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(54) **MAGNETORESISTANCE EFFECT DEVICE WITH A TA, HF, OR ZR SUBLAYER CONTACTING AN NIFE LAYER IN A MAGNETO RESISTIVE STRUCTURE**

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(52) **U.S. Cl.** **360/324.1**; 360/324.12
(58) **Field of Search** 360/113, 324.1, 360/324.11, 324.12, 324.2, 317

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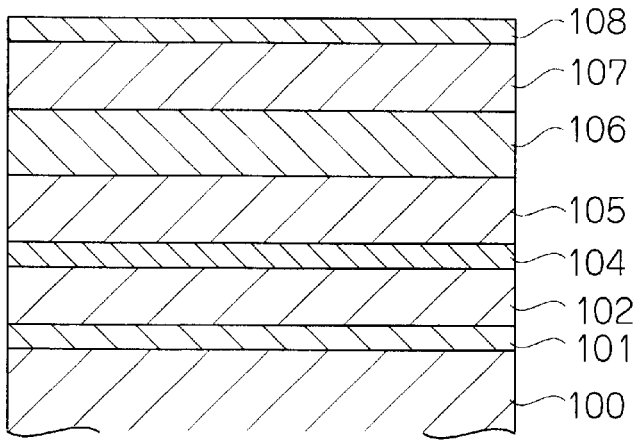
(57) **ABSTRACT**

A magnetoresistance effect device has the basic structure of substrate/sublayer/NiFe layer/CoFe layer/non-magnetic layer/fixed magnetic layer/antiferromagnetic layer. The sublayer may be Ta at a film thickness of not less than 0.2 nm but less than 3.0 nm, or Hf at a film thickness of not less than 0.2 nm but not greater than 1.5 nm, or Zr at a film thickness of not less than 0.2 nm but not greater than 2.5 nm. It is permissible to use only an NiFe layer instead of the NiFe layer/CoFe layer.

13 Claims, 22 Drawing Sheets