bacterial eradication in a storage compartment, wherein clogging, etc. does not occur, or an (home electrical) appliance, such as a refrigerator, an air conditioner, etc., equipped with the electrostatic atomizing apparatus.

[0029] Additionally, it is an object of the present invention to provide especially an air conditioner which can attain the above-mentioned objects among these (home electrical) appliances.

Solution to Problem

[0029a] According to a first aspect of the present invention, there is provided an atomizing apparatus that generates mist by being applied a voltage, the atomizing apparatus comprising: a discharge electrode composed of a main body part, and a protrusion part whereto water that attaches to a surface of the main body part is supplied; an electrode holding part that houses the discharge electrode; a water supply means that is provided apart from the discharge electrode or the electrode holding part via a space, and that supplies water to the discharge electrode or the electrode holding part; and a fixing means that prevents the discharge electrode from moving, wherein the water supply means, the electrode holding part, the discharge electrode, and the fixing means are formed integrally.

[0029b] According to a second aspect of the present invention, there is provided an air conditioner comprising the atomizing apparatus according to the first aspect.

[0029c] According to a third aspect of the present invention, there is provided an air conditioner comprising: the atomizing apparatus according to the first aspect, and a spray outlet that is provided in a place apart from the atomizing apparatus via an air conveying path, and that sprays mist generated by the atomizing apparatus, wherein the mist generated by the atomizing apparatus is sprayed into a room into which the spray outlet provided in the place apart from the atomizing apparatus opens.

[0029d] According to a fourth aspect of the present invention, there is provided an air conditioner comprising: a heat exchanger; an air suction port provided before or above the heat exchanger; a blower for blowing air taken in from the air suction port and heat exchanged by the

heat exchanger, from an air outlet; a filter that is provided between the air suction port and the heat exchanger; a drain pan provided in a lower part of the heat exchanger; and the atomizing apparatus according to the first aspect, wherein the atomizing apparatus is placed downstream of the filter and above the drain pan.

[0029e] According to a fifth aspect of the present invention, there is provided a refrigerator that is composed of an inner box and an outer box, and that cools inside of a plurality of storage compartments partitioned by a partition wall, the refrigerator comprising: the atomizing apparatus according to the first aspect, being placed in a wall surface inside of a storage compartment or in the partition wall.

[0030] The electrostatic atomizing apparatus according to an embodiment of the present invention includes a discharge electrode composed of a main body part formed of foam metal, and a protrusion part whereto water that attaches to a surface of the main body part is supplied by a capillary action, an electrode holding part that holds the discharge electrode, a counter electrode that is provided in the electrode holding part, and that is provided so as to be opposed to the protrusion part, and a water supply means that is provided directly above the main body part via a predetermined clearance, and that supplies water to the discharge electrode or the electrode holding part, wherein the main body part has an approximately rectangular parallelepiped shape and is larger in width than in thickness.

Advantageous Effects of Invention

[0031] According to the present invention, processing efficiency is better, water can be stably supplied to the protrusion part for a long period of time, and mist can be stably sprayed.

Brief Description of Drawings

[0032] Fig. 1 is a front view of a refrigerator 1 describing an embodiment of the present invention.

Fig. 2 is a sectional side view of the refrigerator 1 describing the embodiment of the present invention.

Fig. 3 is a block diagram of a control device 30 of the refrigerator 1 describing the embodiment of the present invention.

CLAIMS

1. An atomizing apparatus that generates mist by being applied a voltage, the atomizing apparatus comprising:

a discharge electrode composed of a main body part, and a protrusion part whereto water that attaches to a surface of the main body is supplied by a capillary action;

an electrode holding part that holds the discharge electrode; and

a water supply means that is provided directly above the discharge electrode or the electrode holding part via a space, and that supplies water to the discharge electrode or the electrode holding part,

wherein the water supply means, the electrode holding part and the discharge electrode are made into a kit component.

2. The atomizing apparatus according to claim 1, further comprising a fixing means that prevents the discharge electrode housed in the electrode holding part from moving.

3. The atomizing apparatus according to claim 2, wherein the fixing means performs positioning of the water supply means.

4. The atomizing apparatus according to any one of claim 1 through claim 3, further comprising a feed-water means cover part that covers at least a part of a path between the water supply means and the electrode holding part, along which the water falls from the water supply means, so that the water is not directly affected by a flow of

air around the water.

5. The atomizing apparatus according to any one of claim 1 through claim 4, further comprising a predetermined clearance between the water supply means and the discharge electrode that prevents an electrical discharge between the discharge electrode and the water supply means when a voltage is applied to the discharge electrode.

6. The atomizing apparatus according to any one of claim 1 through claim 5, wherein the electrode holding part receives the water dropping from the water supply means via the space, and further includes a water discharge spout to discharge water so as to prevent water from attaching to a surface of the discharge electrode or to prevent water from accumulating over the discharge electrode, the water discharge spout discharging excess water among water that is supplied by the water supply means in a state where the discharge electrode is held by the electrode holding part.

7. The atomizing apparatus according to any one of claim 1 through claim 6, wherein the main body part has an approximately rectangular parallelepiped shape or an approximately columnar shape, a protrusion part has an approximately rectangular parallelepiped shape, an approximately columnar shape, an approximately pyramid shape, or an approximately conical shape, and a length of the main body part is within a range of equal to or larger than 4 times and equal to or smaller than 20 times as long as the protrusion part.

8. The atomizing apparatus according to any one of claim 1 through claim 6, wherein the main body part has an approximately rectangular parallelepiped shape and

has a large area to receive water by being larger in width than in thickness.

9. The atomizing apparatus according to any one of claim 1 through claim 8, wherein at least a part of the discharge electrode that receives the water supplied from the water supply means, the part receiving the water, has a flat plate shape or a recessed shape.

10. The atomizing apparatus according to any one of claim 1 through claim 9, wherein, in the discharge electrode, the main body is elongated in an axial direction, the protrusion part protrudes at an approximately right angle to the axial direction of the main body part from a middle in the axial direction of the main body part, and the protrusion part is shorter than a length in the axial direction of the main body part.

11. The atomizing apparatus according to any one of claim 1 through claim 10, wherein a foam metal with a three-dimensional net structure, such as titanium, with a pore diameter of 10 to 800 μm and a voidage of 60 to 90 % is used for the main body part.

12. The atomizing apparatus according to any one of claim 1 through claim 11, wherein the water supply means includes a heat absorbing part, a heat dissipating part, and a cooling plate in which a Peltier element is provided between the heat absorbing part and the heat dissipating part, and the water supply means is placed so that the main body is situated directly below the heat absorbing part that generates dew condensation water.

13. The atomizing apparatus according to any one of claim 1 through claim 12, wherein the water supply means is a cooling plate including a heat absorbing part and a heat dissipating part, wherein a lower end of the heat absorbing part has a shape to protrude downward so that dew condensation water that is generated by the heat absorbing part is collected and dropped.

14. An appliance comprising:

the atomizing apparatus according to any one of claim 1 through claim 13, and

a spray outlet that is provided in a place apart from the atomizing apparatus via an air conveying path, and that sprays mist generated by the atomizing apparatus,

wherein the mist generated by the atomizing apparatus is sprayed into a room into which the spray outlet provided in the place apart from the atomizing apparatus opens.

15. An air conditioner comprising:

a heat exchanger;

an air suction port provided before or above the heat exchanger;

a blower for blowing air taken in from the air suction port and heat exchanged by the heat exchanger, from an air outlet provided in a lower front side;

a filter that is provided between the air suction port and the heat exchanger;

a drain pan provided in a lower part of the heat exchanger; and

the atomizing apparatus according to any one of claim 1 through claim 13, the atomizing apparatus being placed downstream of the filter and above the drain pan, being composed of at least the discharge electrode, the electrode holding part and the

water supply means, and generating mist by applying a voltage to the discharge electrode,

wherein the mist generated by the atomizing apparatus is sprayed into a room into which the air outlet opens from a mist spray outlet provided in a place apart from the atomizing apparatus via an inside of an air trunk whose circumference is surrounded.

16. A refrigerator that is composed of an inner box and an outer box, and that cools inside of a plurality of storage compartments partitioned by a partition wall, the refrigerator comprising:

the atomizing apparatus according to any one of claim 1 through claim 13, the atomizing apparatus being placed in a wall surface inside of a storage compartment or in the partition wall, being composed of at least the discharge electrode, the electrode holding part and the water supply means, and generating mist by applying a voltage to the discharge electrode; and

a spray outlet that is provided in a portion apart from the atomizing apparatus inside of the storage compartment in which the atomizing apparatus is provided, or in a second storage compartment separate from the storage compartment in which the atomizing apparatus is provided, and that is connected to the atomizing apparatus via a cool air trunk,

wherein the mist generated by the atomizing apparatus is sprayed into the storage compartment, or the second storage compartment separate from the storage compartment, into which the spray outlet opens, from the spray outlet provided in a place apart from the atomizing apparatus via the cool air trunk.

CLAIMS

1. An atomizing apparatus that generates mist by being applied a voltage, the atomizing apparatus comprising:

a discharge electrode composed of a main body part, and a protrusion part whereto water that attaches to a surface of the main body part is supplied;

an electrode holding part that houses the discharge electrode;

a water supply means that is provided apart from the discharge electrode or the electrode holding part via a space, and that supplies water to the discharge electrode or the electrode holding part; and

a fixing means that prevents the discharge electrode from moving,

wherein the water supply means, the electrode holding part, the discharge electrode, and the fixing means are formed integrally.

2. The atomizing apparatus according to claim 1, wherein the fixing means presses the discharge electrode against the electrode holding part.

3. The atomizing apparatus according to claim 1 or claim 2, wherein the electrode holding part receives the water from the water supply means via the space, and further includes a water discharge spout for discharging water that is supplied by the water supply means in a state where the discharge electrode is held by the electrode holding part.

4. The atomizing apparatus according to any one of claim 1 through claim 3, further comprising a feed-water means cover part that covers at least a part of a path

between the water supply means and the electrode holding part, along which the water is supplied.

5. The atomizing apparatus according to any one of claim 1 through claim 4, further comprising a predetermined clearance between the water supply means and the discharge electrode.

6. The atomizing apparatus according to any one of claim 1 through claim 5, wherein the main body part has an approximately rectangular parallelepiped shape or an approximately columnar shape, a protrusion part has an approximately rectangular parallelepiped shape, an approximately columnar shape, an approximately pyramid shape, or an approximately conical shape, and a length of the main body part is within a range of equal to or larger than 4 times and equal to or smaller than 20 times as long as the protrusion part.

7. The atomizing apparatus according to any one of claim 1 through claim 5, wherein the main body part has an approximately rectangular parallelepiped shape and has a large area to receive water by being larger in width than in thickness.

8. The atomizing apparatus according to any one of claim 1 through claim 7, wherein at least a part of the discharge electrode that receives the water supplied from the water supply means, the part receiving the water, has a flat plate shape or a recessed shape.

9. The atomizing apparatus according to any one of claim 1 through claim 8,

wherein, in the discharge electrode, the main body part is elongated in an axial direction, the protrusion part protrudes at an approximately right angle to the axial direction of the main body part from a middle in the axial direction of the main body part, and the protrusion part is shorter than a length in the axial direction of the main body part.

10. The atomizing apparatus according to any one of claim 1 through claim 9, wherein a foam metal with a three-dimensional net structure, such as titanium, with a pore diameter of 10 to 800 μm and a voidage of 60 to 90 % is used for the main body part.

11. The atomizing apparatus according to any one of claim 1 through claim 10, wherein the water supply means includes a heat absorbing part and a heat dissipating part, and the water supply means is placed so that the main body part is situated via a space on a side of the heat absorbing part that generates dew condensation water.

12. The atomizing apparatus according to any one of claim 1 through claim 10, wherein the water supply means includes a heat absorbing part and a heat dissipating part, and the water supply means is placed so that the main body part or the electrode holding part is situated directly below the heat absorbing part that generates dew condensation water.

13. The atomizing apparatus according to claim 11 or claim 12, wherein a lower end of the heat absorbing part has a shape to protrude downward so that the dew condensation water that is generated by the heat absorbing part is collected and dropped.

14. The atomizing apparatus according to claim 1, wherein the fixing means performs positioning of the water supply means.

15. An air conditioner comprising the atomizing apparatus according to any one of claim 1 through claim 14.

16. An air conditioner comprising:

the atomizing apparatus according to any one of claim 1 through claim 14, and

a spray outlet that is provided in a place apart from the atomizing apparatus via an air conveying path, and that sprays mist generated by the atomizing apparatus,

wherein the mist generated by the atomizing apparatus is sprayed into a room into which the spray outlet provided in the place apart from the atomizing apparatus opens.

17. An air conditioner comprising:

a heat exchanger;

an air suction port provided before or above the heat exchanger;

a blower for blowing air taken in from the air suction port and heat exchanged by the heat exchanger, from an air outlet;

a filter that is provided between the air suction port and the heat exchanger;

a drain pan provided in a lower part of the heat exchanger; and

the atomizing apparatus according to any one of claim 1 through claim 14,

wherein the atomizing apparatus is placed downstream of the filter and above the drain pan.

18. A refrigerator that is composed of an inner box and an outer box, and that cools inside of a plurality of storage compartments partitioned by a partition wall, the refrigerator comprising:

the atomizing apparatus according to any one of claim 1 through claim 14, being placed in a wall surface inside of a storage compartment or in the partition wall.

19. The refrigerator according to claim 18 further comprising:

a spray outlet that is provided in a portion apart from the atomizing apparatus inside of the storage compartment in which the atomizing apparatus is provided, or in a second storage compartment separate from the storage compartment in which the atomizing apparatus is provided, and that is connected to the atomizing apparatus via a cool air trunk,

wherein the mist generated by the atomizing apparatus is sprayed into the storage compartment, or the second storage compartment separate from the storage compartment, into which the spray outlet opens, from the spray outlet provided in a place apart from the atomizing apparatus via the cool air trunk.

20. The air conditioner according to claim 17, wherein the mist generated by the atomizing apparatus is sprayed into a room into which a mist spray outlet opens from the mist spray outlet provided in a place apart from the atomizing apparatus via an air trunk whose circumference is surrounded.

21. The atomizing apparatus according to claim 2 further comprising:

a conducting member that applies electrical current to the discharge electrode,

wherein the fixing means presses the discharge electrode against the electrode holding part via the conducting member.