

PATENT SPECIFICATION

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PROVISIONAL SPECIFICATION.

Plastic Compositions having a Basis of Cellulose Ester.

We, COLUMBIA GRAPHOPHONE COMPANY, LIMITED, of 102 to 108, Clerkenwell Road, London, E.C. 1, a company registered under the laws of Great Britain, WILLIAM THOMAS FORSE, FREDERICK WILLIAM JONES, Junior, and GEORGE WALTERS, all of Bendon Valley, Garratt Lane, London, S.W. 18, all subjects of the King of Great Britain and Ireland, do hereby declare the nature of this invention to be as follows:—

This invention relates to compositions of matter, and has for its object to provide improved compositions which may be used for the moulding or formation of gramophone records and other articles or devices which may be formed by moulding the material under pressure and with the application of heat.

A further object of the invention is to provide materials suitable for this purpose, which may be formed from

ingredients which are easily obtainable and comparatively cheap.

The invention consists in a thermoplastic material or material mouldable under pressure on the application of moderate heat, having as its base a cellulose ester, such as cellulose acetate.

The invention also consists in a thermoplastic material having as its base cellulose ester such as cellulose acetate, and a non-volatile gelatiniser having a solvent action upon the cellulose ester.

The invention also consists in articles formed from thermoplastic material of the above character and other details and arrangements hereinafter described or indicated.

In carrying our invention into effect in one convenient manner, we form our improved thermoplastic material with a base of cellulose acetate, and a non-volatile gelatiniser or mixture of gelatinisers of cellulose acetate of which the following may be given as examples:—

- Compound ureas e.g., Diethyl diphenyl urea;
- Anilides and their homologues e.g., Form-o-toluidide;
- Urethanes e.g., Phenyl urethane;
- Esters of oxamic acid e.g., Phenyl oxamic ester;
- Cyclohexanone, and similar bodies.

The cellulose acetate, together with the gelatiniser or mixture of gelatinisers, may be mixed or incorporated with resinous materials, such as copals, which assist in forming a plastic mass, and add desirable qualities to the finished product, and we may also incorporate with the mass certain filling materials such as carbon black, barytes, rotten stone and kieselguhr, the object of the filling materials being to reduce the cost of manufacture and/or to impart hardness or other qualities to the finished product.

As an example of one method of carrying out the invention in its application to the manufacture of a gramophone record, we take two parts of cellulose acetate, and this we mix with one part of acaroid resin, and one part of phenyl oxamic ester. The mixture is incorporated between steam heated rolls until gelatinisation is completed. To the gelatinised mass three parts of carbon black are then added and incorporation continued until the plastic mass is uniform. The plastic mass is then removed from the rolls and allowed to cool, and the hard material thus obtained is then ground to a fine powder and used to make the surface of laminated or other records, or before cooling it may be formed into rough blocks which are then allowed to cool and are reheated

and pressed to form non-laminated records.

It must be understood that our invention is not restricted to this composition or this method of manufacture. We may use volatile solvents such as acetone to assist gelatinisation of the mixture and either free the mixture from volatile solvent and recover the hard residue or spread the soft mixture on paper, fabric or other surfaces and then dry previous to moulding, using the sheets thus obtained as in the manufacture of our laminated records.

None of these particular methods are essential to our invention, which consists of new compositions for thermoplastics used in the manufacture of gramophone records and similar mouldable objects that contain in material part gelatinised cellulose acetate and the gelatiniser or gelatinisers of cellulose acetate as an ingredient to replace wholly or in part the shellac that has been used hitherto in the manufacture of these objects.

Dated this 25th day of August, 1921.

MARKS & CLERK.

COMPLETE SPECIFICATION.

Plastic Compositions having a Basis of Cellulose Ester.

We, COLUMBIA GRAPHOPHONE COMPANY, LIMITED, of 102 to 108, Clerkenwell Road, London, E.C. 1, a company registered under the laws of Great Britain, WILLIAM THOMAS FORSE, FREDERICK WILLIAM JONES, Junior, and GEORGE WALTERS, all of Bendon Valley, Garratt Lane, London, S.W. 18, all subjects of the King of Great Britain and Ireland, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to compositions of matter having a basis of cellulose acetate and employed for the manufacture of gramophone records that are moulded under pressure with the application of heat.

In the preparation of such compositions for general purposes it has hitherto been proposed to embody therein a gelatiniser for the cellulose acetate, resins, and some suitable filling material, but we

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Esters of oxamic acide.g. Phenyl oxamic ester;
85 Cyclohexanone and similar bodies.

The cellulose acetate, together with the gelatiniser or mixture of gelatinisers is mixed with one or more of the resins known as "acaroid resins" or "xanthorrhoea resins" in such proportion that the acaroid resin content does not exceed the gelatiniser content, which resins assist in forming a plastic mass and add desirable qualities to the finished product, and we may also incorporate with the mass certain filling materials,

have found that such compositions do not possess all the qualities which are necessary for the production of gramophone records, and it is the object of our invention to meet this want by producing a composition which while being capable of being produced commercially will be eminently suitable for the production of gramophone records.

The invention consists in a composition of matter having a basis of cellulose acetate, and a gelatiniser therefor, with which is incorporated an acaroid resin.

The invention also consists in a composition of matter as hereinafter referred to and in gramophone or like records produced from such composition of matter.

In carrying our invention into effect in one convenient manner, we form our improved thermoplastic material with a base of cellulose acetate and a non-volatile gelatiniser or mixture of gelatinisers of cellulose acetate of which the following may be given as examples:—

such as carbon black, barytes, rotten stone and kieselguhr, the object of the filling materials being to reduce the cost of manufacture and/or to impart hardness or other qualities to the finished product.

As an example of one method of carrying out the invention in its application to the manufacture of a gramophone record, we take two parts of cellulose acetate and this we mix with

one part of acaroid resin and one part of para-toluene-sulpho-anilide. The mixture is incorporated between steam heated rolls until gelatinisation is completed.

5 To the gelatinised mass three parts of carbon black are then added and incorporation continued until the plastic mass is uniform. The plastic mass is then removed from the rolls and allowed
1 to cool and the hard material thus obtained is then ground to a fine powder and used to make the surface of laminated or other records, or before cooling it
15 may be formed into rough blocks which are then allowed to cool and are reheated and pressed to form non-laminated records.

We may use volatile solvents, such as acetone, to assist gelatinisation of the
0 mixture and either free the mixture from volatile solvent and recover the hard residue or spread the soft mixture on paper, fabric, or other surfaces and
25 then dry previous to moulding, using the sheets thus obtained as in the manufacture of our laminated records.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is :—

(1) A composition of matter for use in the manufacture of gramophone records having a basis of cellulose acetate and a gelatiniser therefor with which is incorporated an acaroid resin. 35

(2) A composition of matter according to Claim 1 characterised by the feature that the acaroid resin content does not exceed the gelatiniser content. 40

(3) A composition of matter according to Claim 1 having the specific composition herein described.

(4) Improved compositions of matter substantially as hereinbefore described. 45

(5) Homogeneous or laminated gramophone or like records produced from or comprising the herein described compositions of matter.

Dated this 24th day of May, 1922. 50

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