Oct. 17, 1933. L. FISHER 1,931,287

RECORD

Filed Jan. 14, 1932

Fig. 1

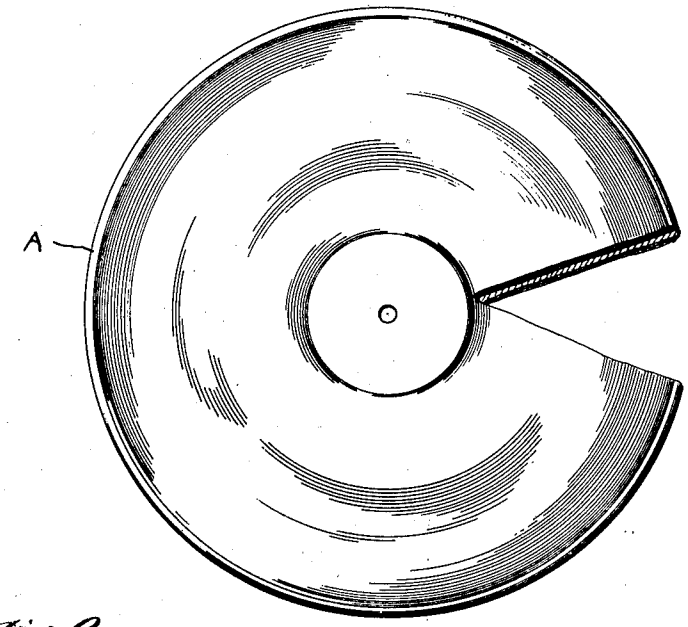


Fig. 2

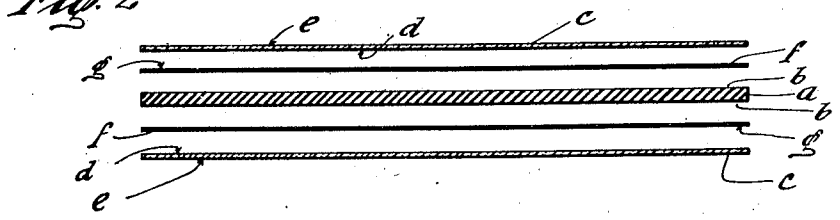
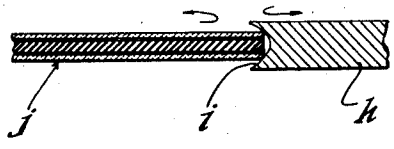


Fig. 3



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RECORD

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7 Claims. (Cl. 274—42)

This invention relates to records used for sound reproduction purposes, and my improvements are directed to a new method of producing records having a fibrous core and wherein the surfacing is of such character that the lines impressed therein are capable of co-operation with all kinds of needles in the most efficient reproduction of the original sound creation.

In my new process I employ as the core a fibrous disk, which may be laminated and consist of wood pulp, cardboard, or the like, of suitable thickness. This core or disk is to be coated with a sizing in the form of a cellulose solution, using for example an acetone solvent, of a character incapable of attacking a cellulose ester. In practice I have used what is commercially known as a bronzing liquid, which is applied to both surfaces of the disk.

The cellulose solution is applied by brushing, spraying, dipping, or by the employment of a coating machine.

The sizing is then allowed to dry naturally, or through subjection to heat.

When the sizing is dry it is treated with a glue wash which may be applied in any desirable manner, and allowed to dry, or put through a dryer. In practice I have found a solution of one part of LePage's glue to four parts water admirably serves my purpose, which is, that when dry, it may have a slight tackiness, whereby it is enabled to serve an important function in the final assembly of the record parts when under thermo-pressure treatment.

A disk of paper is to be placed upon the dried, glue washed surface, said paper disk being either plain or printed on its upper surface with pictorial or other representations.

Then there is placed upon this paper disk a disk composed of cellulose ester, such as cellulose nitrate or cellulose acetate that may have been rendered translucent or transparent in the usual manner. To one surface of this disk of cellulose ester I apply a solution of cellulose, to serve as a thermal reactive adhesive, using for this purpose a refined bronzing liquid, which is to be dried. The other surface of the disk of cellulose ester is to be treated with the following solution.

To one gallon of refined bronzing liquid add half a pound of pulverized silica or silex and two ounces of a filling powder which may be composed of equal parts of soapstone, whiting and soap, all in finely powdered form.

These proportions are of course approximate and may be varied within reasonable limits. The solution is to be applied in any suitable manner and dried either naturally or by the use of heat.

When the treatment with this composite solution has dried the cellulose ester disk is applied at the thus treated surface to a rotating sand roll, or the like, for the purpose of grinding down the projecting points of silica, until the surface becomes of velvety texture to the touch.

Now, with disks of fibre, paper and cellulose prepared and treated in the manners hereinbefore described, the paper disk is placed upon the fibre disk and the disk of cellulose ester upon the paper disk, with its dried, adhesive surface opposed to said paper disk and its composite solution treatment uppermost.

Then the three disks, in their superimposed relation are to be placed in the usual form of press, including the die for impressing the sound reproducing lines, and the thermal pressure employed will unite the elements in a homogeneous whole, constituting a sound record.

For the purpose of trimming and sealing the edge of the record I cause it to be rotated with its periphery in contact with the concaved periphery of a carborundum wheel that is rotated oppositely, thereby grinding the record edge and giving it a convex contour.

When this has been done I apply a refined bronzing liquid to the edge, and may include bronze powder, or colouring matter in the liquid to give a suitable finish to the edge, the bronzing liquid having the effect of sealing the edge and preventing the attacks of moisture.

The pulverized silica in the composite surfacing for the record provides a slightly abrasive, hard surface, which has the effect of shaping the needle point in service to the contours of the impressed sound lines, thereby rendering the needle a true and highly efficient means of transmission between the record and unit diaphragm in a sound reproducing instrument, whilst the other ingredients of the composite surfacing unite in providing a smooth, non-frictional finish to the record surface, for increased volume of tone.

In the drawing:

Figure 1 is a plan view of my improved record.

Fig. 2 shows in edge view a group comprising the constituent elements of a record whose opposite sides are to be operable, and

Fig. 3 is a detail of a record whose edge is under treatment for trimming and rounding.

The record A appearing in Fig. 1 is composed

of the core *a*, whose surfaces *b* have been sized and treated with a glue wash.

Each disk *c* is of cellulose ester whose surface *d* has been treated with a refined bronzing liquid, and whose surface *e* has been treated with a composite surfacing comprising bronzing liquid containing pulverized silica and soft powder.

Each disk *f* is of paper, whose surface *g* may bear a printed representation, pictorial if desired, and either coloured or uncoloured, for exposure through disk *c*.

In Fig. 3 appears a carborundum wheel *h*, having a concave periphery *i*, and at *j* is shown a record formed in the press, with its edge opposed contactingly with wheel *h*, for trimming and to round said edge, said wheel and record rotating oppositely, preparatory to the application of the sealing treatment thereto.

It is to be understood that the core must be provided on both sides with the sound reproducing means hereinbefore described, or one side thereof may have the treated elements *c*, *f*, but without the impressed lines.

It is by reason of applying the treated cellulose ester disks, and intervening paper disks, at both sides of the treated fibrous disk that I have been able to produce a record of substantial and enduring character, whether the sound lines be impressed on one or both sides thereof.

Variations within the spirit and scope of my invention are equally comprehended by the foregoing disclosure.

I claim:

1. The method of producing a sound record which consists in treating a fibrous disk on both sides with a sizing, applying a glue wash to the sizing, treating two disks of cellulose ester on one side with a cellulose solution that is a thermal reactive adhesive, treating the other sides of said cellulose ester disks with a solution of bronzing liquid containing pulverized silica and a filling powder, placing disks of paper respectively between opposite sides of the fibrous disk and the adhesive treated sides of the cellulose ester disks, and subjecting the assembled disks to thermal pressure, whereunder the sound lines are impressed.

2. The method of producing a sound record which consists in treating a fibrous disk on both sides with a sizing composed of an acetone solvent which is incapable of attacking a cellulose ester, allowing the sizing to dry, applying a glue wash to the sizing, treating two disks of a cellulose ester on one side with a cellulose solution that is a thermal reactive adhesive, treating the other sides of said cellulose ester disks with a solution of bronzing liquid containing pulverized silica and a filling powder, placing disks of paper respectively between opposite sides of the fibrous disk and the adhesive treated sides of the cellulose ester disks, and subjecting the assembled disks to thermal pressure, whereunder the sound lines are impressed.

3. The method of producing a sound record which consists in treating a fibrous disk on both sides with a sizing, applying a glue wash to the sizing, treating two disks of cellulose ester, on one side with a thermal reactive adhesive, treating the other sides of said cellulose ester disks with a solution of bronzing liquid containing pulverized silica and a filling powder, placing disks of paper respectively between opposite sides of the fibrous disk and the adhesive treated sides of the cellulose ester disks, and subjecting the assembled disks to thermal pressure, whereunder the sound lines are impressed.

4. The method of producing a sound record which consists in treating a fibrous disk on both sides with a sizing, applying a glue wash to the sizing, treating two disks of cellulose ester, on one side with a thermal reactive adhesive, treating the other sides of said cellulose ester disks with a solution of bronzing liquid containing pulverized silica, and powdered soapstone, whiting and soap, placing disks of paper respectively between opposite sides of the fibrous disk and the adhesive treated sides of the cellulose ester disks, and subjecting the assembled disks to thermal pressure, whereunder the sound lines are impressed.

5. The method of trimming the peripheral edge of a laminated record after subjection to thermal pressure which consists in holding said record, while rotating, with its edge in contacting relation with the concaved periphery of a carborundum wheel, that is rotating oppositely.

6. The new sound record which consists of a treated fibrous disk, and treated disks of a cellulose ester placed at opposite sides thereof over intervening disks of paper, the exposed sides of said cellulose ester disks having surfaces composed of a compound including silica.

7. The method of sealing the peripheral edge of a laminated record after its subjection to thermal pressure, and the trimming of said edge, which consists in applying a bronzing liquid to said edge.

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