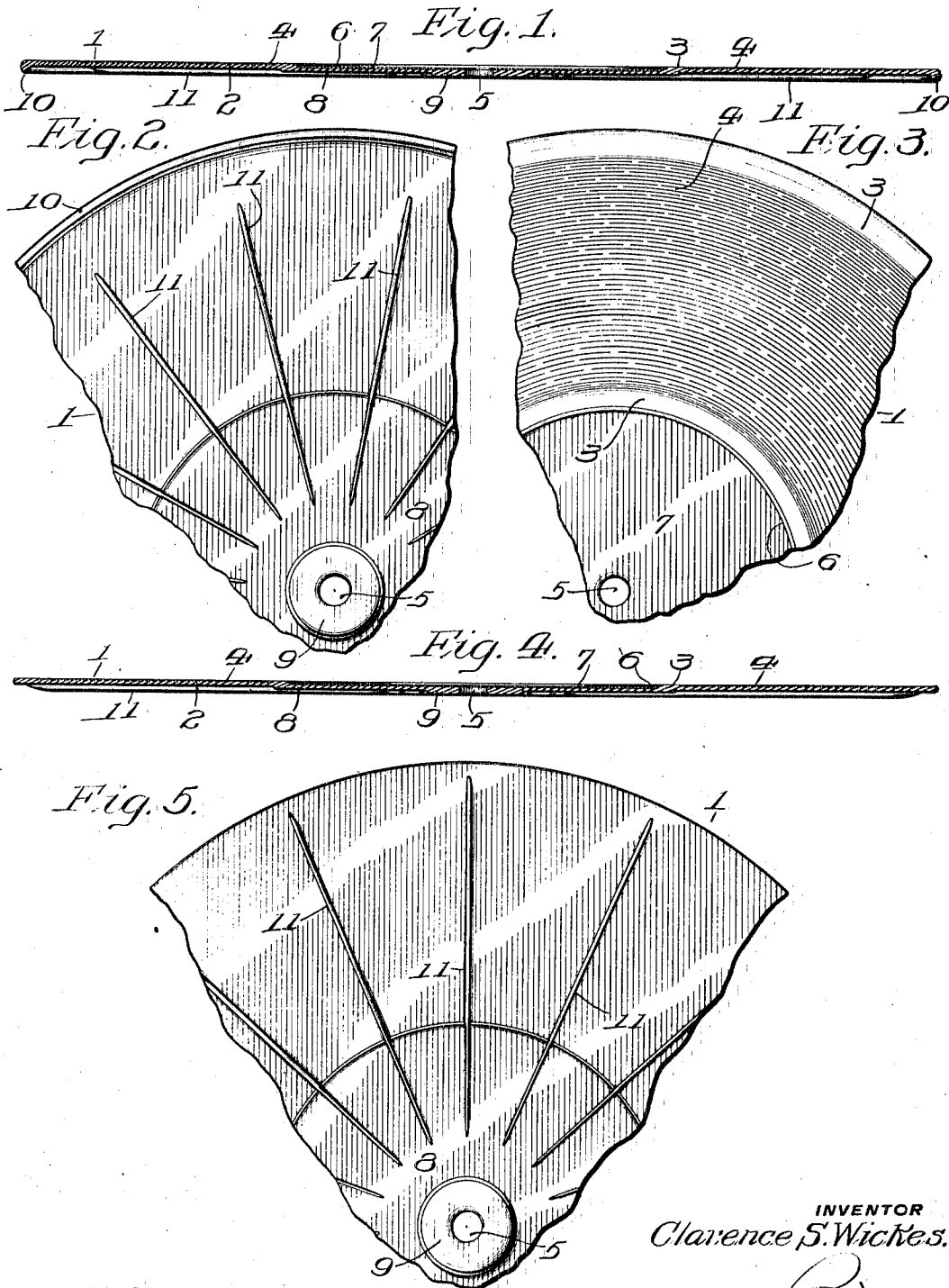


C. S. WICKES.
SOUND RECORD FOR TALKING MACHINES.
APPLICATION FILED SEPT. 6, 1910.

1,059,418.

Patented Apr. 22, 1913.

2 SHEETS—SHEET 1.



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Fig. 6.

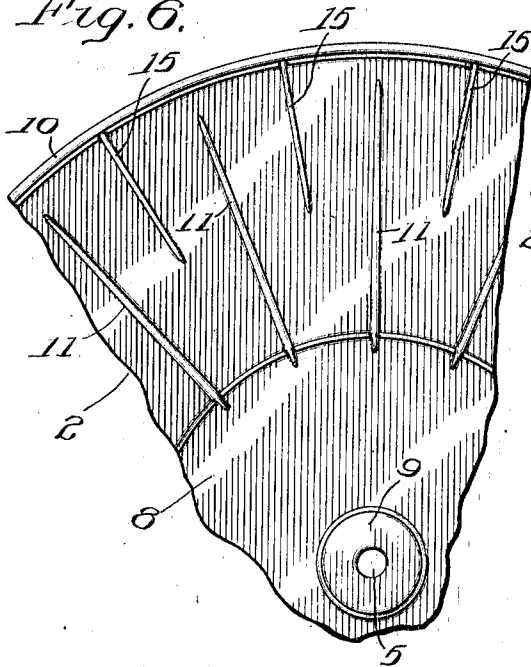


Fig. 7.

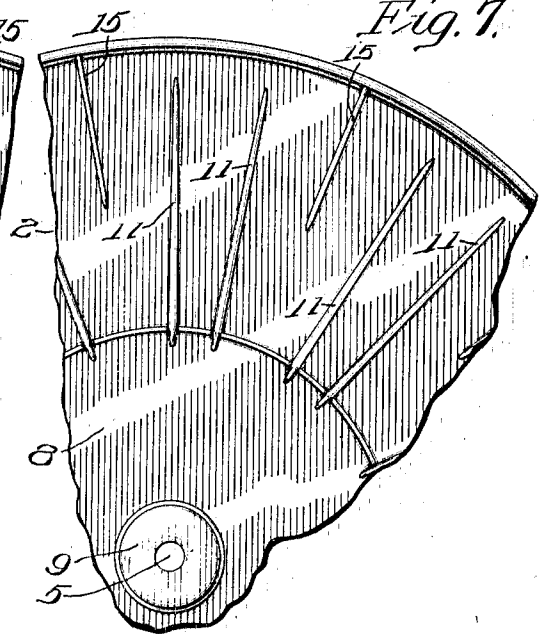


Fig. 8.

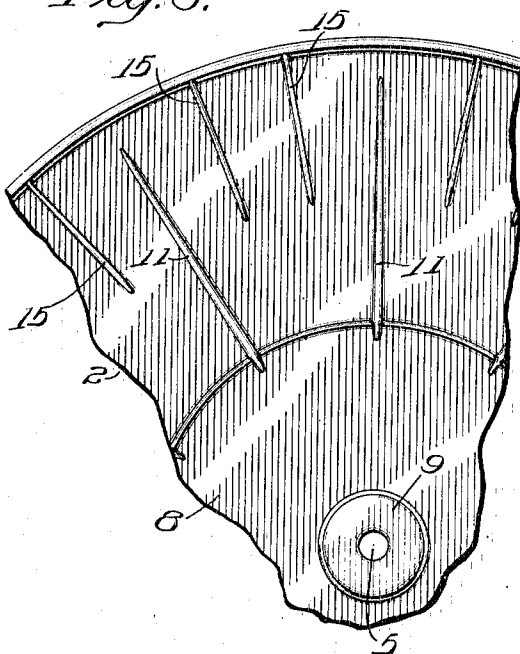
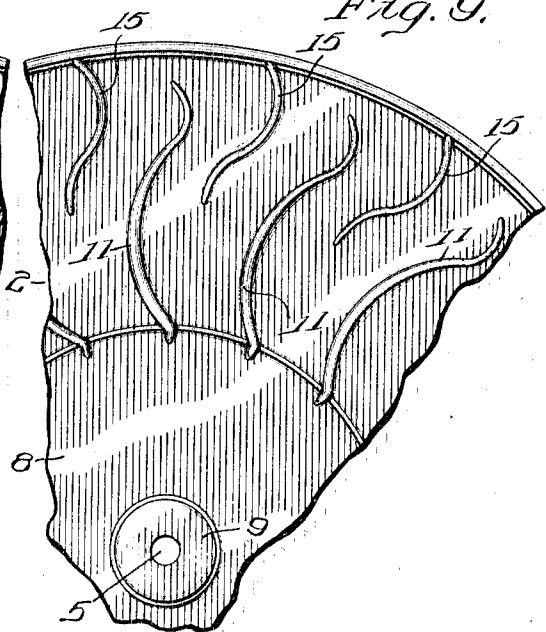


Fig. 9.



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UNITED STATES PATENT OFFICE.

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SOUND-RECORD FOR TALKING-MACHINES.

1,059,418.

Specification of Letters Patent.

Patented Apr. 22, 1913.

Application filed September 6, 1910. Serial No. 580,670.

To all whom it may concern:

Be it known that I, CLARENCE S. WICKES, a citizen of the United States, and a resident of the borough of Merchantville, State of New Jersey, have invented certain new and useful Improvements in Sound-Records for Talking-Machines, of which the following is a full, clear, and exact disclosure, reference being had to the accompanying drawings, forming a part of the following specification.

The main objects of this invention are, to provide a durable and efficient disk sound record of minimum thickness and having a substantially flat recorded surface and sufficient rigidity for commercial purposes; to provide an improved sound record comprising a relatively thin body portion and having a ribbed and recessed back; to provide a disk sound record having a central depression in the face thereof for a label and having a corresponding projection on the back thereof; and to provide other improvements, as will appear hereinafter.

It has been discovered after numerous experiments, that a compressed disk record having a relatively thin body portion provided upon its back with a marginal rib and with radial or transverse reinforcing ribs extending from the central portion of the record and connected with the marginal rib at their outer ends, tends to warp as it cools after being taken from the press in the process of manufacture, and is liable to warp during its subsequent use. This warping appears to be due to the fact that the outer ends of the radial or transverse ribs are connected to the marginal rib, whereby as the record cools, the rim of the record is drawn slightly rearwardly, and the face of the record is caused to assume a convex shape.

One of the objects of this invention is to overcome this tendency to warp, which is found in the ribbed back record as heretofore constructed, during its process of manufacture and during its subsequent use, and I have found that when the marginal rib is omitted in a record of this kind and the radial ribs are retained, that this tendency of the record to warp is eliminated. This omission of the marginal rib, however, obviously deprives the record of some of its strength at its edge.

I have also discovered after various experiments, that a thin ribbed-back record having the desired qualities of rigidity and strength and having a flat recorded surface, may be provided by constructing the record with a marginal rib and also with radial or transverse ribs extending from the central portion of the back of the record outwardly, and the outer ends of which are not connected with the marginal rib.

Furthermore, I have discovered that in the latter construction and also in the construction in which the marginal rib is omitted, or in other constructions, transverse or radial ribs which have their outer ends connected to the marginal rib or extending from the margin of the record, and their inner ends spaced from the central portion of the record, may be used to advantage to strengthen the record and to prevent warping.

In the accompanying drawings, Figure 1 is a diametrical section of a sound record constructed in accordance with this invention; Fig. 2 a fragmentary bottom plan view or rear elevation of the same; Fig. 3 a fragmentary top plan view or front elevation of the same; Fig. 4 a diametrical section of a modified form of this invention; Fig. 5 a fragmentary bottom plan view of Fig. 4, the top plan view of Fig. 4 being the same as shown in Fig. 3; and Figs. 6, 7, 8 and 9 are fragmentary bottom plan views of various other modified forms of this invention.

Referring to the drawings, one embodiment of this invention comprises a circular disk record 1, made in any suitable way of any suitable material, but preferably made in a well known manner by compressing between two heated matrices a well known mixture of shellac and other materials, which is heated before being compressed, and which is permitted to cool after being removed from the matrices or press. This record comprises a relatively thin body portion 2, provided upon its face or front side with a flat annular surface 3, extending from the margin of the record inwardly, and containing the usual spiral sound groove 4, formed of lateral undulations of uniform depth. Instead of the sound groove 4 described, any suitable sound record might be applied to the flat annular face 3 of the disk.

The record is preferably provided with the usual central aperture 5, and the central portion of the face of the record is preferably depressed within the recorded surface 3, to form a shallow flat circular recess 6, of substantially uniform depth and concentric with the record. This recess 6 is adapted to receive the usual label 7, which is secured in place in any suitable manner. The back or under side of the record is preferably provided with a flat circular projection 8, forming a part of the body of the record. The thickness of the projection 8 is preferably substantially uniform and substantially equal to the depth of the label recess 6, in the face of the record; and the diameter of the projection is preferably, however, as shown, slightly greater than the diameter of the recess, to preserve a substantially uniform thickness throughout the body of the record. In other words, the label recess 6 is formed by depressing the central portion of the face of the record and correspondingly raising the central portion 8 of the back of the record a substantially equal amount. The record is also provided upon its under side with a flat circular boss 9, surrounding and concentric with the central aperture 5 of the record, the diameter of the boss being only a small part of the diameter of the projection 8 of the back of the record, and being intended merely to strengthen the record around its central aperture.

The record is preferably formed with an annular marginal rib 10, preferably projecting rearwardly from the back of the record, the lower surface of the rib being preferably substantially in the plane of the lower surface of the boss 9, at the center of the record. This annular marginal rib might be arranged to project forwardly from the front of the record, if preferred. Radial ribs 11 are also provided upon the back of the record, the outer ends of these ribs being spaced inwardly from the marginal rib, the inner portions of these radial ribs preferably overlapping the circular projection 8, upon the back of the record, and the inner ends of the ribs being preferably spaced from the boss 9, surrounding the central aperture of the record. The under surfaces of the ribs 11 are preferably tangent to a plane coincident with the lower surface of the boss 9, and tangent to the marginal rib 10, throughout substantially their full lengths. The extremities of the ribs may be tapered to meet the under surface of the body of the record.

Instead of constructing the record with a marginal rib as heretofore described, the marginal rib may be omitted as shown in Figs. 4 and 5, the record being constructed in other respects identically as before or as hereinafter described. When the marginal rib is omitted, the record is obviously more

fragile, but may be found, when constructed of suitable material, to be durable enough for ordinary purposes.

In Figs. 6, 7, 8 and 9 are shown bottom plan views of modified forms of this invention, in which the body portion 2 of the record is constructed in each instance as heretofore described and shown in Figs. 1 to 5, but in which the back of the record is provided with various forms and arrangements of ribs. The under surfaces of all of the ribs in these modified forms are preferably tangent or coincident with the plane of the lower surface of the central boss 9.

The record shown in Fig. 6 is provided on its back with a marginal rib 10 and with radial ribs 11, which may be called in this connection inner ribs, extending outwardly from the central projection 8 and having their outer ends spaced from the marginal rib 10, as heretofore described, and also with comparatively short outer radial ribs 15 extending from the marginal rib 10 inwardly and having their inner ends spaced from the raised portion 8 of the back. In this construction the outer ribs alternate with and overlap the inner ribs, or, in other words, the alternate ribs are oppositely disposed and arranged in a staggered formation around the record.

The record shown in Fig. 7 is similar to the record shown in Fig. 6, just described, except that in the space between each two adjacent outer radial ribs 15 are two inner radial ribs 11.

The record shown in Fig. 8 is similar to that shown in Fig. 7 and just described, except that in the space between each two adjacent inner radial ribs 11 are two outer radial ribs 15.

The record shown in Fig. 9 is similar to the record shown in Fig. 6, heretofore described, except that in this case the inner and outer ribs 11 and 15 are curved instead of straight. The ribs are shown curved simply to indicate that ribs other than straight may be used, and the curved form shown is only one of many forms that obviously might be employed and which might be found to possess some advantages for some purposes over the straight ribs. The invention, therefore, is not limited to any particular form of rib, but is intended to include all forms.

It is to be understood that in each of the various forms of records described above, all of the ribs, the projection 8, and the boss 9, are preferably integral with the body of the record, and that the record as a whole, including the body, ribs, projection and boss, is preferably a compressed record, substantially homogeneous and comparatively hard, rigid and durable, and adapted for use in directly reproducing sound. This invention might also be applied, however, to any

record, whether compressed or not, and whether homogeneous or not; for instance, it might be applied to a cast or cut record or to a record having a layer of paper or cardboard embedded or inclosed in preferably a mass of other material. The body of the record in each case, is too thin to withstand of itself ordinary usage, and depends upon the ribs to give it the necessary stiffness and durability.

By this invention it is evident that a commercial sound reproducing record is produced which for any given material and for any given area of face or recorded surface has a body portion of minimum thickness, and has consequently a minimum mass or bulk, but which is sufficiently rigid and durable for all requirements.

Only a few of the many forms in which this invention may be embodied have been shown, but these forms are thought to be sufficient to illustrate the invention and to indicate that the invention is not limited to any particular construction described, but might be applied in various forms without departing from the spirit of this invention or the scope of the appended claims.

Having thus fully described this invention, I claim and desire to protect by Letters Patent of the United States:—

1. A disk sound record comprising a relatively thin body portion having recorded upon its face side sound undulations, and upon its opposite side a marginal rib and inwardly extending ribs having their outer ends opposite said undulations and spaced from said marginal rib, and connected to said marginal rib only by said body portion.

2. A disk sound record comprising a relatively thin body portion having recorded upon its face side sound undulations, and upon its opposite side, a marginal rib and radially disposed ribs having their outer ends overlapping said undulations and spaced from said marginal rib, and connected to said marginal rib only by said body portion.

3. A disk sound record comprising a relatively thin body portion having recorded upon its face side sound undulations, and upon its back inwardly extending ribs having their outer ends opposite said undulations and connected only by said body portion.

4. A disk sound record comprising a relatively thin body portion having recorded upon its face side sound undulations, and upon its back inwardly extending radial ribs having their outer ends overlapping said undulations and connected only by said body portion.

5. A disk sound record having a central depression upon one side and a corresponding projection upon its opposite side, and ribs integral with said record and connecting

said projection and the surrounding body portion of said record, and having their outer ends free from contact other than with said body portion.

6. A compressed homogeneous disk sound record having a central depression upon one side and a corresponding projection integral with said disk upon its opposite side, said record being provided with ribs connecting said projection with the surrounding body portion of said record, and said ribs having their ends free from contact other than with said body portion.

7. A compressed homogeneous disk sound record having a central depression upon one side and a corresponding projection integral with said disk upon its opposite side, and ribs connecting said projection with the surrounding body portion of said record and being connected to one another only by said portion, the depth of said depression being substantially equal to the thickness of said projection, and said projection being of substantially the same area as said depression.

8. A compressed homogeneous disk sound record comprising a relatively thin body portion having recorded upon its face side sound undulations, and upon its opposite side integral therewith, a marginal rib and radial ribs, said radial ribs extending over an area directly opposite said undulations and having their outer ends spaced from said marginal ribs and connected thereto only by said body portion.

9. A compressed homogeneous disk sound record comprising a relatively thin body portion having upon its face side a sound record, and upon its opposite side integral therewith, a marginal rib and radial ribs having their outer ends, spaced from said marginal rib and connected thereto only by said body portion, said body portion being provided with a central aperture and with a shallow depression upon its face side, a corresponding projection integral with said record upon its opposite side, and a central boss upon said projection.

10. A disk sound record comprising a relatively thin body portion having recorded upon one side sound undulations, and having upon its opposite side a marginal rib and inwardly extending ribs having their outer ends spaced from said marginal rib and connected to said marginal rib only by said body portion, said inwardly extending ribs being distributed over a major portion of the area of said opposite side.

11. A disk sound record comprising a body portion provided with a transverse rib on the back thereof to strengthen the same, said rib extending longitudinally a major portion of but not the entire distance between the central portion and the margin of said record, one end of said rib being free from contact except with said body portion.

12. A disk sound record comprising a body portion having a transverse rib extending from the margin thereof inwardly and having an inner end spaced from the central portion of said record and connected thereto only by said body portion, said record having also a transverse rib extending toward the central portion thereof and having an outer end spaced from the margin thereof and connected to said margin only by said body portion.

13. A disk sound record provided on the face thereof with sound undulations and on the back thereof opposite said undulations with a marginal rib and with a plurality of transverse ribs spaced around said back in a staggered arrangement, and each having one end free from contact except with the body of said record.

14. A disk sound record comprising a body portion having recorded on one side thereof, sound undulations, and having on its opposite side and distributed over the major portion of said opposite side, a marginal rib and a plurality of sets of transverse ribs arranged in staggered formation, one of said sets of transverse ribs having their inner ends free from contact except with said body

portion, and the other of said sets having their outer ends free from contact except with said body portion.

15. A disk sound record comprising a body portion having recorded on one side thereof sound undulations, and having on its opposite side and distributed over the major portion of said opposite side a marginal rib and a plurality of transverse ribs arranged in staggered formation, each of said transverse ribs having one end free from contact except with said body portion.

16. A disk sound record comprising a body portion, having a marginal rib and a plurality of spaced transverse ribs extending a major portion of, but not the entire distance, between said marginal rib and the central portion of said record, the inner ends of said transverse ribs being free from contact except with said body portion.

In witness whereof, I have hereunto set my hand this 2nd day of September, A. D., 1910.

CLARENCE S. WICKES.

Witnesses:

FRANK B. MIDDLETON, Jr.,

CHARLES I. WILLARD.