WHAT IS CLAIMED IS:

1. An eddy current detection device capable of being disposed near a polishing target on which a conductive film is formed, the eddy current detection device comprising:

a plurality of eddy current sensors, the plurality of eddy current sensors being disposed near to each other, the plurality of eddy current sensors being separate from each other,

wherein each of the plurality of eddy current sensors comprises:

a core section;

an exciting coil disposed in the core section and configured to form an eddy current in the conductive film; and

a detection coil disposed in the core section and configured to detect the eddy current formed in the conductive film,

wherein the plurality of core sections comprised in the plurality of eddy current sensors are separate from each other,

an inter-center distance between the adjacent eddy current sensors is twice the length of external shape of the adjacent eddy current sensors or smaller, and

the plurality of eddy current sensors are disposed in a direction orthogonal to central axis of the coils.

2. The eddy current detection device according to claim 1,

wherein in at least one eddy current sensor of the plurality of eddy current sensors, the exciting coil and the detection coil constitute a same coil, and

wherein the exciting coil can detect the eddy current formed in the conductive film.

3. The eddy current detection device according to claim 1 or 2,

wherein in at least one eddy current sensor of the plurality of eddy current sensors, the core section comprises:

a bottom surface portion;

a magnetic center portion provided at a center of the bottom surface portion; and

a circumferential portion provided on a circumference of the bottom surface portion, and

wherein the exciting coil and the detection coil are disposed at the magnetic center portion.

4. The eddy current detection device according to claim 3,

wherein the exciting coil and the detection coil are disposed at the circumferential portion, in addition to the magnetic center portion.

5. The eddy current detection device according to claim 3 or 4, wherein the circumferential portion constitutes a circumferential wall portion that is provided on a circumference of the bottom surface portion in such a manner as to surround the magnetic center portion.

6. The eddy current detection device according to claim 3 or 4,

wherein the bottom surface portion has a pillar-like shape, and

wherein the circumferential portion is disposed at both ends of the pillar-like shape.

7. The eddy current detection device according to claim 3 or 4, wherein a plurality of circumferential portions are provided on the circumference of the bottom surface portion.

8. The eddy current detection device according to claim 1 or 2,

wherein in at least one eddy current sensor of the plurality of eddy current sensors, the core section comprises:

a bottom surface portion; and

a plurality of pillar-like portions extending from the bottom surface portion in a normal direction towards the polishing target, and

wherein the plurality of pillar-like portions comprise:

a plurality of first pillar-like portions that can generate a first magnetic polarity; and

a plurality of second pillar-like portions that can generate a second magnetic

polarity that is opposite to the first magnetic polarity.

9. The eddy current detection device according to any one of claims 1 to 8, wherein the plurality of eddy current sensors are disposed, to form a polygon, at vertices of the polygon and/or along sides of the polygon and/or in an interior of the polygon.

10. The eddy current detection device according to any one of claims 1 to 8, wherein the plurality of eddy current sensors are disposed, to form a straight line, on the straight line.

11. A polishing apparatus, comprising;

a polishing table to which a polishing pad for polishing a polishing target can be affixed;

a drive section configured to rotationally drive the polishing table;

a holding section configured to press the polishing target against the polishing pad by holding the polishing target;

the eddy current detection device according to any one of claims 1 to 10 that is disposed in an interior of the polishing table, wherein the eddy current formed in the polishing target by the exciting coil in association with rotation of the polishing table is detected by the detection coil; and

an end point detecting section configured to detect a polishing end point indicating an end of polishing of the polishing target from the detected eddy current.