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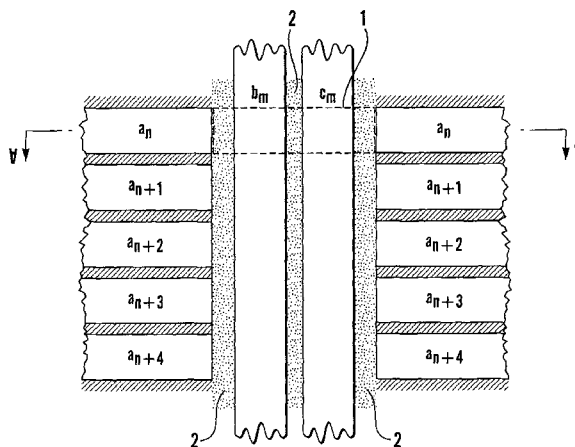
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(54) Title: APPARATUS AND METHOD FOR NON-DESTRUCTIVE DATA STORAGE AND RETRIEVAL



(57) Abstract: In a data storage apparatus comprising means for storing and retrieving data in respective write and read operations, and first and second set of addressing electrodes are provided, the latter set having electrodes that preferably are oriented orthogonally to the electrodes of the first set, and the electrodes (b , c) of the second set are provided as parallel twin electrodes located in parallel recesses or trenches (3) in the electrodes of the first set. The trenches comprise a soft ferroelectric or electret memory material with piezoelectric properties such that memory cells (1) with two subcells ($\alpha_{i1}?$, $\alpha_{i2}?$) are formed in the trench (3) respectively between the electrodes (a) of the first set and the parallel twin electrodes (b , c) on either side of the latter. In a write operation data are encoded in the memory cells (1) by means of an applied voltage potential over the subcells ($\alpha_{i1}?$, $\alpha_{i2}?$). In a non-destructive readout operation of data encoded and stored in the memory cells (1) in this manner, the piezoelectric properties of the memory material (2) is employed for eliciting response signals from the subcells ($\alpha_{i1}?$, $\alpha_{i2}?$) of a memory cell (1) when the former are subjected to mechanical stresses in the lateral direction, such that the logical value stored in the memory cell (1) can be determined.



WO 03/052762 A1