



US00D874393S

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

(10) **Patent No.:** **US D874,393 S**
(45) **Date of Patent:** **** Feb. 4, 2020**

(54) **SOLAR CELL FOR ARTIFICIAL SATELLITE**

(57) **CLAIM**

The ornamental design for a solar cell for artificial satellite, as shown and described.

(71) Applicant: **Mitsubishi Electric Corporation,**
Tokyo (JP)

DESCRIPTION

(72) Inventors: **Yu Kamikawa,** Tokyo (JP); **Naoko Tomoda,** Tokyo (JP); **Mitsuru Okubo,** Tokyo (JP); **Yoshiyuki Kusano,** Tokyo (JP)

FIG. 1 is a front view of a solar cell for artificial satellite showing the first embodiment of our new design;
FIG. 2 is a rear view thereof;
FIG. 3 is a top view thereof;
FIG. 4 is a bottom view thereof;
FIG. 5 is a left side view thereof;
FIG. 6 is a partially enlarged view taken along line 6-6 of FIG. 1;

(73) Assignee: **Mitsubishi Electric Corporation,**
Tokyo (JP)

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

FIG. 7 is an enlarged cross-sectional view taken along line 7-7 of FIG. 6;

(21) Appl. No.: **29/656,690**

FIG. 8 is a front view of a solar cell for artificial satellite showing the second embodiment of our new design;

(22) Filed: **Jul. 16, 2018**

FIG. 9 is a rear view thereof;

(30) **Foreign Application Priority Data**

Mar. 30, 2018 (JP) 2018-007003
Mar. 30, 2018 (JP) 2018-007004
(Continued)

FIG. 10 is a top view thereof;

(51) **LOC (12) Cl.** **13-02**

FIG. 11 is a bottom view thereof;

(52) **U.S. Cl.**
USPC **D13/102**

FIG. 12 is a left side view thereof;

(58) **Field of Classification Search**
USPC D13/101, 102, 110, 133, 182, 199
(Continued)

FIG. 13 is a partially enlarged view taken along line 13-13 of FIG. 8;

(56) **References Cited**

U.S. PATENT DOCUMENTS

D484,177 S * 12/2003 Penke D18/40
D767,484 S * 9/2016 Morad D13/102
(Continued)

FIG. 14 is an enlarged cross-sectional view taken along line 14-14 of FIG. 13;

FIG. 15 is a front view of a solar cell for artificial satellite showing the third embodiment of our new design;

FIG. 16 is a rear view thereof;

FIG. 17 is a top view thereof;

FIG. 18 is a bottom view thereof;

FIG. 19 is a left side view thereof;

FIG. 20 is a partially enlarged view taken along line 20-20 of FIG. 15;

FIG. 21 is an enlarged cross-sectional view taken along line 21-21 of FIG. 20;

FIG. 22 is a front view of a solar cell for artificial satellite showing the fourth embodiment of our new design;

FIG. 23 is a rear view thereof;

FIG. 24 is a top view thereof;

FIG. 25 is a bottom view thereof;

FIG. 26 is a left side view thereof;

FIG. 27 is a partially enlarged view taken along line 27-27 of FIG. 22;

(Continued)

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Assistant Examiner — Suzanne E Tisdell
(74) *Attorney, Agent, or Firm* — Studebaker & Brackett
PC

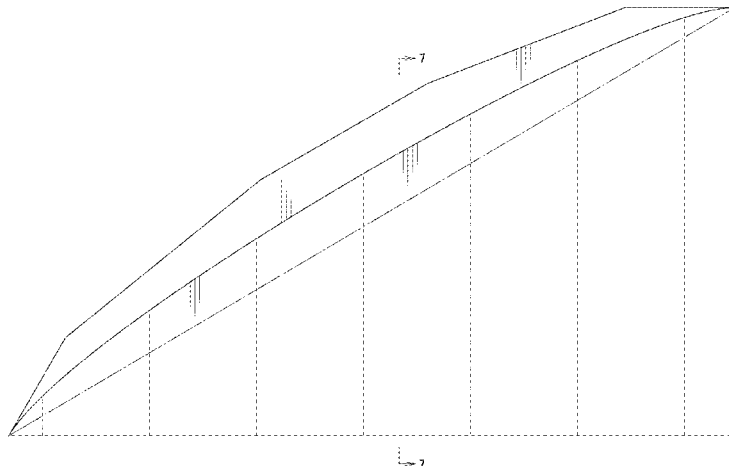


FIG. 28 is an enlarged cross-sectional view taken along line 28-28 of FIG. 27;
 FIG. 29 is a front view of a solar cell for artificial satellite showing the fifth embodiment of our new design;
 FIG. 30 is a rear view thereof;
 FIG. 31 is a top view thereof;
 FIG. 32 is a bottom view thereof;
 FIG. 33 is a left side view thereof;
 FIG. 34 is a partially enlarged view taken along line 34-34 of FIG. 29; and,
 FIG. 35 is an enlarged cross-sectional view taken along line 35-35 of FIG. 34.

Portions of the solar cell for an artificial satellite disclosed in equally-spaced broken lines form no part of the claimed design. Dot-dash pattern lines represent unclaimed boundaries between the claim and the unclaimed portions. Right-side views are omitted because they are mirror images of the left side views.

1 Claim, 30 Drawing Sheets

(30) **Foreign Application Priority Data**

Mar. 30, 2018 (JP) 2018-007005
 Mar. 30, 2018 (JP) 2018-007006

Mar. 30, 2018 (JP) 2018-007007
 (58) **Field of Classification Search**
 CPC Y02E 10/40; Y02E 10/44; Y02E 10/52;
 Y02E 10/542; Y02E 10/544; E04H 4/08;
 H01L 31/00; H01L 31/042; H01L 31/045;
 H01L 31/048; H01L 31/052; H01L
 31/184; H01L 31/0232; H01L 31/0508;
 H01L 31/0512; H01L 31/0543
 See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

D840,924 S * 2/2019 Bonci D13/102
 2005/0133079 A1* 6/2005 Boulanger B64G 1/443
 136/244
 2009/0025710 A1* 1/2009 Hogan F24S 80/30
 126/652
 2014/0009104 A1* 1/2014 Daloglu H02S 30/10
 320/101
 2016/0301354 A1* 10/2016 Draffin, II H02S 10/40
 2018/0037341 A1* 2/2018 Kalman B64G 1/443
 2018/0062011 A1* 3/2018 Crist H01L 31/042
 2019/0144142 A1* 5/2019 Spark B64G 1/443

* cited by examiner

Fig. 1

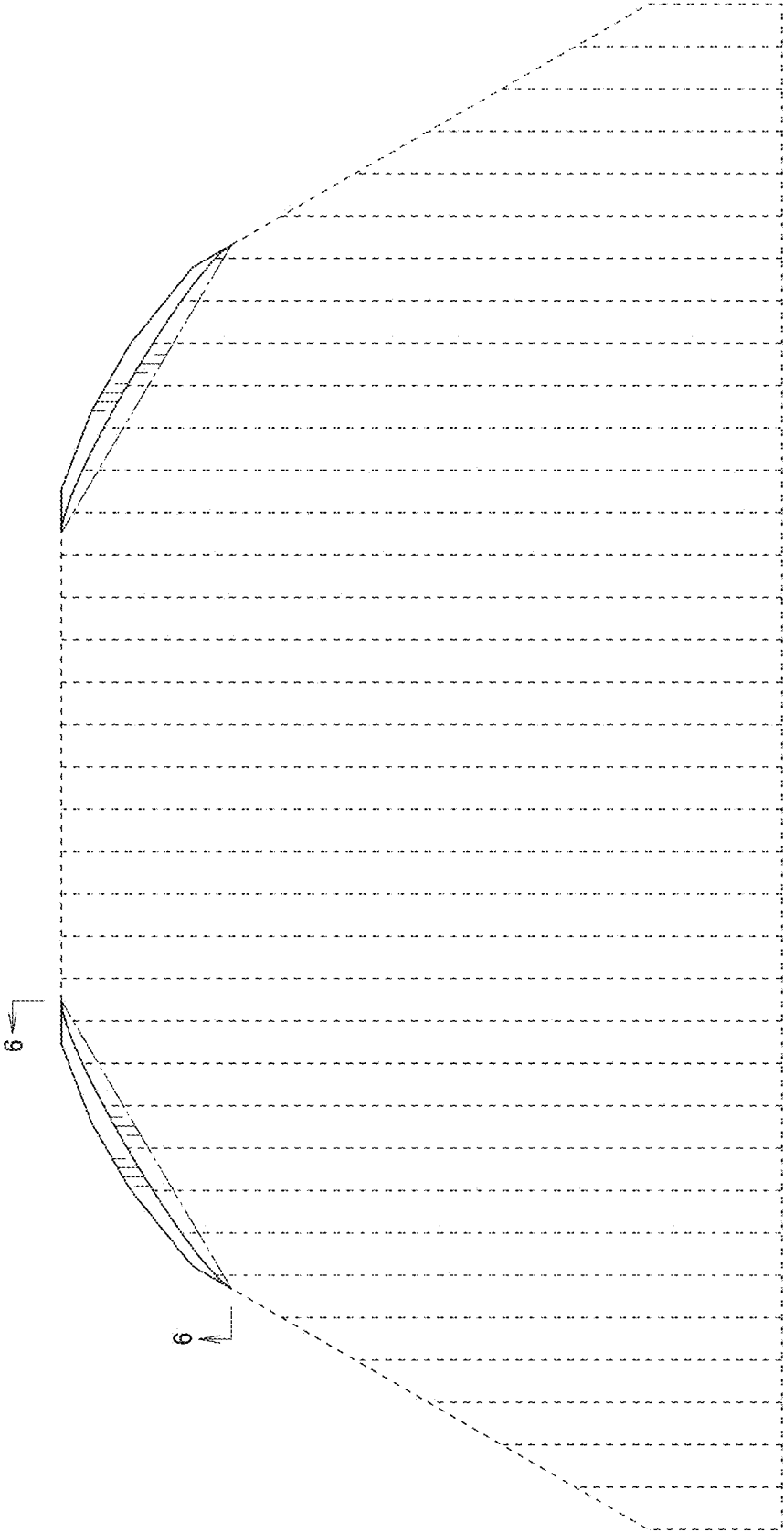


Fig. 2

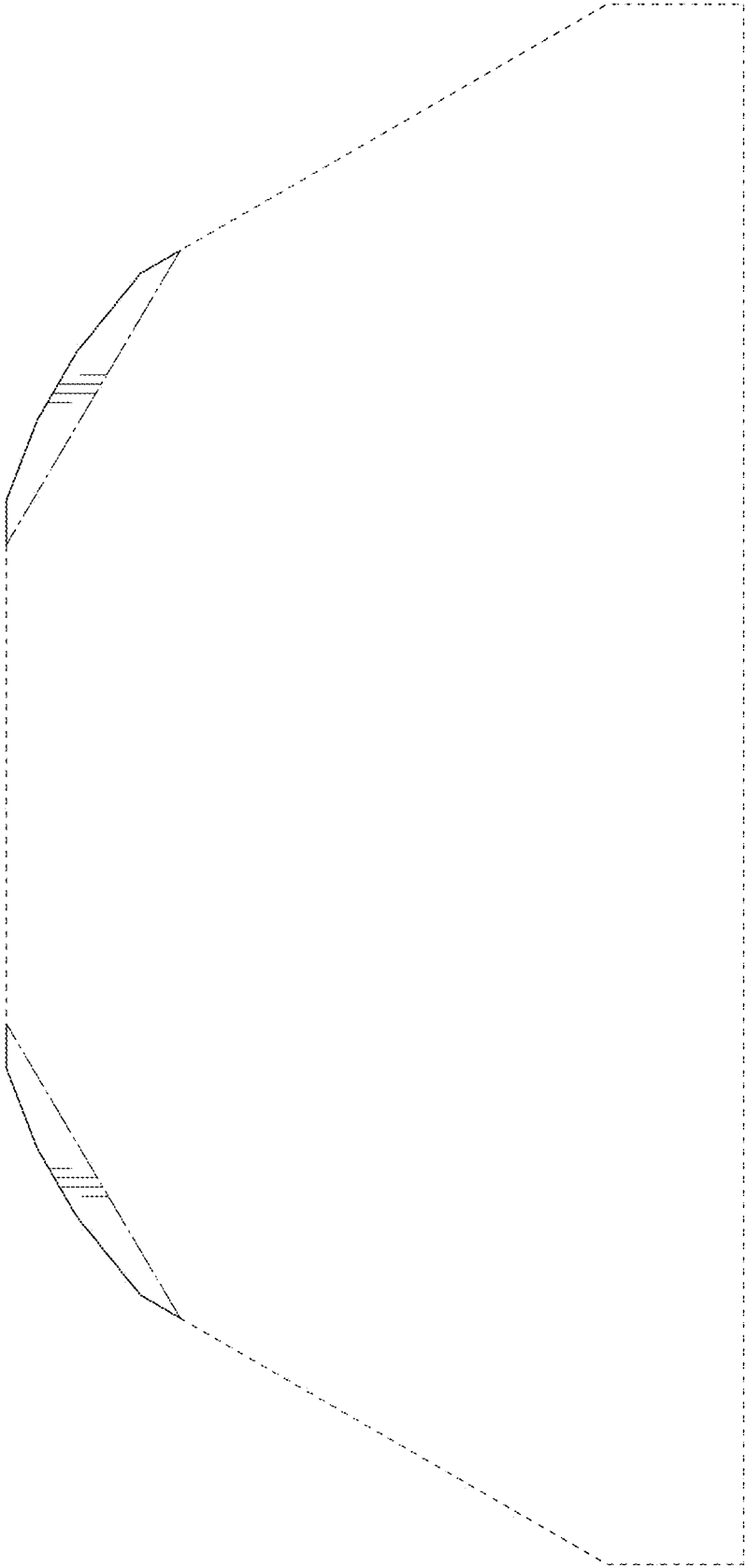


Fig. 3

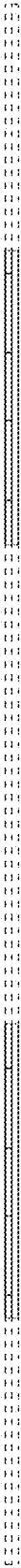


Fig. 4

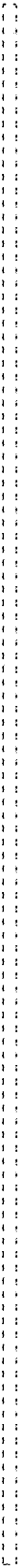
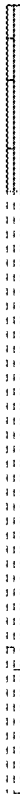


Fig. 5



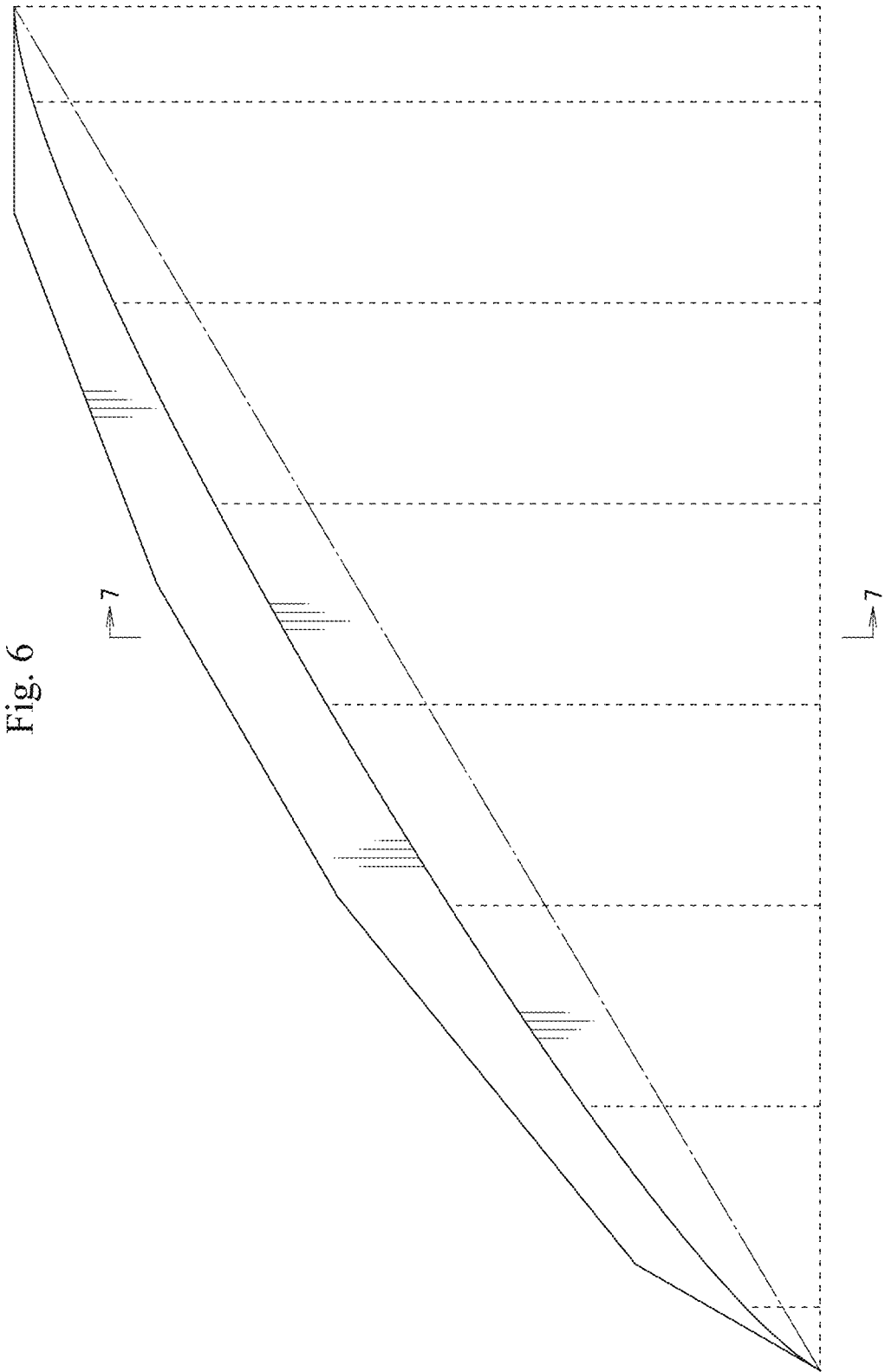


Fig. 7

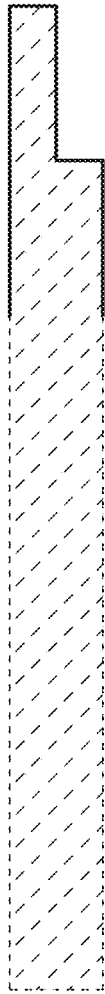


Fig. 8

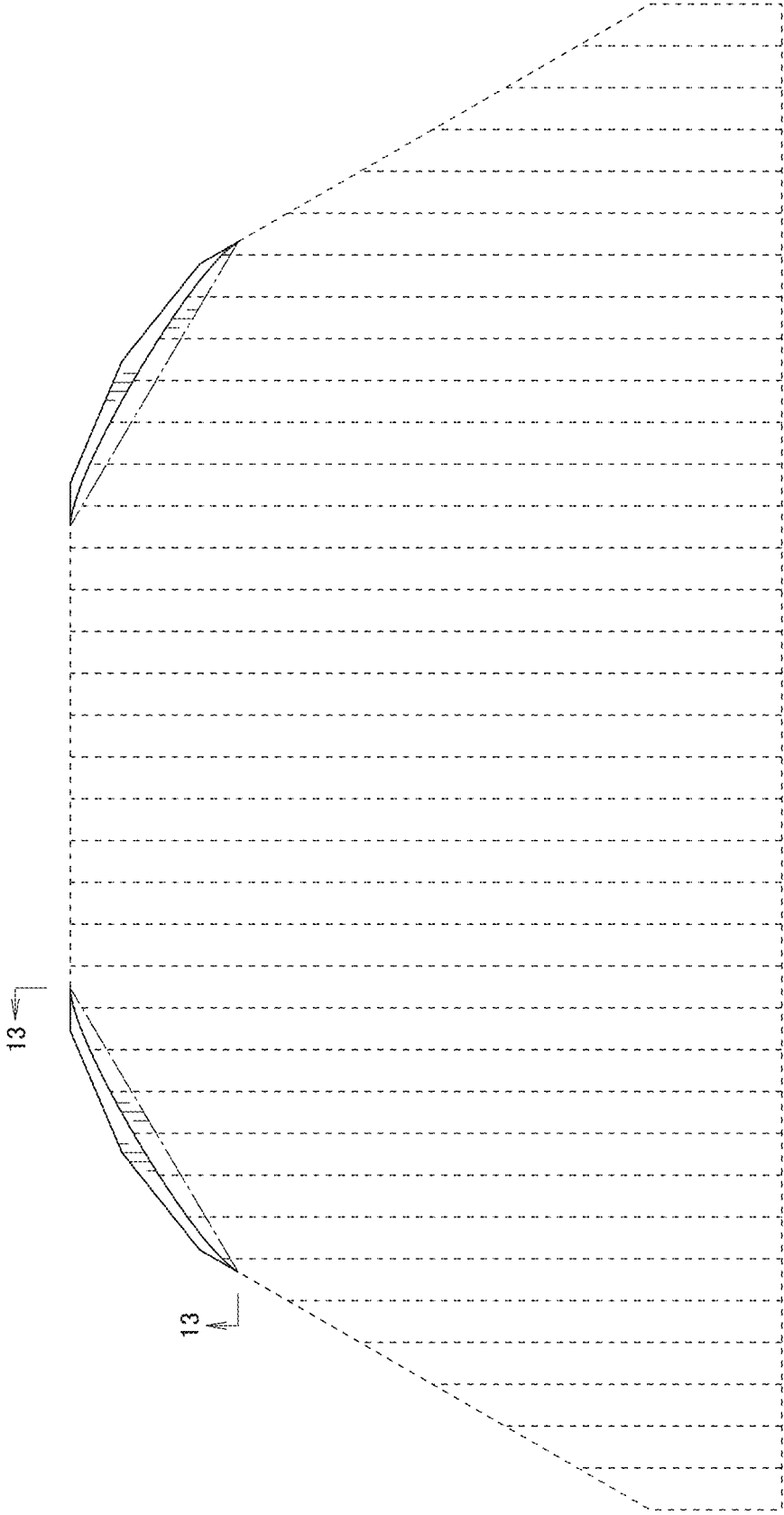


Fig. 9

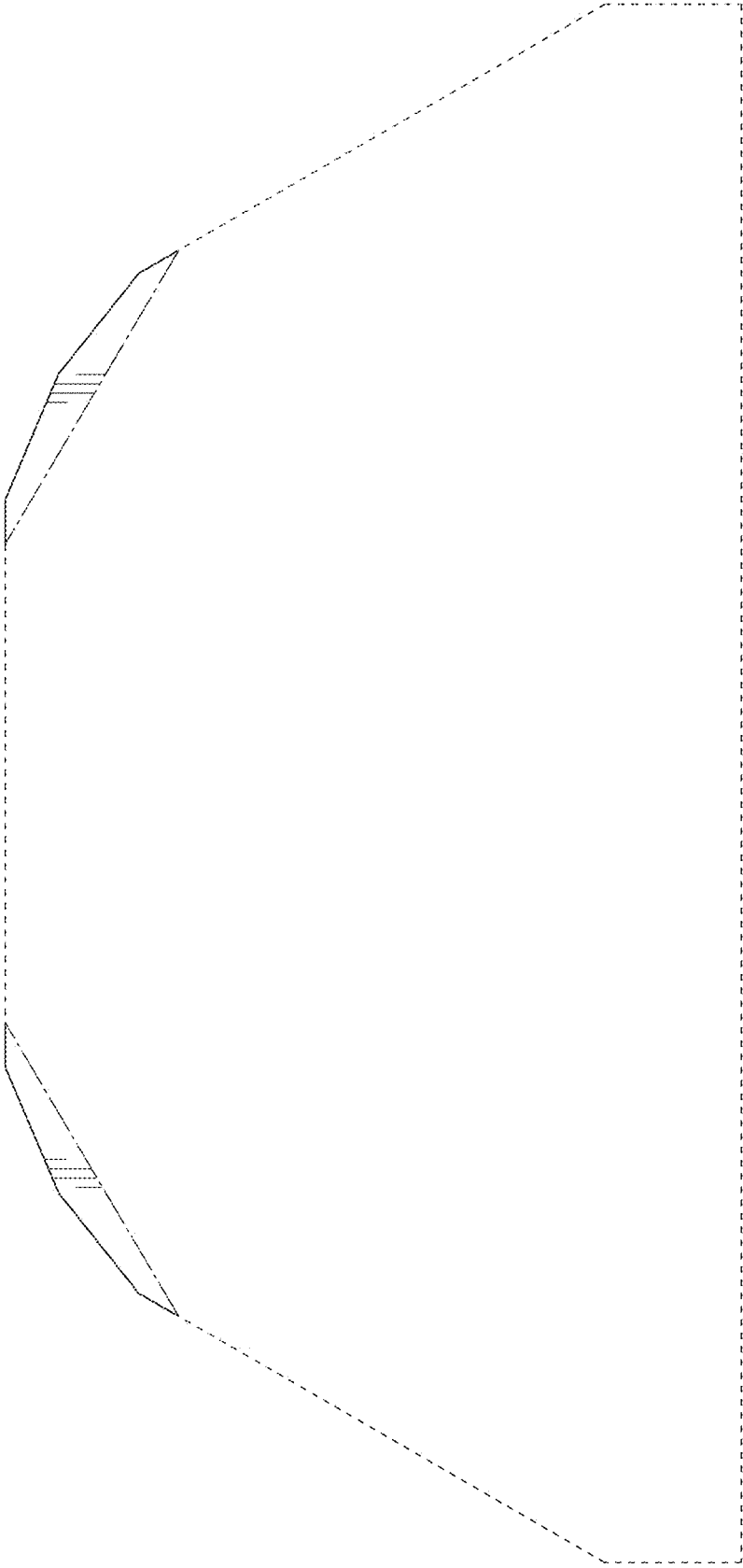


Fig. 10

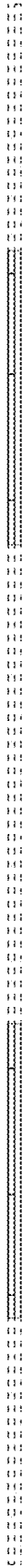


Fig. 11

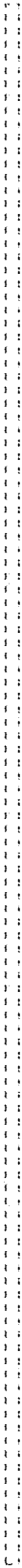
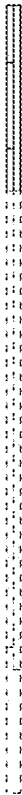


Fig. 12



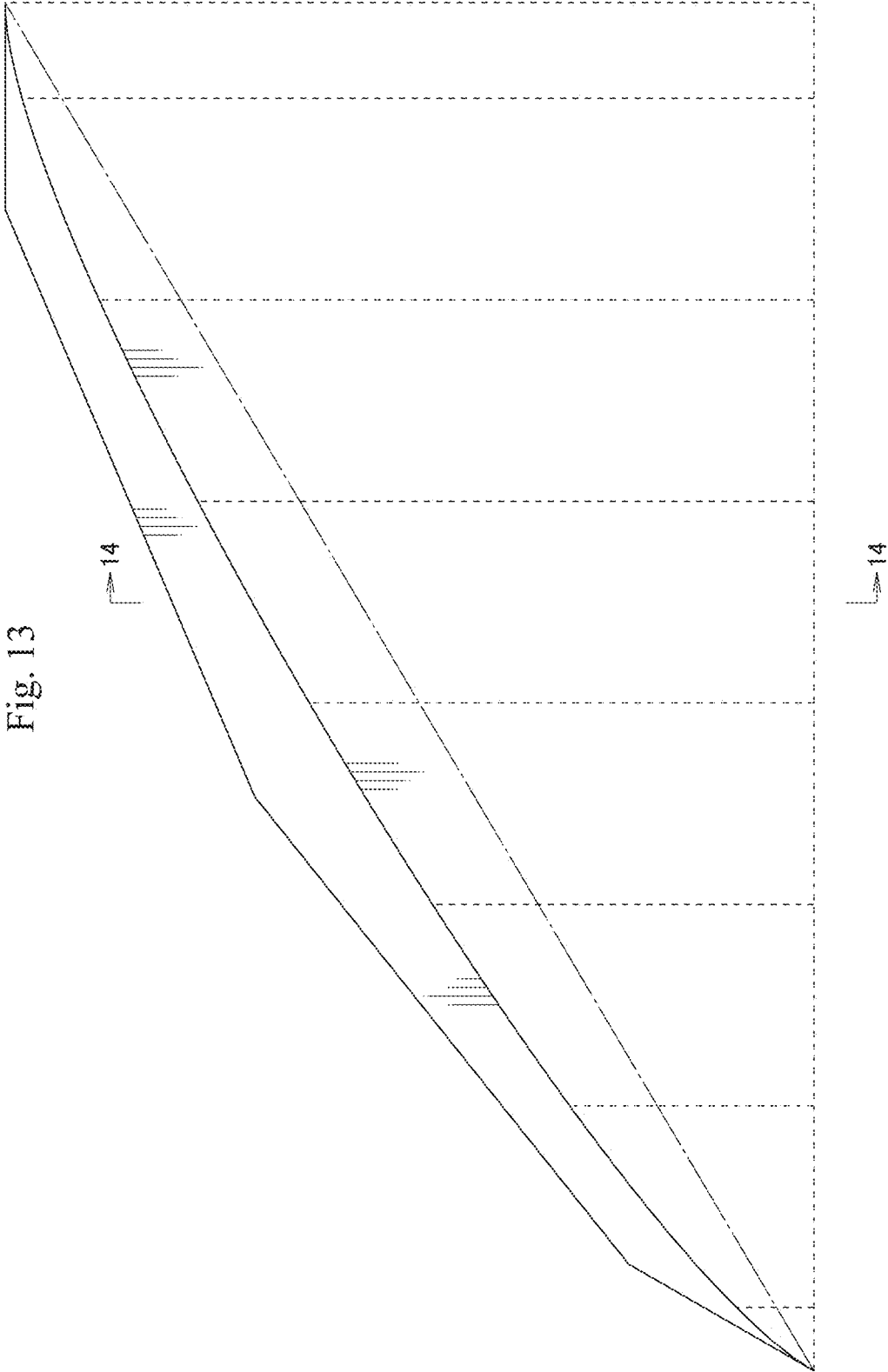


Fig. 13

Fig. 14



Fig. 15

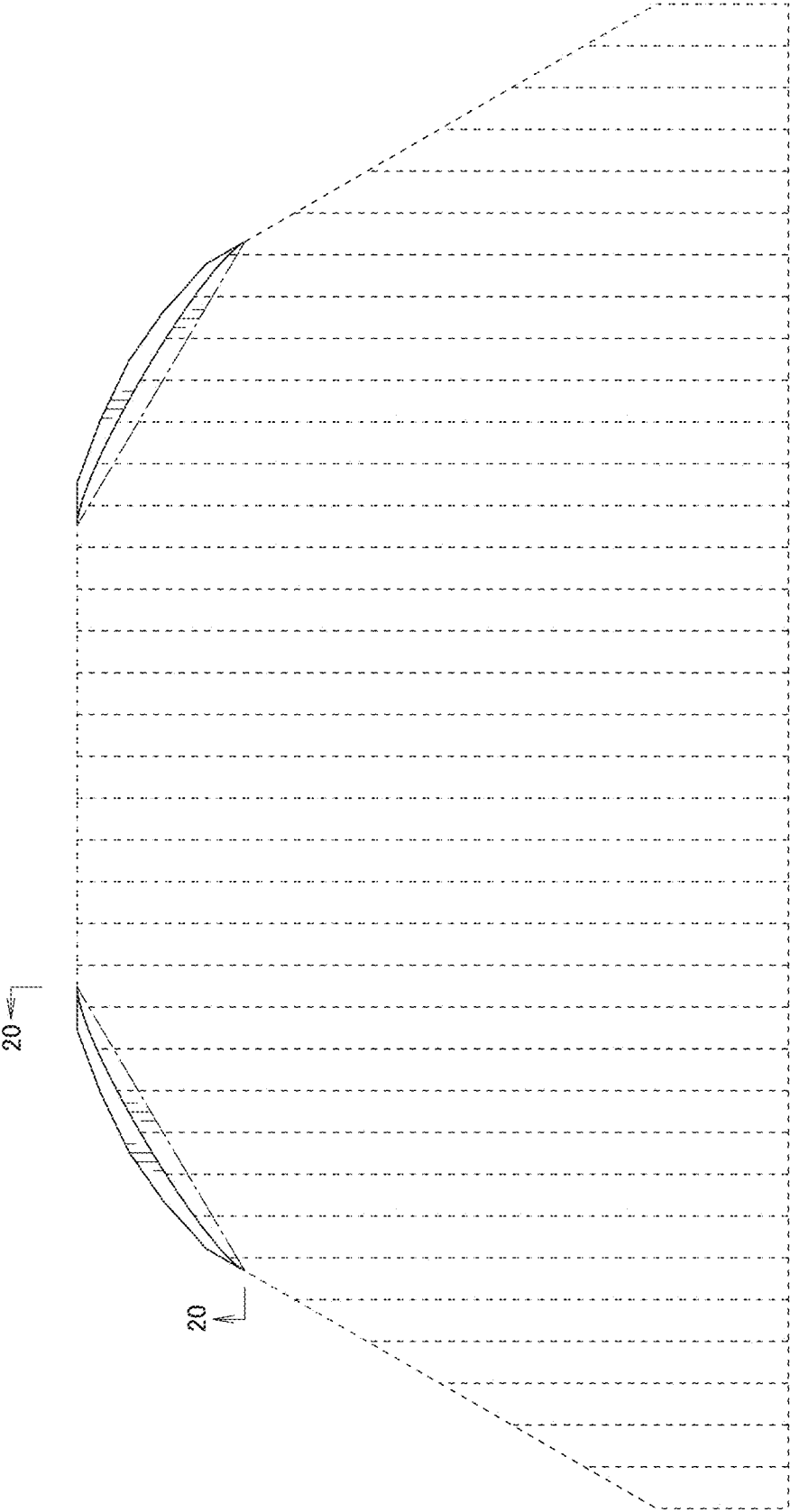


Fig. 16

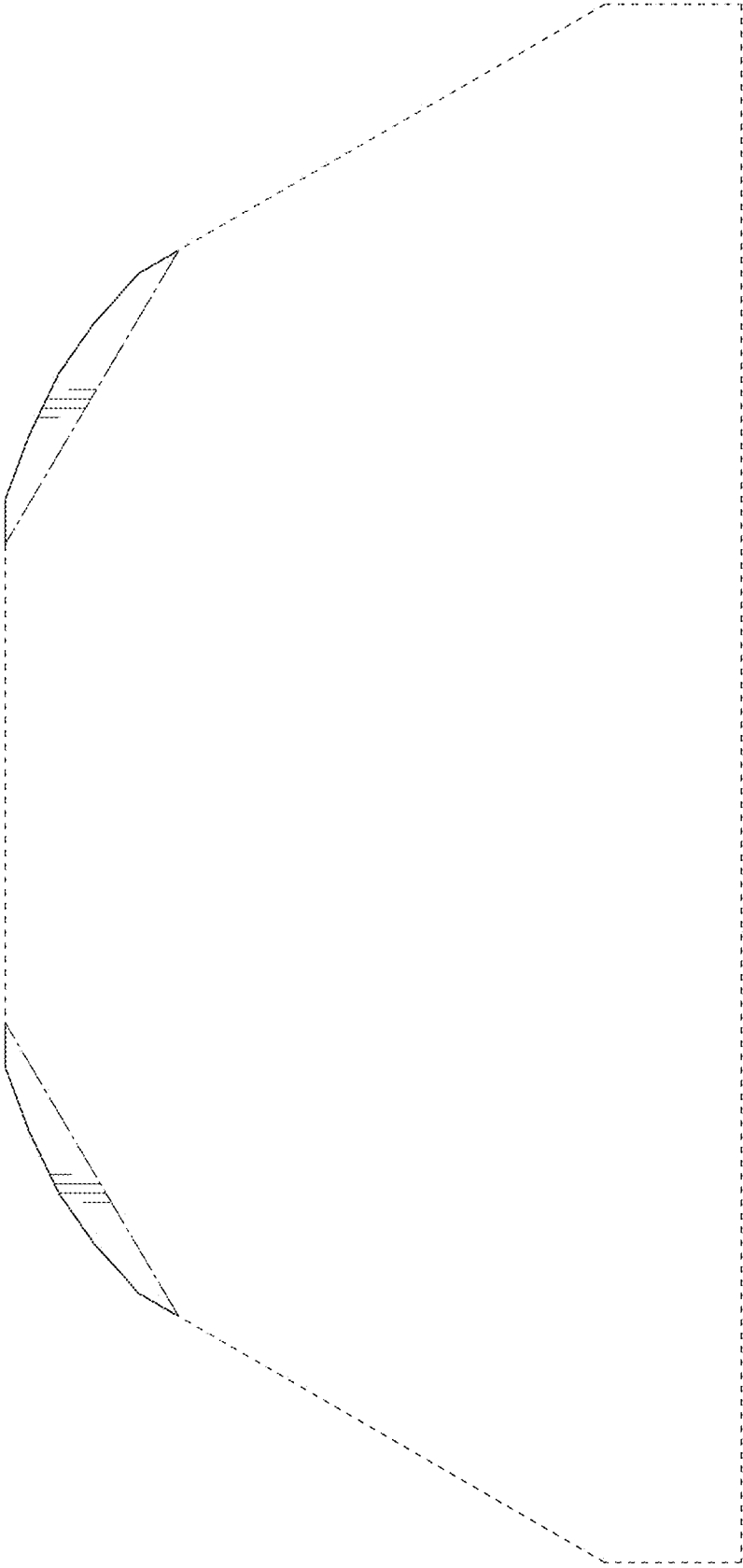


Fig. 17

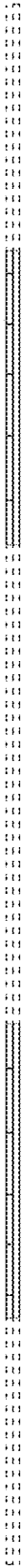


Fig. 18

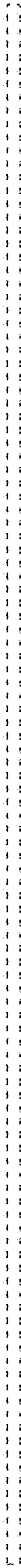
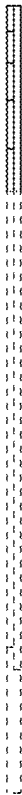


Fig. 19



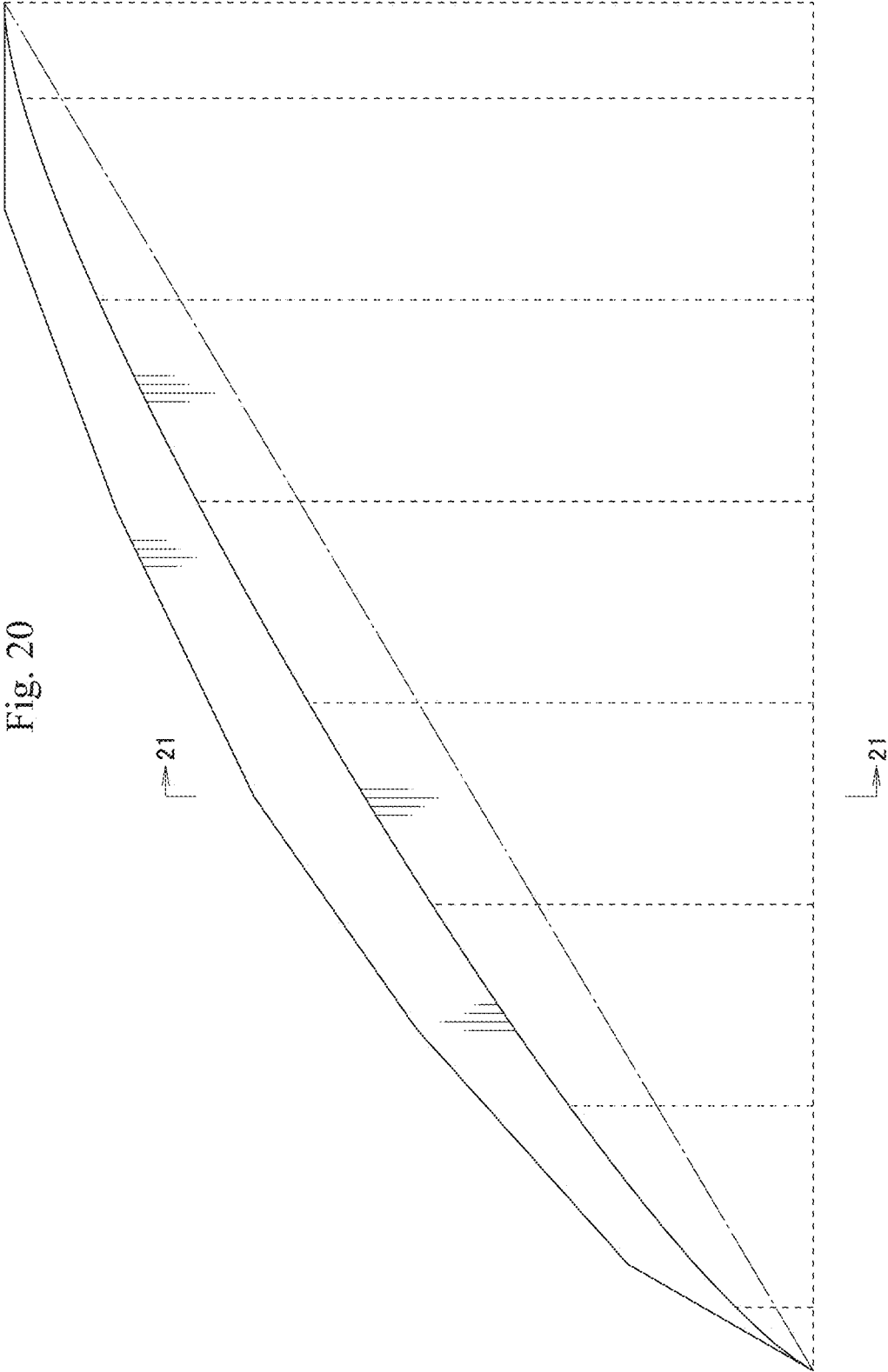


Fig. 20

Fig. 21



Fig. 22

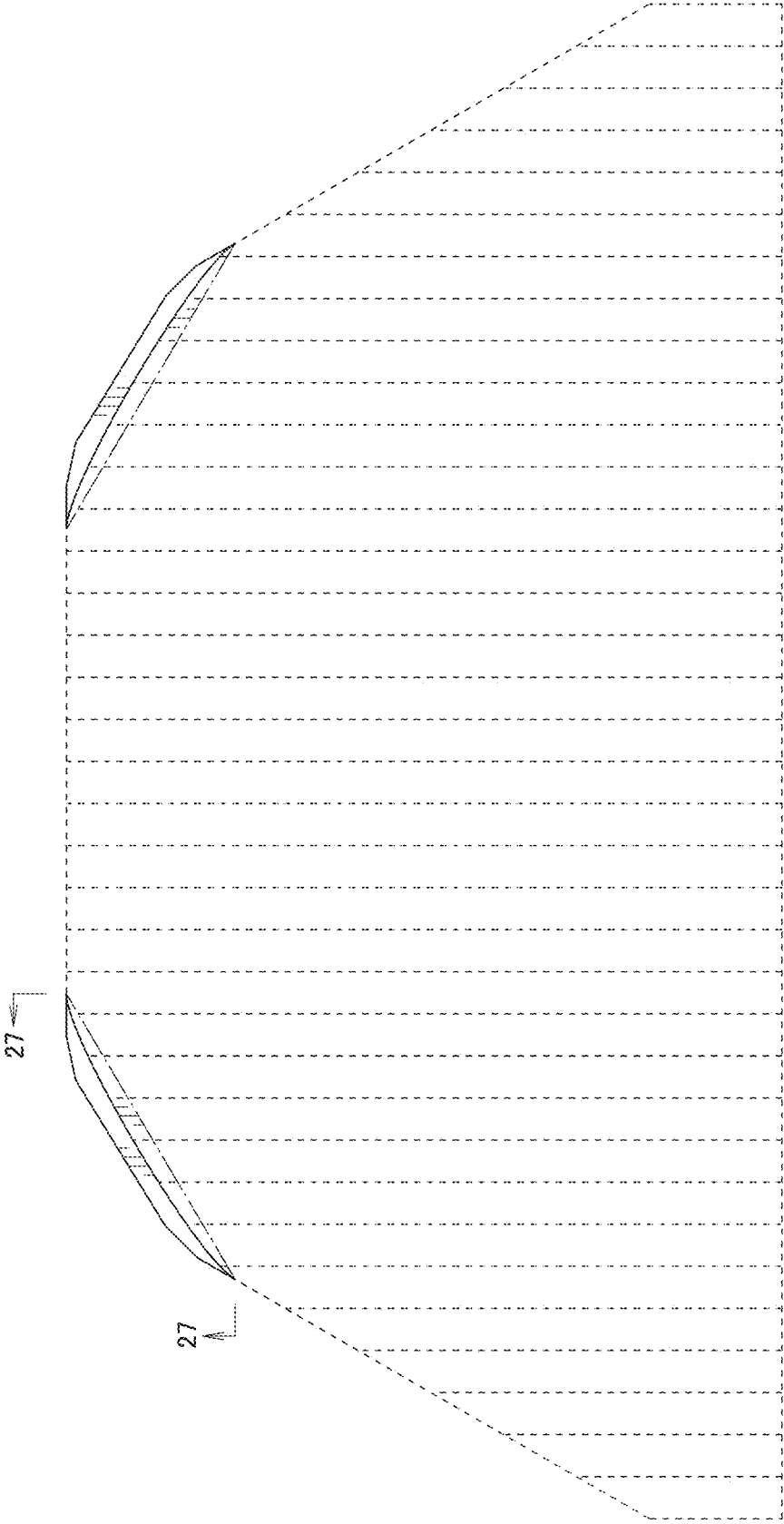


Fig. 23

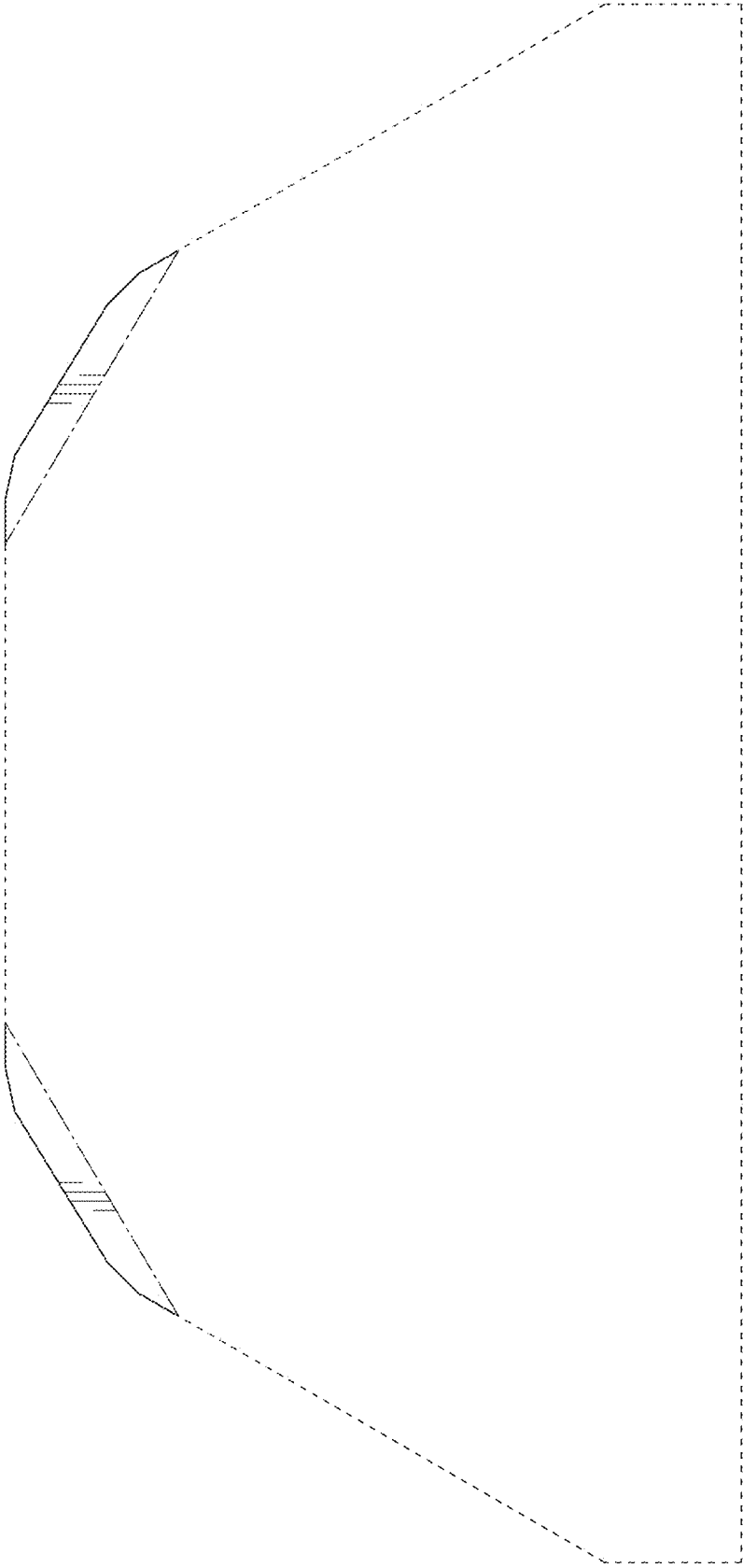


Fig. 24

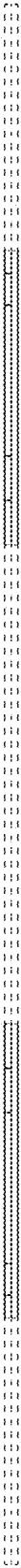


Fig. 25

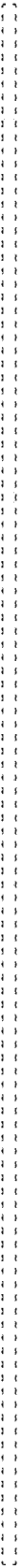
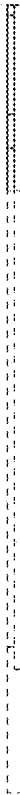


Fig. 26



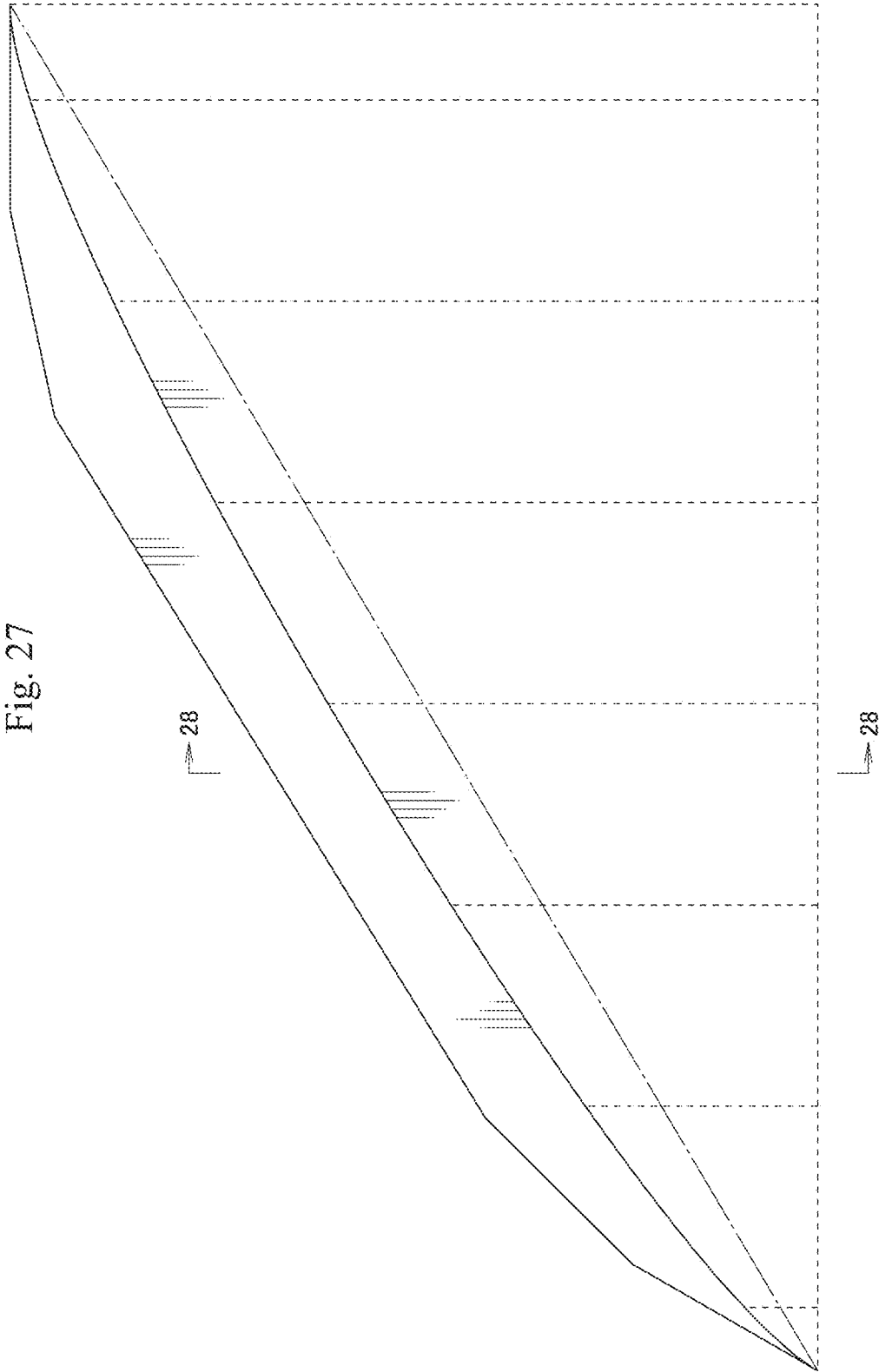


Fig. 27

Fig. 28

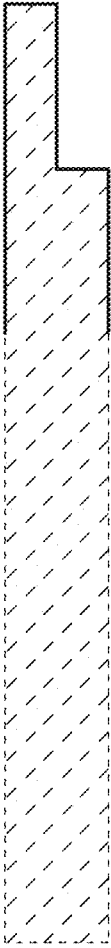


Fig. 29

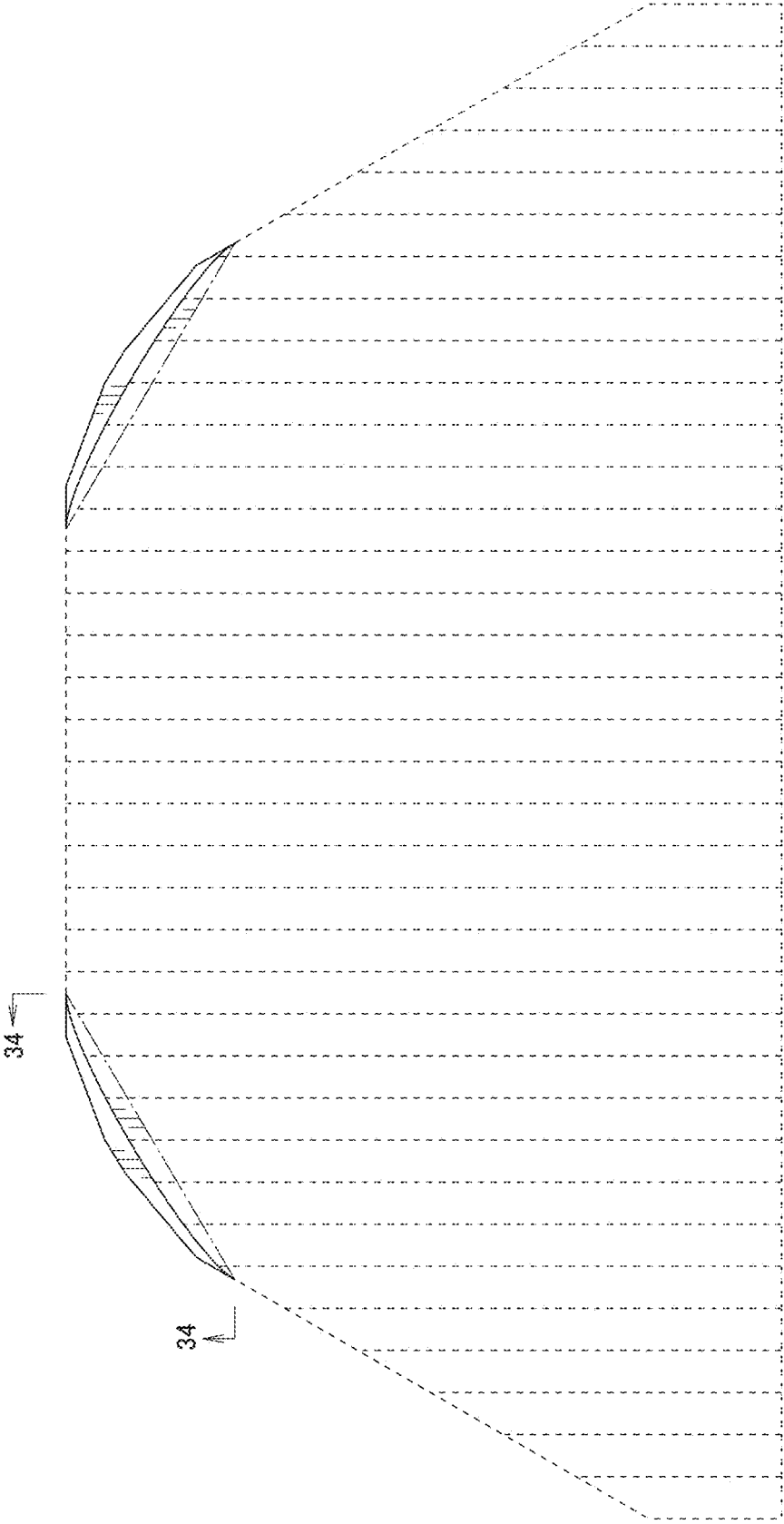


Fig. 30

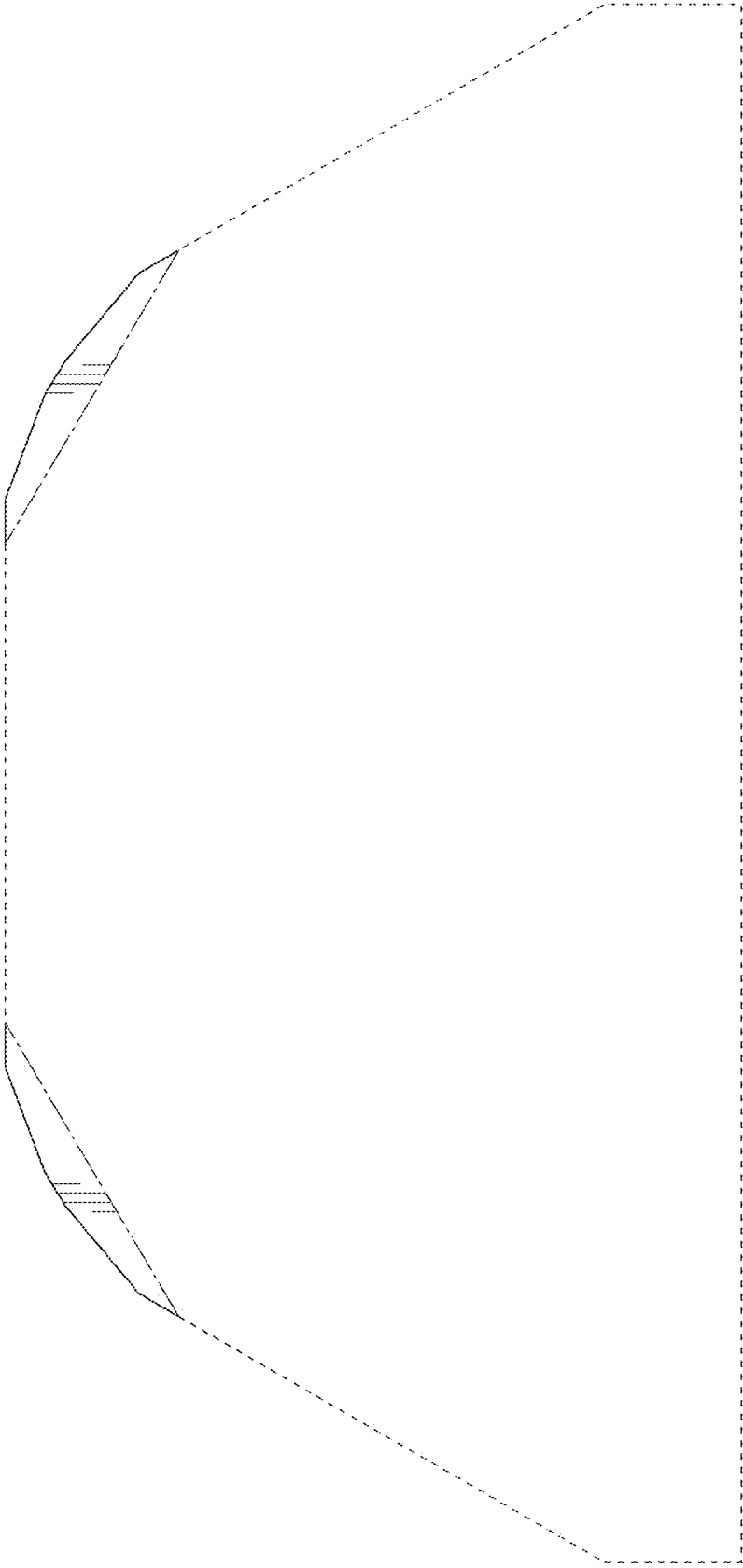


Fig. 31

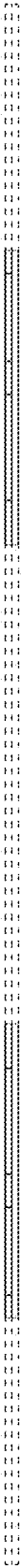


Fig. 32

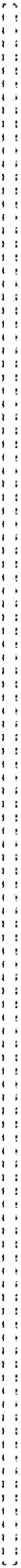
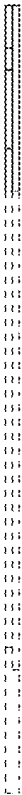


Fig. 33



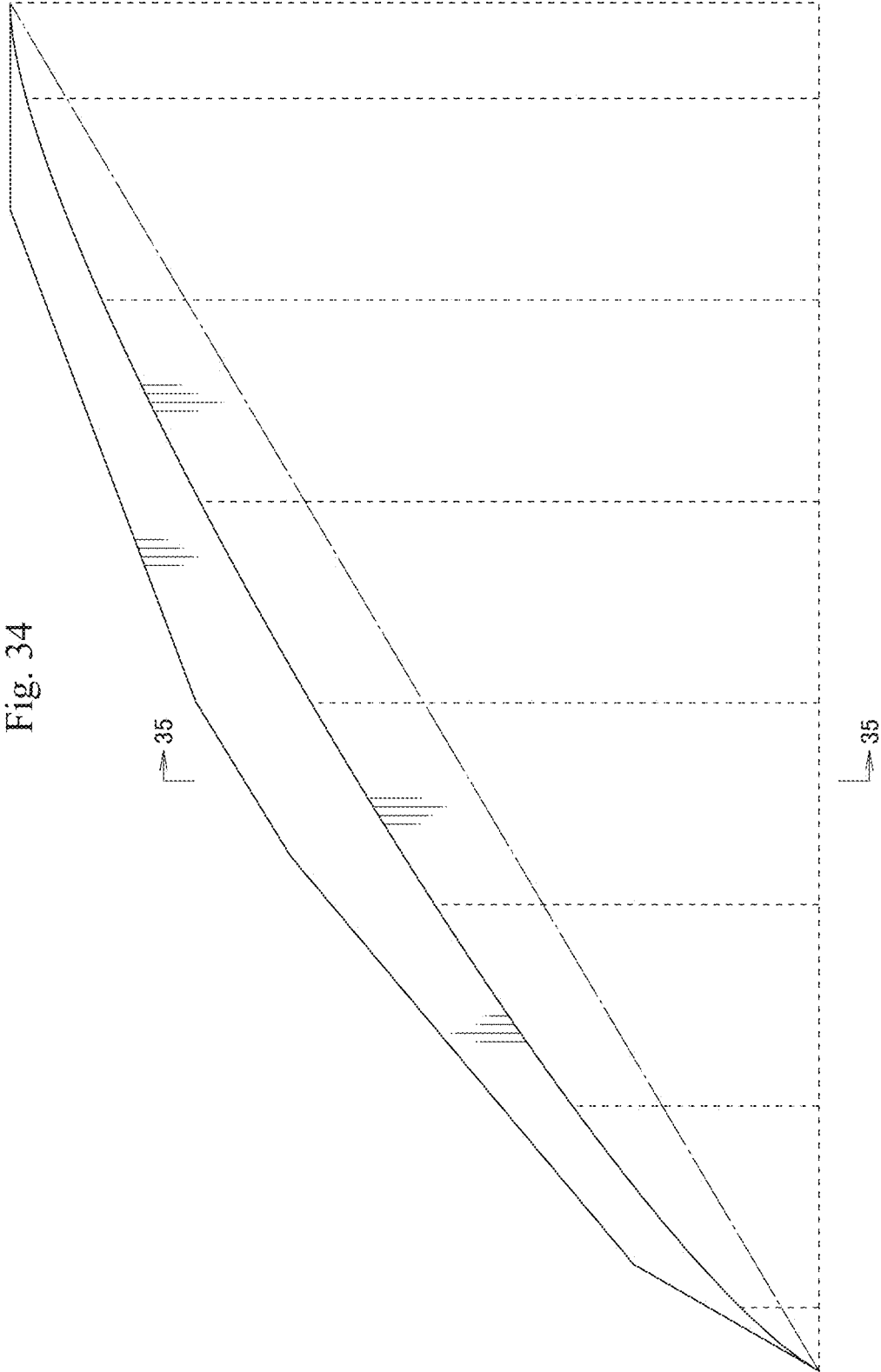


Fig. 34

Fig. 35

