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RECORD BLANK

Harry E. Hofmann, Elizabeth, N. J., assignor, by
mesne assignments, to Union Carbide and
Carbon Corporation, a corporation of New
York

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This invention relates to improvements in records adapted to have reproducible impulses actuated by sound or the like recorded thereon, such, for example, as the well known phonograph records. My improved records are characterized by the fact that the recorded impulses are impressed in or carried by a surface which contains vinyl resins, that is, resinous products resulting from the polymerization of certain vinyl compounds.

Records of the class with which this invention is concerned usually take the form of discs having a continuous spiral groove formed upon one or both surfaces thereof. The impulses to be reproduced are recorded upon the disc as variations in the contour of the groove itself so that a stylus or needle travelling along the groove will be vibrated in accordance with such variations in its path whereby the recorded impulses may be reproduced as discernible physical effects.

The principal objects of my invention are to provide sound records and the like having novel properties, and to provide a novel composition from which the new records may be formed.

The new records possess many advantageous properties which make them superior to records previously known to the art. In this connection it may be noted that the new records are resistant to atmospheric conditions, and to moisture and water generally; they are chemically inert, and not affected by contact with ordinary solvents such as gasoline, alcohol and the like; they are tough and resilient; and they may be prepared in the form of rigid or flexible records of all types without sacrificing any of their desirable properties. A primary consideration in determining the advantage of one type of sound or other records over another type of records is the fidelity and facility with which the recorded impulses may be reproduced. My new records are exceptionally desirable from this standpoint. It is possible to record sound or the like upon the new records in a manner similar to that used in producing previously known records, and the recorded sound may be reproduced with a minimum of undesirable noise. This is possible because delicate variations may be impressed in the sound track of the new records with a minimum formation of variations in the sound track which are unintentional or not actuated by the sound being recorded. For this reason unusual fidelity of reproduction is possible with an extremely low surface noise level. At the same time the new records are resistant to needle wear and exhibit but slight wearing action on the needle.

I am enabled to achieve the objects of this invention, and to produce records having the above described desirable properties by forming such records so that the surface or surfaces thereof which carry the recorded impulses contain vinyl resins.

Vinyl compounds can be polymerized to form resinous bodies for which various uses have been proposed. Also, it has been proposed to alter the properties of vinyl resins by polymerizing a mixture of two or more vinyl compounds, and by incorporating other substances with the resin. These proposals have resulted in generally improved resins, all of which may be used in forming the new records disclosed herein.

In general, vinyl esters of aliphatic acids, such as vinyl acetate, vinyl formate, vinyl propionate, vinyl butyrate, etc., when polymerized yield resins which are relatively soft, low fusing, and soluble in common organic solvents, such as toluene and alcohol, and which possess excellent adhesive properties. Resins which are formed by polymerizing vinyl halides, the chloride for example are generally harder, more infusible, insoluble, and less adhesive than the polymerized aliphatic vinyl esters. Polymerized vinyl benzene (styrene) resin is very similar to vinyl chloride resin in its properties.

Those vinyl resins which are formed by polymerizing a plurality of vinyl compounds while in mutual contact differ in their properties both from mixtures of the separately polymerized compounds and from the individual polymers. In general, resins formed by conjoint polymerization (by which is meant polymerization of a plurality of compounds while in mutual contact) are preferable for use in my new records. A vinyl resin formed by the conjoint polymerization of a vinyl halide and a vinyl ester of an aliphatic acid which contains more than about 50% by weight of the vinyl halide is particularly well adapted to the uses of the present invention. An example of such a resin is that formed by the conjoint polymerization of about 80% by weight of vinyl chloride and about 20% by weight of vinyl acetate.

The new records may be made in a wide diversity of forms. They may comprise an inexpensive core which is surfaced on one or both sides with a coating of the vinyl resin, or they may comprise a plurality of laminations in any manner so that at least one vinyl resin-containing surface is provided for the record.

It is possible to make the records by applying the vinyl resin in sheet form to the core or base

material and by a hot-pressing operation, or the vinyl resin surface may be supplied by applying a solution of a vinyl resin to the base and evaporating the solvent to cause the deposition of a film of vinyl resin. A similar result can be obtained by using previously prepared materials which are impregnated with the vinyl resin.

In general, fibrous materials, such as paper, cardboard, fiber board and the like are suitable for the record base. Such a base may then be treated by one of the foregoing procedures to form a record having a vinyl resin containing surface or surfaces upon which the reproducible impulses may be impressed from a metallic matrix, or in which the impulses may be recorded directly by the action of a recording stylus actuated by sound or the like.

It is to be understood that the vinyl resin surface may be modified by incorporating other materials therein. For example, the surface may be made harder or softer than the original resin by the use of a filling material or plasticizer. Examples of suitable filling materials are inert mineral or organic substances, such as wood flour, cotton flock, silica, mica and the like, and examples of plasticizers are dibutyl phthalate, tricresyl derivatives, glycol or glycerol esters of various organic acids and the like.

The finished record may be rigid or flexible and may be composed of a plurality of laminae or it may be formed of a solid core having a vinyl resin surface or surfaces.

Modifications of the invention are possible and are included within the scope of the invention as defined by the appended claims.

I claim:

1. A record blank adapted to have sound recorded thereon which contains a substantial proportion of a resinous constituent consisting of a vinyl resin at least in the surface of said record upon or in which surface said sound is to be recorded, said vinyl resin being a member selected from the group consisting of polymerized vinyl esters of aliphatic acids, polymerized vinyl halides, polymerized vinyl benzene, and products of the conjoint polymerization of a plurality of vinyl compounds of at least two different members within the foregoing group.

2. A record blank adapted to have sound recorded thereon which comprises a fibrous base provided with at least one integrally formed surface containing a substantial proportion of a resinous constituent consisting of a vinyl resin upon or in which surface said sound is to be recorded, said vinyl resin being a member selected from the group consisting of polymerized vinyl esters of aliphatic acids, polymerized vinyl

halides, polymerized vinyl benzene, and products of the conjoint polymerization of a plurality of vinyl compounds of at least two different members within the foregoing group.

3. A record blank adapted to have sound recorded thereon which comprises a laminated structure having at least one surface lamina upon or in which surface said sound is to be recorded which contains a substantial proportion of a resinous constituent consisting of a vinyl resin which is a member selected from the group consisting of polymerized vinyl esters of aliphatic acids, polymerized vinyl halides, polymerized vinyl benzene, and products of the conjoint polymerization of a plurality of vinyl compounds of at least two different members within the foregoing group.

4. A phonograph record, the record groove receiving surface of which contains a substantial proportion of a resinous constituent consisting of a polymerized vinyl halide.

5. A phonograph record, the record groove receiving surface of which contains a substantial proportion of a resinous constituent consisting of polymerized vinyl chloride.

6. Phonograph record, the record groove receiving surface of which contains a substantial proportion of a resinous constituent consisting of a vinyl resin substantially identical with a resin resulting from the conjoint polymerization of a vinyl halide and a vinyl ester of an aliphatic acid.

7. Phonograph record, the record groove receiving surface of which contains a substantial proportion of a resinous constituent consisting of a vinyl resin substantially identical with a resin resulting from the conjoint polymerization of a vinyl halide and a vinyl ester of an aliphatic acid and which contains more than about 50% by weight of the vinyl halide.

8. Phonograph record, the record groove receiving surface of which contains a substantial proportion of a resinous constituent consisting of a vinyl resin substantially identical with a resin resulting from the conjoint polymerization of vinyl chloride and vinyl acetate.

9. Phonograph record, the record groove receiving surface of which contains a substantial proportion of a resinous constituent consisting of a vinyl resin substantially identical with a resin resulting from the conjoint polymerization of about 80% by weight of vinyl chloride and about 20% by weight of vinyl acetate.

10. As a new article of manufacture, a reproducible record formed in polymerized styrol.

HARRY E. HOFMANN.