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Rubin(10) **Pub. No.: US 2022/0377855 A1**(43) **Pub. Date: Nov. 24, 2022**(54) **OPTICAL ELEMENT WITH HEATER LAYER****H01L 23/34** (2006.01)**C03C 3/32** (2006.01)(71) Applicant: **LightPath Technologies, Inc.**, Orlando,
FL (US)(52) **U.S. Cl.**CPC **H05B 3/86** (2013.01); **G02B 1/041**
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3/321 (2013.01); **H04N 5/22521** (2018.08)(72) Inventor: **Shmuel Rubin**, Winter Park, FL (US)(21) Appl. No.: **17/664,186**

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Methods and systems for providing de-icing and/or de-fogging of an optical element include providing a resistive layer on an optically transparent material. In one embodiment, an optical system includes an optical device having a moldable optical material having a first surface, a resistive transparent material deposited in a layer on the first surface, and a conductive pad in electrical contact with the resistive transparent material. A method can include providing a moldable optical material having a first surface, a resistive transparent material deposited in a layer on the first surface, and a conductive pad in electrical contact with the resistive transparent material, and providing electrical energy to the conductive pad to heat the resistive transparent material.

