WHAT IS CLAIMED IS:

1. A substrate treatment apparatus, comprising:

a reaction tube including a substrate treatment region in which a substrate is treated; and

a furnace opening member disposed in a lower portion of the reaction tube,

wherein the reaction tube includes a flange formed to protrude outward in the lower portion of the reaction tube, and an extension portion formed to extend downward from a lower end of the flange, the extension portion being formed to have a thickness larger than a thickness of the reaction tube at a position corresponding to the substrate treatment region, and being configured to cover an inner circumferential surface of the furnace opening member, and

wherein an inner surface of the extension portion protrudes more inward than an inner surface of the reaction tube at the position corresponding to the substrate treatment region.

2. The apparatus of Claim 1, wherein the reaction tube is made of a heat resistant material and formed in a cylindrical shape with an upper end of the reaction tube closed and a lower end of the reaction tube opened, and

the furnace opening member is made of metal and formed in a cylindrical shape with upper and lower ends of the furnace opening member opened, the furnace opening member being configured to support, on an upper surface of the furnace opening member, the flange of the reaction tube via a seal member.

3. The apparatus of Claim 1, further comprising:

an inert gas supply part configured to supply an inert gas toward a gap between the inner circumferential surface of the furnace opening member and an outer surface of the extension portion.

4. The apparatus of Claim 3, wherein a transition portion between the outer surface of the extension portion and the flange has a rounded shape.

5. The apparatus of Claim 4, wherein the inert gas supply part is configured to supply the inert gas toward the transition portion.

6. The apparatus of Claim 4, wherein both corners of a lower end of the extension portion has a rounded shape and is rounded at a smaller curvature than the transition portion.

7. The apparatus of Claim 3, wherein the inert gas supply part includes two inert gas supply parts installed at mutually-opposing positions, and flow rates of the inert gas supplied from the two inert gas supply parts are equal to each other.

8. The apparatus of Claim 7, wherein lengths of pipes extending from an inert gas supply source to the two inert gas supply parts are equal to each other.

9. The apparatus of Claim 1, wherein a horizontal gap between the inner circumferential surface of the furnace opening member and an outer surface of the extension portion is smaller than a thickness of the extension portion.

10. The apparatus of Claim 1, wherein an outer surface of the extension portion is disposed more inward than an outer surface of the reaction tube at the position corresponding to the substrate treatment region.

11. The apparatus of Claim 1, further comprising:

a seal cap configured to air-tightly close a lower end opening of the furnace opening member,

wherein the extension portion has a length set such that a gap between the extension portion and the seal cap is narrower than a gap between the inner circumferential surface of the furnace opening member and an outer surface of the extension portion.

12. The apparatus of Claim 1, further comprising:

a cleaning gas supply part configured to supply a cleaning gas toward the extension portion.

13. A reaction tube disposed above a furnace opening member and including a substrate treatment region in which a substrate is treated, comprising:

a flange formed to protrude outward in a lower portion of the reaction tube; and

an extension portion formed to extend downward from a lower end of the flange, the extension portion being formed to have a thickness larger than a thickness of the reaction tube at a position corresponding to the substrate treatment region and being configured to cover an inner circumferential surface of the furnace opening member,

wherein an outer surface of the extension portion is disposed more inward than an outer surface of the reaction tube at the position corresponding to the substrate treatment region.

14. A method of manufacturing a semiconductor device using the substrate treatment apparatus of Claim 1.