CLAIMS

1. A magnet separator comprising:

a separator body comprising a storage portion which stores a fluid containing a magnetic material;

a magnet drum provided in the separator body; and

a driving portion provided outside the separator body, wherein

the magnet drum comprises a first shaft extending in a horizontal direction, a cylinder provided inside the separator body, rotatably supported in the first shaft so as to be at least partly immersed in the fluid and comprising an outer circumferential surface and an inner circumferential surface on an opposite side of the outer circumferential surface, an inner cylinder secured to the first shaft inside the cylinder, a magnet provided in the inner cylinder so as to face the inner circumferential surface and forming a magnetic field area to which the magnetic material can be attached in a certain range in a circumferential direction of the outer circumferential surface, and a second shaft provided on a same line as a central axis of the first shaft and rotating together with the cylinder,

the separator body comprises a pair of side walls arranged in the horizontal direction,

the driving portion comprises an output portion provided on the same line as the central axis of the first shaft outside the separator body,

the second shaft penetrates one of the side walls toward outside of the separator body, and

the output portion is connected to the second shaft to rotate the cylinder, and

the magnet separator further comprises:

a third shaft;

a squeeze roller which is provided in the third shaft and squeezes the fluid contained in the magnetic material attached to the outer circumferential surface;

a squeeze roller adjustment mechanism which is provided in the third shaft and adjusts a distance between the first shaft and the third shaft from an upper side of the separator body; and

a transmission mechanism which transmits rotation of the second shaft to the third shaft.

2. The magnet separator of claim 1, wherein

the magnet drum further comprises a pair of side plates provided in both end portions of the cylinder and rotatably supported in the first shaft, and

the second shaft is provided in one of the side plates.

3. The magnet separator of claim 1, further comprising a bracket connected to one of the side walls, wherein

the driving portion is connected to one of the side walls via the bracket, and

the second shaft penetrates the bracket.

4. The magnet separator of claim 1, further comprising a magnet adjustment tool provided outside the separator body and capable of adjusting a position of the magnet relative to the central axis in a circumferential direction.

5. The magnet separator of claim 1, wherein the squeeze roller adjustment mechanism includes an adjustment bolt to adjust the distance from the upper side of the separator body.

6. The magnet separator of claim 1, further comprising a coupling connected to the second shaft outside the separator body, wherein

the driving portion further comprises a fourth shaft connected to the output portion and the coupling.

7. A magnet separator comprising:

a separator body comprising a storage portion which stores a fluid containing a magnetic material;

a magnet drum provided in the separator body;

a driving portion provided outside the separator body;

a bottom plate which forms a channel to which the fluid is supplied from the storage portion; and

a pair of partition plates, wherein

the magnet drum comprises a first shaft extending in a horizontal direction, a cylinder provided inside the separator body, rotatably supported in the first shaft so as to be at least partly immersed in the fluid and comprising an outer circumferential surface and an inner circumferential surface on an opposite side of the outer circumferential surface, a pair of side

plates provided in both end portions of the cylinder and rotatably supported in the first shaft, a magnet provided so as to face the inner circumferential surface and forming a magnetic field area to which the magnetic material can be attached in a certain range in a circumferential direction of the outer circumferential surface, and a second shaft provided in one of the side plates on a same line as a central axis of the first shaft, extending toward outside of the separator body and rotating together with the cylinder,

the driving portion is connected to the second shaft outside the separator body to rotate the cylinder,

the bottom plate is provided inside the separator body across an intervening gap along the outer circumferential surface, and

each of the partition plates is provided between the side plate and a side wall of the separator body and extends in the central axis, and

the magnet separator further comprises:

a third shaft;

a squeeze roller which is provided in the third shaft and squeezes the fluid contained in the magnetic material attached to the outer circumferential surface;

a squeeze roller adjustment mechanism which is provided in the third shaft and adjusts a distance between the first shaft and the third shaft from an upper side of the separator body; and

a transmission mechanism which transmits rotation of the second shaft to the third shaft.

8. The magnet separator of claim 7, wherein

a gap defined between the partition plate and the side plate is smaller than a gap defined between the partition plate and the side wall.

9. The magnet separator of claim 7, further comprising a plurality of current plates provided between the bottom plate and the outer circumferential surface and including, of the outer circumferential surface, a surface facing an end portion of the cylinder,

wherein the plurality of current plates include:

a first current plate facing an end of the cylinder and not overlapping the magnet; and

a second current plate facing the other end of the cylinder and not overlapping the magnet.

10. The magnet separator of claim 7, wherein

the channel comprises an inflow port located on an upstream side, and an outflow port which is located on a downstream side and in which a width in the horizontal direction is greater than the inflow port.