第１８回知的財産翻訳検定＜第１０回和文英訳＞
１級　機械工学　標準解答

問１

[0002]

Fig. 1 illustrates an example of a conventional organic material spray nozzle. A spray nozzle 10 is coupled to an outer wall 21 of a chamber by a screwing coupler 12 or the like.

[0003]

The chamber 20 and spray nozzle 10 are heated to a high temperature by heat transferred from vaporized source material, which passes through an outlet orifice 11 in contact therewith during a vapor deposition process. Thereafter, the temperature of these members returns to a cool state. As this vapor deposition process is repeatedly performed, the chamber 20 and spray nozzle 10 are subjected to repeated loading, where expansion and contraction repeatedly occur due to repeated heating. Such heat-induced repeated loading may cause cracks or looseness to occur at the portion of the screwing coupler 12 between the spray nozzle 10 and the outer wall 21 of the chamber, which may lead to minute gaps being formed between the spray nozzle 10 and the outer wall 21.

[0004]

Such damage to the coupling portion of the spray nozzle 10 and the outer wall 21 of the chamber may result in the vaporized source material within the chamber leaking out through this damaged portion. Not only is expensive source material lost, but also contamination becomes problematic as the source material reaches areas other than a target substrate.

問２

[0010]

Fig. 1 is a cross-sectional view of a porous plastic bearing according to a first embodiment, and Fig. 2 is a cross-sectional view taken along II-II in Fig. 1. In Figs. 1 and 2, reference numeral 1 denotes a shaft (rotation shaft), and 2 denotes a porous plastic plain bearing which rotatably bears the shaft 1. This plain bearing 2 is formed as a collective sintered object of plastic pellets 3 of acrylonitrile butadiene styrene (ABS) resin, this collective sintered object having been impregnated with a liquid lubrication oil 4. Pores 3a are formed between the plastic pellets 3, through which the liquid lubrication oil 4 flows, and seeps out on the inner face of the plain bearing 2.

[0011]

More specifically, the plain bearing 2 is formed by a collection of many (multiple) plastic pellets 3, each having a volume of 0.004 to 4 cubic millimeters, being sintered such that the porosity among the plastic pellets 3 is 10 to 30%.

[0012]

As the shaft 1 rotates, negative pressure is generated at the anti-load side, between the shaft 1 and the inner face of the bearing 2. This causes the liquid lubrication oil 4, standing between the plastic pellets 3 of the plain bearing 2, to seep out onto the inner face of the bearing 2, and travel to the load portion where the inner face of the bearing 2 and the shaft 1 are in closest proximity. Positive pressure is generated at this load, whereby contact between the shaft 1 and the bearing 2 is averted. Accordingly, frictional resistance between the shaft 1 and bearing 2 is reduced.

問３

（１）step の語を使用するクレーム

1. A method for manufacturing a gear, comprising:

a gear machining step of machining a steel material to obtain a gear with a predetermined shape; and

a quenching step of quenching the obtained gear by increasing a temperature of the gear into an austenite region and then rapidly decreasing the temperature of the gear into a martensite region under an atmosphere containing a carbon-based gas and an ammonia gas,

wherein the quenching step includes providing a retained austenite at an outermost surface including a tooth surface of the gear at an amount of 40 to 80 volume%.

（２）step の語を使用しないクレーム

1. A method for manufacturing a gear, comprising:

machining a steel material to obtain a gear with a predetermined shape; and

quenching the obtained gear by increasing a temperature of the gear into an austenite region and then rapidly decreasing the temperature of the gear into a martensite region under an atmosphere containing a carbon-based gas and an ammonia gas,

wherein the quenching includes providing a retained austenite at an outermost surface including a tooth surface of the gear at an amount of 40 to 80 volume%.