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(54) Title: HEAD MOUNTED DISPLAY OPTICS

(57) Abstract

A head mounted display for use in virtual reality applications and typically in the form of a slim visor is provided with binocular magnifying optics which permit the binocular viewing of an image displayed by a single miniature LCD video screen (501) magnified at infinity focus at left and right exit pupils (507). A vertically offset beamsplitter is provided having two elements (502, 508) being substantially mutually perpendicular planar semi-reflecting mirrors (in the illustrated embodiment) disposed respectively above or below the horizontal optical axis of the LCD (501). A single image viewed from the LCD (501) passes through the semi-reflecting mirrors (502, 508) to be reflected off a concave mirror (503). On reflection part of the image is reflected off element (502) and then by a right hand fold mirror (510) toward the right hand exit pupil (507). Another part of the image is similarly reflected off element (508) and left hand fold mirror (510) toward the left hand exit pupil (507). Magnification and/or optical correction of the images viewable at eyepoints (507) can be effected by a respective one of lens arrays (505). In other embodiments of the invention the disposition of optical elements permits the use of vertically offset beamsplitters which are wholly reflective, i.e. not semi-transmissive.

