

May 19, 1942.

R. S. DECH

2,283,797

PHONOGRAPH DISK

Filed June 24, 1941

2 Sheets-Sheet 1

Fig. 1.

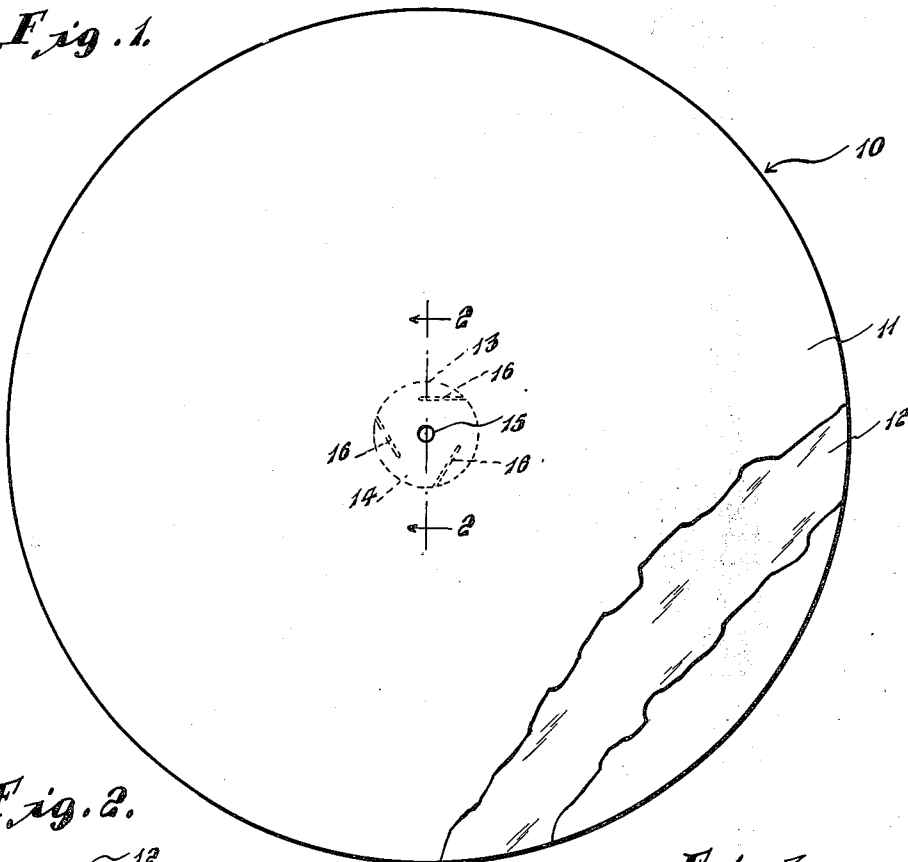


Fig. 2.

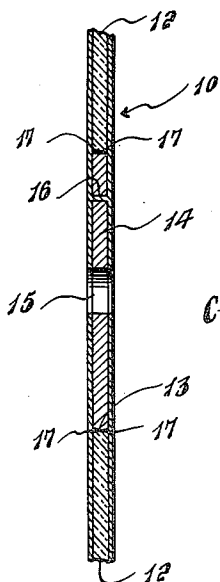


Fig. 3.

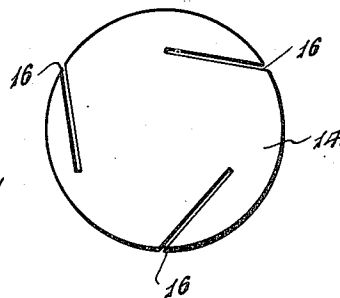
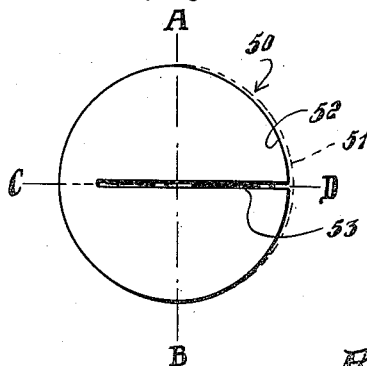


Fig. 4.



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2 Sheets-Sheet 2

Fig. 4.

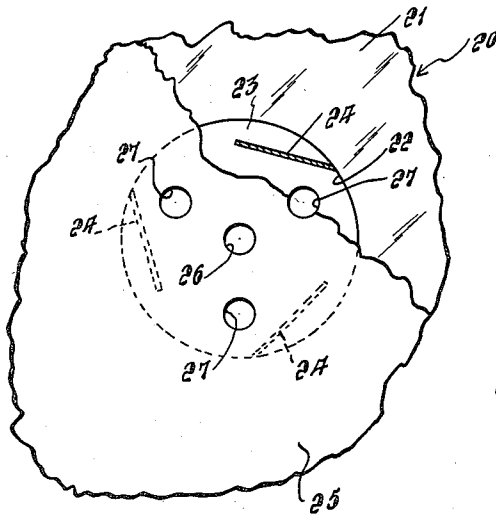


Fig. 5.

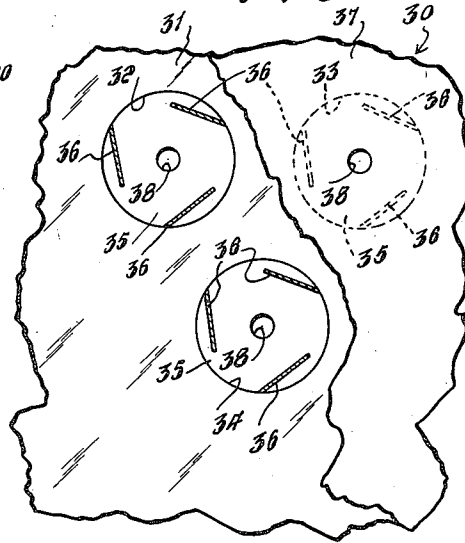


Fig. 7.

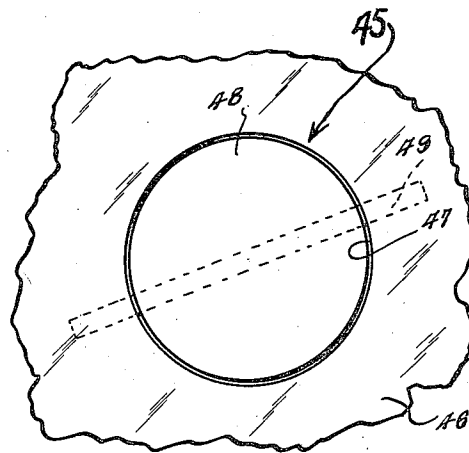
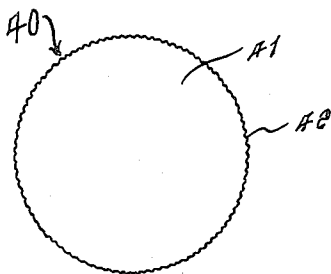


Fig. 6.



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PHONOGRAPH DISK

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16 Claims. (Cl. 274—42)

This invention relates to new and useful improvements in phonograph disks and has particular although not necessarily exclusive relation to a sound record blank.

The objects and advantages of the invention will become apparent from a consideration of the following detailed description taken in connection with the accompanying drawings wherein satisfactory embodiments of the invention are shown. However, it is to be understood that the invention is not limited to the details disclosed but includes all such variations and modifications as fall within the spirit of the invention and the scope of the appended claims.

In the drawings—

Fig. 1 is a face view of a phonograph disk made in accordance with the teaching of the invention;

Fig. 2 is an enlarged detail sectional view taken along the plane of the line 2—2 of Fig. 1;

Fig. 3 is a face view of an insert or plug used in Fig. 1 but on a larger scale;

Fig. 4 is a face view with a portion of a coating broken away, of the central portion of a phonograph disk having a modified insert therein;

Fig. 5 is a view similar to Fig. 4 but showing another modification;

Fig. 6 is a view similar to Fig. 3 but showing a modification of the insert;

Fig. 7 is a face view of a portion of a phonograph disk base comprising an outer member and an insert or plug and suggesting a modified method of making the phonograph disk of the invention; and

Fig. 8 is a view similar to Fig. 6 but showing a modification.

Referring in detail to the drawings and at first more particularly to the form of the invention shown in Figs. 1, 2 and 3, a phonograph disk is generally designated 10 and comprises a disk shaped base having on either or both sides a coating 11 of lacquer adapted to have sound grooves cut or engraved therein or having sound grooves therein. The base of the present phonograph disk includes a member 12, having a rather large diameter opening 13 therethrough, and a plate-like insert 14 located in the inner portion of the member 12.

Member 12 is of a frangible or fracturable material, as glass, and insert 14 is of a material of a different nature, i. e., a softer material such that an opening may be punched therein without likelihood of fracture of the material about such opening during or following the punching operation. Located in the plate or insert 14 is

a phonograph disk locating opening 15 of the desired diameter. This opening is preferably punched as a final operation in the making of disk 10 to provide a clean opening in the desired relation to the outer edge or any other portion of the disk.

As herein disclosed the lacquer coating 11 is applied to both sides of the base although it is to be understood that the invention comprehends a base coated on but one side. The lacquer coating is applied to the entire side or sides of the base, covering both the member 12 and the insert 14.

Recorded phonograph disks do not carry sound grooves on their inner central portions. One terminus of the sound groove is toward the outer edge of the disk and the other is radially spaced from the center of the disk. In the case of a record blank this central space is not to be recorded on when the blank is put into use. The space between such central area (in either a record or a record blank) and the outer peripheral edge of the disk is the sound groove area. Opening 13 is inwardly of the sound groove area of disk 10. Such opening need not be concentrically located in the member 12 and in addition may have rough irregular edges and may vary in diameter from one member to the next and need not be perfectly circular.

In making my improved disk the opening 13 is formed in member 12 by cutting or drilling since (the member being of glass or other rigid brittle substance) the opening cannot be punched without breaking of the member. After the opening has been formed one of the plates or inserts 14 is located in the opening. Fig. 3 shows one of the inserts alone, before use. Preferably the insert is formed of fibre board, cardboard, metal (as brass) or the like although other materials of such nature that they can be punched without fracture may be used.

Owing to its flatness, its smooth surface and its rigidity glass is preferred for the making of the member 12. However, other materials may be used. The use of fracturable or frangible materials in a phonograph disk base presents some problems that heretofore have restricted their use in such articles. Among the difficulties not heretofore overcome was the making of a satisfactory or serviceable locating or mounting opening, as the turntable spindle receiving opening, in the phonograph disk.

To overcome the mentioned difficulty I make the large opening 13 in the brittle member 12 and then insert the plug or plate 14. Preferably

the latter is provided with slits 16 spaced equally and entering the insert from the edges thereof as shown best in Fig. 3. These slits are relatively narrow and lend some resiliency to the insert whereby if the opening 13 is not exactly circular or has rough edges, or the like, the insert may be sprung into place in the opening.

After the insert is located in the opening 13 the coating 11 is applied to the base. This coating is usually applied first to one side of the base and then to the other side thereof. The coating is continuous over each side of the base, covering both the member 12 and the insert 14, and forms a seal between the edges of the member and insert and may enter slightly between such parts as suggested at 17 in Fig. 2. Further the coating enters the slits 16 filling the same and establishing an interlocking connection between the insert and the coating.

After the coating has set, the locating opening 15 is punched through the insert. Since the opening 15 may be made by punching, its dimensions can be accurately controlled, and, if desired, may be made accurately concentric with the entire disk. Because the coating is applied after the insert 14 is in place, the insert is not readily noticeable and is firmly fixed in the opening 13.

Member 12 may be of any desired diameter as for 8, 10, 12, 16, etc., inch phonograph disks and is usually approximately one sixteenth of an inch in thickness. Opening 13 is of the desired diameter and the inserts 14 are preferably of a diameter to have a fairly snug fit in such opening. Slits 16 are in the neighborhood of .005 of an inch in width although this may depend on the diameter, thickness and material of the insert used. These slits extend into the inserts a distance such that the inserts have a certain degree of resiliency and may be sprung into an opening of slightly smaller diameter or into a hole having rough edges or that is not perfectly round. The locating opening 15 is of the desired diameter, generally about .284 of an inch.

Regardless of the outside diameter of the member 12 it is preferable to have the opening 13 of one diameter so that inserts 14 of but one diameter need be made up and kept on hand for all diameters of phonograph disks. As the locating opening 15 is punched in the otherwise finished disk it will be apparent that such hole may always be made in the desired location relative to the outer edge of the disk. One of the objects of the insert 14 is to have rigidly fixed within the sound groove area of a phonograph disk a material that may be punched to provide the locating opening 15. In this connection it may be noted that the base member 12 is of what may be described as an unpunchable material while the insert 14 is of a punchable material.

Referring to the modification of Fig. 4 the phonograph disk 20, of which but a portion is there shown, comprises a base including a member 21 having a relatively large diameter opening 22 therethrough and in which is located a plate or insert 23. Opening 22 and plate 23 are inwardly of the sound groove area of the disk 20. Member 21 is of glass or the like as in the case of the member 12 above described and insert 23 is of a material of the nature of that of the insert 14. In addition insert 23 is provided with slits 24 for the same purpose as the slits 16 of insert 14. Lacquer coatings 25 are applied to either or both sides of the base of phonograph disk 20.

The lacquer coatings 25 cover the insert 23 as well as the member 21 and the lacquer enters into the slits 24 whereby the insert is securely fixed to the member 21. Insert 23 in addition to having a central locating opening 26 has three other locating openings 27. All of these openings are formed, as by punching, as a final operation in the manufacture of the disk 20.

To accommodate the extra openings 27 insert 23 may be made of larger diameter than the insert 14 although the diameter of these elements is a matter of convenience or choice. Some phonograph turntables, in addition to the usual central spindle, are provided with an extra pin or with extra pins, eccentrically located. These are designed to enter eccentric openings in a phonograph disk and establish a positive driving connection between the disk and the turntable. Any desired number and locations of the mounting openings 27 may be provided for cooperation with such extra pin or extra pins of a turntable. However, it will be understood that while a number of the locating openings 27—28 may be used on one turntable the same disk when applied to another turntable may have in use only one such opening.

In the modification of Fig. 5 the phonograph disk 30, only the central portion of which is shown, comprises a base including a member 31 having a plurality of relatively large diameter openings 32, 33 and 34 therein and in each of which is located a plate or insert 35. All the openings 32, 33 and 34 are inwardly of the sound groove area of the disk 30. Inserts 35 are provided with slits 36 and the member 31 and the inserts 35 are of the materials and are treated and assembled as in the case of the member and the insert 14 first above described.

After the inserts 35 have been disposed in the openings 32, 33 and 34 the base thus formed is coated on either or both sides with a covering 37 of lacquer. This covering extends over the member and the inserts, enters the slits 36 and securely seals the inserts in place. Following the coating operation one or more locating openings 38 are punched in each of the inserts or plates 35.

The relation of the inserts to one another is as desired and to adapt the disk 30 for use with any desired turntable or turntables. For example, one insert may be so disposed that its opening 38 is concentric with the outer periphery of the disk 30 to receive the central spindle of a turntable while the other inserts have their openings 38 located for cooperation with eccentrically located driving pins on such turntable.

Fig. 6 suggests a slight modification of insert, generally designated 40 and comprising a plate or body 41 of fibre board, cardboard, metal or the like, having its outer edge roughened as by being milled or serrated as at 42. The body 40 having an uneven or roughened edge may be forced into an opening in a base member of glass or other fracturable material and will retain itself in place while a lacquer coating is being applied to seal it in place. Insert 40 having a broken or interrupted edge, as in the cases of inserts 14, 23 and 35, portions of the lacquer coating will flow into the milled slots or serrations securely locking the insert to the coating. Thus insert 40 may be substituted for any of the inserts 14, 23 and 25 and after the coating operation is completed the punching operation is performed to provide the insert with one or more locating openings as will be understood.

In Fig. 7 the phonograph disk is generally designated 45 and includes a member 46 of glass or other fracturable material having a relatively large diameter opening 47 therethrough and into which loosely fits a solid insert 48. Insert 48 is of a material having the characteristics mentioned when considering insert 14.

When the insert has no slit or has no milled or serrated edge, or has no resiliency, it is made smaller to have a loose fit in the opening in member 46. In such instances a piece of tape or the like 49 is applied to the underside of the base and insert and keeps the latter in place while the lacquer coating is being applied to the upper side of the member and insert. Thereafter the base is reversed and the adhesive tape or the like may be left in place or removed and the second side of the base is coated in the usual manner. If the tape 49 is thin it may be left in place and it will be completely covered by the lacquer coating. Some of the coating material will flow into the slight space between the insert and the edges of the opening 47 and the insert will be effectively sealed in place. Thereafter the locating openings or opening, as the case may be, are punched in the insert 48.

Fig. 8 shows an insert, generally designated 50, of modified construction which may be substituted for any of the inserts heretofore described. Insert 50 is a disk relieved along a portion of its edge whereby it is not a true circle but has a slightly greater diameter along the line A—B than along the line C—D. That is, over a considerable arc as suggested by the distance between the dotted line 51 and the full line 52, the disk is relieved.

For example, where the disk has a diameter along the line A—B of .750 inch it has been found satisfactory to reduce it over an arc of approximately 120 degrees to have its diameter along the line C—D approximately .740 inch. These dimensions are only suggested and are not to be considered as limiting the invention in any way.

A slit 53 is formed in the disk and extends in the direction of the short diameter thereof entering from one edge and preferably extending more than one-half the distance across the disk. Owing to the presence and location of the slit 53 the disk 50 may have its diameter along the line A—B reduced by squeezing its portions inwardly reducing the width of the slit or even closing the open end portion thereof. Thus it will be understood the disk 50 may be inserted into an opening which is not truly circular or which is of a diameter less than that of the disk when measured along the line A—B and that the disk will hold itself in place in an opening into which it has been inserted. Disk 50 has certain manufacturing advantages over disk 14 but otherwise the disks may be substituted one for the other and disk 50 may be substituted for disk 40, 23 or 35.

It is to be understood that in the foregoing description and in the accompanying claims the words phonograph disk are used to designate either a sound record or a sound record blank, in the form of a disk. Additionally it is pointed out that while the various inserts may be of any desired thickness it is preferred that they lie within the planes represented by the side surfaces of the fracturable base members. Then the disks of the invention, when in stacked relation will lie flat against one another and the stack may be handled without breakage of the

disks as the stack is gripped tight in the hands.

The insert of relatively soft non-fracturable material is an advantage when applying a trademark or other identifying mark or data to the phonograph disk of the invention. A trademark or the like may be stamped or embossed into the insert supported portion of the coating without damage to the disk.

Having thus set forth the nature of my invention, what I claim is:

1. In a phonograph disk, a base comprising a member of fracturable material having a relatively large centrally located opening therethrough, a perforated insert of punchable material in said opening, and a film of sound groove receiving material over each side of said member and said insert sealing the latter in place in said opening.

2. In a phonograph disk, a base comprising a member of glass having a relatively large opening therethrough, an insert of punchable material in said opening and having a locating opening therethrough, and a film of sound groove receiving material over each side of the member and said insert sealing the latter in place in said relatively large opening.

3. In a phonograph disk, a base comprising a member of fracturable material having a large opening therethrough, a perforated insert of punchable material located in said opening, said insert having an interrupted edge whereby it retains itself in said large opening by yielding contact with the edges thereof, and a coating of sound groove receiving material over each side of said member and said insert and entering the interrupted edge portions of the latter and sealing the insert in the large opening.

4. In an insert for the purpose described, a plate-like body of a material adapted to have an opening punched therethrough without causing fracture of the material, and said body having a plurality of spaced slits entering therein from the outer peripheral edge thereof whereby the body is radially compressible.

5. In an insert for the purpose described, a plate-like body of non-metallic material adapted to have an opening punched therethrough without causing fracture thereof, and said body having a roughened peripheral edge portion to grip the sides of an opening when the body is forced therein.

6. A phonograph disk comprising a body having an inserted portion, and a coat of record groove receiving material over each side of said body and said inserted portion thereby sealing the latter in place in the body.

7. In an insert for the purpose described, a plate-like body of a material adapted to have an opening punched therethrough without causing fracture of the material, said body having a slit entering therein from the outer peripheral edge thereof.

8. In an insert for the purpose described, a plate-like body of a material adapted to have an opening punched therethrough without causing fracture of the material, and said body having a slit therein providing for radial compression of the body.

9. In a phonograph disk, a body comprising a flat fracturable base member having a centrally located opening therethrough and a film of sound groove receiving material on each of its sides, a perforated insert of punchable material in said opening, means fixing said insert in said opening, and said insert and means located entirely

within the planes defining the two sides of said body whereby a plurality of said disks may be stacked flat one on the other in engagement over the entire adjacent surfaces of said bodies.

10. In a phonograph disk, a flat sheet of glass having a large opening therethrough, a perforated insert of flat fibreboard in said opening, means sealing said insert in said opening, a film of sound groove receiving material on each side of said sheet of glass, and said insert and means sealing it in place lying wholly within the planes represented by the outer surfaces of said films whereby a plurality of said disks may be stacked flat on one another.

11. In a phonograph disk, a flat sheet of glass having a large opening therethrough, a perforated insert in said opening of a material adapted to have a hole punched therethrough without danger of fracture of the material, means sealing said insert in said opening, a film of sound groove receiving material on each side of said sheet of glass, and said insert and the means sealing it in place lying wholly within the planes represented by the outer surfaces of said films whereby a plurality of said disks may be stacked flat one on the other.

12. In a phonograph disk, a base comprising a member of fracturable material having a plurality of large openings therethrough inwardly of the sound groove area thereof, a perforated insert of punchable material in each of said openings, and a film of sound groove receiving material over each side of said member and said inserts and sealing the latter in place in said openings.

13. In a phonograph disk, a base comprising a

member of fracturable material having a plurality of large openings therethrough inwardly of the sound ground area thereof, a perforated insert of punchable material in each of said openings, means securing said inserts in said openings, and a film of sound groove receiving material on each side of said member.

14. In a phonograph disk, a body comprising a flat fracturable base member having a centrally located opening therethrough and a film of sound groove receiving material on each of its sides, a perforated insert of punchable material in said opening, said insert having a broken edge, and said film including an integral portion extending into the broken edge of said insert and onto said insert and sealing the latter in place.

15. In a phonograph disk, a base comprising a member of fracturable material having a large opening therethrough, a perforated insert of punchable material located in said opening, one of the edges of said insert and the edge of said opening interrupted, and a coating of sound groove receiving material over each side of said member and insert and entering said interrupted edge portion and sealing the insert in said opening.

16. In a phonograph record blank, a base comprising a member of fracturable material having an opening therethrough, a perforated insert of punchable material in said opening, a coating over each side of said member and said insert and sealing the latter in said opening, and said coating of a lacquer-like material adapted to have a sound groove cut therein by a recording stylus.

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