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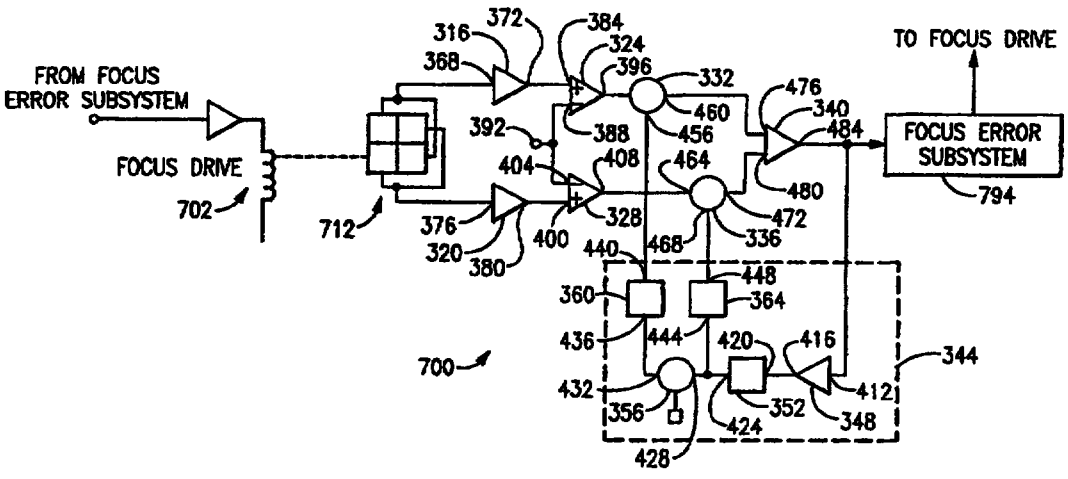
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(54) Title: CLOSED LOOP SERVO OPERATION FOR FOCUS CONTROL



(57) Abstract

A technique is disclosed for focus control of a beam of radiant energy, wherein a detector (712) of the beam has first (368) and second (376) outputs responsive to a position of the focal point of the beam. A circuit is coupled to the outputs of the detector for producing an error signal representing a displacement of the focus from a predetermined position, wherein the error signal has a periodic characteristic relative to the displacement. A servo (700) responsive to the error signal restores the displaced beam to the predetermined position. A local feedback loop (344) is coupled to the outputs of the detector, and includes first (360) and second (364) periodic function generators, each responsive to the error signal. The second periodic function generator has an output that differs from an output of the first periodic function generator by a phase angle, preferably 90 degrees. A first multiplier (332) multiplies the first output of the detector by the output of the first periodic function generator. A second multiplier (336) multiplies the second output of the detector by the output of the second periodic function generator, wherein the outputs (460, 472) of the first and second multipliers are provided as inputs (476, 480) of the circuit to modify the error signal.