An apparatus for repairing a surface of a media storage disc is disclosed. The apparatus comprises an exterior housing having an upper lid rendered with an upper lid shaft and a base portion that includes a platform for holding the media storage disc. The disc is placed on the platform with the bottom surface facing upwards and secured by at least one locking mechanism. The apparatus further includes an abrasive pad attached to the upper lid. The abrasive pad system includes an abrasive pad holder, at least three springs evenly arranged between a top side and a bottom side of the abrasive pad holder. The springs distribute an even amount of pressure on the media storage disc. A plurality of abrasive pads is fixed to the bottom side of the abrasive pad holder. The media storage disc is sanded, buffed, and waxed with a plurality of abrasive pads.
CD REPAIR APPARATUS

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] Not Applicable.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH AND DEVELOPMENT

[0002] Not Applicable.

FIELD OF THE INVENTION

[0003] This invention relates to a media storage disc repairing apparatus, and more particularly is to an improved repairing apparatus with an abrasive pad system to clean the surface of a damaged or dirty disc.

DISCUSSION OF RELATED ART

[0004] Media storage discs such as compact discs (CD), digital video discs (DVD) or video compact discs (VCD) have rapidly gained popularity with consumers. Compact discs (CDs) have been the preferred media format for storing and retrieving infrequently accessed digital information. While the compact discs are a very effective, durable and economical means of storing and transporting digital data and information, it is also a fact that they get tampered and damaged very easily. The most common form of damage is the scratch on the read-side of the disc. In addition, even with proper care and handling, they can easily get scuffed. Grease, dust, exposure to excess heat, and rough handling can result in damage and may affect the quality of the stored data.

[0005] There are various known processes to repair scratched discs for temporarily or permanently. U.S. Pat. No. 5,102,099 issued to Brown on Apr. 7, 1992 discloses a disc polisher apparatus having rotating polishing pads which in association with an abrasive compound repair the damaging scratches. The disc rests upon a disc platform having a biased shaft, and is positioned slightly above the polishing pads. The polishing pads do not allow an even amount of pressure to be applied to the surface of the disc. The uneven pressure distribution on the disc may lead to more destruction of the scratched disc.

[0006] Use of centrifugal force for dispensing cleaning solution across the face of a disc is disclosed by U.S. Pat. No. 5,126,992 issued to Lavinsky on Jun. 30, 1992. Such a disc cleaner incorporates brushes or abrasive pads which mechanically rub the surface of the disc to remove particulate matter on the surface of the disc. Further, dried liquids, fingerprints and other contaminants can not be sufficiently removed.

[0007] U.S. Pat. No. 4,654,917 issued to Yeung on Apr. 7, 1987 explains an apparatus that includes a cleaning pad fastened to a rotatable carrier disposed in a housing carrier. The carrier and its cleaning pad exhibit planetary motion such that the cleaning pad concurrently rotates and revolves. While the apparatus is satisfactory for removing contaminants from the surface of the disc, such apparatus is inadequate for applying the forces necessary for buffing the surface of the disc to remove scratches or marks from the entire surface of the disc.

[0008] U.S. Pat. No. 4,825,497 issued to Nagao on May 2, 1989 provides a disc cleaner comprising a main casing, and a mounting structure located in the main casing to receive a disc to be cleaned. A lid operatively engaged with the main casing covering an upper surface of the main casing. A cleaner is mounted on an inner surface of the lid. A driving mechanism is operated when the lid is positioned in a closed condition relative to the main casing. Such an arrangement does not maintain a parallel or substantially parallel position of the disc against an abrasive surface while the cleaning operation.

Therefore, there is a need for an apparatus that allows uniform distribution of pressure on the surface of the disc. Further, such a disc cleaner would incorporate brushes or abrasive pads to rub the surface of the disc mechanically and would adequately apply the forces necessary for buffing the surface of the disc. Moreover, such an apparatus would maintain the parallel or substantially parallel position of the media storage disc against the abrasive surface while cleaning. The present invention accomplishes these objectives.

SUMMARY OF THE INVENTION

[0010] The present device is an apparatus for repairing a surface of a media storage disc having a top surface and a bottom surface. The apparatus comprises an exterior housing having an upper lid rendered with an upper lid shaft and a base portion that includes a platform for holding the media storage disc along an axis of rotation. The housing includes a visible compartment at a top portion thereof to accommodate the platform. The media storage disc is secured to the platform by at least one locking mechanism. The media storage disc is placed on the platform with the bottom surface facing upwards. The locking mechanism may be utilized to interlock a top of a portion of the shaft to securely fasten and stabilize the media storage disc.

[0011] The apparatus further includes an abrasive pad system attached to a bottom side of the upper lid. The abrasive pad system includes an abrasive pad holder attached to the upper lid by way of a ball bearing. The bottom side of the abrasive pad holder includes a male connecting part thereof. A female connecting part of a plurality of abrasive pads is connected to the male connecting part of the abrasive pad holder. At least three springs are evenly arranged between a top side of the abrasive pad holder and a bottom side of the abrasive pad holder. The springs distribute an even amount of pressure to the bottom surface of the media storage disc. The plurality of abrasive pads is fixed to the bottom side of the abrasive pad holder.

[0012] An elongated rotatable shaft, is further included that is fixed to a center of the platform coupled to a motor encased in the housing. The upper lid of the housing is closed and the media storage disc is sandblasted with a means of an abrasive sand paper with an adhesive that may be attached to one of the abrasive pads. Then the media storage disc is buffed by a new abrasive pad and the polishing compound is applied. The media storage disc is waxed with another abrasive pad along with the waxing compound placed thereon. The sanding, buffing, and waxing can be initiated by powering “on” the motor encased within the housing by a plurality of buttons.

[0013] The present apparatus facilitates uniform distribution of pressure on the surface of the media storage disc. Further, such a media storage disc cleaner incorporates brushes or abrasive pads to rub mechanically the surface of the media storage disc and adequately applies the forces necessary for buffing the surface of the media storage disc. Moreover, such an apparatus maintains the parallel or substantially parallel position of the media storage disc against the abrasive surface while cleaning. Other features and advantages of the present invention will become apparent from the following more detailed description, taken in conjunction with the drawings.
with the accompanying drawings, which illustrate, by way of example, the principles of the invention.

DESCRIPTION OF THE DRAWINGS

[0014] FIG. 1 is a perspective view of the invention, illustrating a CD repairing apparatus in use;

[0015] FIG. 2 is a perspective view of the invention, illustrating a CD repairing apparatus with an abrasive pad system attached to an upper lid in an open position;

[0016] FIG. 3 is a top plan view of an abrasive pad system of the invention;

[0017] FIG. 4 is a perspective view from an angle of an abrasive pad system of the invention;

[0018] FIG. 5 is a perspective top-side view of at least three springs and a pair of interlocking connecting parts attached within an abrasive pad holder of the invention; and

[0019] FIG. 6 is a perspective view of the invention, illustrating an upper lid shaft with a ball bearing attached to an upper lid.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0020] FIG. 1 shows an apparatus 10 for repairing a surface (not shown) of a media storage disc 12 having a top surface (not shown) and a bottom surface 22. The apparatus 10 comprises an exterior housing 14 having an upper lid 24 rendered with an upper lid shaft 62 and a base portion 26 that includes a platform 28 for holding the media storage disc 12 along an axis of rotation (not shown). The housing 14 includes a visible compartment 16 at a top portion 18 thereof to accommodate the platform 28.

[0021] The media storage disc 12 is secured to the platform 28 by at least one locking mechanism (not shown). The media storage disc 12 may be a compact disc (CD), a digital versatile disc (DVD) and the like. The media storage disc 12 is placed on the platform 28 with the bottom surface 22 facing upwards. The standard media storage discs 12 have a diameter of 120 mm, a thickness of 1.2 mm, and weigh approximately 16 grams.

[0022] The apparatus 10 further includes an abrasive pad system 30 attached to a bottom side of the upper lid 32. FIG. 2 shows a repairing apparatus 10 with an abrasive pad system 30 attached to an upper lid 24 in an open position 20. FIG. 3 is a top plan view of an abrasive pad system 30. The abrasive pad system 30 includes a cylindrical cavity 38 to be inserted to an upper lid shaft 62. FIG. 4 is a perspective view of an abrasive pad system 30 that includes an abrasive pad holder 42 attached to an upper lid 24 by way of a ball bearing 64. A bottom side of the abrasive pad holder 54 includes a male connecting part 48 thereof. A female connecting part 56 is connected to the male connecting part 48 of the abrasive pad holder 42. A distance between a bottom side of the abrasive pad holder 54 and the surface of a media storage disc 12 due to the give of the springs is approximately 3 mm.

[0023] FIG. 5 is a perspective top-side view of an abrasive pad holder 40 with at least three springs 52. The at least three springs 52 are evenly arranged between a top side of the abrasive pad holder 44 and a bottom side of the abrasive pad holder 54. The springs 52 distribute an even amount of pressure to a bottom surface 22 of a media storage disc 12. Each spring has a length of approximately 9 mm. The preferred embodiment of the present invention has a triangular placement of the springs 52. Three springs even spaced apart from the center of the cylindrical cavity 38 allows for greater stability. Alternative embodiments may however contemplate a plurality of springs greater than three. A plurality of abrasive pads 46 is fixed to the bottom side of the abrasive pad holder 54. The thickness of the abrasive pads 46 is approximately 0.3 inches that may range from 0.27 to 0.285. The abrasive pads 46 may be made from different materials, such as pre-polymer foam having an inside diameter and an outside diameter of 1.14 inches and 2.2 inches respectively.

[0024] The apparatus 10 further comprises an elongated rotatable shaft 34 which is fixed to a center of the platform 36 coupled to a motor (not shown) encased within a housing 14. A locking mechanism (not shown) may be utilized to interlock a top of a top portion 66 of the elongated rotatable shaft 34 to securely fasten and stabilize the media storage disc 12. The locking mechanism (not shown) may be a threaded or a clipping mechanism and the like. The motor (not shown) can be encased in a frame (not shown) of various materials or sizes used to house the motor (not shown).

[0025] FIG. 6 is a perspective view of an upper lid shaft 62 with a bearing 64 attached to an upper lid 24 of a housing 14 in an open position 20 with a top portion 18 and a base portion 26 for holding a media storage disc 12. In use, the media storage disc 12 is inserted to a platform 28 along an elongated rotatable shaft 34. An abrasive pad system 30 cleans a bottom surface 22 of the damaged or dirty media storage disc 12.

[0026] The surface of the media storage disc 12 is repaired by placing the media storage disc 12 on the platform 28 centrally along the axis. At least one locking mechanism (not shown) such as a threaded or a clipping mechanism secures the media storage disc 12 and the platform 28. A male connecting part 48 of an abrasive pad holder 42 is interlocked to a female connecting part 56 of a plurality of abrasive pads 46. The upper lid 24 of the housing 14 is closed and the media storage disc 12 is sanded by means of an abrasive sand paper (not shown) with an adhesive (not shown) that may be attached to one of the abrasive pads 46. The abrasive sand paper (not shown) has a grade of about 1200. The sanding may extend for 10 seconds. Then, the media storage disc 12 is buffed by the new abrasive pad (not shown) and a polishing compound is applied thereon. The buffing may extend for 90 seconds. The media storage disc 12 is waxed with another abrasive pad (not shown) along with a waxing compound (not shown) placed thereon.

[0027] The sanding, buffing, and waxing can be initiated by powering "on" a motor (not shown) encased within the housing 14 by a plurality of buttons (not shown). The motor (not shown) spins the platform 28 and distributes an even pressure to the bottom surface 22 of the media storage disc 12 by means of at least three springs 52 arranged within the abrasive pad system 30.

[0028] While a particular form of the invention has been illustrated and described, it will be apparent that various modifications can be made without departing from the spirit and scope of the invention. For example, various size motors can be used and other strengths/rpm/torque can be contemplated to accommodate the amount of power needed based on the thickness of the abrasive pads 46. Accordingly, it is not intended that the invention be limited, except as by the appended claim.
What is claimed is:

1. An apparatus for repairing a surface of a media storage disc having a top surface and a bottom surface, the apparatus comprising:
an exterior housing having an upper lid rendered with an upper lid shaft and a base portion that includes a platform for holding the media storage disc along an axis of rotation thereof;
an abrasive pad system attached to a bottom side of the upper lid;
the abrasive pad system includes
an abrasive pad holder attached to the upper lid by way of a ball bearing;
at least three springs evenly arranged between a top surface and a bottom surface of the abrasive pad holder;
a plurality of abrasive pads fixed to the bottom side of the abrasive pad holder; and
an elongated rotatable shaft fixed to a center of the platform coupled to a motor encased in the housing;
whereby the media storage disc is inserted to the platform along the elongated rotatable shaft, the abrasive pad system cleans the surface of the damaged or dirty media storage disc.
2. The apparatus of claim 1 wherein the housing includes a visible compartment at a top portion thereof to accommodate the platform.
3. The apparatus of claim 1 wherein the media storage disc is secured to the platform by at least one locking mechanism.
4. The apparatus of claim 3 wherein the locking mechanism may be utilized to interlock a top of a top portion of the shaft to securely fasten and stabilize the media storage disc.
5. The apparatus of claim 4 wherein the locking mechanism may be a threaded or a clipping mechanism.
6. The apparatus of claim 1 wherein the bottom side of the abrasive pad holder includes a male connecting part thereof.
7. The apparatus of claim 1 wherein the abrasive pad includes a female connecting part to connect to the male connecting part of the abrasive pad holder.
8. The apparatus of claim 1 wherein the springs distribute an even amount of pressure to the bottom surface of the media storage disc.
9. The apparatus of claim 1 wherein the abrasive pads includes approximately a thickness of 0.3 inches.
10. The apparatus of claim 1 wherein the abrasive pads may be made from different materials, such as pre-polymer foam.
11. The apparatus of claim 1 wherein the media storage disc is placed on the platform with the bottom surface facing upwards.
12. The apparatus of claim 1 wherein a distance between the bottom side of the abrasive pad holder and the surface of the media storage disc is 3/8 inches.
13. A method of repairing a surface of a media storage disc having an upper surface and a bottom surface, the method comprising:
a) placing the media storage disc on a platform centrally along an axis;
b) securing the media storage disc and the platform by at least one locking mechanism;
c) interlocking a male connecting part of an abrasive pad holder to a female connecting part of an abrasive pad;
d) closing an upper lid of a housing;
e) sanding the media storage disc by means of an abrasive sand paper with an adhesive that may be attached to one of the abrasive pads;
f) buffing the media storage disc by a new abrasive pad and applying a polishing compound;
g) waxing the media storage disc with another abrasive pad with a waxing compound placed thereon.
14. The method of claim 13 wherein the media storage disc is placed on the platform with the bottom surface facing upwards.
15. The method of claim 13 wherein the media storage disc is secured to the platform by a threaded or a clipping locking mechanism.
16. The method of claim 13 wherein the abrasive sand paper has a grade of about 1200.
17. The method of claim 13 wherein the processes e), f), and g) can be initiated by powering "on" a motor encased within the housing by a plurality of buttons.
18. The method of claim 17 wherein the motor spins the platform thereby distributing an even pressure to the surface of the media storage disc by means of at least three springs arranged within an abrasive pad system.
19. The method of claim 13 wherein the sanding may extend for 10 seconds.
20. The method of claim 13 wherein the buffing may extend for 90 seconds.

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