



(12) **United States Design Patent** (10) **Patent No.:** **US D860,956 S**  
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(54) **IMPELLER**

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(52) **U.S. Cl.**  
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D26/59; D13/179  
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F04D 25/088; F04D 29/282; F04D  
25/0613; F04D 29/30; F04D 29/386;  
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F04D 19/002; H02K 1/187  
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

D486,568 S \* 2/2004 Chen ..... D23/370  
D745,955 S \* 12/2015 Chen ..... D13/179  
D755,134 S \* 5/2016 Andre ..... D13/179  
10,100,840 B2 \* 10/2018 Xu ..... F04D 29/624  
2005/0056405 A1 \* 3/2005 Hashimoto ..... F04D 29/30  
165/104.33  
2013/0164158 A1 \* 6/2013 Matsuba ..... F04D 17/16  
417/410.1

2013/0343884 A1 \* 12/2013 Horng ..... F01D 5/28  
415/200  
2014/0072434 A1 \* 3/2014 Wu ..... F04D 17/162  
416/198 R  
2014/0119909 A1 \* 5/2014 Chiang ..... F04D 17/105  
415/208.1  
2014/0119960 A1 \* 5/2014 Aiello ..... F04D 29/281  
417/353  
2014/0127022 A1 \* 5/2014 Cheng ..... F04D 29/281  
416/192  
2014/0127024 A1 \* 5/2014 Yang ..... F04D 17/162  
416/211  
2014/0134011 A1 \* 5/2014 Chen ..... F04D 25/0613  
417/354  
2015/0139833 A1 \* 5/2015 He ..... F04D 29/545  
417/423.7  
2015/0152883 A1 \* 6/2015 Dybenko ..... F04D 25/0613  
415/220

(Continued)

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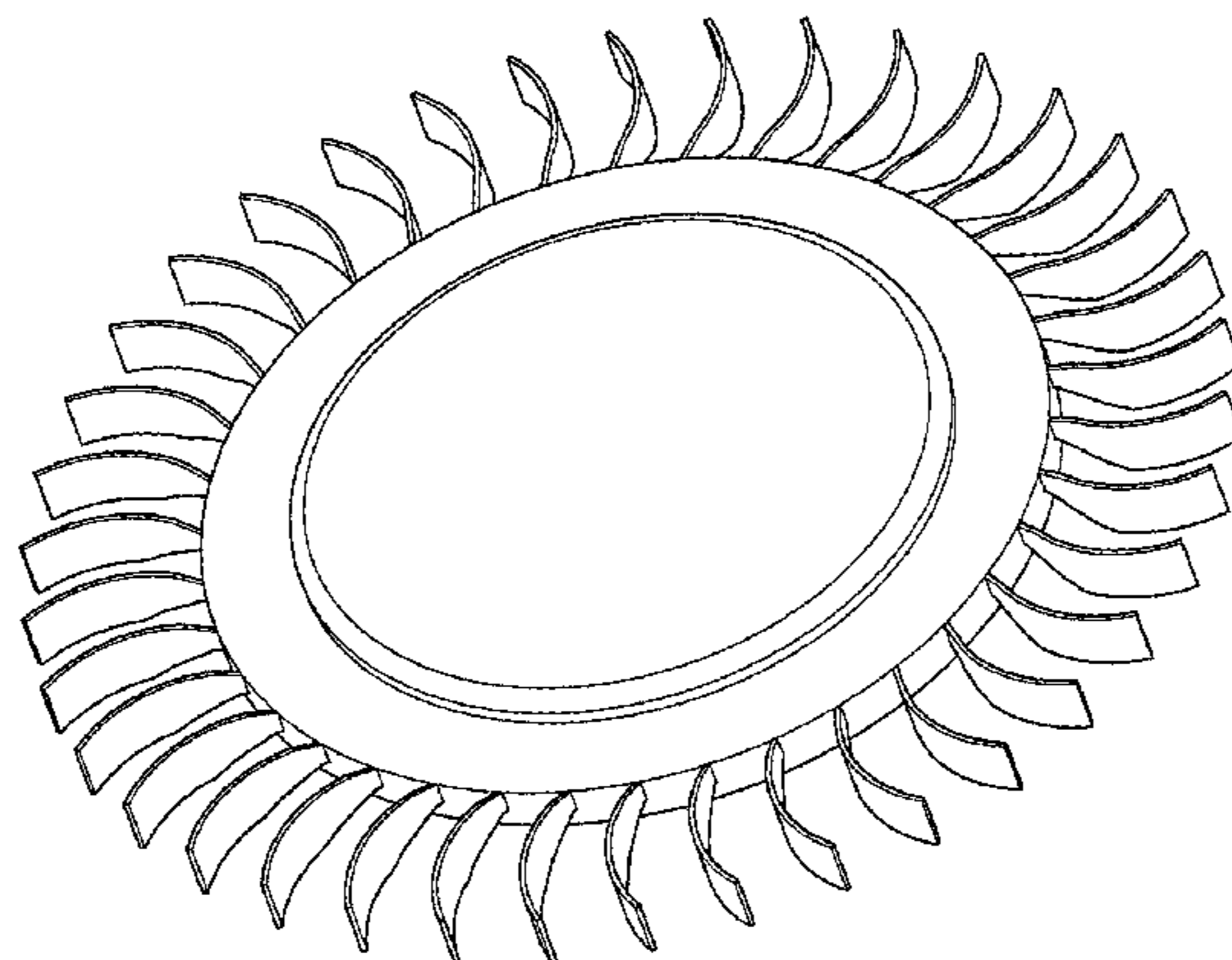
(57) **CLAIM**

The ornamental design for impeller, as shown and described.

**DESCRIPTION**

FIG. 1 is a perspective view of an impeller showing our new design;  
FIG. 2 is a front view thereof;  
FIG. 3 is a rear front 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 dash-dash broken lines show environmental structure that forms no part of the claimed design.

**1 Claim, 5 Drawing Sheets**



(56)

**References Cited**

U.S. PATENT DOCUMENTS

2015/0382500 A1\* 12/2015 Chen ..... G06F 1/20  
165/121  
2017/0218971 A1\* 8/2017 Bianchi ..... F04D 17/16  
2017/0260984 A1\* 9/2017 Xu ..... F04D 19/002  
2017/0260994 A1\* 9/2017 Xu ..... F04D 29/281  
2017/0260995 A1\* 9/2017 Xu ..... F04D 29/624  
2017/0260996 A1\* 9/2017 Xu ..... F04D 29/624  
2018/0017069 A1\* 1/2018 Boutros-Mikhail .....  
F04D 23/008  
2018/0058467 A1\* 3/2018 Lin ..... F04D 29/30  
2018/0202455 A1\* 7/2018 Tamaoka ..... F04D 25/0606  
2018/0202456 A1\* 7/2018 Tamaoka ..... F04D 25/0606  
2018/0202457 A1\* 7/2018 Tamaoka ..... F04D 25/0606  
2018/0238338 A1\* 8/2018 Tamaoka ..... F04D 29/283  
2018/0238340 A1\* 8/2018 Tamaoka ..... F04D 29/30  
2018/0252237 A1\* 9/2018 Lin ..... F04D 29/666  
2018/0266434 A1\* 9/2018 Chen ..... F04D 29/329

\* cited by examiner

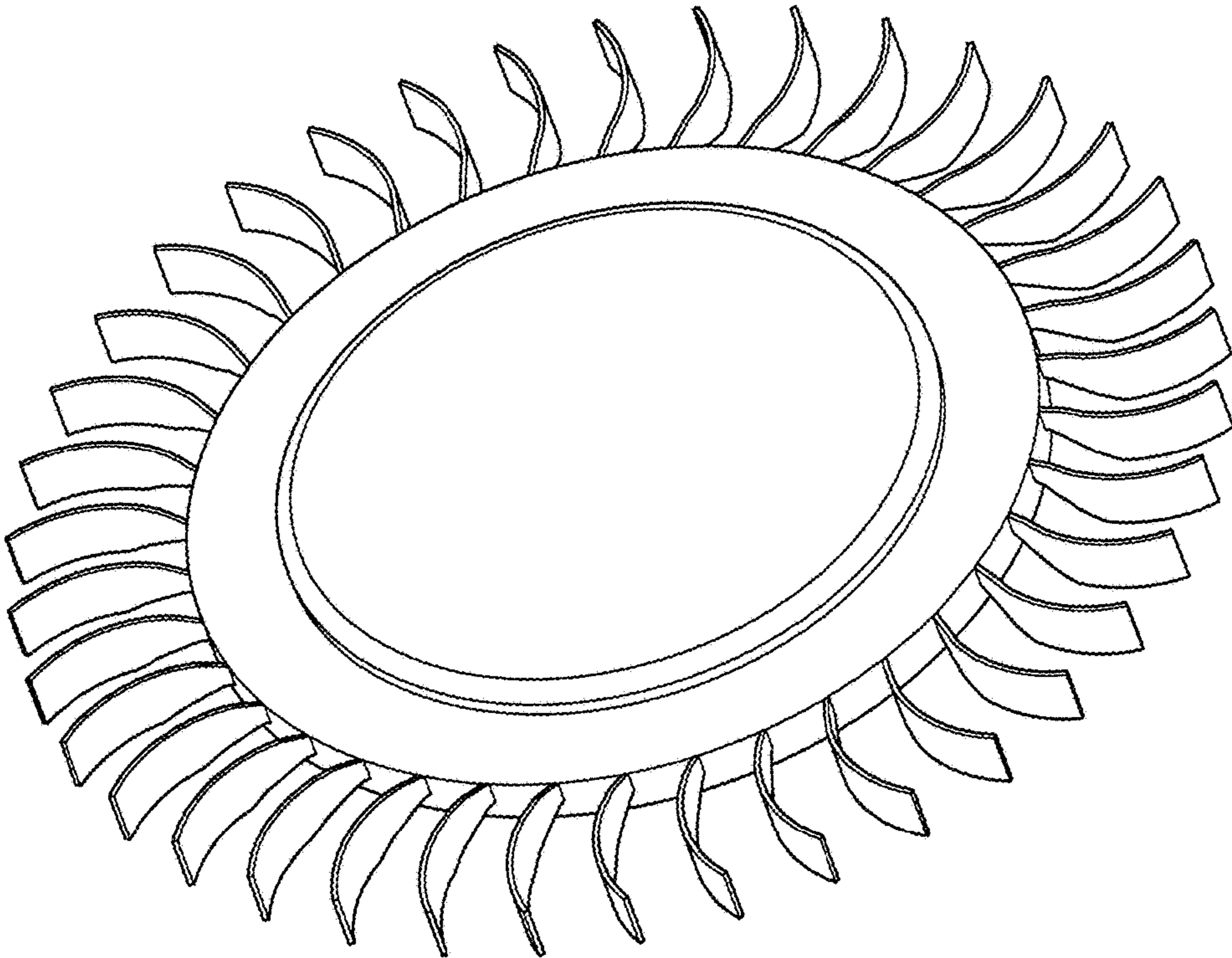


FIG.1

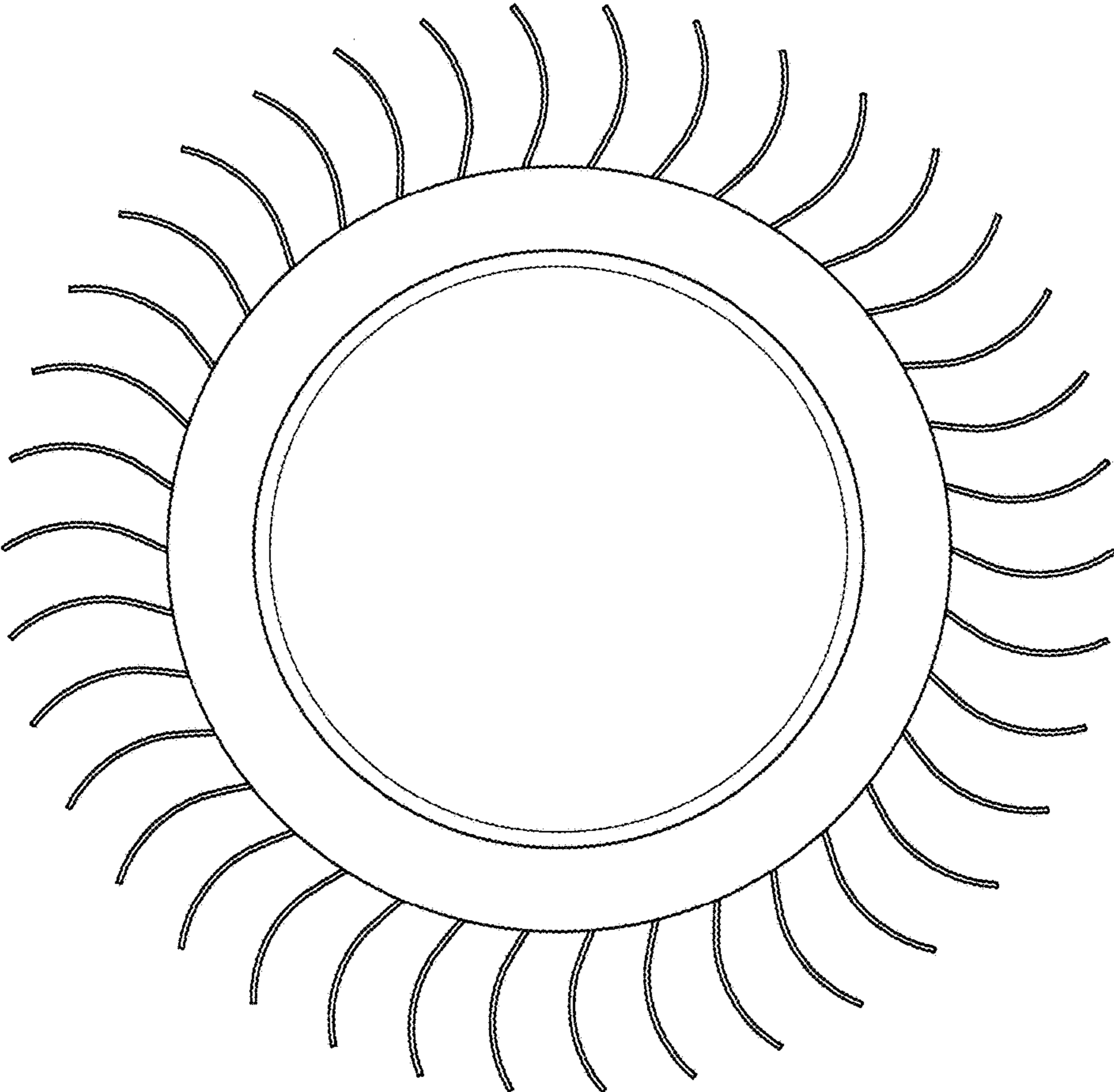


FIG.2



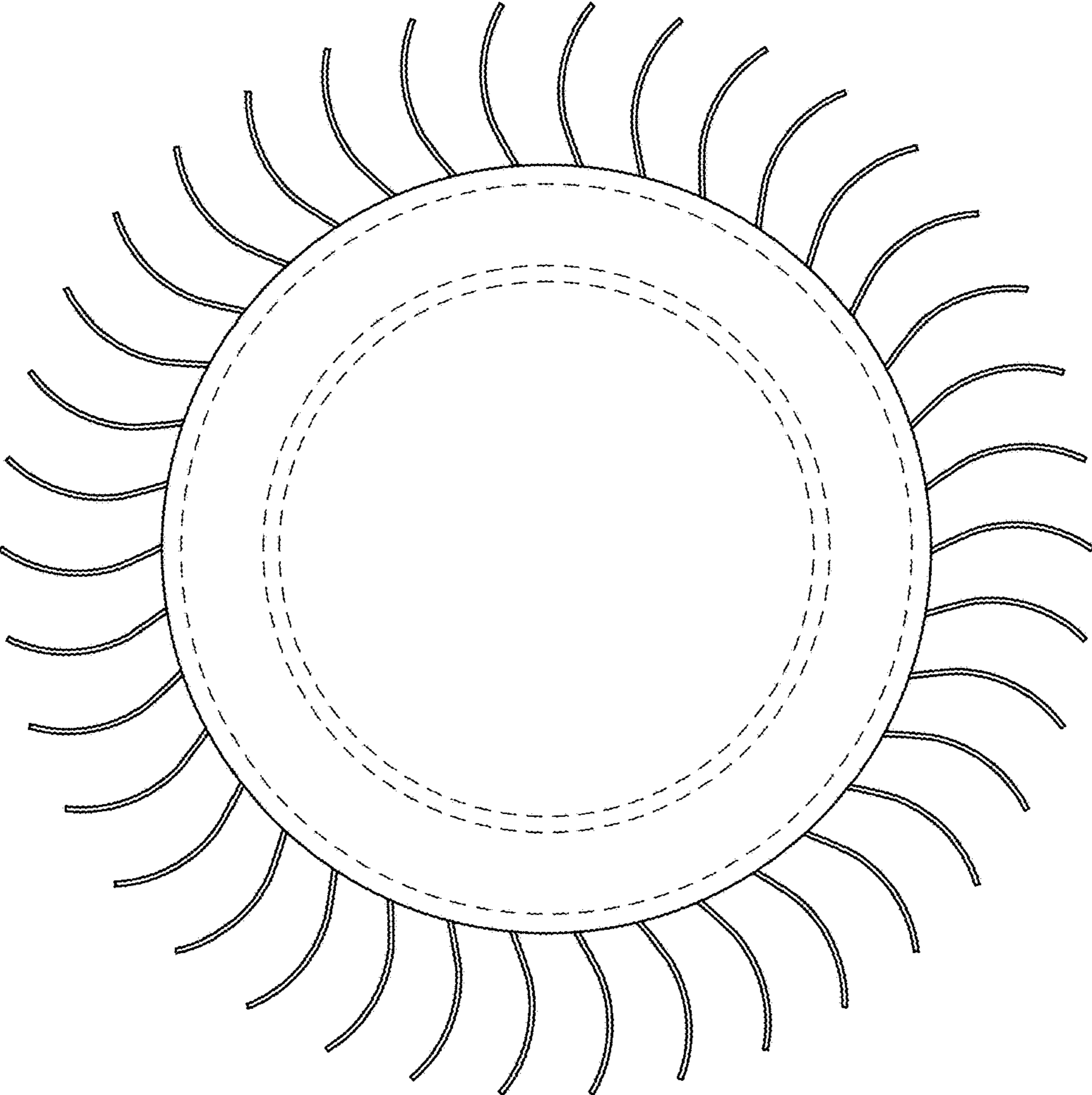


FIG.3

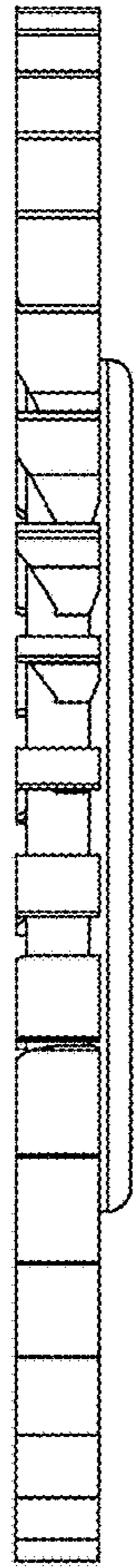


FIG.4



FIG.5

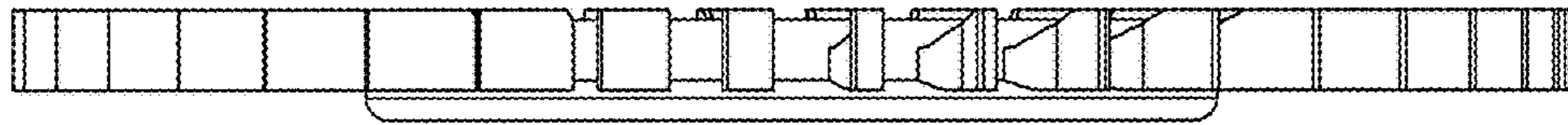


FIG.6



FIG.7