PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.:	90/019,956
Confirmation No.:	2854
Filing Date:	May 12, 2025
Inventor(s):	Burkhard Wiggerich
Group Art Unit:	3993
Examiner:	William Charles Doerrler
Title:	AIRCRAFT
Attorney Docket:	14003-000424/US/RE

Mail Stop Ex Parte Reexam
Central Reexamination Unit
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

CERTIFICATE OF SERVICE

Commissioner:

The undersigned certifies that a true and correct copy of the Amendment and Response filed on November 6, 2025 has been served in its entirety by U.S. Air Mail (as the requester's attorneys are located in Hong Kong) on November 6, 2025 on the attorney

of record for the Requester of the *Ex parte* Reexamination for U.S. Patent No. 8,328,128 with sufficient postage fees paid addressed to:

IDEA Intellectual Limited
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Respectfully submitted,

Dated: November 6, 2025

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CERTIFICATE OF TRANSMISSION

I hereby certify that this paper (along with any paper referred to as being attached) is being transmitted to the USPTO via the USPTO patent electronic filing system on the date indicated below.

Dated: November 6, 2025 Signature: /Gail Poland/
Gail Poland

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AMENDMENT AND RESPONSE

Commissioner:

In response to the Office Action mailed September 10, 2025, please amend the claims as follows and consider the remarks set forth below.

AMENDMENTS TO THE CLAIMS

In accordance with 37 C.F.R. 1.530(f), the following amendments to the claims are shown with deleted elements in single brackets (i.e., [delete]) and added elements underlined (i.e., add) relative to the issued patent.

LISTING OF CLAIMS

1. (Amended) An aircraft, comprising:

autonomous attitude and position control provided by at least three drive units, each of said drive units having:

a first rotor[;],

a first rotary speed-controlled electric motor configured for driving said first rotor in a rotation direction during operation of the aircraft[;],

at least one second rotor[;], and

at least one second rotary speed-controlled electric motor configured for driving said at least one second rotor during operation of the aircraft in a rotation direction opposite to said rotation of said first rotor of said respective drive unit[;],

said first rotary speed-controlled electric motor and said at least one second rotary speed-controlled electric motor having rotary speeds being variable on an individual basis; and

a support for said drive units, said support including a number of supporting arms extending radially outward from and secured only to a central base body without the drive units being secured to each other, at least one of said drive units being fitted to each respective one of said supporting arms,

wherein said first and second rotors of each of said drive units are disposed coaxially, and

wherein the attitude and position control is provided by individually controlling a rotary speed of each of the at least one first rotary speed-controlled electric motor and the at least one second rotary speed-controlled electric motor in each of said drive units.

2. (Original as Issued) The aircraft according to claim 1, wherein said first rotors of at least two of said drive units have a common rotation plane.

3. (Original as Issued) The aircraft according to claim 1, wherein said first rotors of all of said drive units have a common rotation plane.

4. (Original as Issued) The aircraft according to claim 1, wherein said second rotors of at least two of said drive units have a common rotation plane.

5. (Original as Issued) The aircraft according to claim 1, wherein said second rotators of all of said drive units have a common rotation plane.

6. (Original as Issued) The aircraft according to claim 1, wherein:

said first rotors of at least two of said drive units have a common rotation plane;

said second rotors of at least two of said drive units have a common rotation plane;

said rotation planes of said first and second rotors are oriented substantially parallel to one another.

7. (Original as Issued) The aircraft according to claim 1, wherein said first and second rotors of at least one of said drive units are separated from one another in axial direction.

8. (Original as Issued) The aircraft according to claim 1, wherein said first and second rotors of each of said at least three drive units are separated from one another in axial direction.

9. (Canceled)

10. (Canceled)

11. (Original as Issued) The aircraft according to claim 1, wherein said supporting arms are detachably fitted to said base body or are fitted to said base body by quick-release fasteners.

12. (Original as Issued) The aircraft according to claim 1, which further comprises a collision protection device for said rotors.

13. (Original as Issued) The aircraft according to claim 1, which further comprises a collision protection device for said rotors, said collision protection device being detachably fitted to said support or to said supporting arms.

14. (Original as Issued) The aircraft according to claim 12, wherein said collision protection device includes at least one rotor protection ring extending along an outer circumference of the aircraft.

15. (Original as Issued) The aircraft according to claim 12, wherein said collision protection device includes a first rotor protection ring and a second rotor protection ring extending along an outer circumference of the aircraft.

16. (Original as Issued) The aircraft according to claim 15, wherein said rotor protection rings are oriented substantially parallel to one another.

17. (Original as Issued) The aircraft according to claim 15, which further comprises a number of holding crossmembers interconnecting said rotor protection rings.

18. (Original as Issued) The aircraft according to claim 17, wherein said holding crossmembers are detachably fitted to said supporting arms.

19. (Original as Issued) The aircraft according to claim 1, which further comprises an aircraft landing frame.

20. (Original as Issued) The aircraft according to claim 1, which further comprises an interchangeable payload module.

21. (New) An aircraft, comprising:

autonomous attitude and position control provided by at least three drive units, each of said drive units having:

a first rotor,

a first rotary speed-controlled electric motor configured for driving said first rotor in a rotation direction during operation of the aircraft,

at least one second rotor, and

at least one second rotary speed-controlled electric motor configured for driving said at least one second rotor during operation of the aircraft in a rotation direction opposite to said rotation of said first rotor of said respective drive unit,

said first rotary speed-controlled electric motor and said at least one second rotary speed-controlled electric motor having rotary speeds being variable on an individual basis;

a support for said drive units, said support including a number of supporting arms extending radially outward from and secured only to a central base body without the drive units being secured to each other, at least one of said drive units being fitted to each respective one of said supporting arms;

a collision protection device for said rotors, wherein said collision protection device includes a first rotor protection ring and a second rotor protection ring extending along an outer circumference of the aircraft; and

a number of holding crossmembers interconnecting said rotor protection rings.

22. (New) The aircraft according to claim 21, wherein said holding crossmembers are detachably fitted to said supporting arms.

STATUS OF THE CLAIMS

In accordance with 37 C.F.R. §1.530(e) and the Manual of Patent Examining Procedure at §2250, the following status of claims is provided below as of the date of filing of the present Response.

Patent Claims:

1. Amended
2. Original as Issued
3. Original as Issued
4. Original as Issued
5. Original as Issued
6. Original as Issued
7. Original as Issued
8. Original as Issued
9. Canceled
10. Canceled
11. Original as Issued
12. Original as Issued
13. Original as Issued
14. Original as Issued
15. Original as Issued
16. Original as Issued
17. Original as Issued
18. Original as Issued

19. Original as Issued

20. Original as Issued

21. New

22. New

Support for the amendment to claim 1 can be found, for example, at issued claims 9 and 10, and at column 4, lines 8-21 of U.S. Patent No. 8,328,128. The amendment does not enlarge claim scope or add new matter.

Support for new claims 21 and 22 can be found, for example, at issued claims 17 and 18. More specifically, new claims 21 and 22 correspond and are substantively identical to issued claims 17 and 18, respectively, where claim 21 is issued claim 17 rewritten in independent form, and new claim 22 is made dependent upon new claim 21. These new claims do not enlarge claim scope or add new matter.

PATENT OWNER'S STATEMENT OF THE INTERVIEW

In accordance with 37 C.F.R. §1.560(b), Patentee is submitting this Patent Owner's Statement of the Interview. Patentee thanks the Examiners for the courtesy extended during the telephone interview of October 30, 2025, in which Supervisory Patent Examiner Patricia Engle, Examiner Sarah McPartlin, Examiner William Doerrler, and the undersigned participated. No exhibit was shown or demonstration conducted. After exchanging pleasantries, Examiner Doerrler began the conversation by stating that the Interview would likely not take too long because the amendment to claim 1 above would overcome all of the rejections. Further, Supervisory Patent Examiner Engle reminded Patentee's representative of the procedures for properly serving this response on the Requester, and the requirement to submit this Patent Owner's Statement of the Interview.

REMARKS

Both the Request for Reexamination and the presently pending Office Action dated September 10, 2025 (the "Office Action") identify independent claim 1 and dependent claims 2-20 of U.S. Patent No. 8,328,128 (the "'128 Patent") as the subject matter for the present *ex parte* reexamination. Request for *Ex Parte* Reexamination of U.S. Patent No. 8,328,128 dated May 12, 2025[1] (the "Request") at page 1, and Office Action at page 2. By this Amendment, Patentee amends claim 1; cancels claims 9 and 10; and adds new claims 21 and 22. Support for the amendments and new claims can be found throughout the written description, drawings, and claims of the '128 Patent. No new matter has been added.

STATEMENT UNDER 37 C.F.R. §1.565(A)

The '128 Patent has not been involved in any prior or concurrent proceedings, such as interferences, reissues, other *ex parte* reexaminations, *inter partes* reexaminations, or litigations.

PARTY IDENTIFICATION

Nordic Unmanned Holding AS ("Nordic" or "Patentee") is the owner of the '128 Patent.

[1] The Office has assigned Control No. 90/019,956 a filing date of May 12, 2025.

REJECTIONS UNDER 35 U.S.C. § 103

Claims 1-13 stand rejected under 35 U.S.C. 103 as allegedly obvious over Pak (U.S. Pat. Pub. No. 2006/0016930; hereinafter "Pak") in view of Ehrmantraut et al. (U.S. Pat. No. 7,712,701; hereinafter "Ehrmantraut") in view of Dolch (German Patent Publication No. DE 102005010336A1; hereinafter "DE '336"). Claims 1-13 stand rejected under 35 U.S.C. 103 as allegedly obvious over Walton (U.S. Pat. Pub. No. 2006/0226281; hereinafter "Walton") in view of Ehrmantraut and DE '336. Claims 15 and 16 stand rejected under 35 U.S.C. 103 as allegedly unpatentable over Walton in view of Ehrmantraut and DE '336 as applied to claims 1-13 above, and further in view of Korean Patent Publication No. 20-0414580 (hereinafter "KR '580"). Claims 19 and 20 stand rejected under 35 U.S.C. 103 as allegedly unpatentable over Walton in view of Ehrmantraut and DE '336 as applied to claims 1-13 above, and further in view of Vanderlip (U.S. Pat. No. 3,053,480; hereinafter "Vanderlip"). Claims 1-10 stand rejected under 35 U.S.C. 103 as allegedly obvious over DE '336 in view of Pak. Claims 1-14 stand rejected under 35 U.S.C. 103 as allegedly obvious over Dolch (German Patent Publication No. DE 202005004698U1; hereinafter "DE '698") in view of Ehrmantraut. Claims 15 and 16 stand rejected under 35 U.S.C. 103 as allegedly unpatentable over DE '698 in view of Ehrmantraut as applied to claims 1-14 above, and further in view of KR '580. Claims 19 and 20 stand rejected under 35 U.S.C. 103 as allegedly unpatentable over DE '698 in view of Ehrmantraut as applied to claims 1-14 above, and further in view of Vanderlip. Claims 1-10 stand rejected under 35 U.S.C. 103 as allegedly obvious over Japanese Patent Publication No. P2002-370696 (hereinafter "JP '696") in view of Walton or Pak. Claims 11-14 stand rejected under 35 U.S.C. 103 as allegedly obvious over JP '696 in

view of Walton or Pak as applied to claims 1-10 above, and further in view of Ehrmantraut. Claims 15 and 16 stand rejected under 35 U.S.C. 103 as allegedly unpatentable over JP '696 in view of either Pak or Walton and Ehrmantraut as applied to claims 11-14 above, and further in view of KR '580. Claims 19 and 20 stand rejected under 35 U.S.C. 103 as allegedly unpatentable over JP '696 in view of either Pak or Walton as applied to claims 1-10 above, and further in view of Vanderlip.

At the outset, Patentee has canceled claims 9 and 10, thereby rendering their rejection moot. The remaining claims are discussed below.

The rejections of independent claim 1 can be summarized as follows:

1. Pak (U.S. Pat. Pub. No. 2006/0016930; hereinafter "Pak") in view of Ehrmantraut et al. (U.S. Pat. No. 7,712,701; hereinafter "Ehrmantraut") in view of Dolch (German Patent Publication No. DE 102005010336A1; hereinafter "DE '336");
2. Walton (U.S. Pat. Pub. No. 2006/0226281; hereinafter "Walton") in view of Ehrmantraut and DE '336;
3. DE '336 in view of Pak;
4. Dolch (German Patent Publication No. DE 202005004698U1; hereinafter "DE '698") in view of Ehrmantraut; and
5. Japanese Patent Publication No. P2002-370696 (hereinafter "JP '696") in view of Walton or Pak.

A brief discussion of each of the above references is provided below.

Pak:

In relevant portion, the Pak reference discloses a vertical takeoff and landing aircraft that includes "propulsion units" that each include a "forward fan" and a "counter rotating rearward fan." Pak at [0014]. Both fans in each propulsion unit are driven by a common "power train," which comprises either an internal combustion engine or an electric motor and associated gears. Pak at [0050]-[0052]. In order to control the aircraft, the "propulsion units" (as a whole) are rotated. See, e.g., Pak at FIGs. 5A, 5B, and 10A-H.

Ehrmantraut:

In relevant portion, the Ehrmantraut reference discloses an unmanned aerial vehicle that includes two counterrotating rotors. Ehrmantraut at col. 3, lines 45-48. Each rotor is driven by a separate motor (reference numerals 52 and 54). Ehrmantraut at col. 5, lines 1-6. In order to control the vehicle, a "passive control system 40" and an "active control system 42" are provided. Ehrmantraut at col. 3, line 56 to col. 4, line 55. These control systems operate to control the "blade angle" of the blades, which enables "translational flight along any axis." Id. Of particular note, although a separate motor for each rotor is disclosed, there is no discussion in Ehrmantraut regarding individually varying the rotary speeds of the rotors, let alone providing attitude and position control in this manner.

DE '336:

In relevant portion, the DE '336 reference discloses a multirotor helicopter that includes four rotors, each of which being located at an end of an arm of a "support frame 18." That is, there is only one rotor provided on each arm. Further, and as shown in FIG. 1, the rotors are technically counterrotating as two rotors rotate clockwise and the other two rotors rotate counterclockwise. Nonetheless, none of the rotors are disposed coaxially.

Walton:

In relevant portion, the Walton reference discloses a vertical takeoff and landing aircraft that includes multiple "ducted fan units" that each include "counter rotating propellers." Walton at [0075]-[0076]. Similar to Pak discussed above, both fans in each ducted fan unit are driven by a common "power source 50" so that the propellers rotate at the same speed. Id. Again, similar to Pak, in order to control the aircraft, the "ducted fan units" as a whole can be rotated or otherwise manipulated to control their thrust direction. See, e.g., Walton at FIGs. 1a, 7, and 8.

DE '698:

Similar to the DE '336 reference, in relevant portion the DE '698 reference discloses a multirotor helicopter that includes four rotors, each of which being located at an end of an arm of a "support frame 3." That is, there is only one rotor provided on each arm. Further, and as shown in FIG. 1, the rotors are technically counterrotating as two

rotors rotate clockwise and the other two rotors rotate counterclockwise. Nonetheless, none of the rotors are disposed coaxially.

JP '696:

In relevant portion, the JP '696 reference discloses a vertical takeoff and landing aircraft that includes a plurality of lift-generating propellers. A horizontal flight propeller (reference numeral 32 in FIGs. 1 and 6, and reference numeral 75 in FIGs. 10-12) is also provided to control translational flight control.

The rejections are based on various combinations of the references discussed above. All of these combinations fail to disclose coaxially disposed rotors in a single drive unit, where the rotors are independently rotated to provide autonomous attitude and position control. Pak and Walton each disclose a single power source to rotate both rotors at the same speed. Additionally, the Ehrmantraut reference, although it discloses separate motors for each rotor, does not disclose separate rotation speeds of its rotors. Finally, each of DE '336, DE '698, and JP '696 does not disclose coaxially disposed, counter rotating rotors, as these references disclose multiple "single rotor" configurations, as opposed to the rotor pair configuration of the patent.

Patentee respectfully submits that it would require utilizing impermissible hindsight to combine the references in the exact arrangement set forth in the claims. See MPEP §2142 ("The tendency to resort to 'hindsight' based upon applicant's disclosure is often difficult to avoid due to the very nature of the examination process. However, impermissible hindsight must be avoided and the legal conclusion must be reached on

the basis of the facts gleaned from the prior art"). The rejections require picking and choosing elements from different and mostly unrelated references, and then arranging these elements in the specific arrangement taught by the present patent. Further, it would not just be combining elements from different references, but it instead would require combining bits and pieces of the disclosure of different references to form individual elements of the claims, thereby reading various elements out of the context of the claim as a whole. Patentee respectfully submits that this is the exact type of "impermissible hindsight" that the MPEP instructs "must be avoided" when it charges that "the legal conclusion [of obviousness] must be reached on the basis of the facts gleaned from the prior art." MPEP §2142 (emphasis added).

For at least these reasons, Patentee respectfully submits that independent claim 1 is patentable over the cited references. As the remainder of the claims ultimately depend from independent claim 1, all of the claims should be patentable over the cited references for at least similar reasons.

Reconsideration and withdrawal of the rejection of claims 1-8, 11-16, 19, and 20 are respectfully requested.

NEW CLAIMS

Claims 21 and 22 are new. Support for claims 21 and 22 can be found throughout the written description, drawings, and claims as originally filed. New claims 21 and 22 do not enlarge claim scope or add new matter. As discussed above, new claims 21 and 22 correspond and are substantively identical to issued claims 17 and 18, respectively, where claim 21 is issued claim 17 rewritten in independent form, and new claim 22 is

made dependent upon new claim 21.

Favorable consideration of claims 21 and 22 is respectfully requested.

ALLOWABLE SUBJECT MATTER

Patentee kindly thanks the Examiner for confirming the patentability of issued claims 17 and 18. As discussed, Patentee has added new claims 21 and 22, which correspond to issued claims 17 and 18, respectively.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Patentee therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. Further, it is believed that a full and complete response has been made to the outstanding Office Action. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 270-2893.

Respectfully submitted,

Dated: November 6, 2025

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ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
90/019,956	**11/06/2025 02:57:25 PM Z ET**	**14003-000424/US/RE**

Title of Invention

AIRCRAFT

Application Information

APPLICATION TYPE	Utility / ex parte reexam	PATENT #	8328128
CONFIRMATION #	2854	FILED BY	Gail Poland
PATENT CENTER #	73069632	FILING DATE	05/12/2025
CUSTOMER #	112467	FIRST NAMED INVENTOR	- 8328128
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Michael Schaldenbrand

Documents

TOTAL DOCUMENTS: 2

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
2025-11-05_ResponseAsFiled_14003-000424-US-RE.pdf	17	Response after non-final action-owner timely	100 KB
2025-11-06_CertificateofService_14003-000424-US-RE.pdf	2	Reexam Certificate of Service	51 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
2025-11-05_ResponseAsFiled_14003-000424-US-RE.pdf	5E37A0D79B788E26C6E496F16F414F8EDE7FC77D4C717E15CE086BF6958D569AEE6678A705FD9A21BC551BC4E49FE46644CF64A6D971C15FF6D20298E24B5CBE

2025-11-06_CertificateofService_14003-000424-US-RE.pdf	37E3CD951BC727A2467C4CD702C633CAB44625458AE6AEFCF4E3BCE4B889F4AC76FC8098CCF389EF391DC2BA2AA7762AD5BEFEA98CA8069C1FEED716D560E055

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.