WHAT IS CLAIMED IS:

1. A polishing apparatus for polishing between a polishing pad and a polishable object disposed opposed to the polishing pad, the polishing apparatus comprising:

a polishing table that can hold the polishing pad;

a first electric motor that can drive to rotate the polishing table;

a holding section that can hold the polishable object and press the polishable object against the polishing pad;

a second electric motor that can drive to rotate the holding section;

a swing arm that holds the holding section;

a third electric motor that can swing the swing arm around a swing center on the swing arm;

a detection section that can detect a current value of one of the first, second and third electric motors and/or a torque command value of the one electric motor and can generate a first output, and

a change detection section that can increase a change amount of the first output while causing the polishable object to swing around the swing center on the swing arm and polishing the polishable object, and can detect a change of a frictional force between the polishing pad and the polishable object,

wherein the first output can be synchronized with the fluctuation of arm torque added to the swing arm regarding to the swing center.

2. The polishing apparatus according to claim 1, wherein the first output can be synchronized with swing motion of the swing arm.

3. The polishing apparatus according to any one of claims 1 to 2, wherein the change detection section can increase the change amount of the first output by multiplying the first output by a constant.

4. The polishing apparatus according to any one of claims 1 to 3, wherein the change detection section averages the first output and can thereby reduce noise included in the first output.

5. The polishing apparatus according to any one of claims 1 to 4, further comprising an end point detection section that can detect a polishing end point indicating an end of polishing based on a change of the detected frictional force.

6. The polishing apparatus according to any one of claims 1 to 5, wherein the change detection section amplifies the first output or adds a predetermined value in accordance with the first output to the first output and can thereby increase the change amount of the first output.

7. The polishing apparatus according to any one of claims 1 to 6, wherein the change detection section can obtain an amount of the first output subjected to smoothing.

8. A polishing method for polishing between a polishing pad and a polishable object disposed opposed to the polishing pad, the polishing method comprising:

a step of holding the polishing pad using a polishing table;

a step of driving to rotate the polishing table using a first electric motor;

a step of driving to rotate a holding section for holding the polishable object and pressing the polishable object against the polishing pad using a second electric motor;

a step of holding the holding section using a swing arm;

a step of swinging the swing arm around a swing center on the swing arm using a third electric motor;

a step of detecting a current value of one of the first, second and third electric motors and/or a torque command value of the one electric motor and generating a first

output; and

a step of increasing a change amount of the first output while swinging the polishable object around the swing center on the swing arm and polishing the polishable object, and detecting a change of a frictional force between the polishing pad and the polishable object,

wherein the first output can be synchronized with the fluctuation of arm torque added to the swing arm regarding to the swing center.

9. A computer readable recording medium that records a program for causing a computer to control a polishing apparatus that can polish a polishable object, the polishing apparatus comprising:

a first electric motor that can drive to rotate a polishing table that can hold a polishing pad;

a second electric motor that can drive to rotate a holding section that can hold the polishable object and can press the polishable object against the polishing pad;

a third electric motor that can swing a swing arm that holds the holding section around a swing center on the swing arm; and

a detection section that can detect a current value of one of the first, second and third electric motors and/or a torque command value of the one electric motor and can generate a first output, the program causing the computer to perform step of:

detecting a change of a frictional force between the polishing pad and the polishable object by increasing a change amount of the first output while swinging the polishable object around the swing center on the swing arm and polishing the polishable object; and

controlling polishing by the polishing apparatus,

wherein the first output can be synchronized with the fluctuation of arm torque added to the swing arm regarding to the swing center.