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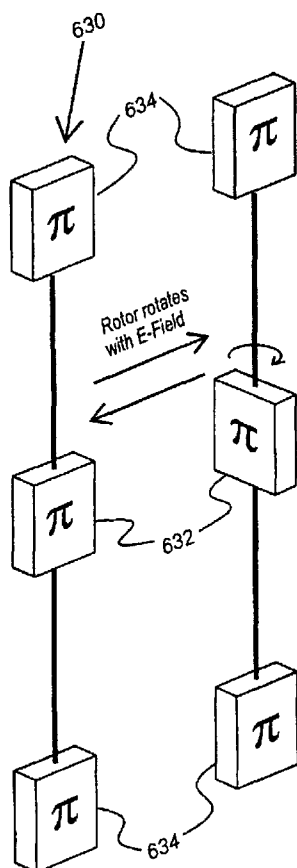
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(54) Title: BISTABLE MOLECULAR MECHANICAL DEVICES ACTIVATED BY AN ELECTRIC FIELD FOR ELECTRONIC INK AND OTHER VISUAL DISPLAY APPLICATIONS



(57) Abstract: An electric field activated bi-stable molecular system (16, 630) configured within an electric field generated by a pair of electrodes (301, 303 or 301, 305 or 403, 405) is provided for use, e.g., as electronic ink (12) or other visual displays. The molecular system (16, 630) has at least one rotor portion (632) connected to at least one stator portion (634), wherein the rotor portion (632) rotates with respect to the stator portion (634) between at least two different states upon application of the electric field, thereby inducing a band gap change in the molecular system (16, 630), wherein in a first state, there is extended conjugation throughout the major portion of the molecular system (16, 630), resulting in a relatively smaller band gap, and wherein in a second state, the extended conjugation is destroyed, resulting in a relatively larger band gap. A primary advantage of the molecular system (16, 630) is improved contrast. Because the colorant of the present invention is molecular and thus effectively monoplanar, there should be no backside reflection or scattering from the colorant. A second advantage of the present invention is improved resolution. Finally, each molecule (16, 630) of the present invention will latch to stabilize one or the other of its color states.

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