CLAIMS

1. A ring-shaped glass spacer to be arranged in contact with a magnetic disk in a hard disk drive apparatus,

wherein a glass material of the glass spacer has a surface resistivity of 10^3 to 10^9 [Ω/sq] at 22 [°C], and

a surface roughness Rz of an outer circumferential edge surface of the glass spacer that does not come into contact with the magnetic disk is at least 1.5 [μm].

2. A ring-shaped glass spacer to be arranged in contact with a magnetic disk in a hard disk drive apparatus,

wherein a glass material of the glass spacer has a surface resistivity of 10^3 to 10^9 [Ω/sq] at 22 [°C], and

grooves that extend along an outer circumference of the glass spacer are formed in an outer circumferential edge surface of the glass spacer that does not come into contact with the magnetic disk.

3. A ring-shaped glass spacer to be arranged in contact with a magnetic disk in a hard disk drive apparatus,

wherein a glass material of the glass spacer has a surface resistivity of 10^3 to 10^9 [Ω/sq] at 22 [°C], and

a skewness of an outer circumferential edge surface of the glass spacer that does not come into contact with the magnetic disk is preferably not larger than 1.2.

4. The glass spacer according to claim 2,

wherein a surface roughness Rz of an outer circumferential edge surface of the glass spacer that does not come into contact with the magnetic disk is at least 1.5 [μm].

5. The glass spacer according to claim 3,

wherein a surface roughness Rz of an outer circumferential edge surface of the glass spacer that does not come into contact with the magnetic disk is at least 1.5 [μm].

6. The glass spacer according to claim 3,

grooves that extend along an outer circumference of the glass spacer are formed in an outer circumferential edge surface of the glass spacer that does not come into contact with the magnetic disk.

7. The glass spacer according to claim 4,

wherein a skewness of an outer circumferential edge surface of the glass spacer that does not come into contact with the magnetic disk is preferably not larger than 1.2.

8. A ring-shaped glass spacer to be arranged in contact with a magnetic disk in a hard disk drive apparatus,

wherein the surface resistivity of a surface of the glass material of the spacer at 22 [°C] is lower than the surface resistivity of an inner portion of the glass material at 22 [°C].

9. The glass spacer according to claim 8,

wherein the glass material of the glass spacer has a surface resistivity of 10^3 to 10^9 [Ω/sq] at 22 [°C].

10. The glass spacer according to any one of claims 1 to 9,

wherein the glass spacer contains at least one oxide selected from the group consisting of TiO_2, Nb_2O_5, WO_3, and Bi_2O_3, as a glass component.

11. The glass spacer according to any one of claims 1 to 10,

wherein a surface roughness Ra of a main surface of the glass spacer that comes into contact with the magnetic disk is not larger than 1.0 [μm].

12. The glass spacer according to any one of claims 1 to 11,

wherein the surface roughness Rz of the outer circumferential edge surface is not larger than 20 [μm].

13. A hard disk drive apparatus comprising the glass spacer according to any one of claims 1 to 12 and the magnetic disk.

14. The hard disk drive apparatus according to claim 13,

wherein the magnetic disk includes a glass substrate and a magnetic film that is formed on the glass substrate.

15. The hard disk drive apparatus according to claim 14,

wherein a surface roughness Ra of a main surface of the magnetic disk is not larger than 0.3 [nm].

16. The hard disk drive apparatus according to any one of claims 13 to 15,

wherein eight or more magnetic disks are installed in the hard disk drive apparatus.

17. A method for manufacturing a ring-shaped glass spacer to be arranged in contact with a magnetic disk in a hard disk drive apparatus, the method comprising:

manufacturing a glass spacer blank that is a blank for the glass spacer; and

reducing a surface resistivity of a surface of the glass spacer blank by performing reduction treatment on the surface.

18. The method for manufacturing a glass spacer according to claim 17, wherein the glass spacer contains at least one oxide selected from the group consisting of TiO_2, Nb_2O_5, WO_3, and Bi_2O_3, as a glass component.