ABSTRACT

There is provided a cathode unit for a sputtering apparatus, having a construction in which a target can be replaced without opening a vacuum chamber to the atmosphere.

The cathode unit CU having targets Tg1, Tg2 and being adapted to be mounted on a vacuum chamber Vc has: a supporting frame 1 mounted on an external wall of the vacuum chamber; an annular moveable base 2 supported by the supporting frame in a manner to be movable toward or away from the vacuum chamber; a rotary shaft body 3 rotatably supported by the movable base in a manner to be elongated through an inner space 23 of the movable base in parallel with a sputtering surface of the target; provided an axial direction of the rotary shaft body is defined to be an X-axis direction, and a forward or backward direction orthogonal to the X-axis direction of the movable base is defined to be a Z-axis direction, at least one target holder 5_1, 5_2 disposed on the rotary shaft body in a manner to be radially protruded such that the target is detachably mounted in position on a tip surface of the target holder; a reserve chamber Rc disposed in that portion of the supporting frame which is away by a predetermined distance in the Z-axis direction from an external wall surface of the vacuum chamber, the reserve chamber having an open-close door Rd and being capable of evacuation independent of the vacuum chamber, and a vent valve Vv for returning the reserve chamber under vacuum atmosphere to atmospheric pressure; a pair of vacuum bellows 7_1, 7_2 disposed between the movable base and the reserve chamber, and between the movable base and the vacuum chamber so as to enclose the target holder. The target holder is provided with an isolating part which: comes into close contact with a peripheral part of a first opening Vc1 formed in the vacuum chamber such that the vacuum chamber in which the target is present is isolated in a film-forming position of the movable base in which the target holder is positioned on the Z axis and the target has been moved in the Z-axis direction closer to the vacuum chamber side, the target holder being provided with the isolating part which

comes into close contact with a peripheral part of a second opening Rc2 formed in the reserve chamber in a replacing position of the movable base in which the target has been moved in the Z-axis direction away from the vacuum chamber in a posture to face the reserve chamber side. The isolating part is further provided with a rotary mechanism Dm2 for rotating the rotary shaft body about the X axis in a neutral position of the movable base in which the isolating part is away from the first opening and the second opening.