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United States Patent [19]

Getreuer et al.

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[54] **SEEK ACTUATOR FOR OPTICAL RECORDING**

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[21] Appl. No.: **657,155**

[22] Filed: **Feb. 15, 1991**

[51] **Int. Cl.**[5] **G11B 7/00**

[52] **U.S. Cl.** **369/44.14**; 369/44.21; 369/249; 359/824; 359/813

[58] **Field of Search** 369/44.14, 44.15, 44.18, 369/44.17, 44.21, 44.22, 44.35, 219, 249, 256; 359/814, 813, 819, 824

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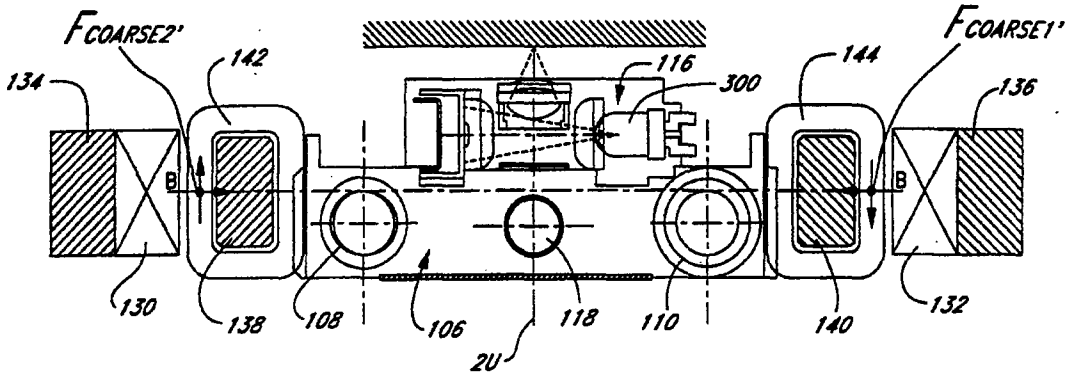
[57] **ABSTRACT**

The present invention is an apparatus for optical reading or recording information on an optical information medium, wherein as a result of the relative position of the components of the apparatus and the magnitude and application points of the forces exerted to track and focus, the objective lens through which information is read from the information medium, prevents the objective lens from being affected by most resonances, motor forces and reaction forces. This is critical in that in optical recording, displacements of 0.02 micrometers can easily be picked up. Specifically, one aspect of the invention is an apparatus for optically reading or recording information on an optical disk which is rotatable about an axis of rotation, wherein the apparatus includes a frame, a carriage, a carriage drive, an objective lens, an objective lens holder and a focus drive. The carriage drive (i.e., those portions of the carriage motor which move relative the frame) drives the carriage along a path radial to the axis of the rotation. The objective lens is mounted on the objective lens holder so that the optical axis of the objective lens is within 0.5 millimeters of intersecting the center of mass of the carriage mass. The holder is movable relative to the carriage so as to move the objective lens along its optical axis. This movement is controlled by a focus drive (i.e., those portions of the focus motor which move relative to the carriage) which drives the holder so as to move the objective lens along its optical axis. For purposes of this application including appended claims, the carriage and actuator assembly is considered to be broken down into two mass groupings. The first is the "fine motor mass" (i.e., the mass of all components suspended for freedom of movement from the carriage). The second is the "carriage mass" (i.e., the mass of all components which move with the carriage excluding the fine motor mass and any incidental connecting wiring not wholly supported by the carriage).

26 Claims, 35 Drawing Sheets



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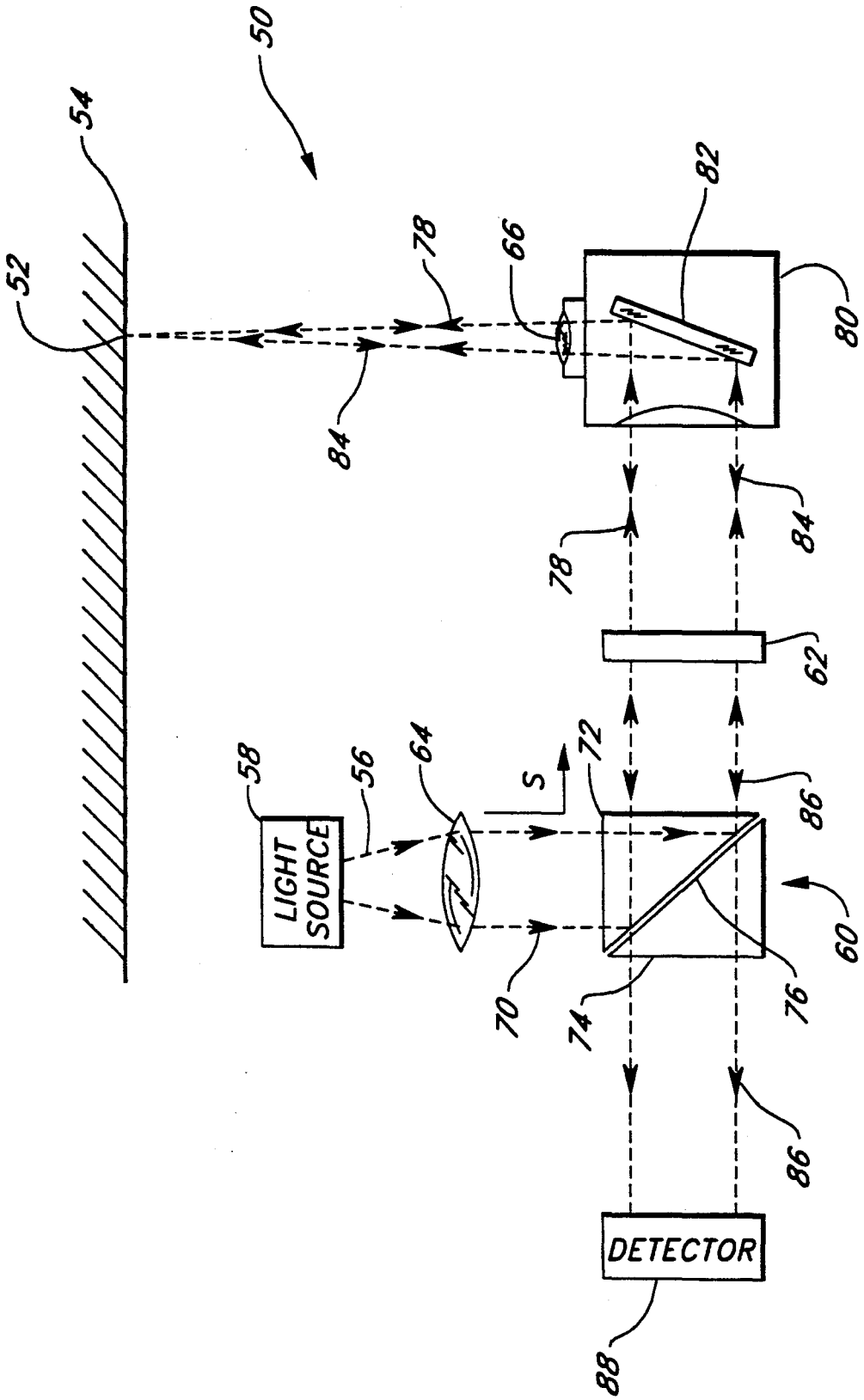

FIG. 1

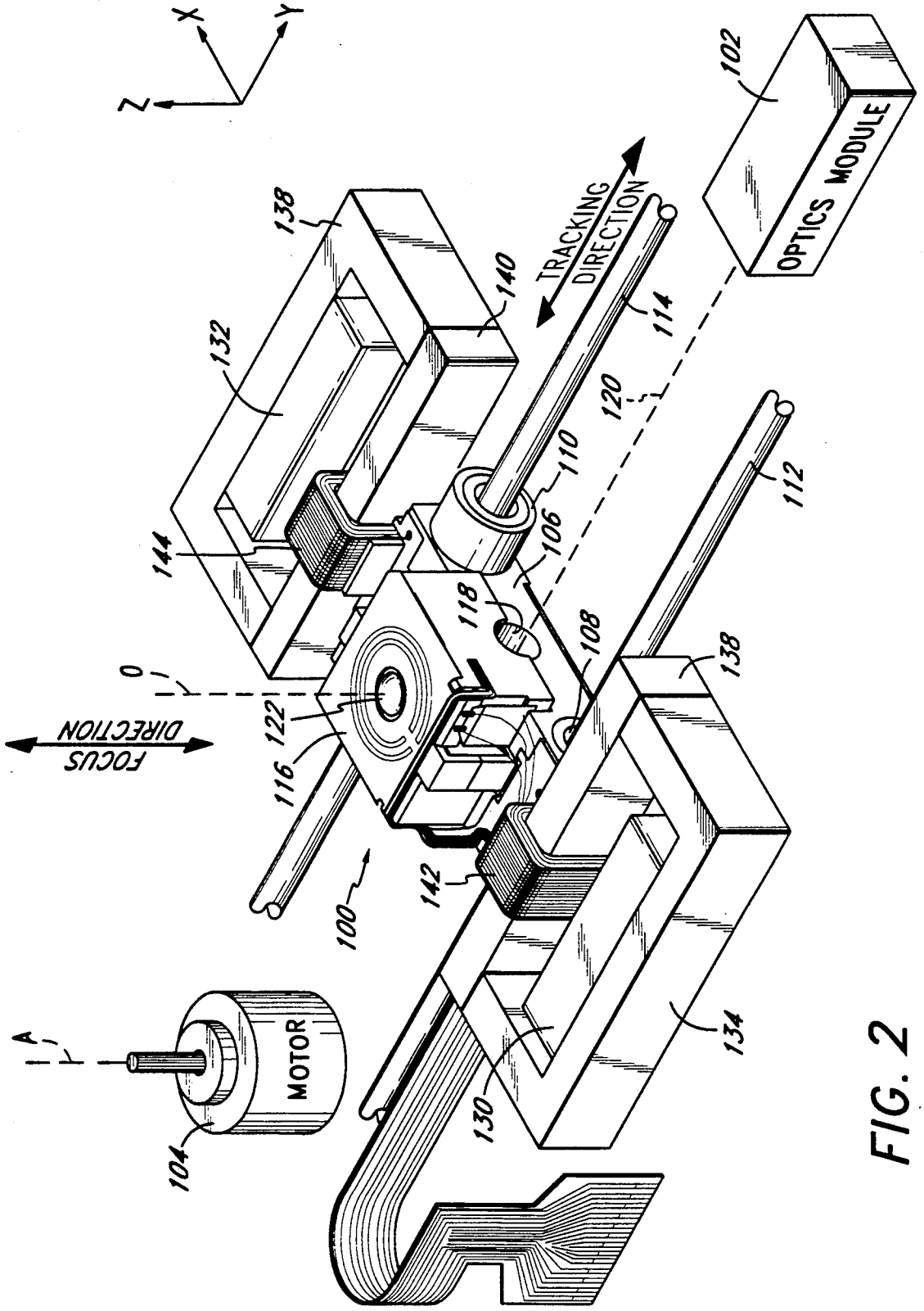

FIG. 2

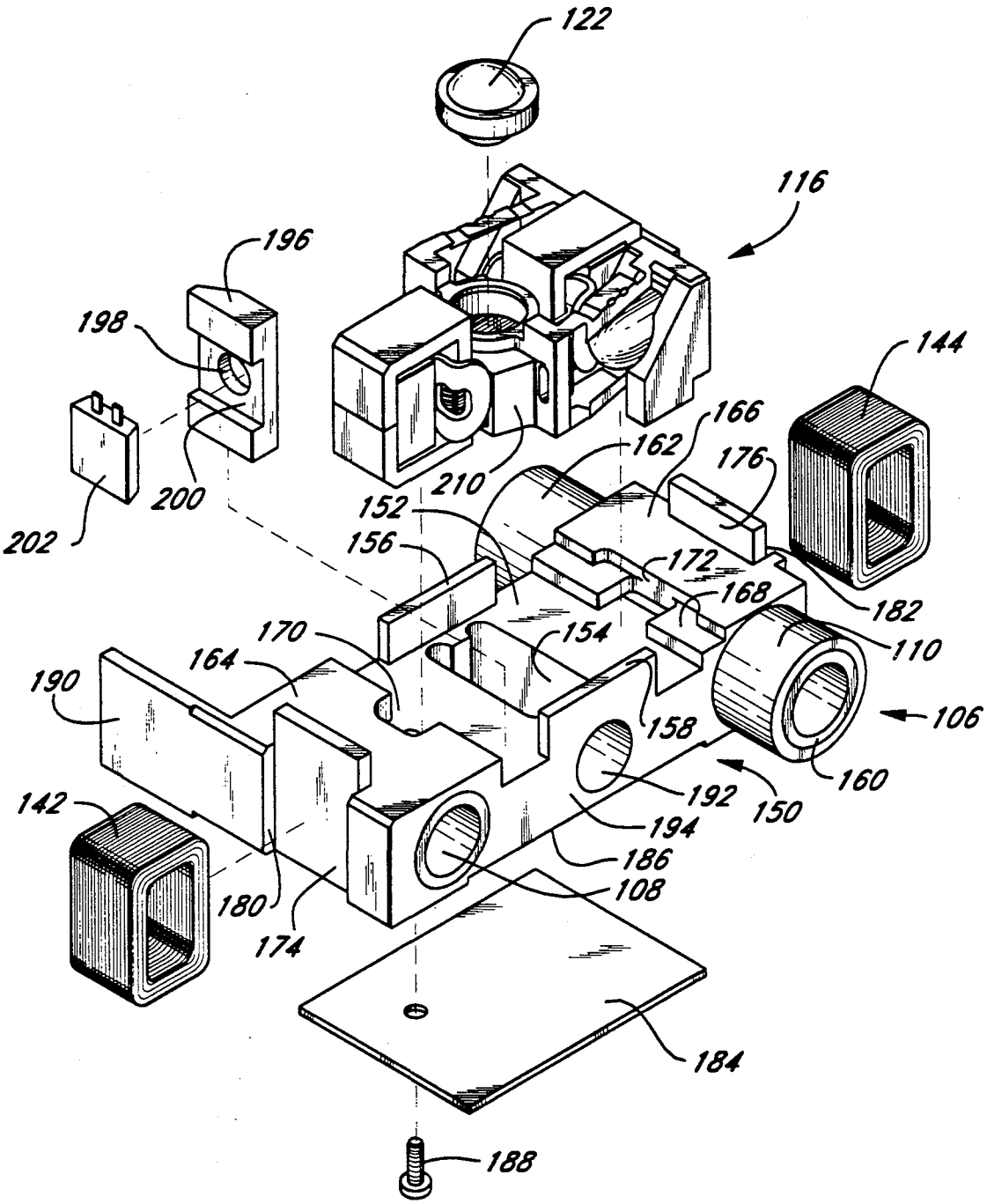

FIG. 3

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