

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
15 July 2021 (15.07.2021)



(10) International Publication Number
WO 2021/140330 A1

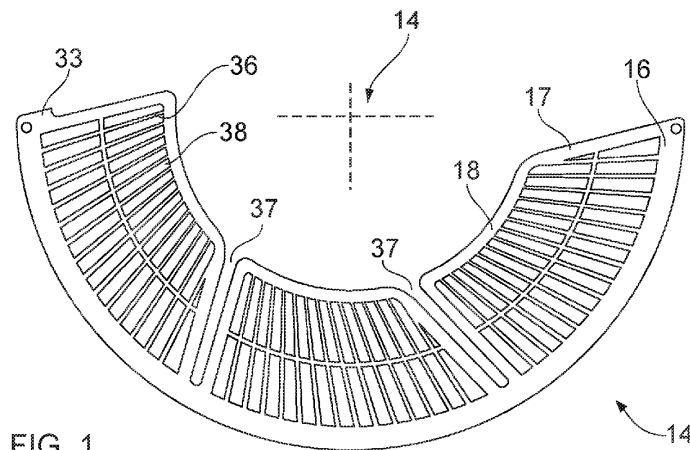
- (51) **International Patent Classification:**
F04D 19/04 (2006.01) *F04D 29/54* (2006.01)
- (21) **International Application Number:**
PCT/GB2021/050036
- (22) **International Filing Date:**
07 January 2021 (07.01.2021)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
2000298.6 09 January 2020 (09.01.2020) GB
- (71) **Applicant:** **EDWARDS LIMITED** [GB/GB]; Innovation Drive, Burgess Hill Sussex RH15 9TW (GB).
- (72) **Inventors:** **SCHOFIELD, Nigel Paul**; c/o Edwards Limited, Innovation Drive, Burgess Hill Sussex RH15 9TW (GB). **DOWDESWELL, Stephen**; Edwards Limited, Innovation Drive, Burgess Hill Sussex RH15 9TW (GB).
- (74) **Agent:** **NORTON, Ian**; Edwards Limited, Innovation Drive, Burgess Hill Sussex RH15 9TW (GB).
- (81) **Designated States** (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO,

DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, IT, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW.

(84) **Designated States** (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, 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).

Published:
— with international search report (Art. 21(3))

(54) **Title:** VACUUM PUMP



(57) **Abstract:** A vacuum pump (10) comprising: a rotor (35) rotatably mounted within a stator; the rotor comprising a plurality of angled blades (30) arranged along a helical path from an inlet (26) to an outlet (28); the stator comprising a plurality of perforated elements (14) forming a plurality of perforated discs arranged to intersect the helical path at different axial positions, the perforations allowing gas molecules travelling along the helical path to pass through the perforated elements. Each of the perforated discs comprises an outer curved wall (16) forming an outer circumference of the disc and an inner curved wall (18) forming a portion of an inner circumference of the disc, the inner circumference comprising at least one gap where there is no inner wall.



WO 2021/140330 A1