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(12) **United States Design Patent** (10) **Patent No.:** **US D516,693 S**
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(54) **AXIAL FAN WITH DOUBLE IMPELLERS
ROTATING IN MUTUALLY OPPOSITE
DIRECTIONS**

Primary Examiner—Lisa Lichtenstein
(74) *Attorney, Agent, or Firm*—Rankin, Hill, Porter & Clark LLP

(75) Inventors: **Honami Oosawa**, Nagano (JP);
Katsumichi Ishihara, Nagano (JP);
Yoshihiko Aizawa, Nagano (JP)

(57) **CLAIM**

The ornamental design for an axial fan with double impellers rotating in mutually opposite directions, as shown and described.

(73) Assignee: **Sanyo Denki Co., Ltd.**, Tokyo (JP)

(**) Term: **14 Years**

DESCRIPTION

(21) Appl. No.: **29/187,652**

(22) Filed: **Aug. 5, 2003**

(30) **Foreign Application Priority Data**

Mar. 10, 2003 (JP) 2003-006225

(51) **LOC (8) Cl.** **23-04**

(52) **U.S. Cl.** **D23/370**

(58) **Field of Classification Search** D23/370,
D23/379, 383; 415/214.1, 213.1; 220/60,
220/66, 68

See application file for complete search history.

This article relates to an axial fan with double impellers rotating in mutually opposite directions to be used for cooling an electronic component. The fan takes in air through an opening provided at one of the ends of the article in an axial direction, and discharges the air out of an opening provided at the other end of the article in the axial direction. Inside the air intake opening, an impeller having five blades is installed. Inside the air discharge opening, an impeller having four blades is installed. The impeller having five blades and the one having four blades rotate in an opposite direction to each other.

FIG. 1 is a front view of our new design.

FIG. 2 is a rear view thereof.

FIG. 3 is a right side view thereof.

FIG. 4 is a left side view thereof.

FIG. 5 is a top plan view thereof.

FIG. 6 is a bottom plan view thereof.

FIG. 7 is a cross-sectional view taken along line 7—7 of FIG. 5; and,

FIG. 8 is a cross-sectional view taken along line 8—8 of FIG. 5.

(56) **References Cited**

U.S. PATENT DOCUMENTS

D297,761 S * 9/1988 Shiraki D23/379
5,839,205 A 11/1998 Hung
6,157,104 A * 12/2000 Yokozawa et al. 310/58
6,244,818 B1 6/2001 Chang
6,827,549 B1 * 12/2004 Horng et al. 415/68

FOREIGN PATENT DOCUMENTS

JP 05-005499 1/1993
JP 11-037093 2/1999

* cited by examiner

1 Claim, 4 Drawing Sheets

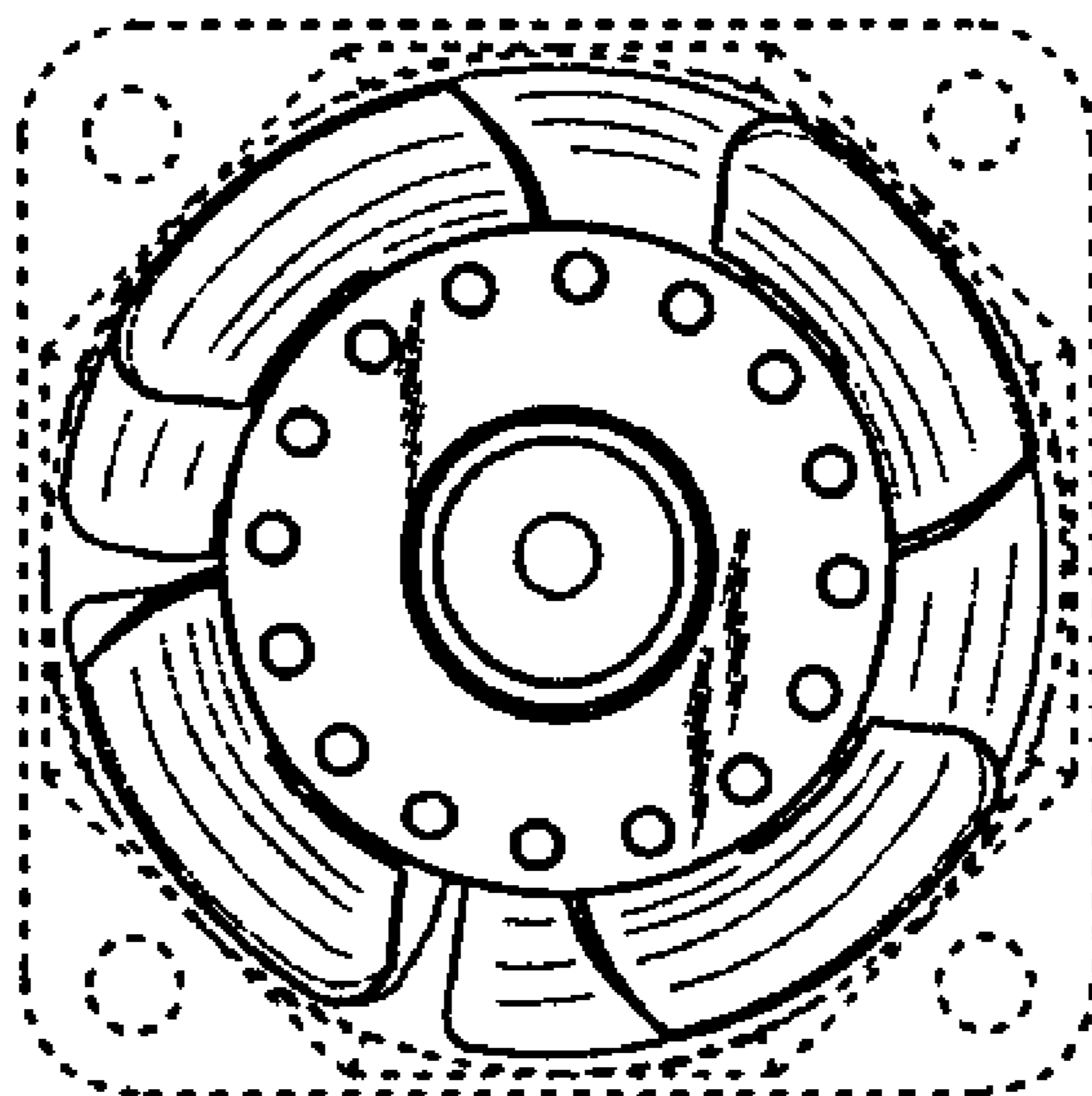


Fig.1

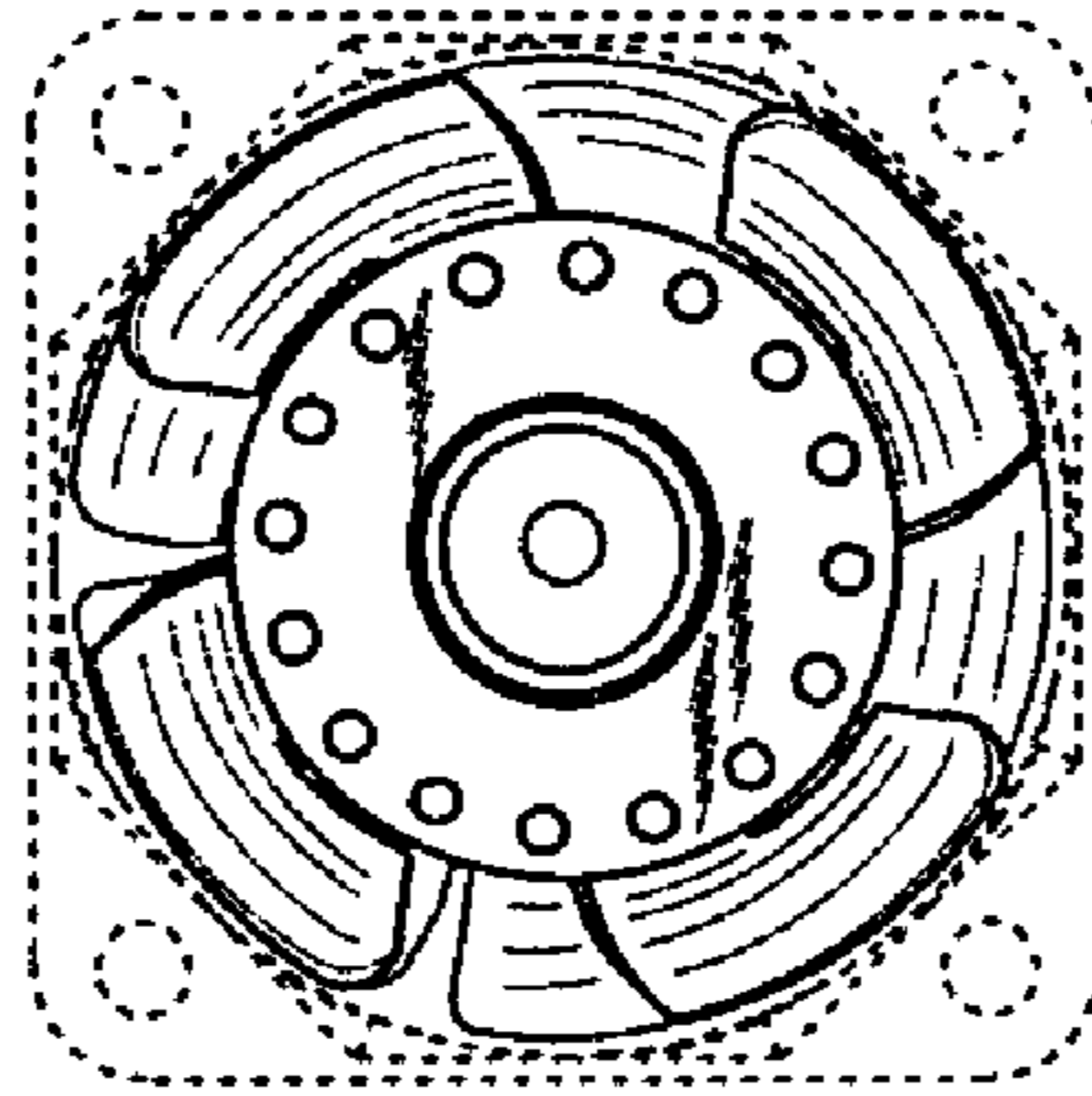


Fig.2

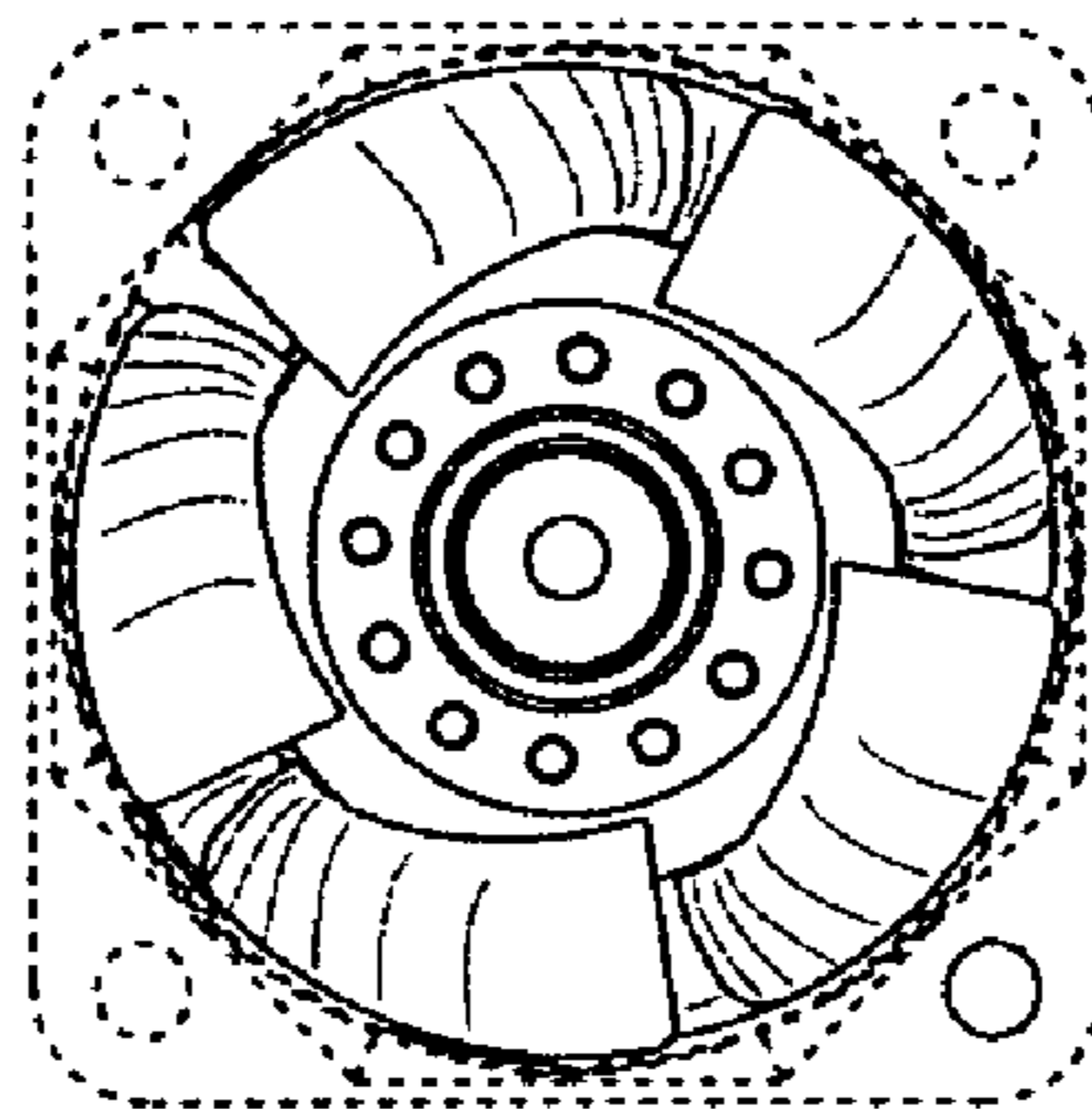


Fig.3

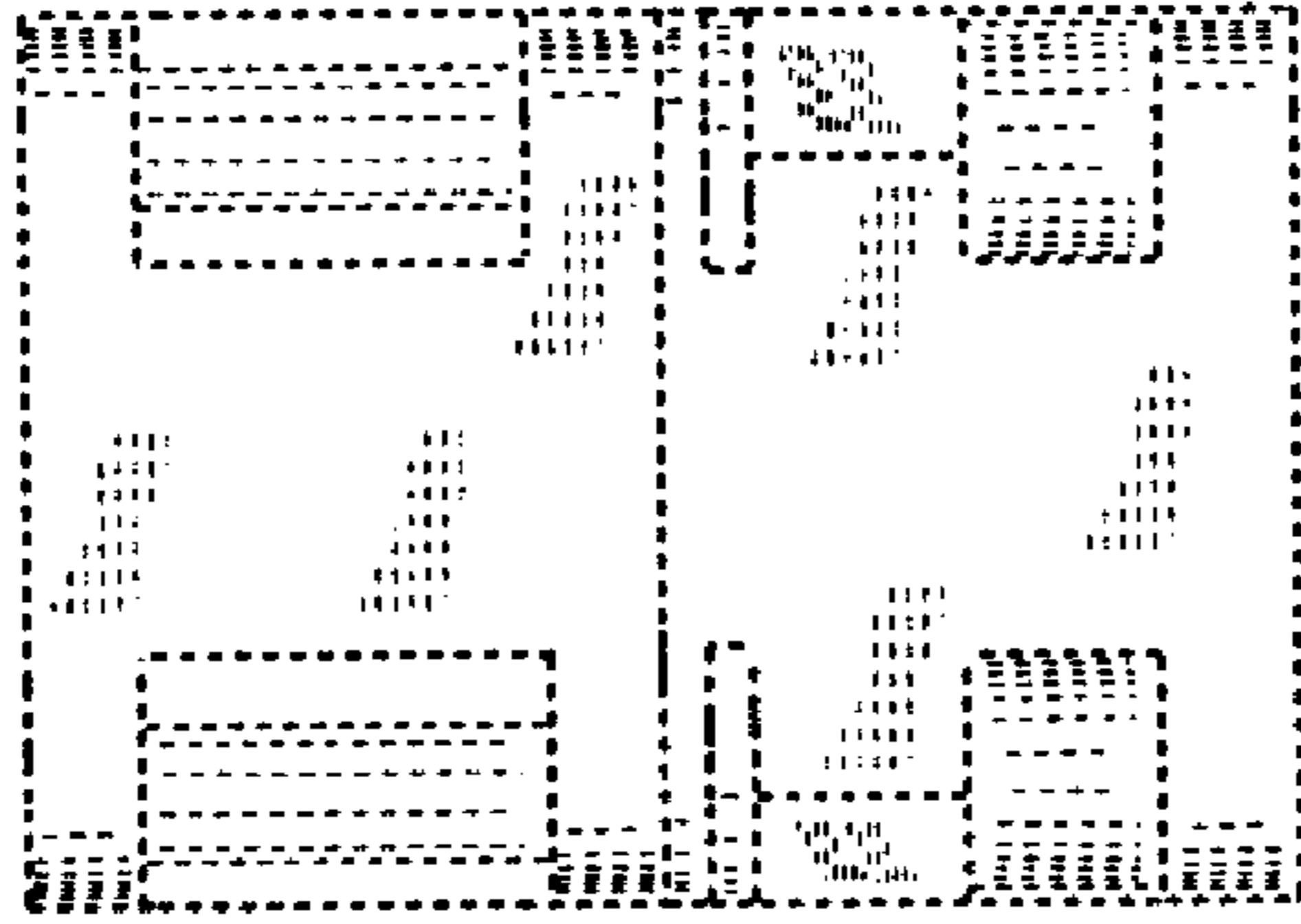


Fig.4

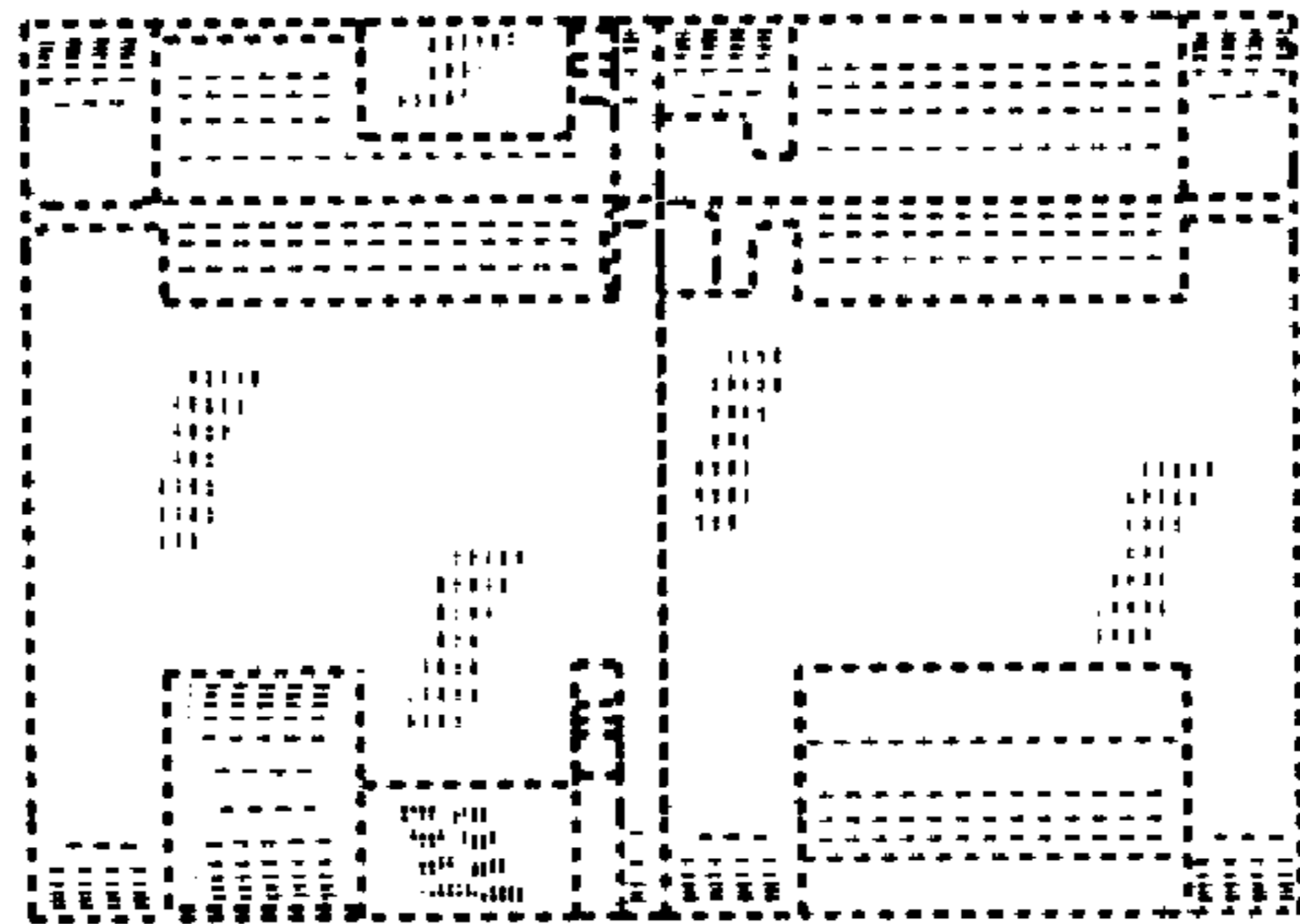


Fig. 5

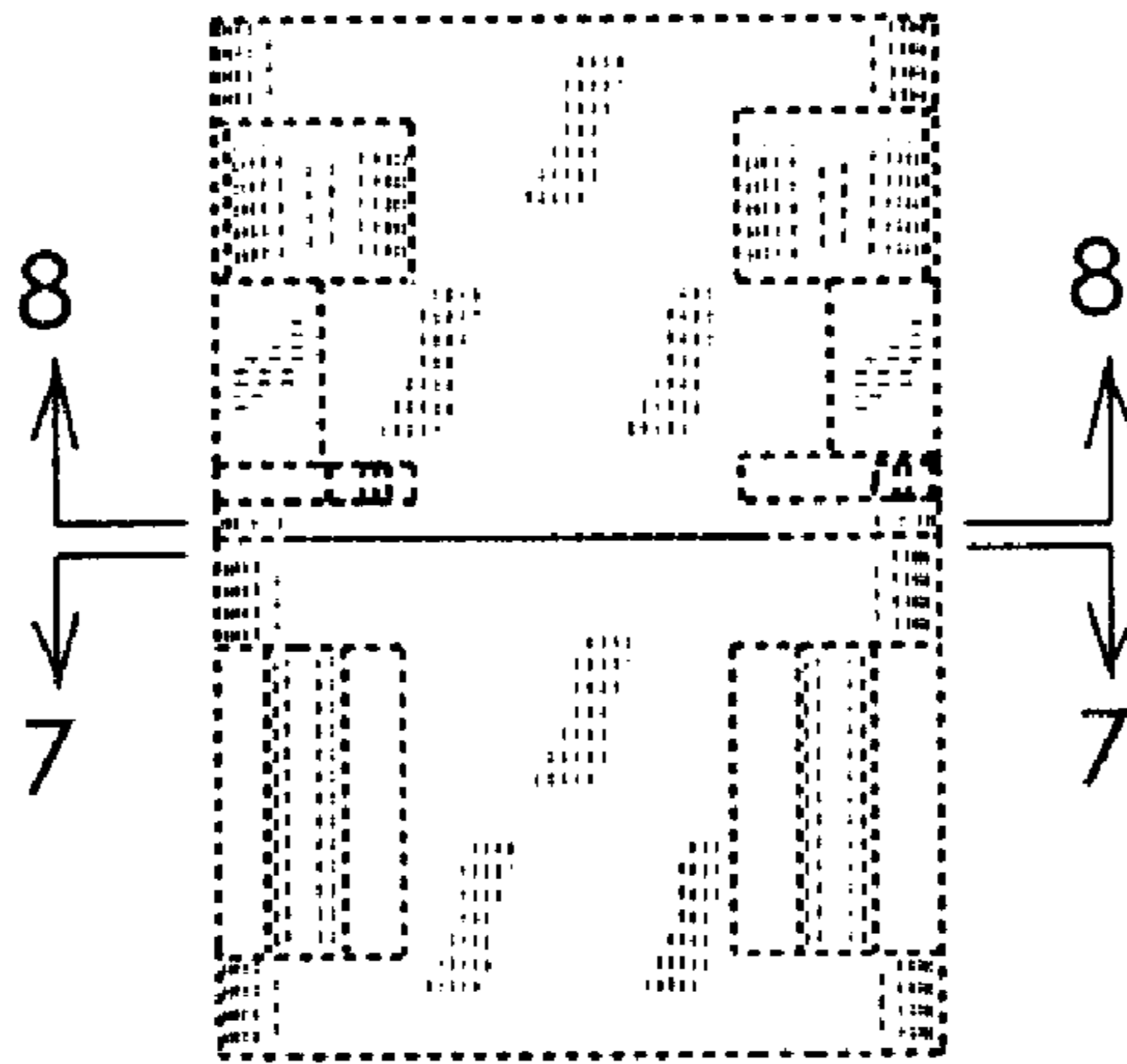


Fig. 6

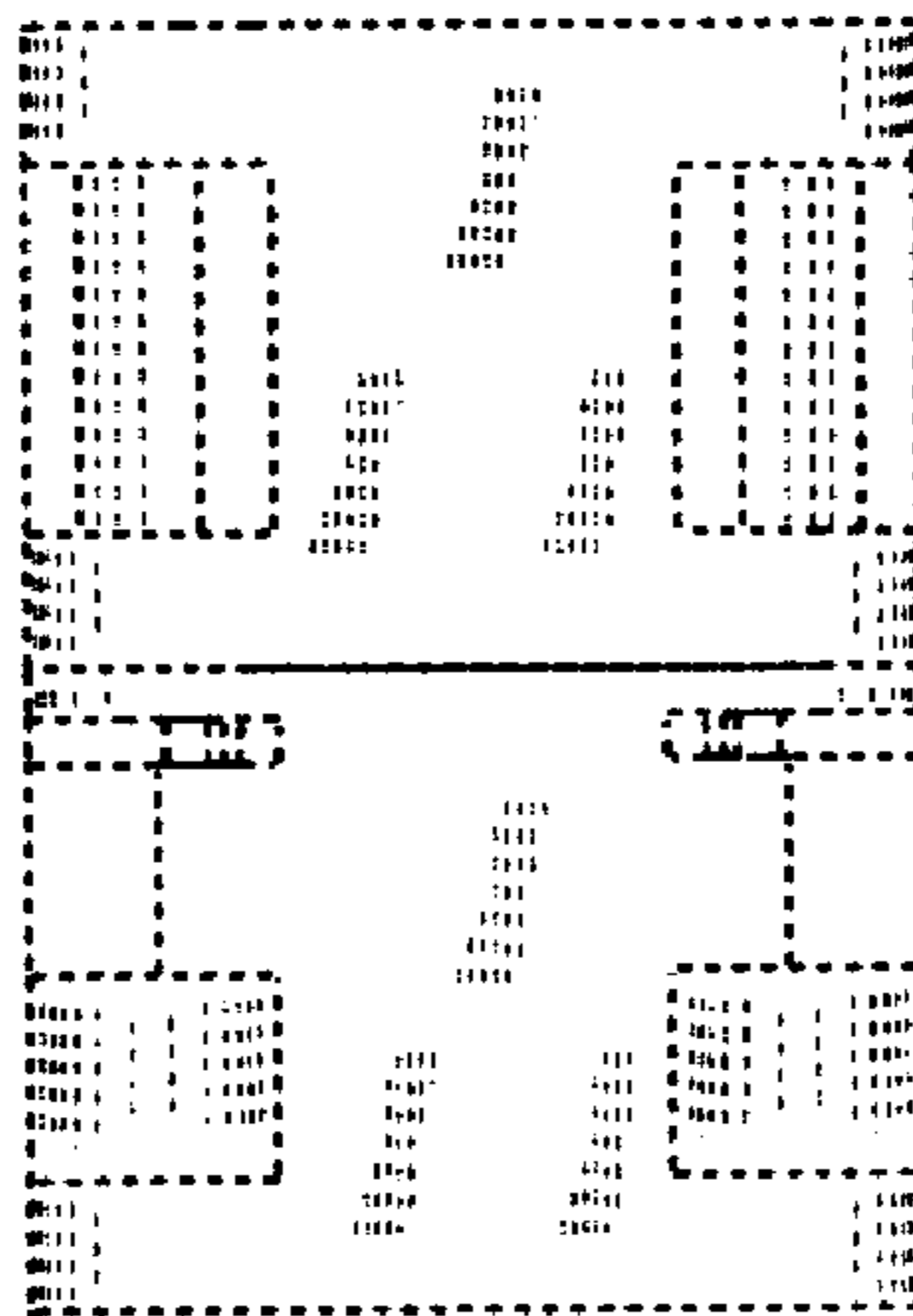


Fig. 7

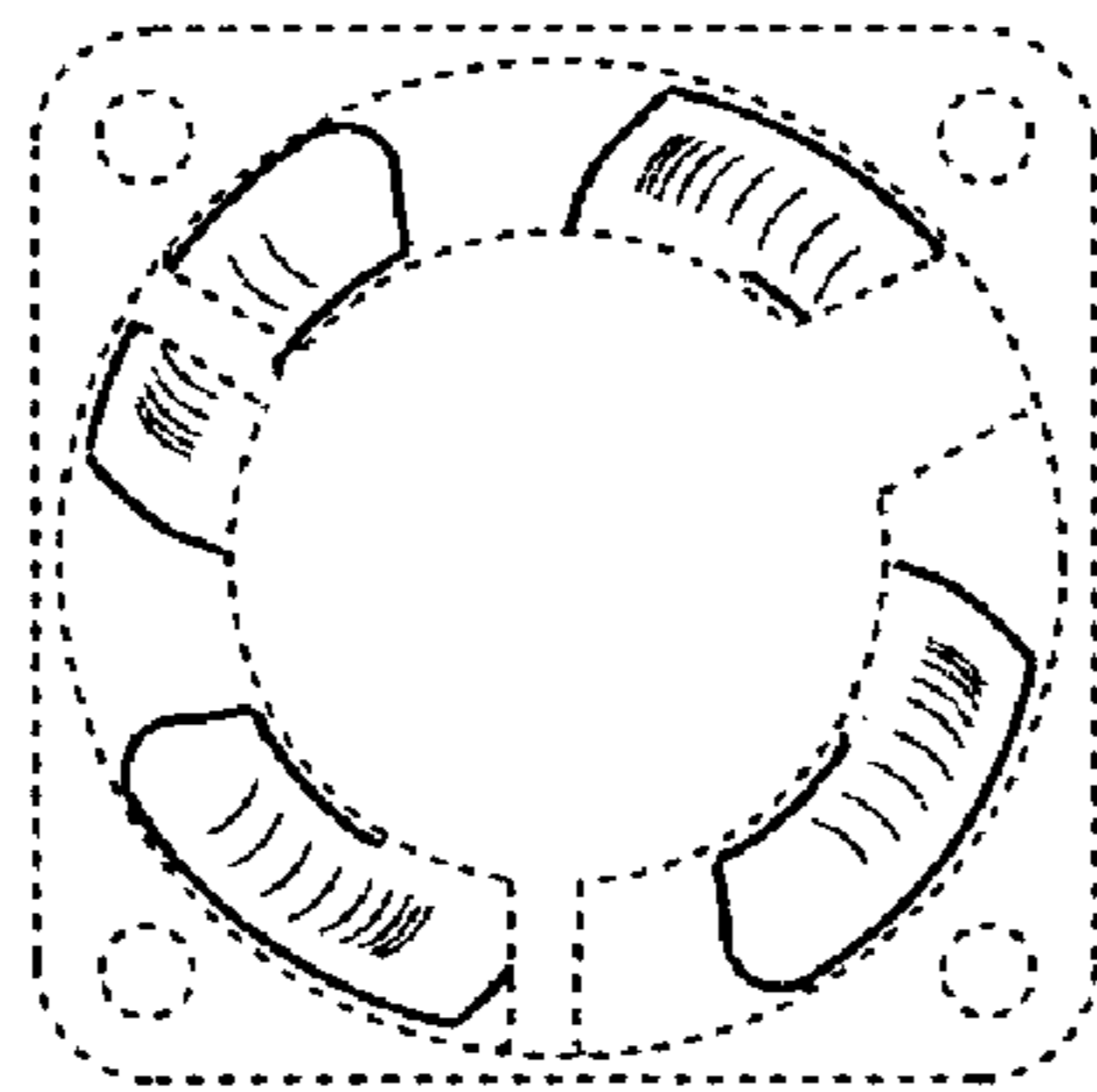


Fig. 8

