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(12) **United States Design Patent**
Cummings

(10) **Patent No.:** **US D713,321 S**
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(54) **AIR VEHICLE HAVING ROTATING WINGS**

(71) Applicant: **Darold B. Cummings**, Coeur D'Alene, ID (US)

(72) Inventor: **Darold B. Cummings**, Coeur D'Alene, ID (US)

(73) Assignee: **Empirical Systems Aerospace, Inc.**, Oceano, CA (US)

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

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(51) **LOC (10) Cl.** **12-07**

(52) **U.S. Cl.**
USPC **D12/326; D12/328**

(58) **Field of Classification Search**
CPC B46C 2201/024; B46C 2201/102;
B46C 3/38; B46C 3/385; B46C 3/56; B46C
27/00; B46C 27/08; B46C 27/10; B46C
27/22; B46C 39/08; Y02T 50/145
USPC D12/319, 320, 326, 327, 328, 329, 330,
D12/333, 338, 339, 344, 345; D21/430,
D21/436, 437, 441, 442, 443, 444, 447, 450,
D21/451, 453; 244/2, 5, 6, 7 A, 7 R, 7 C,
244/3.28, 12.5, 46, 49, 218; 446/34-38,
446/57-60, 230-236; 280/1.12, 1.21
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

D190,840 S * 7/1961 Lear, Sr. D12/339
3,116,036 A * 12/1963 Nichols 244/7 A
D218,856 S * 9/1970 Fellers D12/338
D218,858 S * 9/1970 Fellers et al. D12/338
3,971,535 A * 7/1976 Jones 244/46

D240,810 S * 8/1976 Meyerhoff et al. D12/214
4,132,374 A * 1/1979 Abell 244/46
4,998,689 A * 3/1991 Woodcock 244/46
5,454,530 A 10/1995 Rutherford et al.
6,244,537 B1 * 6/2001 Rutherford 244/7 A

(Continued)

OTHER PUBLICATIONS

X-49A SpeedHawk compound helicopter, manufactured by Sikorsky Aircraft and modified by Piasecki Aircraft, 2007, photograph.

(Continued)

Primary Examiner — Martie K Holtje

(74) *Attorney, Agent, or Firm* — Morland C. Fischer

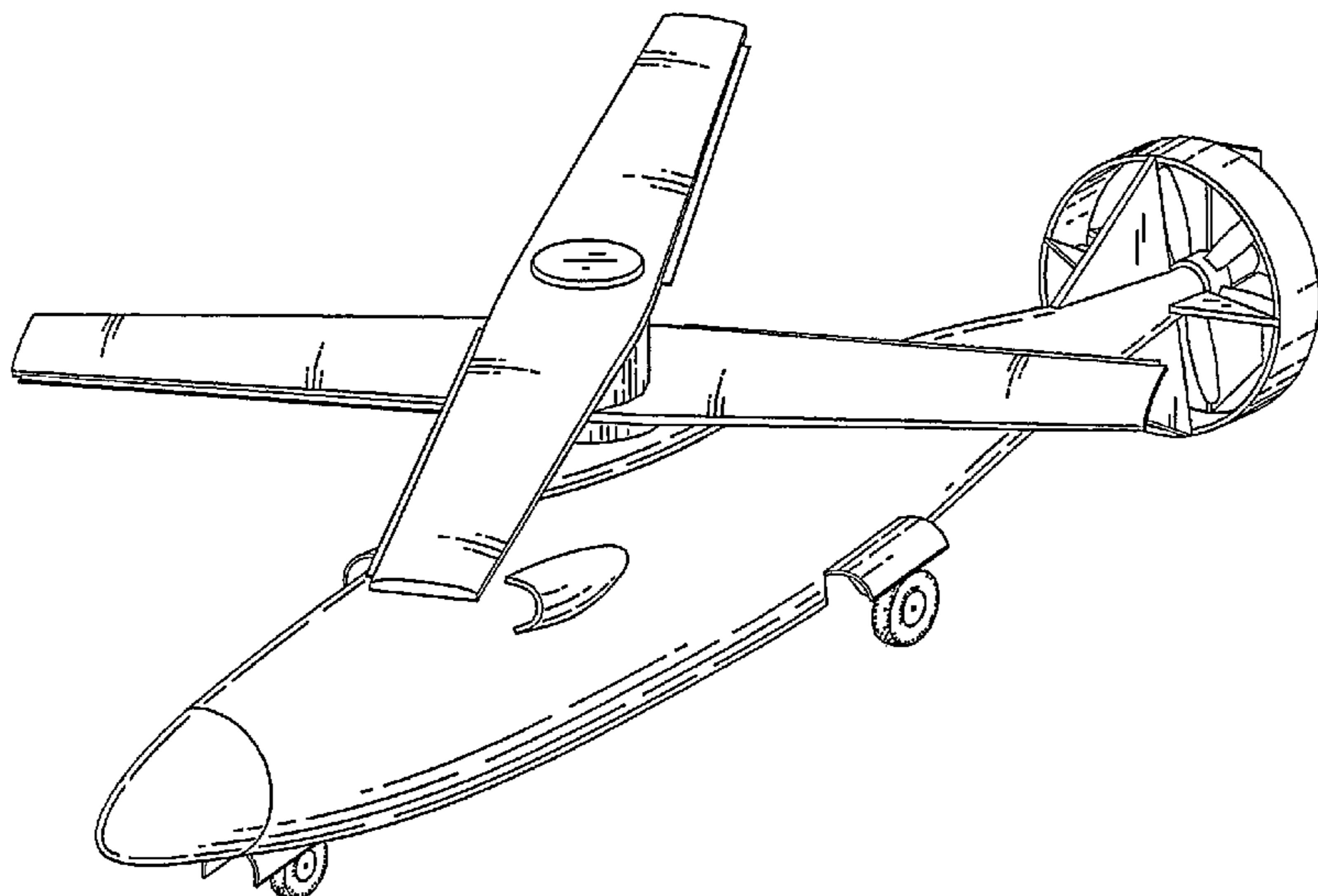
(57) **CLAIM**

The ornamental design for an air vehicle having rotating wings, as shown and described.

DESCRIPTION

FIG. 1 is a perspective view showing the top, right side and front of an air vehicle having rotating wings which forms my new design, wherein the wings are shown rotated to a first position relative to one another;
FIG. 2 is a top plan view thereof;
FIG. 3 is a right side elevational view thereof;
FIG. 4 is a left side elevational view thereof;
FIG. 5 is a bottom plan view thereof;
FIG. 6 is a front elevational view thereof;
FIG. 7 is a rear elevational view thereof;
FIG. 8 is a top plan view thereof, wherein the wings are shown rotated to a second position relative to one another;
FIG. 9 is a right side elevational view of FIG. 8;
FIG. 10 is a left side elevational view of FIG. 8;
FIG. 11 is a bottom plan view of FIG. 8;
FIG. 12 is a front elevational view of FIG. 8; and,
FIG. 13 is a rear elevational view of FIG. 8.

1 Claim, 7 Drawing Sheets



(56)

References Cited

U.S. PATENT DOCUMENTS

6,601,795 B1 * 8/2003 Chen 244/46
6,669,137 B1 * 12/2003 Chen 244/7 R
6,923,404 B1 * 8/2005 Liu et al. 244/46
7,014,142 B2 * 3/2006 Barocela et al. 244/7 R
7,510,139 B2 * 3/2009 Walliser 244/7 A
7,611,090 B2 * 11/2009 Oleshchuk et al. 244/12.5

7,816,635 B2 * 10/2010 Fink 244/3.28
2007/0095970 A1 * 5/2007 Richardson 244/7 A
2008/0272244 A1 * 11/2008 Bjornenak et al. 244/7 R

OTHER PUBLICATIONS

S-72/NASA X-Wing Demonstrator, manufactured by Sikorsky Aircraft, 1986, photograph.

* cited by examiner

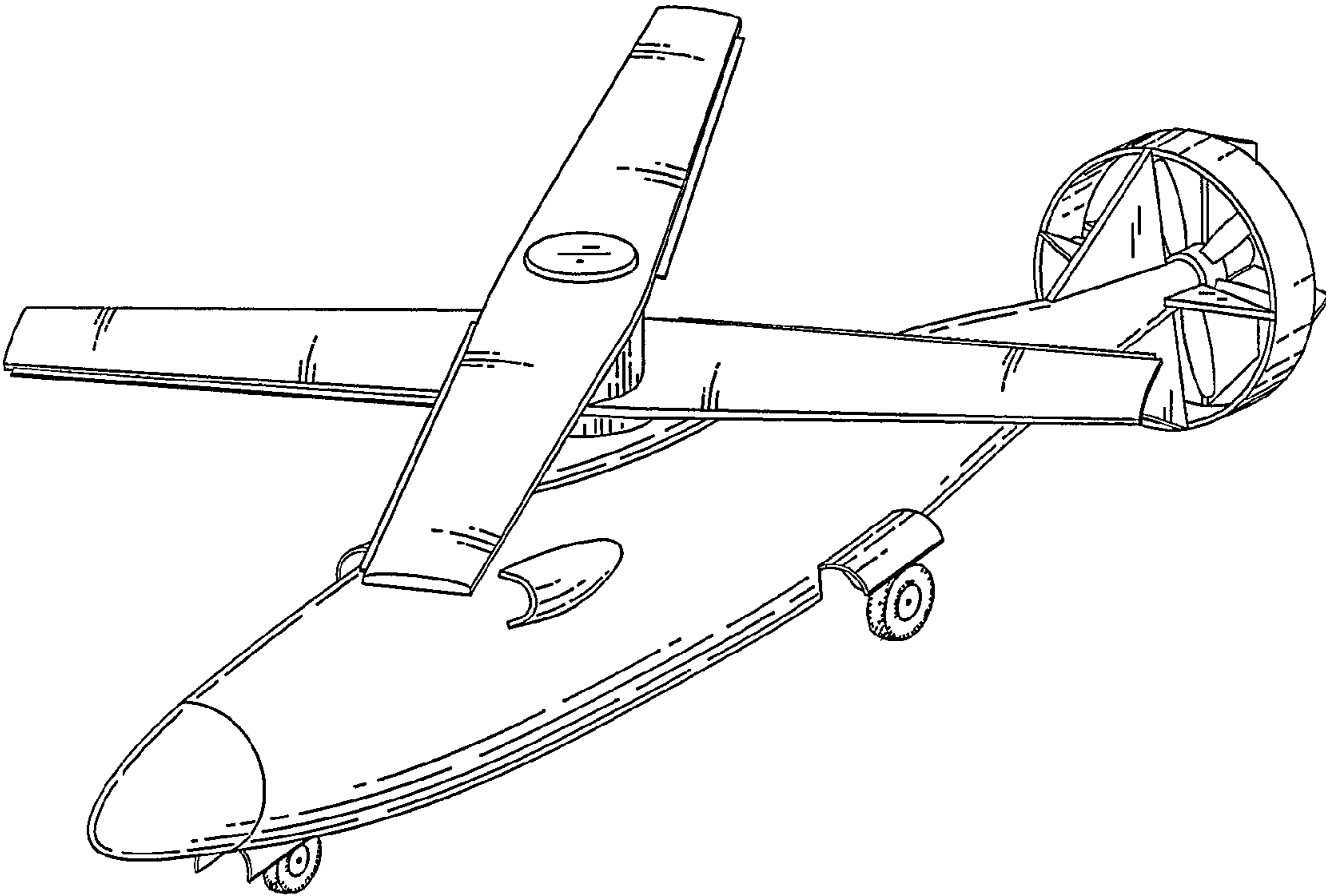


FIG. 1

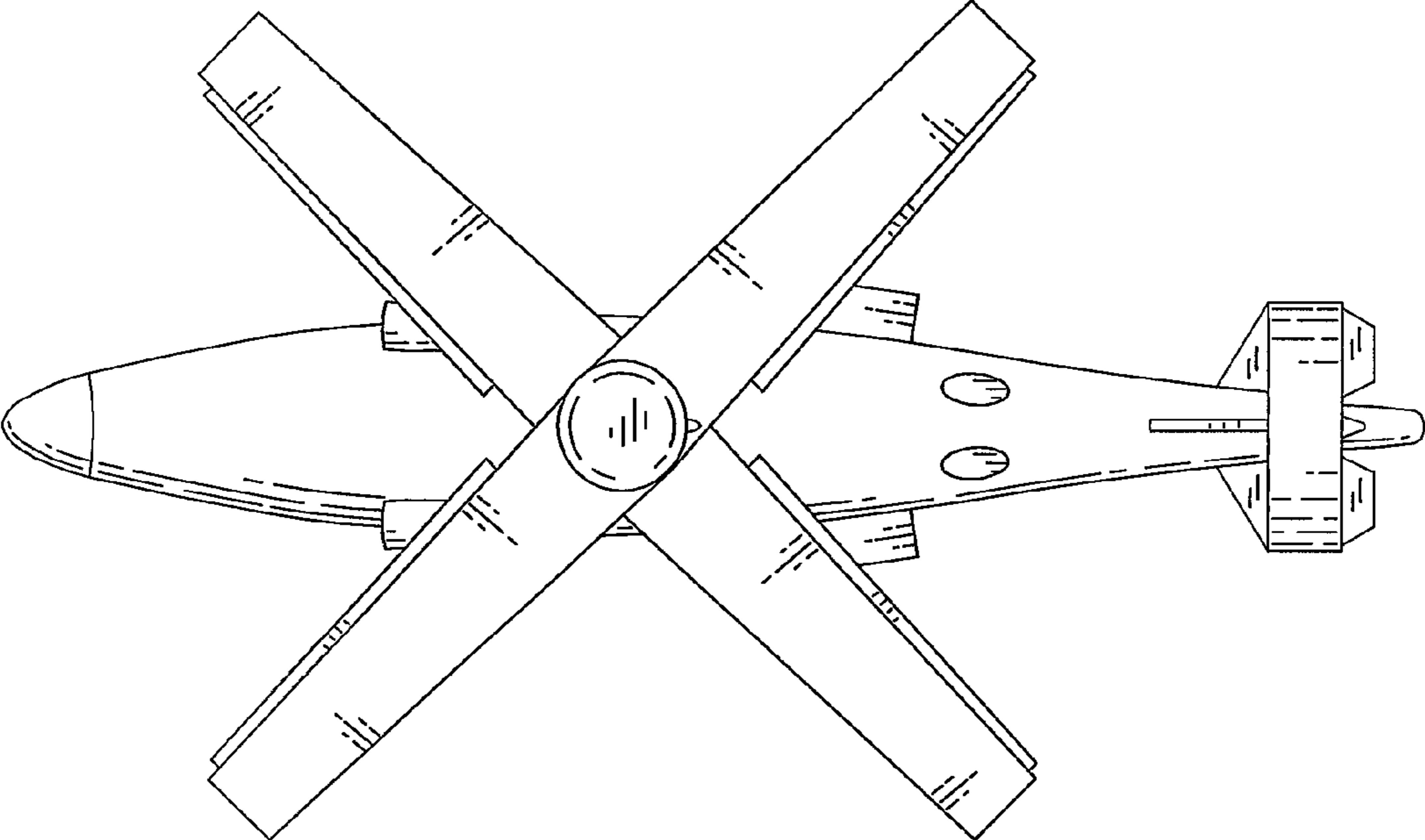


FIG. 2

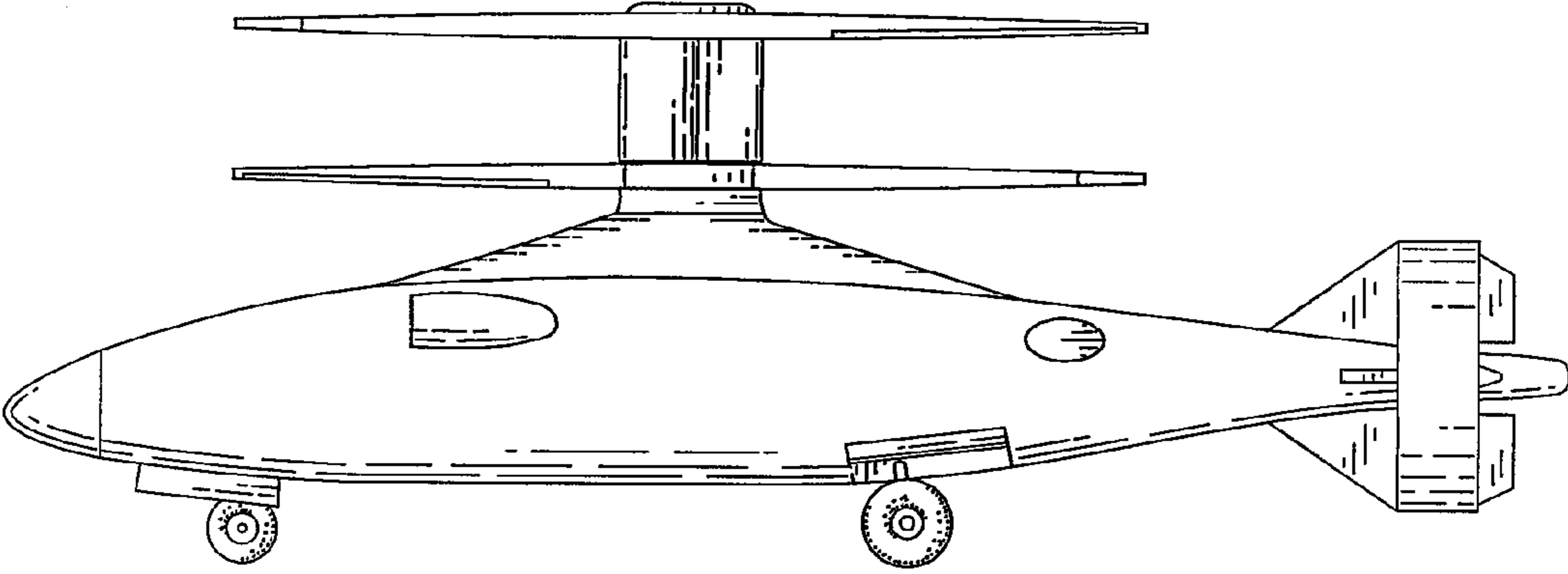


FIG. 3

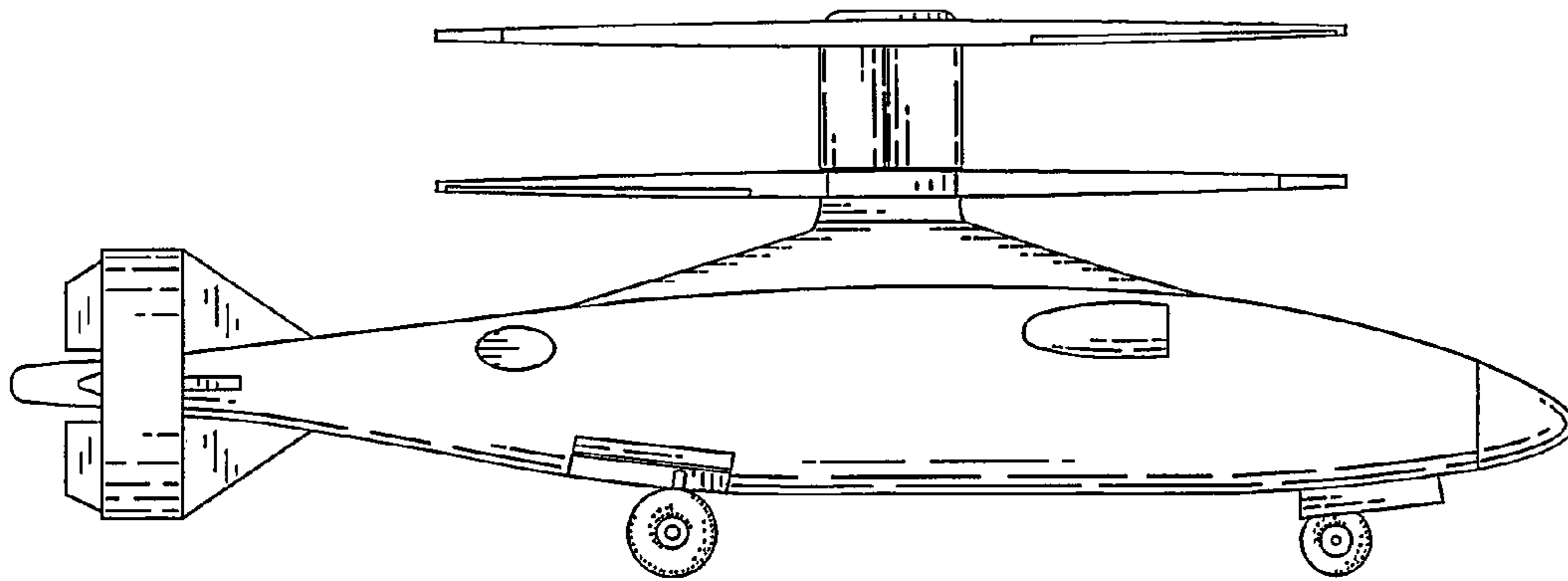


FIG. 4

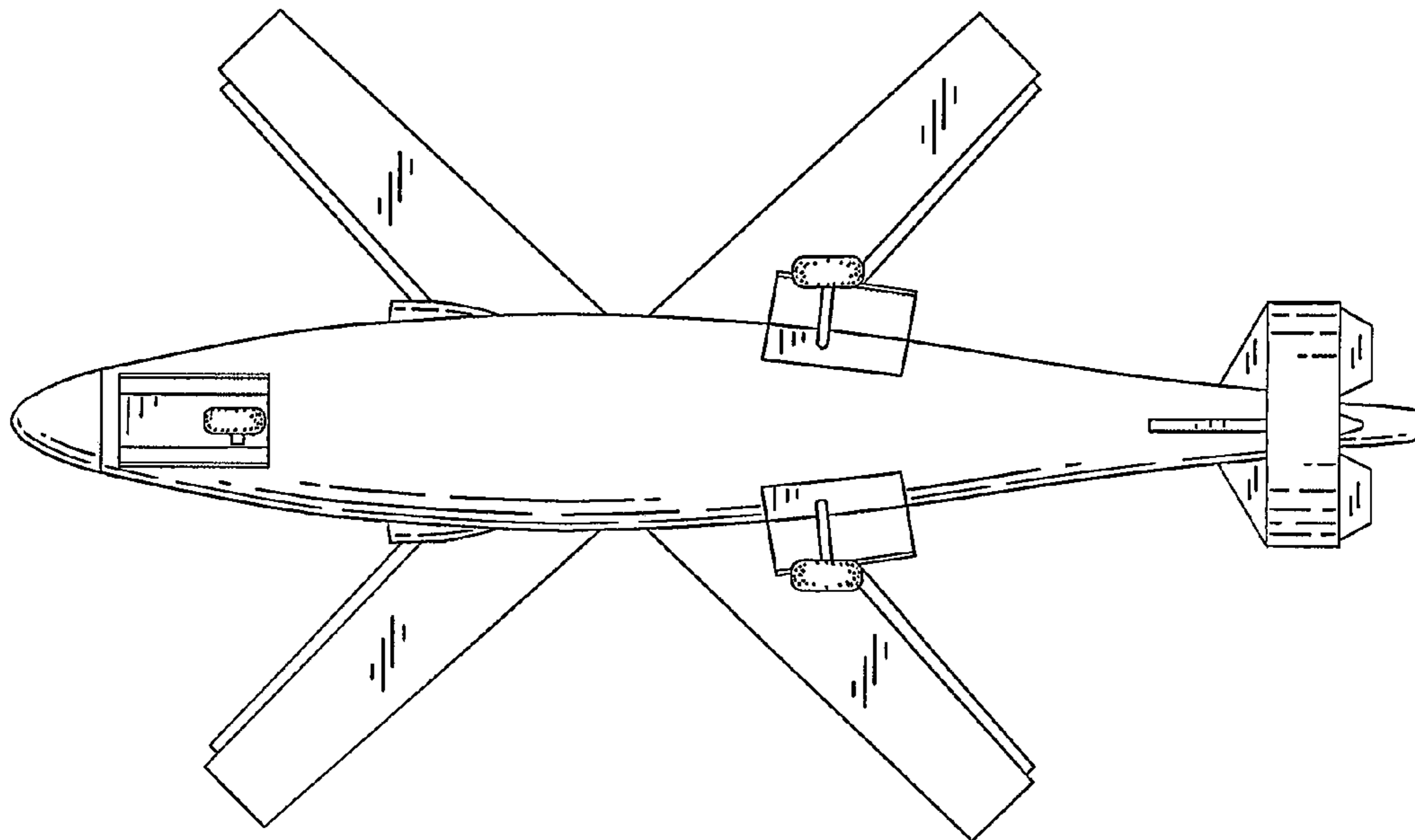


FIG. 5

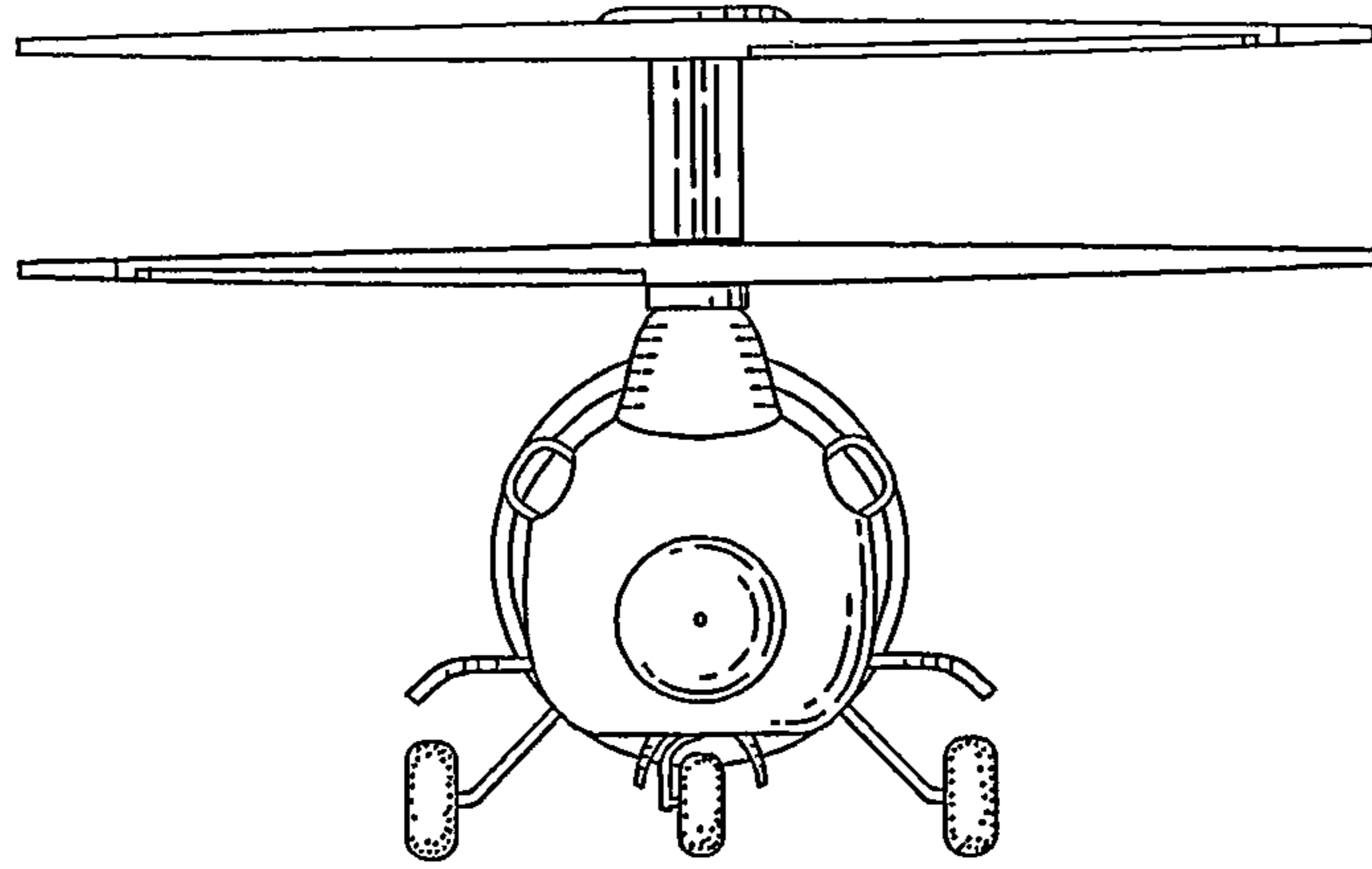


FIG. 6

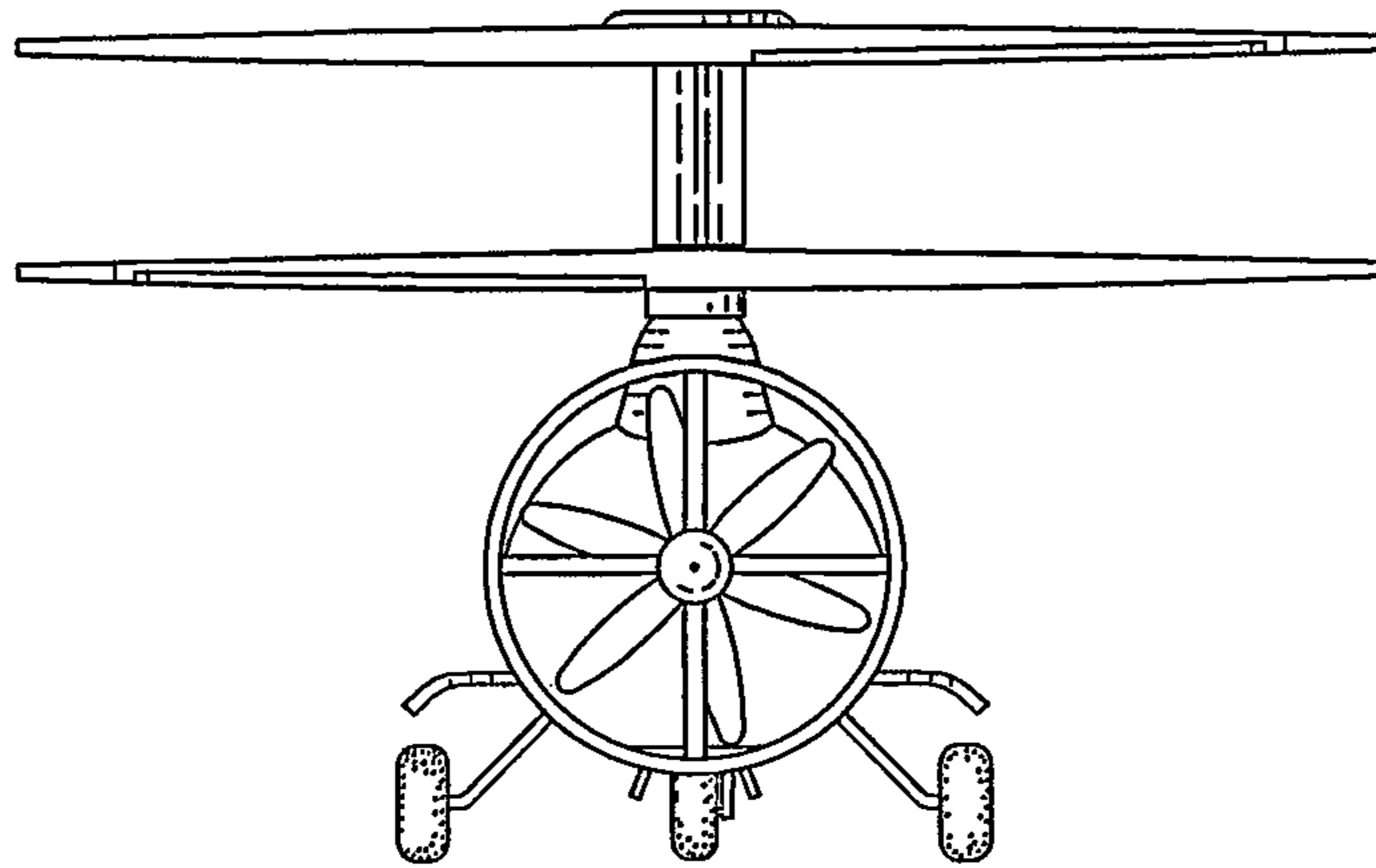


FIG. 7

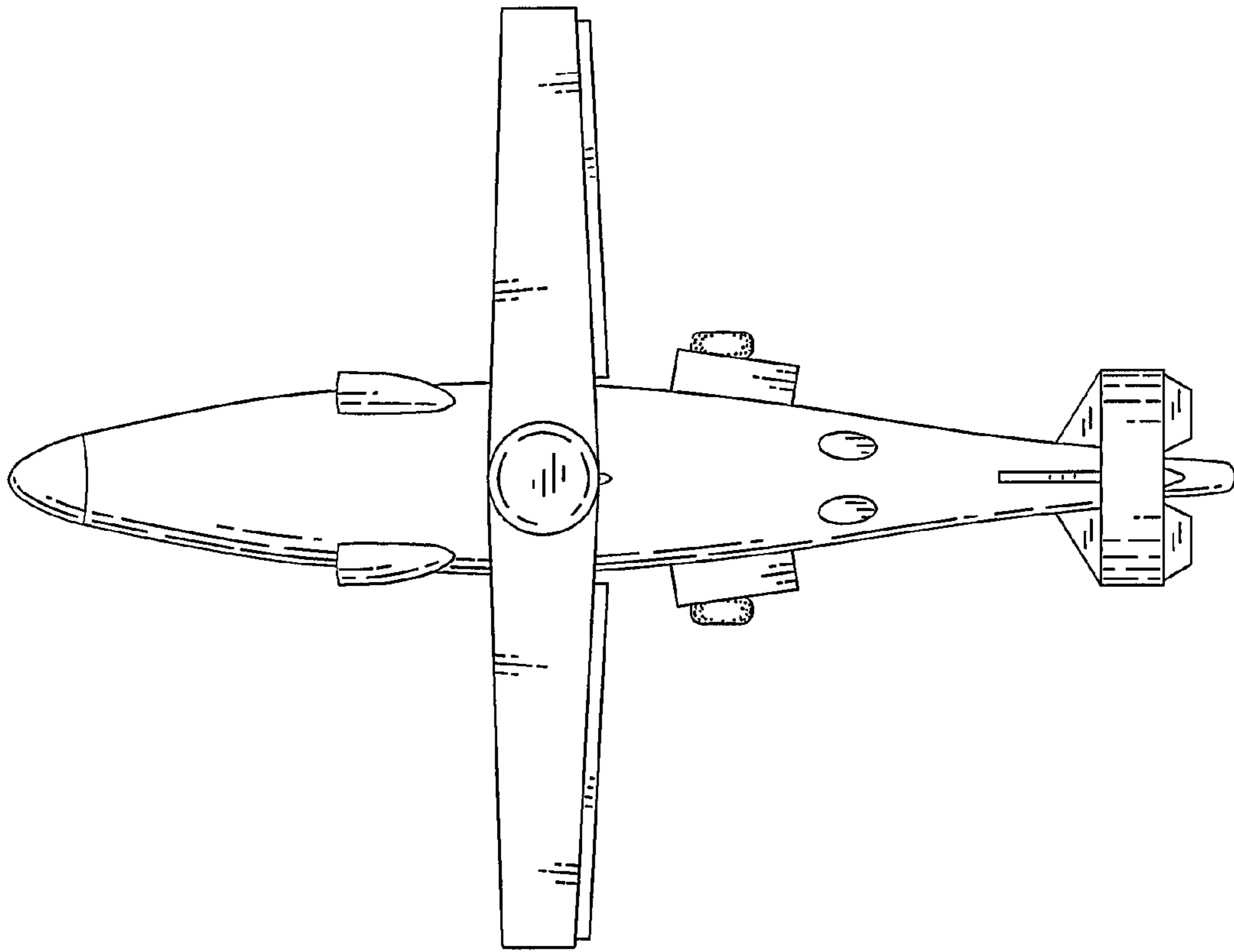


FIG. 8

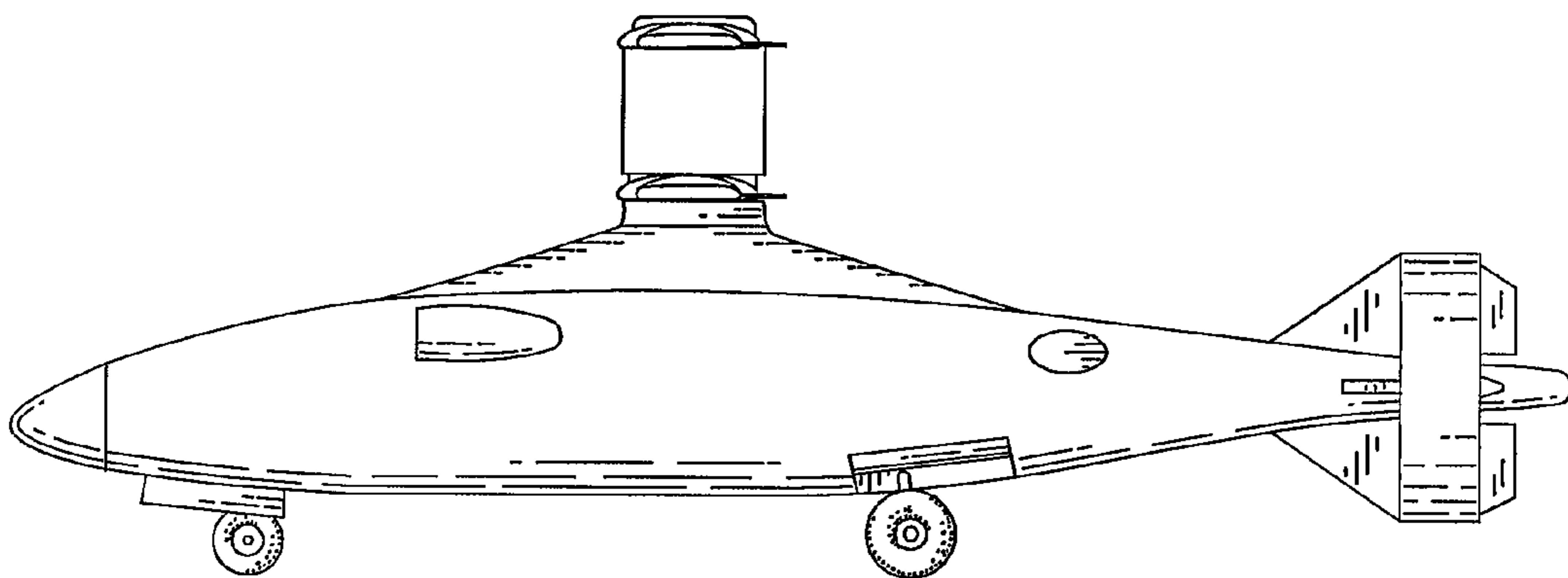


FIG. 9

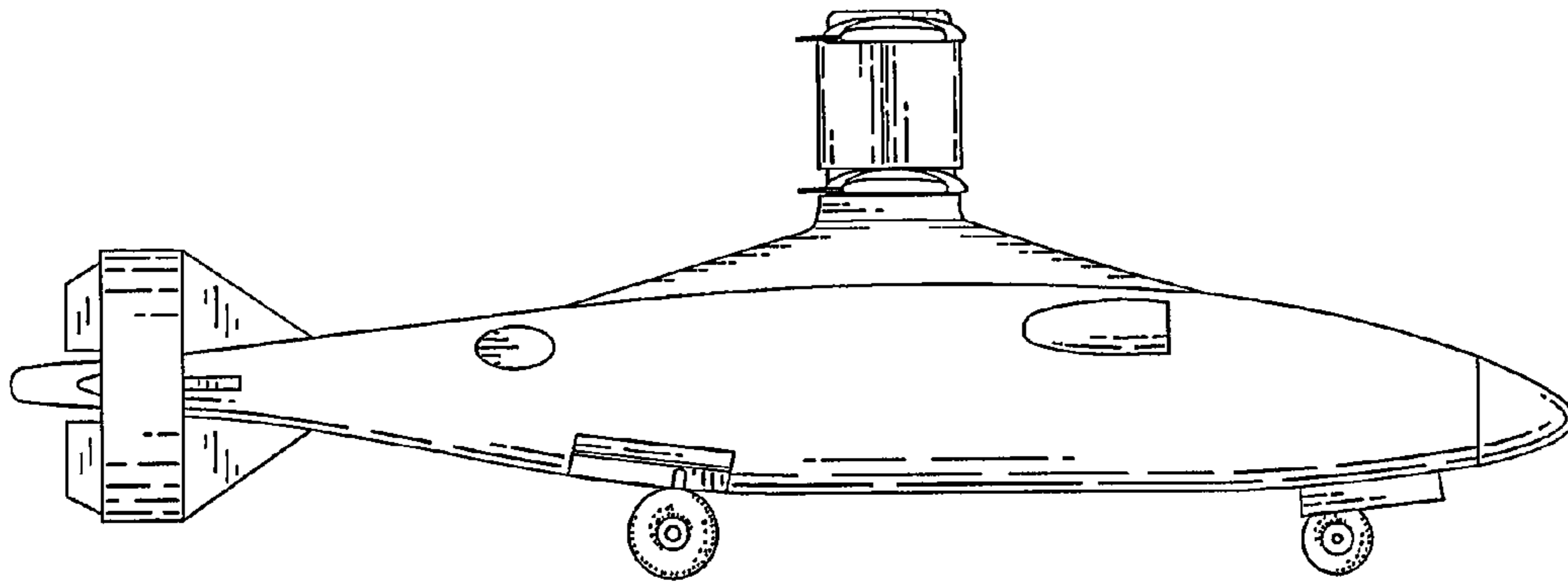


FIG. 10

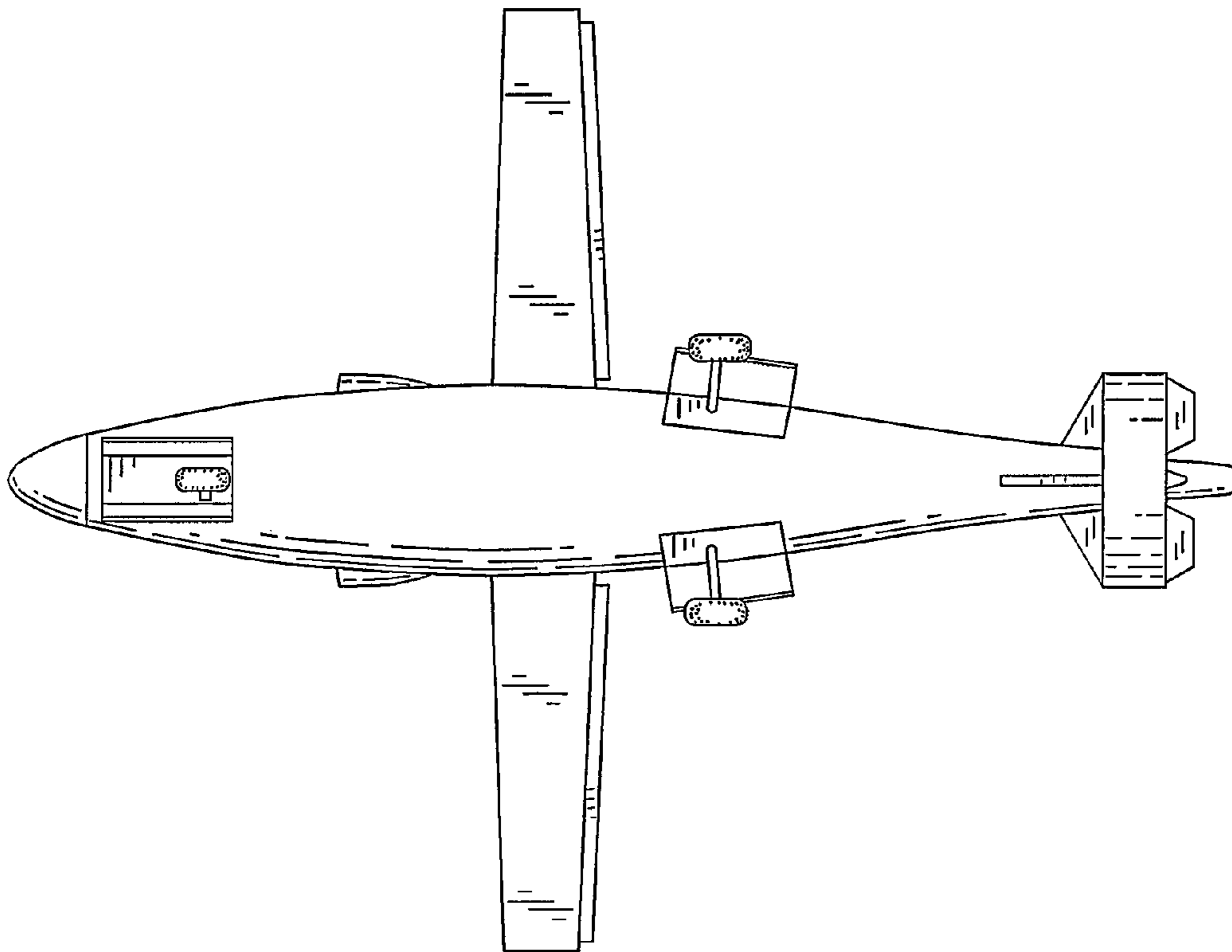


FIG. 11

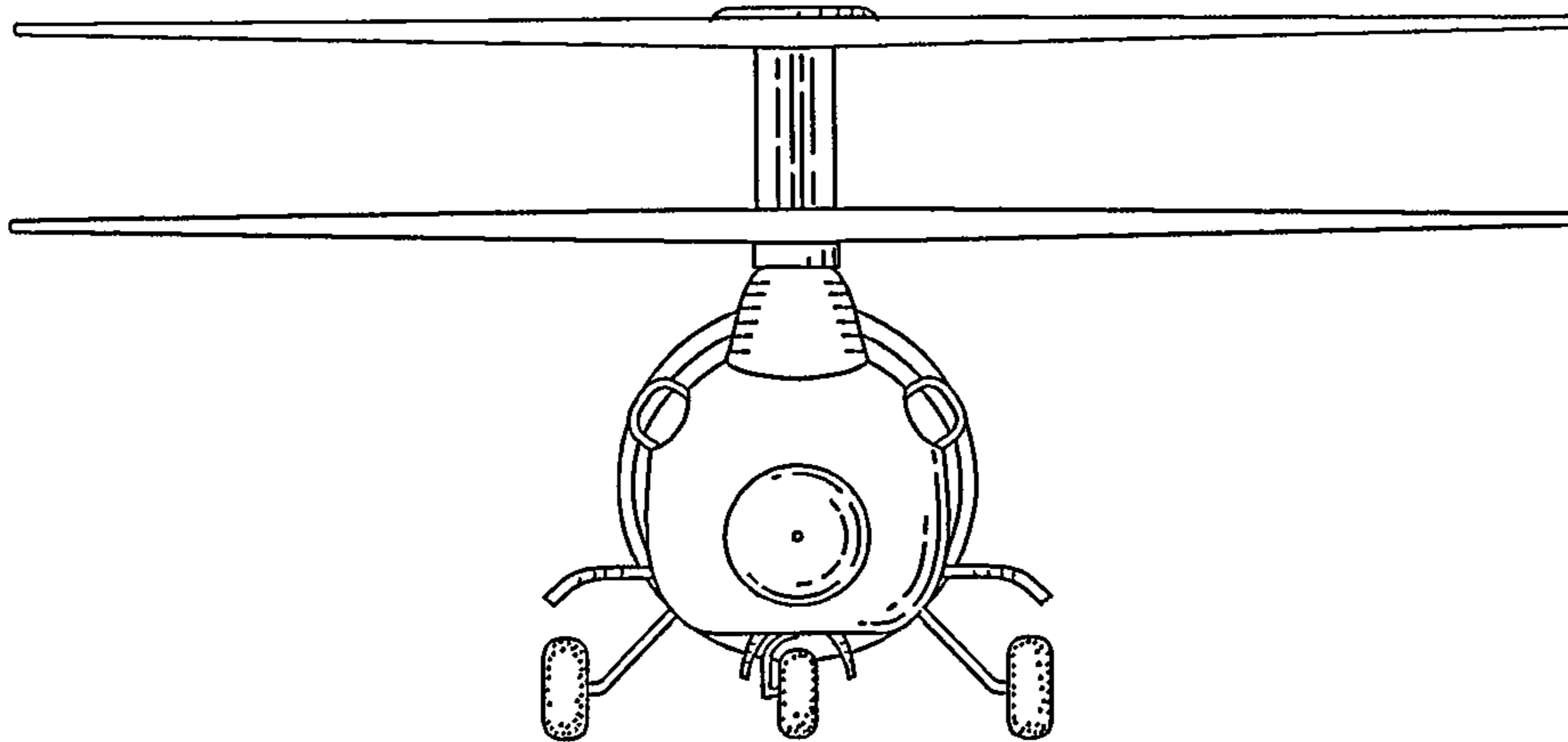


FIG. 12

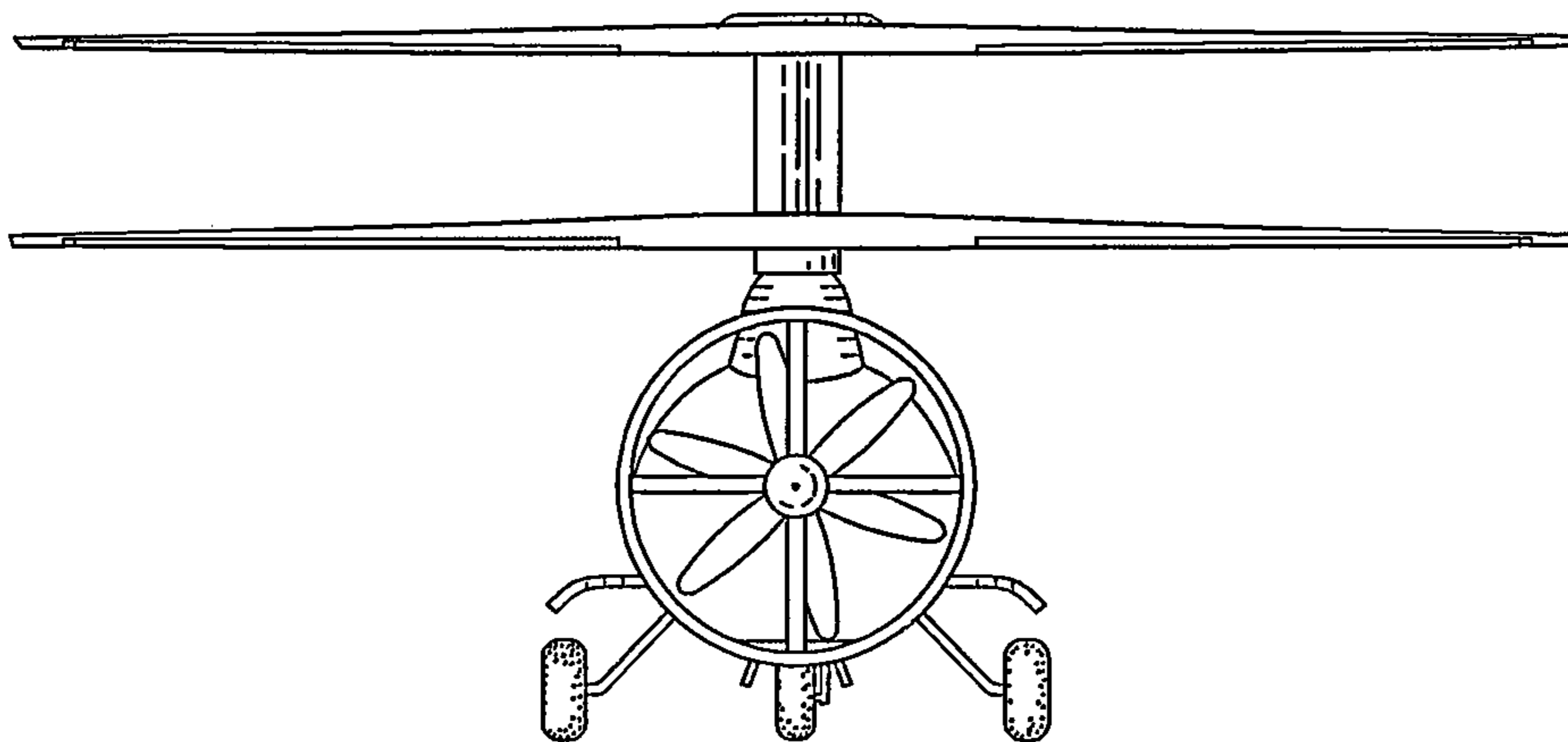


FIG. 13