(iii) a magnetoresistance effect device laminated on the lower gap layer;

(iv) a vertical bias layer laminated so as to contact the edges of the magnetoresistance effect device;

(v) a lower electrode layer laminated on the vertical bias layer;

(vi) an upper gap layer laminated on the lower electrode layer and on the magnetoresistance effect device; and

(vii) an upper shield layer laminated on the upper gap layer;

(b) a current source for producing a current that passes through the magnetoresistance effect sensor; and

(c) a resistance detector that detects resistivity variation as a function of the magnetic field detected by the magnetoresistance effect sensor;

the magnetoresistance effect device comprises:

a sublayer directly on and contacting said lower gap layer, said sublayer being one of (1) Ta that is not less than 0.2 nm thick and less than 1.0 nm thick, (2) Hf that is not less than 0.2 nm thick and not more than 1.5 nm thick, and (3) Zr that is not less than 0.2 nm thick and not more than 2.5 nm thick, an NiFe layer directly on and contacting said sublayer, a non-magnetic layer directly on and contacting said NiFe layer, a fixed magnetic layer directly on and contacting said non-magnetic layer, and an antiferromagnetic layer directly on and contacting said fixed magnetic layer;

the magnetoresistance effect device is formed in a prescribed pattern.

10. The magnetoresistance detection system according to claim **9**, wherein said sublayer has a thickness less than 1.0 nm.

11. A magnetoresistance detection system comprising:

(a) a magnetoresistance effect sensor comprising:

(i) a lower shield layer laminated on a substrate, the shield layer formed in a designated pattern;

(ii) a lower gap layer laminated on the lower shield layer;

(iii) a magnetoresistance effect device laminated on the lower gap layer;

the magnetoresistance effect device comprises:

a sublayer directly on and contacting said lower gap layer, said sublayer being one of (1) Ta that is not less than 0.2 nm thick and less than 1.0 nm thick, (2) Hf that is not less than 0.2 nm thick and not more than 1.5 nm thick, and (3) Zr that is not less than 0.2 nm thick and not more than 2.5 nm thick, an NiFe layer directly on and contacting said sublayer, a CoFe layer directly on and contacting said NiFe layer, a non-magnetic layer directly on and contacting said CoFe layer, an MR-enhancing layer directly on and contacting said non-magnetic layer, a fixed magnetic layer directly on and contacting said MR-enhancing layer, and an antiferromagnetic layer directly on and contacting said fixed magnetic layer;

the magnetoresistance effect device is formed in a prescribed pattern;

(iv) a vertical bias layer laminated so as to contact the edges of the magnetoresistance effect device;

(v) a lower electrode layer laminated on the vertical bias layer;

(vi) an upper gap layer laminated on the lower electrode layer and on the magnetoresistance effect device, and

(vii) an upper shield layer laminated on the upper gap layer;

(b) a current source for producing a current that passes through the magnetoresistance effect sensor; and

(c) a resistance detector that detects resistivity variation as a function of the magnetic field detected by the magnetoresistance effect sensor.

12. The magnetoresistance detection system according to claim **11**, wherein said sublayer has a thickness less than 1.0 nm.

13. A magnetic storage system comprising:

(a) a magnetic storage medium having a plurality of tracks for data recording;

(b) a magnetic recording system for storing data on the magnetic storage medium;

(c) a magnetoresistance detection system comprising:

(i) a magnetoresistance effect sensor comprising:

a shield layer formed in a prescribed pattern and laminated on a substrate;

a lower gap layer laminated on the lower shield layer;

a magnetoresistance effect device laminated on the lower gap layer;

a vertical bias layer laminated so as to contact the edges of the magnetoresistance effect device;

a lower electrode layer laminated on the vertical bias layer;

an upper gap layer laminated on the lower electrode layer and on the magnetoresistance effect device; and

an upper shield layer laminated on the upper gap layer;

(ii) a current source for producing a current that passes through the magnetoresistance effect sensor; and

(iii) a resistance detector that detects resistivity variation as a function of the magnetic field detected by the magnetoresistance effect sensor; and

(d) an actuator that couples the magnetoresistance detection system and the magnetic recording system;

the magnetoresistance effect device comprises:

a sublayer comprising Ta that is less than 1.0 nm thick and not less 0.2 nm thick and that is directly on and contacting said lower gap layer, an NiFe layer directly on and contacting said Ta sublayer, a non-magnetic layer directly on and contacting said NiFe layer, a fixed magnetic layer directly on and contacting said non-magnetic layer, and an antiferromagnetic layer directly on and contacting said fixed magnetic layer;

the magnetoresistance effect device is formed in a prescribed pattern; and

the actuator moves a head unit of the magnetoresistance detection system and of the magnetic recording system over a selected track on the magnetic storage medium.

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