CLAIMS

1. A workpiece holding jig for holding a workpiece having a plate shape, the workpiece being an object to be electroplated, the workpiece holding jig comprising:

a back panel; and

a frame body, wherein

the workpiece is held between the back panel and the frame body,

the frame body is configured to be attached to the back panel to hold a peripheral portion of the workpiece between the frame body and the back panel,

the frame body includes a main body having an annular shape, a conductive member provided all over the main body, a contact member provided along the conductive member, the contact member being electrically connected to the conductive member to come into electrical contact with the peripheral portion of the workpiece, and a seal member provided all over the main body and located on an inner side of the main body relative to the contact member,

the frame body is adapted to form a sealed space that accommodates the peripheral portion of the workpiece, the conductive member, and the contact member in a state where the seal member and the contact member are in contact with the peripheral portion of the workpiece, and

the conductive member has a wide and thick form to exhibit an approximately uniform resistance value at any point all over the conductive member, wherein

the frame body or the back panel includes a liquid inlet through which a liquid is injected into the sealed space.

2. A workpiece holding jig for holding a workpiece having a plate shape, the workpiece being an object to be electroplated, the workpiece holding jig comprising:

a back panel; and

a frame body, wherein

the workpiece is held between the back panel and the frame body,

the frame body is configured to be attached to the back panel to hold a peripheral portion of the workpiece between the frame body and the back panel,

the frame body includes a main body having an annular shape, a wire provided all over the main body, a contact member provided along the wire, the contact member being electrically connected to the wire to come into electrical contact with the peripheral portion of the workpiece, and a seal member provided all over the main body and located on an inner side of the main body relative to the contact member,

the frame body is adapted to form a sealed space that accommodates the peripheral portion of the workpiece, the wire, and the contact member in a state where the seal member and the contact member are in contact with the peripheral portion of the workpiece, and

the frame body or the back panel includes a liquid inlet through which a liquid is injected into the sealed space.

3. The workpiece holding jig according to claim 1 or 2, wherein

the contact member is a comb-shaped contact member including a large number of contact terminals that have a leaf spring shape and are arranged side by side, the contact terminals being configured to come into electrical contact with the peripheral portion of the workpiece.

4. The workpiece holding jig according to claim 3, wherein

the main body of the frame body has a rectangular shape, and

the comb-shaped contact member is provided continuously or separately on each side of the main body.

5. An electroplating apparatus including the workpiece holding jig according to any one of claims 1 to 4, the electroplating apparatus being configured to hold the workpiece with the workpiece holding jig and electroplate the

workpiece thus held, the electroplating apparatus comprising:

a plating bath configured to hold a plating solution and electroplate the workpiece; and

a transfer mechanism configured to load and unload the workpiece holding jig holding the workpiece into and from the plating bath, wherein

the sealed space in the workpiece holding jig is filled with a liquid that contains no metal salt.

6. The electroplating apparatus according to claim 5, wherein

the liquid is tap water, natural water, or pure water, and

the pure water is deionized water, distilled water, purified water, or RO water.

7. The electroplating apparatus according to claim 5, wherein

the transfer mechanism includes a vertical transfer mechanism configured to load and unload the workpiece holding jig into and from the plating bath in a vertical direction.

8. The electroplating apparatus according to claim 7, wherein

a plurality of the plating baths are arranged side by side in a horizontal direction, and

the vertical transfer mechanism is connected to a first conveying mechanism configured to convey the workpiece holding jig to a loading and unloading position with respect to each of the plating baths.

9. The electroplating apparatus according to claim 7 or 8, wherein

the main body of the frame body has a rectangular shape,

the transfer mechanism is adapted to load and unload the workpiece holding jig holding the workpiece in an upright position into and from the plating bath,

the workpiece holding jig includes a right guide bar extending along a

right side of the main body and a left guide bar extending along a left side of the main body, and

the plating bath includes a right guide rail configured to guide the right guide bar and a left guide rail configured to guide the left guide bar.

10. The electroplating apparatus according to claim 5, wherein

a flux-reflux bath is disposed in front of the plating bath,

the transfer mechanism includes a horizontal transfer mechanism configured to load and unload the workpiece holding jig into and from the plating bath and the flux-reflux bath in a horizontal direction.

11. The electroplating apparatus according to claim 10, wherein

a plurality of the plating baths and a plurality of the flux-reflux baths are arranged side by side in the horizontal direction, wherein

the horizontal transfer mechanism is connected to a second conveying mechanism configured to convey the workpiece holding jig to a loading and unloading position with respect to each of the plating baths.

12. The electroplating apparatus according to claim 10 or 11, wherein

the main body of the frame body has a rectangular shape,

the transfer mechanism is adapted to load and unload the workpiece holding jig holding the workpiece in an upright position into and from the plating bath,

the workpiece holding jig includes an upper guide bar extending along an upper side of the main body and a lower guide bar extending along a lower side of the main body, and

the plating bath and the flux-reflux bath each include an upper guide rail configured to guide the upper guide bar and a lower guide rail configured to guide the lower guide bar.