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[54] LIGHT PEN ARRANGEMENT FOR PROVIDING THREE DEGREES OF FREEDOM FOR A LIGHT PEN IN AN INTERACTIVE GRAPHICS SYSTEM

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[57] ABSTRACT

A light pen arrangement is described wherein the light pen has three degrees of freedom, viz. two-dimensional translation in the (X,Y) plane of a cathode ray tube screen and rotation about the projection of its own longitudinal axis to the normal of the screen. To sense the angular position of the light pen, at least two independent light sensitive elements, i.e., fiber optic bundles are required, the latter being suitably provided by dividing the bundle of fiber optics emerging from a single light pen into at least two separate groups and having photosensitive transducer respectively associated with each of the separate groups. When the light pen is placed on the screen and its presence there is sensed, an (X,Y) value pair is stored for the location of each light sensitive area of the light pen, i.e., each of the aforementioned separate fiber optic groups. The storing is accomplished by having an electron beam draw lines or points in each light sensitive area and, receiving in response thereto, interrupts for points or lines in the field of view of each fiber optic group, the (X,Y) coordinate of each point or line causing an interrupt and the fiber optic group that picked up the interrupt is now known to the computer or other control arrangement controlling the cathode ray tube. The computer or control arrangement can then compute the (X,Y) location of the light pen as the centroid of the individual areas and the angular position of the pen.

2 Claims, 6 Drawing Figures

