Lead Overlaid Type of Sensor with Sensor Passive Regions Pinned

Abstract

An improved magnetic head (20) for a hard disk drive (10) includes a lead overlaid read head component (80) in which the magnetic fields of the passive region of the free magnetic layer regions are pinned. In one embodiment, an additional thin film layer (128) composed of a magnetic material such as the hard bias layer material (88) is deposited on top of the free layer (68) of the GMR head in the passive region beneath the overlaid electrical leads(94). When the hard bias layer (88) is magnetically initialized, magnetic fields created in the new thin film layer (128) act to pin the magnetic fields in the passive regions of the free layer (68). The operational characteristics of the read head (80) are improved because the passive region of the free layer is magnetically pinned and thus not affected by side reading magnetic fields from adjacent data tracks. Noise and side reading effects are thereby reduced and the performance of the read head (80) is thereby improved.

Fig. 3