CLAIMS

1. A contactless information medium comprising:

a body forming an outer shape of the contactless information medium;

an IC chip housed in the body;

a coil antenna which is formed of a string of conductive wire, both ends of the conductive wire being connected to the IC chip, and which includes a main arrangement pattern provided along a closed curve and a plurality of sub-arrangement patterns, each of which has a smaller diameter than the main arrangement pattern; and

a plurality of bobbins provided in the body and arranged ~~along~~ such that a path connecting end regions on sides of outer peripheries of the plurality of the bobbins forms the closed curve, the string of conductive wire being wound around the plurality of bobbins along the closed curve to form the main arrangement pattern, the string of conductive wire being wound around each of the bobbins to form the sub-arrangement patterns.

2. The contactless information medium according to claim 1, further comprising an auxiliary bobbin which is arranged along the closed curve and makes the string of conductive wire, which forms the main arrangement pattern, jut out to a side of an outer periphery.

3. The contactless information medium according to claim 1 or 2, wherein

the body comprises:

a first member which forms a part of the body; and

a second member which forms a part of the body and seals, with the first member, the plurality of bobbins, the

IC chip, and the coil antenna, and

the plurality of bobbins is connected to each other by a fixation member, which fixes the plurality of bobbins, and housed between the first member and the second member.

4. The contactless information medium according to claim 3, further comprising a metal member arranged on a side of an outer periphery of the fixation member,

wherein the fixation member is arranged on a surface, located on an inner side of the contactless information medium, of the first member, with the plurality of bobbins facing a side of the second member, and the metal member is sealed inside the first member.

5. The contactless information medium according to claim 3, further comprising a metal member arranged on a side of an outer periphery of the fixation member and sealed inside the second member.

6. The contactless information medium according to claim 1 or 2, wherein

the body comprises:

a first member which forms a part of the body; and

a second member which forms a part of the body and seals, with the first member, the plurality of bobbins, the IC chip, and the coil antenna, and

the plurality of bobbins is provided on a surface, located on an inner side of the contactless information medium, of either the first member or the second member.

7. The contactless information medium according to claim

6, further comprising a metal member arranged on a side of an outer periphery of the plurality of bobbins, wherein the plurality of bobbins is provided on a surface, located on an inner side of the contactless information medium, of the first member, and the metal member is sealed inside the first member.

8. The contactless information medium according to claim 6, further comprising a metal member arranged on a side of an outer periphery of the plurality of bobbins, wherein the plurality of bobbins is provided on a surface, located on an inner side of the contactless information medium, of the first member, and

the metal member is sealed by the first member and the second member.

9. The contactless information medium according to claim 6, further comprising a metal member arranged on a side of an outer periphery of the plurality of bobbins, wherein

the plurality of bobbins is provided on a surface, located on an inner side of the contactless information medium, of the first member, and

the metal member is sealed by the second member and a third member which is different from the first member.

10. The contactless information medium according to any one of claims 1 to 9, wherein the body is coin-shaped.

11. A bobbin member for a contactless information medium, around which bobbin member a conductive wire is wound to form a predetermined pattern of a coil antenna in the contactless information medium, the bobbin member comprising:

a plurality of bobbins arranged such that a path connecting

end regions on sides of outer peripheries of the plurality of the bobbins forms ~~along~~ a closed curve; and

a fixation member which connects the plurality of bobbins to each other.

12. A body member for a contactless information medium, which body member forms a part of a body of the contactless information medium, the body member comprising:

a plurality of bobbins arranged ~~along~~ such that a path connecting end regions on sides of outer peripheries of the plurality of the bobbins forms a closed curve on a surface on an inner side of the contactless information medium.

13. A method for producing a contactless information medium, comprising:

an arranging step of arranging a unit, which includes an IC chip and an antenna connected to the IC chip, into a mold for injection molding, with a first surface of the unit facing a bottom face of the mold; and

a molding step of performing molding by injecting a resin material into the mold to cover a second surface of the unit, the second surface opposing the first surface,

wherein the antenna is formed of a string of conductive wire, both ends of the conductive wire being connected to the IC chip, and includes a main arrangement provided along a closed curve and a plurality of sub-arrangement patterns, each of which has a smaller diameter than the main arrangement pattern, and

wherein the unit comprises a plurality of bobbins arranged such that a path connecting end regions on sides of outer peripheries of the plurality of the bobbins forms the closed curve, the string of conductive wire being wound around the bobbins along the closed curve, the string of conductive wire

being wound also around each of the bobbins.

14. The method for producing a contactless information medium according to claim 13, further comprising: a second arranging step of releasing a molded piece, which has been manufactured in the molding step, from the mold and arranging the molded piece into a second mold for injection molding different from the mold, with the second surface facing a bottom face of the second mold; and

a secondary molding step of performing secondary molding by injecting a resin material into the second mold to cover the first surface of the unit.

~~15. The method for producing a contactless information medium according to claim 13 or 14, wherein the antenna is formed of a string of conductive wire, both ends of the conductive wire being connected to the IC chip, and includes a main arrangement pattern provided along a closed curve and a plurality of sub-arrangement patterns, each of which has a smaller diameter than the main arrangement pattern.~~

~~16. The method for producing a contactless information medium according to claim 15, wherein the unit comprises a plurality of bobbins arranged along the closed curve, the string of conductive wire being wound around the bobbins along the closed curve, the string of conductive wire being wound also around each of the bobbins.~~