the insensitive regions D and D, setting the optical read track width O-Tw and the magnetic read track width M-Tw (i.e., the width dimension of the sensitive region E) to approximately the same dimension.

[0495] It is not a requirement that the electrode layers **136** and **136** formed above the multilayer film **203** fully cover the insensitive regions D and D, and the electrode layer **136** may be narrower than the insensitive region D. In this case, the optical read track width O-Tw becomes larger than the magnetic read track width M-Tw.

[0496] The percentage of the sense current flowing from the electrodes **136** and **136** to the multilayer film **203** without passing through the hard bias layers **114** is increased.

[0497] The electrode layers **136** and **136**, extending over the insensitive regions D and D, prevent the sense current from flowing into the insensitive regions D and D, thereby controlling the generation of noise.

[0498] Referring to **FIG. 23**, the protective layer **15** is not deposited on top of the multilayer film **203**, and the insulator layer **137** is directly deposited on the antiferromagnetic layer **112**. The insulator layer **137** also serves as an antioxidizing protective layer. The electrode layers **136** and **136** are directly in contact with the antiferromagnetic layer **112**.

[0499] This arrangement presents a smaller electrical resistance than the arrangement in which the electrode layers **136** and **136** are deposited on the protective layer **15**, improving the characteristics of the magnetoresistive-effect device.

[0500] When the magnetoresistive-effect device shown in **FIG. 23** is produced using the manufacturing method to be described later, the angle θ**23** made between the end face **136***a* of the electrode layer **136**, extending over the insensitive region of the multilayer film **203** and in contact with the insulator layer **137**, and the top surface **112***a* of the antiferromagnetic layer **112**, is set to be 60 degrees or greater, or 90 degrees or greater. This arrangement allows a certain quantity of sense current to continuously flow through the electrode layer **136**, way down to the tip thereof. The magnetoresistive-effect device shown in **FIG. 23** is more effective than the magnetoresistive-effect device shown in **FIG. 13** in the prevention of the sense current from shunting into the insensitive region, thereby in the control of the generation of noise.

[0501] In the magnetoresistive-effect device shown in **FIG. 23**, the location of the insulator layer **137** on the multilayer film **203** is accurately set using the manufacturing method to be described later and the electrode layer **136** is prevented from extending beyond the insensitive region and from narrowing the area of the magnetoresistive-effect device capable of detecting the magnetic field.

[0502] Referring to **FIG. 23**, the width dimension T**70** of the electrode layer **136** extending over the insensitive region D of the multilayer film **203** is preferably within a range from 0 μm to 0.08 μm. The width dimension T**70** of the electrode layer **136** is more preferably within a range of 0.05 μm to 0.08 μm.

[0503] Referring to **FIG. 23**, the magnetic coupling junction M between the multilayer film **203** and each of the hard bias layers **114** and **114** is fabricated of an interface with the end face of only the first free magnetic layer **105**, of both the first free magnetic layer **105** and the second free magnetic layer **107**.

[0504] By producing the magnetoresistive-effect device of **FIG. 23** through the manufacturing method to be described later, the side face of the multilayer film **203** and the side face of the insulator layer **137** are set to be parallel to each other.

[0505] **FIG. 24** is a cross-sectional view of the magnetoresistive device of a nineteenth embodiment of the present invention, viewed from an ABS side thereof.

[0506] The magnetoresistive-effect device shown in **FIG. 24** includes, on the multilayer film **61** having the same construction as the one in the magnetoresistive-effect device shown in **FIG. 14, a** laminated insulator layer **141** constructed of Al_2O_3, and electrode layers **140** and **140** with their end faces **140***a* and **140***a* in direct contact with both sides of the insulator layer **141**.

[0507] The construction and materials of the layers of the multilayer film **61** remain the same as those of the magnetoresistive-effect device shown in **FIG. 14**. Referring to **FIG. 24**, however, the layer **55** is not deposited on top of the multilayer film **61**.

[0508] The hard bias layers **56** and **56** and the intermediate layers **57** and **57** are identical, in construction and material, to the counterparts in the magnetoresistive-effect device shown in **FIG. 14**.

[0509] In the nineteenth embodiment again, the sensitive region E and the insensitive regions D and D of the multilayer film **61** are measured using the micro track profile method. Referring to **FIG. 24**, the portion, having the width dimension T19, of the multilayer film **61** is the sensitive region E, and the portions, each having the width dimension T20, on both sides of the sensitive region E are the insensitive regions D and D.

[0510] The electrode layers **140** and **140** formed on both sides of the multilayer film **61** extend over the multilayer film **61**. The width dimension of the top surface of the multilayer film **61** not covered with the electrode layers **140** and **140** is the optical read track width O-Tw.

[0511] The magnetic read track width M-Tw, determined by the width dimension of the sensitive region E not covered with the electrode layers **140** and **140**, is the width dimension T19, which is also the dimension of the sensitive region E.

[0512] In the nineteenth embodiment, the electrode layers **140** and **140** formed on the multilayer film **61** fully cover the insensitive regions D and D, setting the optical read track width O-Tw and the magnetic read track width M-Tw (i.e., the width dimension of the sensitive region E) to approximately the same dimension.

[0513] It is not a requirement that the electrode layers **140** and **140** formed above the multilayer film **203** fully cover the insensitive regions D and D, and the electrode layer **140** may be narrower than the insensitive region D. In this case, the optical read track width O-Tw becomes larger than the magnetic read track width M-Tw.

[0514] The percentage of the sense current flowing from the electrodes **140** and **140** to the multilayer film **61** without passing through the hard bias layers **56** and **56** is increased in this embodiment.