



US 20230231356A1

(19) **United States**(12) **Patent Application Publication**
PINNA et al.(10) **Pub. No.: US 2023/0231356 A1**(43) **Pub. Date: Jul. 20, 2023**(54) **FABRY-PEROT BASED MULTI RESONANT
CAVITY TUNABLE LASER**(71) Applicant: **ROCKLEY PHOTONICS LIMITED,**
Altrincham (GB)(72) Inventors: **Sergio PINNA**, Santa Barbara, CA
(US); **Yi ZHANG**, Pasadena, CA (US);
Richard GROTE, Rancho Cucamonga,
CA (US)(21) Appl. No.: **18/085,455**(22) Filed: **Dec. 20, 2022****Related U.S. Application Data**(60) Provisional application No. 63/292,341, filed on Dec.
21, 2021.**Publication Classification**(51) **Int. Cl.****H01S 3/083** (2006.01)**H01S 3/08022** (2006.01)**H01S 3/082** (2006.01)(52) **U.S. Cl.**CPC **H01S 3/083** (2013.01); **H01S 3/08027**
(2013.01); **H01S 3/0823** (2013.01)

(57)

ABSTRACT

There is provided a laser, and/or a reflector for a laser cavity comprising: a ring resonator structure; and a Fabry-Perot filter connected in cascade to the ring resonator structure by a coupling waveguide. The coupling waveguide is configured to propagate light having a frequency corresponding to any of the resonant frequencies of the ring resonator structure to the Fabry-Perot filter, and the Fabry-Perot filter is configured to select one or more frequencies and return light having a frequency matching any of the selected frequencies to the ring resonator structure via the coupling waveguide.

