



US00D980965S

(12) **United States Design Patent**
Stauter et al.

(10) **Patent No.:** **US D980,965 S**
(45) **Date of Patent:** **** Mar. 14, 2023**

- (54) **LEADING EDGE OF A FAN BLADE**
- (71) Applicant: **Carrier Corporation**, Palm Beach Gardens, FL (US)
- (72) Inventors: **Richie C. Stauter**, Fayetteville, NY (US); **Ryan K. Dygert**, Cicero, NY (US); **Mina Adel Zaki**, Syracuse, NY (US); **Daniel Asselin**, Syracuse, NY (US)
- (73) Assignee: **CARRIER CORPORATION**, Palm Beach Gardens, FL (US)
- (**) Term: **15 Years**
- (21) Appl. No.: **29/690,361**
- (22) Filed: **May 7, 2019**
- (51) **LOC (14) Cl.** **23-03**
- (52) **U.S. Cl.**
USPC **D23/413**
- (58) **Field of Classification Search**
USPC D23/328, 332, 333, 370–383, 385, D23/335–337, 341, 351–352, 354, D23/411–414
CPC .. F04D 25/084; F04D 25/086; F04D 25/0673; F04D 29/646; F04D 29/324; F04D 29/38
See application file for complete search history.

8,568,095 B2 * 10/2013 Bushnell F04D 29/164
415/228
8,721,280 B2 5/2014 Nakagawa et al.
8,915,717 B2 12/2014 Stephan et al.
D725,251 S * 3/2015 Hamada D23/354
D725,252 S * 3/2015 Hamada D23/354

(Continued)

FOREIGN PATENT DOCUMENTS

CN 201574972 9/2010
CN 102022381 4/2011

(Continued)

Primary Examiner — Sharon S Oum

(74) *Attorney, Agent, or Firm* — Carlson, Gaskey & Olds, P.C.

(57) **CLAIM**

The ornamental design for a leading edge of a fan blade, as shown and described.

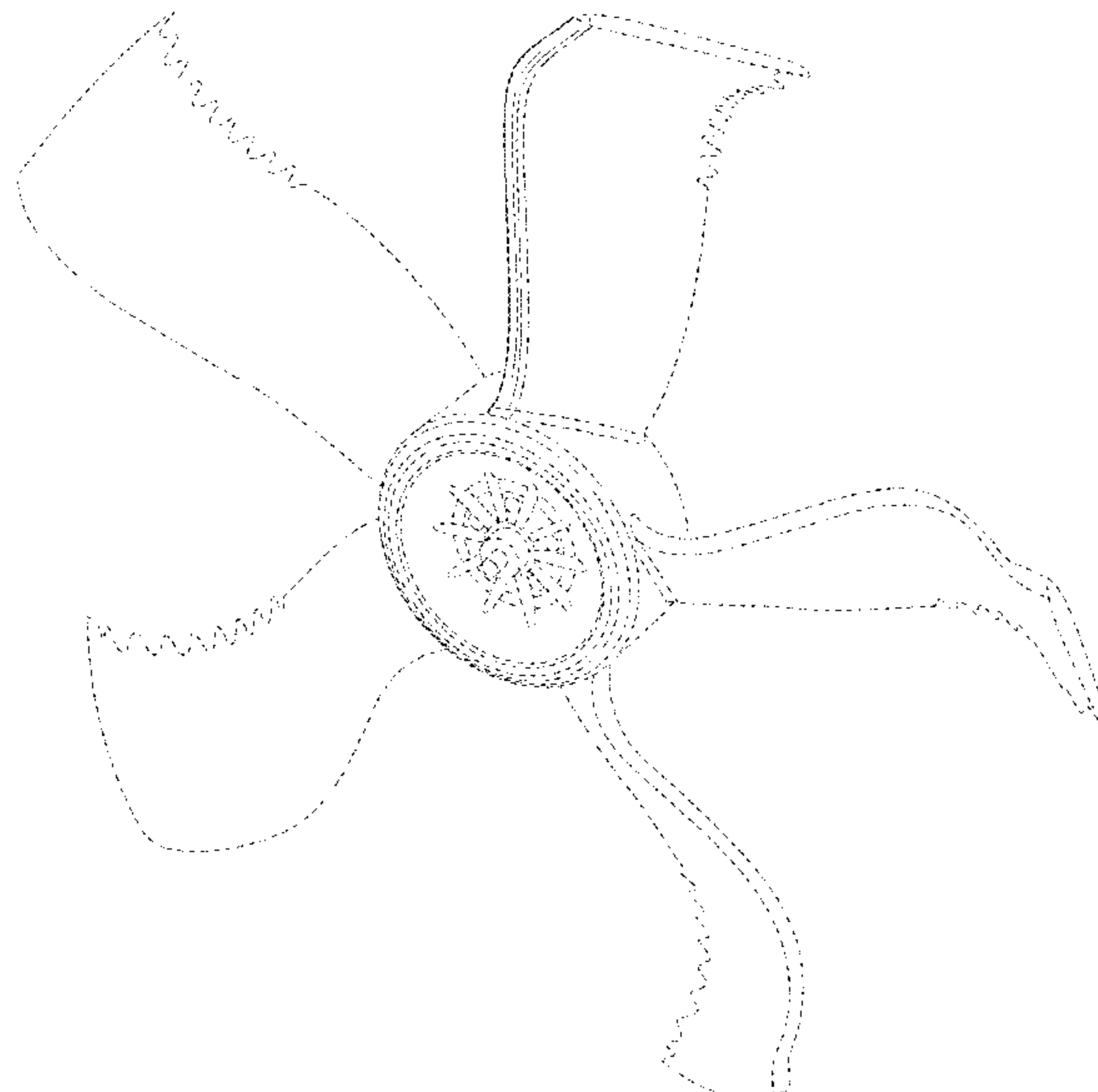
DESCRIPTION

FIG. 1 is a perspective view of a leading edge of a fan blade, shown in its environment;
 FIG. 2 is a front view of the leading edge of the fan blade of FIG. 1;
 FIG. 3 is a front perspective view of the leading edge of the fan blade of FIG. 1;
 FIG. 4 is another front perspective view of the leading edge of the fan blade of FIG. 1;
 FIG. 5 is a first side view of the leading edge of the fan blade of FIG. 1; and,
 FIG. 6 is a second side view of the leading edge of the fan blade of FIG. 1.
 The dash-dash broken lines illustrate portions of the leading edge of the fan blade and environment. The dash-dot broken lines define the bounds of the claimed design. None of the broken lines form part of the claimed design.

(56) **References Cited**
 U.S. PATENT DOCUMENTS

- 4,089,618 A 5/1978 Patel
- 5,603,607 A 2/1997 Kondo et al.
- 6,296,446 B1 10/2001 Ishijima et al.
- D515,688 S * 2/2006 Li D23/379
- 7,442,010 B2 * 10/2008 Gruber F04D 29/329
416/169 A
- 7,815,418 B2 10/2010 Suzuki et al.
- 8,512,004 B2 8/2013 Nakagawa et al.
- 8,556,587 B2 10/2013 Suzuki et al.

1 Claim, 6 Drawing Sheets



(56)

References Cited

U.S. PATENT DOCUMENTS

D727,490 S * 4/2015 Hatz D23/413
 9,121,294 B2 9/2015 Kray et al.
 9,518,585 B2 12/2016 Choi et al.
 9,556,881 B2 1/2017 Seiji et al.
 D853,554 S * 7/2019 Biancuzzo D23/413
 D858,737 S * 9/2019 Tadokoro D23/379
 10,544,797 B2 * 1/2020 Kumon F04D 25/08
 D884,874 S * 5/2020 Meng F04D 29/384
 D901,669 S * 11/2020 Bushnell F04D 29/384
 D23/413
 2012/0171042 A1 * 7/2012 Takeda F04D 29/384
 416/223 R
 2013/0091888 A1 4/2013 Park et al.
 2013/0202443 A1 * 8/2013 Tzeng F01D 5/34
 416/223 R
 2014/0147282 A1 5/2014 Hu et al.
 2015/0044058 A1 * 2/2015 Hamada F04D 29/386
 416/242
 2015/0125307 A1 * 5/2015 Kumon F04D 29/384
 416/223 R
 2015/0152875 A1 6/2015 Kamiya et al.
 2017/0023005 A1 1/2017 Gallagher
 2017/0167275 A1 6/2017 Schroeder et al.
 2017/0261000 A1 9/2017 Komura et al.
 2018/0066521 A1 3/2018 Sawada

2018/0238343 A1 8/2018 Nakashima et al.
 2018/0355885 A1 12/2018 Kim et al.
 2019/0024674 A1 1/2019 Loercher et al.
 2020/0173284 A1 * 6/2020 Gauss F01D 5/04
 2020/0355079 A1 * 11/2020 Stauter F01D 5/141

FOREIGN PATENT DOCUMENTS

CN 301873335 S 3/2012
 CN 204175642 2/2015
 CN 204572556 8/2015
 CN 106560115 4/2017
 CN 106837871 6/2017
 CN 107143521 9/2017
 CN 206530537 9/2017
 CN 206785722 12/2017
 CN 108087334 5/2018
 CN 207333287 5/2018
 CN 108167224 6/2018
 CN 208185056 12/2018
 EP 2466150 A2 6/2012
 EP 2947330 11/2015
 EP 3217018 9/2017
 JP 2000110785 4/2000
 KR 20140039976 A 4/2014
 KR 101392610 B1 5/2014
 KR 20180013514 A 2/2018
 WO 2019015729 A1 1/2019
 WO 2019021468 A1 1/2019

* cited by examiner

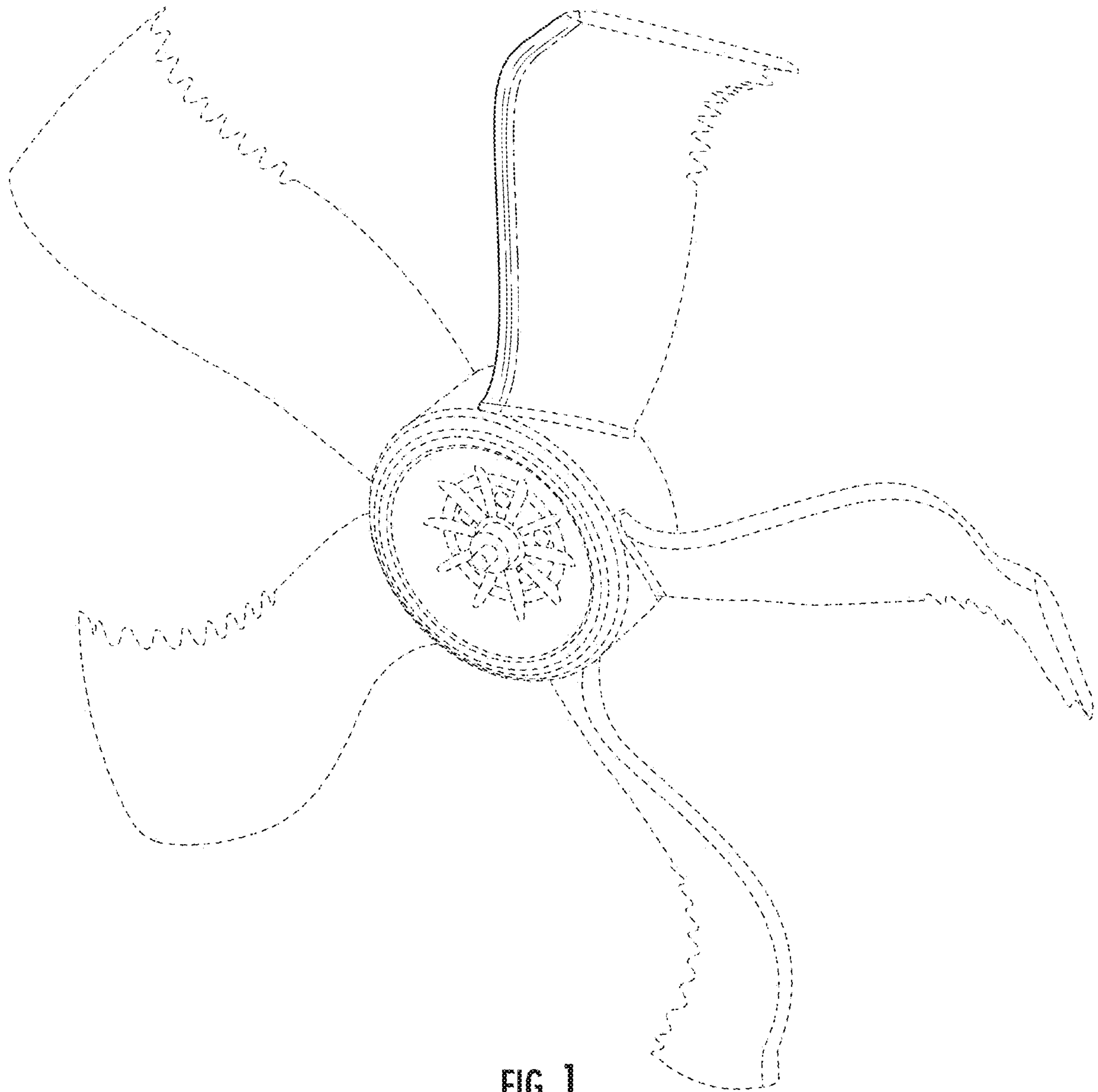


FIG. 1

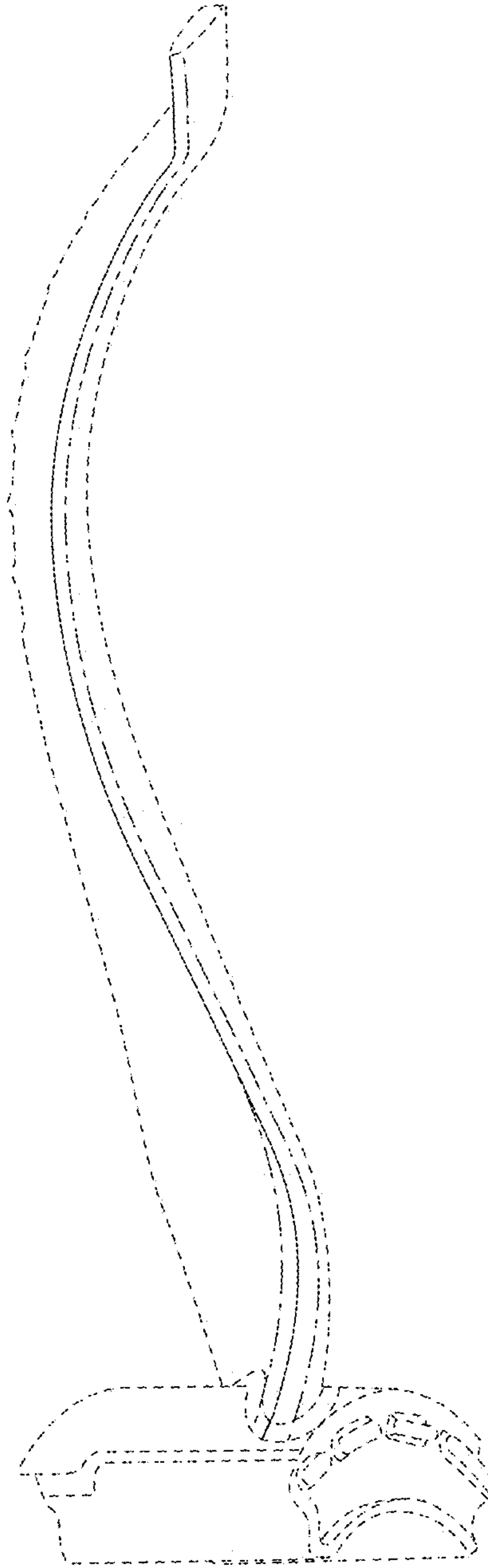


FIG. 2

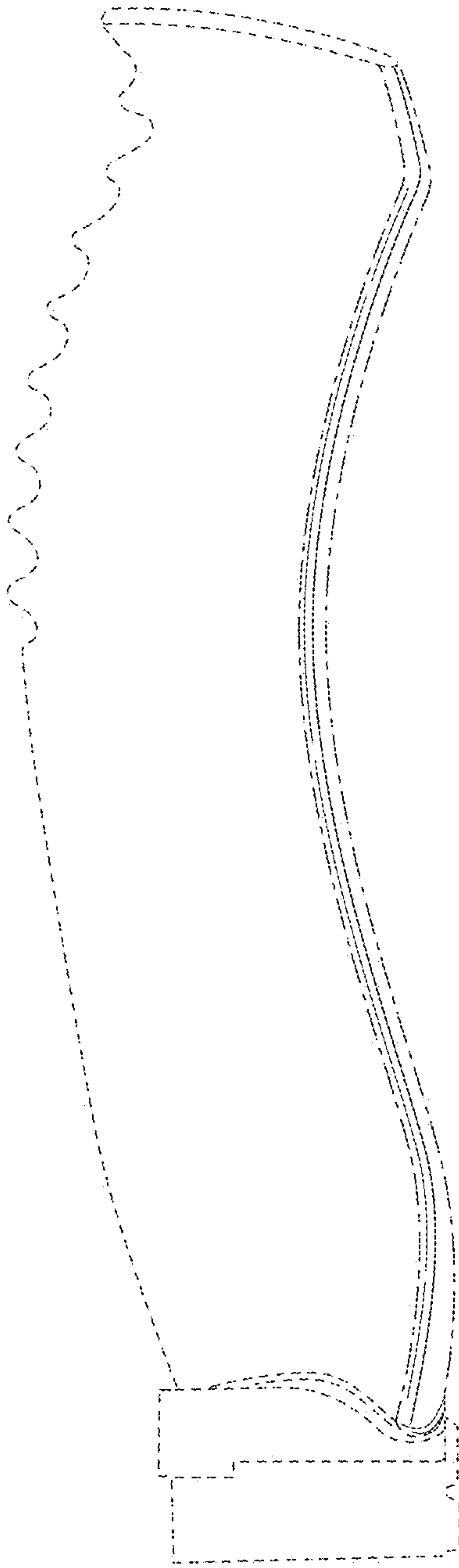


FIG. 3

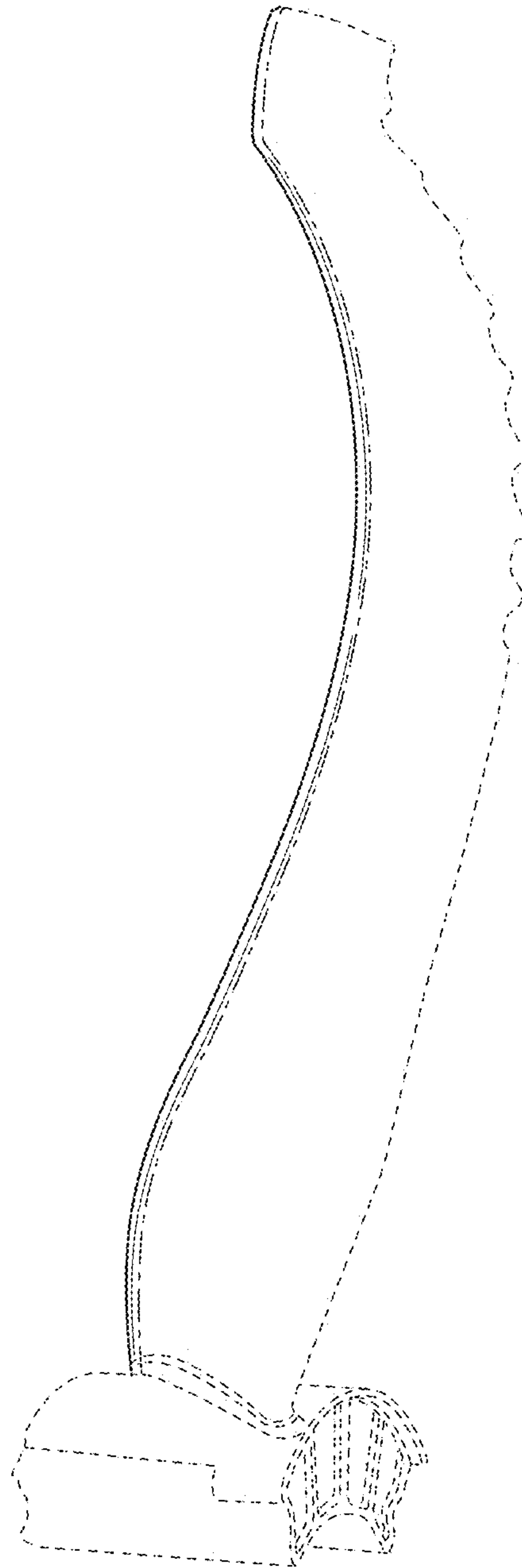


FIG. 4

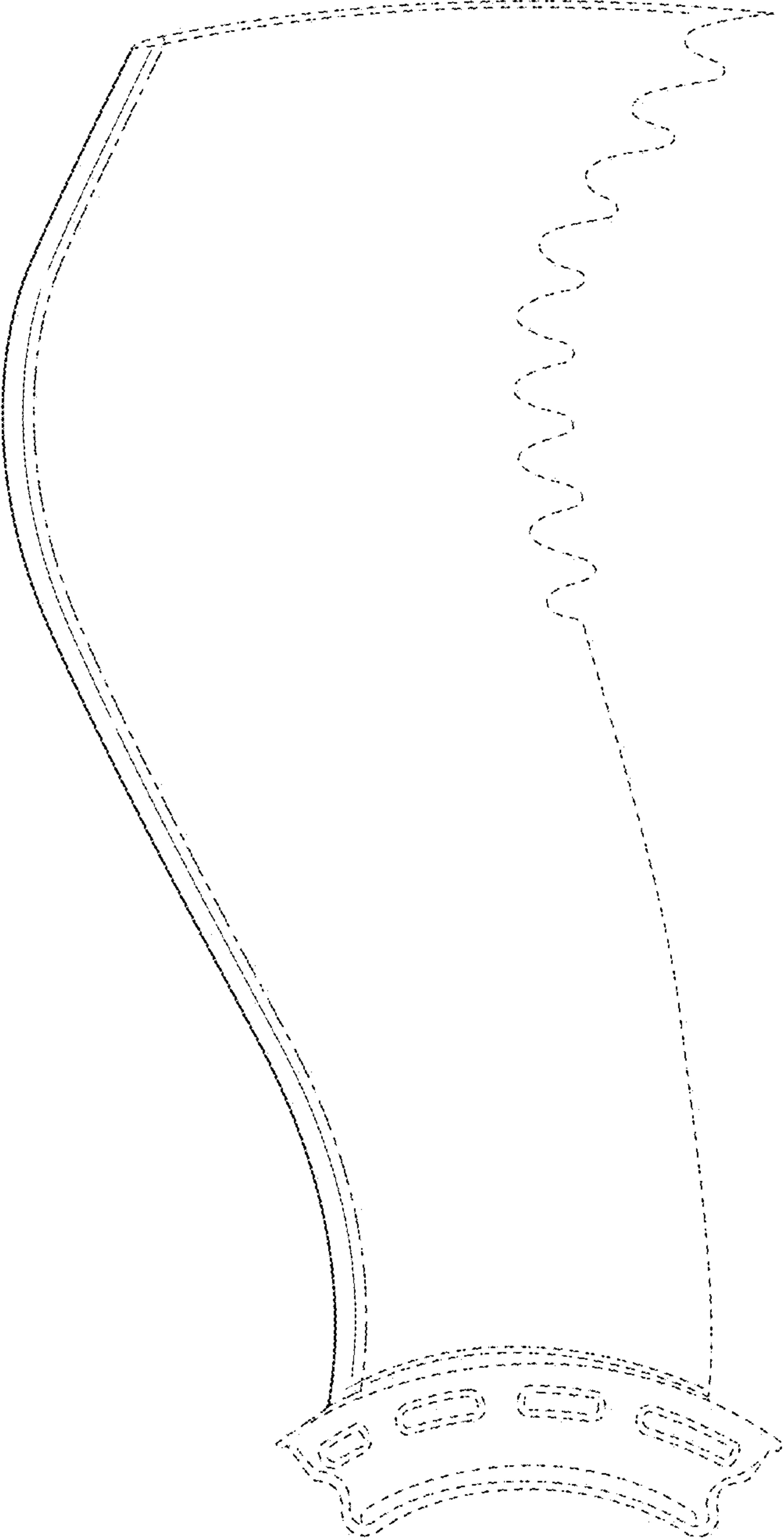


FIG. 5

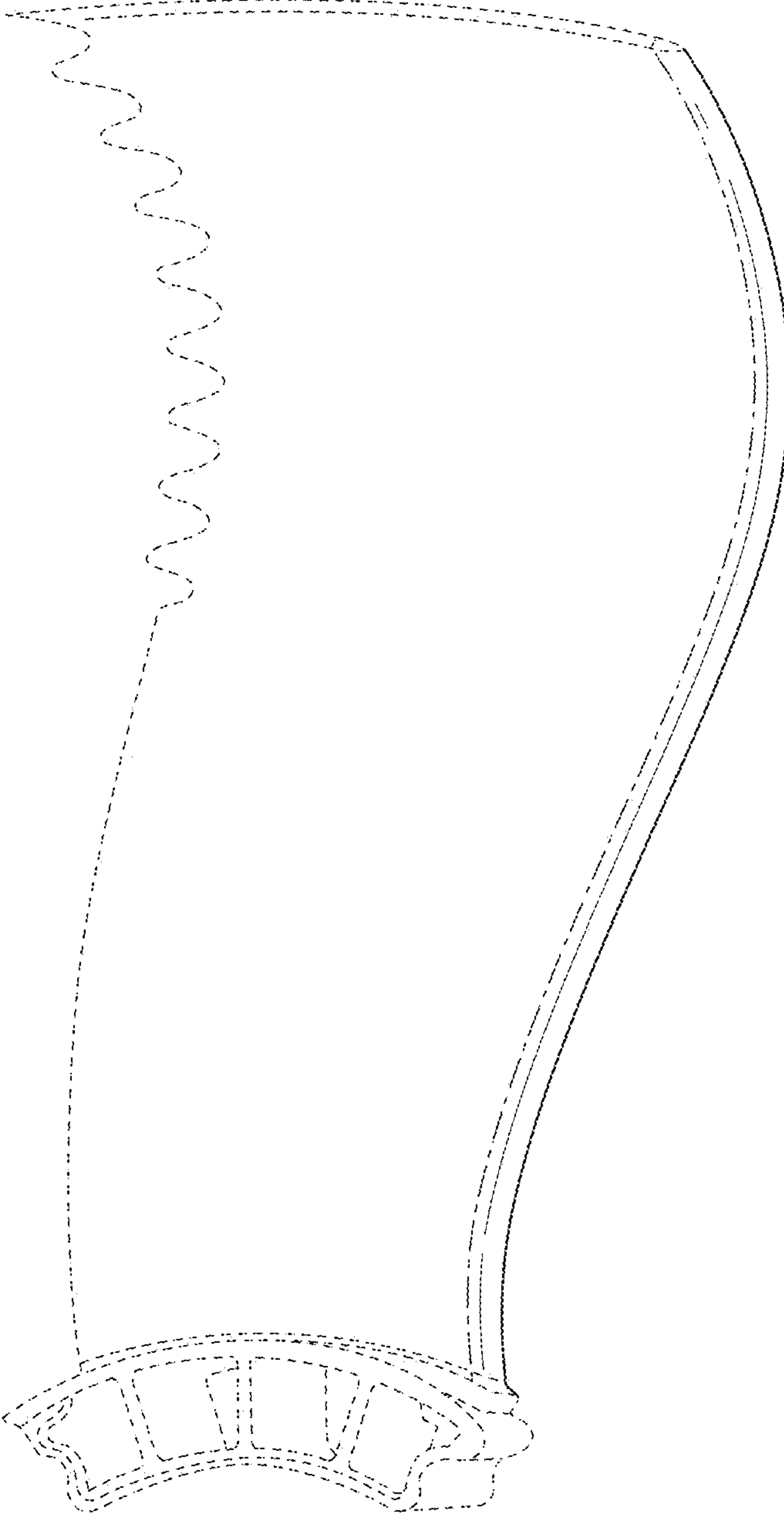


FIG. 6