CLAIMS

[Claim 1] A method for manufacturing a glass plate, comprising processing for irradiating an inner circumferential edge surface extending along an inner hole in a glass plate having the inner hole with a laser beam along the inner circumferential edge surface,

wherein, in the processing, when the inner circumferential edge surface is irradiated with the laser beam, the laser beam is concentrated by a condenser lens and formed into diffused light, and the inner circumferential edge surface is irradiated with the diffused light from a direction inclined with respect to a main surface of the glass plate, and

a position where the laser beam is concentrated by the condenser lens is located above a plane that includes the main surface outward in a radial direction of a position on the inner circumferential edge surface that faces an irradiation position on the inner circumferential edge surface that is irradiated with the laser beam across the center of the inner hole.

[Claim 2] The method for manufacturing a glass plate according to claim 1,

wherein an inclination angle of a central axis of the laser beam with respect to the main surface is 20 degrees or less.

[Claim 3] The method for manufacturing a glass plate according to claim 1 or 2,

wherein a diffusion angle of the laser beam is 20 degrees or less.

[Claim 4] The method for manufacturing a glass plate according to any one of claims 1 to 3,

wherein corner portions present between the inner circumferential edge surface and the main surfaces on both sides of the glass plate are chamfered through the processing, and

a cross-sectional shape of the inner circumferential edge surface in which the corner portions are chamfered is line-symmetric with respect to a center line that passes through the center of the glass plate in a thickness direction of the glass plate and that is parallel to the main surfaces.

[Claim 5] The method for manufacturing a glass plate according to any one of claims 1 to 4,

wherein the glass plate is a glass substrate that is a base of a glass substrate for a magnetic disk.

[Claim 6] The method for manufacturing a glass plate according to any one of claims 1 to 5,

wherein the main surface of the glass plate is ground or polished without polishing the inner circumferential edge surface, after irradiation with the laser beam.

[Claim 7] A method for manufacturing a magnetic-disk glass substrate,

wherein, after the glass plate is manufactured using the method for manufacturing a glass plate according to any one of claims 1 to 5, the magnetic-disk glass substrate is manufactured by grinding or polishing the main surface of the glass plate.

[Claim 8] A method for manufacturing a magnetic disk,

wherein a magnetic film is formed on the main surface of the glass plate manufactured using the method for manufacturing a magnetic-disk glass substrate according to claim 7.

[Claim 9] An apparatus for processing a glass plate, the apparatus configured to perform processing for irradiating an inner circumferential edge surface extending along an inner hole in a glass plate having the inner hole with

a laser beam along the inner circumferential edge surface,

wherein, in the processing, when the inner circumferential edge surface is irradiated with the laser beam, the laser beam is concentrated by a condenser lens and formed into diffused light, and the inner circumferential edge surface is irradiated with the diffused light from a direction inclined with respect to a main surface of the glass plate, and

a position where the laser beam is concentrated by the condenser lens is located above a plane that includes the main surface outward in a radial direction of a position on the inner circumferential edge surface that faces an irradiation position on the inner circumferential edge surface that is irradiated with the laser beam across the center of the inner hole.