CLAIMS

1. A reciprocating compressor comprising:

a compression part compressing, by a piston, gas sucked into a cylinder through a suction valve, and discharging the compressed gas through a discharge valve;

a piston drive part supplying a force to the piston to reciprocate the piston via a rod coupled to the piston;

a container part accommodating the compression part and forming a vacuum region around the compression part; and

an intermediate tube part disposed between the piston drive part and the container part, and accommodating the rod,

wherein the intermediate tube part forms a first intermediate chamber, a second intermediate chamber, and a third intermediate chamber,

the first intermediate chamber, the second intermediate chamber, and the third intermediate chamber are disposed in the order of the first intermediate chamber, the second intermediate chamber, and the third intermediate chamber in a direction from the piston drive part toward the container part, and

an internal pressure of the first intermediate chamber is higher than internal pressures of the second intermediate chamber and the third intermediate chamber.

2. The reciprocating compressor comprising:

a compression part compressing, by a piston, gas sucked into a cylinder through a suction valve, and discharging the compressed gas through a discharge valve;

a piston drive part supplying a force to the piston to reciprocate the piston via a rod coupled to the piston; and

a container part accommodating the compression part and forming a vacuum region around the compression part;

wherein the container part includes a housing forming the vacuum region, and a cylinder holding part disposed between the housing and the cylinder,

a side surface of the cylinder is spaced from an inner surface of the housing facing the side surface of the cylinder,

a first end part of the cylinder holding part is formed on the side surface of the cylinder, and

a second end part of the cylinder holding part is formed on the inner surface of the housing,

wherein the first end part has a pedestal base part fixed to the side surface of the cylinder, and a pedestal coupling part in contact with the pedestal base part and coupled to the second end part, and the pedestal coupling part is movable along a movement direction of the piston relative to the pedestal base part.

3. The reciprocating compressor comprising:

a compression part compressing, by a piston, gas sucked into a cylinder through a suction valve, and discharging the compressed gas through a discharge valve;

a piston drive part supplying a force to the piston to reciprocate the piston via a rod coupled to the piston;

a container part accommodating the compression part and forming a vacuum region around the compression part;

an intermediate tube part disposed between the piston drive part and the container part, and accommodating the rod; and

a heat resistive part disposed between the compression part and the intermediate tube part,

wherein the compression part is a separate body from the container part, and the heat resistive part is a heat insulator inserted between a surface of the compression part and a surface of the container part facing each other.

4. The reciprocating compressor according to claim 1,

wherein the suction valve is formed in the cylinder, and is capable of alternately switching between an open mode allowing entry and exit of the gas to and from the cylinder and a closed mode inhibiting the entry and exit of the gas according to an internal pressure of the cylinder, and

the reciprocating compressor further includes an unloader disposed on an outer surface side of the container part, and configured to force the closed mode of the suction valve to be switched to the open mode by receiving a supply of compressed gas.

5. The reciprocating compressor according to claim 1, wherein a liquefaction temperature of the gas is lower than the liquefaction temperature of oxygen or the liquefaction temperature of nitrogen.