

WHAT IS CLAIMED IS:

1. A polishing apparatus comprising a polishing pad having a polishing surface for polishing a polishing target object, a polishing table to which a back surface of the polishing pad is fitted, the back surface being on an opposite side to the polishing surface, and an end-point detection sensor that is arranged in the polishing table and configured to detect an end point of the polishing, wherein the end-point detection sensor includes:

a pot core as a magnetic material having a bottom portion, a magnetic core portion arranged in a middle of the bottom portion and a peripheral wall portion arranged around the bottom portion and around the magnetic core portion;

an exciting coil that is arranged at the magnetic core portion and configured to form eddy current in the polishing target object; and

a detection coil that is arranged at the magnetic core portion or the peripheral wall portion and configured to detect the eddy current formed in the polishing target object, and wherein a space for housing parts of the magnetic core portion and the peripheral wall portion is arranged at a portion facing the polishing table on the back surface side of the polishing pad, and the magnetic core portion and the peripheral wall portion extend from the bottom portion to the space and at least tip portions of the magnetic core portion and the peripheral wall portion extending to the space are located in the space,

wherein the tip portion of the peripheral wall portion has a tapered shape which is narrower in a direction farther away from the bottom portion to the tip portion of the peripheral wall portion, and the peripheral wall portion surrounds the magnetic core portion.

2. The polishing apparatus according to claim 1, wherein at least a part of the magnetic core portion located in the space is separable from at least a part of the magnetic core portion located in the polishing table.

3. The polishing apparatus according to claim 1 or 2, wherein at least a part of the peripheral wall portion located in the space is separable from at least a part of the peripheral wall portion located in the polishing table.

4. The polishing apparatus according to any one of claims 1 to 3, wherein the space penetrates from the back surface of the polishing pad to the polishing surface.

5. The polishing apparatus according to any one of claims 1 to 4, further comprising a metal shield arranged around an outer periphery of the peripheral wall portion, wherein the metal shield shields a magnetic field generated by the exciting coil.

6. A polishing apparatus comprising a polishing pad having a polishing surface for polishing a polishing target object, a polishing table to which a back surface of the polishing pad is fitted, the back surface being on an opposite side to the polishing surface, and an end-point detection sensor that is arranged in the polishing table and configured to detect an

end point of the polishing, wherein the end-point detection sensor includes:

a pot core as a magnetic material having a bottom portion and a peripheral wall portion arranged around the bottom portion;

an exciting coil that is arranged in a middle of the bottom portion and configured to form eddy current in the polishing target object; and

a detection coil that is an air-core coil or a coil arranged at the peripheral wall portion with the peripheral wall portion serving as a core, and is configured to detect the eddy current formed in the polishing target object, and wherein the peripheral wall portion is arranged around the exciting coil, the exciting coil is an air-core coil having an air core portion, a space for housing a part of the peripheral wall portion is arranged at a portion facing the polishing table on the back surface of the polishing pad, the peripheral wall portion extends from the bottom portion to the space, at least a tip portion of the peripheral wall portion extending to the space is located in the space, the pot core has a magnetic core portion as a magnetic material at an extension position of the air core portion that extends to the space, the magnetic core portion extends from the air core portion to the space, and at least a tip portion of the magnetic core portion extending to the space is located in the space.

7. The polishing apparatus according to claim 6, wherein at least a part of the peripheral wall portion located in the space is separable from at least a part of the peripheral wall

portion located in the polishing table.

8. The polishing apparatus according to any one of claims 1 to 7, wherein the detection coil is arranged at the magnetic core portion or the peripheral wall portion that is located in the space.

9. The polishing apparatus according to any one of claims 1 to 8, wherein the magnetic core portion and the peripheral wall portion that are located in the space are held by a holding portion, and the holding portion is fixed to the end-point detection sensor or the polishing table.

10. The polishing apparatus according to any one of claims 1 to 5, wherein the exciting coil and the detection coil are not arranged at the magnetic core portion that is disposed in the space.