



US00D976384S

(12) **United States Design Patent** (10) **Patent No.:** **US D976,384 S**  
**Sawchuk et al.** (45) **Date of Patent:** **\*\* Jan. 24, 2023**

(54) **STATIC MIXER FOR FLUID FLOW**

4,461,579 A 7/1984 McCallum  
4,495,858 A 1/1985 Erickson  
4,614,440 A 9/1986 King  
(Continued)

(71) Applicant: **Canada Pipeline Accessories Co., Ltd.**, Calgary (CA)

(72) Inventors: **Daniel Sawchuk**, Chestermere (CA);  
**Reginald Selirio**, Calgary (CA);  
**Raphael Selirio**, Calgary (CA)

FOREIGN PATENT DOCUMENTS

DE 10361411 A1 7/2005  
EP 2596854 A1 5/2013  
(Continued)

(73) Assignee: **CANADA PIPELINE ACCESSORIES CO., LTD.**, Calgary (CA)

OTHER PUBLICATIONS

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

Xingyu 8.74 inch Air Fryer Replacement Grill Pan 5QT Airfryers, Jan. 11, 2021, amazon.ca, Oct. 13, 2022, URL: <https://www.amazon.ca/Replacement-Airfryers-Non-stick-Accessories-Dishwasher/dp/B08PSN7W69/> (Year: 2021).\*

(21) Appl. No.: **29/720,391**

(Continued)

(22) Filed: **Jan. 13, 2020**

(51) **LOC (14) Cl.** ..... **23-03**

(52) **U.S. Cl.**  
USPC ..... **D23/413**

*Primary Examiner* — Keith J Wilson

(74) *Attorney, Agent, or Firm* — Cahn & Samuels, LLP

(58) **Field of Classification Search**  
USPC ..... D23/213, 214, 215, 223, 224, 226, 229,  
D23/230, 379-380, 413-414  
CPC ..... A61H 9/0021; A61H 33/00; B05B 1/00;  
B05B 1/14; B05B 1/185; B05B 1/08;  
B05B 1/02; B05B 1/26; B05B 12/002;  
B05B 1/18; B05B 9/01

(57) **CLAIM**

The ornamental design for a static mixer, as shown and described.

See application file for complete search history.

**DESCRIPTION**

FIG. 1 illustrates a front perspective view of a static mixer having a plurality of curved arms circumferentially positioned around a central portion of the static mixer.

FIG. 2 illustrates a rear perspective view of the static mixer of FIG. 1.

FIG. 3 illustrates a front view of the static mixer of FIG. 1. FIG. 4 illustrates a cross-sectional view of the static mixer of FIG. 1 along the cut depicted in FIG. 3.

FIG. 5 illustrates a rear view of the static mixer of FIG. 1; and,

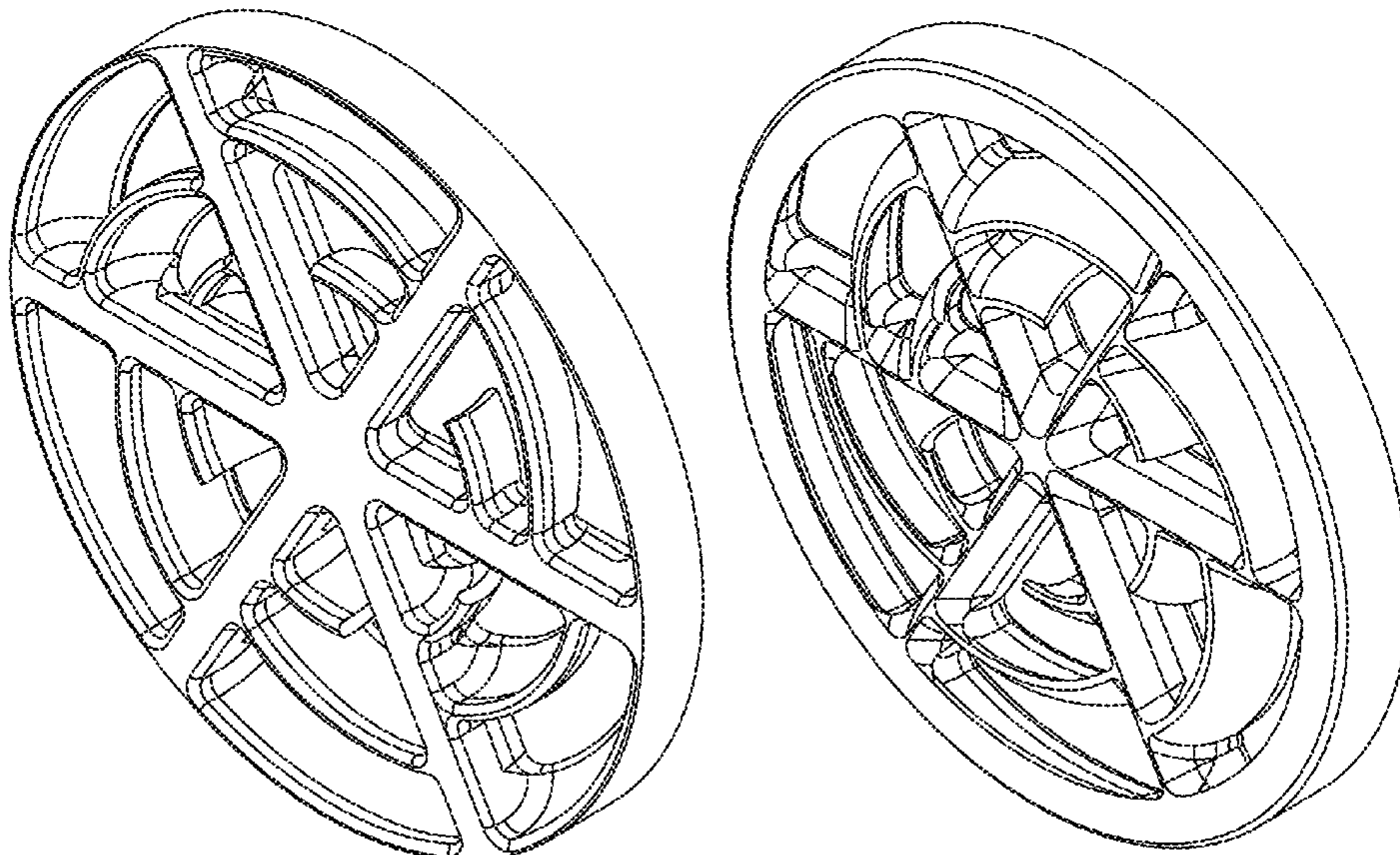
FIG. 6 illustrates a side view of the static mixer of FIG. 1 having the rear of the static mixer on the left.

(56) **References Cited**

U.S. PATENT DOCUMENTS

1,113,041 A 10/1914 Murphy  
1,637,697 A 8/1927 Jacobsen  
1,648,708 A 11/1927 Wilkinson  
1,702,274 A 2/1929 Schmidt  
2,693,391 A 11/1954 Manseau  
3,128,794 A 4/1964 Boucher et al.  
3,682,443 A 8/1972 Upmeier  
3,863,678 A 2/1975 Petterson et al.  
3,911,073 A 10/1975 Charles-Massance  
4,208,136 A 6/1980 King

**1 Claim, 5 Drawing Sheets**





(56)

References Cited

U.S. PATENT DOCUMENTS

4,848,920 A 7/1989 Heathe et al.  
 4,971,450 A 11/1990 Gerich  
 5,605,399 A 2/1997 King  
 6,379,035 B1 4/2002 Kubo et al.  
 6,615,872 B2 9/2003 Goebel et al.  
 6,878,056 B2 4/2005 Robinson  
 D513,530 S \* 1/2006 Chen ..... D23/379  
 D530,006 S \* 10/2006 Li ..... D23/414  
 D533,935 S \* 12/2006 Chen ..... D23/413  
 7,198,400 B2 4/2007 Unterlander et al.  
 D561,323 S \* 2/2008 Shirahama ..... D23/370  
 7,543,561 B2 6/2009 Shibata et al.  
 7,784,273 B2 8/2010 Kanaya et al.  
 7,954,514 B2 6/2011 Tung et al.  
 D645,007 S \* 9/2011 Alexander ..... D13/179  
 D645,950 S \* 9/2011 Kenyon ..... D23/379  
 8,042,989 B2 11/2011 Gordon et al.  
 8,141,353 B2 3/2012 Zheng et al.  
 8,220,444 B2 7/2012 Cheung et al.  
 D667,104 S \* 9/2012 Shiraichi ..... D23/413  
 8,342,159 B2 1/2013 Detore  
 8,375,708 B2 2/2013 Foster et al.  
 8,495,866 B2 7/2013 Wirth  
 D697,942 S 1/2014 Puczok et al.  
 8,739,519 B2 6/2014 Hadden et al.  
 8,745,978 B2 6/2014 Vanvolsem et al.  
 8,826,649 B2 9/2014 Li et al.  
 9,010,994 B2 4/2015 McQueen et al.  
 9,016,928 B1 4/2015 England et al.  
 D733,283 S \* 6/2015 Larouche ..... D23/379  
 9,067,183 B2 6/2015 Glanville  
 9,221,022 B2 12/2015 Glanville  
 D771,235 S \* 11/2016 Hoff ..... D23/411  
 9,718,037 B2 8/2017 Harmon et al.  
 9,776,356 B1 \* 10/2017 VanDalsem ..... B29B 7/488  
 9,790,833 B2 10/2017 Kobe et al.  
 9,835,068 B2 12/2017 Mueller et al.  
 D813,369 S \* 3/2018 Chiu ..... D23/370  
 9,975,094 B2 5/2018 Gillis et al.  
 10,288,292 B2 5/2019 Ryon  
 10,500,550 B2 12/2019 Geibel  
 D886,275 S \* 6/2020 Avedon ..... D23/385  
 10,947,882 B2 3/2021 Park  
 D916,269 S \* 4/2021 Bushnell ..... F04D 29/384  
 D921,871 S \* 6/2021 Oh ..... D13/179  
 D921,872 S \* 6/2021 Oh ..... D13/179  
 D921,873 S \* 6/2021 Oh ..... D13/179  
 D921,876 S \* 6/2021 Oh ..... D13/179  
 D930,808 S \* 9/2021 Hsu ..... D23/370  
 D938,568 S \* 12/2021 Hakozaki ..... D23/370  
 D949,318 S \* 4/2022 He ..... D23/380  
 D956,202 S \* 6/2022 Yang ..... D23/382  
 2001/0038575 A1 11/2001 Mathys et al.  
 2002/0191483 A1 12/2002 Ohtsuki et al.  
 2003/0007419 A1 1/2003 Goebel et al.  
 2005/0039809 A1 2/2005 Speldrich et al.  
 2005/0099886 A1 5/2005 Grajewski et al.  
 2005/0163614 A1 \* 7/2005 Chapman ..... F04D 29/30  
 415/206  
 2005/0219947 A1 10/2005 Carlson  
 2006/0162690 A1 7/2006 Kim

2007/0205523 A1 9/2007 Kojima  
 2008/0037366 A1 2/2008 Smith  
 2008/0075598 A1 \* 3/2008 Chen ..... F04D 29/283  
 416/179  
 2008/0079179 A1 4/2008 Lundgreen et al.  
 2008/0232190 A1 9/2008 Schneider  
 2009/0266064 A1 10/2009 Zheng et al.  
 2009/0320453 A1 12/2009 Salanta et al.  
 2010/0084034 A1 4/2010 Sonnenberg  
 2010/0104705 A1 4/2010 Gordon et al.  
 2010/0107617 A1 5/2010 Kaiser et al.  
 2011/0174407 A1 7/2011 Lundberg et al.  
 2012/0096948 A1 4/2012 Laird et al.  
 2012/0297870 A1 11/2012 de Boer  
 2013/0176814 A1 7/2013 Gillis et al.  
 2013/0286769 A1 10/2013 Baron  
 2014/0301157 A1 10/2014 Glanville  
 2015/0211398 A1 7/2015 Hornback et al.  
 2016/0097411 A1 4/2016 Sawchuk et al.  
 2016/0175784 A1 6/2016 Harmon et al.  
 2016/0177801 A1 6/2016 Wohlfahrt  
 2017/0291151 A1 10/2017 Berglund  
 2017/0362987 A1 12/2017 Fu et al.  
 2018/0085719 A1 3/2018 Larner et al.  
 2018/0280900 A1 10/2018 Tucker  
 2018/0296993 A1 10/2018 Schriver et al.  
 2018/0306084 A1 10/2018 Inoue et al.  
 2019/0162490 A1 5/2019 Heusser  
 2019/0338888 A1 11/2019 Selirio et al.  
 2020/0030825 A1 1/2020 Otoguro  
 2020/0149687 A1 5/2020 Selirio et al.

FOREIGN PATENT DOCUMENTS

EP 2826547 A1 1/2015  
 FR 2921415 A1 3/2009  
 JP 2009041371 A 2/2009  
 WO 2016024207 A1 2/2016

OTHER PUBLICATIONS

HQT 4QT Air Fryer Crisper Plate For Ninja Air Fryer, Feb. 23, 2022, amazon.ca, Oct. 13, 2022, URL: <https://www.amazon.ca/dp/B09SBJCDN7/> (Year: 2022).  
 Written Opinion of the International Searching Authority, PCT/CA2017/051153, dated Jan. 5, 2018.  
 “How a Flow Conditioner Works—Flow Conditioning Basics”, www.instrumentaltoolbox.com/2016/01, pp. 1-2, printed on Oct. 22, 2019.  
 Extended European Search Report, EP Application 17881461.2, dated Aug. 20, 2019.  
 Westfall, Low Headloss Pipeline Mixer Model 3050, 4 pages, printed on Jul. 6, 2018.  
 Koflo, Static Inline Mixers, 3 pages, printed on Jul. 6, 2018.  
 Komax, Static Mixers—Komax Systems Inc, 1 page, printed on Jul. 6, 2018.  
 Statiflo, Pipe Mixers, 2 pages, printed on printed on Jul. 6, 2018.  
 English Abstract of DE 10361411, Jul. 28, 2005.  
 English abstract of FR 2921415 A1, Mar. 27, 2009.  
 English machine translation of FR 2921415 A1, Mar. 27, 2009.  
 English abstract of JP 2009041371 A, Feb. 26, 2009.  
 English translation of JP 2009041371 A, Feb. 26, 2009.

\* cited by examiner

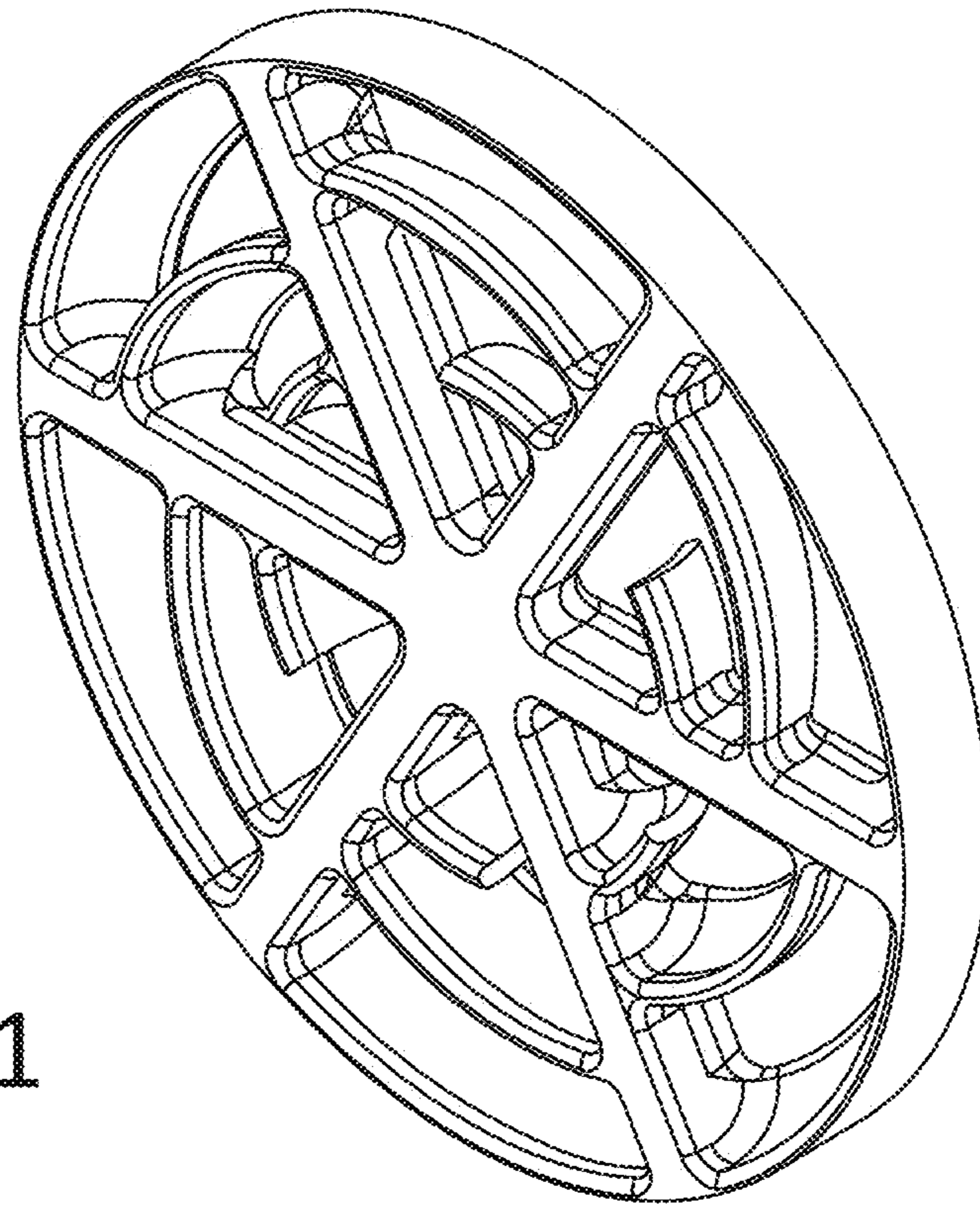


FIG. 1

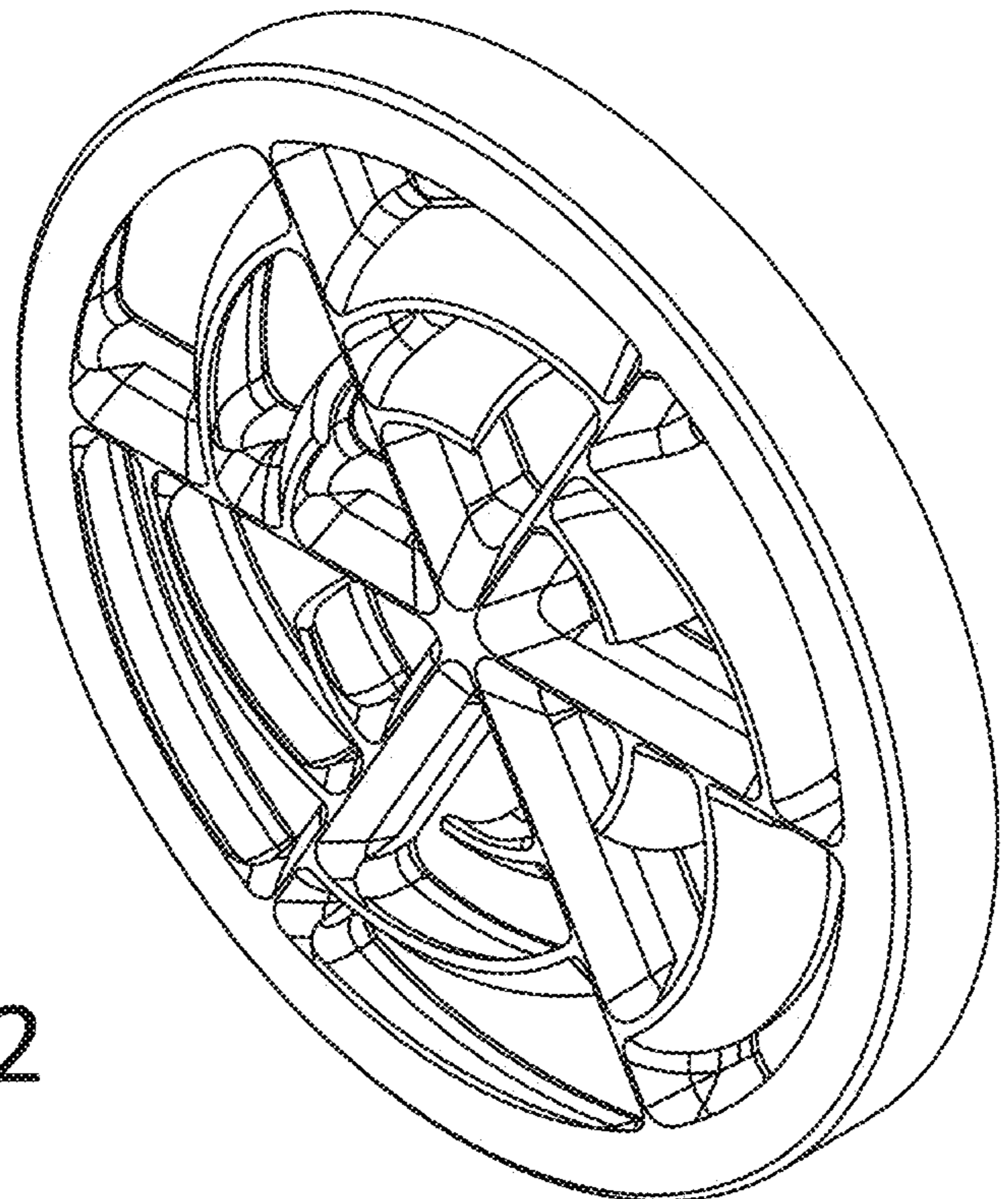


FIG. 2



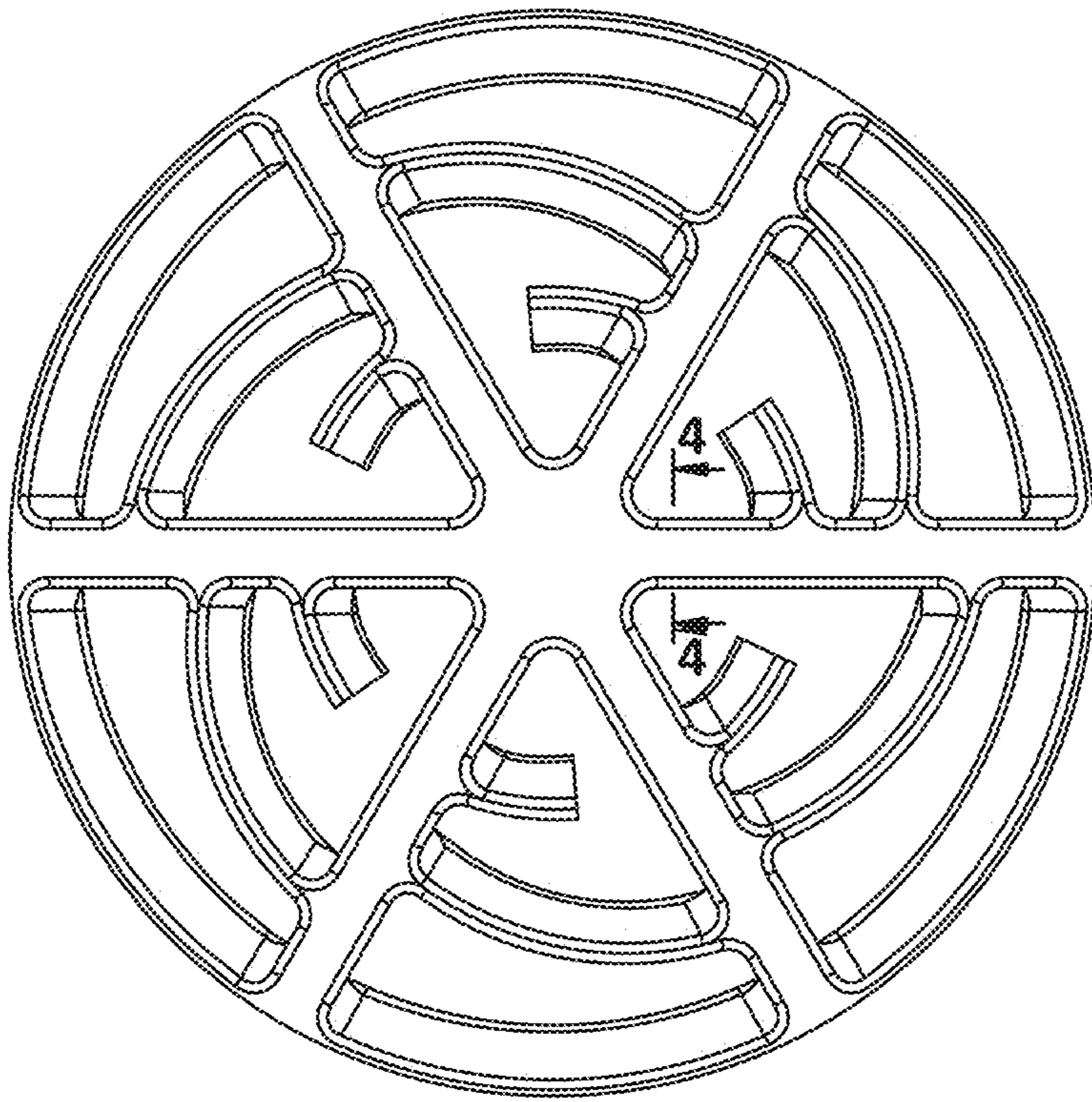


FIG. 3

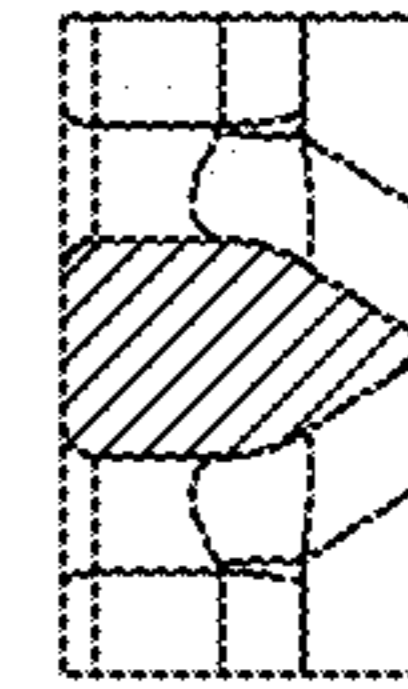


FIG. 4

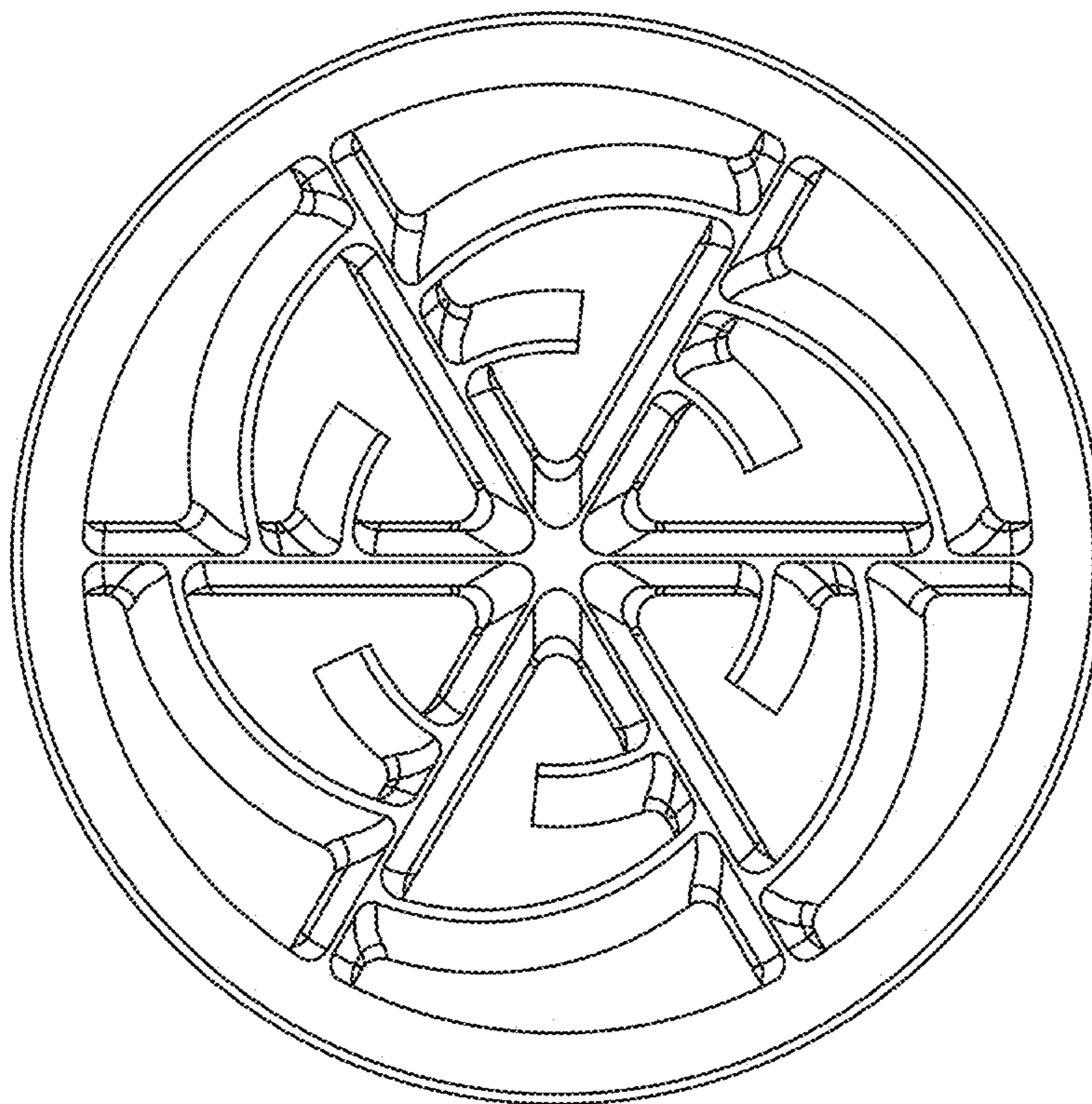


FIG. 5



FIG. 6

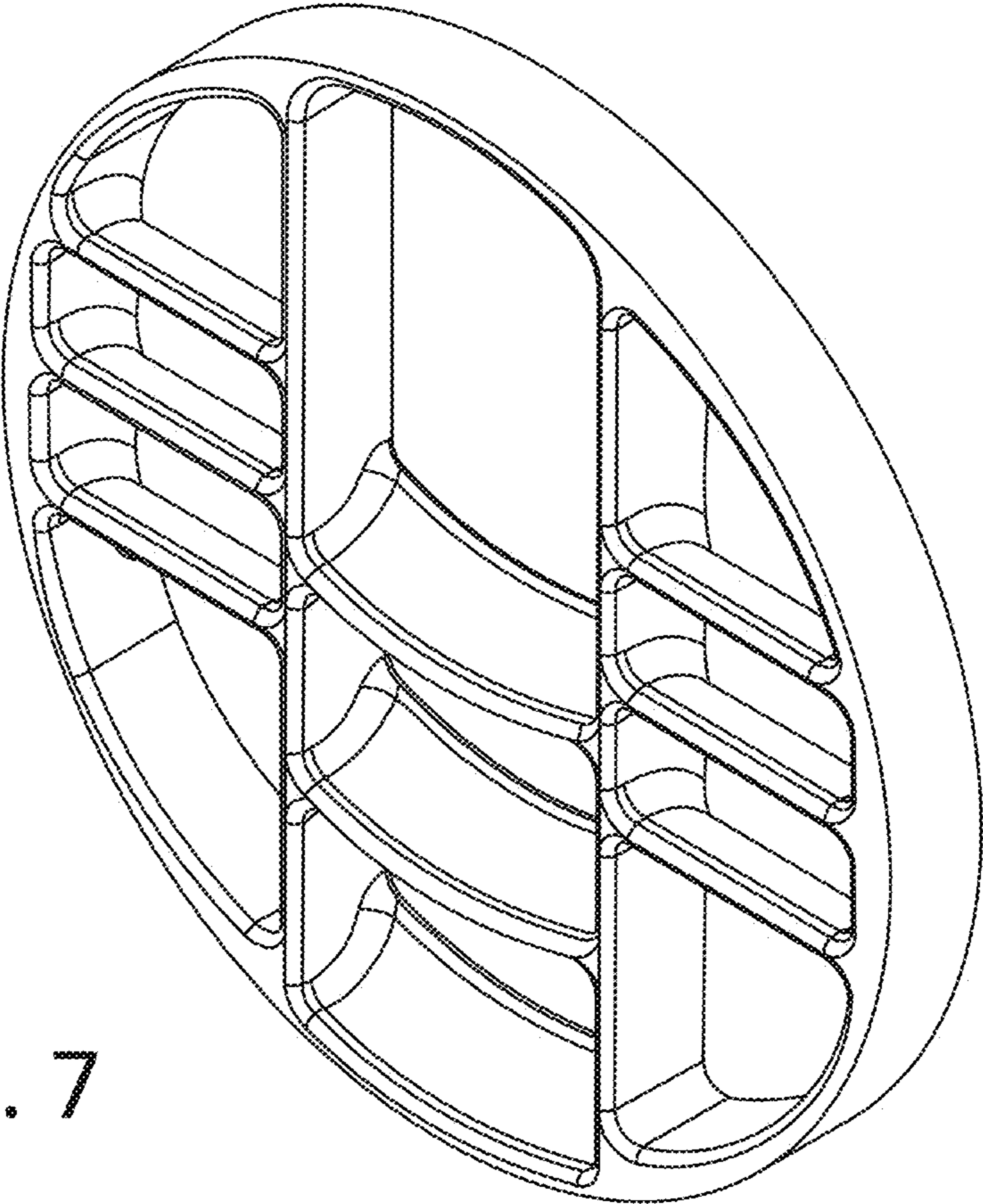


FIG. 7



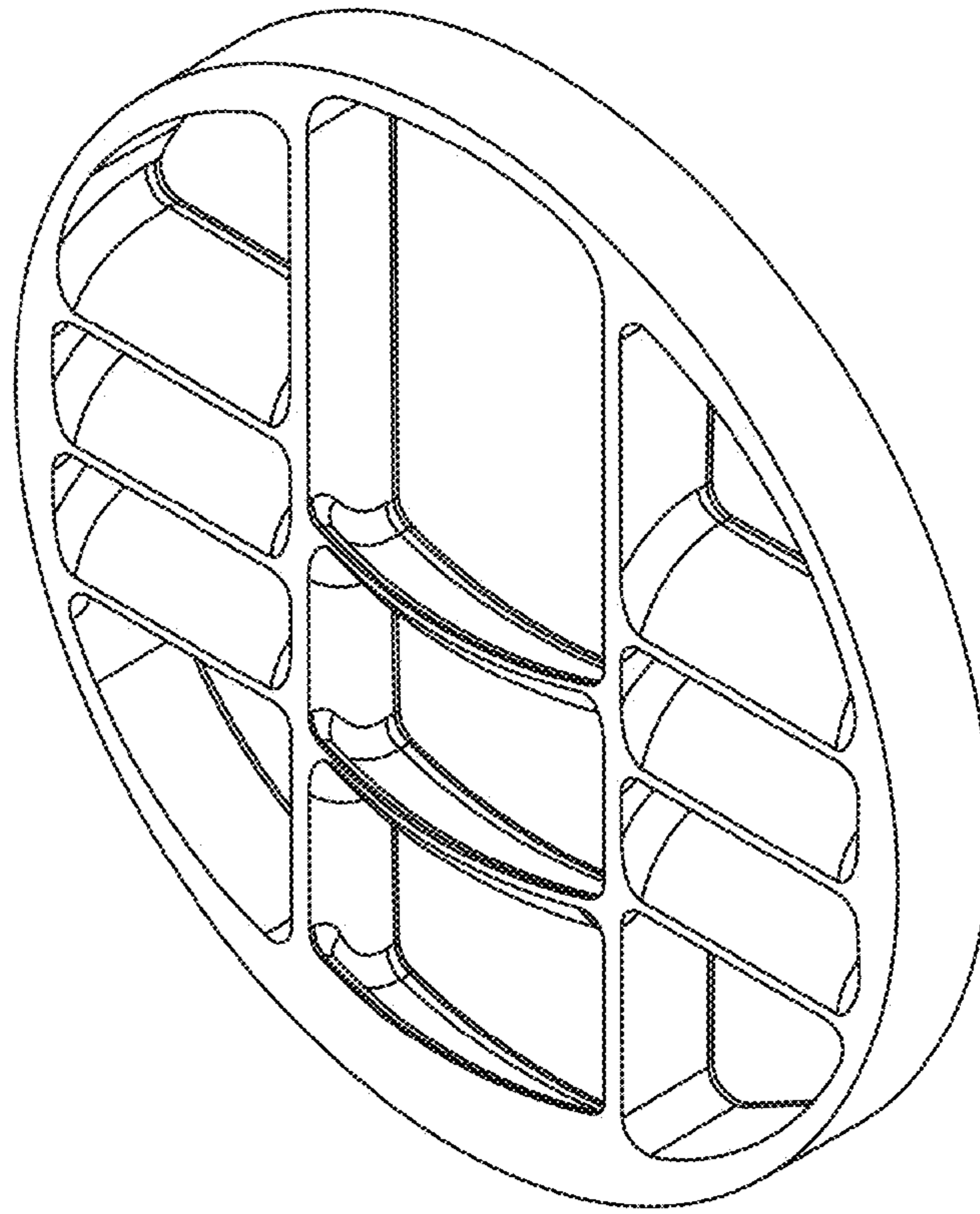


FIG. 8

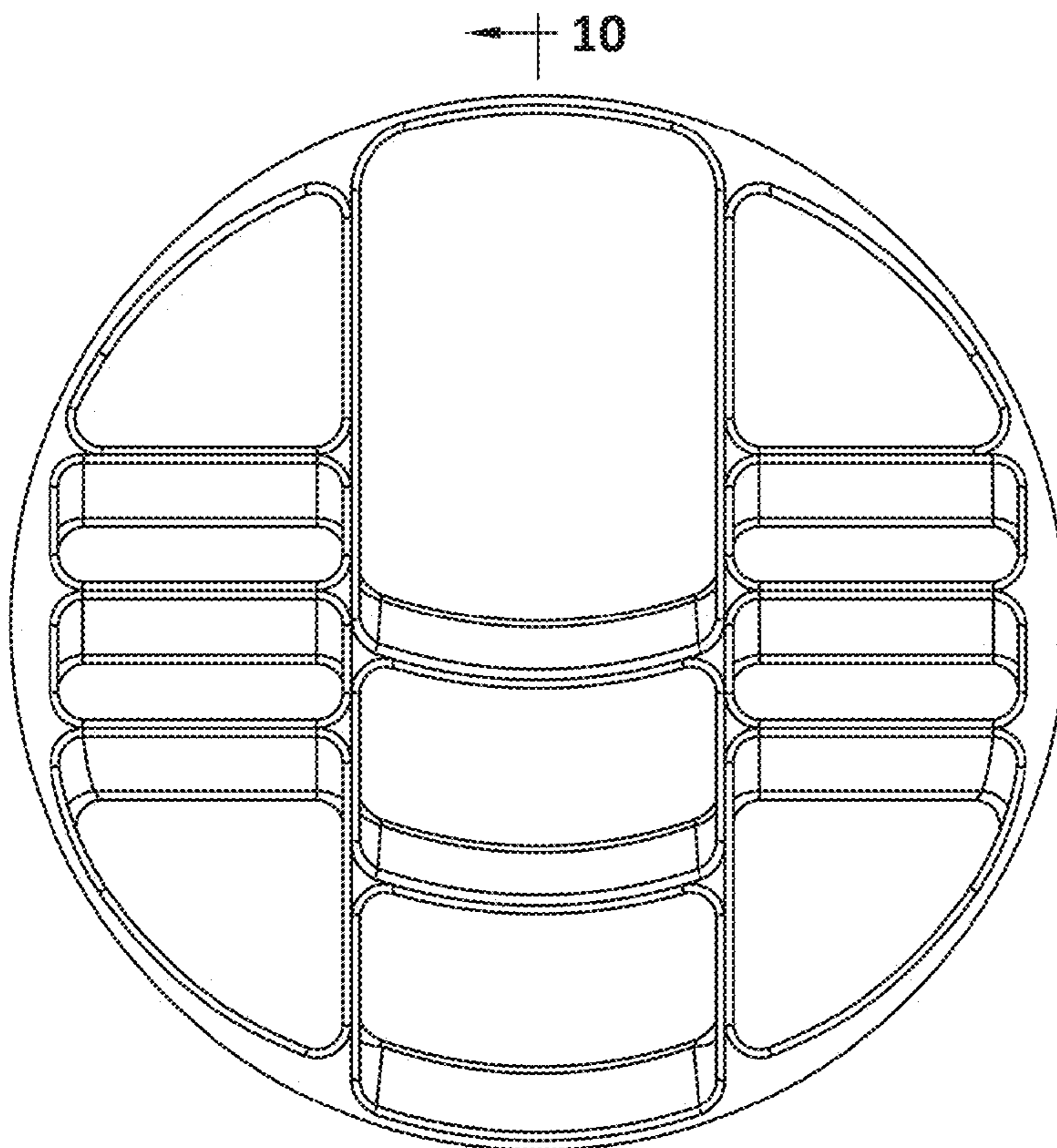


FIG. 9

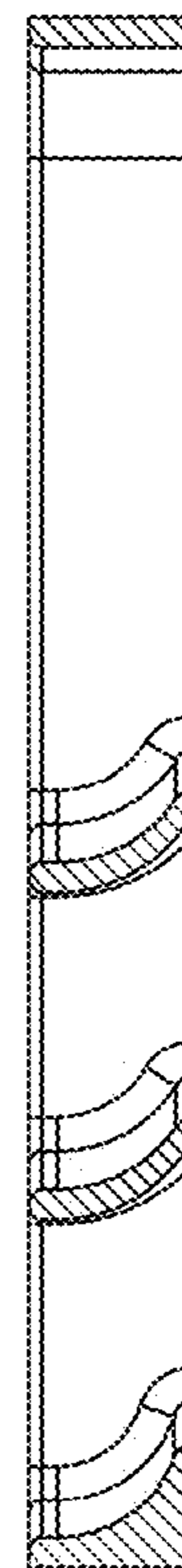


FIG. 10

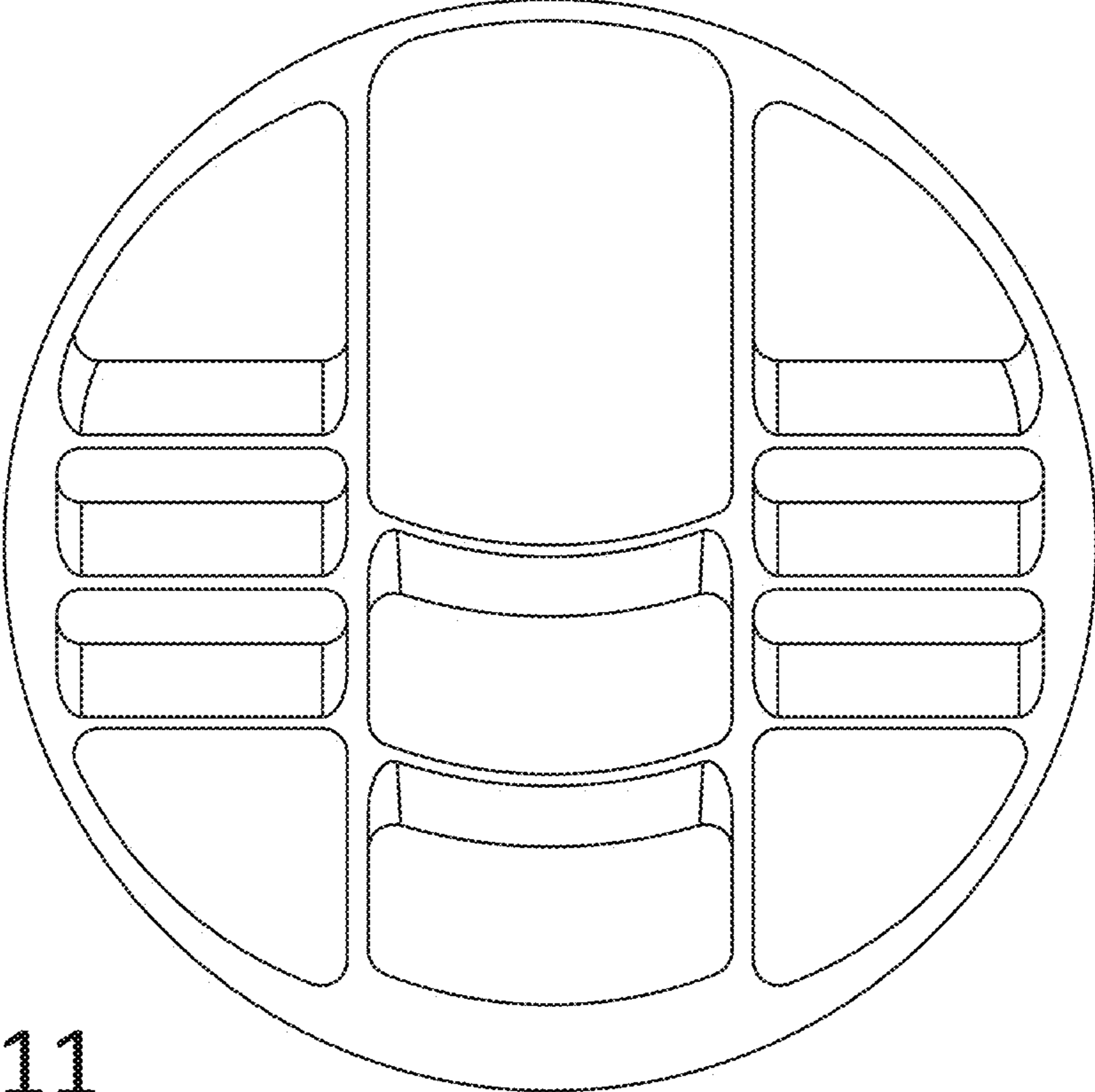


FIG. 11

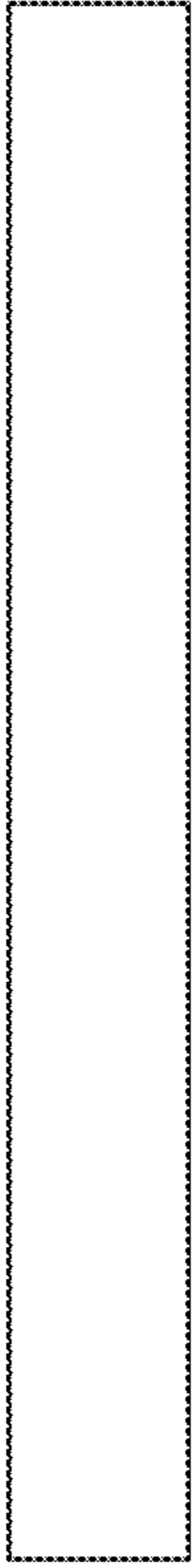


FIG. 12

UNITED STATES PATENT AND TRADEMARK OFFICE  
**CERTIFICATE OF CORRECTION**

PATENT NO. : D976,384 S  
APPLICATION NO. : 29/720391  
DATED : January 24, 2023  
INVENTOR(S) : Sawchuk et al.

Page 1 of 5

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

On the Title Page

Replace Title Page with attached Title Page.

In the Drawings

Replace Drawing sheets 1-3 with attached Drawing sheets 1-3.

Delete Drawing sheets 4-5.

Signed and Sealed this  
Thirteenth Day of June, 2023  
*Katherine Kelly Vidal*

Katherine Kelly Vidal  
*Director of the United States Patent and Trademark Office*



(12) **United States Design Patent** (10) **Patent No.:** **US D976,384 S**  
**Sawchuk et al.** (45) **Date of Patent:** **\*\* Jan. 24, 2023**

(54) **STATIC MIXER FOR FLUID FLOW**

4,461,579 A 7/1984 McCallum  
 4,495,858 A 1/1985 Erickson  
 4,614,440 A 9/1986 King  
 (Continued)

(71) Applicant: **Canada Pipeline Accessories Co., Ltd., Calgary (CA)**

(72) Inventors: **Daniel Sawchuk, Chestermere (CA);  
 Reginald Selirio, Calgary (CA);  
 Raphael Selirio, Calgary (CA)**

**FOREIGN PATENT DOCUMENTS**

DE 10361411 A1 7/2005  
 EP 2596854 A1 5/2013  
 (Continued)

(73) Assignee: **CANADA PIPELINE ACCESSORIES CO., LTD., Calgary (CA)**

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

**OTHER PUBLICATIONS**

Xingyu 8.74 inch Air Fryer Replacement Grill Pan 5QT Airfryers, Jan. 11, 2021, amazon.ca, Oct. 13, 2022, URL: <https://www.amazon.ca/Replacement-Airfryers-Non-stick-Accessories-Dishwasher/dp/B08PSN7W69/> (Year: 2021).\*

(21) Appl. No.: **29/720,391**

(22) Filed: **Jan. 13, 2020**

(51) **LOC (14) CL** ..... **23-03**

(52) **U.S. CL**  
 USPC ..... **D23/413**

(58) **Field of Classification Search**  
 USPC ..... D23/213, 214, 215, 223, 224, 226, 229,  
 D23/230, 379-380, 413-414  
 CPC ..... A61H 9/0021; A61H 33/00; B05B 1/00;  
 B05B 1/14; B05B 1/185; B05B 1/08;  
 B05B 1/02; B05B 1/26; B05B 12/002;  
 B05B 1/18; B05B 9/01

See application file for complete search history.

(Continued)

*Primary Examiner* — Keith J Wilson  
 (74) *Attorney, Agent, or Firm* — Calm & Samuels, LLP

(57) **CLAIM**

The ornamental design for a static mixer, as shown and described.

**DESCRIPTION**

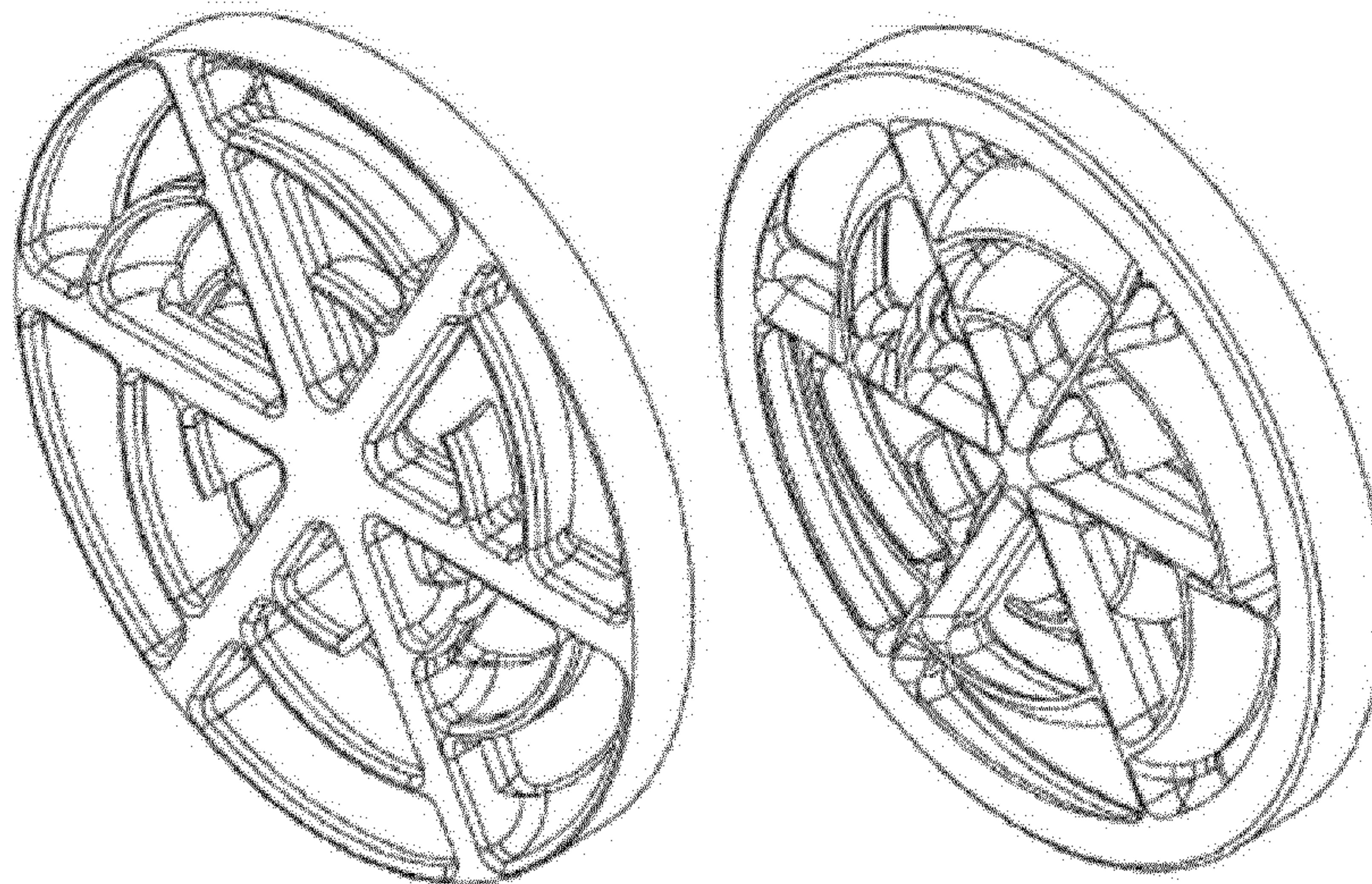
FIG. 1 illustrates a front perspective view of a static mixer having a plurality of curved arms circumferentially positioned around a central portion of the static mixer.  
 FIG. 2 illustrates a rear perspective view of the static mixer of FIG. 1.  
 FIG. 3 illustrates a front view of the static mixer of FIG. 1.  
 FIG. 4 illustrates a cross-sectional view of the static mixer of FIG. 1 along the cut depicted in FIG. 3.  
 FIG. 5 illustrates a rear view of the static mixer of FIG. 1; and,  
 FIG. 6 illustrates a side view of the static mixer of FIG. 1 having the rear of the static mixer on the left.

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

1,113,041 A	10/1914	Murphy
1,637,697 A	8/1927	Jacobsen
1,648,708 A	11/1927	Wilkinson
1,702,274 A	2/1929	Schmidt
2,693,391 A	11/1954	Manseau
3,128,794 A	4/1964	Boucher et al.
3,682,443 A	8/1972	Upmeyer
3,863,678 A	2/1975	Peterson et al.
3,911,073 A	10/1975	Charles-Massance
4,208,136 A	6/1980	King

1 Claim, 3 Drawing Sheets





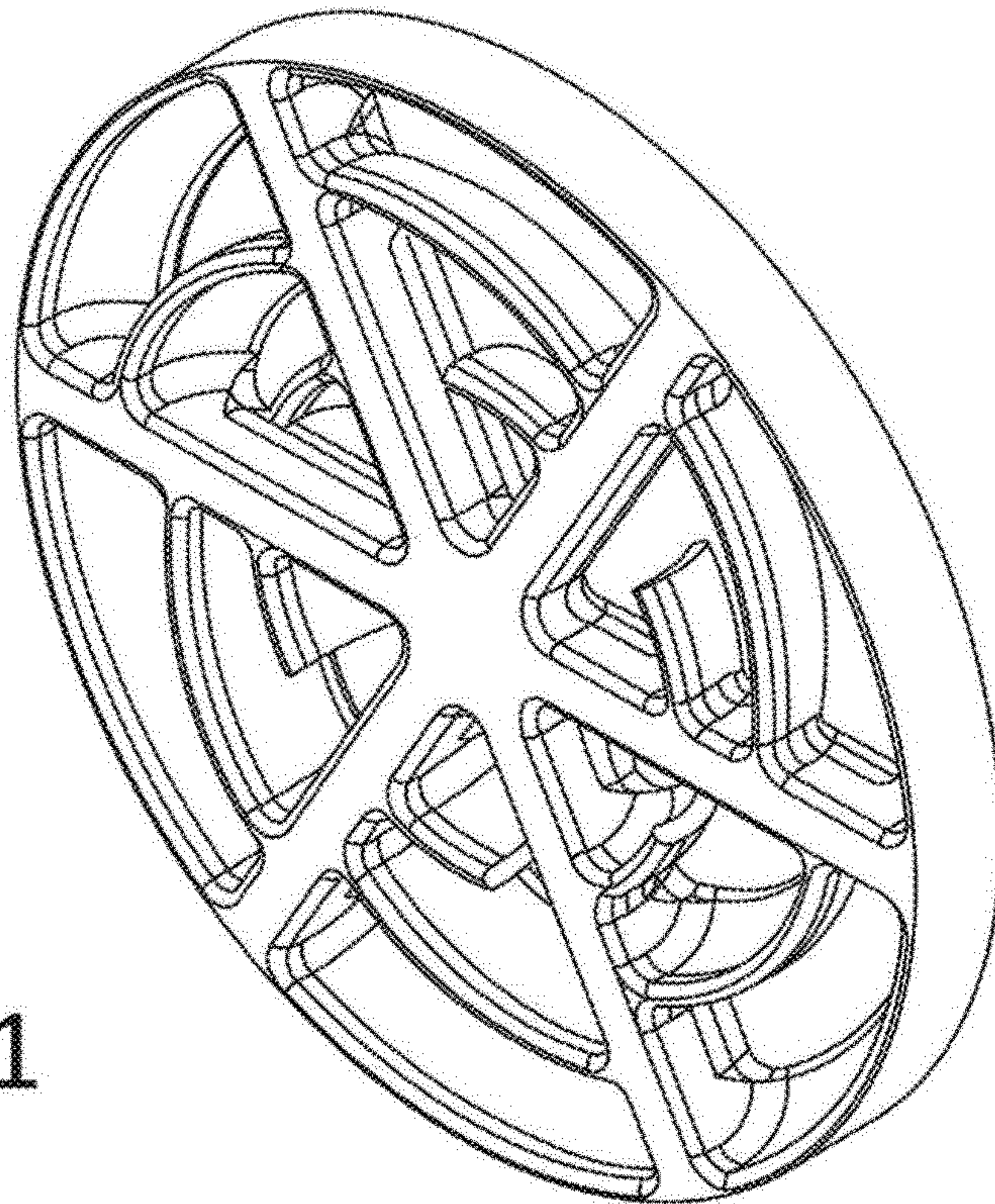


FIG. 1

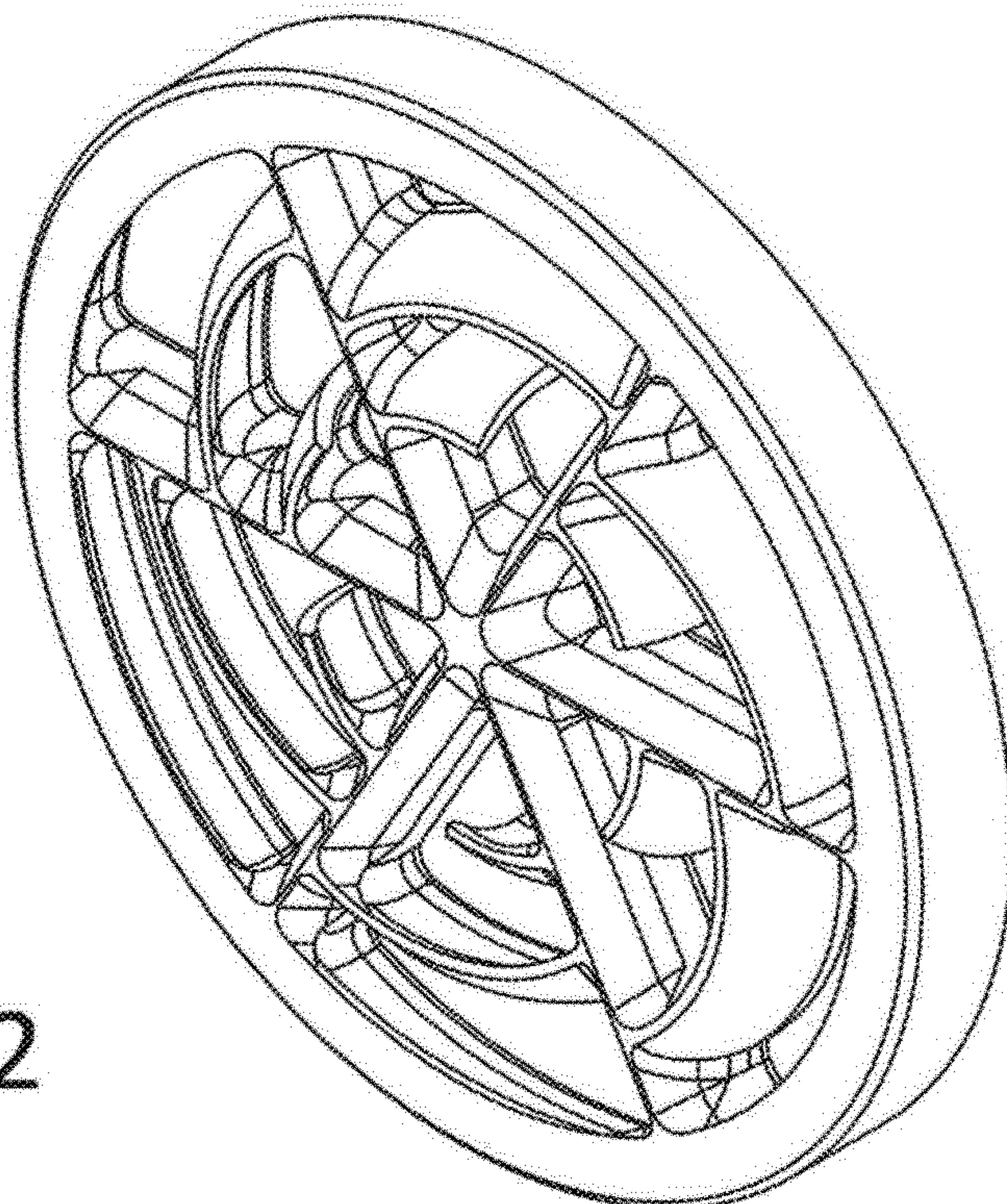


FIG. 2



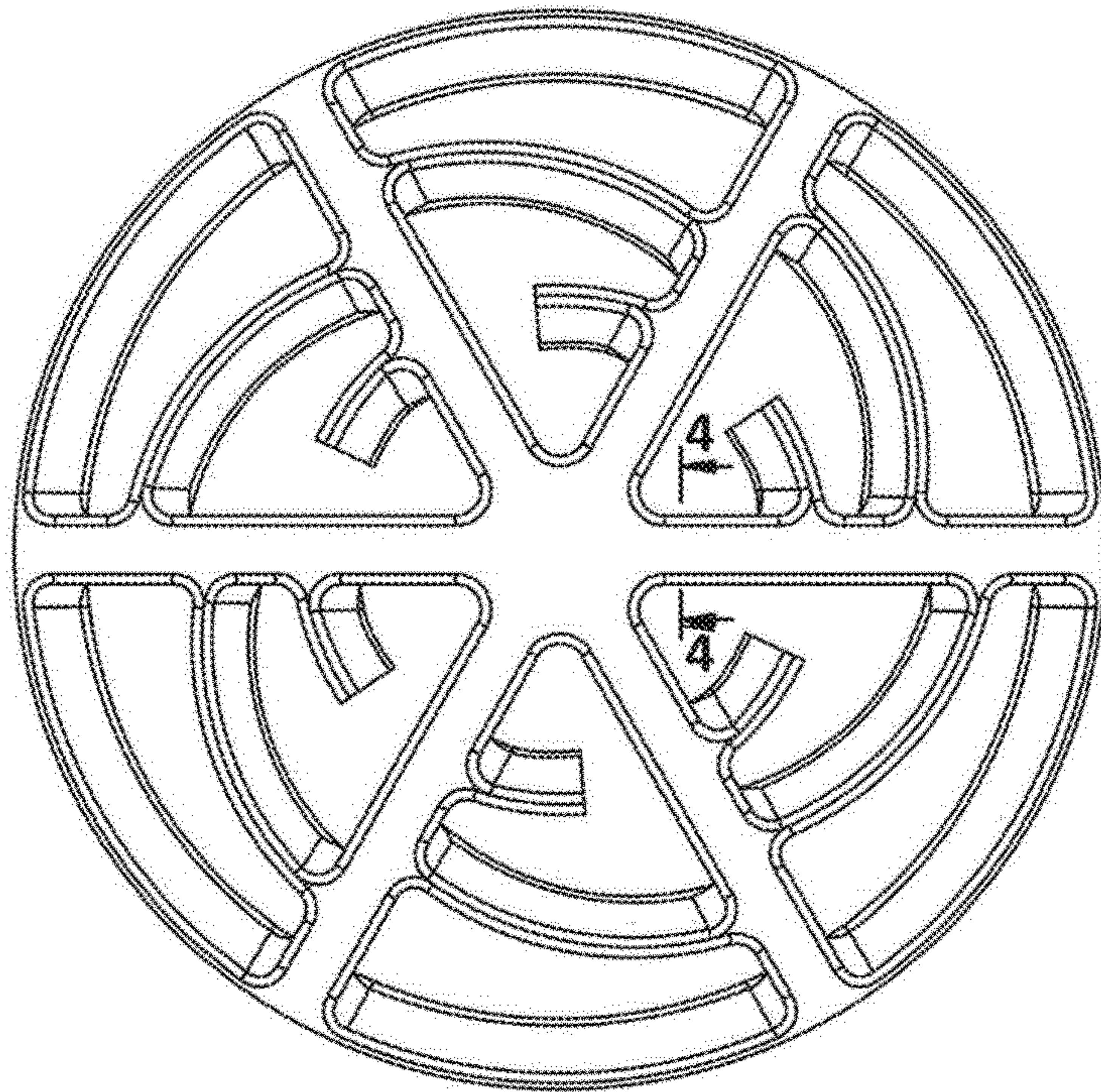


FIG. 3

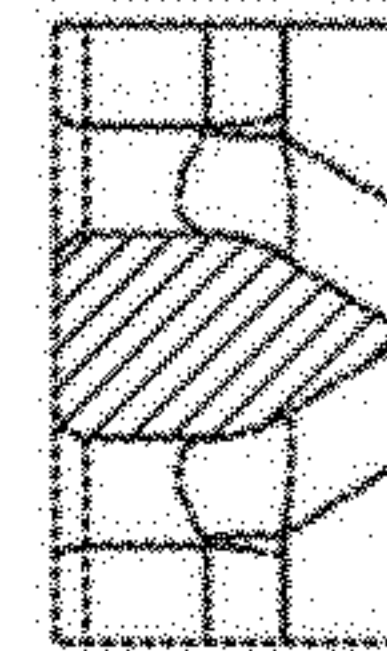


FIG. 4

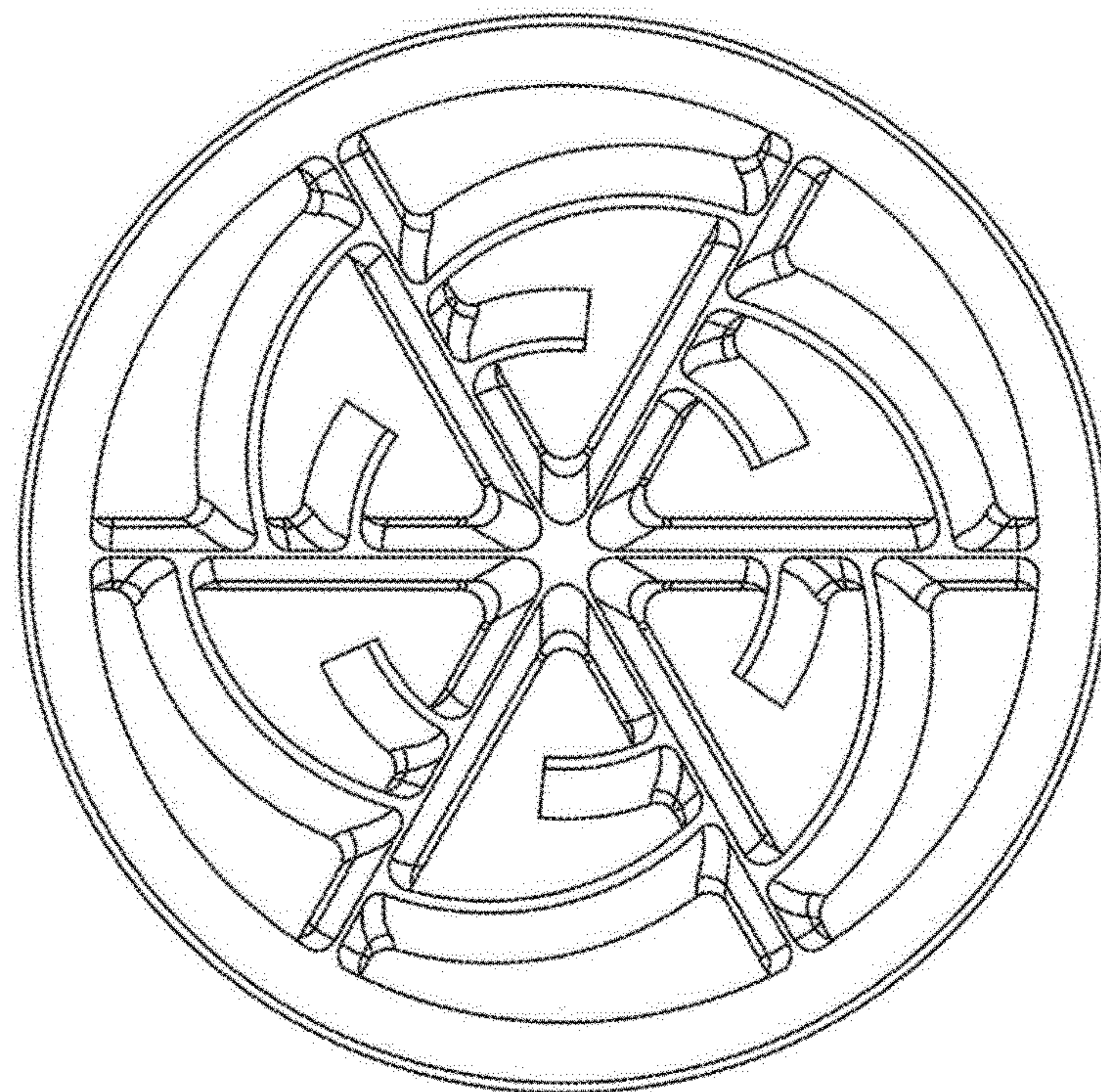


FIG. 5

**FIG. 6**

