CLAIMS

1. A powder container used in an image forming apparatus, the powder container comprising:

a rotatable powder storage that stores therein the powder for image formation, the rotatable powder storage to rotate about a rotation axis;

an opening on one end of the powder storage, through which a nozzle of the image forming apparatus is to be inserted; ~~and~~

a scooping portion to scoop up powder on an opening side, and to supply the powder to a powder receiving hole of the nozzle when the powder storage rotates, wherein

the scooping portion includes a scooping surface that extends inwardly from an inner wall surface of the powder storage,

an inner end portion of the scooping surface extends in a rotation axis direction of the powder storage,

an edge of the inner end portion is approximately parallel to the rotation axis, and

in a cross-section perpendicular to the rotation axis, the scooping surface is inclined toward an upstream side in a rotation direction of the powder storage with respect to a virtual line that passes through the rotation axis and is tangent to the edge of the inner end portion~~.~~; and

a conveying portion that conveys the powder toward the opening side in the scooping portion, wherein

the conveying portion is connected to the scooping surface at a start position, and

the start position of the conveying portion is in an opening range of the powder receiving hole in an axial direction.

2. The powder container according to claim 1, wherein

the scooping surface is inclined by an inclined angle in a predetermined range, and

the inclined angle of the scooping surface is in a range of 25 ± 5 degrees.

3. The powder container according to claim 1 or 2, wherein

the powder container is to be rotated at a rotation frequency in a predetermined range, and

the predetermined range of the rotation frequency of the powder container is a range of 110 ± 15 revolution per minute.

4. The powder container according to any one of claims 1 to 3, wherein the powder is toner with an apparent density of 0.41 to 0.48 g/cm3.

5. The powder container according to any one of claims 1 to 4, wherein when the powder storage rotates and the scooping surface is located above the powder receiving hole, the edge of the inner end portion of the scooping surface is located in an opening range of the powder receiving hole in a rotation direction.

6. The powder container according to claim 5, wherein when the powder storage rotates and the scooping surface is located above the powder receiving hole, the edge of the inner end portion overlaps with at least a part of the powder receiving hole in the rotation axis direction.

7. The powder container according to claim 5 or 6, wherein when the scooping surface faces upward, the scooping surface is located above a virtual line that

passes through the rotation axis and extends in a horizontal direction.

8. The powder container according to any one of claims 1 to 7, further comprising a rotary conveyor that conveys the powder in the powder storage to the opening side.

~~9. The powder container according to any one of claims 1 to 8, further comprising a conveying portion that conveys the powder toward the opening side in the scooping portion.~~

~~10. The powder container according to claim 9, wherein~~

~~the conveying portion is connected to the scooping surface at a start position, and~~

~~the start position of the conveying portion is in an opening range of the powder receiving hole in an axial direction.~~

~~11~~9. The powder container according to any one of claims 1 to ~~10~~8, wherein

the scooping portion includes a wall to be connected to the opening side of the scooping surface and to extend along the rotation direction,

the wall defines a holding space of the powder in the rotation axis direction,

the scooping surface defines upstream side of the holding space in the rotation direction, and

the wall is located in an opening range of the powder receiving hole in an axial direction.

~~12~~10. The powder container according to claim ~~11~~9, wherein the holding space is narrowed toward the opening in the rotation axis direction.

~~13~~11. The powder container according to any one of claims ~~9~~1 to ~~12~~10, wherein the scooping portion is located on the opening side relative to an end of the conveying portion on a side distant from the opening in the rotation axis direction.

~~14~~12. The powder container according to any one of claims ~~9~~1 to ~~13~~11, wherein

the conveying portion is a spiral rib protruding to an inside of the powder storage, and

the spiral rib extends in the rotation axis direction and a part of the spiral rib is located in the scooping portion.

~~15~~13. The powder container according to claim ~~14~~12, wherein a length of the spiral rib from an inner surface of the powder storage is same as a length of the scooping surface in the direction perpendicular to the rotation axis.

~~16~~14. The powder container according to claim ~~14~~12, wherein an angle between the spiral rib and the scooping surface is equal to or greater than a repose angle of the powder.

~~17~~15. The powder container according to any one of claims 1 to ~~11~~9, wherein the scooping portion includes a triangular protrusion extending along an rotation axis direction.

~~18~~16. The powder container according to claim ~~17~~15, wherein the edge of the scooping surface serves as an apex of the triangular protrusion.

~~19~~17. The powder container according to claim ~~17~~ 15 or ~~18~~16, wherein an angle between two surfaces of the triangular protrusion is an acute angle.

~~20~~18. The powder container according to any one of claims 1 to ~~19~~17, wherein the powder stored inside of the powder storage includes toner.

~~21~~19. The powder container according to claim ~~20~~18, wherein the powder further includes carrier particle.

~~22~~20. An image forming apparatus comprising the powder container according to any one of claims 1 to ~~21~~19.