Abstract

A Memory Storage Device

A memory storage device, the device comprising: a plurality of magnetic recording bits 104, each recording bit 104 storing at least one logical value; a plurality of conducting lines 102 to magnetize at least one recording bit 104 when a magnetic field is induced by passing a current through the conducting lines 102; and a plurality of sensors 204 for measuring the magnetoresistance of the recording bits 104, each sensor 204 corresponding to a recording bit 104, and where the at least one logical value stored by a recording bit 104 is determined by the measured magnetoresistance of the recording bit 104; wherein each sensor 204 comprises a pinned layer 502 and a sensing layer 504, the pinned layer 502 having a fixed magnetic orientation and the sensing layer 504 having a variable magnetic orientation; and wherein each recording bit 104 comprises a recording layer 506 having a variable magnetic orientation, the recording layer 506 having a higher coercivity relative to the sensing layer 504 such that the magnetic orientation of the sensing layer 504 is stabilized by the recording layer 506.

Fig. 1