CLAIMS

1. A wire bonding apparatus, comprising:

a base body;

a bonding head configured to move a bonding tool in X, Y, and Z directions with respect to the base body;

a wire spool attached to the base body, and configured to feed a wire to the bonding tool; and

a wire-cleaning plasma unit disposed between the wire spool and the bonding tool, wherein

the wire-cleaning plasma unit comprises:

hollow casings in which an inert gas is introduced, so that an internal pressure is higher than an atmospheric pressure;

holes respectively provided in walls of the casings, and face against each other, so that the wire is inserted therebetween; and

electrodes respectively disposed within the walls of the casings around circumferences of the holes, so as to face against each other the holes, and wherein

the wire is cleaned by applying current to the electrodes and having the wire be inserted into plasma in a space between the electrodes within the casings generated in a state in which air is not contained.

2. The wire bonding apparatus according to claim 1, wherein

the wire-cleaning plasma unit is attached to the bonding head.

3. The wire bonding apparatus according to claim 1, further comprising:

at least two wire-feed guides attached to the base body, and configured to guide the wire fed from the wire spool in a linear direction, wherein

the wire-cleaning plasma unit is attached to the base body between the wire-feed guides.

4. The wire bonding apparatus according to claim 1, wherein

the casings respectively comprise pipes on outer surfaces of the walls, each pipe being communicated with a corresponding one of the holes and allowing the wire to be inserted therethrough.

5. The wire bonding apparatus according to claim 2, wherein

the casings respectively comprise pipes on outer surfaces of the walls, each pipe being communicated with a corresponding one of the holes and allowing the wire to be inserted therethrough.

6. The wire bonding apparatus according to claim 3, wherein

the casings respectively comprise pipes on outer surfaces of the walls, each pipe being communicated with a corresponding

one of the holes and allowing the wire to be inserted therethrough.

7. A wire bonding apparatus, comprising:

a base body;

a bonding head configured to move a bonding tool in X, Y, and Z directions with respect to the base body;

a wire spool attached to the base body, and configured to feed a wire to the bonding tool;

at least two wire-feed guides attached to the base body, and configured to guide the wire fed from the wire spool in a linear direction;

a cleaning plasma unit configured to blow plasma jet for cleaning to the wire between the wire-feed guides; and

a reducing plasma unit disposed on the side of the bonding tool from the cleaning plasma unit, and configured to further blow plasma for reducing to the wire between the wire-feed guides after the plasma for cleaning has been blown.

8. A wire bonding apparatus, comprising:

a base body;

a bonding head configured to move a bonding tool in X, Y, and Z directions with respect to the base body;

a wire spool attached to the base body, and configured to feed a wire to the bonding tool;

a cleaning plasma unit attached to the bonding head, and configured to blow plasma jet for cleaning to the wire; and

a reducing plasma unit attached to the bonding head on the side of the bonding tool from the cleaning plasma unit, and configured to further blow plasma for reducing to the wire after the plasma for cleaning has been blown.

Claims

1. A wire bonding apparatus comprising:

a base body;

a bonding head configured to move a bonding tool in X, Y, and Z directions with respect to the base body;

a wire spool attached to the base body, and configured to feed a wire to the bonding tool; and

a wire-cleaning plasma unit disposed between the wire spool and the bonding tool,

wherein the wire-cleaning plasma unit comprises:

hollow casings in which an inert gas is introduced, so that an internal pressure is higher than an atmospheric pressure;

holes respectively provided in walls of the casings, and face against each other, so that the wire is inserted therebetween; and

electrodes respectively disposed within the walls of the casings around circumferences of the holes, so as to face against each other the holes, and

wherein the wire is cleaned by applying current to the electrodes and having the wire be inserted into plasma in a space between the electrodes within the casings generated in a state in which air is not contained.

2. The wire bonding apparatus according to claim 1, wherein the wire-cleaning plasma unit is attached to the bonding head.

3. The wire bonding apparatus according to claim 1, further comprising: at least two wire-feed guides attached to the base body, and configured to guide the wire fed from the wire spool in a linear direction, wherein the wire-cleaning plasma unit is attached to the base body between the wire-feed guides.

4. The wire bonding apparatus according to any one of claims 1 to 3, wherein the casings respectively comprise pipes on outer surfaces of the walls, each pipe being communicated with a corresponding one of the holes and allowing the wire to be inserted therethrough.

5. A wire bonding apparatus, comprising:

a base body;

a bonding head configured to move a bonding tool in X, Y, and Z directions with respect to the base body;

a wire spool attached to the base body, and configured to feed a wire to the bonding tool;

at least two wire-feed guides attached to the base body, and configured to guide the wire fed from the wire spool in a linear direction;

a cleaning plasma unit configured to blow plasma jet, in open atmosphere state, for cleaning to the wire between the wire-feed guides; and

a reducing plasma unit disposed on the side of the bonding tool from the cleaning plasma unit, and configured to further blow plasma, in open atmosphere state, for reducing to the wire between the wire-feed guides after the plasma for cleaning has been blown.

6. A wire bonding apparatus, comprising:

a base body;

a bonding head configured to move a bonding tool in X, Y, and Z directions with respect to the base body;

a wire spool attached to the base body, and configured to feed a wire to the bonding tool;

a cleaning plasma unit attached to the bonding head, and configured to blow plasma jet, in open atmosphere state, for cleaning to the wire; and

a reducing plasma unit attached to the bonding head on the side of the bonding tool from the cleaning plasma unit, and configured to further blow plasma, in open atmosphere state, for reducing to the wire after the plasma for cleaning has been blown.