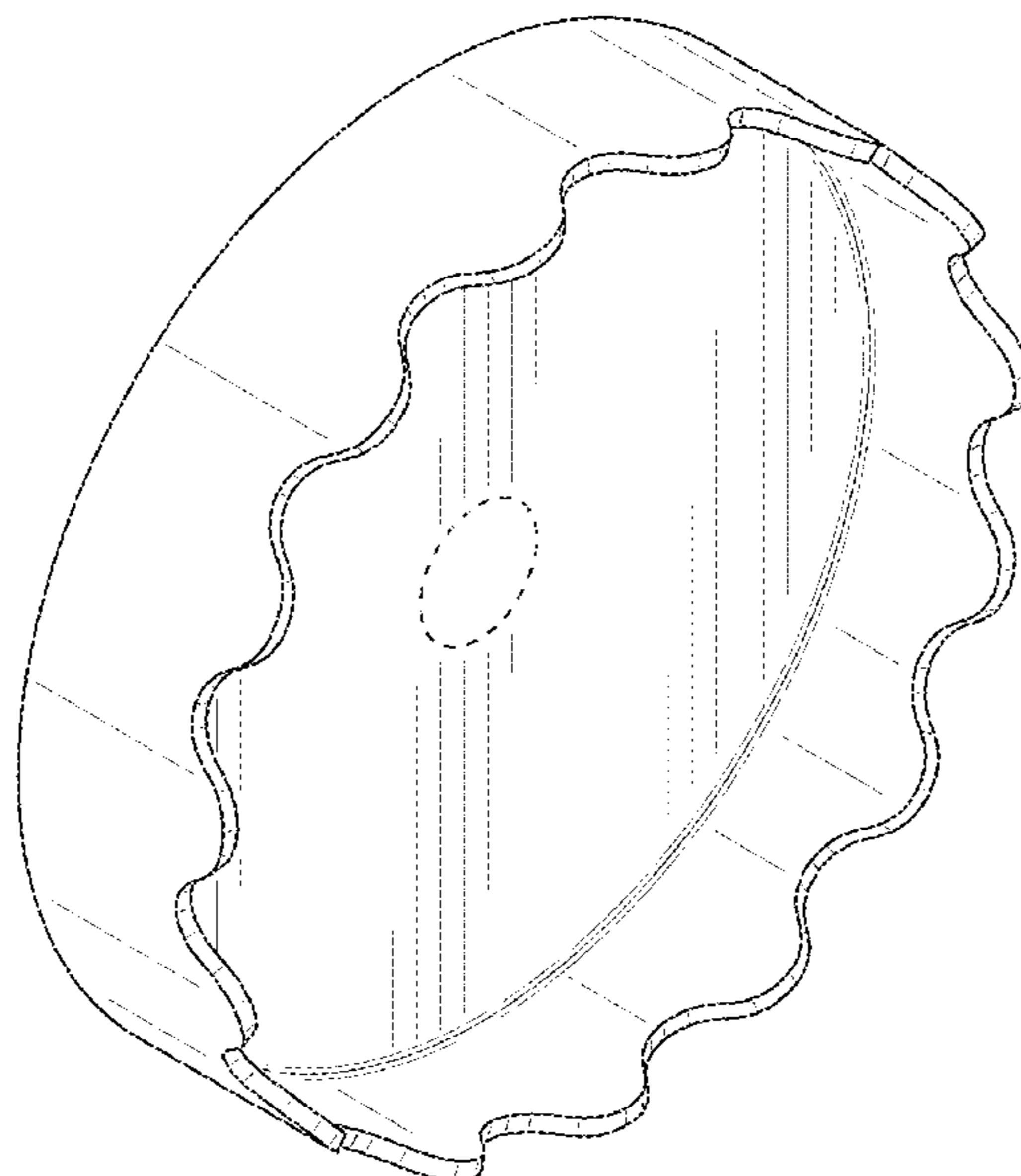
**Related U.S. Application Data**

(62) Division of application No. 29/658,498, filed on Jul. 31, 2018, now Pat. No. Des. 910,717.  
(51) **LOC (13) Cl.** ..... **15-01**  
(52) **U.S. Cl.**  
USPC ..... **D15/5**  
(58) **Field of Classification Search**  
USPC ..... D27/162, 167; D23/212, 214, 220, 222,  
D23/229, 200; D8/64; D15/5, 2,  
D15/127-132, 138, 139; 43/129, 130  
CPC ..... B27B 5/32; B23D 61/02; B23D 61/026;  
A61M 11/02; A61M 11/00; A61M 11/006  
See application file for complete search history.

**References Cited**

U.S. PATENT DOCUMENTS

(56) 1,327,256 A 1/1920 Scheminger, Jr.  
2,595,505 A ‡ 5/1952 Bachle ..... F23R 3/38  
60/804  
2,720,750 A ‡ 10/1955 Schelp ..... F23R 3/38  
60/269  
2,856,755 A ‡ 10/1958 Szydlowski ..... F23R 3/38  
60/804  
3,204,408 A ‡ 9/1965 Vincent ..... F23R 3/38  
60/745  
3,381,669 A 5/1968 Tschudi



(56)

References Cited

U.S. PATENT DOCUMENTS

4,458,844 A 7/1984 Mitsui  
 4,519,549 A 5/1985 Yokoe et al.  
 4,706,452 A ‡ 11/1987 Lavoie ..... F02C 3/165  
 60/39  
 4,918,925 A ‡ 4/1990 Tingle ..... F02C 7/228  
 60/739  
 4,919,333 A 4/1990 Weinstein  
 5,009,206 A ‡ 4/1991 Yi ..... F02B 53/00  
 123/24  
 5,029,442 A 7/1991 Nishiyama  
 5,042,256 A ‡ 8/1991 Smith ..... F23R 3/38  
 60/745  
 5,224,339 A ‡ 7/1993 Hayes ..... F23R 3/38  
 60/269  
 5,555,788 A ‡ 9/1996 Gakhar ..... B23D 61/025  
 83/835  
 6,102,687 A ‡ 8/2000 Butcher ..... F23D 11/406  
 239/43  
 D441,423 S ‡ 5/2001 Goknur ..... D23/214  
 6,347,754 B1 2/2002 Prus  
 D476,931 S \* 7/2003 Fishburn ..... D12/180  
 D493,683 S ‡ 8/2004 Hortenbury ..... D8/70  
 7,086,854 B2 ‡ 8/2006 Rakhmailov ..... F23C 3/00  
 431/11  
 D527,738 S \* 9/2006 Pearson, Sr. .... D15/5  
 D582,004 S ‡ 12/2008 Eshet ..... D23/214  
 7,896,620 B1 ‡ 3/2011 Ewing, Jr. .... F01D 5/048  
 416/23  
 7,992,514 B1 8/2011 Weisenberg et al.  
 8,096,264 B2 1/2012 Seitz  
 D653,523 S ‡ 2/2012 Wackwitz ..... D8/354  
 8,141,360 B1 3/2012 Huber  
 D714,346 S \* 9/2014 Swanson ..... F16D 35/00  
 D15/5  
 D726,367 S ‡ 4/2015 Dukat ..... D27/167  
 9,149,865 B2 ‡ 10/2015 Smeets ..... B21K 25/00  
 D744,066 S ‡ 11/2015 Peterson ..... D23/229  
 D753,201 S ‡ 4/2016 Kim ..... D15/139  
 D756,277 S \* 5/2016 Pasfield ..... D12/180  
 D786,936 S ‡ 5/2017 Manning ..... D15/5  
 D802,037 S \* 11/2017 Cordingley ..... D15/148  
 D817,736 S ‡ 5/2018 Kao ..... D8/70  
 10,119,460 B2 11/2018 Primus et al.  
 D837,830 S ‡ 1/2019 Romani ..... D15/5  
 D845,197 S \* 4/2019 Wang ..... D12/180  
 D847,228 S ‡ 4/2019 Wang ..... D15/138

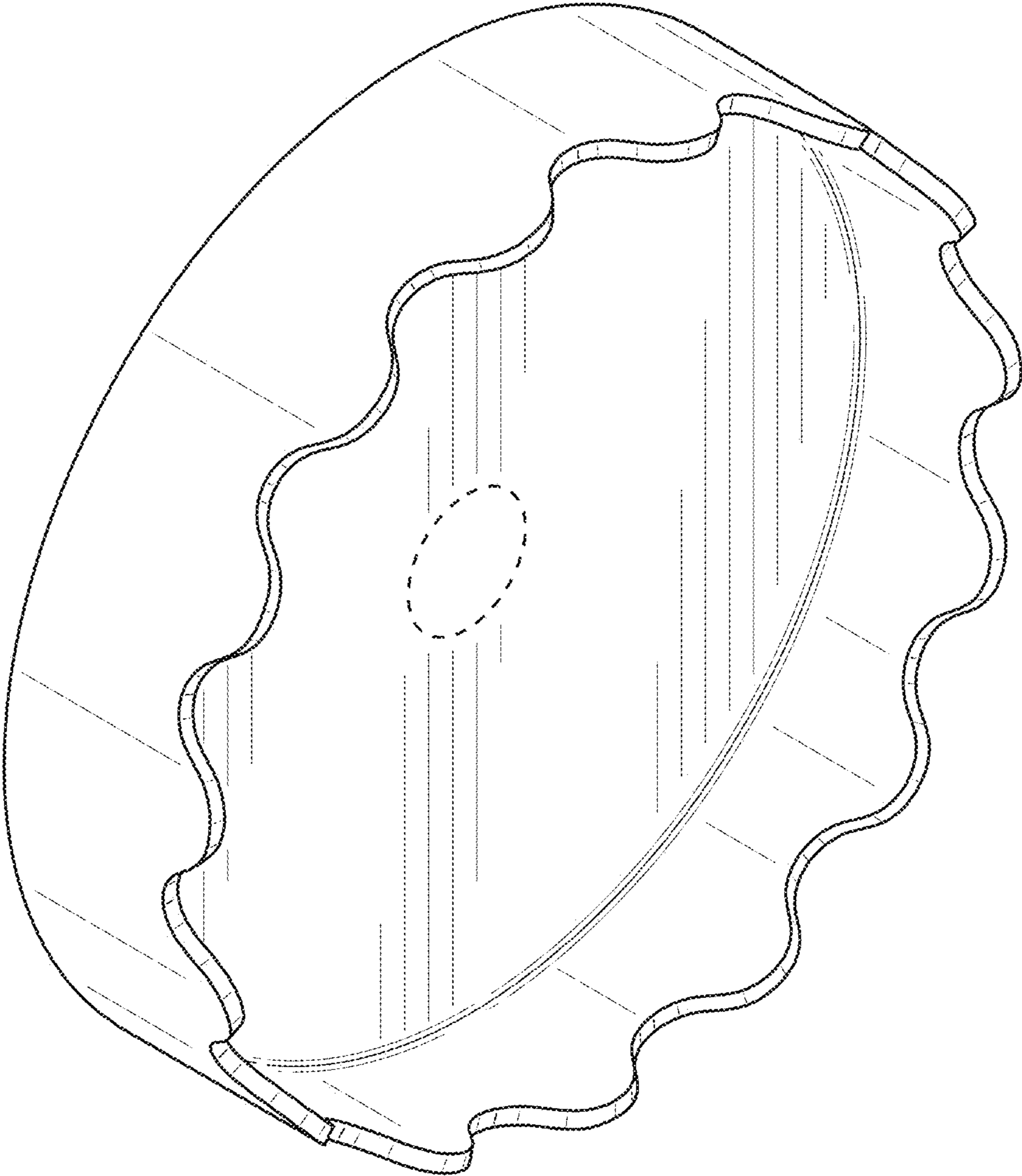
D847,884 S ‡ 5/2019 Hayakawa ..... D15/139  
 D871,877 S ‡ 1/2020 Terris ..... D8/70  
 D881,767 S ‡ 4/2020 Yoder ..... D12/180  
 D897,032 S ‡ 9/2020 Rix ..... D27/162  
 D910,717 S \* 2/2021 Boyce ..... D15/5  
 D920,383 S \* 5/2021 Macco ..... D15/5  
 2004/0020206 A1 2/2004 Sullivan et al.  
 2004/0045302 A1 ‡ 3/2004 Brown ..... F02C 7/22  
 60/804  
 2005/0039463 A1 ‡ 2/2005 Condevaux ..... F02C 7/22  
 60/776  
 2005/0097889 A1 5/2005 Pilatis et al.  
 2007/0144500 A1 6/2007 Dupree et al.  
 2007/0186556 A1 8/2007 Rasheed et al.  
 2007/0234721 A1 10/2007 Vuk  
 2007/0234725 A1 ‡ 10/2007 Critchley ..... F23R 3/52  
 60/744  
 2008/0171294 A1 ‡ 7/2008 Critchley ..... F23R 3/38  
 431/16  
 2010/0155504 A1 6/2010 Yamasaki et al.  
 2010/0181138 A1 7/2010 Khadiya et al.  
 2010/0193602 A1 8/2010 Ballu et al.  
 2011/0094483 A1 4/2011 Suh et al.  
 2012/0131923 A1 5/2012 ELKady et al.  
 2012/0240588 A1 ‡ 9/2012 Patel ..... F02C 9/26  
 60/772  
 2013/0213050 A1 ‡ 8/2013 Shakariyants ..... F02C 3/34  
 60/774  
 2014/0373533 A1 12/2014 Jensen et al.  
 2015/0125264 A1 5/2015 Lighty et al.  
 2015/0224521 A1 8/2015 Peterson et al.  
 2015/0251198 A1 9/2015 Bak et al.  
 2015/0367862 A1 ‡ 12/2015 Ledbetter ..... B61G 5/08  
 701/19  
 2018/0156118 A1 6/2018 Lighty et al.  
 2018/0185859 A1 7/2018 Kishimoto et al.  
 2020/0004113 A1 ‡ 2/2020 Boyce ..... F02C 3/34  
 2020/0040762 A1 ‡ 2/2020 Boyce ..... F02C 7/22  
 2020/0041130 A1 ‡ 2/2020 Boyce ..... F02B 39/10  
 2020/0041131 A1 2/2020 Boyce et al.

OTHER PUBLICATIONS

Office Action for U.S. Appl. No. 16/527,681, dated Mar. 11, 2021, Boyce, "Gas Turbine Engine Heaters", 14 pages.  
 Non Final Office Action dated Dec. 15, 2020 for U.S. Appl. No. 16/527,822, "Rotary Atomizer", Boyce, 22 pages.

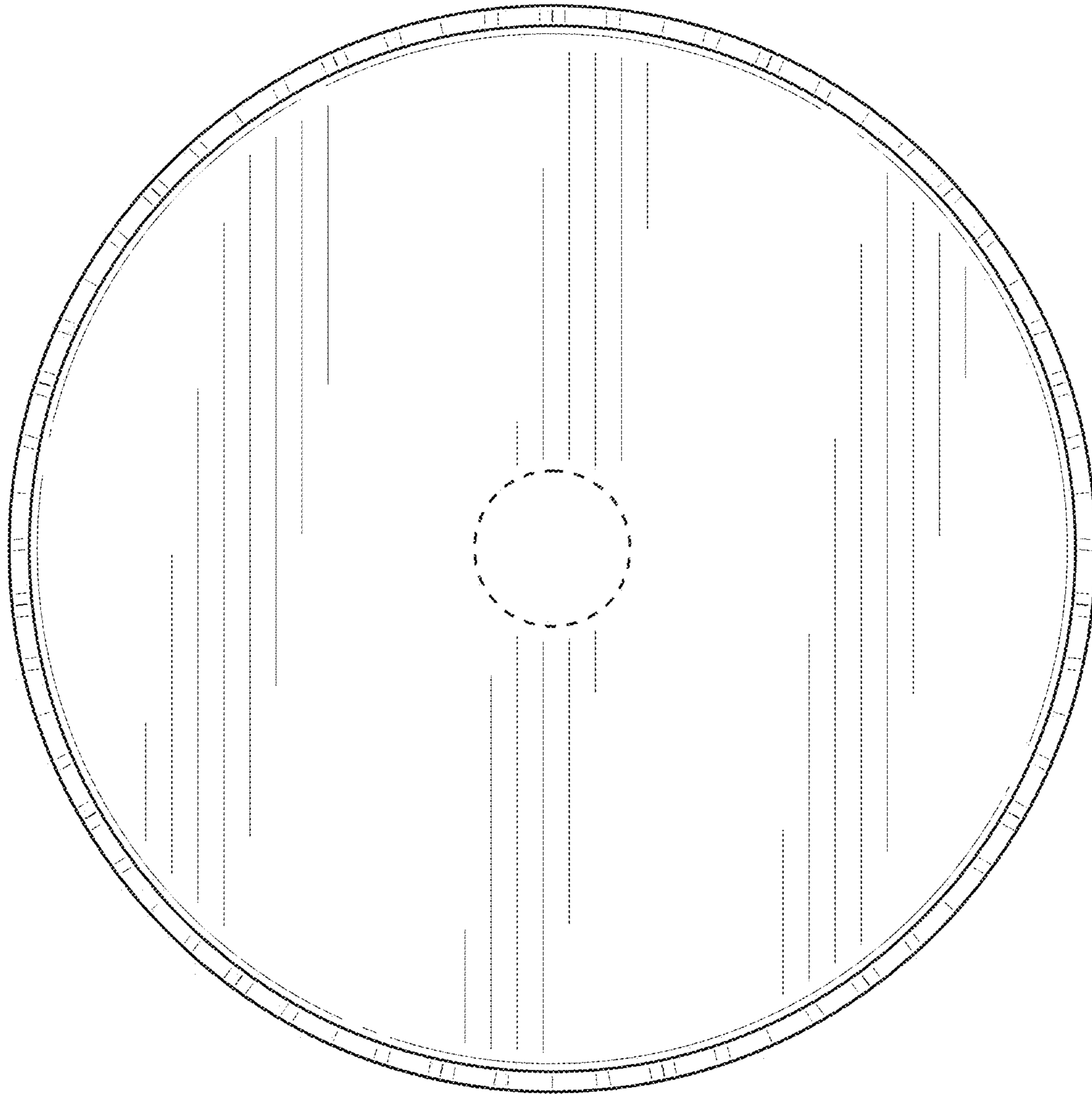
\* cited by examiner

‡ imported from a related application

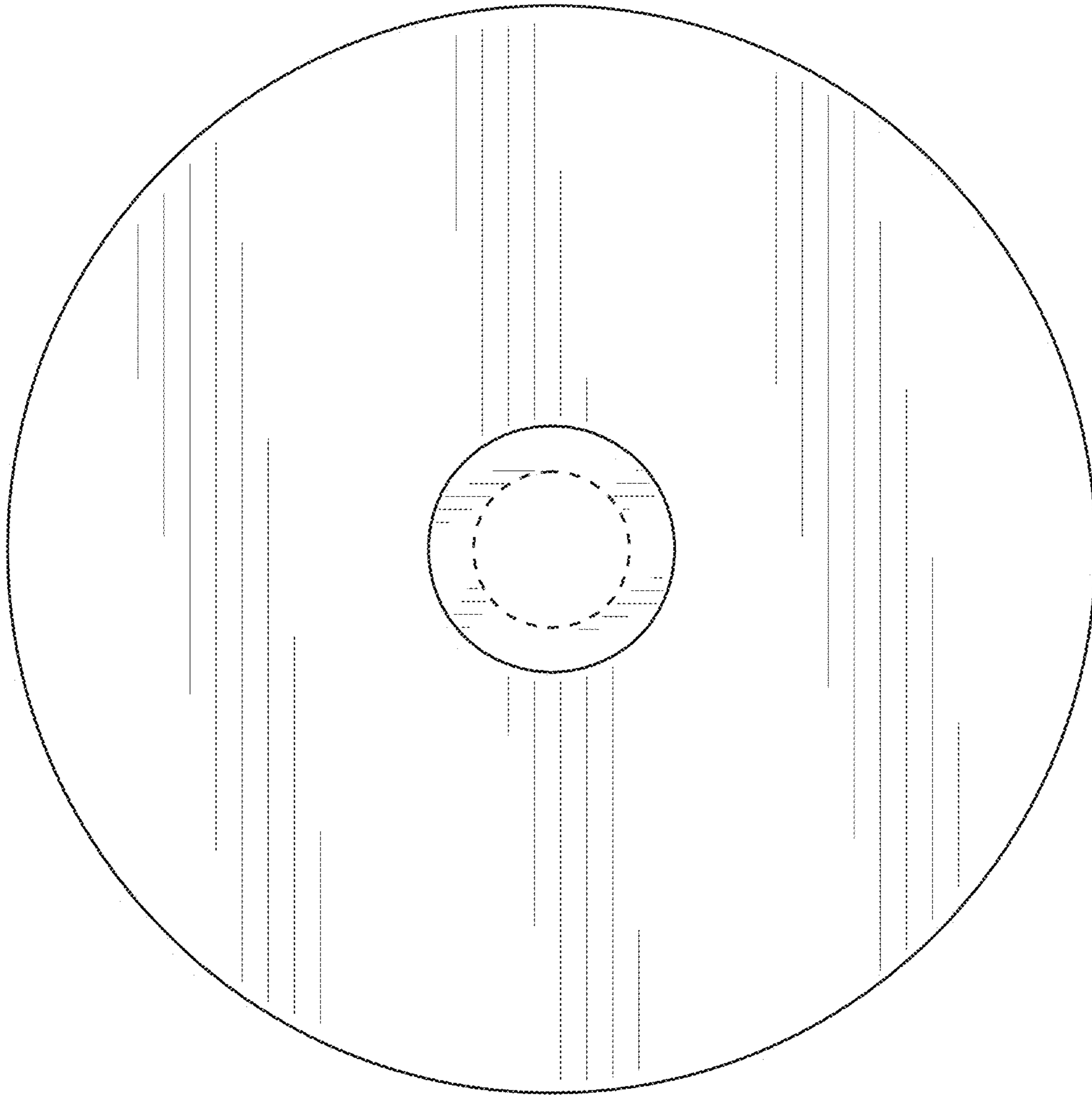


**FIG. 1**

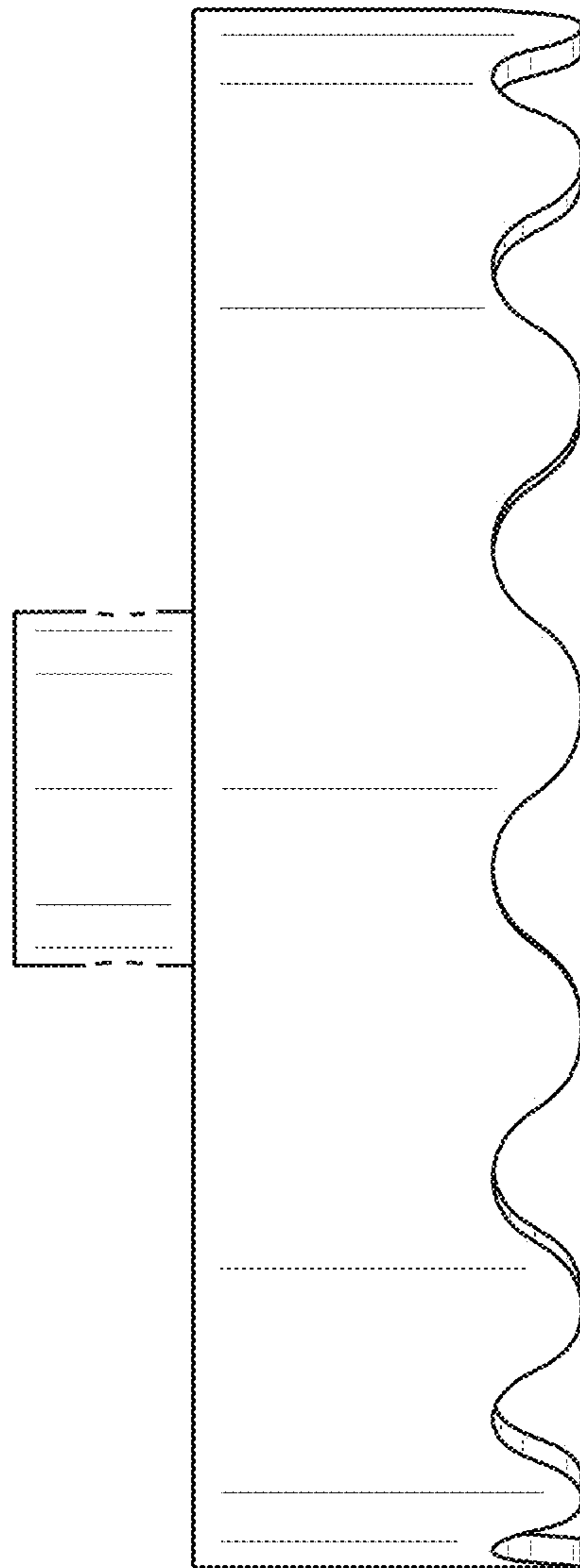




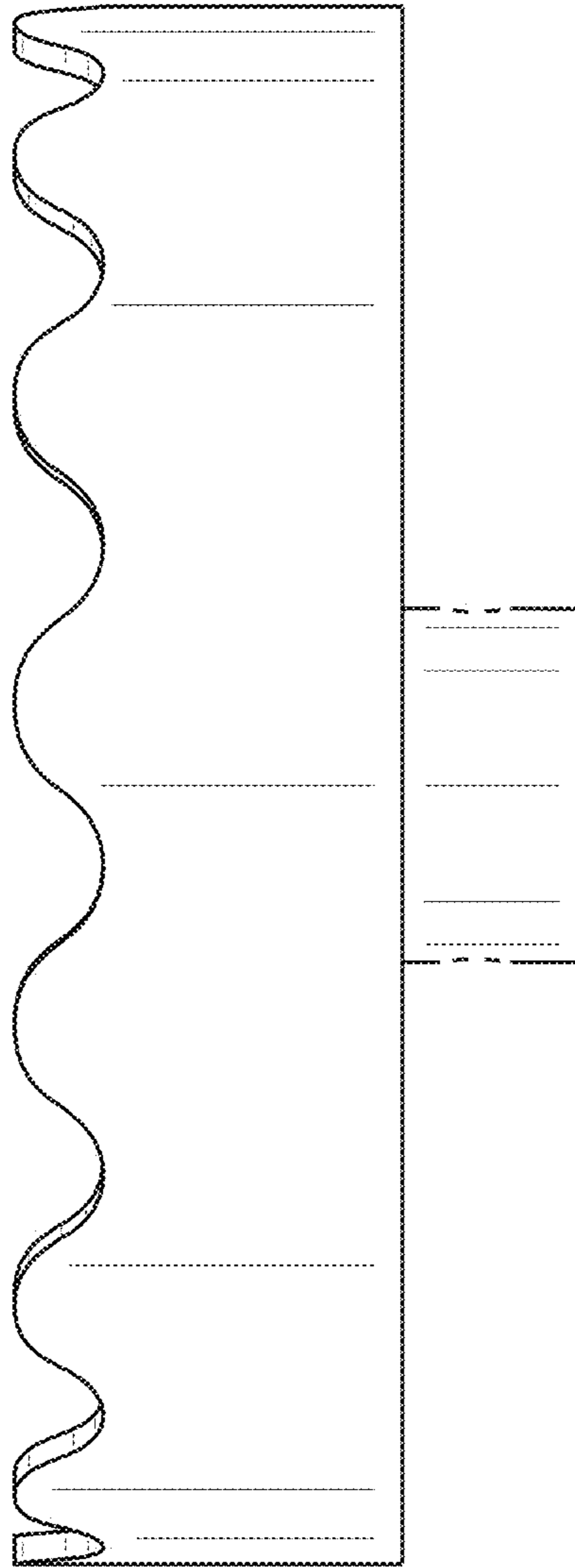
**FIG. 2**



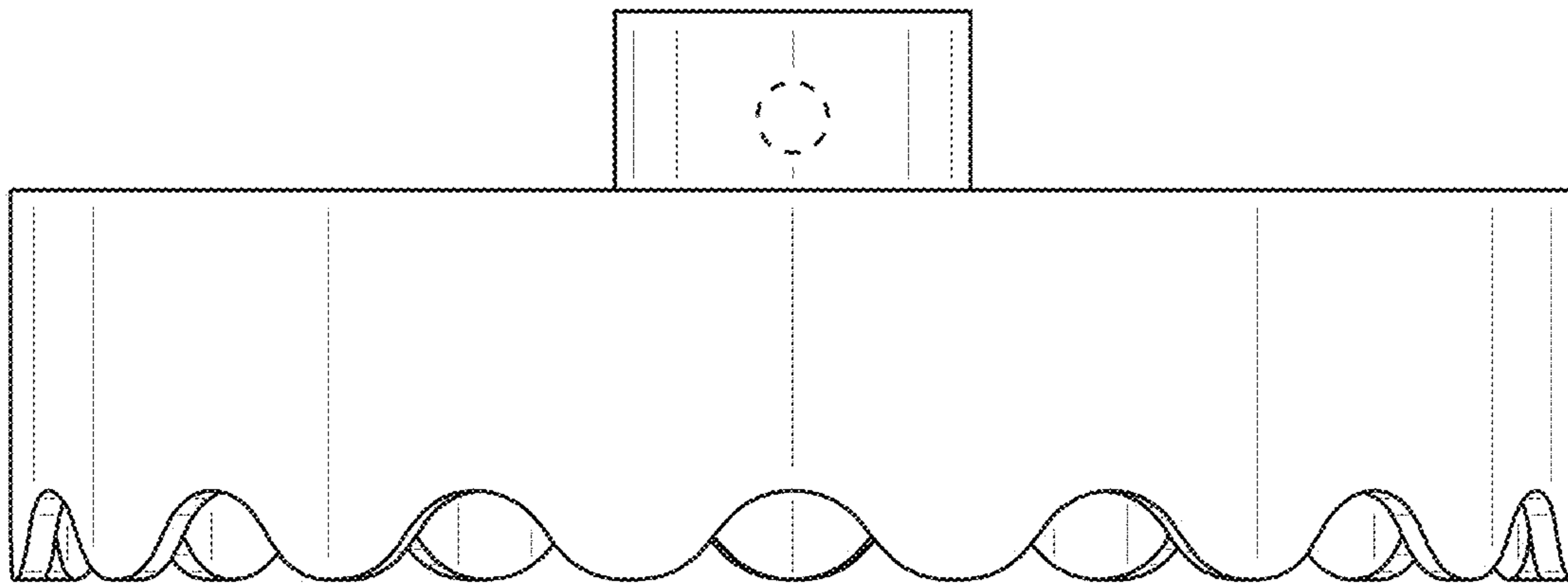
**FIG. 3**



**FIG. 4**

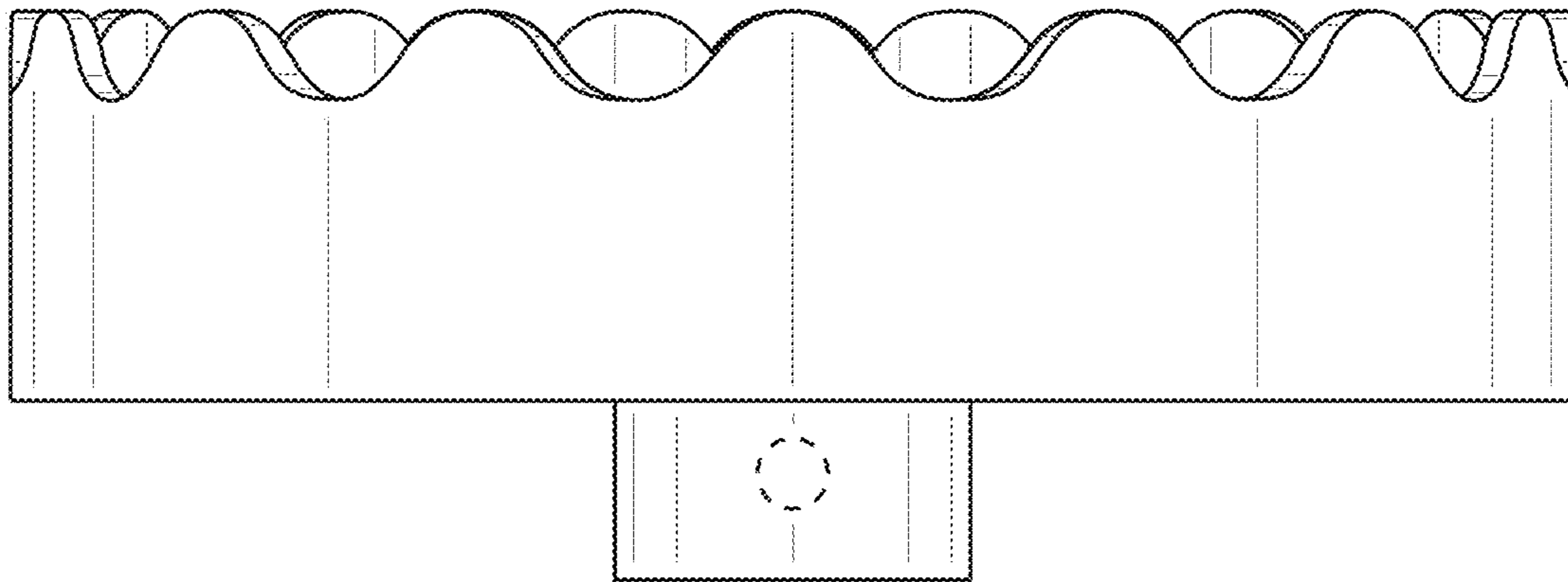


**FIG. 5**



**FIG. 6**





**FIG. 7**