

polishing rate of the wafer W.

SUMMARY OF THE INVENTION

Embodiments of the present invention seek to provide a polishing apparatus
5 capable of correcting an inclination of a polishing head.

An aspect of the present invention provides a polishing apparatus comprising a
polishing table configured to support a polishing pad, a polishing head having a substrate
holding surface, the polishing head being configured to hold a substrate on the substrate
holding surface and press the substrate against the polishing pad, a rotational shaft
10 secured to an upper end of the polishing head, a first bearing contacting an outer
circumferential surface of the rotational shaft, the polishing head and the rotational shaft
being tiltable together about a center of the first bearing, a second bearing contacting the
outer circumferential surface of the rotational shaft, the second bearing being disposed
away from the first bearing in an axial direction of the rotational shaft and a plurality of
15 inclination adjusting devices arranged at equal intervals around the second bearing, the
plurality of inclination adjusting devices being configured to push the rotational shaft
through the second bearing in a radial direction of the rotational shaft to adjust an
inclination of the rotational shaft.

There is also disclosed a polishing apparatus comprising: a polishing table
20 configured to support a polishing pad thereon; a polishing head configured to press a
substrate against the polishing pad; a rotational shaft coupled to the polishing head; a
self-aligning rolling bearing that tiltably supports the rotational shaft; a radial rolling
bearing that receives a radial load of the rotational shaft; a detector configured to detect
an inclination of the rotational shaft; and an inclination adjusting device configured to
25 adjust the inclination of the rotational shaft.

Preferably, the polishing apparatus further comprises a controller configured to
operate the inclination adjusting device based on the inclination of the rotational shaft
detected by the detector.

Preferably, the controller is configured to emit an alarm signal if the inclination of the rotational shaft does not fall within a predetermined range.

Preferably, the self-aligning rolling bearing is located between the polishing head and the radial rolling bearing, and the inclination adjusting device is coupled to the radial
5 rolling bearing.

Preferably, the radial rolling bearing comprises a self-aligning rolling bearing.

Preferably, the radial rolling bearing comprises a combination of angular contact ball bearings.

Since the rotational shaft is supported by the self-aligning rolling bearing, the
10 rotational shaft can tilt. Therefore, the inclination adjusting device can adjust the inclination of the rotational shaft to make the rotational shaft perpendicular to a table

What is claimed is:

1. A polishing apparatus comprising:

a polishing table configured to support a polishing pad;

a polishing head having a substrate holding surface, the polishing head being configured to hold a substrate on the substrate holding surface and press the substrate against the polishing pad;

a rotational shaft secured to an upper end of the polishing head;

a first bearing contacting an outer circumferential surface of the rotational shaft, the polishing head and the rotational shaft being tiltable together about a center of the first bearing;

a second bearing contacting the outer circumferential surface of the rotational shaft, the second bearing being disposed away from the first bearing in an axial direction of the rotational shaft; and

a plurality of inclination adjusting devices arranged at equal intervals around the second bearing, the plurality of inclination adjusting devices being configured to push the rotational shaft through the second bearing in a radial direction of the rotational shaft to adjust an inclination of the rotational shaft.

2. The polishing apparatus according to claim 1, wherein the plurality of inclination adjusting devices comprise ball screws.

3. The polishing apparatus according to claim 1, wherein the plurality of inclination adjusting devices comprise piezoelectric devices.

4. The polishing apparatus according to claim 1, wherein the first bearing comprises a self-aligning rolling bearing.

5. The polishing apparatus according to claim 1, wherein the second bearing comprises a radial rolling bearing.