height has been widely used. Especially, the use of the solder balls is indispensable in an electrode for an external terminal of the BGA and the CSP or an electrode for a bare chip joining inside a component where securing the height in mounting is important.

[0006] To mount the solder balls on a number of electrodes, the solder balls are put on a pallet with holes having diameters smaller than those of the solder balls formed, and the pallet is swung. Thus, the solder balls are aligned on the holes on the pallet. Then, the solder balls are mounted on a solder ball mounting head. Accordingly, if an aspect ratio of the solder ball is large or there is an error in grain diameter, the solder ball cannot be mounted to the electrode. Thus, it is important that there is no error in grain diameter of every one of the solder balls in order to secure a precise amount of solder and secure the height in mounting.

[0007] In addition, as the solder balls become minute, a ratio of a surface area of the solder balls to total volume of the solder increases; therefore, the surfaces of the solder balls are likely to become oxidized and turn into yellow. Such yellowing is due to the fact that the solder balls are exposed to the atmosphere and Sn in the solder balls is oxidized by oxygen in the atmosphere. Since a color of an oxide film of the Sn is yellow, the thickened oxide film causes the entire solder ball to appear yellowish.

[0008] In contrast to this, there has been known a package for storing minute solder balls where containers housing the minute solder balls are made of a breathable material and a deoxidizing and drying agent arranged outside the containers is housed in a bag member together with the containers to be airtightly sealed (see PTL 1). This allows preventing the oxidization and the yellowing of the solder ball surface.

CITATION LIST

PATENT LITERATURE

[0009] PTL 1: Japanese Patent No. 4868267

SUMMARY

[0010] However, in a solder ball container disclosed in PTL 1, to house solder balls having

a small grain diameter (for example, 0.1 mm or less), the solder ball is possibly sandwiched in a fine gap between an edge of a container body of the solder ball container and a lid material. When the solder ball is sandwiched in the above-described gap, for example, the lid material moves with respect to the edge of the container body during conveyance of the solder ball container. This squashes the solder ball, causing a problem of deterioration of sphericity of the solder ball.

[0011] In the solder ball container disclosed in PTL 1, when the solder ball is electrically charged, metal particles possibly electrostatically adsorb to an inner surface and an opening end surface of the container body when the solder ball is taken out from the container body. The electrostatic adsorption of the solder ball to the opening end surface causes the solder ball to be sandwiched between the lid member and the opening end surface of the container body when the lid member is again mounted to the container body. This makes closing the lid member difficult and deforms the solder ball.

[0012] There has been also known a container housing, for example, a copper ball, a copper core ball, and a copper column. Similarly electrically-charging such metals possibly results in electrostatic adsorption to an opening end surface of the container. Since such metal has high strength compared with a solder, a possibility that the metal is sandwiched between a lid member and the opening end surface of a container body to deform is low. However, even these metals have the possibility of deformation more or less and therefore these metals are preferably not sandwiched between the lid material and the opening end surface of the container body.

[0013] Various embodiments have been made in consideration of the above-described problems. Various embodiments provide a container and a package configured to prevent a deformation of housed metal. Another object is to provide the container and the package configured to prevent metal particles from attaching to an opening end surface of a container body.

[0014] According to a first aspect, there is provided a container. This container includes a

cylindrical container body, a lid, and a flat plate-shaped inner plug. The cylindrical container body with a bottom has a sidewall and a bottom wall. The lid has a flat plate portion and a side portion. The flat plate portion covers an opening of the container body. The side portion covers at least a part of an outer peripheral surface of the container body. The flat plate-shaped inner plug is located inside the lid. The container body includes a thread ridge on the outer peripheral surface. The side portion of the lid has a screw groove with two or more threads on its inner peripheral surface. The lid is configured to be screwed with the container body by screwing the screw groove with the thread ridge. The inner plug includes an inner plug body and lock portions. The lock portions are disposed on an outer peripheral portion of the inner plug body. The screw groove has the threads by a count identical to a count of the lock portions. The inner plug is held to an inside of the lid by each of the lock portions fitted into each inside of the screw grooves.

[0015] According to an embodiment, in the container of the earlier aspect, at least an inner surface and an opening end surface of the container body have a conductive property.

[0016] According to an aspect, there is provided a container comprising:

a cylindrical container body with a bottom having a sidewall and a bottom wall;

a lid having a flat plate portion and a side portion, the flat plate portion covering an opening of the container body, the side portion covering at least a part of an outer peripheral surface of the container body; and

a flat plate-shaped inner plug located inside the lid, wherein

the container body has an opening end surface,

at least an inner surface and the opening end surface of the container body have a conductive property,

the container body includes a thread ridge on the outer peripheral surface,

the side portion of the lid has a screw groove with two or more threads on its inner peripheral surface,

the lid is configured to be screwed with the container body by screwing the screw

groove with the thread ridge,

the inner plug includes an inner plug body and lock portions, the lock portions being disposed on an outer peripheral portion of the inner plug body,

the screw groove has the threads by a count identical to a count of the lock portions, and

the inner plug is held to an inside of the lid by each of the lock portions fitted into each of the screw grooves. In an embodiment, a container includes a cylindrical container body, a lid, and a flat plate-shaped inner plug. The cylindrical container body with a bottom has a sidewall and a bottom wall. The lid has a flat plate portion and a side portion. The flat plate portion covers an opening of the container body. The side portion covers at least a part of an outer peripheral surface of the container body. The flat plate-shaped inner plug is located inside the lid. The container body has an opening end surface. At least an inner surface and the opening end surface of the container body have a conductive property.

[0017] According to an aspect, there is provided a container comprising:

a cylindrical container body with a bottom having a sidewall and a bottom wall;

a lid having a flat plate portion and a side portion, the flat plate portion covering an opening of the container body, the side portion covering at least a part of an outer peripheral surface of the container body; and

a flat plate-shaped inner plug located inside the lid, wherein

the container body has an opening end surface,

at least an inner surface and the opening end surface of the container body have a conductive property,

the flat plate portion of the lid has a ring-shaped protrusion,

the protrusion has a flat portion at its distal end,

the lock portions are each screwed into the screw groove along the screw groove to bring the inner plug body in contact with the flat portion and to bring the lock portions in contact with an inside of the screw groove to fix the lock portions to the inside of the screw

groove. In an embodiment the container body includes a thread ridge on the outer peripheral surface. The side portion of the lid has a screw groove with two or more threads on its inner peripheral surface. The lid is configured to be screwed with the container body by screwing the screw groove with the thread ridge. The inner plug includes an inner plug body and lock portions. The lock portions are disposed on an outer peripheral portion of the inner plug body. The screw groove has the

threads by a count identical to a count of the lock portions. The inner plug is held to an inside of the lid by each of the lock portions fitted into each of the screw grooves.

[0018] According to an embodiment, in the container according to any one of the first to the fourth aspects, the side portion of the lid has an inner surface having a gradient such that an inner diameter gradually decreases toward the flat plate portion.

[0019] According to an embodiment, in the container according to any one of the first to the fifth aspects, the flat plate portion of the lid has a ring-shaped protrusion. The protrusion has a flat portion at its distal end. The lock portions are each screwed into the screw groove along the screw groove to bring the inner plug body in contact with the flat portion and to bring the lock portions in contact with an inside of the screw groove to fix the lock portions to the inside of the screw groove.

[0020] According to an embodiment, in the container according to any one of the first to the sixth aspects, at least the inner plug has a conductive property.

[0021] According to an eighth aspect, in the container according to any one of the first to the seventh aspects, the bottom wall and the sidewall form a corner portion inside the container body. The corner portion is rounded off.

[0022] According to an embodiment, in the container according to any one of the first to the eighth aspects, the bottom wall has an inner surface formed to be flat.

[0023] According to a tenth aspect, there is provided a package. This package includes a holding member, a deoxidizing and drying agent, and a bag member. The holding member includes a receptacle. The receptacle receives the container according to any one of the first to the ninth aspects. The deoxidizing and drying agent is located outside the container. The bag member is impermeable to air. The bag member houses the container, the holding member, and the deoxidizing and drying agent. The bag member is hermetically sealed.

[0024] The present disclosure can provide a container and a package that can prevent a housed metal from deforming.

[0025] Additionally, the present disclosure can provide the container and the package that

CLAIMS

1. A container comprising:

a cylindrical container body with a bottom having a sidewall and a bottom wall;

a lid having a flat plate portion and a side portion, the flat plate portion covering an opening of the container body, the side portion covering at least a part of an outer peripheral surface of the container body; and

a flat plate-shaped inner plug located inside the lid, wherein

the container body includes a thread ridge on the outer peripheral surface,

the side portion of the lid has a screw groove with two or more threads on its inner peripheral surface,

the lid is configured to be screwed with the container body by screwing the screw groove with the thread ridge,

the inner plug includes an inner plug body and lock portions, the lock portions being disposed on an outer peripheral portion of the inner plug body,

the screw groove has the threads by a count identical to a count of the lock portions, and

the inner plug is held to an inside of the lid by each of the lock portions fitted into each inside of the screw grooves.

2. The container according to claim 1, wherein

at least an inner surface and an opening end surface of the container body have a conductive property.

3. A container comprising:

a cylindrical container body with a bottom having a sidewall and a bottom wall;

a lid having a flat plate portion and a side portion, the flat plate portion covering an opening of the container body, the side portion covering at least a part of an outer peripheral

surface of the container body; and

a flat plate-shaped inner plug located inside the lid, wherein

the container body has an opening end surface,

at least an inner surface and the opening end surface of the container body have a conductive property,

the container body includes a thread ridge on the outer peripheral surface,

the side portion of the lid has a screw groove with two or more threads on its inner peripheral surface,

the lid is configured to be screwed with the container body by screwing the screw groove with the thread ridge,

the inner plug includes an inner plug body and lock portions, the lock portions being disposed on an outer peripheral portion of the inner plug body,

the screw groove has the threads by a count identical to a count of the lock portions, and

the inner plug is held to an inside of the lid by each of the lock portions fitted into each of the screw grooves.

4. A container comprising:

a cylindrical container body with a bottom having a sidewall and a bottom wall;

a lid having a flat plate portion and a side portion, the flat plate portion covering an opening of the container body, the side portion covering at least a part of an outer peripheral surface of the container body; and

a flat plate-shaped inner plug located inside the lid, wherein

the container body has an opening end surface,

at least an inner surface and the opening end surface of the container body have a conductive property,

the flat plate portion of the lid has a ring-shaped protrusion,

the protrusion has a flat portion at its distal end,

the lock portions are each screwed into the screw groove along the screw groove to bring the inner plug body in contact with the flat portion and to bring the lock portions in contact with an inside of the screw groove to fix the lock portions to the inside of the screw groove.

5. The container according to any one of claims 1 to 4, wherein

the side portion of the lid has an inner surface having a gradient such that an inner diameter gradually decreases toward the flat plate portion.

6. The container according to any one of claims 1 to 5, wherein

at least the inner plug has a conductive property.

7. The container according to any one of claims 1 to 6, wherein

the bottom wall and the sidewall form a corner portion inside the container body, the corner portion being rounded off.

8. The container according to any one of claims 1 to 9, wherein

the bottom wall has an inner surface formed to be flat.

9. A package comprising:

a holding member that includes a receptacle, the receptacle receiving the container according to any one of claims 1 to 10,

a deoxidizing and drying agent located outside the container, and

a bag member impermeable to air, the bag member housing the container, the holding member, and the deoxidizing and drying agent, the bag member being hermetically sealed.