

PATENT SPECIFICATION

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(54) RECORD DISC PACKAGE

(71) We, RCA CORPORATION, a corporation organized under the laws of the State of Delaware, United States of America, of 30 Rockefeller Plaza, City and State of New York, 10020, United States of America, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:

The invention relates to a package for a disc record.

In the U.S. Patent No. 3,842,194, issued to Jon K. Clemens, a video disc system is disclosed. In an arrangement therein disclosed, an information track consists of geometric variations in the bottom of a smooth spiral groove on the surface of a disc record. The disc record has a deposit of dielectric material overlying a coating of conductive material. During playback, variations in the capacitance formed between an electrode incorporated in a groove-riding stylus and the conductive coating of the disc record are sensed as the record is rotated by a supporting turntable to reconstruct the recorded information.

In systems of the Clemens type, in order to obtain adequate playing time, the successive groove convolutions are relatively closely spaced on the surface of the video disc (e.g., 4.5 micrometers - corresponding to a groove density of 5,555 gpi) and the signal elements in the groove bottom are relatively small (e.g., signal element length - 0.3 to 0.8 micrometers and signal element depth of 0.10 to 0.15 micrometers).

The accumulation of dust on such video discs presents a considerable problem. The problem of dust accumulation is especially serious when exposure of a video disc to atmosphere dust is accompanied by conditions of high temperature and high humidity. It is therefore advantageous to provide a package which completely encloses a video disc in a dust-proof environment during its storage and handling.

The video discs of the type described above are prone to damage during their manual handling (e.g., scratches, finger-

prints, etc). It is therefore desirable to provide a package which permits insertion and withdrawal of an enclosed video disc into and from a playback device without the need for removing the enclosed video disc from its protective package.

It has been found that wiping of a video disc with soft material (e.g., velvet) prior to playback is useful as it results in a significant reduction in signal dropouts during playback.

In accordance with the present invention, there is provided a package for a disc record comprising: a pair of juxtaposed panels defining a cavity for enclosing said disc record; said panels being joined together along less than their entire peripheral edges; the unjoined peripheral edges of said panels defining an opening in communication with said cavity to permit the insertion and removal of said disc record into and from said cavity; said panels having portions which form a passage disposed between said opening and said disc record enclosing cavity; and said passage forming portions of said panels being covered with wiping material disposed so that said wiping material lies entirely outside said record enclosing cavity, said wiping material effecting a cleaning of said disc record during said insertion and removal.

In a preferred embodiment, the package may include a detent for engaging the bead of an enclosed disc record to prevent its accidental removal from the package.

Also, the panels may have recessed interior surfaces defining a toroidal region of the cavity which is positioned so that, when a disc record is enclosed in the cavity, the disc record is suspended between the panels without contact therewith. The package may be a multi-record package.

In the accompanying drawings:

FIGURE 1 is a plan view of a video disc package according to the present invention;

FIGURES 2 and 3 are cross-sections of the package of FIGURE 1 taken along the lines 2-2 and 3-3 respectively in FIGURE 1;

FIGURE 4 shows the constricted passage forming portion of the package of FIGURE 100

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FIGURE 5 illustrates a retaining cap for sealing the open edge of the package of FIGURE 1;

5 FIGURES 6 and 7 depict embodiments of a two-record package also according to the present invention;

FIGURE 7a shows a side view of the package of FIGURE 7;

10 FIGURE 8 illustrates a portion of the package of FIGURE 1 showing detents for securing an enclosed video disc in the package; and

FIGURES 9 and 10 are cross-sections of the package portion of FIGURE 8 taken along the lines 9-9 and 10-10 respectively in FIGURE 8.

Referring to FIGURES 1, 2 and 3, the video disc package 15 comprises a pair of juxtaposed panels 20 and 21 made from any suitable material (e.g., polystyrene). The juxtaposed panels define a cavity 22 for enclosing a video disc 23 in a dust-proof environment. The panels 20 and 21 are joined together over less than their entire peripheral edges. The unjoined portions of the panels 20 and 21 define an edge opening 24 in communication with the cavity 22 for permitting insertion and removal of a video disc into and from the package.

The interior surfaces of the panels 20 and 21 are outwardly recessed to define a toroidal region 25 of the cavity 22. The inner diameter of the toroidal region 25 is made not greater than the inner diameter of the recorded portion of the video disc 23 and the outer diameter of the toroidal region is made not less than the outer diameter of the recorded portion of the video disc. The toroidal region 25 is so positioned that an enclosed video disc is suspended between the panels without contact therewith. Such an arrangement protects the recorded portion of a video disc and adds stiffness to the package.

As illustrated in more detail in FIGURE 4, the panels 20 and 21 have portions 26 and 27 which define a constricted passage 28 interposed between the recorded enclosing cavity 22 and the opening 24. A pair of pads 29 and 30, made from suitable soft material (e.g., velvet), is secured to the interior surfaces of the constricted passage forming portions 26 and 27 of the panels 20 and 21 to effect a wiping of a video disc during its insertion into and removal from the package. Other suitable materials for the wiping pads are lintless, non-woven polyester paper made under the trademark "Dupont", and polyurethane foam made by Scott Paper Co., Foam Division. It will be seen that the wiping pads 29 and 30 are rolled away from the constricted passage 28 so as to keep the edges of the wiping pads from contacting a video disc during its insertion

into and removal from its package. As indicated previously, the wiping of a video disc prior to playback significantly improves its performance during playback.

The unjoined peripheral edges of the panels 20 and 21 are outwardly flared to facilitate insertion and removal of a video disc into and from the package.

The package may be manufactured by using any suitable process - e.g., injection molding, vacuum forming, etc.

The package 15 is suitable for use with a system which permits insertion and removal of an enclosed video disc into and from a playback device without the direct handling of the video disc by the user. Such systems are disclosed in U.S. Patents, Nos. 4124866 and 4098511 in the names of C. F. Coleman and M. A. Leedom and entitled, respectively, "VIDEO DISC INSERTION/EXTRACTION SYSTEM FOR A VIDEO DISC PLAYER" and "VIDEO DISC HANDLING SYSTEM FOR A VIDEO DISC PLAYER."

In accordance with the above Leedom and Coleman approach, a package containing a video disc is inserted into a player through an input slot provided in the player housing. During the insertion of the package into the player, an appropriately designed platform leads it to a fully inserted position such that a clamping device mounted in the player protrudes into the package. The clamping device then precludes removal of the video disc during the cover withdrawal to permit the video disc to remain in the player resting on the platform.

When the lid of the player is lowered, the platform is depressed to effect a transfer of the video disc resting thereon to the player turntable for playback. After playback, the lid is raised to lift the video disc to the level of the input slot. During the insertion of an empty package into the player through the input slot, the video disc is automatically returned to the package. After full insertion of the package into the player, the package is removed along with the enclosed video disc.

In the afore-mentioned systems, it is desirable to prevent removal of the package from the player while a video disc is only partly enclosed therein. To this end, as shown in FIGURES 8, 9 and 10, the video disc package is provided with a pair of detents 31 and 32. The detents 31 and 32 engage the bead 33 of the video disc 23 only when it is fully enclosed in the package 15. Relief areas 34 and 35 are provided around the depressions defining the detents 31 and 32 to allow the panels to flex easily without breaking the joint interconnecting the panels 20 and 21. The detents 31 and 32 additionally serve to preclude accidental removal of an enclosed video disc from the

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package.

FIGURE 5 shows a retaining cap 36 for sealing the open edge of the package 15. The retaining cap 36 blocks the dirt from getting into the package, adds stiffness to the package and also serves to protect the shape of the unjoined portions of the panels 20 and 21 which define the flared opening. The retaining cap 36 is removed before insertion of the package into the player. To help ensure that the consumer does not discard the cap, the edge 37 of the retaining cap may be labeled to make a nice display on a book case.

FIGURES 6 and 7 show two embodiments of a two-record 52, 53 package 17 according to the present invention. As illustrated therein, a centre partition 47 and 49 to define two record enclosing cavities 50 and 51. In the embodiment of FIGURE 6, the openings 54 and 55 in the package 17 are located at the same end of the package. However, in the embodiment of FIGURE 7, the openings 54 and 55 in the package are located at opposite ends of the package.

The player designed for handling the two record package of the type shown in FIGURE 6 may be provided with two clamping devices, the appropriate one of which is activated by the package upon its full insertion into the player to select the respective one of the discs.

The player designed to handle the two record package of the type shown in FIGURE 7 may be provided with only one clamping device. As can be seen from FIGURE 7a, a ledge portion 56 provided in the two record package of the type shown in FIGURE 7, for guiding the package during its insertion into the player, is angled to pass through the centre lines of the two openings on the opposite sides of the package so that each opening aligns with the clamping device upon the insertion of the package into the player. Such player would be suitable for playing one record albums as well as two record albums.

The foregoing is considered as illustrative only of the present invention, and numerous modifications and changes will readily occur to those skilled in the art.

WHAT WE CLAIM IS:

1. A package for a disc record comprising: a pair of juxtaposed panels defining a cavity for enclosing said disc record; said panels being joined together along less than their entire peripheral edges; the unjoined peripheral edges of said panels defining an opening in communication with said cavity to permit the insertion and removal of said disc record into and from said cavity; said panels having portions which form a passage disposed between said opening and said disc record enclosing cavity; and said passage forming portions of said panels being

covered with wiping material disposed so that said wiping material lies entirely outside said record enclosing cavity, said wiping material effecting a cleaning of said disc record during said insertion and removal.

2. A package as defined in Claim 1 wherein said unjoined peripheral edges of said panels are outwardly flared so that said opening has a funnel shape to facilitate said insertion and removal.

3. A package as defined in Claim 2 wherein said wiping material comprises a pair of wiping pads secured to said passage forming portions; each of said wiping pads having an intermediate portion disposed between interior and exterior edges wherein said interior and said exterior edges of each of said wiping pads are retracted with respect to said intermediate portions so as to prevent contact between said interior and exterior edges and the recorded portion of a disc record during the insertion and removal thereof into and from said cavity.

4. A package as defined in Claim 1 wherein each of said panels has a recessed inner surface defining said cavity; the construction of said recessed inner surfaces of said panels being such that said cavity includes a region of toroidal shape dimensioned to provide a non-contacting relation with the recorded portion of a disc record which is to be enclosed in said cavity.

5. A package as defined in Claim 4 wherein said panels have convex-shaped outer surfaces which conform to said inner surfaces defining said toroidal region.

6. A package as defined in Claim 1 further including a dust-excluding cap which slips over the unjoined peripheral edges of said panels.

7. A package as defined in Claim 1 for use with a disc record having outer peripheral surfaces defining a bead, wherein at least one of said panels has a detent for engaging said disc record bead when said disc record is fully enclosed in said cavity to secure said disc record in said package.

8. A package for storing a set of two disc records comprising: a pair of panels; a partition interposed between said panels; each of said panels defining in cooperation with said partition a respective cavity for enclosing a disc record; said package having a pair of openings; each of said openings being defined by an edge of said partition and an edge of a respective one of said panels; and each of said openings being in communication with a respective one of said cavities to permit the insertion and removal of a disc record from the respective cavity; each of said panels having a portion which forms in cooperation with an adjacent portion of said one of said openings and a respective one of said cavities; and said passage forming portions of said panels and said partition being



package.

FIGURE 5 shows a retaining cap 36 for sealing the open edge of the package 15. The retaining cap 36 blocks the dirt from getting into the package, adds stiffness to the package and also serves to protect the shape of the unjoined portions of the panels 20 and 21 which define the flared opening. The retaining cap 36 is removed before insertion of the package into the player. To help ensure that the consumer does not discard the cap, the edge 37 of the retaining cap may be labeled to make a nice display on a book case.

FIGURES 6 and 7 show two embodiments of a two-record 52, 53 package 17 according to the present invention. As illustrated therein, a centre partition 47 and 49 to define two record enclosing cavities 50 and 51. In the embodiment of FIGURE 6, the openings 54 and 55 in the package 17 are located at the same end of the package. However, in the embodiment of FIGURE 7, the openings 54 and 55 in the package are located at opposite ends of the package.

The player designed for handling the two record package of the type shown in FIGURE 6 may be provided with two clamping devices, the appropriate one of which is activated by the package upon its full insertion into the player to select the respective one of the discs.

The player designed to handle the two record package of the type shown in FIGURE 7 may be provided with only one clamping device. As can be seen from FIGURE 7a, a ledge portion 56 provided in the two record package of the type shown in FIGURE 7, for guiding the package during its insertion into the player, is angled to pass through the centre lines of the two openings on the opposite sides of the package so that each opening aligns with the clamping device upon the insertion of the package into the player. Such player would be suitable for playing one record albums as well as two record albums.

The foregoing is considered as illustrative only of the present invention, and numerous modifications and changes will readily occur to those skilled in the art.

WHAT WE CLAIM IS:

1. A package for a disc record comprising: a pair of juxtaposed panels defining a cavity for enclosing said disc record; said panels being joined together along less than their entire peripheral edges; the unjoined peripheral edges of said panels defining an opening in communication with said cavity to permit the insertion and removal of said disc record into and from said cavity; said panels having portions which form a passage disposed between said opening and said disc record enclosing cavity; and said passage forming portions of said panels being

covered with wiping material disposed so that said wiping material lies entirely outside said record enclosing cavity, said wiping material effecting a cleaning of said disc record during said insertion and removal.

2. A package as defined in Claim 1 wherein said unjoined peripheral edges of said panels are outwardly flared so that said opening has a funnel shape to facilitate said insertion and removal.

3. A package as defined in Claim 2 wherein said wiping material comprises a pair of wiping pads secured to said passage forming portions; each of said wiping pads having an intermediate portion disposed between interior and exterior edges wherein said interior and said exterior edges of each of said wiping pads are retracted with respect to said intermediate portions so as to prevent contact between said interior and exterior edges and the recorded portion of a disc record during the insertion and removal thereof into and from said cavity.

4. A package as defined in Claim 1 wherein each of said panels has a recessed inner surface defining said cavity; the construction of said recessed inner surfaces of said panels being such that said cavity includes a region of toroidal shape dimensioned to provide a non-contacting relation with the recorded portion of a disc record which is to be enclosed in said cavity.

5. A package as defined in Claim 4 wherein said panels have convex-shaped outer surfaces which conform to said inner surfaces defining said toroidal region.

6. A package as defined in Claim 1 further including a dust-excluding cap which slips over the unjoined peripheral edges of said panels.

7. A package as defined in Claim 1 for use with a disc record having outer peripheral surfaces defining a bead, wherein at least one of said panels has a detent for engaging said disc record bead when said disc record is fully enclosed in said cavity to secure said disc record in said package.

8. A package for storing a set of two disc records comprising: a pair of panels; a partition interposed between said panels; each of said panels defining in cooperation with said partition a respective cavity for enclosing a disc record; said package having a pair of openings; each of said openings being defined by an edge of said partition and an edge of a respective one of said panels; and each of said openings being in communication with a respective one of said cavities to permit the insertion and removal of a disc record from the respective cavity; each of said panels having a portion which forms in cooperation with an adjacent portion of said one of said openings and a respective one of said cavities; and said passage forming portions of said panels and said partition being

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covered with wiping material disposed so that said wiping material lies entirely outside said record enclosing cavity; said wiping material effecting a cleaning of said disc record during said insertion and removal.

9. A package as defined in Claim 8 wherein said openings in said package are at the same end of said package.

10. A package as defined in Claim 8 wherein said openings in said package are at opposite ends of said package.

11. A package as defined in Claim 10 wherein said package has ledge portions for

locating the package in a playback device; said ledge portions being angled to pass through the respective centre lines of said openings on the opposite sides of said package.

12. A package substantially as hereinbefore described with reference to Figures 1-5, 20 or Figures 6-7a, or Figures 8-10.

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