

Title (en)  
FAN WITH INTEGRAL SHROUD

Title (de)  
LÜFTER MIT INTEGRIERTEM MANTEL

Title (fr)  
VENTILATEUR À TUYÈRE INTÉGRÉE

Publication  
**EP 2932039 A4 20151223 (EN)**

Application  
**EP 13863829 A 20131204**

Priority  
• US 201213716959 A 20121217  
• US 2013072993 W 20131204

Abstract (en)  
[origin: US2014169972A1] An integrally bladed rotor for use in a gas turbine engine includes a central hub; a plurality of airfoils extending from the central hub, each airfoil with a tip, a leading edge and a trailing edge; and a shroud with a metallic portion connecting to the tip of each airfoil to rotate with the airfoils.

IPC 8 full level  
**F01D 5/22** (2006.01); **B23P 15/00** (2006.01); **F01D 5/34** (2006.01)

CPC (source: EP US)  
**F01D 5/225** (2013.01 - EP US); **F01D 5/34** (2013.01 - EP US); **F01D 21/045** (2013.01 - EP US); **F04D 29/023** (2013.01 - EP US); **F04D 29/321** (2013.01 - EP US); **F05D 2220/36** (2013.01 - EP US); **F05D 2230/53** (2013.01 - EP US); **F05D 2260/96** (2013.01 - EP US); **F05D 2300/121** (2013.01 - EP US); **F05D 2300/133** (2013.01 - EP US); **F05D 2300/173** (2013.01 - EP US); **F05D 2300/174** (2013.01 - EP US); **F05D 2300/603** (2013.01 - EP US); **F05D 2300/614** (2013.01 - EP US); **Y02T 50/60** (2013.01 - EP US)

Citation (search report)  
• [X] US 6454535 B1 20020924 - GOSHORN DAVID ANDREW [US], et al  
• [X] US 2008016688 A1 20080124 - FABRE ADRIEN [FR], et al  
• [XY] US 5201850 A 19930413 - LENHARDT CHRISTOPHER H [US], et al  
• [X] US 2005220621 A1 20051006 - HORNICK DAVID C [US], et al  
• [X] US 6223524 B1 20010501 - DURCAN JAMES FRANCIS [US]  
• [X] WO 2006062451 A1 20060615 - VOLVO AERO CORP [SE], et al  
• [X] DE 102010021220 A1 20111124 - MTU AERO ENGINES GMBH [DE]  
• [X] CN 102418562 A 20120418 - UNIV TSINGHUA  
• [Y] US 3556675 A 19710119 - HOWALD WERNER E, et al  
• [Y] US 2952442 A 19600913 - WARNKEN ELMER P  
• See references of WO 2014099365A1

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

Designated extension state (EPC)  
BA ME

DOCDB simple family (publication)  
**US 2014169972 A1 20140619**; EP 2932039 A1 20151021; EP 2932039 A4 20151223; WO 2014099365 A1 20140626

DOCDB simple family (application)  
**US 201213716959 A 20121217**; EP 13863829 A 20131204; US 2013072993 W 20131204