method to be described later and the electrode layer **132** is prevented from extending beyond the insensitive region and from narrowing the area of the magnetoresistive-effect device capable of detecting the magnetic field.

[**0458**] Referring to **FIG. 21**, the width dimension T**63** of the electrode layer **132** extending over the insensitive region D of the multilayer film **201** is preferably within a range from 0 μm to 0.08 μm. The width dimension T**63** of the electrode layer **132** is more preferably within a range of 0.05 μm to 0.08 μm.

[**0459**] Referring to **FIG. 21**, the magnetic coupling junction M between the multilayer film **201** and each of the hard bias layers **89** and **89** is fabricated of an interface with the end face of only the first free magnetic layer **85**, of both the first free magnetic layer **85** and the second free magnetic layer **87**.

[**0460**] By producing the magnetoresistive-effect device of **FIG. 21** through the manufacturing method to be described later, the side face of the multilayer film **201** and the side face of the insulator layer **133** are set to be parallel to each other.

[**0461**] **FIG. 22** is a cross-sectional view of the magnetoresistive device of a seventeenth embodiment of the present invention, viewed from an ABS side thereof.

[**0462**] The magnetoresistive-effect device shown in **FIG. 22** includes, on the multilayer film **202** having the same construction as the one in the magnetoresistive-effect device shown in **FIG. 12, a** laminated insulator layer **135** constructed of $Al_2O_3$, and electrode layers **134** and **134** with their end faces **134***a* and **134***a* in direct contact with both sides of the insulator layer **135**.

[**0463**] The construction and materials of the layers of the multilayer film **202** remain the same as those of the magnetoresistive-effect device shown in **FIG. 12**. Referring to **FIG. 22**, however, no protective layer **15** is deposited on top of the multilayer film **202**.

[**0464**] The metallic layers **88** and **88**, the hard bias layers **89** and **89** and the intermediate layers **90** and **90** deposited on the substrate **10** are identical, in construction and material, to the counterparts in the magnetoresistive-effect device shown in **FIG. 12**.

[**0465**] The first pinned magnetic layer **81** and the second pinned magnetic layer **83** are in a ferrimagnetic state with the magnetization directions thereof being antiparallel. The first pinned magnetic layer **81** and the second pinned magnetic layer **83** pin each other in magnetization direction, thereby stabilizing the magnetization direction of the pinned magnetic layer P in one direction as a whole.

[**0466**] In the magnetoresistive-effect device shown in **FIG. 22**, the first free magnetic layer **85** and the second free magnetic layer **87**, having different magnetic moments and in a ferrimagnetic state with the magnetization directions thereof being antiparallel, are laminated with the nonmagnetic material layer **86** interposed therebetween, and function as a single free magnetic layer F.

[**0467**] The two end portions of the free magnetic layer F, having disturbed magnetization directions, present a poor reproduction gain, and become insensitive regions unable to exhibit no substantial magnetoresistive effect.

[**0468**] In the seventeenth embodiment again, the sensitive region E and the insensitive regions D and D of the multilayer film **202** are measured using the micro track profile method. Referring to **FIG. 22**, the portion, having the width dimension T**64**, of the multilayer film **202** is the sensitive region E, and the portions, each having the width dimension T**65**, on both sides of the sensitive region E are the insensitive regions D and D.

[**0469**] In the sensitive region E, the magnetization direction of the pinned magnetic layer P is pinned correctly in a direction parallel to the Y direction, and the magnetization direction of the free magnetic layer F is correctly aligned in the X direction. The pinned magnetic layer P and the free magnetic layer F are thus perpendicular in magnetization direction. The magnetization of the free magnetic layer F varies sensitively in response to an external magnetic field from the recording medium. An electrical resistance varies in accordance with the relationship between the variation in the magnetization direction of the free magnetic layer F and the pinned magnetic field of the pinned magnetic layer P. A leakage magnetic field from the recording medium is thus detected in response to a variation in voltage due to the electrical resistance variation.

[**0470**] The electrode layers **134** and **134** deposited above the multilayer film **202** extend over the multilayer film **202**. The width dimension of the top surface of the multilayer film **202** not covered with the electrode layers **134** and **134** is the optical read track width O-Tw.

[**0471**] The magnetic read track width M-Tw, determined by the width dimension of the sensitive region E not covered with the electrode layers **134** and **134**, is a width dimension T**64**, which is also the dimension of the sensitive region E.

[**0472**] In the seventeenth embodiment, the electrode layers **134** and **134** formed on the multilayer film **202** 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.

[**0473**] It is not a requirement that the electrode layers **134** and **134** formed above the multilayer film **202** fully cover the insensitive regions D and D, and the electrode layer **134** 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.

[**0474**] The percentage of the sense current flowing from the electrodes **134** and **134** to the multilayer film **202** without passing through the hard bias layers **89** and **89** is increased.

[**0475**] The electrode layers **134** and **134**, 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.

[**0476**] Referring to **FIG. 22**, the protective layer **15** is not deposited on top of the multilayer film **202**, and the insulator layer **135** is directly deposited on the antiferromagnetic layer **80**. The insulator layer **135** also serves as an antioxidizing protective layer. The electrode layers **134** and **134** are directly in contact with the antiferromagnetic layer **80**.

[**0477**] This arrangement presents a smaller electrical resistance than the arrangement in which the electrode layers