



US00D453317S

(12) **United States Design Patent** (10) **Patent No.:** **US D453,317 S**
DeTore et al. (45) **Date of Patent:** **** Feb. 5, 2002**

(54) **QUAD TILTROTOR**

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(73) Assignee: **Bell Helicopter TEXTRON Inc.**, Hurst, TX (US)

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

(21) Appl. No.: **29/133,527**

(22) Filed: **Dec. 1, 2000**

(51) **LOC (7) Cl.** **12-07**

(52) **U.S. Cl.** **D12/328**

(58) **Field of Search** **D12/319-345;**
244/7 C, 48, 51, 69, 78

(56) **References Cited**

U.S. PATENT DOCUMENTS

- D392,937 S * 3/1998 Brichard et al. D12/319
- D394,422 S * 5/1998 Magee D12/326
- D401,898 S * 12/1998 Lauder et al. D12/326

OTHER PUBLICATIONS

- J.A. DeTore—Trends for Optimum Flying Crane Design, Oct. 1957.
- John A. DeTore—An Investigation of Improved Flying Qualities for Tandem Rotor Helicopters, Institution of the Aerospace Sciences, Jan. 23-25, 1961.
- L. Kingson and J. DeTore—Second European Rotorcraft and Powered Lift Aircraft Forum Paper No. 36, Tilt Rotor v/Stol Aircraft Technology, Sep. 20-22, 1976.

J. DeTore and S. Martin, Jr.—Multi Rotor Options for Heavy Lift, Star Technical Paper Series Dec. 3-6, 1979.

Scott R. Gourley—Article V-44—Flying Freight Train, pp. 66-69, Popular Mechanics Magazine, Sep. 2000.

* cited by examiner

Primary Examiner—Marcus A. Jackson

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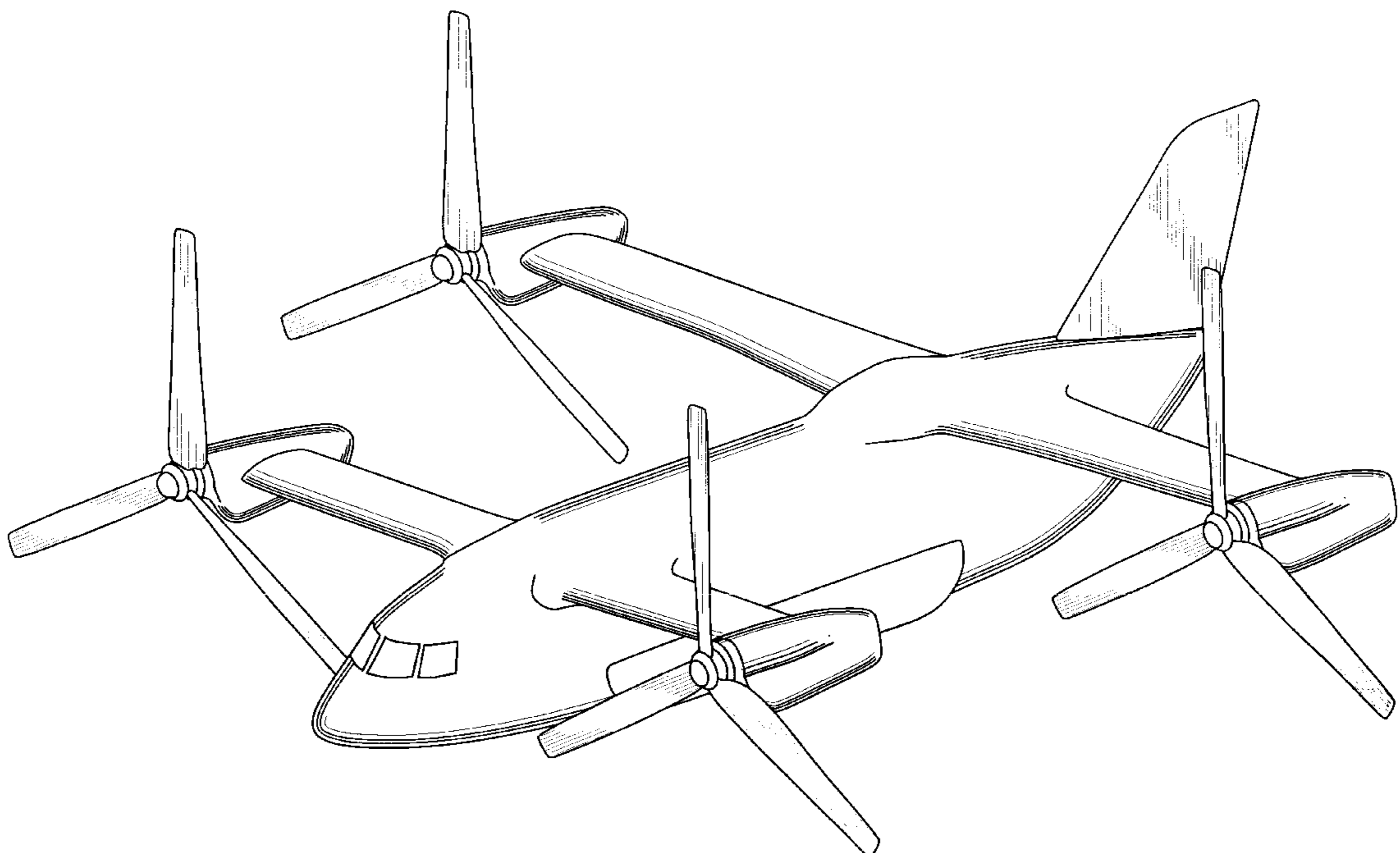
(57) **CLAIM**

The ornamental design for the quad tiltrotor, as shown and described.

DESCRIPTION

- FIG. 1 is a top view of a quad tiltrotor of our new design having rotors in the takeoff/landing/hovering position;
- FIG. 2 is a bottom view thereof;
- FIG. 3 is a port side elevation view thereof;
- FIG. 4 is a starboard side elevation view thereof;
- FIG. 5 is a front elevation view thereof;
- FIG. 6 is a rear elevation view thereof;
- FIG. 7 is a top view of a quad tiltrotor of our new design having rotors in a flight position;
- FIG. 8 is a bottom view thereof;
- FIG. 9 is a port side elevation view thereof;
- FIG. 10 is a starboard side elevation view thereof;
- FIG. 11 is a front elevation view thereof;
- FIG. 12 is a rear elevation view thereof; and,
- FIG. 13 is a perspective view thereof.

1 Claim, 7 Drawing Sheets



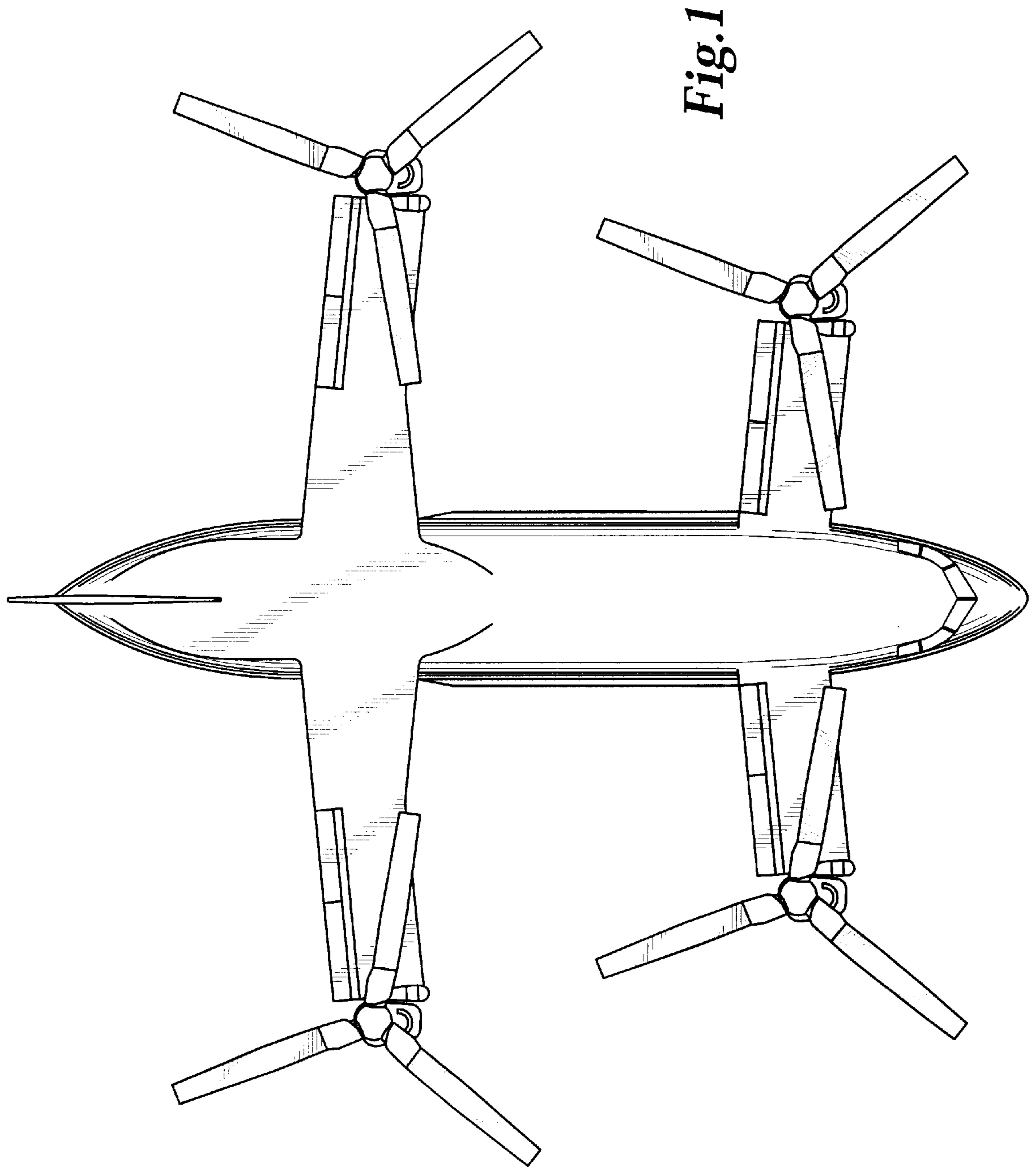


Fig. 1

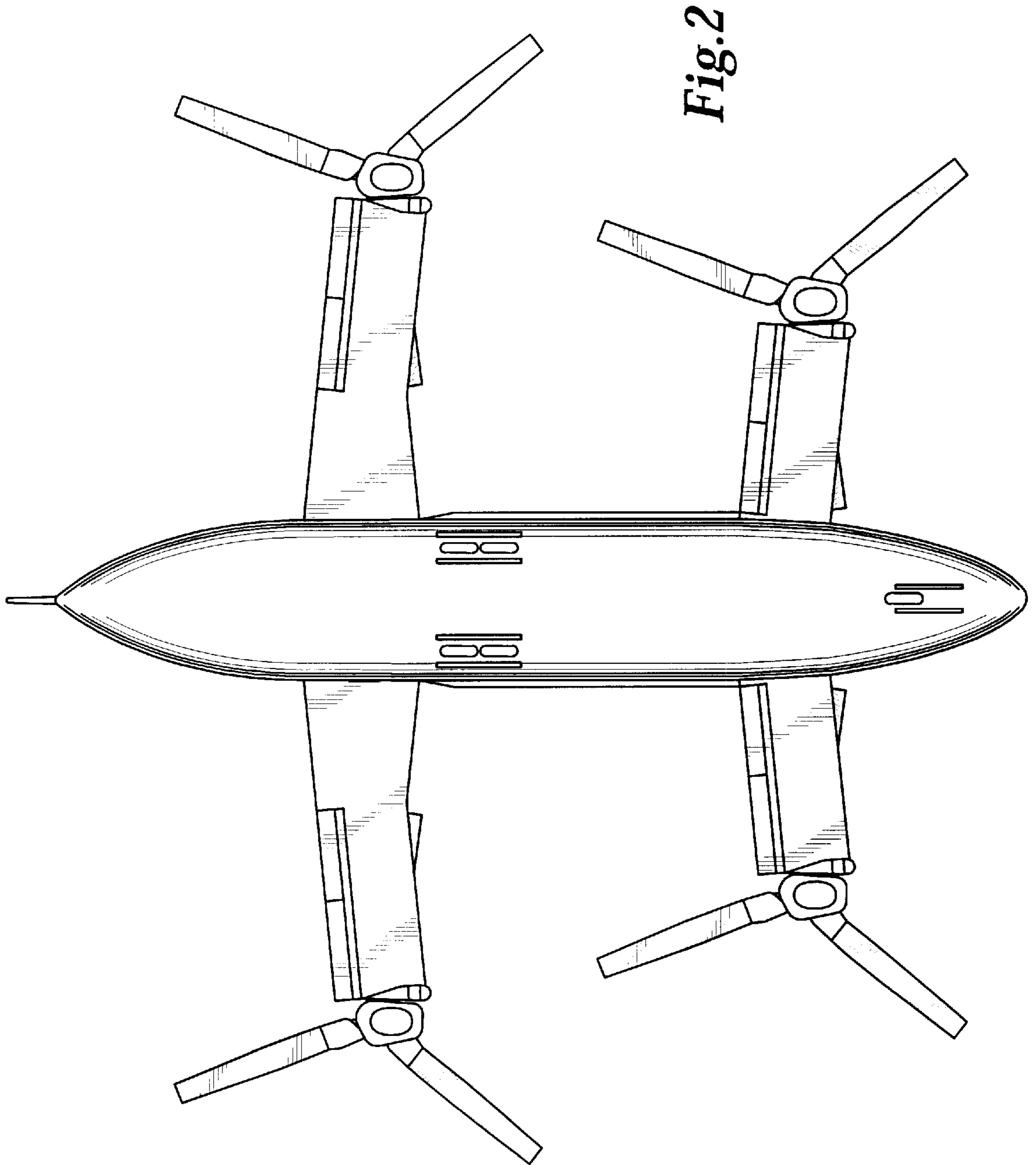


Fig. 2

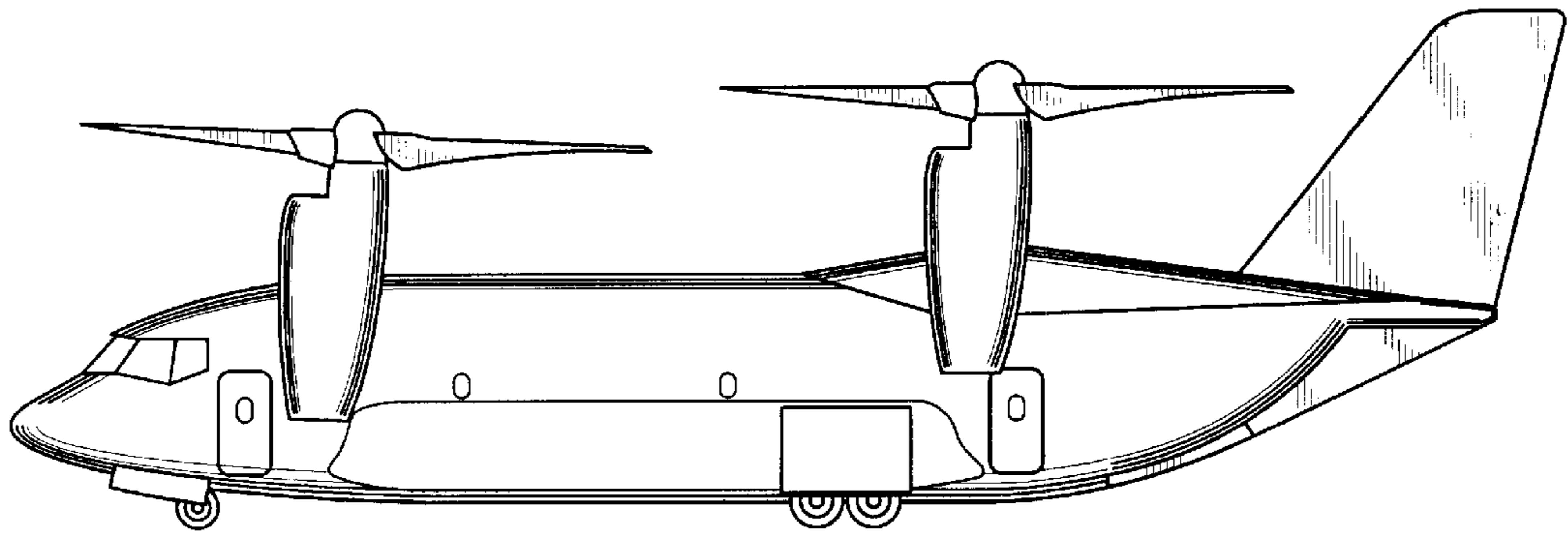


Fig.3

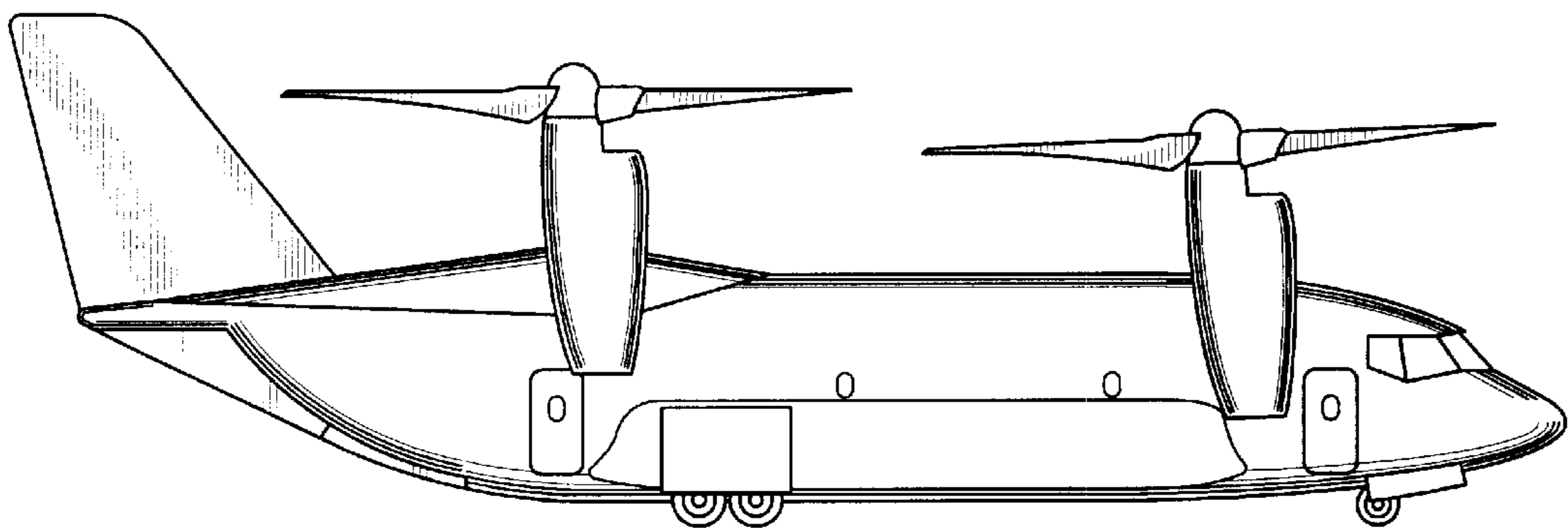


Fig.4

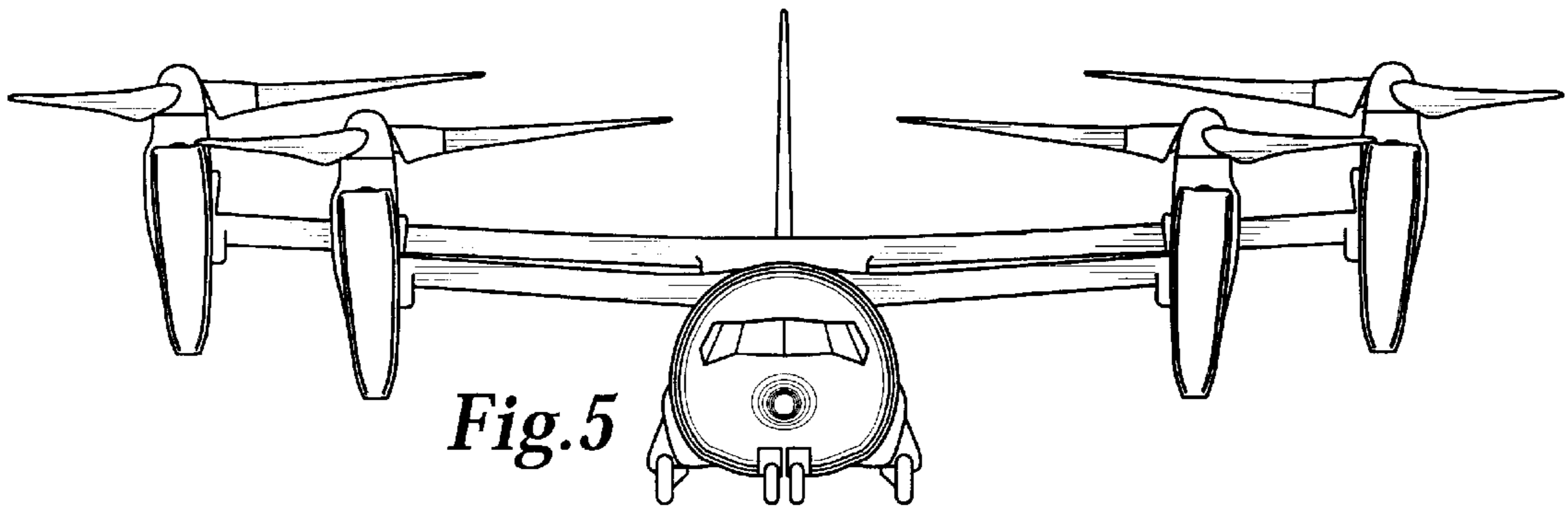


Fig.5

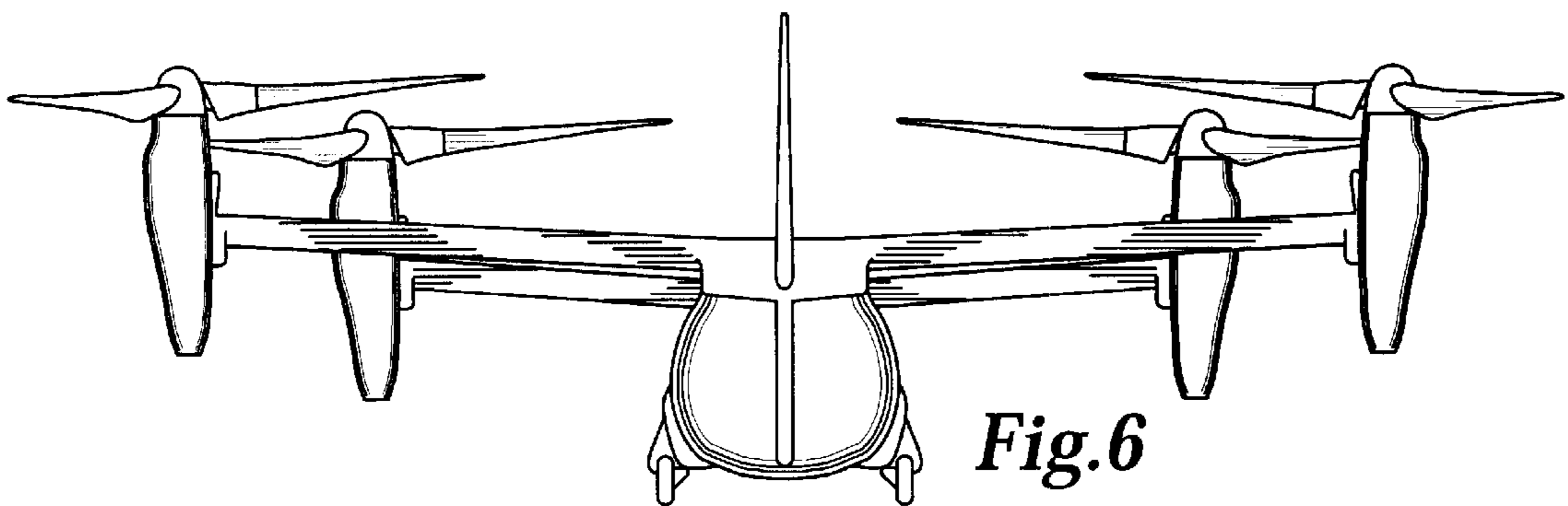


Fig.6

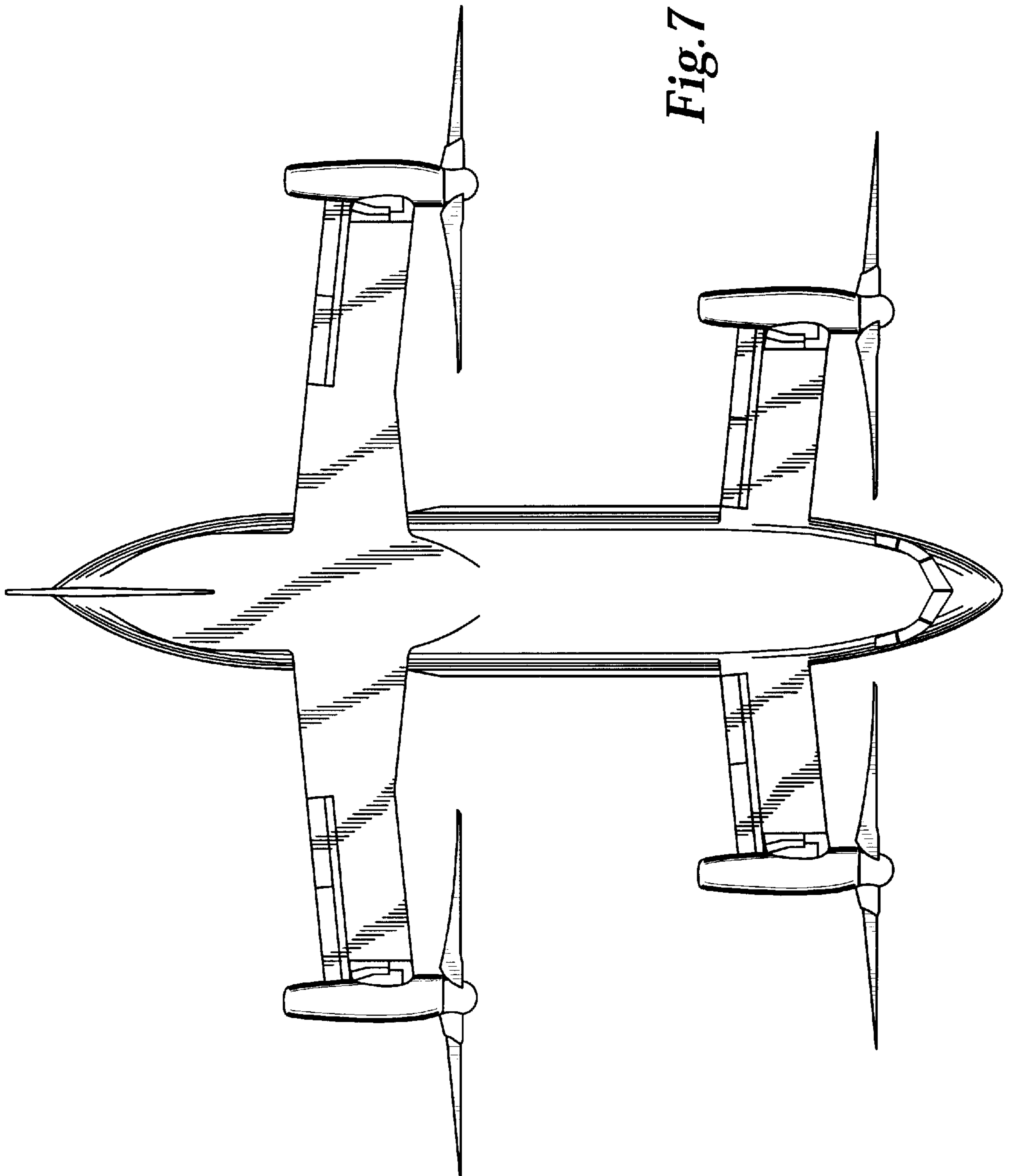


Fig. 7

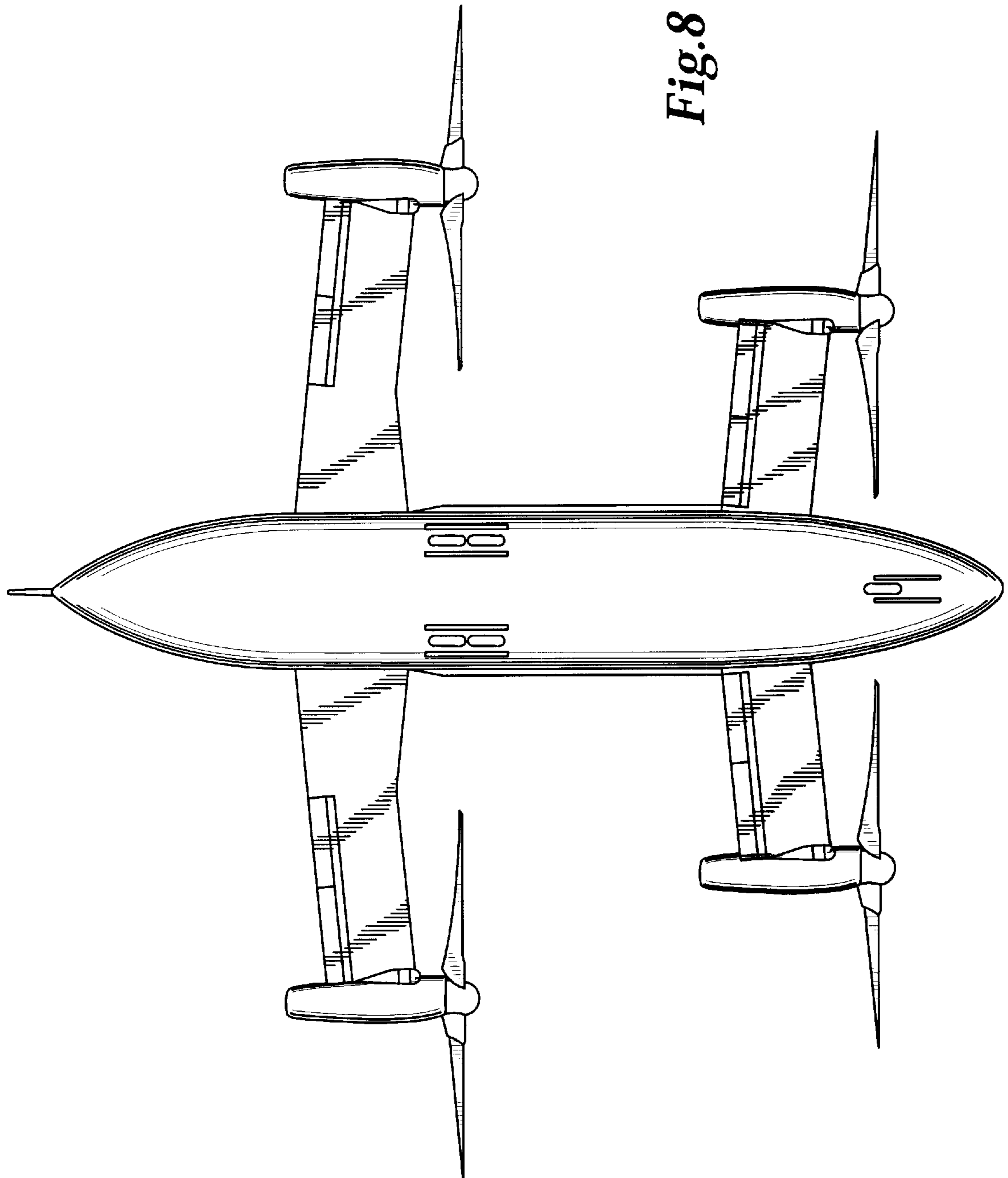
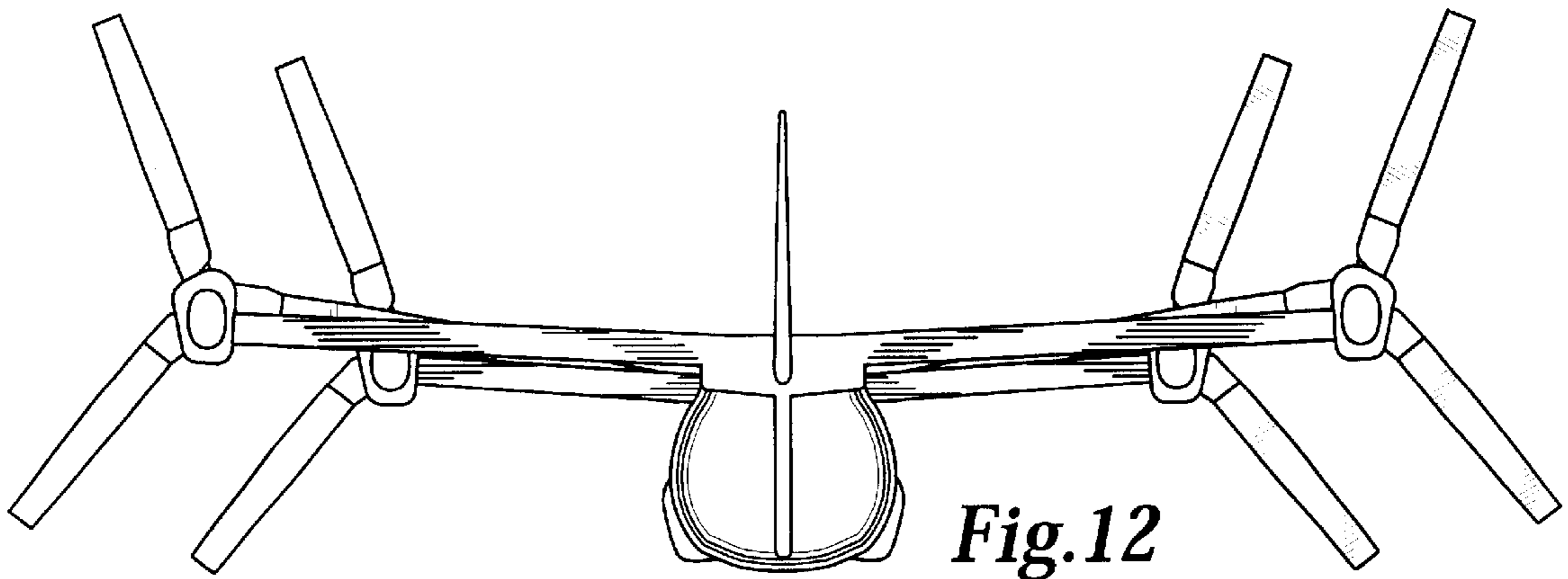
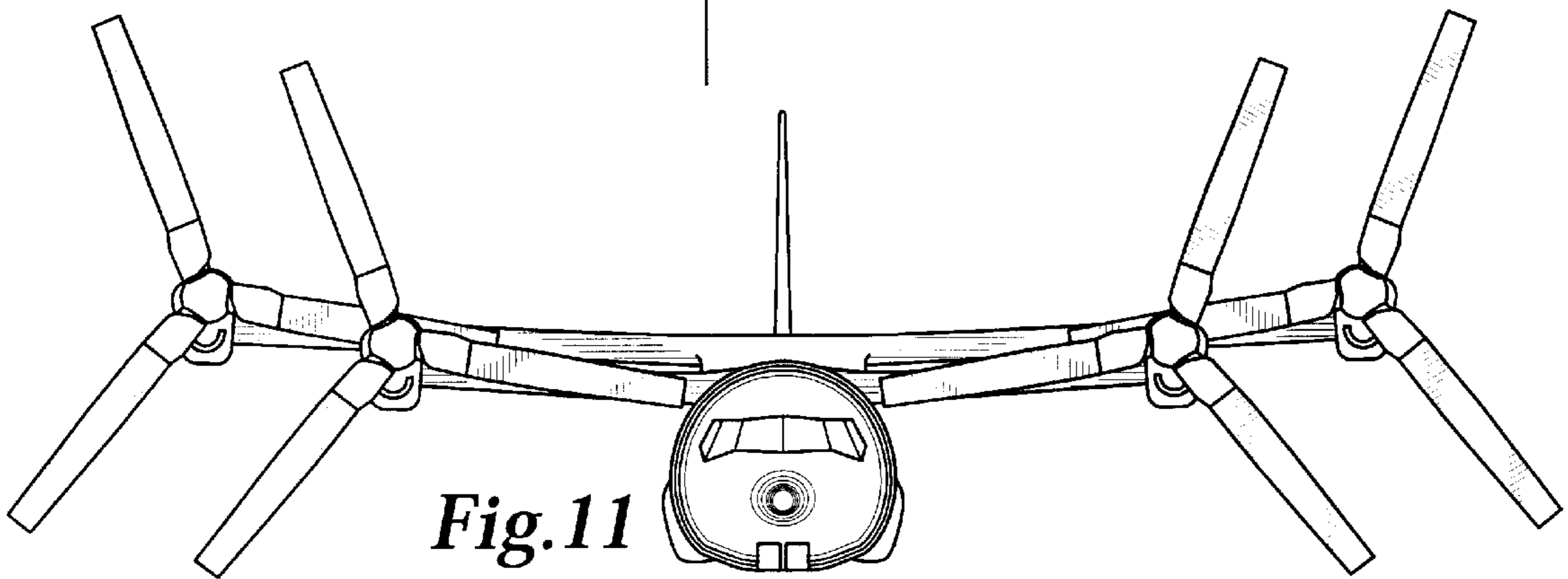
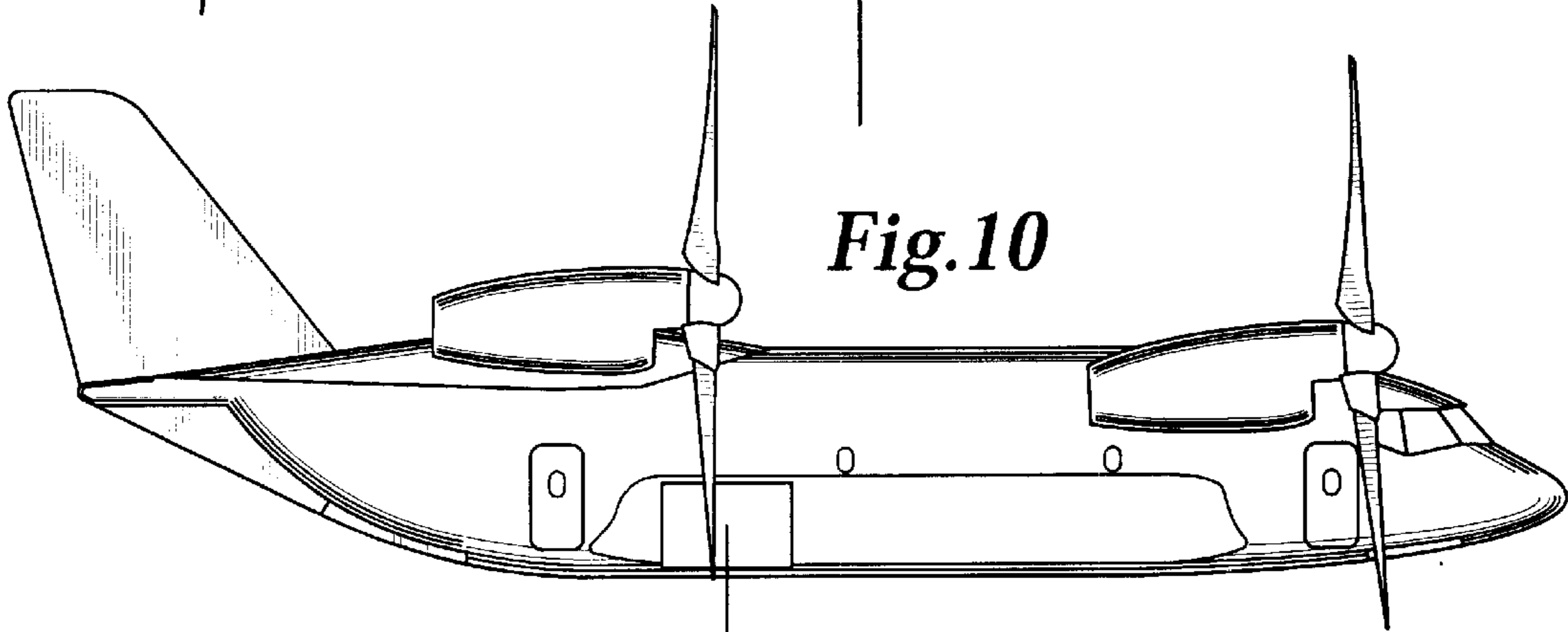
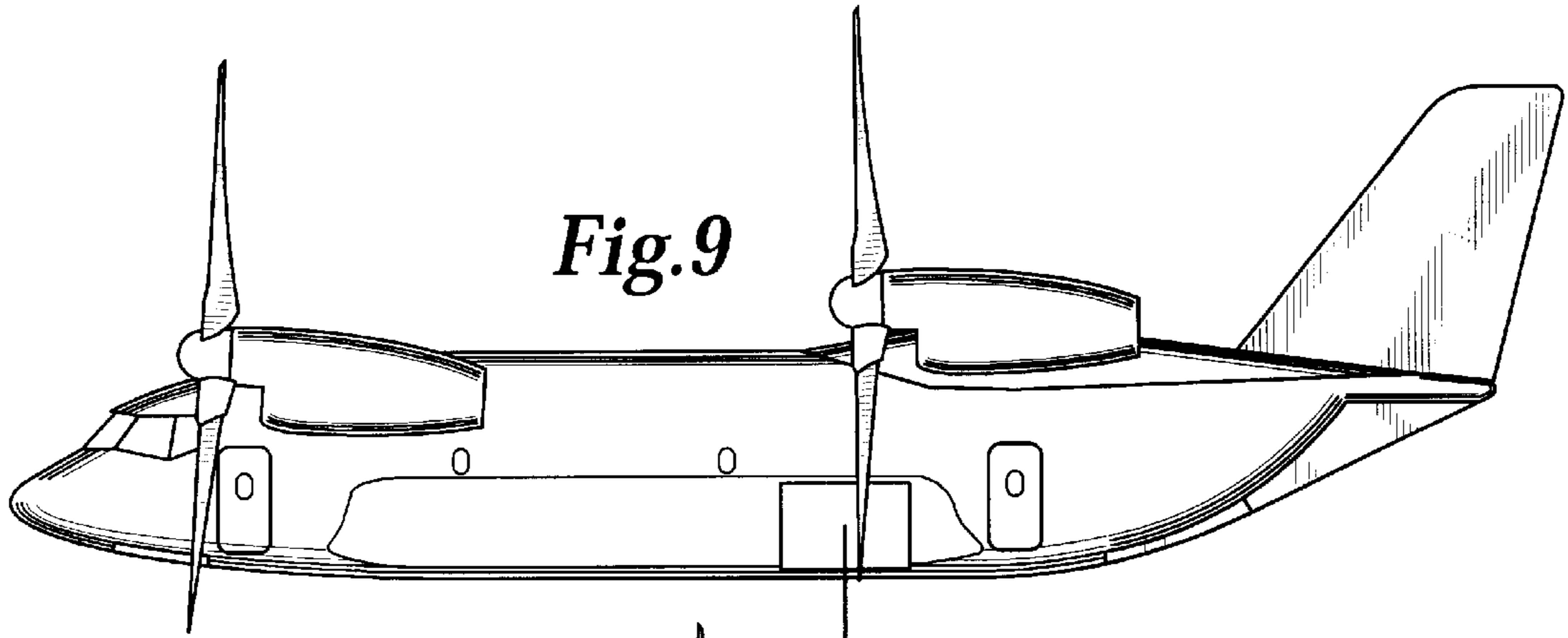


Fig. 8



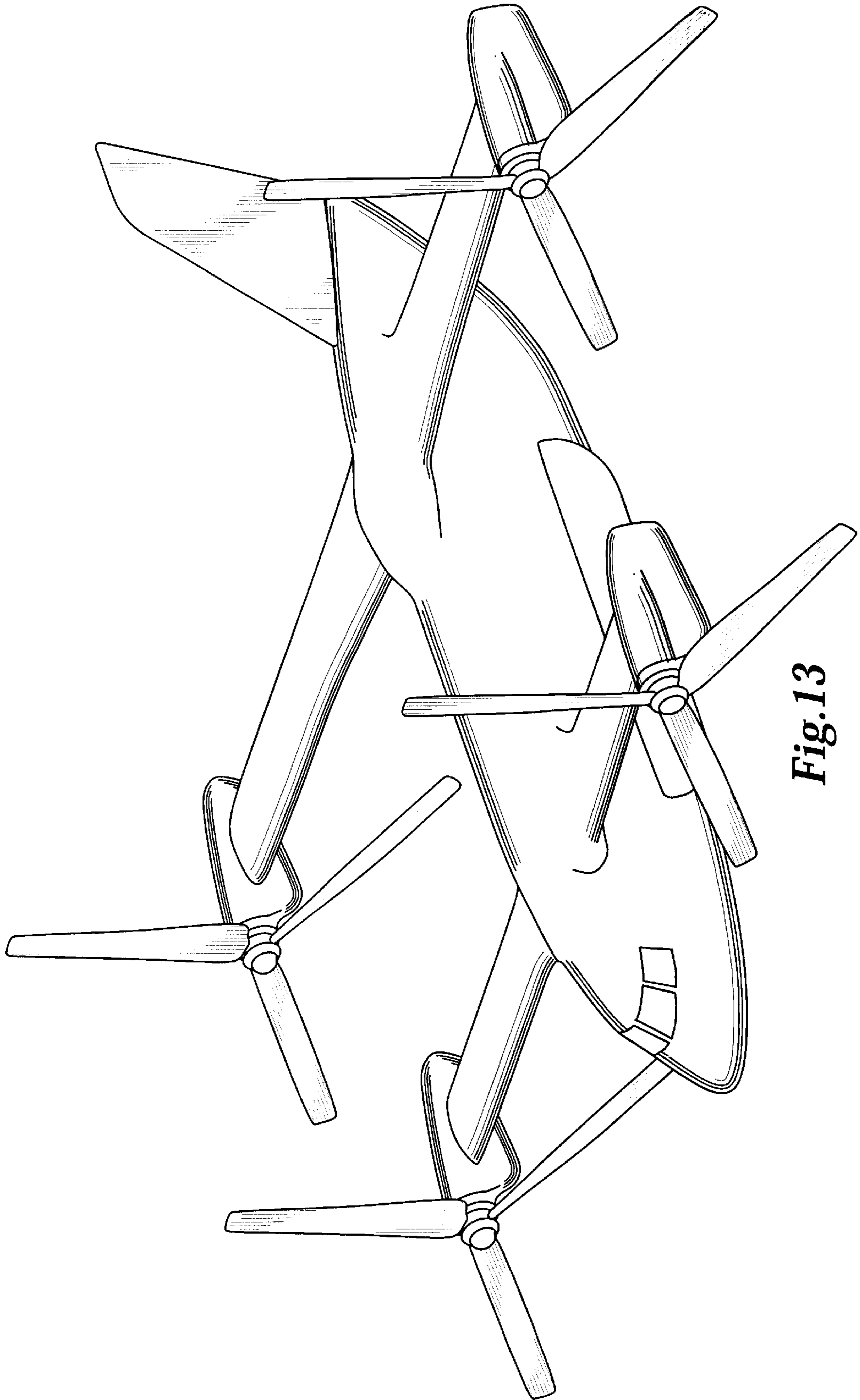


Fig. 13