

Feb. 3, 1942.

I. SPINNER.

2,272,157

RECORD DISK

Filed March 11, 1940

Fig. 1

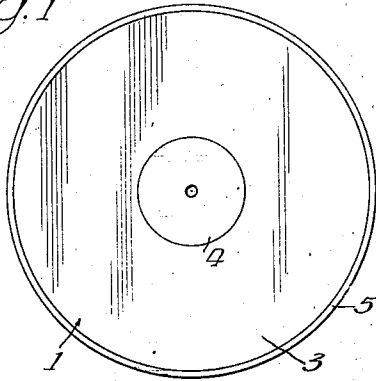


Fig. 2

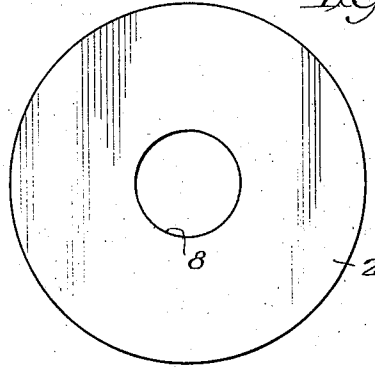


Fig. 3

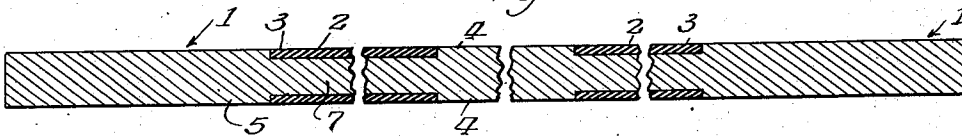


Fig. 4

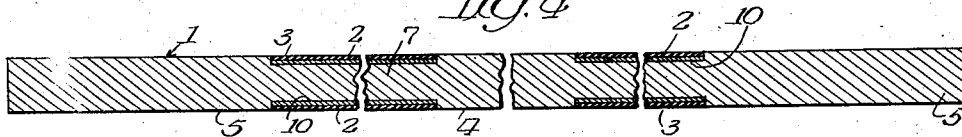


Fig. 5

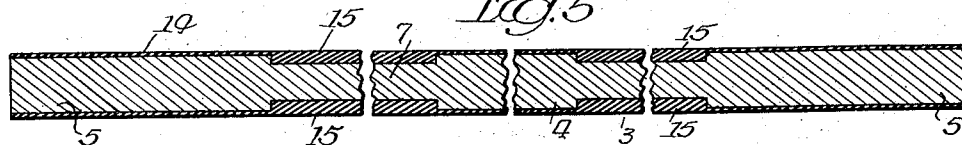


Fig. 6

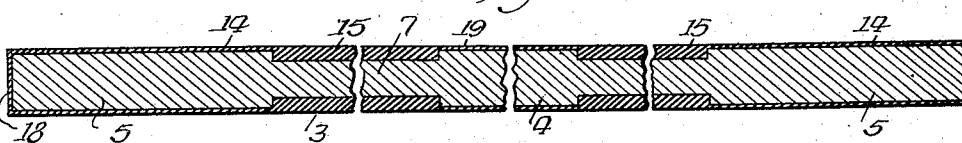
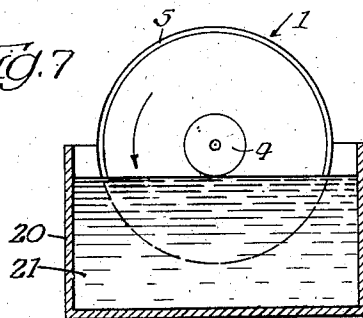


Fig. 7



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UNITED STATES PATENT OFFICE

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RECORD DISK

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5 Claims. (Cl. 274-42)

This invention relates to disk phonograph records and more particularly to the construction of the disk.

Phonograph disk records are now made of a thin sheet, which may be paper or the like, covered by a layer of plastic material upon which an impression or sound track may be made. This type of record can be made exceedingly cheaply, and is particularly adapted for home recording purposes.

Phonograph disk records of the type comprising a paper or cardboard base overlaid by a layer of plastic material are subject to the objection that they tend to warp out of shape. This interferes with the proper recording of sound on the record, if the warping takes place before the sound is recorded, and interferes with the reproduction of the sound thereafter. It is one of the objects of the present invention to provide a disk record of the above type which will be so constructed as to inhibit the tendency of the same to warp. In accordance with the principles of the present invention a circular disk record is reinforced along the rim and at the center thereof. The base of the record may be made of pressed paper, papier-mâché, cardboard or the like, or may be made of "Bakelite" or other moldable material, of wood, metal, plastic material, etc. In fact it may be made of any material which has the necessary strength but lacks the characteristics necessary for receiving a sound track or record. The center portion of the record, which is the part upon which no sound track is to be made, and the outer rim of the record, are of greater thickness than the intermediate portion. The intermediate portion is thus recessed to form an annulus between the rim and the center portion. This recess is preferably made exceedingly shallow. It may be of the order of a fraction of a hundredth of an inch, or it may be of a greater depth, namely, a depth of one or more hundredths of an inch, or even one or more tenths of an inch. In this depressed annulus I mount a similar annular sheet upon which the sound record is to be formed. This annular sheet is preferably of a thickness approximately equal and preferably not exceeding the depth of the annulus in the base or foundation of the record. This annular sheet may be made of plastic material throughout or may comprise a thin sheet of paper overlaid by a sheet or film of plastic material. This sheet is pasted or otherwise adherably secured to the foundation or base of the record, with the plastic side of the sheet outermost. This sheet preferably, but not necessarily, fills the annular depression in the foundation

sheet so that at its outermost edge the adhered sheet is flush with the rim on the record, and at its inner edge the adhered sheet is flush with the inner raised part of the foundation sheet. If desired, the rim may be so much thicker than the depressed part for receiving the sound track material that the rim extends as a peripheral flange around the finished record. The rim on the foundation sheet, as well as the inner thickened part of the foundation sheet, is preferably highly compressed so as to be of greater strength than the rest of the sheet. It may be coated with a waterproof film which may be of plastic material, varnish, shellac, or the like or, if desired, the covering film may be a plastic material such as is used for the recording film.

The recording film hereinabove mentioned may be made of any desired plastic material such as, for instance, nitrocellulose, cellulose acetate, ethyl cellulose, or the vinyl types of plastic. The above are merely a few of the plastic materials suitable for receiving a record of sounds capable of reproduction.

While I have here spoken of the record film or sheet as being applied within the groove in the foundation sheet by pasting, or adhering the same, in position, it may be applied otherwise. For instance, the foundation sheet with its annular depression may be dipped in a vat or the like containing the plastic and then smoothed so that the plastic fills the annular depression in the foundation sheet and may or may not also overlie the rim and all or part of the inner thickened portion of the foundation sheet.

The attainment of the above and further objects of the present invention will be apparent from the following specification taken in conjunction with the accompanying drawing forming a part thereof.

In the drawing:

Figure 1 is a plan view of a foundation disk for a record embodying the present invention;

Figure 2 is a plan view of a recording film to be applied to the disk of Figure 1;

Figure 3 is a sectional view, on a very much enlarged scale, of a phonograph record formed by assembling the film of Figure 2 on the disk of Figure 1;

Figures 4, 5 and 6 are sectional views corresponding to Figure 3 and showing modified constructions; and

Figure 7 is a diagrammatic view illustrating the manner of coating the disk to form the record of Figure 6.

Referring now more particularly to Figures 1, 2 and 3, the phonograph record comprises a foundation disk 1 overlaid by a recording film 2. The foundation disk is preferably made of pressed paper pulp or papier-mâché, although it may be made of other materials such as, for instance, of "Bakelite" or other molded material, of wood, metal, or of plastic material. In fact, it may be made of any material which has the necessary strength but lacks the characteristics required for receiving a sound track or record. The material is depressed on each side to form an annular depression 3 which extends from the elevated center portion 4 to an outer rim 5. The outer rim may be of a width of approximately one-fourth of an inch, although this may be increased or decreased as is necessary to afford the requisite strength. The outer rim 5 is preferably compressed more compactly than is the intermediate part 3 of the disk whereby the rim 1 tends to impart the necessary strength to the foundation disk to prevent warping of the same. The center portion 4 may be more compactly compressed than the intermediate part 3. If desired the foundation disk may be coated or sprayed with a strengthening or stiffening material. This may comprise a coating of plastic or "Bakelite," or it may even be a thin film of metal. The annular groove 3 is made very shallow, of a depth only sufficient to receive a recording film 2. In one preferred construction the rim 5 and central part 4 were of a thickness of the order of 0.050 inch and each groove 3 was of a depth of 0.006 inch. This left the central part 7 of a depth of the order of 0.038 inch. The film 2 is of an annular shape having a central circular opening 8 of a diameter equal to the diameter of the central portion 4 of the foundation disk 1. The outside diameter of the film 2 is equal to the outside diameter of the depressed central annular part 3. The annular film 2 thus fits into and fills the depressed part 3 of the foundation disk 1. The film 2 is preferably of a thickness approximately equal to the depth of the depressed part 3 of the foundation disc so that in the finished record the top surface of the recording film 2 lies flush with the adjacent surface of the rim 5. The film 2 is made of any material suitable for receiving a sound record impression. It may be stamped or die cut from a sheet of suitable plastic material, and it is pasted or cemented in place in the annular groove 3 of the foundation disk.

If desired, the film 2 may be backed by a thin piece of paper of corresponding annular shape to facilitate handling of the recording film 2. Such a construction is illustrated in Figure 4 wherein the recording film 2 is backed by a sheet of thin paper 10 to which it is adhered and which sheet of paper with the film 2 thereon is then pasted, cemented, or otherwise adhered in the annular depression 3 in the foundation disk 1.

If desired, the plastic sound track receiving material 2 may coat the entire outside surface of the foundation record. The plastic sound recording surface may be painted or spread over the foundation record 1, as illustrated in Figure 5. This leaves a very thin film 14 overlying the rim 5 of the foundation disk, and a thicker film 15 integral with the film 14, and filling the annular depression 3 in the foundation disc. The film 14 is generally, although not necessarily, too thin for receiving the sound record and is relied upon only to act as a preserving layer over the rim 5 of the foundation disk.

If desired, the entire exposed surface of the foundation disk may be coated with the plastic material used for the sound record. This is illustrated in Figure 6 wherein the layer 14 of the plastic material extends over and around the edges of the foundation disk, as indicated at 18, and over the center part 4 of the disk as indicated at 19. This also protects the edge of the disk from atmospheric moisture.

One method of coating the foundation disk to produce a record such as is illustrated in Figure 6 is shown diagrammatically in Figure 7. In this figure the foundation disk 1 is mounted on a rotatable shaft and is dipped into a tray 20 containing the liquid plastic which is to be coated onto the disk. The disk is then rotated through the tray, thus coating the entire disk with the plastic material.

From the above description it is apparent that I have provided a phonograph record which comprises a foundation disk overlaid by a film or layer of plastic material upon which the sound track is to be formed. The foundation disk is embossed at the center and at the outer peripheral rim, which tends to stiffen the foundation disk against warping or bending out of shape.

In compliance with the requirements of the patent statutes I have here shown and described a few preferred embodiments of my invention. It is, however, to be understood that the invention is not limited to the precise constructions here shown, the same being merely illustrative of the principles of the invention. What I consider new and desire to secure by Letters Patent is:

1. A disk type phonograph record of uniform thickness comprising a base sheet of pressed paper pulp of the same thickness at the center and along the outer periphery and of a lesser thickness at the intermediate portion, and an annular layer of sound track forming material on said base sheet between the rim and the center portion and building up said intermediate portion to at least the same thickness as the rim and the center portion.

2. A disk type phonograph record of uniform thickness comprising a base sheet of pressed paper pulp of the same thickness at the center and along the outer periphery and of a lesser thickness at the intermediate portion, an annular layer of sound track forming material on said base sheet between the rim and the center portion and building up said intermediate portion to at least the same thickness as the rim and the center portion, and a sealing coating of non-hygroscopic material covering the base sheet outside said sound track forming material to prevent absorption of atmospheric moisture by the base sheet.

3. A disk type phonograph record comprising a circular base of paper stock material having an annular depression therein, an annular film of sound track receiving material, a backing for said film, said film and backing being in and substantially filling said depression and said film serving to protect the subjacent part of the base from atmospheric moisture.

4. A disk type phonograph record of uniform thickness comprising a base sheet of paper stock having a greater thickness at the center and along the outer periphery than at the intermediate portion, an annular layer of non-hygroscopic plastic sound track forming material on said base sheet between said rim and said center thickened portion, said sound track form-

ing material serving to seal the subjacent paper sheet from atmospheric moisture, said non-hygroscopic material also covering substantially the entire surface of the base sheet to prevent absorption of atmospheric moisture by said base sheet and being of greater thickness between the rim and the center thickened portion to bring the entire record to a substantially uniform thickness.

5. A disk type phonographic record of uniform thickness comprising a base sheet of paper stock

having an annular depression therein between the rim and the center thereof and of uniform thickness from the center of the rim to the depression, an annular layer of non-hygroscopic plastic sound track forming material on said base sheet in and filling said depression, said sound track forming material serving to seal the subjacent paper sheet from atmospheric moisture.

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