

Title (en)  
IMPELLER

Title (de)  
FLÜGELRAD

Title (fr)  
HÉLICE

Publication  
**EP 3597924 A4 20201111 (EN)**

Application  
**EP 18768414 A 20180227**

Priority  
• JP 2017047545 A 20170313  
• JP 2018007194 W 20180227

Abstract (en)  
[origin: EP3597924A1] Blade grooves (Qn) are continuous from a 1<sup>st</sup> blade groove (Q<sub>1</sub>) and constitute each of m blade groove groups, m satisfying  $m \geq 5$ . A pitch angle ( $\theta_n$ ) is set to a value different from the pitch angles ( $\theta_n$ ) of the other blade grooves constituting the one blade groove group (Rn). With respect to integrated pitch angles (tn), among a 1<sup>st</sup> integrated pitch angle t<sub>1</sub> to an i-th integrated pitch angle t<sub>i</sub>, the number of integrated pitch angles having one value is two or less, and the number of sets having the same value does not exceed  $i \times 0.18$ .

IPC 8 full level  
**F04D 5/00** (2006.01); **F04D 29/18** (2006.01); **F04D 29/24** (2006.01); **F04D 29/66** (2006.01)

CPC (source: EP)  
**F04D 5/002** (2013.01); **F04D 29/188** (2013.01); **F04D 29/666** (2013.01)

Citation (search report)  
• [A] JP H1150990 A 19990223 - DENSO CORP  
• [A] JP 2003278684 A 20031002 - DENSO CORP  
• [A] US 4881871 A 19891121 - WUNDERLICH ERHARD [DE]  
• [A] US 5163810 A 19921117 - SMITH JOHN E [US]  
• See references of WO 2018168442A1

Designated contracting state (EPC)  
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

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**EP 3597924 A1 20200122**; **EP 3597924 A4 20201111**; **EP 3597924 B1 20220615**; JP 6659911 B2 20200304; JP WO2018168442 A1 20190627; WO 2018168442 A1 20180920

DOCDB simple family (application)  
**EP 18768414 A 20180227**; JP 2018007194 W 20180227; JP 2019505848 A 20180227