



US00D909278S

(12) **United States Design Patent** (10) **Patent No.:** **US D909,278 S**  
**Williams et al.** (45) **Date of Patent:** **\*\* \*Feb. 2, 2021**

(54) **FOLDABLE TILTROTOR AIRCRAFT**

(71) Applicant: **Bell Helicopter Textron Inc.**, Fort Worth, TX (US)

(72) Inventors: **Jeffrey M. Williams**, Hudson Oaks, TX (US); **James E. Kooiman**, Fort Worth, TX (US); **Clegg Smith**, Keller, TX (US); **Lynn F. Eschete**, Arlington, TX (US); **Jason P. Winter**, Fort Worth, TX (US); **Michael E. Rinehart**, Euless, TX (US); **Troy T. Bushmire**, Fort Worth, TX (US)

(73) Assignee: **Bell Helicopter Textron Inc.**, Fort Worth, TX (US)

(\*) Notice: This patent is subject to a terminal disclaimer.

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

(21) Appl. No.: **29/670,337**

(22) Filed: **Nov. 15, 2018**

(51) **LOC (13) Cl.** ..... **12-07**

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

(58) **Field of Classification Search**  
USPC ..... D12/1-4, 16.1, 319-345; D21/436-455; D25/13, 199

(Continued)

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

D128,173 S 7/1941 Oliver  
D140,130 S 1/1945 Walter  
(Continued)

**OTHER PUBLICATIONS**

Bill Carey, "Bell Unveils 'Vigilant' Unmanned Tiltrotor for U.S. Marine Corps;" Sep. 22, 2016.

(Continued)

*Primary Examiner* — Marissa J Cash

(74) *Attorney, Agent, or Firm* — Timmer Law Group, PLLC

(57) **CLAIM**

The ornamental design for a foldable tiltrotor aircraft, substantially as shown and described.

**DESCRIPTION**

FIG. 1 is a front perspective view of a foldable tiltrotor aircraft with the rotor nacelles facing forward, doors on the bottom of the fuselage open, and landing gear down; FIG. 2 is a front elevational view of the aircraft in FIG. 1; FIG. 3 is a rear elevational view thereof; FIG. 4 is a right side view thereof; FIG. 5 is a left side view thereof; FIG. 6 is a top view thereof; FIG. 7 is a bottom view thereof; FIG. 8 is a front perspective view of the aircraft in FIG. 1 with the rotor nacelles facing upward, doors on the bottom of the fuselage open, and landing gear down; FIG. 9 is a front elevational view of the aircraft in FIG. 8; FIG. 10 is a rear elevational view thereof; FIG. 11 is a right side view thereof; FIG. 12 is a left side view thereof; FIG. 13 is a top view thereof; FIG. 14 is a bottom view thereof; FIG. 15 is a front perspective view of the aircraft of FIG. 1 with the rotor nacelles facing forward, doors on the bottom of the fuselage closed, and landing gear up; FIG. 16 is a front elevational view of the aircraft in FIG. 15; FIG. 17 is a rear elevational view thereof; FIG. 18 is a right side view thereof; FIG. 19 is a left side view thereof; FIG. 20 is a top view thereof; FIG. 21 is a bottom view thereof; FIG. 22 is a front perspective view of the aircraft of FIG. 1 with the rotor nacelles facing upward, doors on the bottom of the fuselage closed, and landing gear up; FIG. 23 is a front elevational view of the aircraft in FIG. 22; FIG. 24 is a rear elevational view thereof; FIG. 25 is a right side view thereof; FIG. 26 is a left side view thereof;

(Continued)

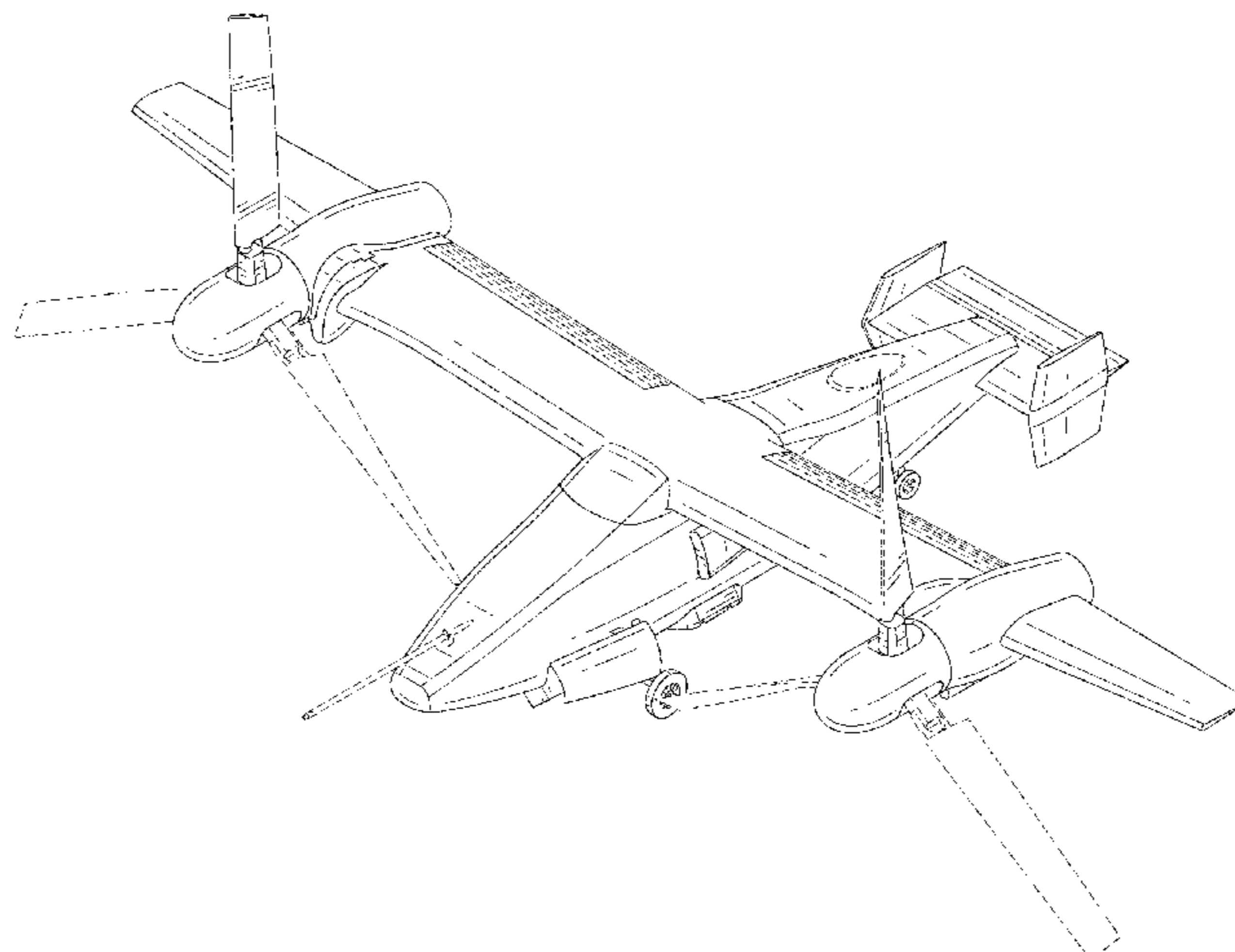


FIG. 27 is a top view thereof;  
 FIG. 28 is a bottom view thereof;  
 FIG. 29 is a front perspective view of the aircraft of FIG. 1 in a folded position;  
 FIG. 30 is a front elevational view of the aircraft in FIG. 29;  
 FIG. 31 is a rear elevational view thereof;  
 FIG. 32 is a right side view thereof;  
 FIG. 33 is a left side view thereof;  
 FIG. 34 is a top view thereof; and,  
 FIG. 35 is a bottom view thereof.  
 The broken lines in the drawings represent unclaimed environmental subject matter and form no part of the claim.

**1 Claim, 33 Drawing Sheets**

(58) **Field of Classification Search**

CPC ..... B64C 29/0033; B64C 29/02; B64C 2201/021; B64C 2201/088; B64C 2201/104; B64C 2201/141; B64C 29/00; B64C 29/0025; B64G 2001/1064; B64G 2001/1071; B64G 5/00; B64G 1/46  
 See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

D195,794 S	7/1963	Dancik	
D203,523 S	1/1966	Girard	
D311,719 S	10/1990	Haga	
D317,287 S	6/1991	Haga	
D317,897 S	7/1991	Antonov	
5,031,858 A	7/1991	Schellhase	
5,054,716 A	10/1991	Wilson	
D388,392 S	12/1997	McGinnis	
D394,422 S	5/1998	Magee	
D399,816 S	10/1998	Peacock	
D456,337 S	4/2002	Sankrithi	
D597,148 S	7/2009	Lin	
7,604,202 B2	10/2009	Froman	
D620,392 S *	7/2010	Rodriguez	D12/3
D624,001 S	9/2010	Saint-Jalmes	
D628,528 S	12/2010	Cabezas Carrasco	
D635,083 S	3/2011	DeLaurier	
D691,547 S	10/2013	Hall	
8,626,363 B2	1/2014	Kisor	
D706,678 S	6/2014	Earon	
D708,563 S	7/2014	Colten	
D713,774 S *	9/2014	Tritschler	D12/3
D725,548 S	3/2015	Herald	
D725,576 S	3/2015	Vickers	
D725,577 S	3/2015	Vickers	
9,051,046 B2	6/2015	Ivans	
D739,335 S *	9/2015	Robertson	D12/345
D739,807 S	9/2015	Strand	
D743,868 S	11/2015	Cummings	
D755,702 S	5/2016	Hall	
9,327,831 B2 *	5/2016	Schank	B64C 27/32
9,376,206 B2	6/2016	Ross	
D763,733 S	8/2016	Gattelli	
9,650,128 B2	5/2017	Fenny	
9,657,816 B2	5/2017	Burnett	
9,663,225 B1	5/2017	Kooiman	
D797,641 S	9/2017	Cummings	
D799,402 S	10/2017	Cummings	

D807,273 S	1/2018	Koppenwallner	
D808,328 S *	1/2018	Ivans	D12/328
D809,970 S	2/2018	Zhou	
D810,621 S	2/2018	Sadek	
D813,143 S	3/2018	Belik	
D814,970 S *	4/2018	Chen	D12/16.1
D824,320 S	7/2018	Ivans	
D824,321 S *	7/2018	Ivans	D12/327
D843,304 S *	3/2019	MacAndrew	D12/319
D843,305 S *	3/2019	MacAndrew	D12/319
D876,988 S *	3/2020	Stepura	D12/16.1
10,589,855 B2 *	3/2020	Groninga	B64D 27/02
10,640,205 B2 *	5/2020	Paulson	B64C 27/50
2010/0209242 A1	8/2010	Popelka	
2012/0043413 A1	2/2012	Smith	
2012/0199699 A1	8/2012	Isaac	
2012/0292456 A1	11/2012	Hollimon	
2013/0153708 A1	6/2013	Brunken	
2014/0084080 A1	3/2014	Robertson	
2014/0263855 A1	9/2014	Ross	
2014/0322010 A1	10/2014	Rauber	
2015/0048213 A1	2/2015	Ross	
2016/0023752 A1	1/2016	Foskey	
2016/0122039 A1	5/2016	Ehinger	
2016/0152329 A1	6/2016	Tzeng	
2016/0207611 A1	7/2016	Fenny	
2016/0229531 A1 *	8/2016	Robertson	B64C 39/04
2016/0333797 A1	11/2016	Laramee	
2016/0340038 A1	11/2016	Chavez	
2016/0347479 A1	12/2016	O'Neill	
2017/0036753 A1	2/2017	Shue	
2017/0121029 A1	5/2017	Blyth	
2017/0137122 A1	5/2017	Kooiman	
2017/0190443 A1	7/2017	Fisher	
2017/0291719 A1	10/2017	Lavine	
2017/0355460 A1	12/2017	Shannon	
2018/0079482 A1	3/2018	Ivans	
2018/0079484 A1 *	3/2018	Ross	B64C 7/02
2018/0079487 A1 *	3/2018	Ivans	B64C 3/56
2018/0079503 A1 *	3/2018	Ivans	B64D 33/04
2019/0233095 A1 *	8/2019	Baldwin	B64C 27/35
2019/0329863 A1 *	10/2019	King	B64C 29/0033
2019/0329867 A1 *	10/2019	Cravener	B64C 3/56
2019/0344877 A1 *	11/2019	Gilliland	B64C 29/0033
2020/0010183 A1 *	1/2020	Kizhakkepat	B64C 29/0033
2020/0056696 A1 *	2/2020	Fenny	B64D 35/00
2020/0070994 A1 *	3/2020	Rosado	F02K 1/825
2020/0086971 A1 *	3/2020	Heeringa	B64C 29/0033

OTHER PUBLICATIONS

Richard Whittle, "Month After Use, Bell Unveils V-247 Vigilant Tiltrotor Drone;" Sep. 22, 2016.  
 Notice of Allowance, dated Jun. 21, 2017, re Design U.S. Appl. No. 29/577,578.  
 Notice of Allowance, dated Sep. 20, 2017, re Design U.S. Appl. No. 29/577,578.  
 Notice of Allowance, dated Jun. 8, 2018, re Design U.S. Appl. No. 29/628,801.  
 Notice of Allowance, dated Jun. 8, 2018, re Design U.S. Appl. No. 29/628,827.  
 Office Action, dated Sep. 7, 2018, re Design U.S. Appl. No. 29/628,792.  
 Final Rejection, dated Feb. 25, 2019, re Design U.S. Appl. No. 29/628,792.  
 DefenseNews; Video: Check out Bell's V-247 Vigilant at Modern Day Marine; Sep. 15, 2018; <https://www.defensenews.com/video/2018/09/25/check-out-bells-v-247-vigilant-at-modern-day-marine/>.

\* cited by examiner



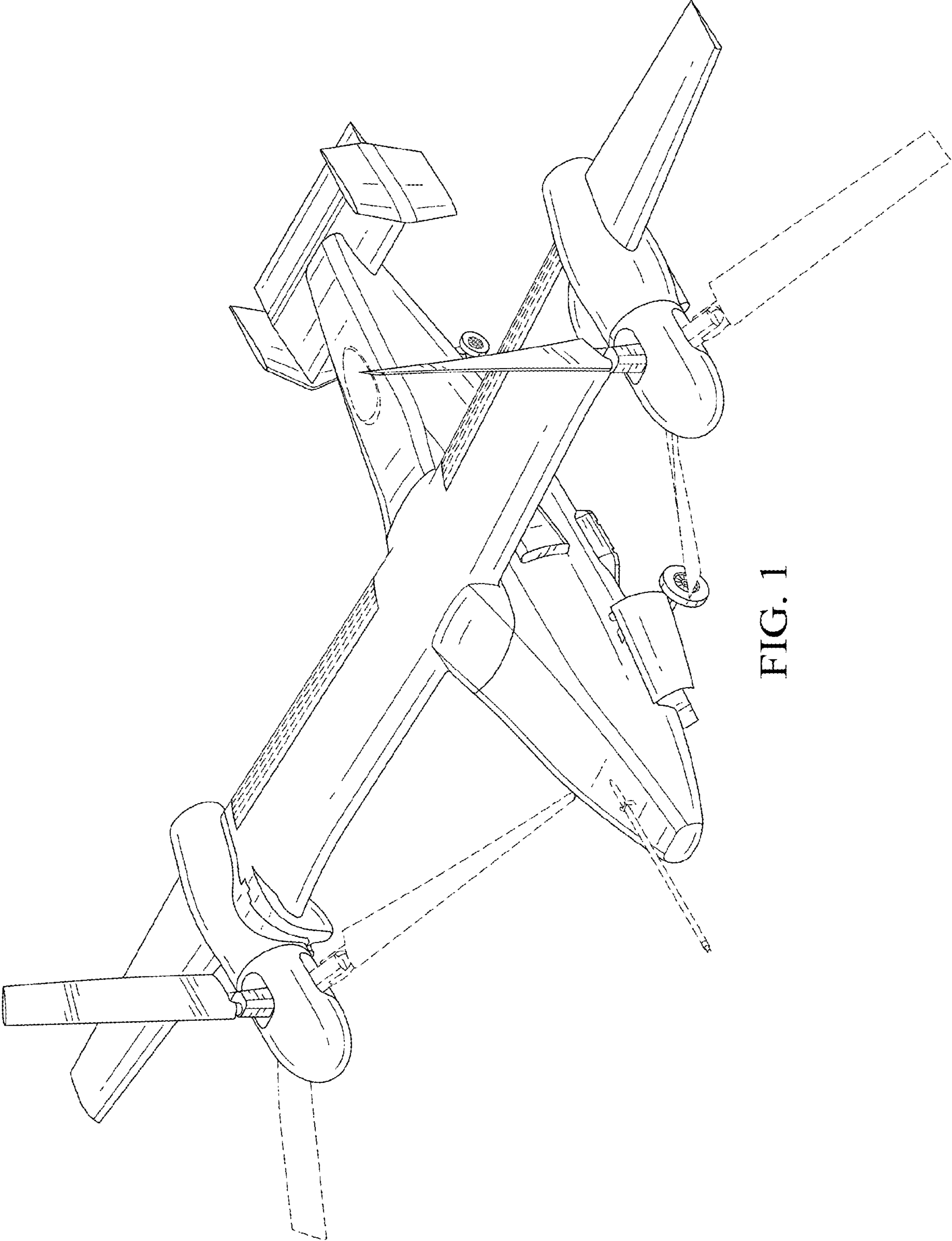


FIG. 1

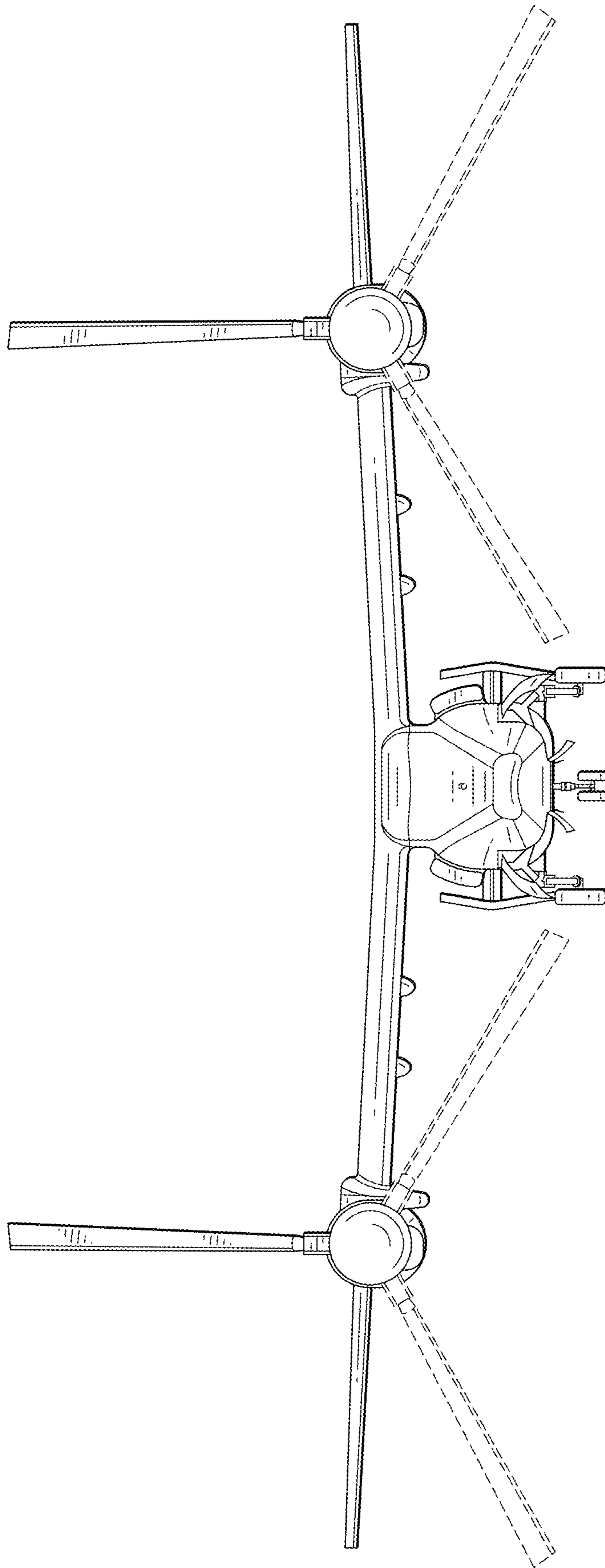


FIG. 2

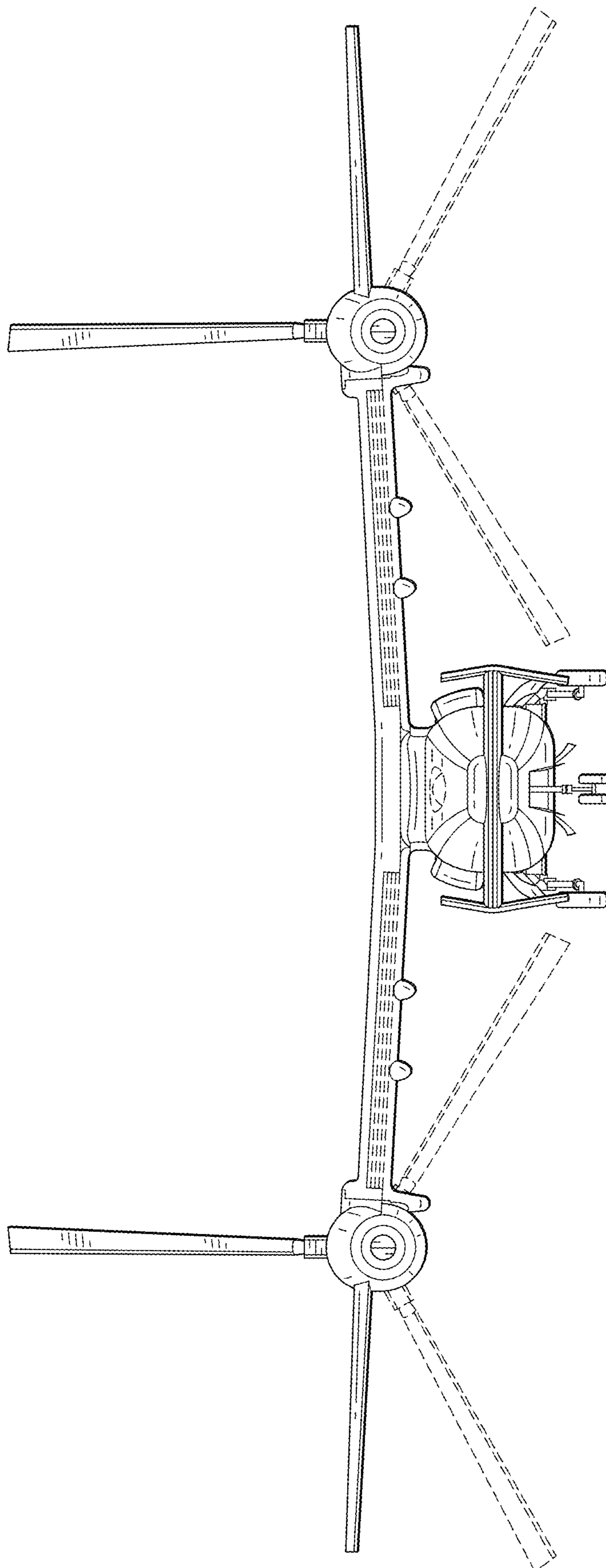


FIG. 3

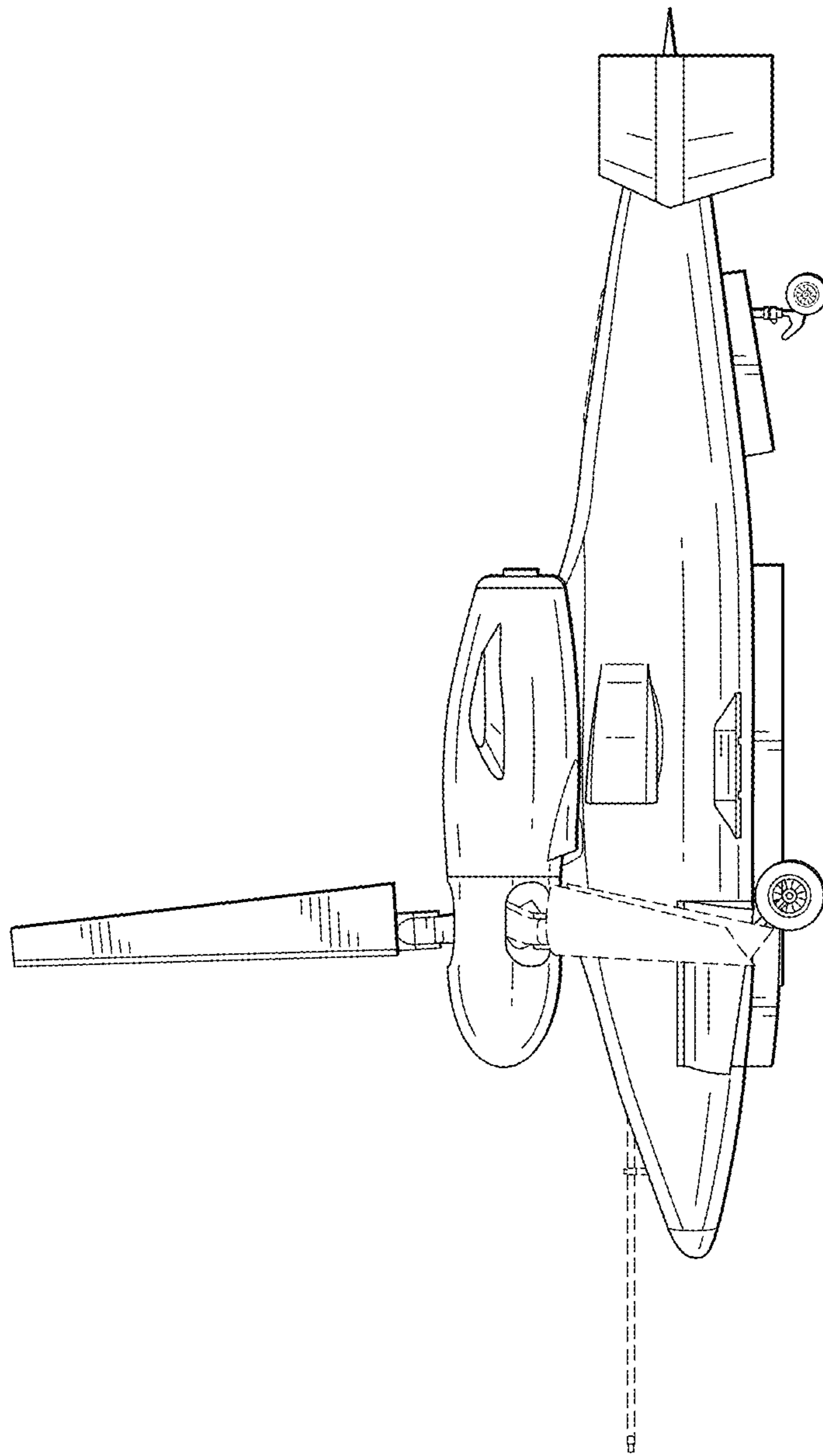


FIG. 4

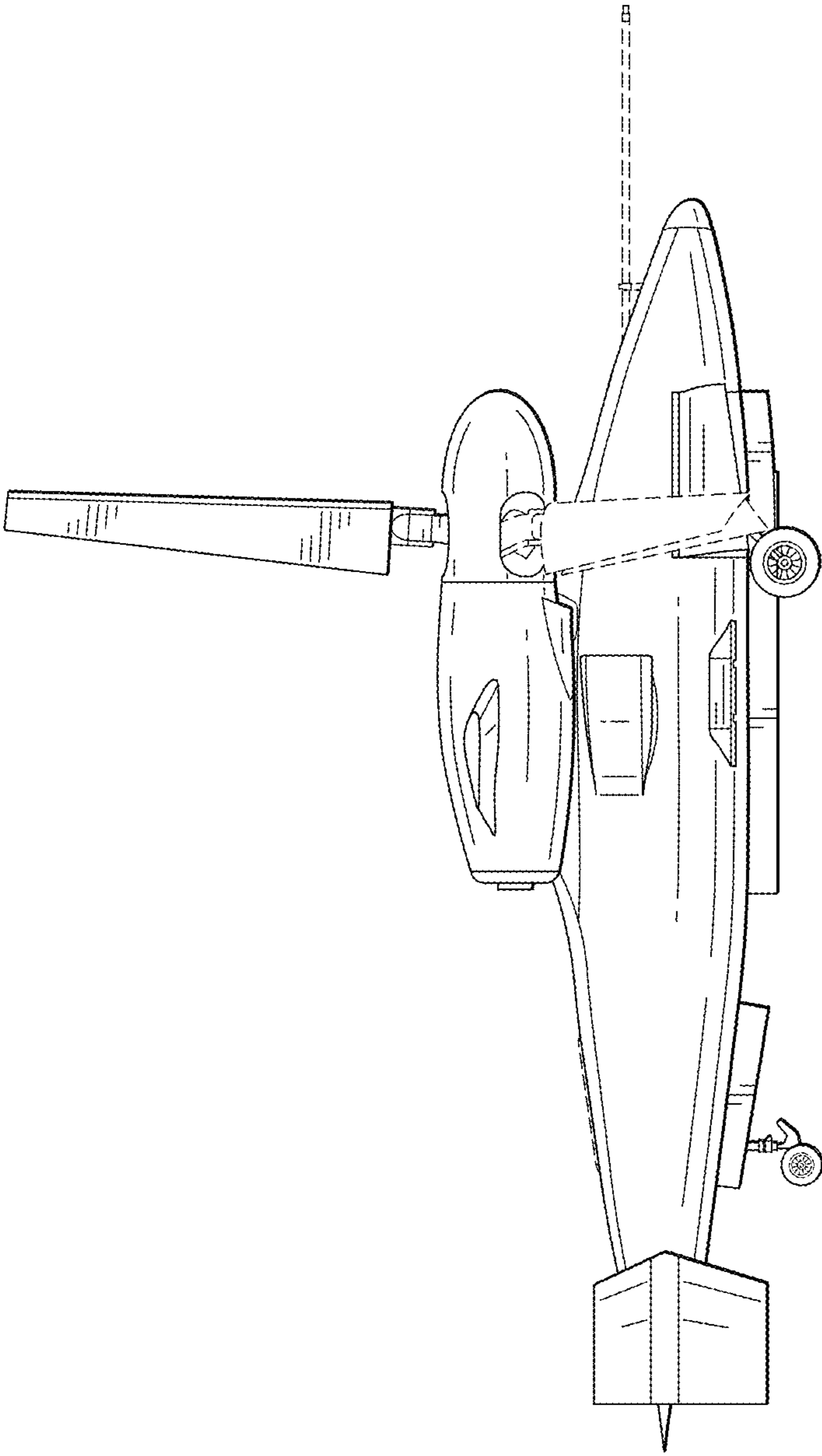


FIG. 5

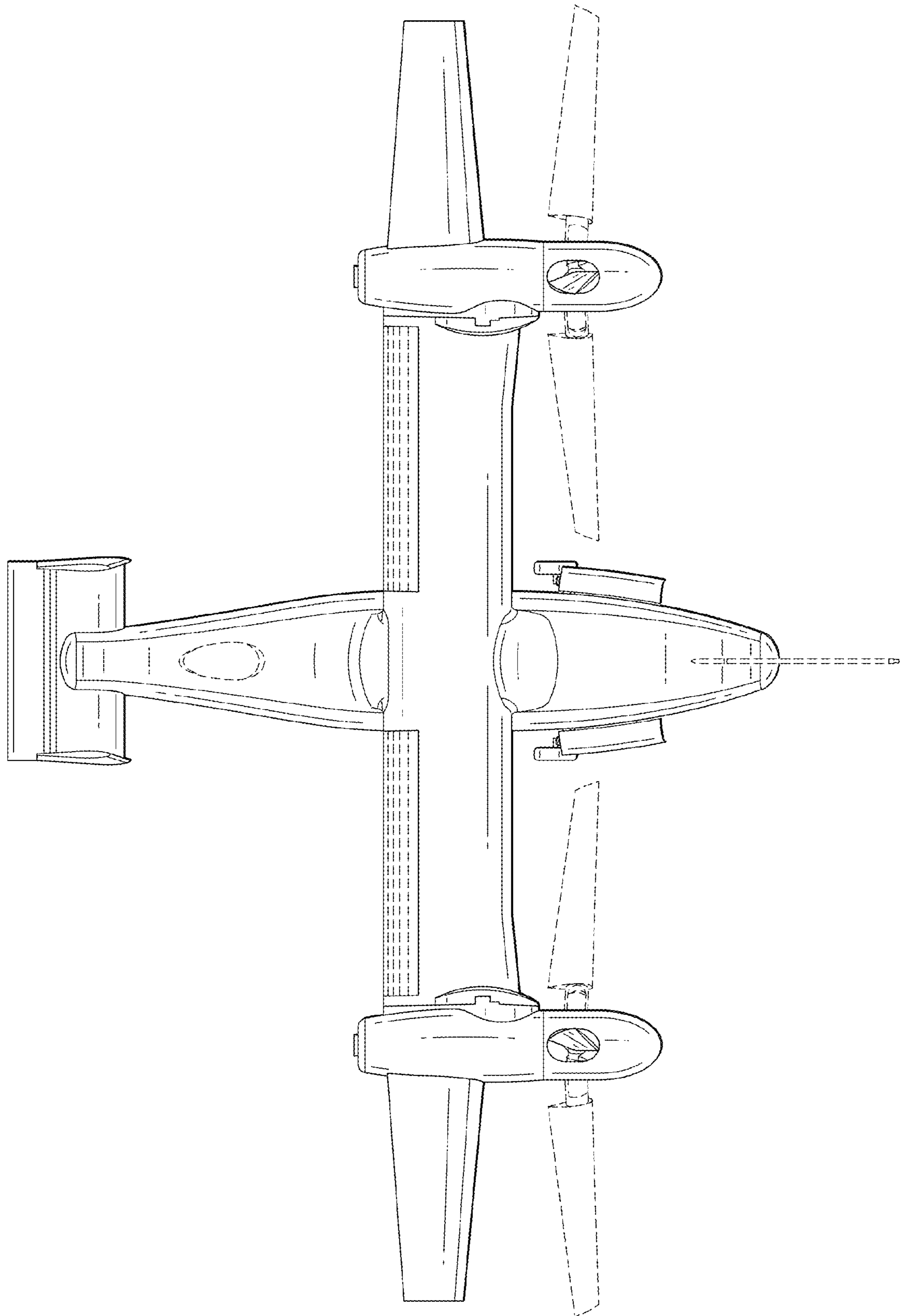


FIG. 6



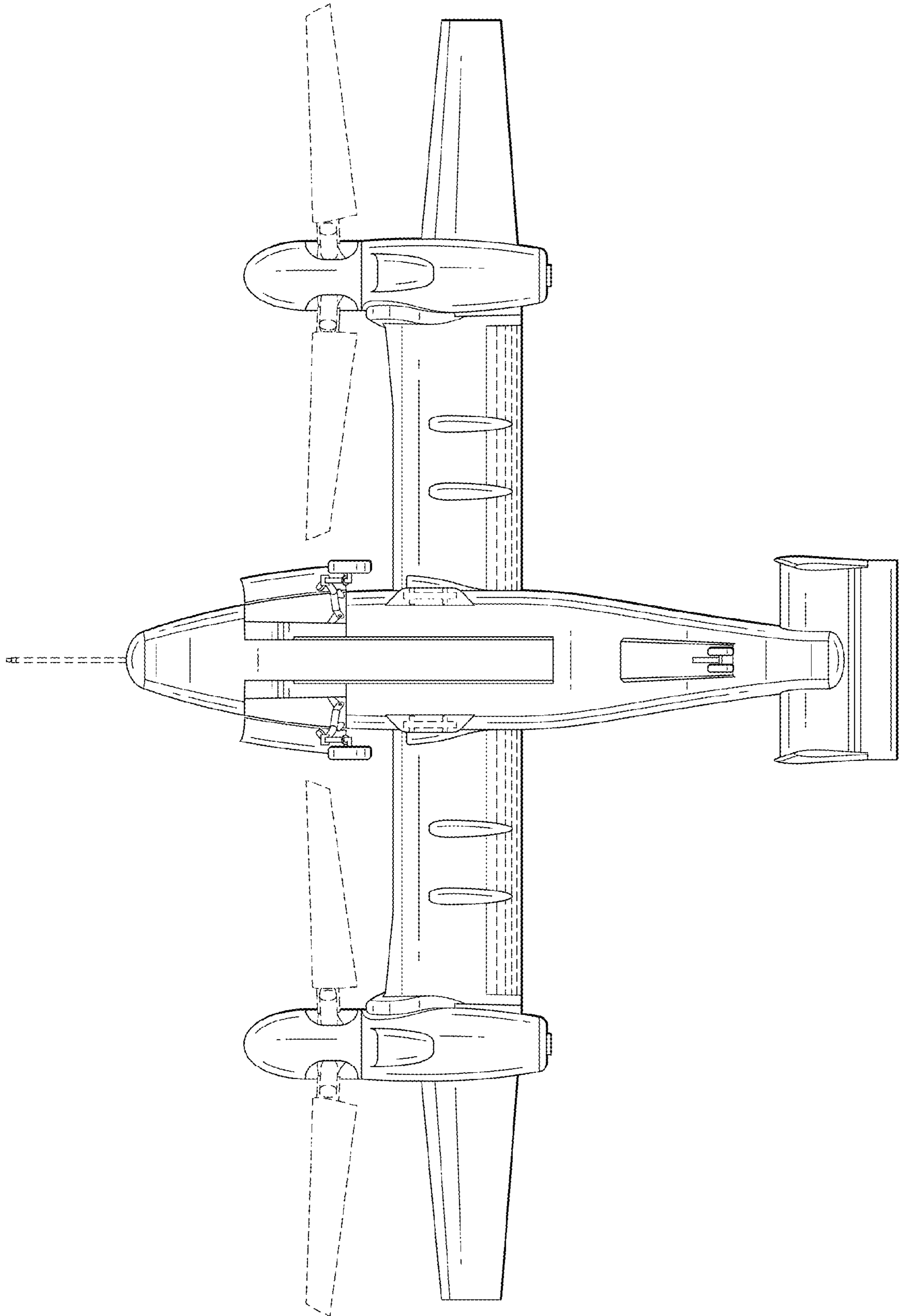


FIG. 7

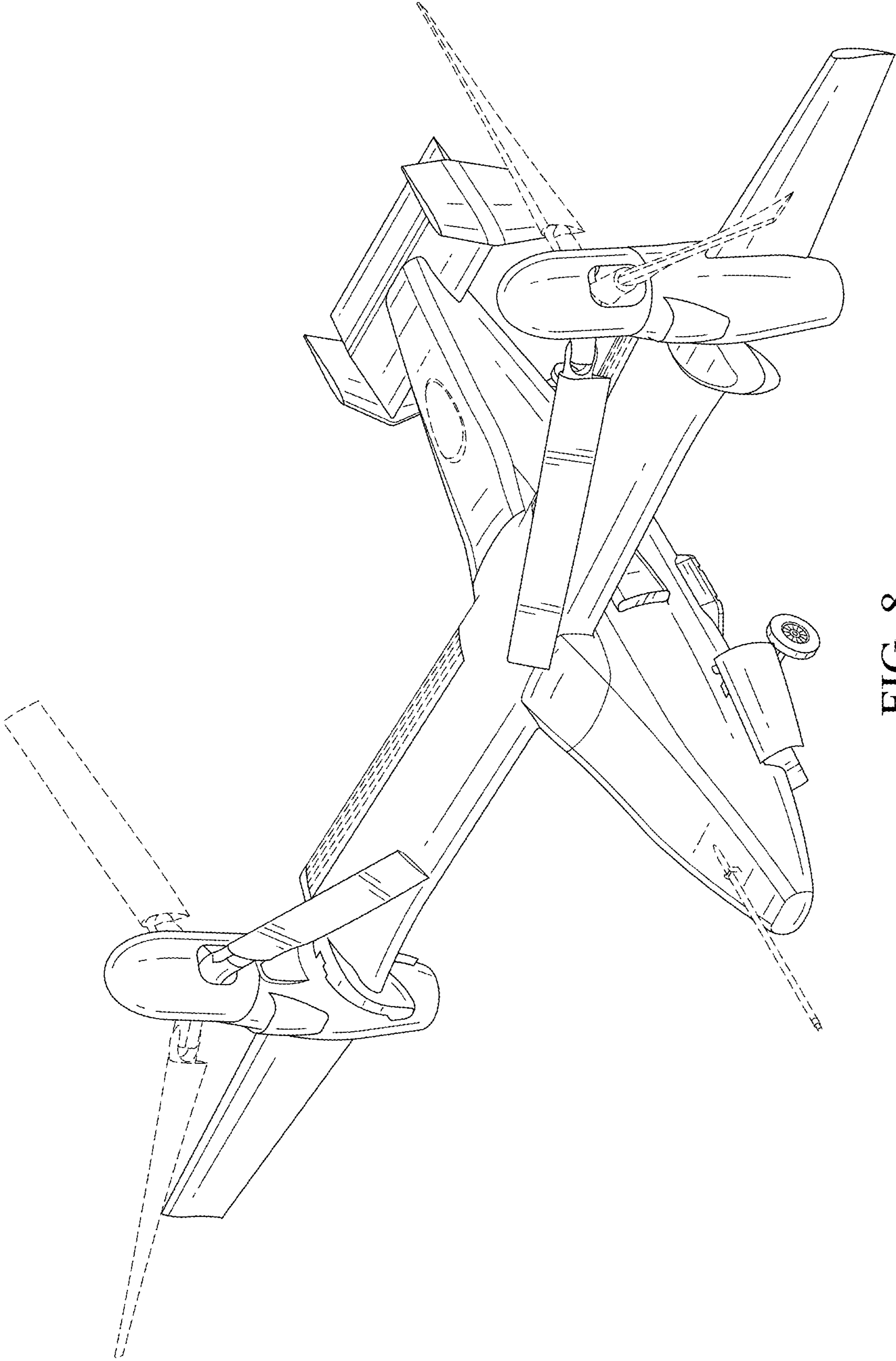


FIG. 8

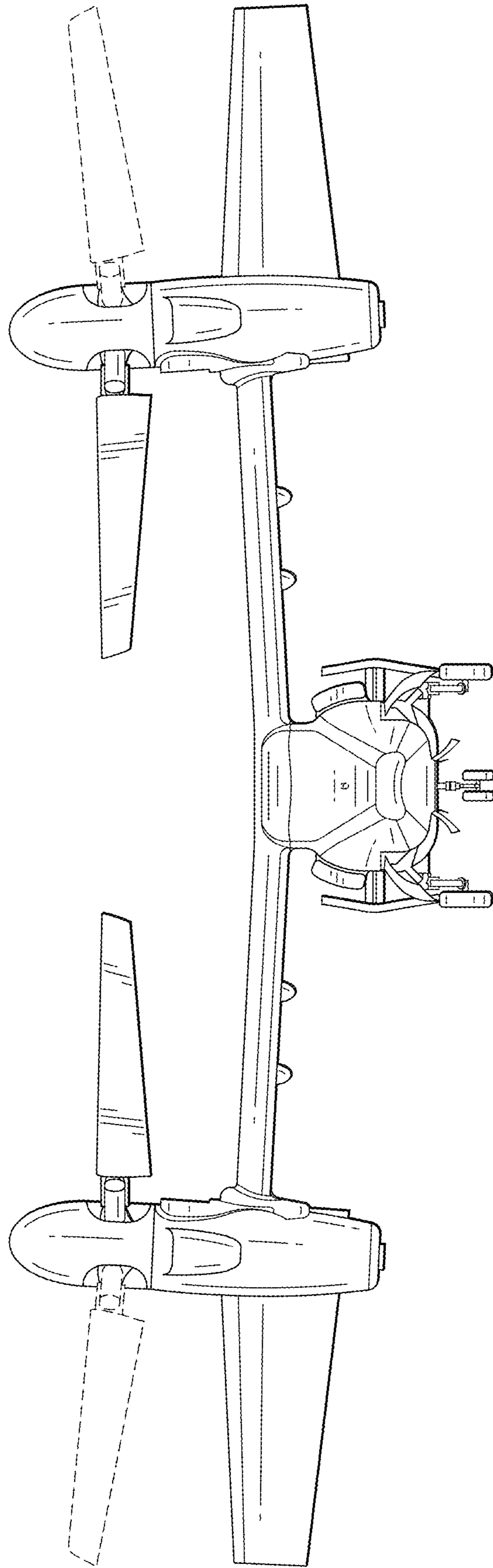


FIG. 9

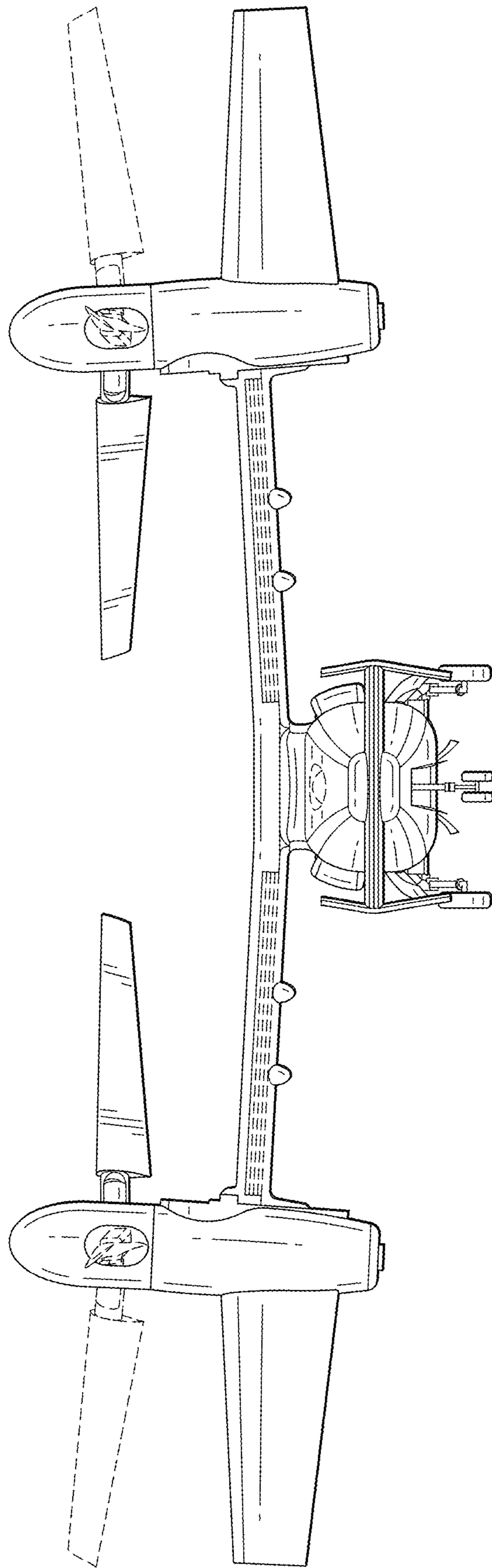


FIG. 10



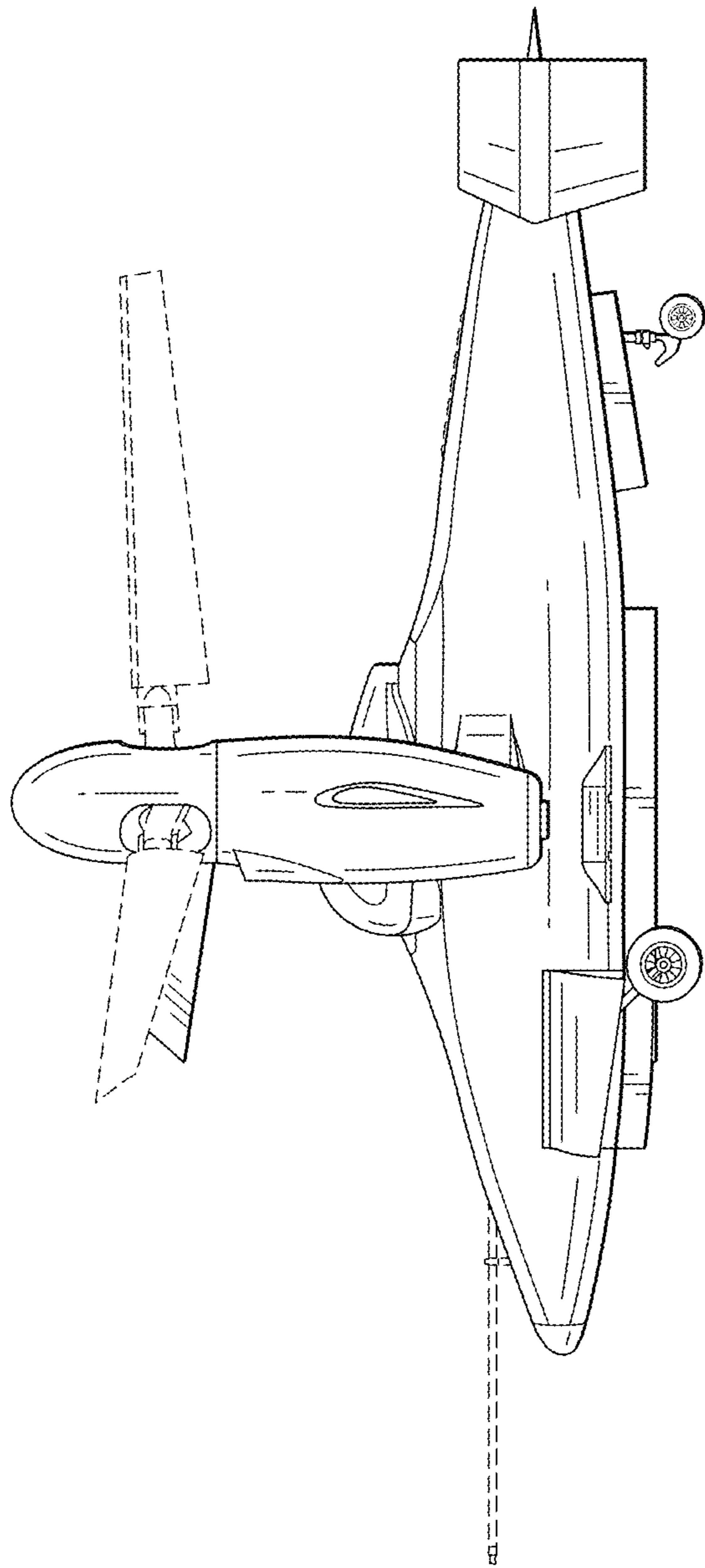


FIG. 11

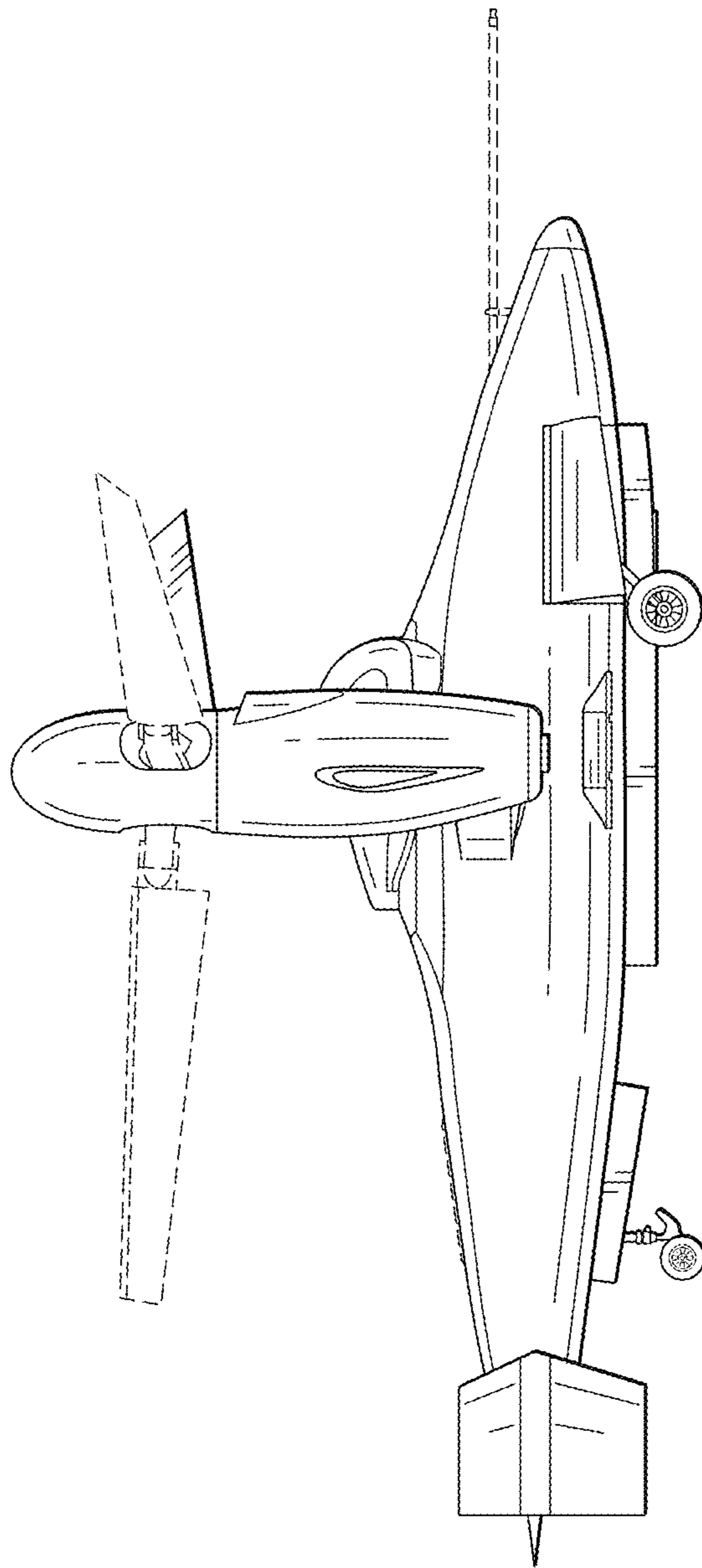


FIG. 12

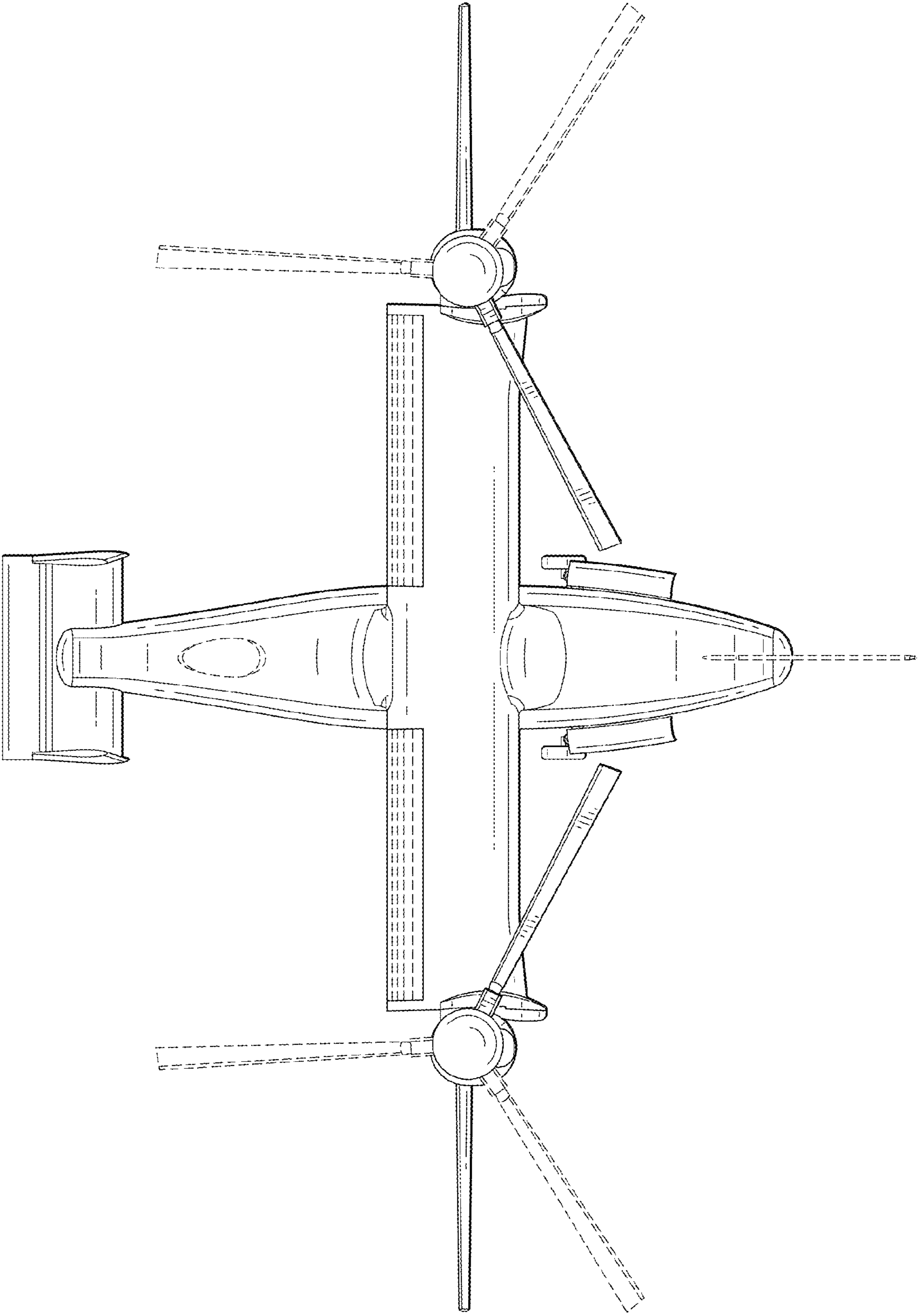


FIG. 13

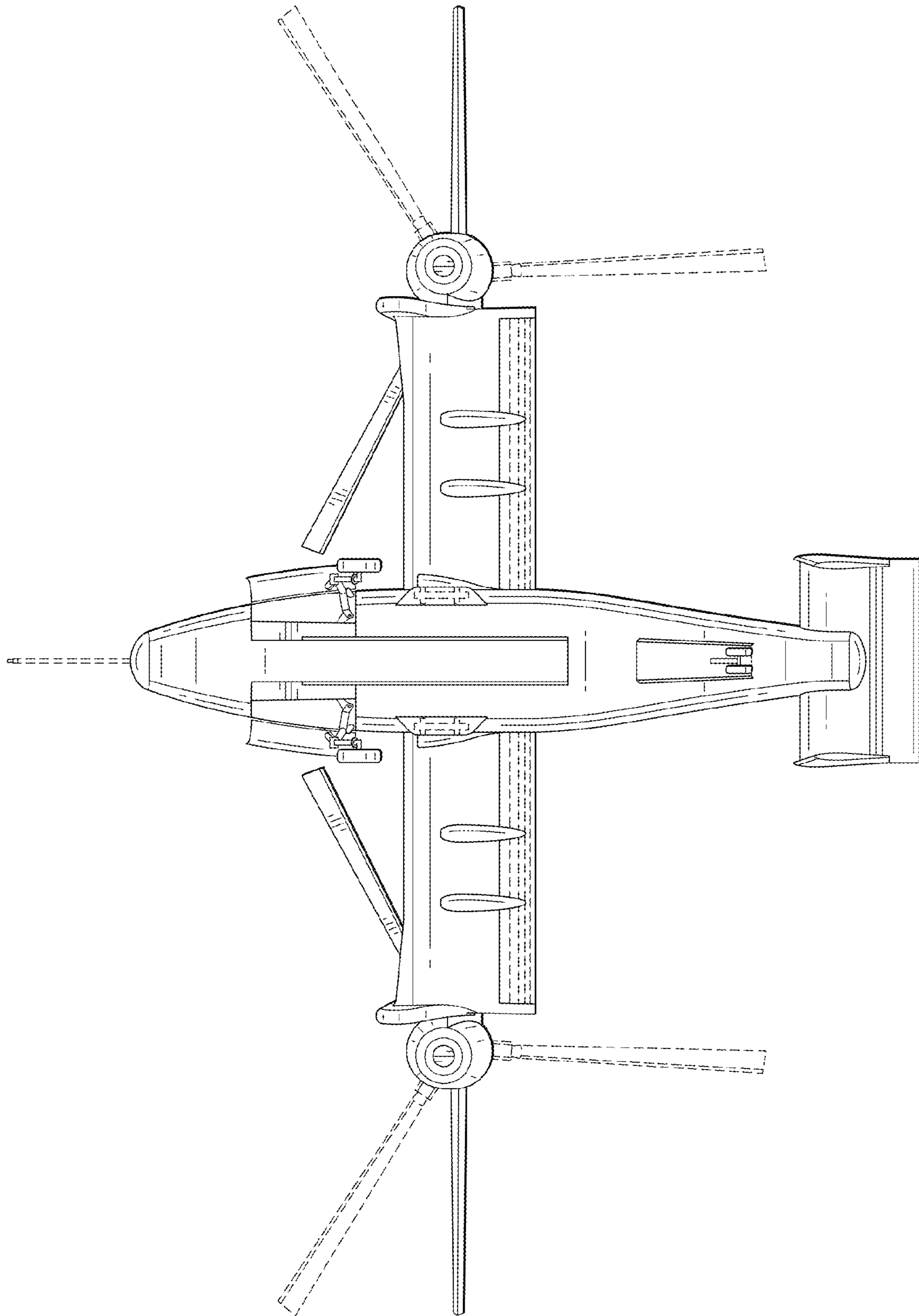


FIG. 14



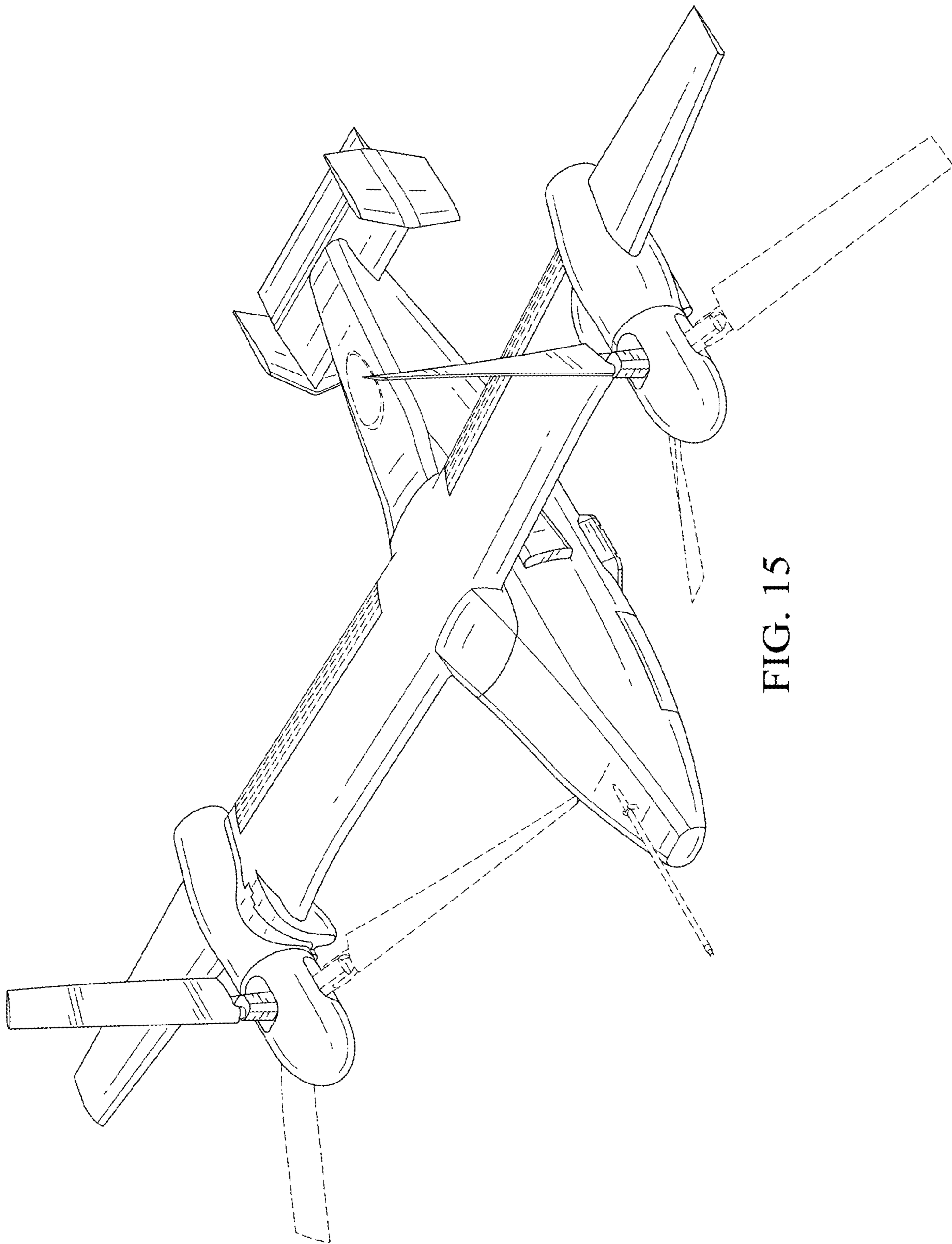


FIG. 15

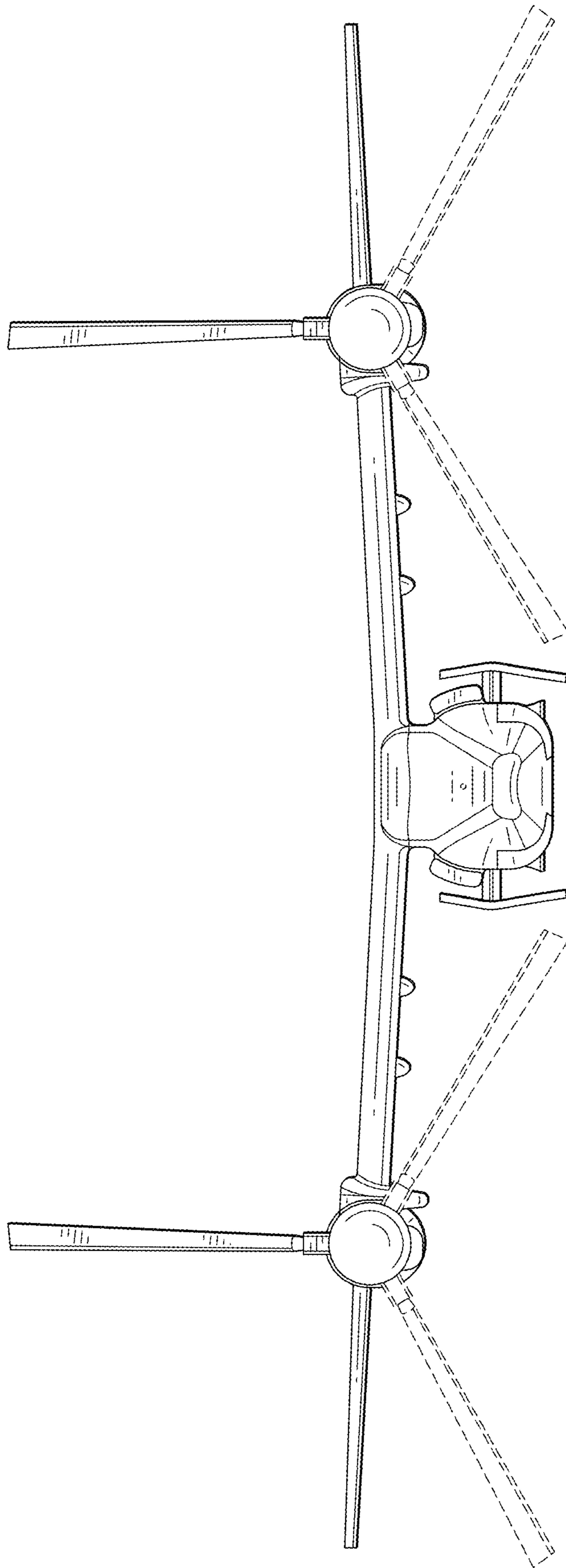


FIG. 16

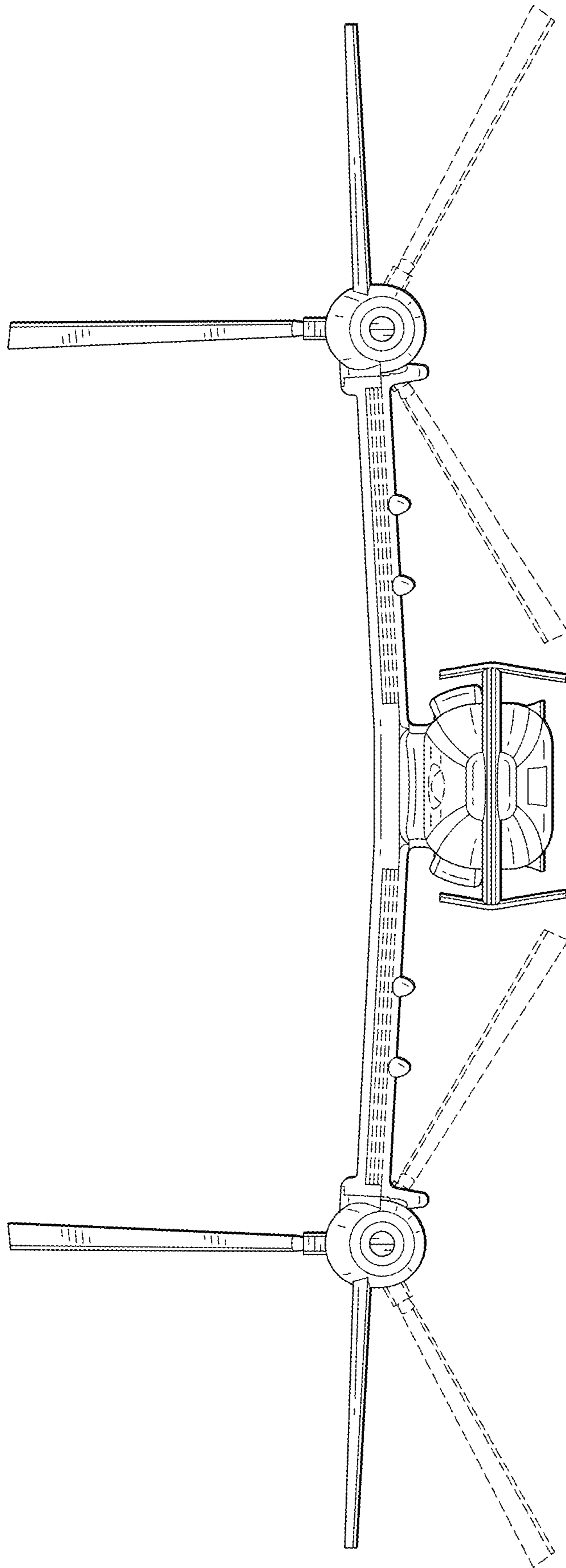


FIG. 17

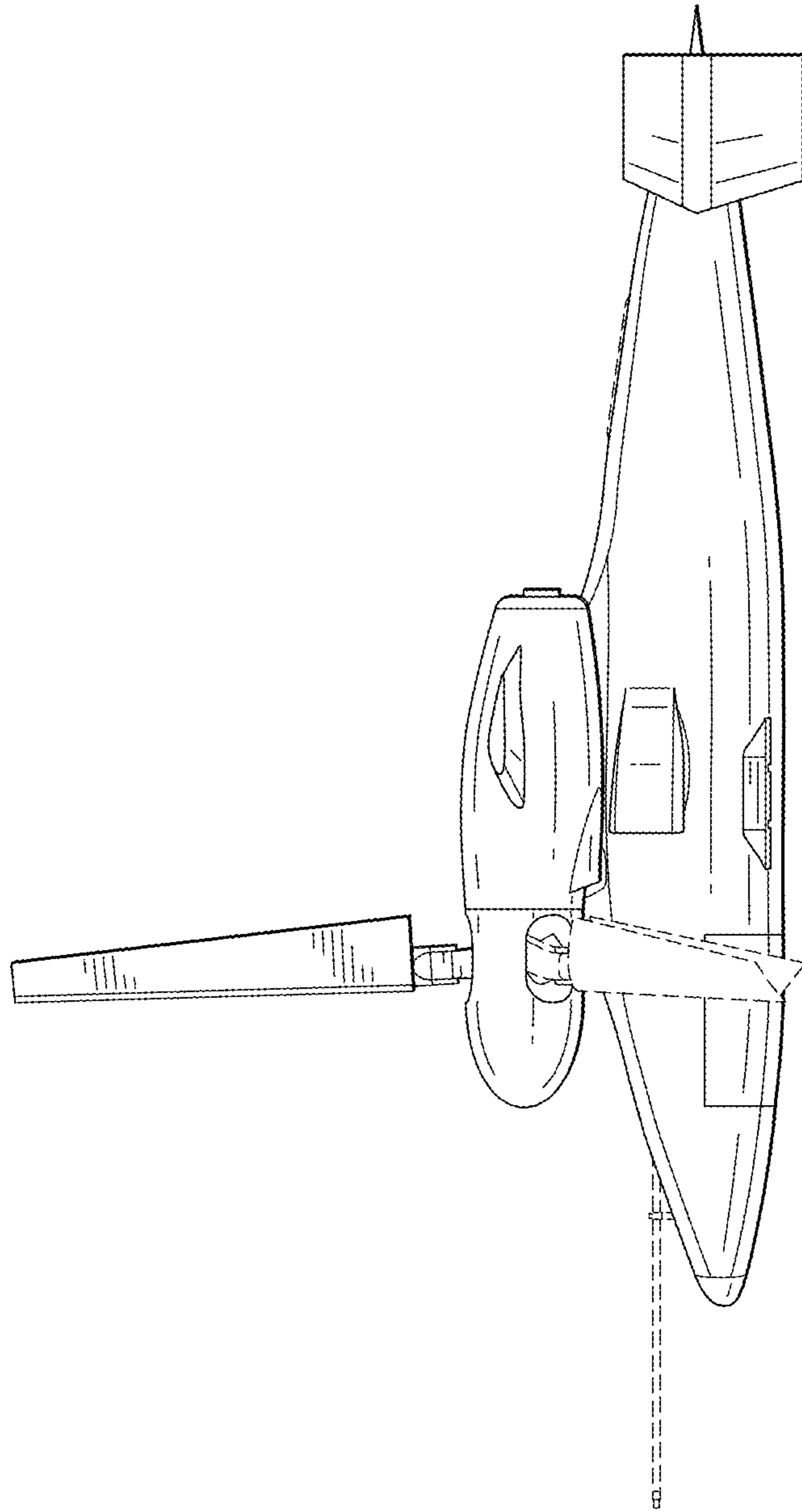


FIG. 18



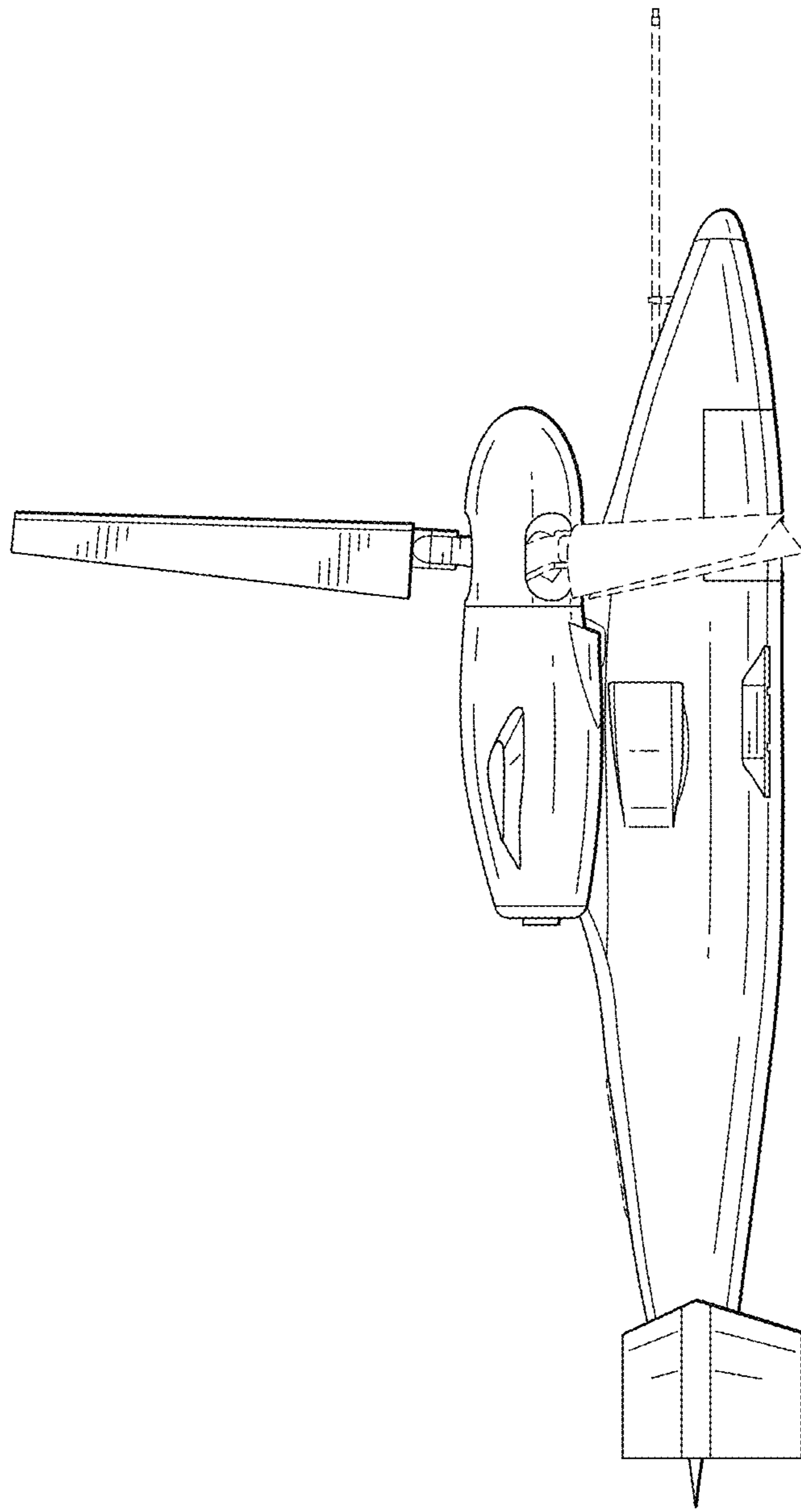


FIG. 19

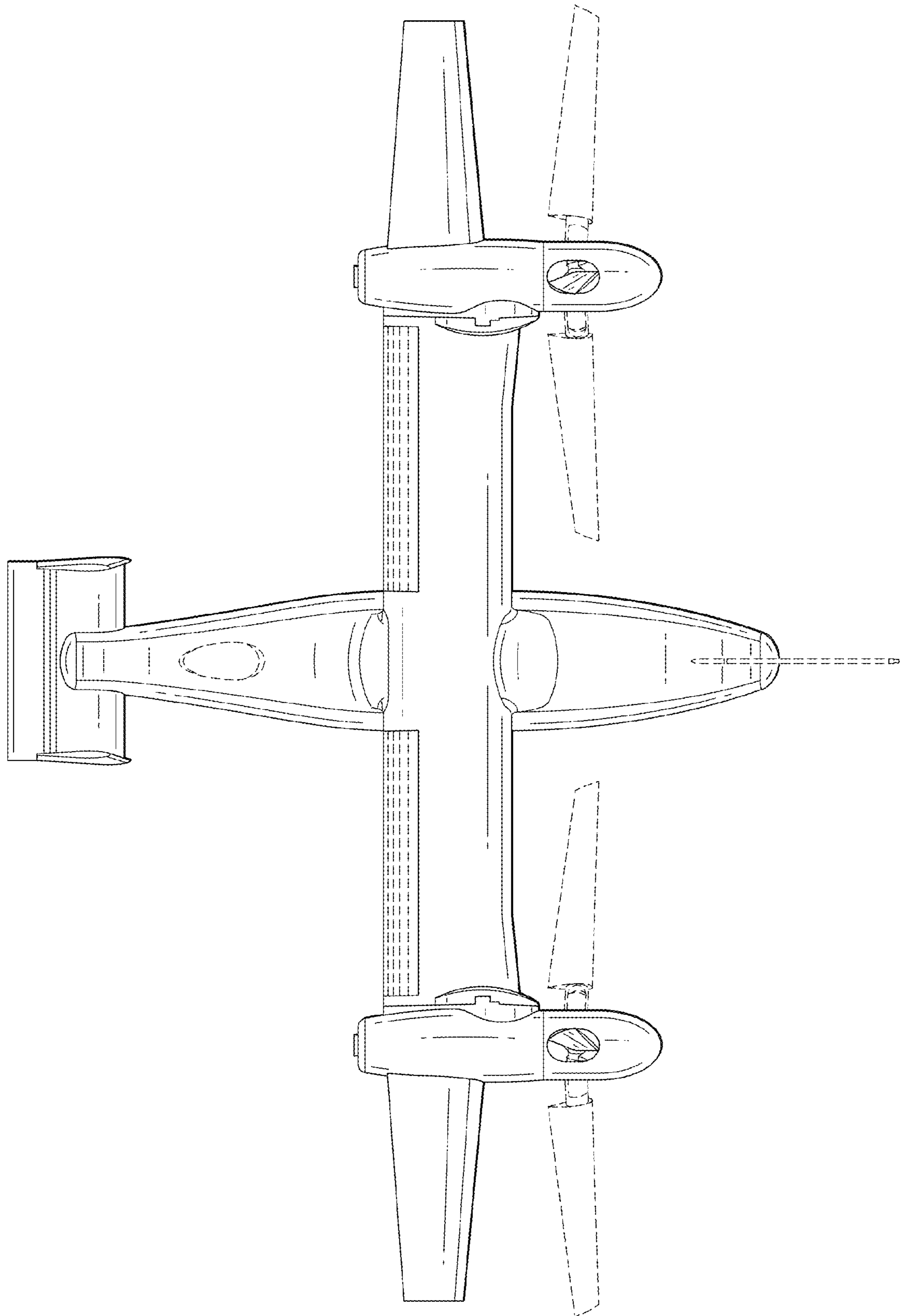


FIG. 20

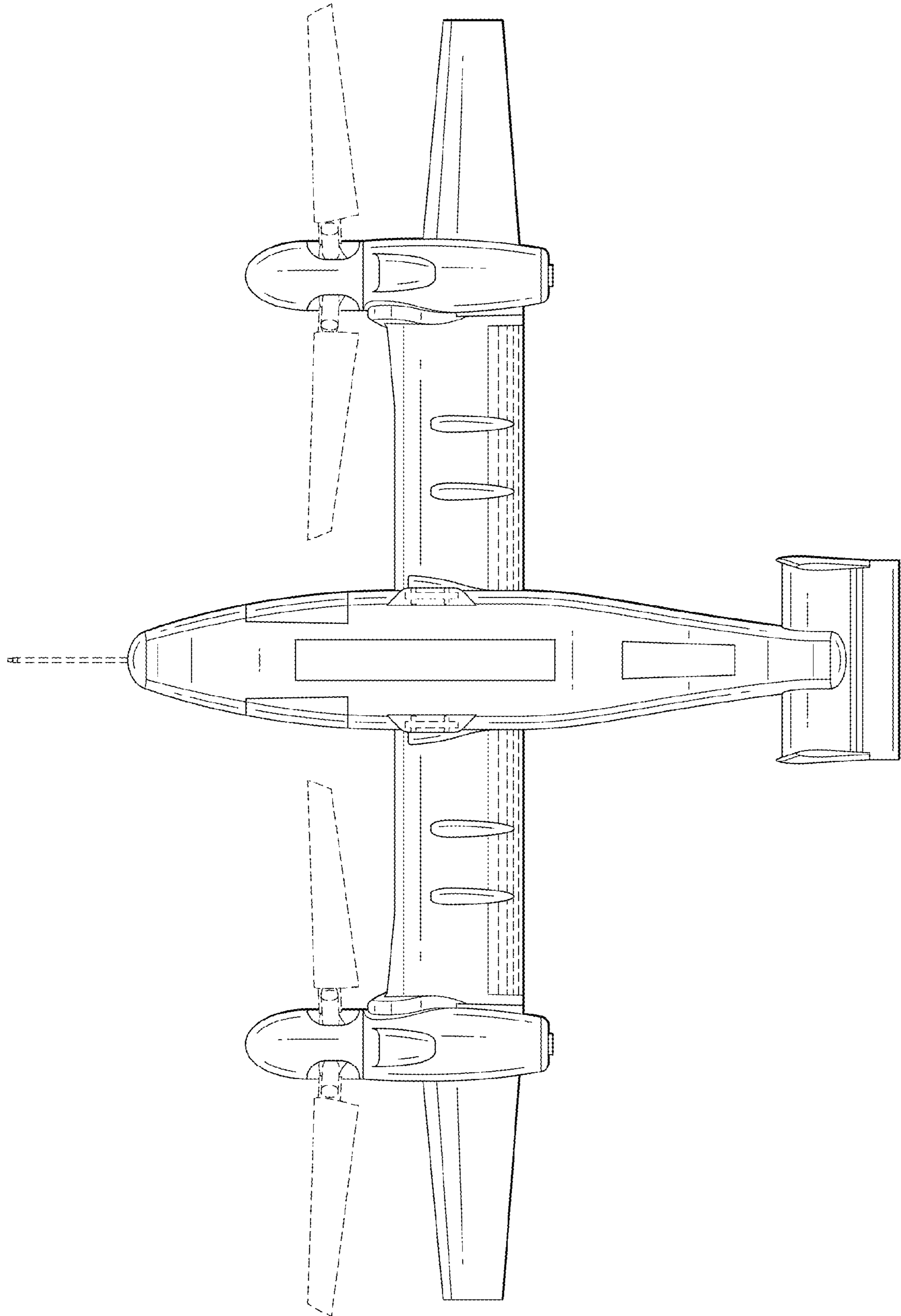


FIG. 21

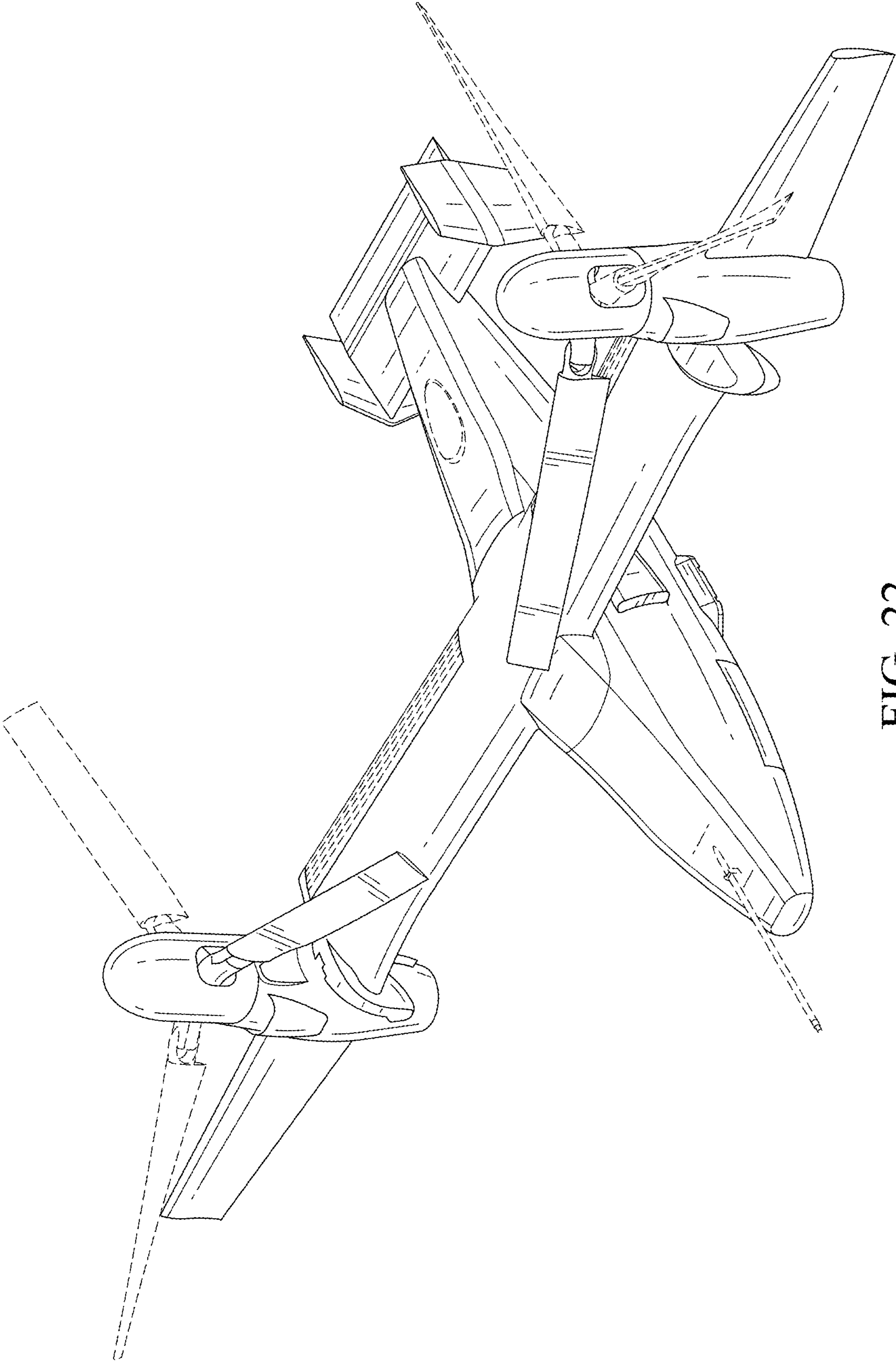


FIG. 22



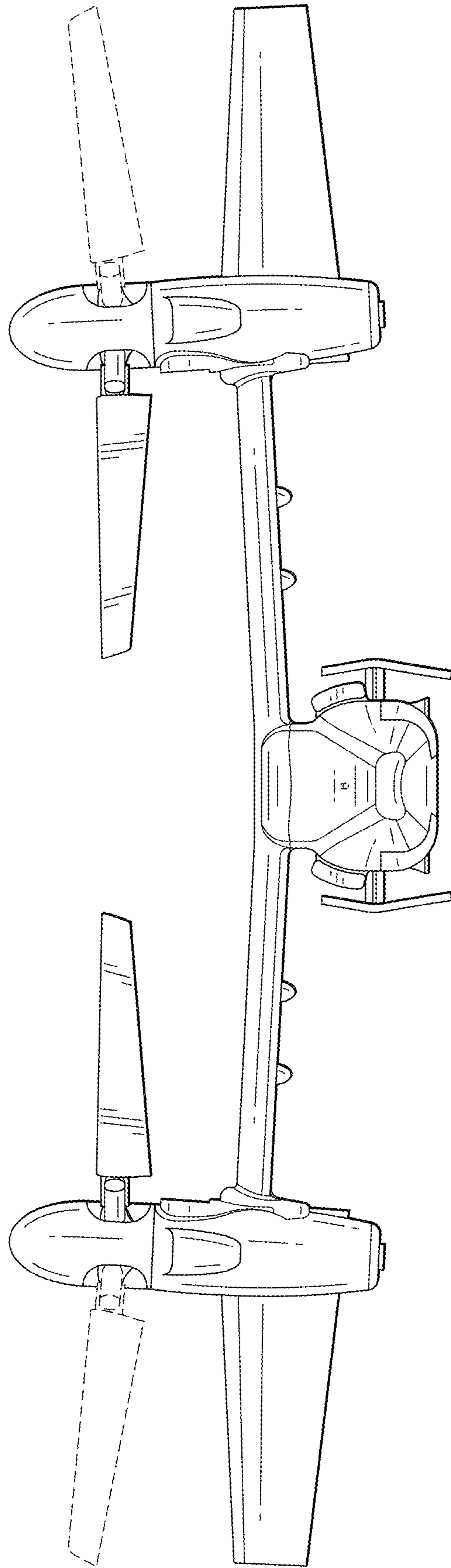


FIG. 23

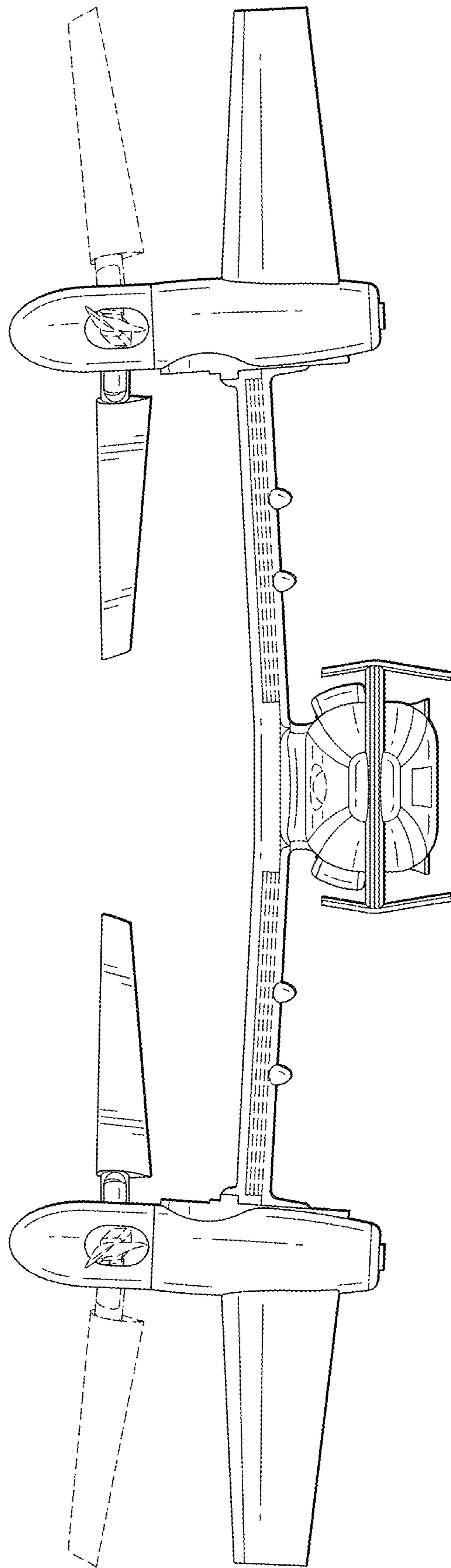


FIG. 24

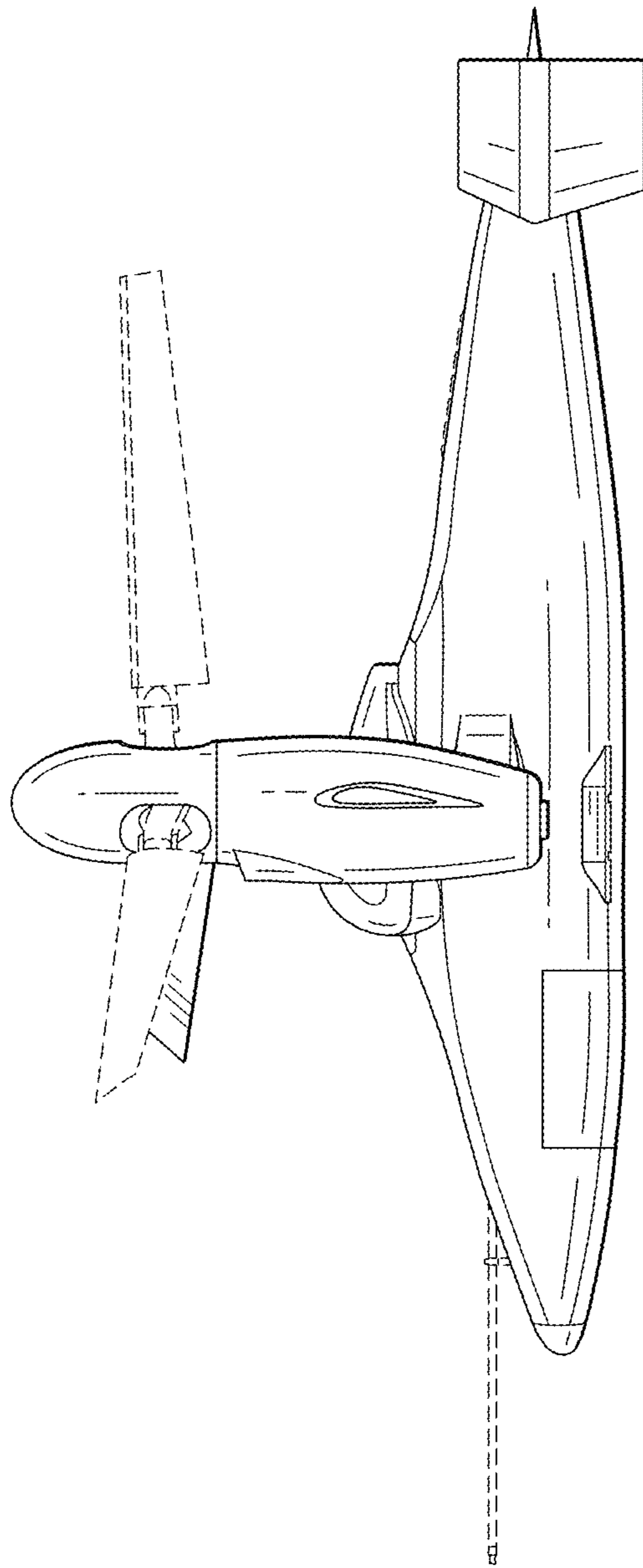


FIG. 25

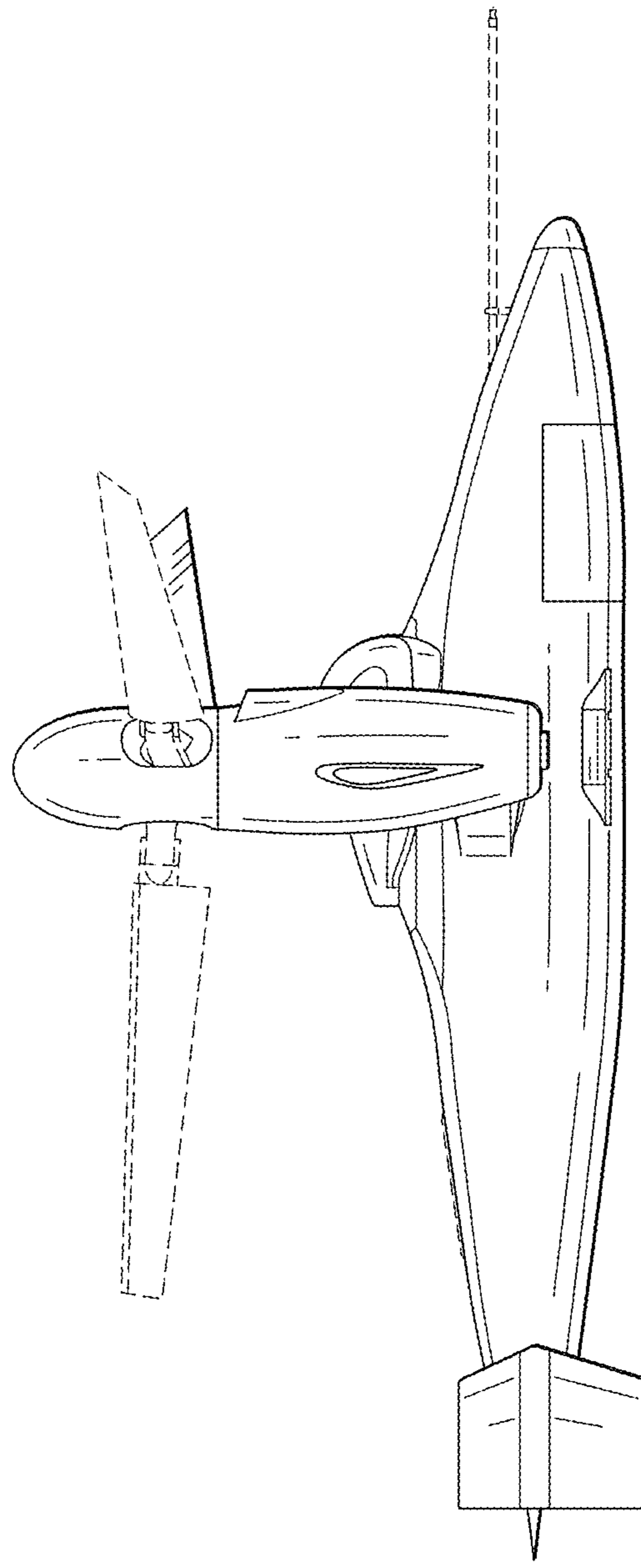


FIG. 26

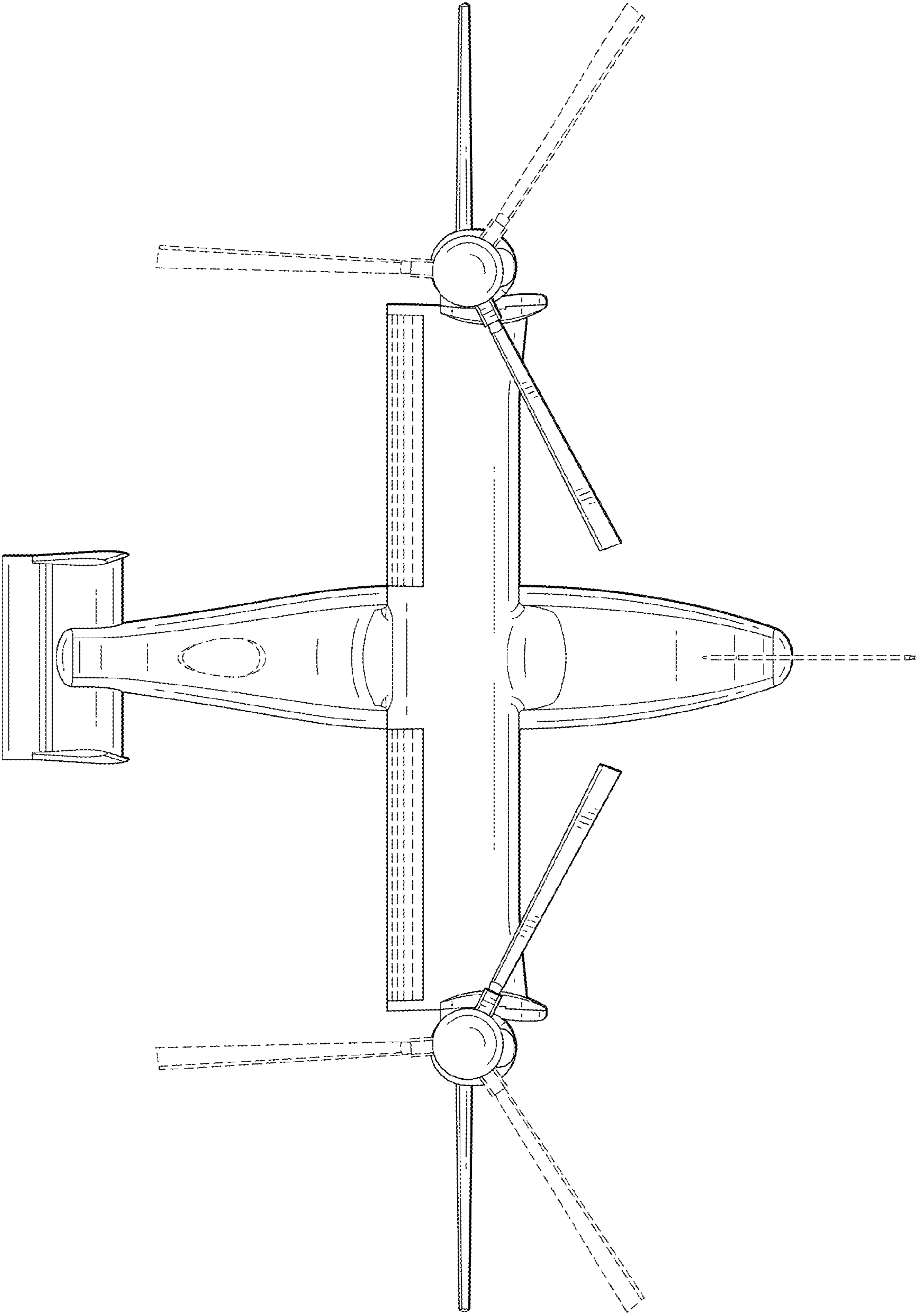


FIG. 27



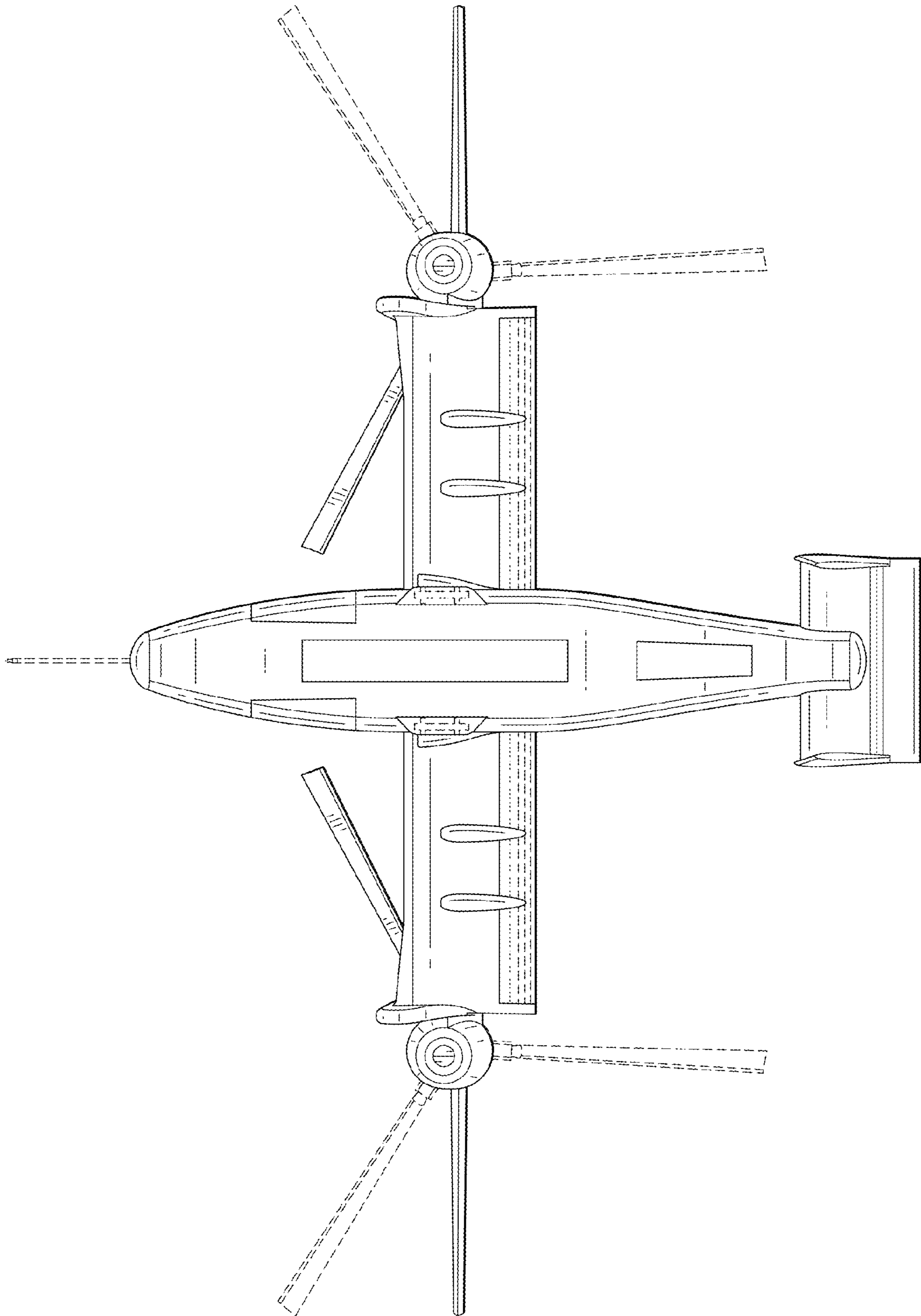


FIG. 28

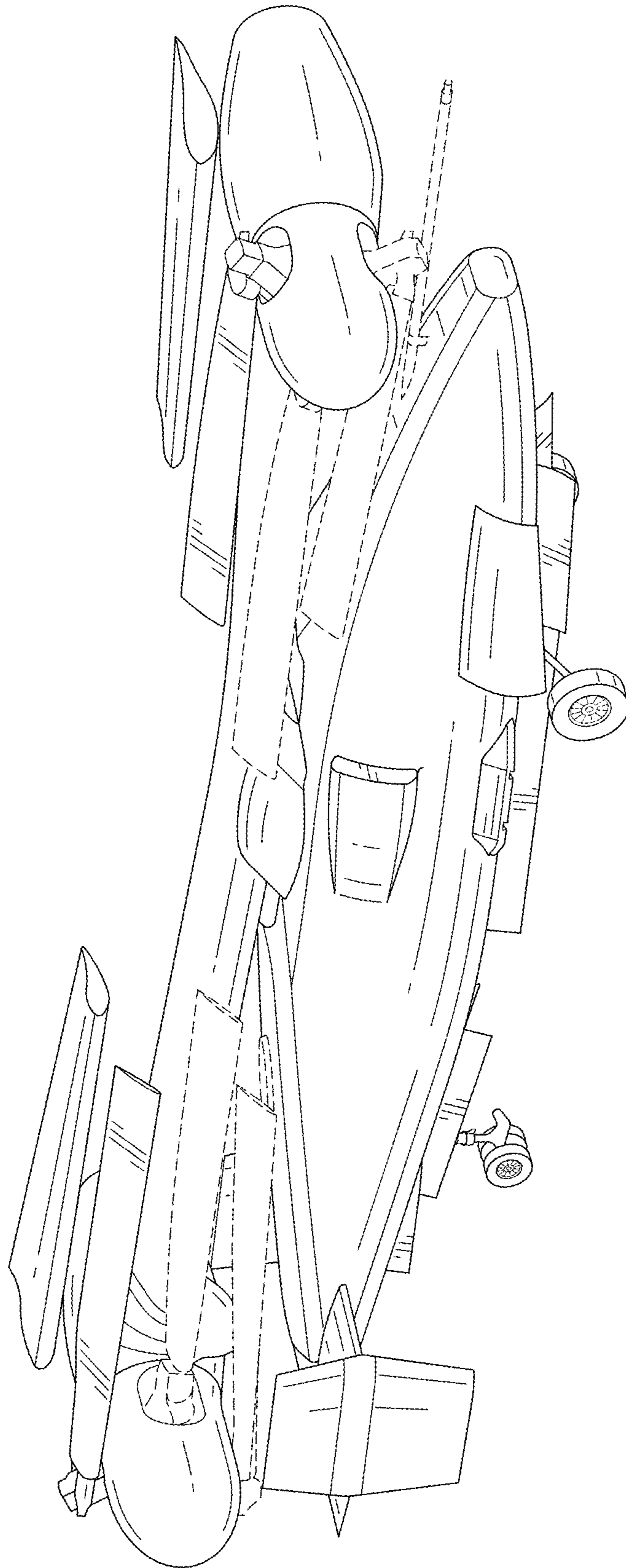


FIG. 29

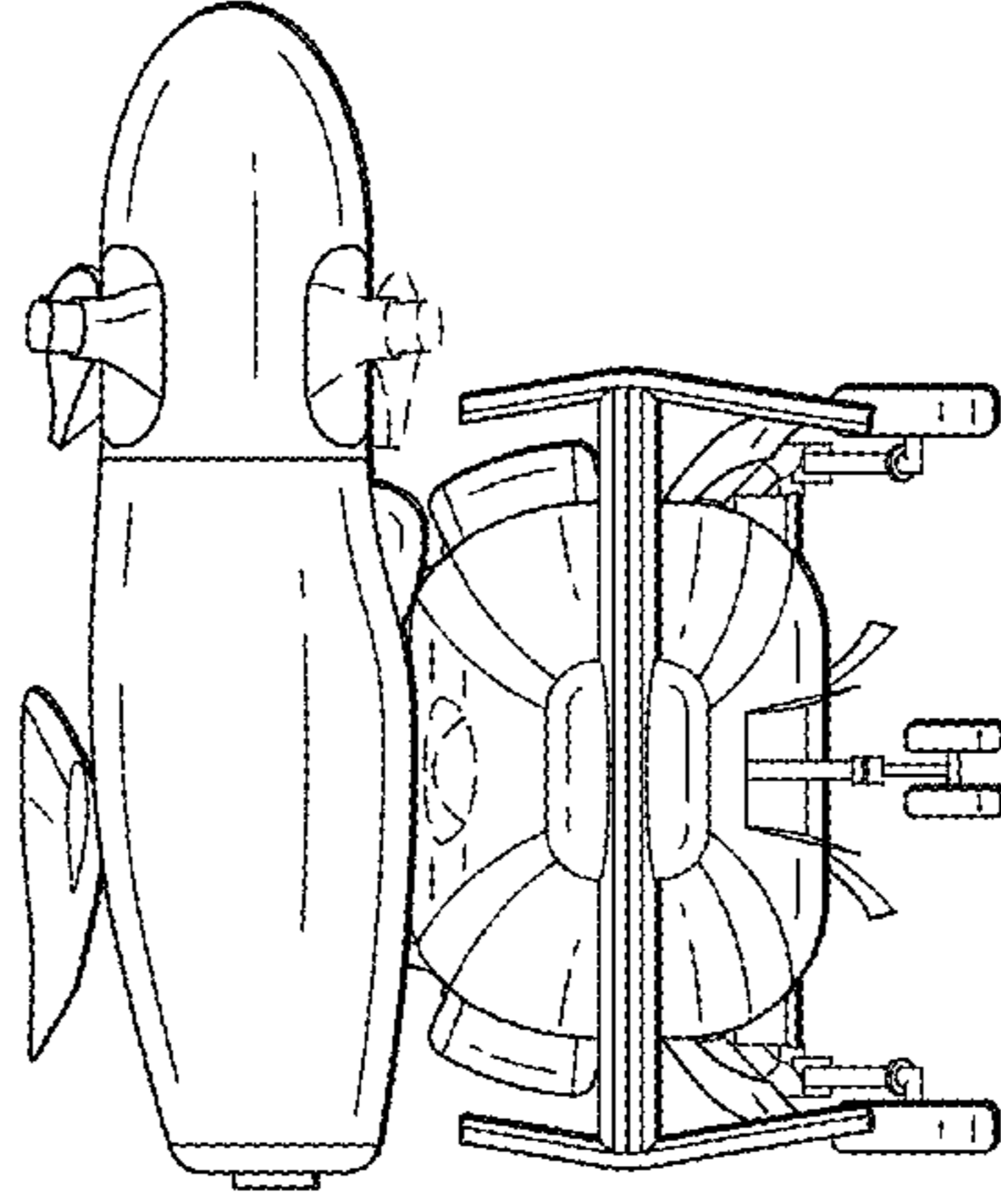


FIG. 31

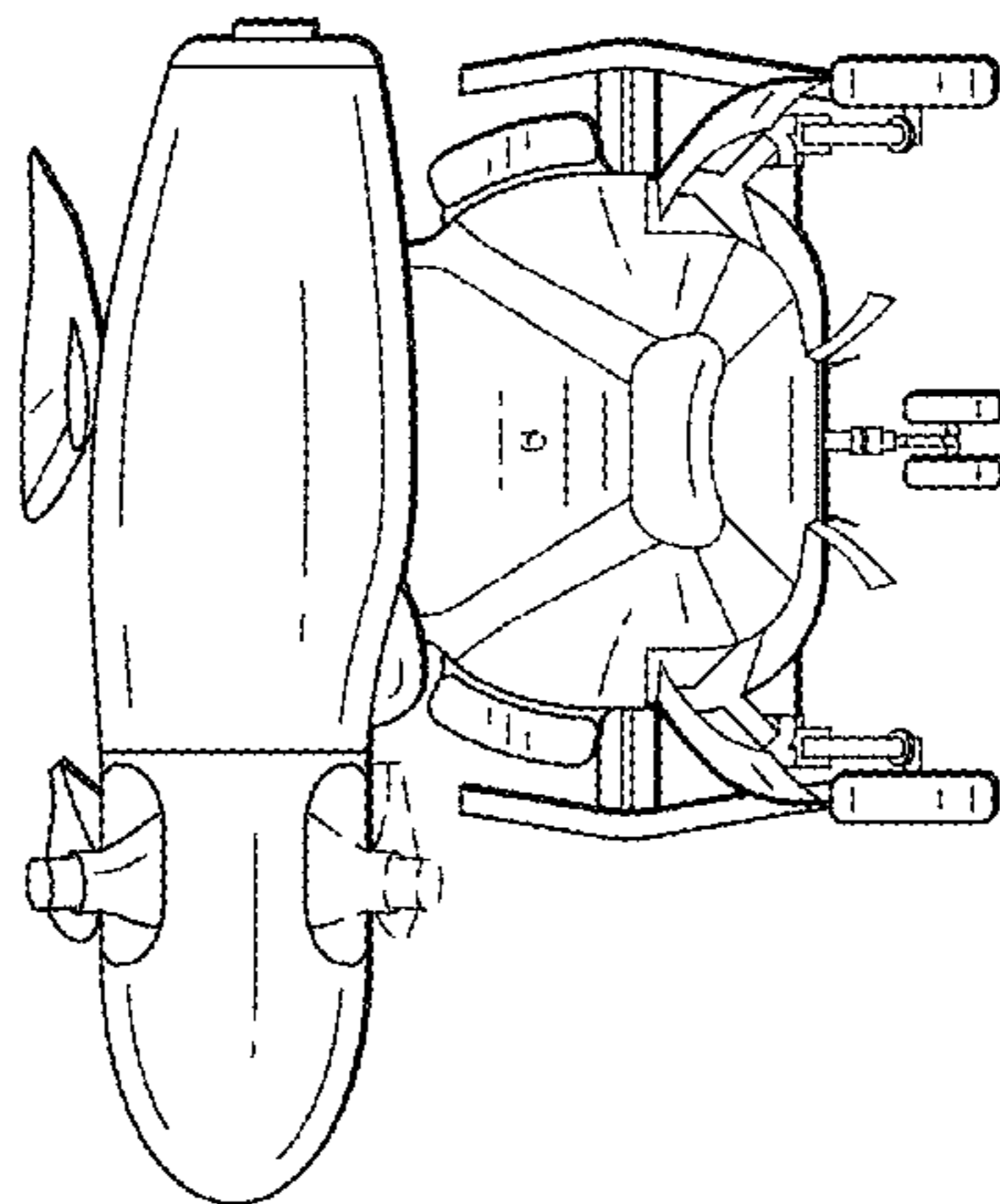


FIG. 30

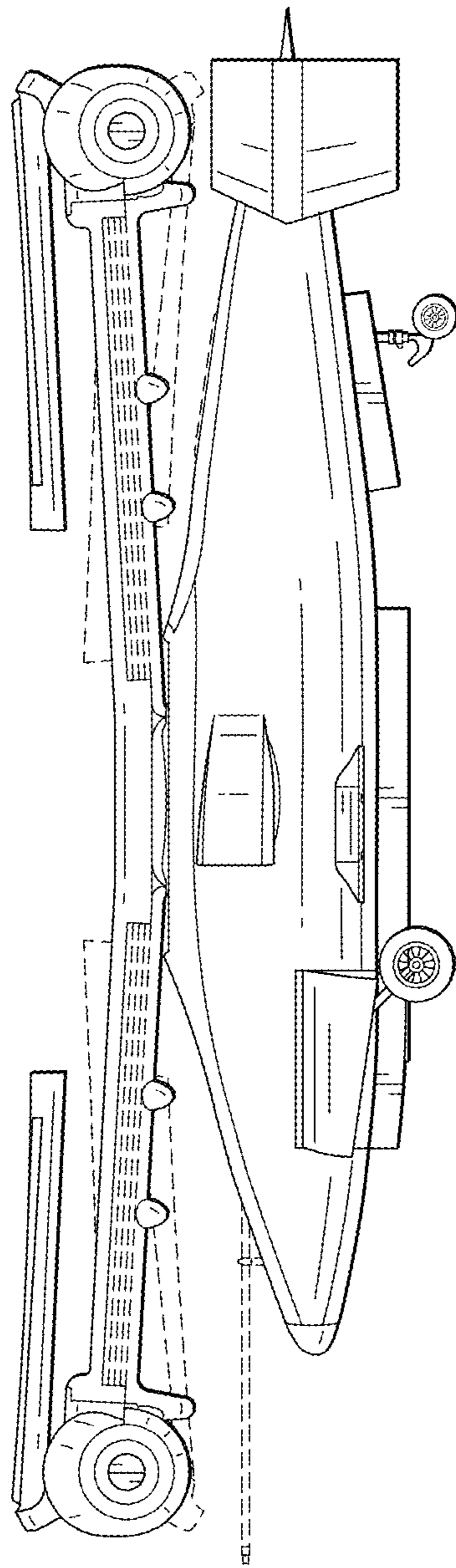


FIG. 32

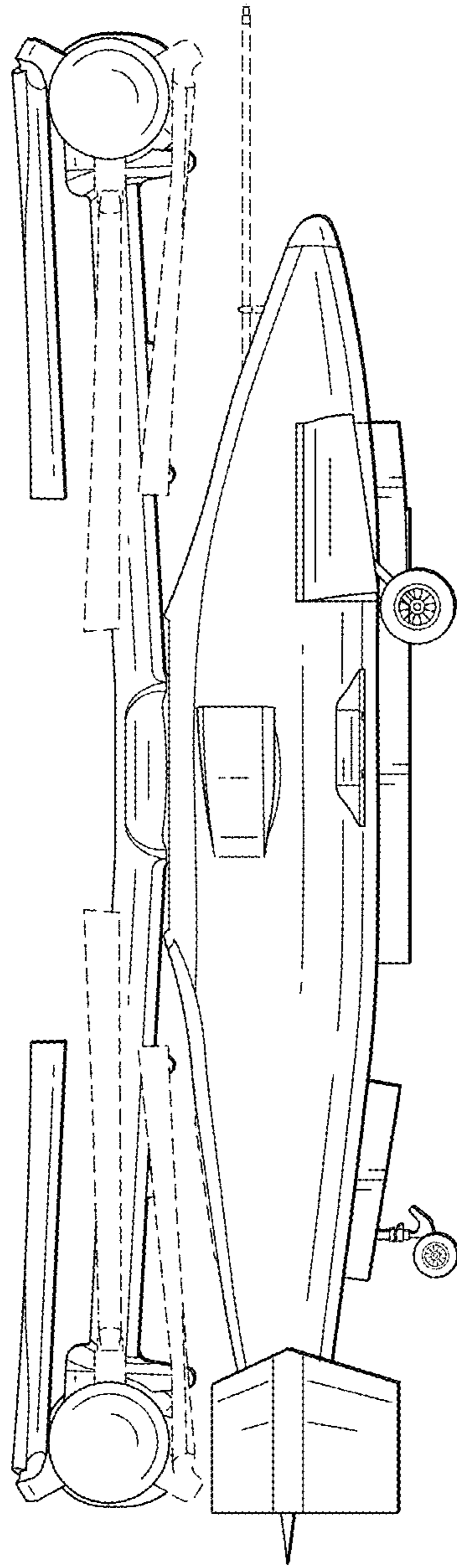


FIG. 33



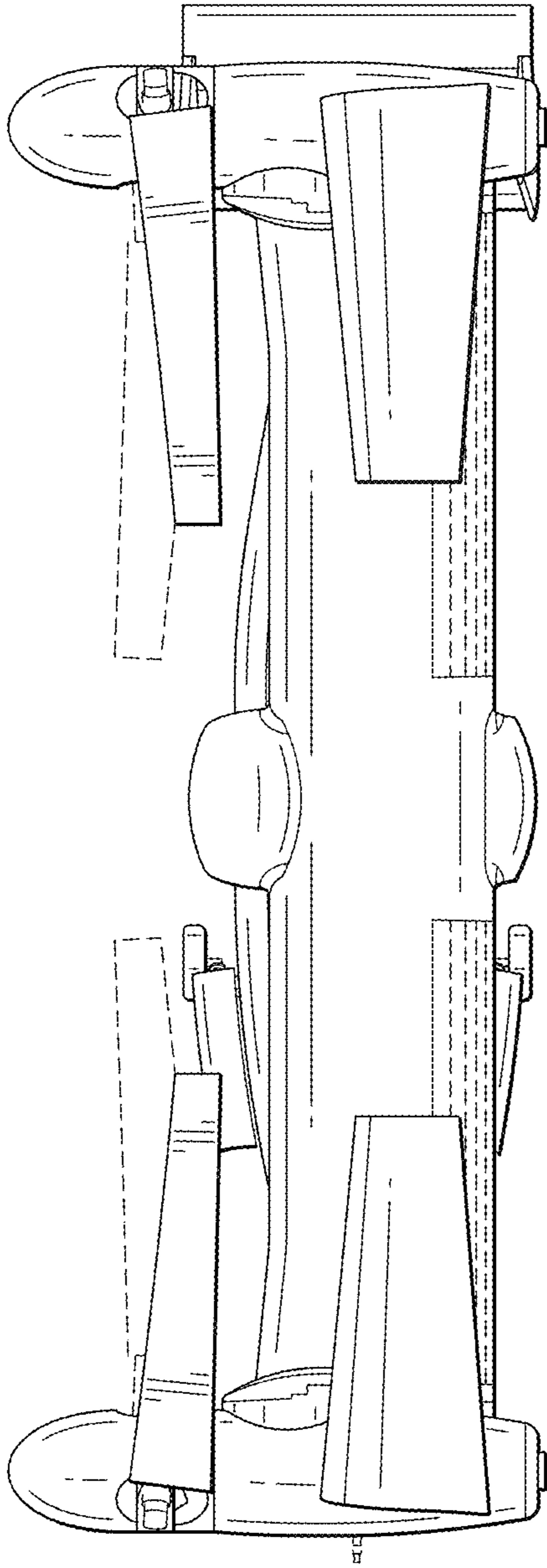


FIG. 34

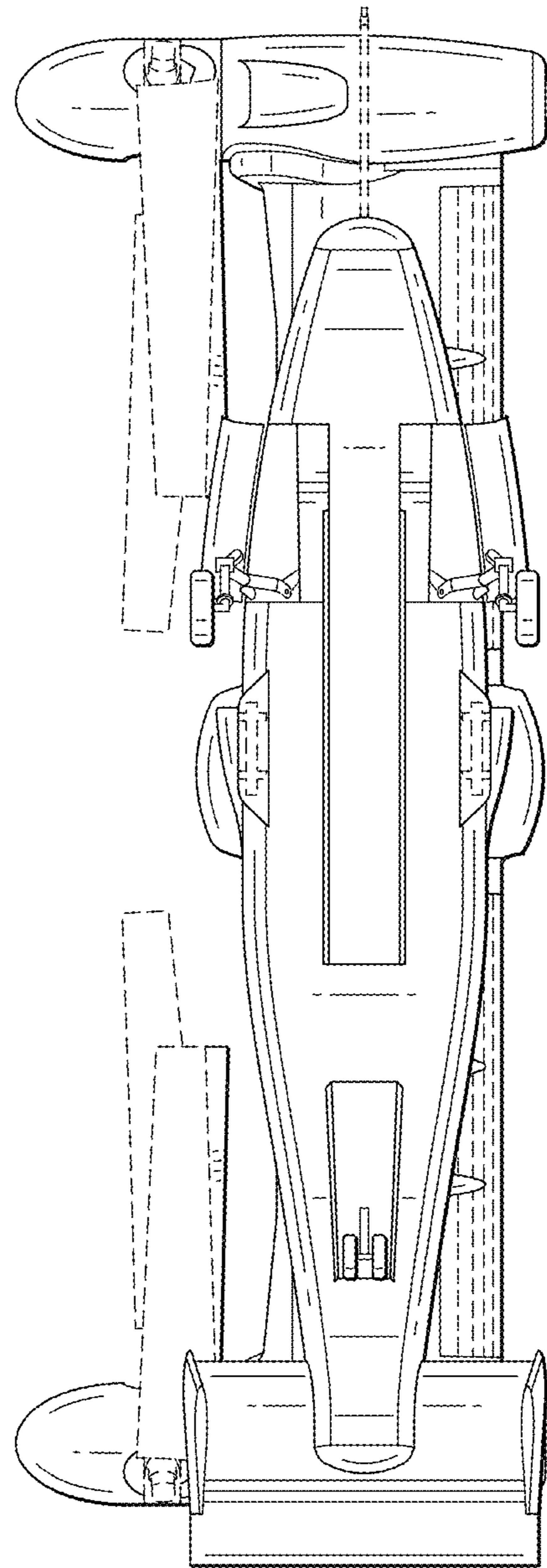


FIG. 35