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SUMMARY OF INVENTION

TECHNICAL PROBLEM

[0004]

A groove arranged in the sealing part is usually formed by cutting a sealing surface using a rotary cutting tool such as an end mill. After a desired shape of the groove has been cut, slight unevenness or cutting debris may remain on the sealing surface, and polishing is necessary to remove them. Although the polishing of the sealing surface is often performed manually by a worker, it takes a long time to complete the polishing process, and there is a problem that the quality of the sealing surface is not stabilized due to a difference in a surface roughness of the polishing surface depending on the experience and skill of the worker.

[0005]

Aspects of the invention are defined in the independent claims. Some optional features of the invention are defined in the dependent claims.

[0006]

THIS PARAGRAPH HAS BEEN DELETED.

SOLUTION TO PROBLEM

[0007]

In one disclosed arrangement, a polishing device includes a supporting unit supporting a polishing tool, a stage holding an object to be polished, a first drive unit moving the supporting unit and the stage relative to each other along a shape of a polished surface, and a second drive unit synchronized with the first drive unit and rotating the supporting unit so that one end of a polishing member attached to the polishing tool faces in a

movement direction.

[0008]

In one disclosed arrangement, a there is a polishing method for a polishing surface on a hard anodized aluminum, the polishing method including a first step of polishing the polishing surface with a first polishing member at a first pressing strength, and a second step of polishing the polishing surface with a second polishing member at a second pressing strength after the first step, wherein the first pressing strength is lower than the second pressing strength.

[0009]

In one disclosed arrangement, a machine component includes a hard anodized aluminum surface, and a polishing surface on a part of the hard anodized aluminum surface, wherein a waviness of the polishing surface is 0.2μm or less and a surface roughness of the polishing surface is 0.4μm or less.

ADVANTAGEOUS EFFECTS OF INVENTION

[0010]

According to an embodiment of the present disclosure, by automating a polishing process with a machine, the time required for polishing can be reduced and the quality of a sealing surface can be stabilized. In addition, a machine component having a sealing surface with stabilized quality may be provided.

BRIEF DESCRIPTION OF DRAWINGS

CLAIMS

1. A polishing device which, when assembled, comprises:

a supporting unit supporting a polishing tool;

a stage for holding an object to be polished;

a first drive unit for moving the supporting unit and the stage relative to each other along a shape of a polished surface; and

a second drive unit synchronized with the first drive unit and for rotating the supporting unit so that one end of a polishing member attached to the polishing tool faces in a movement direction.

2. The polishing device according to claim 1, wherein the first drive unit is arranged to move the supporting unit and the stage relative to each other in a non-circular pattern along the shape of the polishing surface.

3. A polishing method for a polishing surface on a hard anodized aluminum, the polishing method comprising:

a first step of polishing the polishing surface with a first polishing member at a first pressing strength; and

a second step of polishing the polishing surface with a second polishing member at a second pressing strength after the first step,

wherein the first pressing strength is lower than the second pressing strength.

4. The polishing method for the polishing surface on the hard anodized aluminum according to claim 3, wherein the second step comprises:

pressing the second polishing member onto the polishing surface and moving the second polishing member and the polishing surface relative to each other; and

rotating the second polishing member so that one end of the second polishing member faces in the movement direction.

5. The polishing method for the polishing surface on the hard anodized aluminum according to claim 3 or claim 4, wherein the first polishing member is a brush, and the second polishing member is a sponge.

6. The polishing method for the polishing surface on the hard anodized aluminum according to any one of claims 3 to 5, wherein

the first polishing member and the second polishing member are held by a jig, and

the first pressing strength and the second pressing strength are controlled by a spring constant of the jig.

7. A machine component comprising:

a hard anodized aluminum surface; and

a polishing surface on a part of the hard anodized aluminum surface,

wherein a waviness of the polishing surface is 0.2μm or less and a surface roughness of the polishing surface is 0.4μm or less.

8. The machine component according to claim 7, wherein a standard deviation of the waviness of the polishing surface is 0.2μm or less, and a standard deviation of the surface roughness is 0.3μm or less.

9. The machine component according to claim 7 or claim 8, wherein the waviness of the polishing surface is 0.1μm or less.