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(54) Title: METHOD AND DEVICE FOR MANUFACTURING TITANIUM OBJECTS

(57) Abstract: This invention relates to a method and reactor of manufacturing an object by solid freeform fabrication, especially an object made of titanium or titanium alloys. The reactor of production of an object of a weldable material by solid freeform fabrication comprises a reactor chamber which is closed to the ambient atmosphere, wherein the reactor is given a design such that all adjacent wall elements forming the reactor chamber are joined with an obtuse angle (larger than 90°), the actuator located below the reactor chamber is given a design such that the actuator protrudes into the reactor chamber through an opening at the bottom of the reactor chamber holding the support substrate inside the reactor chamber, the opening is sealed by at least one elastic gas impermeable membrane which is gas tight attached to the reactor wall at the opening and to the actuator, the actuator located outside the reactor chamber is given a design such that the actuator protrudes into the reactor chamber through an opening at the side of the reactor chamber holding the high energy plasma transferred arc welding torch with wire feeder of the weldable material inside the reactor chamber, the opening is sealed by the at least one elastic gas impermeable membrane which is gas tight attached to the reactor wall at the opening and to the actuator, and the reactor is equipped with at least one closable gas inlet located at the lowest level of the reactor chamber and at least one closable gas outlet located at the highest level of the reactor chamber.

