CLAIMS

What is claimed is:

1. A molded body production device ~~adapted to be used~~ for producing a molded body by compression molding a molding material, comprising:

a molding die having ~~an inner circumferential surface defining~~ a cavity opened in~~with~~ upward~~per~~ and downward directions and configured to be filled with~~lower openings, the cavity into which~~ the molding material ~~is to be filled, and upper and lower end surfaces defining the upper and lower openings, respectively~~;

a~~n~~ vertically movable upper punch provided so as to be inserted into the cavity from an~~the~~ upper end side~~opening~~ thereof ~~and vertically move~~, the upper punch having an upper punch surface;

a vertically movable lower punch provided so as to be inserted into the cavity from a~~the~~ lower end side~~opening~~ thereof ~~and vertically move~~, the lower punch having a lower punch surface; and

a release agent injection means having at least one nozzle hole capable of injecting a release agent toward the upper punch surface and injecting the release agent toward the lower punch surface,

wherein the release agent injection means is configured so as to apply the release agent onto the upper punch surface by injecting the release agent toward the upper punch surface in a state that the upper punch is located above the upper end opening surface of the cavity~~molding die~~, and to apply the release agent onto the lower punch surface and an~~the~~ inner circumferential surface of the cavity exposing above the lower punch surface by injecting the release agent toward the lower punch surface in a state that the lower punch surface is located into the cavity and below the upper end opening surface of the cavity~~molding die~~, before the molding material is filled into the cavity~~.~~,

~~2. The molded body production device as claimed in claim 1, wherein in the release agent injection means includes, as the at least one nozzle hole, includes an upper nozzle hole which injects the release agent upward and a lower~~

nozzle hole which injects the release agent downward, the lower nozzle hole provided independently of~~so as to be separated from~~ the upper nozzle hole, and~~.~~

~~3. The molded body production device as claimed in claim 2,~~ wherein the release agent injection means is configured so as to be capable of separately changing positions and/or orientations of the upper and lower nozzle holes.

2. A molded body production device for producing a molded body by compression molding a molding material, comprising:

a molding die having a cavity opened in upward and downward directions and configured to be filled with the molding material;

a vertically movable upper punch provided so as to be inserted into the cavity from an upper end side thereof, the upper punch having an upper punch surface;

a vertically movable lower punch provided so as to be inserted into the cavity from a lower end side thereof, the lower punch having a lower punch surface; and

a release agent injection means having at least one nozzle hole capable of injecting a release agent toward the

upper punch surface and injecting the release agent toward the lower punch surface,

wherein the release agent injection means is configured so as to apply the release agent onto the upper punch surface by injecting the release agent toward the upper punch surface in a state that the upper punch is located above the upper end opening surface of the cavity, and to apply the release agent onto the lower punch surface and an inner circumferential surface of the cavity exposing above the lower punch surface by injecting the release agent toward the lower punch surface in a state that the lower punch surface is located into the cavity and below the upper end opening surface of the cavity, before the molding material is filled into the cavity, and

wherein the release agent injection means is configured so as to be capable of switching an injection direction of the release agent between an upward direction and a downward direction.

3. A molded body production device for producing a molded body by compression molding a molding material, comprising:

a molding die having a cavity opened in upward and downward directions and configured to be filled with the molding material;

a vertically movable upper punch provided so as to be inserted into the cavity from an upper end side thereof, the upper punch having an upper punch surface;

a vertically movable lower punch provided so as to be inserted into the cavity from a lower end side thereof, the lower punch having a lower punch surface; and

a release agent injection means having at least one nozzle hole capable of injecting a release agent toward the upper punch surface and injecting the release agent toward the lower punch surface,

wherein the release agent injection means is configured so as to apply the release agent onto the upper punch surface by injecting the release agent toward the upper punch surface in a state that the upper punch is located above the upper end opening surface of the cavity, and to apply the release agent onto the lower punch surface and an inner circumferential surface of the cavity exposing above the lower punch surface by injecting the release agent toward the lower punch surface in a state that the

lower punch surface is located into the cavity and below the upper end opening surface of the cavity, before the molding material is filled into the cavity, and

wherein the release agent injection means is configured so as to be capable of changing an orientation of the nozzle.

4. The molded body production device as claimed in claim 1, wherein the release agent injection means is configured so as to be capable of switching an injection direction of the release agent between an upward direction and a downward direction.

5. The molded body production device as claimed in claim 1, wherein the release agent injection means is configured so as to be capable of vertically moving the nozzle ~~hole~~.

6. The molded body production device as claimed in claim 1, wherein the release agent injection means is configured so as to be capable of changing an orientation of the nozzle ~~hole~~.

7. The molded body production device as claimed in claim 1, wherein if~~in the case where~~ a distance between the lower punch surface and the upper end opening surface of the cavity~~molding die~~ when the release agent is injected by the release agent injection means is defined as "A" and if a distance between the lower punch surface and the upper end opening surface of the cavity~~molding die~~ when the molding material is compression molded within the cavity using the upper and lower punch surfaces is defined as "B", A/B is in the range of 0.5 to 1.5.

8. The molded body production device as claimed in claim 1, wherein an average thickness of the release agent applied on each of the upper punch surface, the lower punch surface and the inner circumferential surface of~~defining~~ the cavity is in the range of 0.001 to 50 μm.

9. The molded body production device as claimed in claim 1, wherein the molding material is of a powdered state and contains a resin material.

10. The molded body production device as claimed in claim 9, wherein the resin material comprises an epoxy-based resin material.

11. The molded body production device as claimed in claim 1, wherein the release agent contains a silicone-based release agent.

12. A method of producing a molded body using the molded body production device defined in any one of~~by~~ claims 1 to 11, comprising:

an application step of applying the release agent onto the upper punch surface by injecting the release agent toward the upper punch surface in the state that the upper punch is located above the upper end opening surface of the cavity~~molding die~~, and applying the release agent onto the lower punch surface and the inner circumferential surface of the cavity exposing above the lower punch surface by injecting the release agent toward the lower punch surface in the state that the lower punch surface is located into the cavity and below the upper end opening surface of the cavity~~molding die~~;

a filling step of filling the molding material into the cavity; and

a molding step of compression molding the molding material filled into the cavity using the upper and lower punches.

~~13. A molded body produced using the molded body production device defined by claim 1.~~