

US 7,149,377 B2

Extract Page 18:

FIG. 12 illustrates a single-pass embodiment 84 of the invention wherein the etalon 22 operates in reflection. Finally, FIGS. 13 and 14 illustrate a preferred, actual embodiment 90 of the invention tuned by applying counterbalanced compressive forces on a conventional etalon 22 to vary in very precise fashion the optical length of its cavity, as fully disclosed in Ser. No. 10/795,167. The optical length of the etalon is determined by the thickness of its spacers (see FIG. 1) which separate the optical surfaces of the cavity by exerting the force necessary to keep them apart at a predetermined distance. On the other hand, all spacer materials are characterized by a certain degree of resilience (within the Young's Modulus limits of the material) which affords an opportunity to change the thickness of the spacers by applying a controlled compressive force over them. Accordingly, as shown in the exploded view of FIG. 13, a conventional etalon 22 is mounted inside a cylindrical main cell 86 butting against an appropriately formatted recess 88. A tuning cell 92, positioned over the etalon inside the main cell 86, is mated to the main cell via a mating threads 94 which, when the thread is engaged, applies a compressive force onto the etalon 22. The degree of compression of the etalon (and, therefore, the degree of its spectral tuning) varies within predetermined limits depending on how deep the tuning cell is threaded

into the main cell. Finally, a collar 96 is positioned over the main cell 86 and rigidly attached to the tuning cell. As a result, in operation a mere rotation of the collar mechanically translates the rotation of the tuning cell 92, which in turn engages more or less of the mating threads 94 to compress and therefore tune the etalon 22. One or more slots 98 are provided in the main cell 96 to house energy-rejection order-selection filters according to the present invention. FIG. 14 shows the tunable filter 90 in assembled condition.

#### Extract Page 19:

18. The filter assembly of claim 2, wherein said means for tuning said etalon cavity by changing the optical length of the cavity includes variable means for adjusting a distance between optical Surfaces in said cavity.

19. The filter assembly of claim 18, wherein said variable means operates by applying a variable force to vary a distance between said optical Surfaces and said variable force is a resultant of two counteracting opposite forces urging at least one of said optical Surfaces in opposite directions.