

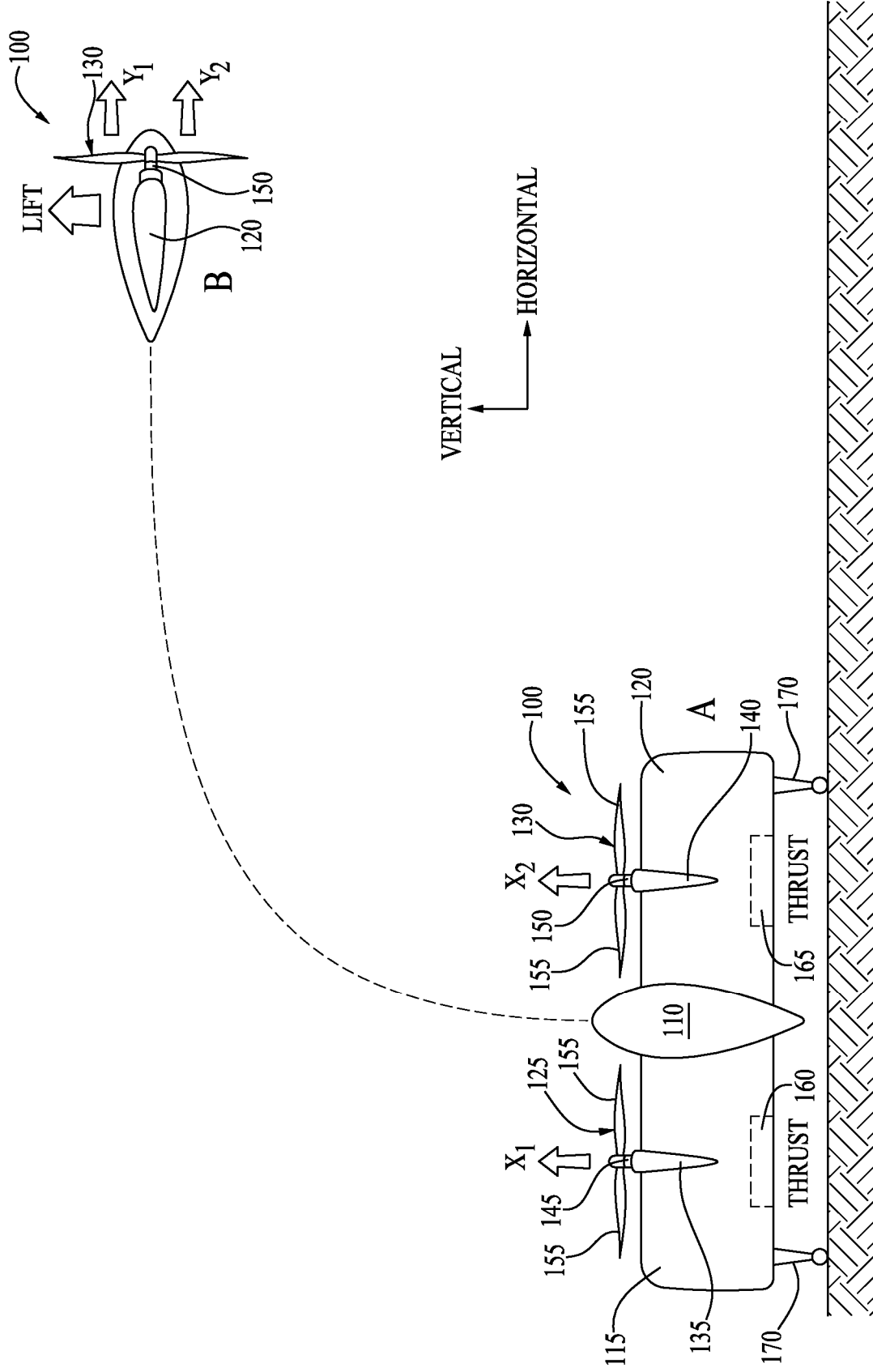


Fig. 1

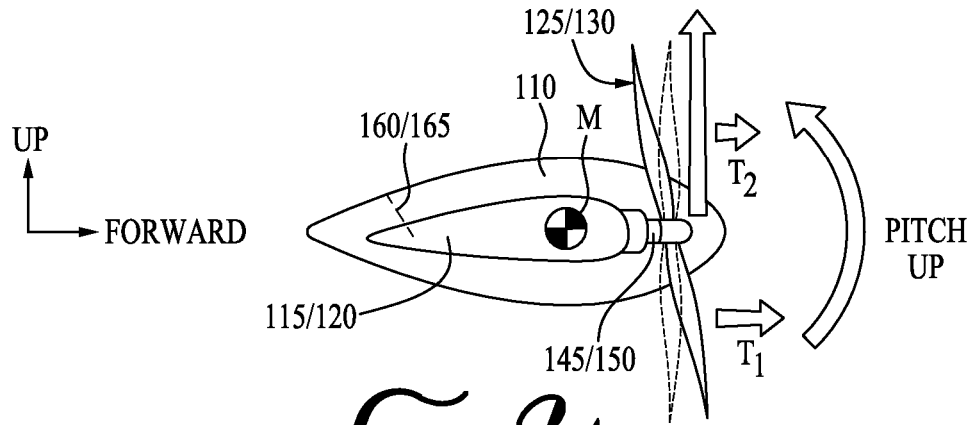


FIG. 2A

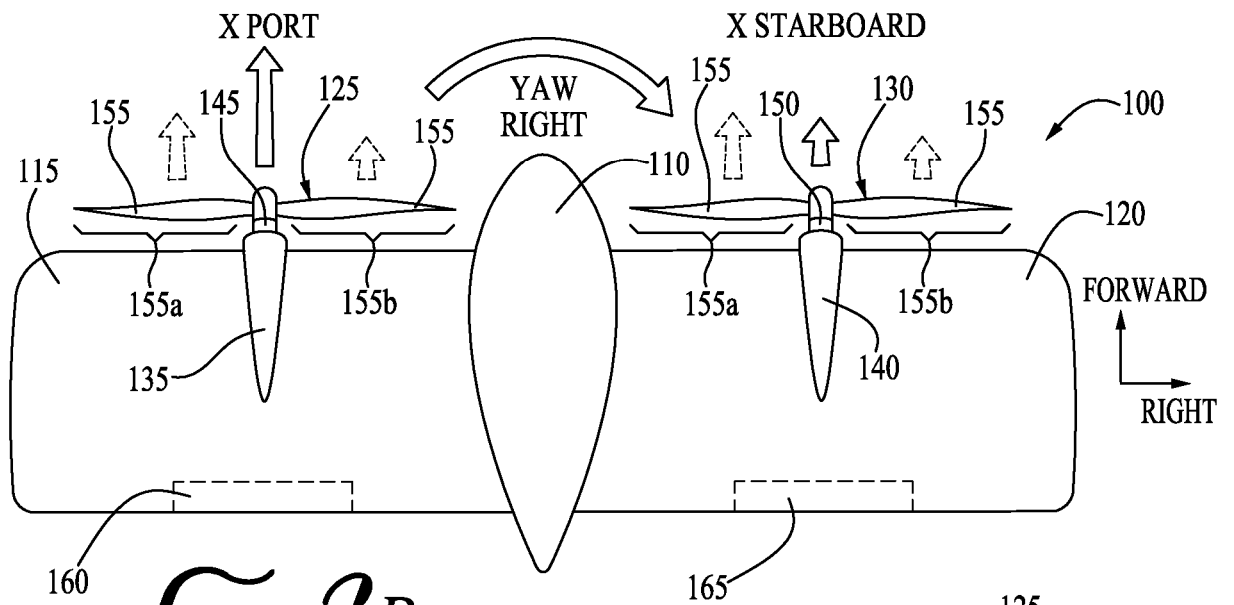


FIG. 2B

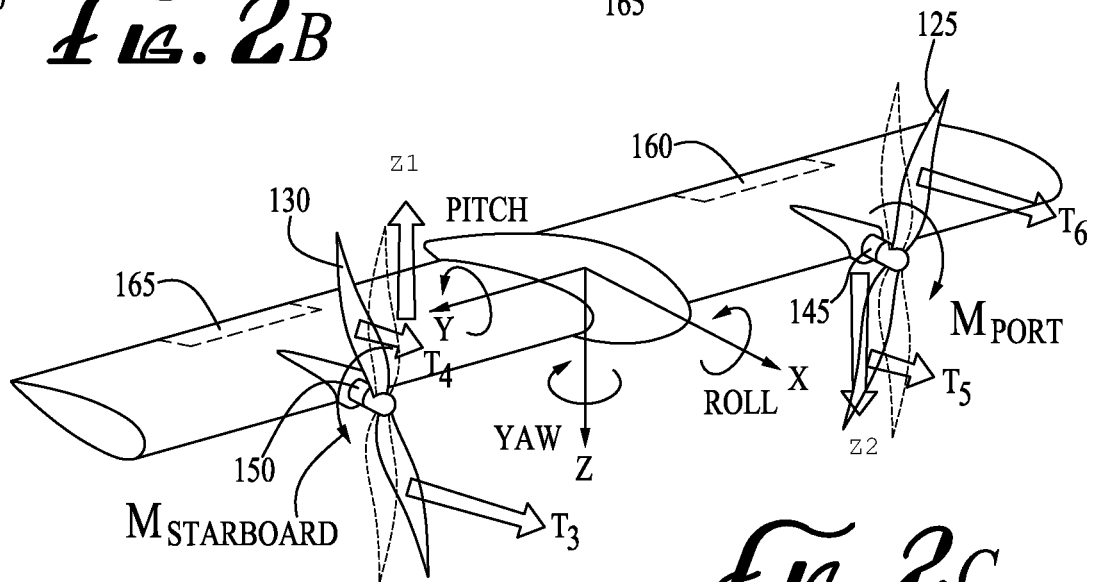


FIG. 2C

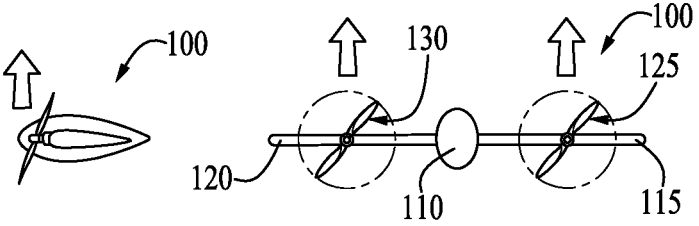
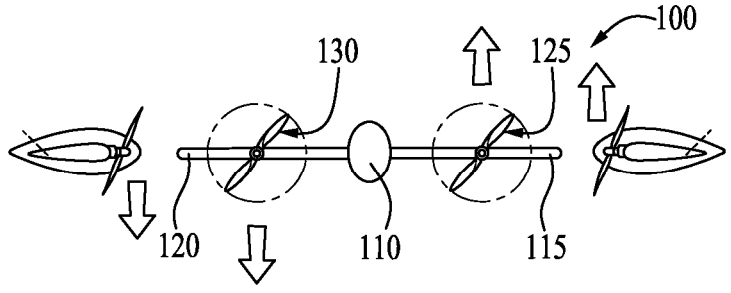
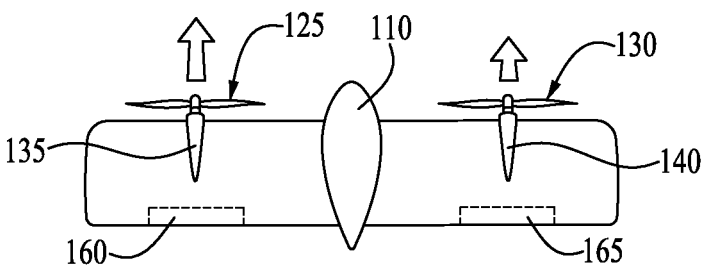
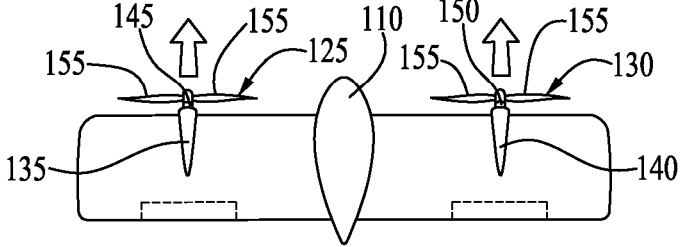
	EFFECTOR	GRAPHIC
1. PITCH	SYMMETRIC PITCH CYCLIC (NOSE UP POSITIVE)	
2. ROLL	ASYMMETRIC CYCLIC AND ELEVON (RIGHT ROLL POSITIVE)	
3. YAW	ASYMMETRIC COLLECTIVE (NOSE RIGHT POSITIVE)	
4. THRUST	SYMMETRIC COLLECTIVE (FORWARD POSITIVE)	

FIG. 3A

2-ROTOR AIRCRAFT CONFIGURATION EMBODIMENTS

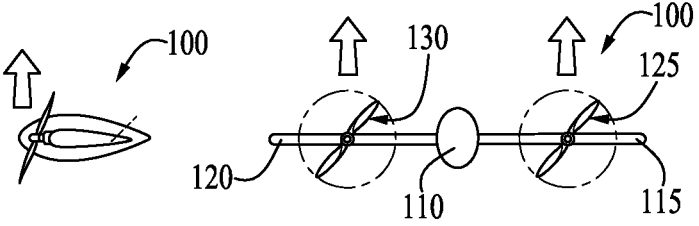
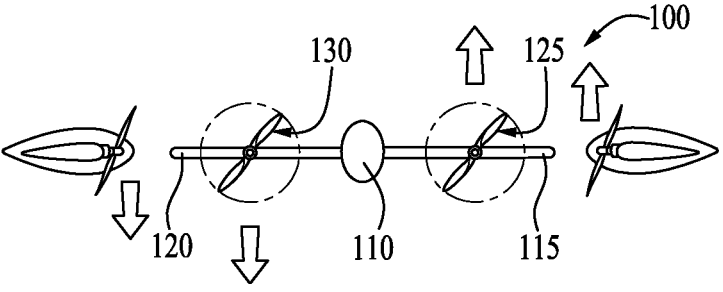
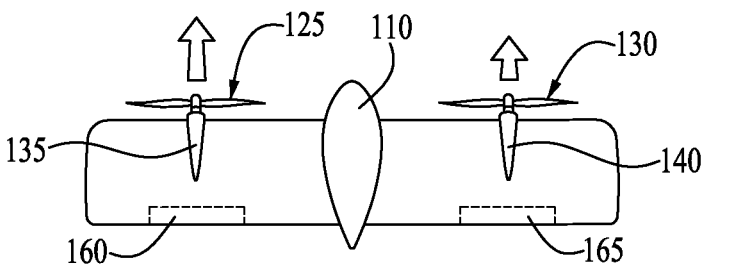
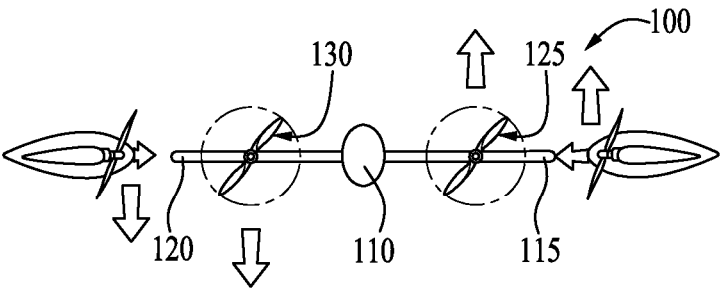
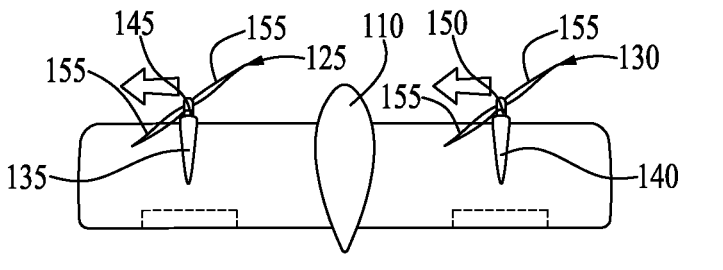
	EFFECTORS - EMBODIMENT 1	GRAPHIC
1. PITCH AND PITCH TO/FROM VERTICAL FLIGHT	<u>SYMMETRIC CYCLIC - PORT AND STARBOARD</u>	
2. ROLL	<u>ASYMMETRIC CYCLIC - PORT VS. STARBOARD</u>	
3. YAW	<u>ASYMMETRIC COLLECTIVE - PORT VS. STARBOARD</u>	
4. COORDINATED TURN	<u>ASYMMETRIC CYCLIC - PORT VS. STARBOARD; AND ASYMMETRIC COLLECTIVE - PORT VS. STARBOARD</u>	
5. HOVER, SLOW HORIZONTAL TRANSLATION	<u>SYMMETRIC CYCLIC - (NON-ZERO) ALL</u>	

FIG. 3B

2-ROTOR AIRCRAFT CONFIGURATION EMBODIMENTS

	EFFECTORS - EMBODIMENT 2	EFFECTORS - EMBODIMENT 3	EFFECTORS - EMBODIMENT 4
1. PITCH AND PITCH TO/FROM VERTICAL FLIGHT	<u>SYMMETRIC CYCLIC -</u> PORT VS. STARBOARD; AND <u>SYMMETRIC ELEVONS -</u> PORT AND STARBOARD		
2. ROLL	<u>ASYMMETRIC CYCLIC -</u> PORT VS. STARBOARD; AND <u>ASYMMETRIC ELEVONS -</u> PORT VS. STARBOARD		
3. YAW	<u>DIFFERENTIAL MOTOR RPM -</u> PORT VS. STARBOARD	<u>ASYMMETRIC COLLECTIVE -</u> PORT VS. STARBOARD; AND <u>DIFFERENTIAL MOTOR RPM -</u> PORT VS. STARBOARD	
4. COORDINATED TURN	<u>ASYMMETRIC ELEVONS</u> - PORT VS. STARBOARD; AND <u>ASYMMETRIC COLLECTIVE -</u> PORT VS. STARBOARD	<u>ASYMMETRIC CYCLIC -</u> PORT VS. STARBOARD; AND <u>ASYMMETRIC COLLECTIVE -</u> PORT VS. STARBOARD; AND <u>ASYMMETRIC ELEVONS -</u> PORT VS. STARBOARD	<u>ASYMMETRIC CYCLIC -</u> PORT VS. STARBOARD; AND <u>ASYMMETRIC ELEVONS -</u> PORT VS. STARBOARD; AND <u>DIFFERENTIAL MOTOR RPM -</u> PORT VS. STARBOARD
5. HOVER, SLOW HORIZONTAL TRANSLATION	<u>SYMMETRIC CYCLIC -</u> (NON-ZERO) ALL; AND <u>ELEVON</u>	<u>ASYMMETRIC COLLECTIVE -</u> PORT VS. STARBOARD	

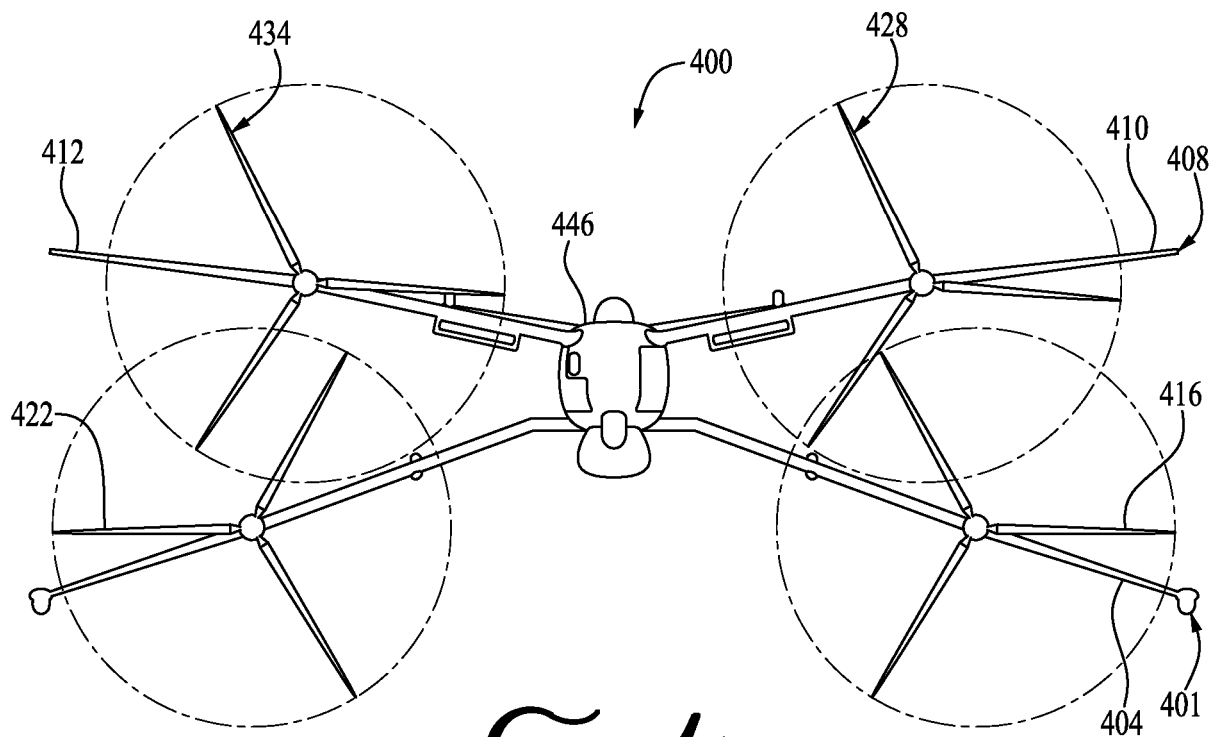


FIG. 4A

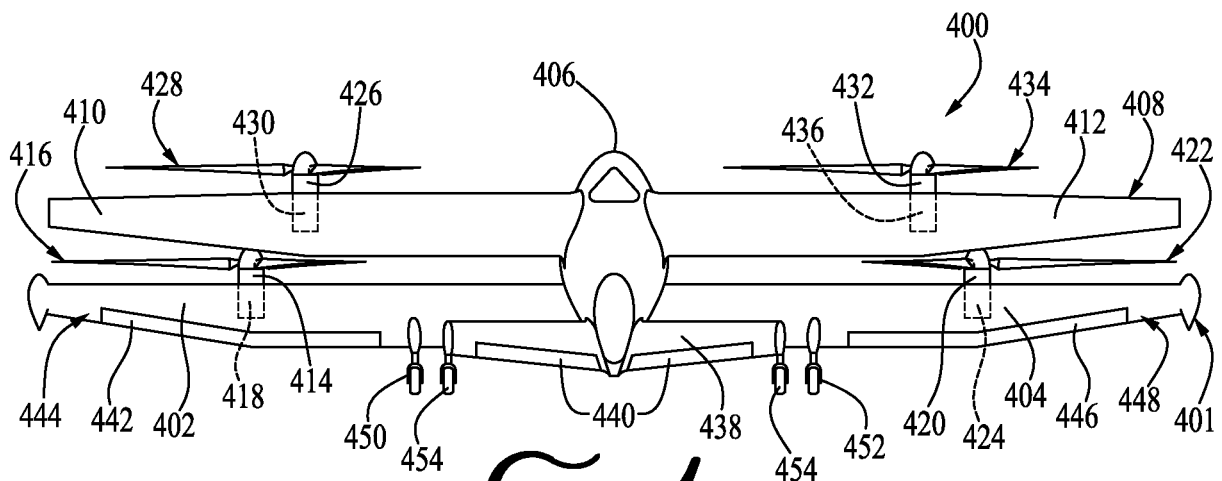


FIG. 4B

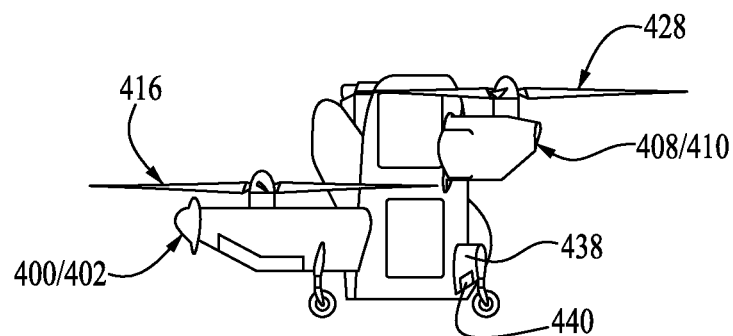


FIG. 4C

VERTICAL FLIGHT ORIENTATION
4-ROTOR AIRCRAFT FLIGHT CONTROL CONFIGURATION EMBODIMENTS - EFFECTOR CONTROL

	EFFECTORS - EMBODIMENT 1	EFFECTORS - EMBODIMENT 2
1. PITCH TO HORIZONTAL FLIGHT	DIFFERENTIAL MOTOR RPM - FORWARD PORT AND FORWARD STARBOARD VS. AFT PORT AND AFT STARBOARD	ASYMMETRIC COLLECTIVE - FORWARD PORT AND FORWARD STARBOARD VS. AFT PORT AND AFT STARBOARD
2. HOVER, SLOW HORIZONTAL TRANSLATION	<u>SYMMETRIC CYCLIC (NON-ZERO) - ALL</u>	ASYMMETRIC COLLECTIVE - FORWARD PORT AND FORWARD STARBOARD VS. AFT PORT AND AFT STARBOARD
3. HOVER, NON-ZERO ROLL ANGLE	ASYMMETRIC COLLECTIVE - FORWARD AND AFT STARBOARD VS. FORWARD AND AFT PORT; AND <u>SYMMETRIC CYCLIC (NON-ZERO) - ALL</u>	DIFFERENTIAL MOTOR RPM - FORWARD AND AFT STARBOARD VS. FORWARD AND AFT PORT; AND <u>SYMMETRIC CYCLIC - ALL</u>
4. HOVER, NON-ZERO PITCH ANGLE	ASYMMETRIC COLLECTIVE - FORWARD PORT AND FORWARD STARBOARD VS. AFT PORT AND AFT STARBOARD; AND SYMMETRIC CYCLIC - FORWARD AND AFT PORT, FORWARD AND AFT STARBOARD	DIFFERENTIAL MOTOR RPM - FORWARD PORT AND FORWARD STARBOARD VS. AFT PORT AND AFT STARBOARD; AND SYMMETRIC CYCLIC - FORWARD AND AFT PORT, FORWARD AND AFT STARBOARD
5. HOVER/VERTICAL ORIENTATION, YAW	ASYMMETRIC CYCLIC - FORWARD AND AFT PORT VS. FORWARD AND AFT STARBOARD	<u>DIFFERENTIAL MOTOR RPM - FORWARD PORT AND AFT STARBOARD VS. AFT PORT AND FORWARD STARBOARD</u>
6. VERTICAL TAKE-OFF	<u>SYMMETRIC MOTOR RPM - ALL</u>	<u>SYMMETRIC COLLECTIVE - ALL</u>

Fig. 5

HORIZONTAL FLIGHT ORIENTATION
4-ROTOR AIRCRAFT CONTROL CONFIGURATION EMBODIMENTS - EFFECTOR CONTROL

AIRCRAFT MOTION	EFFECTORS - EMBODIMENT 1	EFFECTORS - EMBODIMENT 2	EFFECTORS - EMBODIMENT 3
1. PITCH TO VERTICAL FLIGHT	<u>ELEVATOR</u> AND ASYMMETRIC COLLECTIVE - FORWARD PORT AND FORWARD STARBOARD VS. AFT PORT AND AFT STARBOARD	ASYMMETRIC COLLECTIVE - FORWARD PORT AND FORWARD STARBOARD VS. AFT PORT AND AFT STARBOARD	DIFFERENTIAL MOTOR RPM - FORWARD PORT AND FORWARD STARBOARD VS. AFT PORT AND AFT STARBOARD
2. PITCH	<u>ELEVATOR</u>	ASYMMETRIC COLLECTIVE - FORWARD PORT AND FORWARD STARBOARD VS. AFT PORT AND AFT STARBOARD	DIFFERENTIAL MOTOR RPM - FORWARD PORT AND FORWARD STARBOARD VS. AFT PORT AND AFT STARBOARD
3. ROLL	<u>AILERONS</u> - FORWARD PORT AND FORWARD STARBOARD	ASYMMETRIC CYCLIC - FORWARD PORT AND AFT PORT VS. FORWARD STARBOARD AND AFT STARBOARD	DIFFERENTIAL MOTOR RPM - FORWARD PORT AND AFT PORT VS. FORWARD STARBOARD AND AFT STARBOARD
4. YAW	ASYMMETRIC COLLECTIVE - FORWARD AND AFT PORT VS. FORWARD AND AFT STARBOARD	ASYMMETRIC COLLECTIVE - FORWARD AND AFT PORT VS. FORWARD AND AFT STARBOARD	DIFFERENTIAL MOTOR RPM - FORWARD AND AFT PORT VS. FORWARD AND AFT STARBOARD
5. COORDINATED TURN	<u>AILERONS</u> - FORWARD PORT AND FORWARD AFT ASYMMETRIC COLLECTIVE - FORWARD AND AFT PORT VS. FORWARD AND AFT STARBOARD	ASYMMETRIC CYCLIC - FORWARD PORT AND AFT PORT VS. FORWARD STARBOARD AND AFT STARBOARD ASYMMETRIC COLLECTIVE - FORWARD AND AFT PORT VS. FORWARD AND AFT STARBOARD	DIFFERENTIAL MOTOR RPM - FORWARD PORT AND AFT PORT VS. FORWARD STARBOARD AND AFT STARBOARD DIFFERENTIAL MOTOR RPM - FORWARD AND AFT PORT VS. FORWARD AND AFT STARBOARD

fig. 8

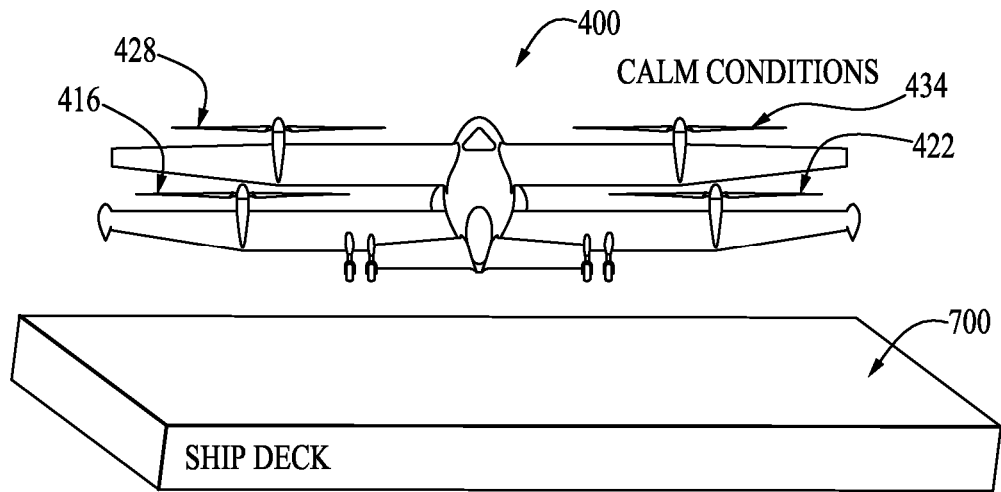


Fig. 7A

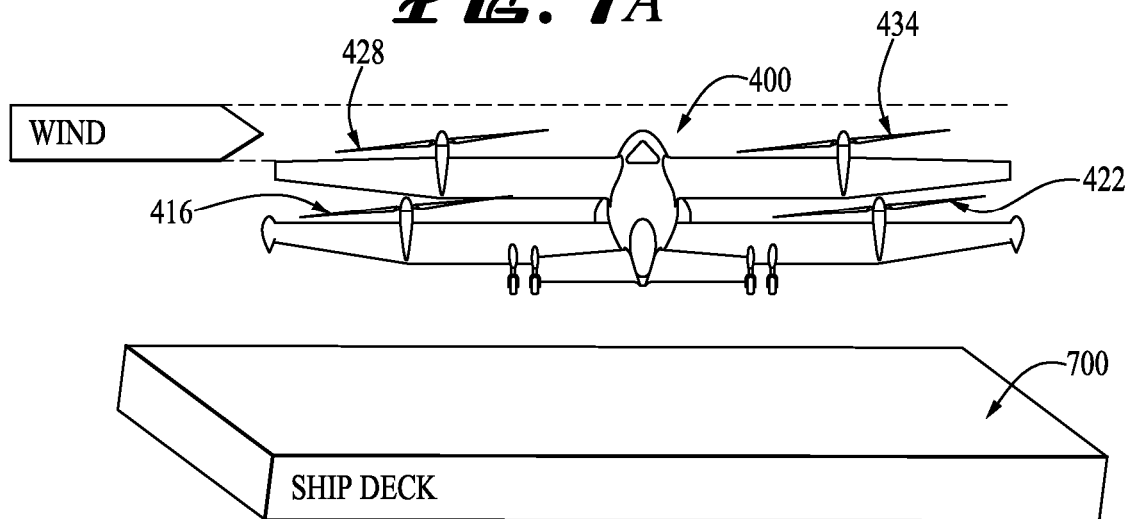


Fig. 7B

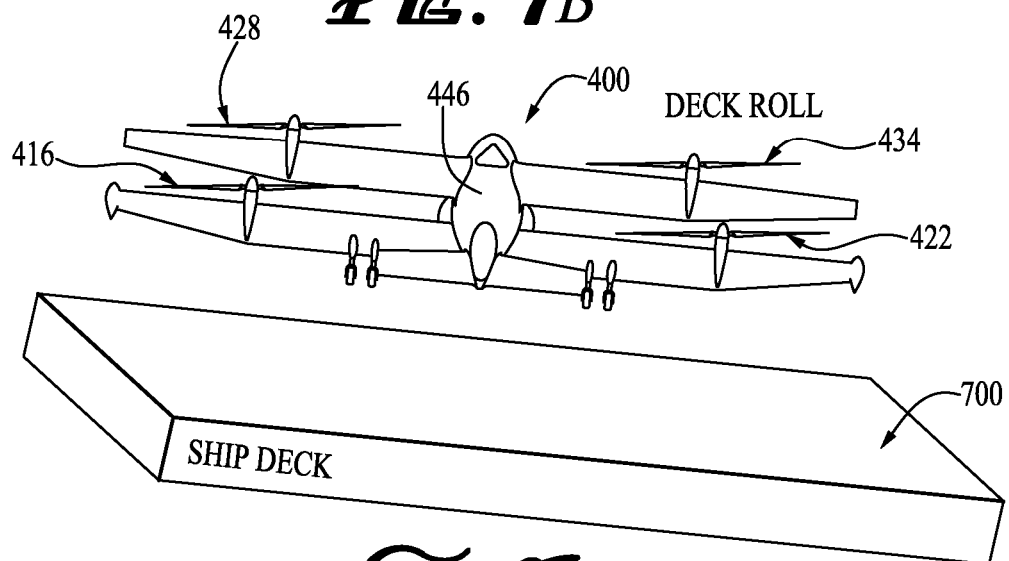


Fig. 7C

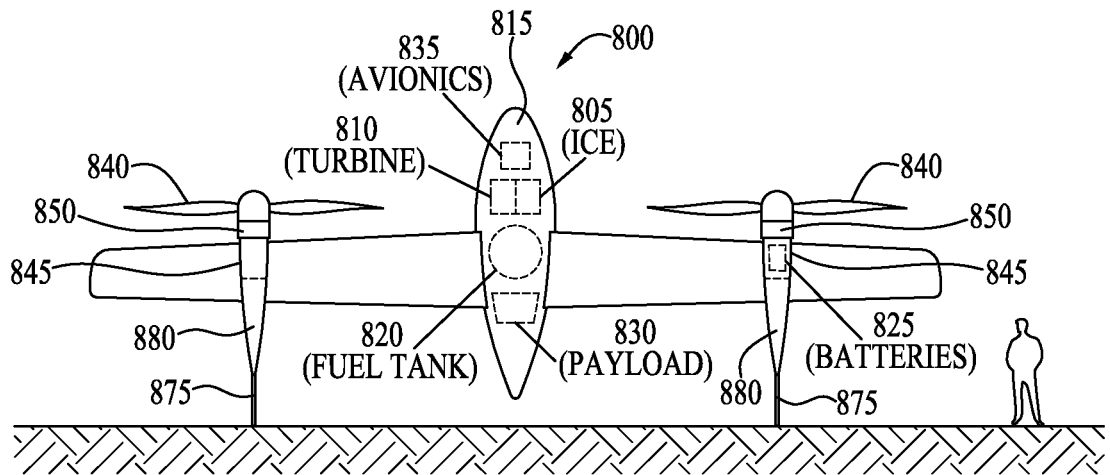


Fig. 8A

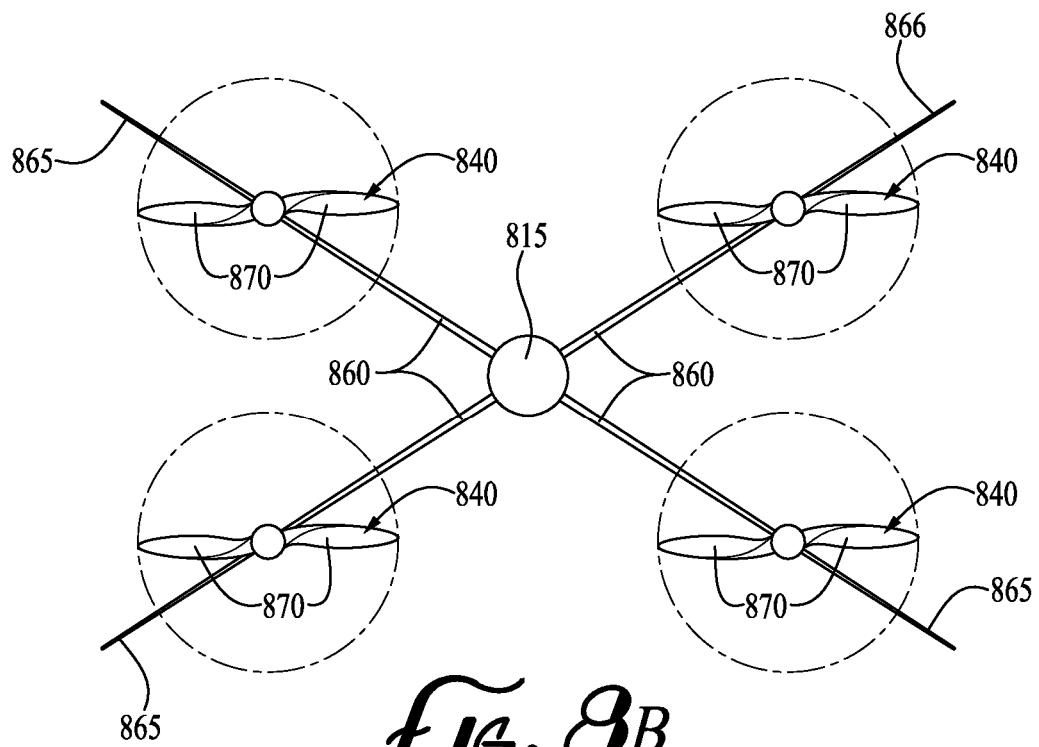


Fig. 8B

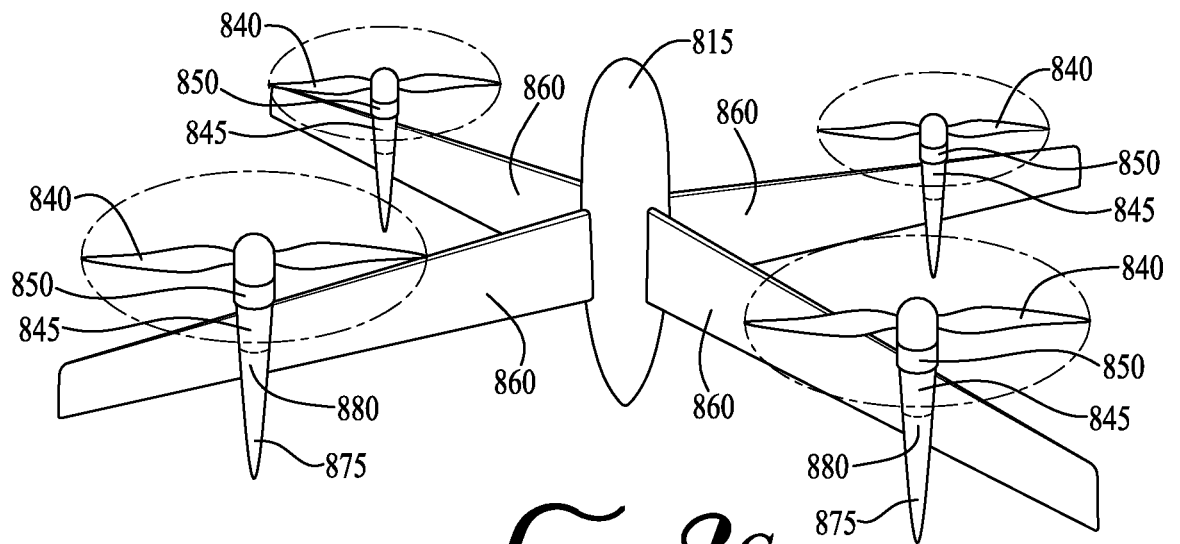


Fig. 8C

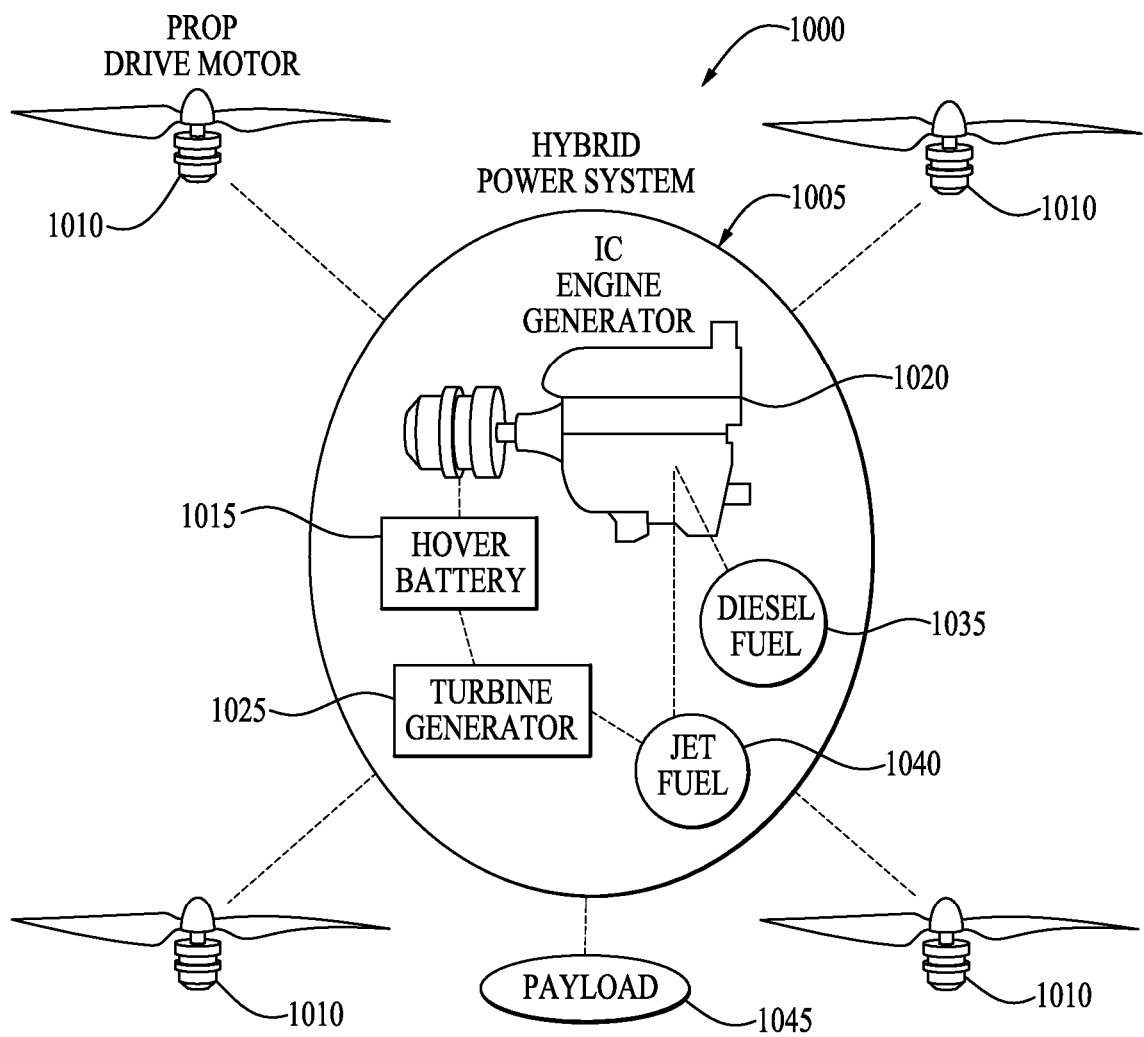


Fig. 10