UNITED STATES PATENT OFFICE.

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CELLULOID COMPOSITION.

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To all whom it may concern:

Be it known that I, JONAS W. AYLSWORTH, a citizen of the United States, residing at 223 Midland avenue, East Orange, in the county of Essex and State of New Jersey, have invented a certain new and useful Improved Celluloid Composition, of which the following is a description.

The object of my invention is to render celluloid and similar compositions less inflammable, while at the same time preserving their desirable properties of transparency, toughness, flexibility, etc.

The invention consists in admixing or associating, by the aid of a suitable solvent, with pyroxylin and with cellulose esters of the acetic series, a halogenized fatty acid or derivative such as the methyl, ethyl, propyl, or amyl ester of a chlorinated fatty acid, or the similar derivative of a brominated fatty acid. By a halogenized fatty acid I mean a fatty acid, such as stearic, palmitic or myristic acid, in which a part of the hydrogen is replaced by a halogen, such as fluorin, chlorin, or bromin. The composition may be varied in a number of ways to suit the special requirements of its use. For instance, when great flexibility is required, the proportion of the halogenized fatty acid or derivative may be increased until it exceeds the pyroxylin or cellulose ester. When it is desired to make more or less massive articles where flexibility is not important, but where great toughness is desired, a smaller proportion of a halogenized fatty acid or derivative may be used, or if great toughness is not important, the halogenizing of the fatty acid may be carried to such an extent as to resinize the same. Stearic acid or palmitic acid, when chlorinated in the usual way for several days in a heated condition (preferably with the aid of a catalytic agent, such as iodin or antimony chlorid) passes through various stages, commencing with the solid fatty acid, thence to an oily liquid when cold, and finally through progressively increasing degrees of viscosity, as each additional atom of hydrogen is replaced by chlorin until a resinous solid results. The further this treatment is carried the higher will be the non-inflammability of the resulting compound. Such materials and many of its derivatives above referred to, form a solid solvent of pyroxylin and cellulose esters when heated with the same with the aid of a common solvent. The presence of the halogenized fatty acid or fatty acid derivative imparts decreased inflammability to the product; in fact, when a halogenized fatty acid or fatty acid derivative is thus admixed in varying proportions with pyroxylin or cellulose ester, the compound can be burned only with great difficulty. At the same time, a composition closely resembling celluloid can be obtained, since the halogenized solid solvent possesses the desirable properties of camphor in celluloid without being in the least volatile.

In manufacturing the improved celluloid composition, the halogenized solid solvent is added to the cellulose ester or pyroxylin and with the aid of a common solvent, such as acetone, the composition may be manufactured into rods, sheets, films or other articles by the well-known methods of manipulating celluloid.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is as follows:—

1. A celluloid composition, comprising pyroxylin or other cellulose ester, combined with a halogenized fatty acid or its derivative, substantially as set forth.

2. A celluloid composition, comprising pyroxylin or other cellulose ester, combined with a chlorinated fatty acid or its derivative, substantially as set forth.

3. A celluloid composition, comprising pyroxylin or other cellulose ester, combined with halogenized stearic acid, substantially as set forth.

4. A celluloid composition, comprising pyroxylin or other cellulose ester, combined with chlorinated stearic acid, substantially as set forth.

5. A celluloid composition comprising an ester of cellulose of the acetic series of fatty acids, combined with a halogenized fatty acid or its derivative, substantially as set forth.

6. A celluloid composition comprising an ester of cellulose of the acetic series of fatty acids, combined with a chlorinated fatty acid or its derivative, substantially as set forth.

7. A celluloid composition comprising an

ester of cellulose of the acetic series of fatty acids, combined with halogenized stearic acid, substantially as set forth.

8. A celluloid composition, comprising an ester of cellulose of the acetic series of fatty acids, combined with chlorinated stearic acid, substantially as set forth.

This specification signed and witnessed this 29th day of May 1906.

JONAS W. AYLSWORTH.

Witnesses:
FRANK L. DYER,
ANNA R. KLEHM.