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(54) Title: EVTOL AIRCRAFT

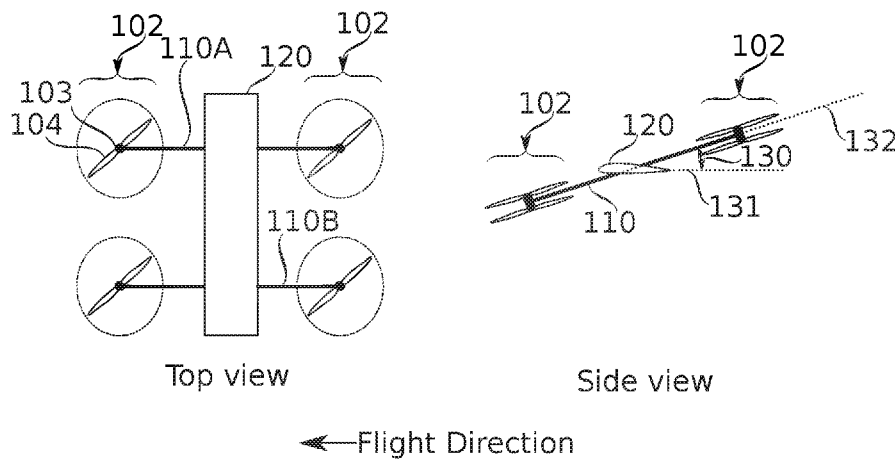


FIG. 1A

(57) Abstract: A VTOL aircraft comprising a plurality of motor assemblies, each configured to generate thrust by movement of air past the motor assembly along a respective axis of thrust of the motor assembly, and a wing, wherein 1) the orientations of the axes of thrust are each fixed, during operation of the aircraft, at a constant respective pitch angle oblique to a pitch orientation of the wing; 2) the plurality of motor assemblies is operable together to both fully support the aircraft in a hovering mode, and to propel the aircraft forward in a forward flight mode; 3) the wing does not intersect with any right cylinder centered on any motor assembly and having a central longitudinal axis aligned with the axis of thrust of the motor assembly and having a radius equal to a radius of a propeller of the motor assembly.



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EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV,
MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM,
TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
KM, ML, MR, NE, SN, TD, TG).

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— *of inventorship (Rule 4.17(iv))*

Published:

— *with international search report (Art. 21(3))*
— *before the expiration of the time limit for amending the
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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER INV. B64C29/02 ADD.		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols) B64C		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) EPO-Internal, WPI Data		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2010/051740 A1 (YOELI RAPHAEL [IL]) 4 March 2010 (2010-03-04)	1,4-12, 14, 16-20, 46,47,49
Y	the whole document	2,3,13, 15,21
X	----- US 2016/236775 A1 (ESHKENAZY MAXIM [US] ET AL) 18 August 2016 (2016-08-18)	1,6-9, 12, 17-19, 46,49
X	the whole document	
X	----- WO 2018/208596 A1 (PINNACLE VISTA LLC [US]) 15 November 2018 (2018-11-15)	1,46
Y	the whole document	2,3,13
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<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.		
* Special categories of cited documents :		
"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention	
"E" earlier application or patent but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone	
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art	
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family	
"P" document published prior to the international filing date but later than the priority date claimed		
Date of the actual completion of the international search	Date of mailing of the international search report	
24 June 2020	06/07/2020	
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Bianchi, Cristiano	

INTERNATIONAL SEARCH REPORT

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2018/134795 A1 (URBAN AERONAUTICS LTD [IL]) 26 July 2018 (2018-07-26) the whole document -----	1,46,47
X	US 2014/158815 A1 (RENTERIA JOSEPH RAYMOND [US]) 12 June 2014 (2014-06-12) the whole document -----	1,46,47, 49
Y	the whole document -----	15,21

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IL2019/051433

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-21, 46, 47, 49

Remark on Protest

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-21, 46, 47, 49

An aircraft with motor assemblies oblique to a pitch orientation of the wing

2. claims: 22, 23

A method of launching an aircraft with motor assemblies oblique to the ground from ground to forward flight

3. claims: 24-27

A self-tilting rotor mounting assembly of an aircraft

4. claims: 28-30

A variable blade-pitch rotor

5. claims: 31, 32

A guarded propeller of a winged aircraft

6. claims: 33-35

An electrical motor

7. claims: 36, 37

A battery-powered aircraft

8. claims: 38-45, 48

A multicopter aircraft

9. claim: 50

A method of setting thrust vectors of motor assemblies of an aircraft

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/IL2019/051433
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Patent document cited in search report	A1	Publication date	Patent family member(s)	Publication date
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			US 2010051740 A1	04-03-2010
			WO 2010026517 A2	11-03-2010

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			US 2019009895 A1	10-01-2019
			WO 2018208596 A1	15-11-2018

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