

UNITED STATES PATENT OFFICE.

ADEMOR N. PETIT, OF NEWARK, NEW JERSEY.

SOLVENT MATERIAL FOR TREATING SURFACES OF CELLULOID.

SPECIFICATION forming part of Letters Patent No. 662,961, dated December 4, 1900.

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To all whom it may concern:

Be it known that I, ADEMOR N. PETIT, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented a new and useful Improvement in Solvent Materials for Treating Surfaces of Celluloid, of which the following is a specification.

My invention relates to the treatment of surfaces of celluloid for the purpose of engraving, cutting, plowing, or otherwise marking or ornamenting the same for use in the arts.

My invention relates particularly to the treatment of phonograph-cylinders of celluloid for the production of records by a material capable of rendering such surface appreciably soft and plastic, but not sticky, so that the instruments employed for recording or reproducing phonograph-records can readily cut into the same for producing the desired impression.

In carrying out my invention I employ a solvent of celluloid and add to the same a fatty acid or similar material. These materials are adapted for use with all celluloid; but I prefer to use a celluloid that contains a proportion of a metallic salt or pigment in its structure. These materials in a liquid state are coated upon the surface of the celluloid or the celluloid may be dipped into the mixture. The celluloid is then to be exposed to the air for a period, so that these elements may combine with the celluloid to render the surface thereof appreciably soft and plastic, but not sticky, and sufficiently soft to permit the instrument employed for engraving, cutting, plowing, or otherwise marking or ornamenting the celluloid to readily cut into the same for the purposes intended. If the celluloid is a phonograph-cylinder, the following or reproducing style employed will thus be enabled to readily cut into the surface in the usual manner in making or reproducing records.

I prefer to employ about two parts of the solvent for celluloid to about one part of the fatty acid or similar material.

Among the solvents for celluloid adapted for the purposes of my invention are amyl acetate, alcohols, ethers, and volatile oils, the preference being given to the amyl acetate.

Among the fatty acids or similar materials adapted for use in my invention are oleic acid, cotton-seed oil, corn-oil, and olive-oil, the preference being given to the oleic acid.

The proportion of the ingredients used may be varied somewhat, according to the result to be obtained, because where the proportion of the solvent of celluloid is increased the celluloid surface is more readily treated and softened; but after the cutting or engraving operation the same dries quickly and becomes as hard or harder than it was before treatment, and where a less proportion of the solvent for celluloid is made use of, and consequently a greater proportion of fatty acid, the treatment is slow, but the surface remains after treatment softer than in the original state.

The surface of the celluloid after treatment with the hereinbefore-named substances may be kept in a comparatively soft and plastic state for quite a time if the air is kept away from it.

It is well known that the application to celluloid surfaces of solvent solutions alone will render the surface of the celluloid soft, but gummy and sticky and unfit for the purposes of cutting or engraving. The addition to the solvent of the materials hereinbefore stated changes the character of the celluloid surface produced by the application of the said materials, taking away the sticky and gummy condition and simply rendering the surface plastic, so that it can be cut clean and without clogging the cutting instrument.

Heretofore it has not been possible to use celluloid to advantage, because of its hardness and the difficulty of treating the surface so that it could be cut into. In the application of my invention it makes no difference whether the celluloid has a dull surface or a highly-polished surface, the materials acting equally well on either surface.

I have discovered that celluloid untreated in the hereinbefore-described manner according to my invention is not only too hard for the successful making of records, but is of a porous nature, and that records cut therein are failures. I have also discovered that the treatment of celluloid according to my hereinbefore-described method effects a change in the celluloid tissue of the celluloid sur-

face, filling the cells and, in fact, rearranging the molecular structure.

The various colors given to celluloid are produced by pigments. According to my invention a colored celluloid or a plain approximately transparent celluloid may be treated equally well at pleasure. Colored celluloids are desirable to distinguish classes of records.

10 I claim as my invention—

1. A material for treating the surface of celluloid, consisting of a solvent of celluloid

and a fatty acid or similar material, substantially as set forth.

2. A material for treating celluloid surfaces consisting of amyl acetate and oleic acid, substantially as set forth.

Signed by me this 17th day of October, 1899.

ADEMOR N. PETIT.

Witnesses:

GEO. T. PINCKNEY,
S. T. HAVILAND.