CLAIMS

1. A plasma CVD apparatus, characterized in that the apparatus ~~comprising~~comprises:

a chamber;

a plasma wall that is disposed in said chamber and has a cylindrical shape or a polygonal cross-section with opened both ends;

a holding part that is disposed in said chamber and holds a substrate to be deposited disposed near the opening of one end of said plasma wall;

an anode that is disposed in said chamber and is disposed so as to cover the whole cross section of the opening of the other end of said plasma wall;

a filament-shaped cathode that is disposed in said chamber, is disposed on an inner side of said anode and near the opening of the other end of said plasma wall, and is disposed facing said substrate to be deposited held by said holding part;

an AC power supply or a DC power supply which is disposed outside said chamber, is electrically connected to one end of said cathode via a first wiring, and is electrically connected to the other end of said cathode via a second wiring;

a hole which is provided at said anode, and through which each of said first wiring and said second wiring passes;

a first DC power supply that is disposed outside said chamber and is electrically connected to said anode;

a second DC power supply that is disposed outside said

chamber and is electrically connected to said substrate to be deposited held by said holding part;

a gas supply mechanism supplying a raw material gas into said chamber; and

an exhaust mechanism exhausting the inside of said chamber.

2. The plasma CVD apparatus according to claim 1, ~~wherein~~characterized in that:

the largest gap between the other end of said plasma wall and said anode is not more than 5 mm; and

the largest gaps between said hole and each of said first wiring and said second wiring is not more than 5 mm.

3. The plasma CVD apparatus according to claim 2, characterized in that the apparatus having a gap between said chamber and said anode, linked to the gap between the other end of said plasma wall and said anode, the largest part of said gap between said chamber and said anode being not more than 5 mm.

4. The plasma CVD apparatus according to claim 2 or 3, characterized in that the apparatus having a gap between said chamber and said plasma wall, linked to the gap between the other end of said plasma wall and said anode, the largest part of said gap between said chamber and said plasma wall being not more than 5 mm.

5. A method for manufacturing a magnetic recording medium using a plasma CVD apparatus according to any one of claims 1 to 4, the method comprising the steps of:

holding a substrate to be deposited in which at least a magnetic layer is formed on a nonmagnetic substrate in said holding part; and

putting said raw material gas into a plasma state by discharge between said filament-shaped cathode heated under vacuum conditions and said anode in said chamber, and accelerating and bombarding the plasma on the surface of the substrate to be deposited held by said holding part to form a protective layer having carbon as a main component.

6. The method for manufacturing a magnetic recording medium according to claim 5, wherein said raw material gas is a raw material gas for forming a DLC layer as said protective layer on said substrate to be deposited and includes a gas containing carbon and hydrogen.

~~7. A magnetic recording medium manufactured using the method for manufacturing a magnetic recording medium according to claim 6, comprising:~~

~~said substrate to be deposited; and~~

~~said DLC layer formed on said substrate to be deposited.~~