

UNITED STATES PATENT OFFICE.

JAMES F. BABCOCK, WILLIAM A. LEONARD, AND EDWARD B. CRANE, OF
BOSTON, MASSACHUSETTS.

IMPROVEMENT IN MATCH COMPOSITIONS.

Specification forming part of Letters Patent No. 136,953, dated March 18, 1873.

To all whom it may concern:

Be it known that we, JAMES F. BABCOCK, WILLIAM A. LEONARD, and EDWARD B. CRANE, all of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improved Match Composition; and we do hereby declare that the following is a description of our invention sufficient to enable those skilled in the art to practice it.

In making fuses for lighting lamps, (the fuse being attached to the lamp and connected with mechanism, by which, by movement of a lever, the tip of the fuse is ignited at a point where it will inflame the wick, the fuse being also fed by the lever,) it is customary to use a strip of paper or a tape as a backing or foundation to which to apply the match composition.

For various reasons such fuses have not proved of much, if any, practical value as lamp-lighters, and our invention has reference to the formation of a new composition for making a fuse, by which formation we produce a fuse which will burn with sufficient intensity and length of time at the point projected beyond the fuse-tube, to insure ignition of the wick end whether such end be freshly trimmed or in a charred condition.

This composition consists of pyroxyline mixed with some resinous or other inflammable or gummy substance less combustible than the pyroxyline, such composition being preferably molded into the form of a thin narrow strip, to one side of which is applied a match composition that will ignite by frictional contact.

Our invention consists primarily in this composition, either made into a fuse-strip by itself or by application to other material, one surface being coated with a friction-match composition.

To produce this composition we prefer to proceed as follows: We first dissolve four hundred and eighty grains of collodion cotton in ether and alcohol, (as in making collodion,) and then mix with the solution two hundred grains of gum copal and eighty grains of camphor, with a small amount of olive-oil. The mixture being rendered uniformly liquid is placed in a bath, (such, for instance, as is used by photographers in pre-

paring negatives,) and a plate is dipped into the bath, and redipped as the composition sets, until a sufficiently thick coating is formed. Then the plate is put by for the coating to dry thoroughly, which may take from a week to ten days. The coating is then peeled off from the plate, and is rolled and then cut into strips. These strips are pressed, and are then ready for application of the friction-match composition.

In pressing each strip we prefer to use a mold, by pressure in which one side or edge of the strip is formed with a row of serrations, and the other side with a recess rectangular in section, with a narrow groove extending down from each bottom angle of the recess. Into this recess the match composition is uniformly pressed, (the composition filling the narrow slits or grooves, and being thereby better retained in the recess,) the outer surface of this composition and the adjacent surface of the collodion-composition strip being preferably formed to a curved shape in cross-section, and such curved surface being finally covered by a coating of collodion that makes a uniform surface and renders it impervious.

The gum in the composition imparts the requisite body and rigidity, and renders the strip less inflammable than the collodion, so that when the end of the strip is ignited it burns surely but slowly. The oil in the composition is to lessen the brittleness.

The serrations form the feed-teeth, by engagement with which a suitable pawl effects the feed of the strip.

The strip being thus made and applied to a self-lighting lamp mechanism, the striker by contact with the friction-match composition instantly ignites it, and the flame extends to the body of the strip, and thence to the wick of the lamp, the projected part of the strip burning slowly, but intensely enough to insure the ignition of the wick whatever may be the condition thereof, providing only that it be in position to be inflamed.

Although we have thus described the best method now known to us of forming the composition and the match, the process and composition may be greatly varied, it being the essential of our invention only to use a collodion composition in the formation of a match

or fuse strip to be ignited by frictional contact.

We claim—

1. A match composition, consisting of pyroxyline, (pure or mixed,) having applied to the whole or a part of its surface an ordinary friction-match composition.

2. The fuse-strip or match, made of the composition and formed into shape by molding, substantially as described.

3. The composition fuse-strip, molded with serrations, substantially as described.

JAS. F. BABCOCK.

WM. A. LEONARD.

EDW. B. CRANE.

Witnesses:

FRANCIS GOULD,

M. W. FROTHINGHAM.