

8. A magnetic head according to claim 1; wherein a gap layer is interposed between said magnetoresistive film and either of said pair of shield layers.

9. A magnetic head according to claim 1; wherein said insulation protective film is above or under said magnetoresistive film (as viewed from above the substrate) and is arranged in the region excluding said magnetoresistive film, and the boundary between the region in which said insulation protective film is arranged and the region in which said insulation protective film is not arranged is contained in the region in which said pair of shield layers exist.

10. A magnetic head according to claim 1; wherein electrodes of said pair of electrodes or films of said pair of longitudinal bias films are formed such that a distance therebetween is constant in the vicinity of the magnetoresistive film and expands at a position raised to a prescribed height in the head depth direction, and said electrodes of said pair of electrodes or said films of said pair of longitudinal bias films have straight lines parallel to each other in the vicinity of the magnetoresistive film such that  $H_1 \leq N_1$ , where  $H_1$  denotes the length of that part of said parallel straight lines which is not in contact with the magnetoresistive film and  $N_1$  denotes the space between said parallel straight lines.

11. A magnetic head having a pair of shield layers, a magnetoresistive film arranged in said pair of shield layers, said pair of shield layer functioning as electrodes to apply current to said magnetoresistive film, and insulation films formed at both ends of said magnetoresistive film, characterized in that an additional insulation protective film is interposed between said pair of shield layers and arranged outside the active region of said magnetoresistive film, and either of said pair of shield layers contains at least one

magnetic layer having a resistivity which is higher than a resistivity of metal.

12. A magnetic head according claim 11, wherein either of said pair of shield layers is composed of a second magnetic layer and a first magnetic layer laminated on top of the other (the former being adjacent to said magnetoresistive film) and said second magnetic layer is a mixture of ferromagnetic metal and oxide, a laminate film of ferromagnetic metal and oxide, or an oxide soft magnetic film.

13. A magnetic head according to claim 11, wherein said magnetoresistive film is a ferromagnetic tunneling magnetoresistive film.

14. A magnetic storage apparatus having a magnetic recording medium for information recording, a recording-reproducing head with a recording element to record information in said magnetic recording medium and a reproducing element to detect information recorded in said magnetic recording medium, a read-write circuit to send and receive recording and reproducing signals to and from said storage head, an actuator to move said storage head to a prescribed position on said magnetic recording medium, and a means to control said read-write circuit and actuator for storage operation, wherein said reproducing element is a magnetic head having a substrate, a pair of shield layers, a magnetoresistive film arranged between said pair of shield layers, a pair of electrodes to apply current to said magnetoresistive film, and a pair of longitudinal bias films, with an insulation protective film being interposed between either of said pair of electrodes and either of said pair of shield layers, and said either of said pair of shield layers contains at least one magnetic layer having a resistivity which is higher than a resistivity of metal.

\* \* \* \* \*