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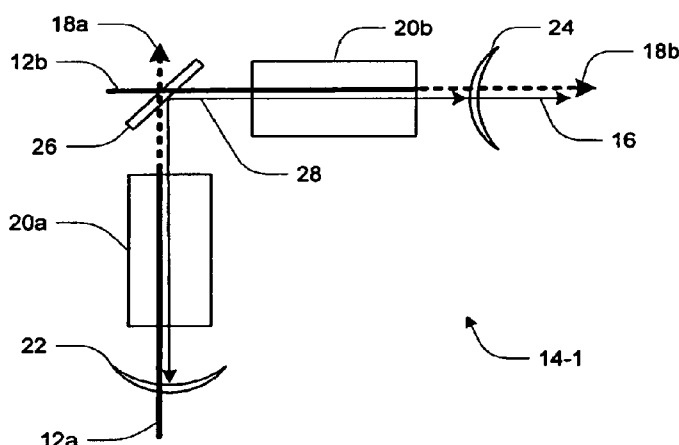
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- as to the applicant's entitlement to claim the priority of
the earlier application (Rule 4.17(iii))

[Continued on next page]

(54) Title: MULTI-PORT OPTICAL PARAMETRIC OSCILLATOR



(57) **Abstract:** An optical parametric oscillator (14) includes a source (10) of coherent energetic pump optical signals and an optical resonator cavity which includes a set of optical parametric amplifying (OPA) crystals (20a, 20b) and a set of optical elements (22, 24, 26) such as mirrors disposed along an optical path. The optical elements are configured (1) to direct an oscillation optical signal (28) generated by the OPA crystals along the optical path, (2) to provide input coupling of the energetic pump optical signals (12a, 12b) such that each energetic pump optical signal travels through only one of the OPA crystals to result in a corresponding depleted pump optical signal, and (3) to provide output coupling of the depleted pump optical signals (18a, 18b) to prevent each depleted pump optical signal from traveling through more than one of the OPA crystals. Resonator cavities have multi-leg configurations, including 'L' and 'U' shapes, and either linear (or standing-wave) or ring architectures. The pump source may employ wavefront division or alternatively amplitude division of a single relatively high-power optical pump beam.



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