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ABSTRACT

LIQUID CRYSTAL DISPLAY DEVICE

A liquid crystal display device (10) includes an entrance polarizer (18) to provide light which is linearly polarized in a first selected direction and a first birefringent film (26) to convert the linearly polarized light from the entrance polarizer to elliptically polarized light having a selected ellipticity. At least one liquid crystal cell (2) having an ellipticity equal to the selected ellipticity receives the light propagating from the first birefringent film; the liquid crystal cell includes first and second parallel-facing transparent plates (14a,14b) which sealably contain a quantity of liquid crystal material (16). The liquid crystal material comprises at least a first molecule immediately adjacent the first transparent plate which is oriented in the first selected direction and at least a second molecule immediately adjacent the second transparent plate which is oriented in a second selected direction. A second birefringent film (28) converts the elliptically polarized light propagating from the at least one liquid crystal cell to light which is linearly polarized in the second selected direction. An exit polarizer (20) having a polarization axis oriented orthogonally to the second selected direction will extinguish the light propagating from the second birefringent film when the liquid crystal cell is in an "off" state.

