

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
02 May 2024 (02.05.2024)



(10) International Publication Number
WO 2024/089402 A1

- (51) **International Patent Classification:**
G02C 7/02 (2006.01) G02C 7/08 (2006.01)
- (21) **International Application Number:**
PCT/GB2023/052764
- (22) **International Filing Date:**
23 October 2023 (23.10.2023)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
63/420,114 28 October 2022 (28.10.2022) US
- (71) **Applicant: COOPERVISION INTERNATIONAL LIMITED** [GB/GB]; Delta Park, Concorde Way, Segensworth North, Fareham PO15 5RL (GB).
- (72) **Inventors: CHAMBERLAIN, Paul;** CooperVision, Inc, 5870 Stoneridge Drive, Suite 1, Pleasanton, California 94588 (US). **SAHA, Sourav;** CooperVision, Inc, 5870 Stoneridge Drive, Suite 1, Pleasanton, California 94588 (US). **BRADLEY, Arthur;** CooperVision, Inc, 5870 Stoneridge Drive, Suite 1, Pleasanton, California 94588 (US).
- (74) **Agent: ABEL & IMRAY LLP;** Westpoint Building, James Street West, Bath Bath and North East Somerset BA1 2DA (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, CV, CZ, DE, DJ, DK, DM,

DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, MG, MK, MN, MU, 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, CV, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SC, 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, ME, 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:** OPHTHALMIC LENSES INCLUDING ASYMMETRIC GRADIENT INDEX OPTICAL ELEMENTS

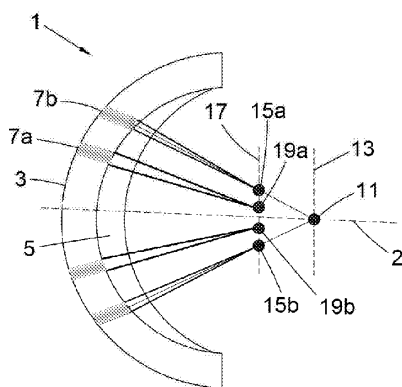


FIG. 1A

(57) **Abstract:** An ophthalmic lens (1), a film for use in an ophthalmic lens (1) and a method (500) of manufacturing an ophthalmic lens (1) are described. The lens (1) has an optical axis. The lens (1) comprises a layer (3) provided on a surface of a substrate (5). The layer (3) has a base refractive index and includes at least one gradient index optical element (7a, 7b) having an asymmetric refractive index profile. The at least one gradient index optical element (7a, 7b) focuses light from a distant point source on the optical axis to a point that is a first distance from the optical axis (2).

WO 2024/089402 A1