SUMMARY OF THE INVENTION

According to one aspect of the invention there is provided an optical data storage cartridge comprising: a base member having a substantially cylindrical interior portion for receiving a hubless optical disk through a disk opening and having a base member aperture for providing access for electromagnetic radiation to a first planar surface of the disk; a lid member for covering the disk opening, the lid member having a lid aperture for providing access for electromagnetic radiation to a second planar surface of the disk, the lid member mounted on a top side of the base member; a hinge device for attaching the lid member to the base member; a retractable base member shutter for covering the base member aperture mounted on a bottom side of the base member; a retractable lid shutter for covering the lid aperture mounted on the lid member, the lid shutter being on a top side of the cartridge opposite the bottom side of the base member; a shutter hinge attached to the lid shutter for connecting the lid shutter to the base member shutter, the shutter hinge allowing the lid shutter to move with the lid when the lid is open; and a rotatable hub member mounted to a surface of the lid member which faces the interior portion of the base member, the rotatable hub member being located opposite the base member aperture, the rotatable hub member for engaging the hubless optical disk.

According to another aspect of the invention there is provided an optical data storage cartridge system comprising: an optical disk cartridge comprising a base member having a substantially cylindrical interior portion for receiving a hubless optical disk through a disk opening and having a base member aperture for providing access for electromagnetic radiation to a first planar surface of the disk, a lid member for covering the disk opening, the lid member mounted on a top side of the base member, the lid member having a lid aperture for providing access for electromagnetic radiation to a second planar surface of the disk, a hinge device for attaching the lid member to the base member, a retractable base member shutter mounted on a bottom side of the base

[redacted] for covering the base member aperture, a retractable lid shutter mounted on the lid member for covering the lid aperture, the lid shutter being on a top side of the cartridge opposite the bottom side of the base member, a shutter hinge attached to the lid shutter for connecting the lid shutter to the base member shutter, the shutter hinge allowing the lid shutter to move with the lid when the lid is open, and a rotatable hub member mounted to a surface of the lid member which faces the interior portion of the base member, the rotatable hub member being located opposite the base member aperture, the rotatable hub member for engaging the hubless optical disk; a device for receiving the optical disk cartridge; a rotation device for engaging the hub and rotating the disk; an electromagnetic radiation transmission device for transmitting a beam of electromagnetic radiation to the disk; and an electromagnetic radiation reception device for receiving an electromagnetic radiation beam from the disk and generating a data signal responsive thereto.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Embodiments of the invention will now be described by way of example only, with reference to the accompanying drawings in which:

Fig. 1 is a top, exploded view of a cartridge of the present invention;

Fig. 2 is a bottom, exploded view of the cartridge of Fig. 1;

CLAIMS

1. An optical data storage cartridge comprising:

a base member having a substantially cylindrical interior portion for receiving a hubless optical disk through a disk opening and having a base member aperture for providing access for electromagnetic radiation to a first planar surface of the disk;

a lid member for covering the disk opening, the lid member having a lid aperture for providing access for electromagnetic radiation to a second planar surface of the disk, the lid member mounted on a top side of the base member;

a hinge device for attaching the lid member to the base member;

a retractable base member shutter for covering the base member aperture mounted on a bottom side of the base member;

a retractable lid shutter for covering the lid aperture mounted on the lid member, the lid shutter being on a top side of the cartridge opposite the bottom side of the base member;

a shutter hinge attached to the lid shutter for connecting the lid shutter to the base member shutter, the shutter hinge allowing the lid shutter to move with the lid when the lid is open; and

a rotatable hub member mounted to a surface of the lid member which faces the interior portion of the base member, the rotatable hub member being located opposite the base member aperture, the rotatable hub member for engaging the hubless optical disk.

2. The cartridge of claim 1, wherein the combined mass of the hub member and the hubless optical disk is in the range between the mass of an ISO standard single sided hubbed optical disk and an ISO standard double sided hubbed optical disk.

3. The cartridge of claim 1, wherein the rotatable hub member has a beveled edge for engaging a central aperture of the hubless optical disk.

4. The cartridge of claim 3, wherein the angle of the beveled edge is in the range of 10°-45°.

5. The cartridge of claim 1, wherein the hub is sized to receive an optical disk having a central aperture of approximately 15 mm in diameter.

6. The cartridge of claim 1, wherein the hubless optical disk is a CD disk.

7. The cartridge of claim 1, wherein the hubless optical disk is a CD-ROM disk.

8. The cartridge of claim 1, wherein the hubless optical disk is a WORM disk.

9. The cartridge of claim 1, wherein the hubless optical disk is a magneto-optical disk.

10. An optical data storage cartridge system comprising:

an optical disk cartridge comprising a base member having a substantially cylindrical interior portion for receiving a hubless optical disk through a disk opening and having a base member aperture for providing access for electromagnetic radiation to a first planar surface of the disk, a lid member for covering the disk opening, the lid member mounted on a top side of the base member, the lid member having a lid aperture for providing access for electromagnetic radiation to a second planar surface of the disk, a hinge device for attaching the lid member to the base member, a retractable base member shutter mounted on a bottom side of the base member for covering the base member aperture, a retractable lid shutter mounted on the lid member for covering the lid aperture, the lid shutter being on a top side of the cartridge opposite the bottom side of the base member, a shutter hinge attached to the lid shutter for connecting the lid shutter to the base member shutter, the shutter hinge allowing the lid shutter to move with the lid when the lid is open, and a rotatable hub member mounted to a surface of the lid member which faces the interior portion of the base member, the rotatable hub member being located opposite the base member aperture, the rotatable hub member for engaging the hubless optical disk;

a device for receiving the optical disk cartridge;

a rotation device for engaging the hub and rotating the disk;

an electromagnetic radiation transmission device for transmitting a beam of electromagnetic radiation to the disk; and

an electromagnetic radiation reception device for receiving an electromagnetic radiation beam from the disk and generating a data signal responsive thereto.

11. The system of claim 10, wherein the combined mass of the hub member and the hubless optical disk is in the range between the mass of an ISO standard single sided hubbed optical disk and an ISO standard double sided hubbed optical disk.

12. The system of claim 10, wherein the rotatable hub member has a beveled edge for engaging a central aperture of the hubless optical disk.

13. The system of claim 12, wherein the angle of the beveled edge is in the range of 10°-45°.

14. The system of claim 10, wherein the hub is sized to receive an optical disk having a central aperture of approximately 15 mm in diameter.

15. The system of claim 10, wherein the hubless optical disk is a CD disk.

16. The system of claim 10, wherein the hubless optical disk is a CD-ROM disk.

17. The system of claim 16, wherein the hubless optical disk is a WORM disk.

18. The system of claim 10, wherein the hubless optical disk is a magneto-optical disk.