UNITED STATES PATENT OFFICE.

LEONARD S. BEALS, OF LONG ISLAND CITY, NEW YORK, ASSIGNOR TO THE CEROXYLON COMPANY, OF SAME PLACE.

TREATING PYROXYLINE.

SPECIFICATION forming part of Letters Patent No. 239,423, dated March 29, 1881.

Application filed October 2, 1880. (Specimens.)

To all whom it may concern:

Be it known that I, LEONARD SPROAT BEALS, a citizen of the United States, residing at Long Island City, in the county of Queens and State of New York, have invented certain new and useful Improvements in the Treatment of Pyroxyline; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable any one skilled in the art to which it pertains to use the same.

The invention relates, first, to a certain compound to be used as a solvent for dissolving or softening soluble pyroxyline, xyloidine, nitro-cellulose, or that substance derived from ligneous or vegetable fibers, starch, or sugar, which has been treated with suitable acids, and is known as "soluble pyroxyline;" and it further relates to the use, with the pyroxyline or similar materials, of certain ingredients, hereinafter more fully described, by which the said materials are rendered plastic for further use in the arts.

The first part of my invention consists in dissolving pyroxyline in one of the following compounds: first, five parts mirbane, five parts essential oil-lavender, fifty-five parts benzole, thirty-five parts methylic alcohol—total one hundred parts; second, five parts mirbane, five parts essential oil-lavender, fifty-five parts benzole, thirty-five parts alcohol—total one hundred parts; third, five parts mirbane, five parts essential oil-lavender, thirty parts benzole, thirty parts methylic alcohol, thirty parts alcohol—total one hundred parts. Either of the above compounds will be found to be a superior solvent of soluble pyroxyline, or a mixture of two or more thereof may be used with advantage, or the proportions of the ingredients may be varied, according to the use to which the softened or dissolved pyroxyline is to be afterward applied.

In using these compounds, I take of soluble pyroxyline one hundred parts, and add thereto about two hundred parts of either of the above-named solvents alone, or of two or more thereof combined, or sufficient of them to dissolve or soften the pyroxyline into a pasty mass. The solution may be effected when the materials are cold, but to hasten the solution a moderate degree of heat may be applied—say 150° to 200° Fahrenheit—with advantage. If it is desired to produce a transparent product, this compound may now be intimately mixed or ground by any mechanical means, (preferably by heated rollers,) as is well understood by persons conversant with the art, in order to evaporate the solvent combined therewith. The finished product will then resemble horn. If it is desired to imitate ivory, bone, coral, malachite, or other colored substance, the pigment or coloring-matter must be added to the pasty mass before grinding or evaporating the solvents. The finished products of these compounds are hard and rigid, and most useful where inflexibility is needed—as, for instance, in forming knife-handles, umbrella and whip handles, combs, piano-keys, and articles to be finished in a lathe, such as chessmen, checkers, &c.

In order to render pyroxyline compounds plastic, for the purpose of molding or otherwise shaping under pressure and heat, it has hitherto been the practice to combine therewith camphor, either as a solvent or by subsequent addition; but such combination with camphor is objectionable, inasmuch as the latter continues to slowly evaporate, causing always a corresponding shrinkage and warping of the finished article. My second improvement obviates such objection by substituting for the camphor, and compounding with every hundred pounds of pyroxyline while in the pasty mass, about twenty parts of olibanum frankincense, or a part of this may be omitted and paraffine or vegetable wax substituted therefore, or a combination of all three of these ingredients may be used. These substances may or may not be dissolved in alcoholic or naphtha solvents before adding to the pyroxyline pasty mass, but such solution is not important. The whole should then be intimately mixed, with or without further incorporation of pigments or other materials, by any mechanical means, (grinding between heated rollers preferred,) as is well understood by persons conversant with the art, in order to thoroughly incorporate all the mixture and evaporate the solvents, as before named. The above proportions are found to be useful, but

I do not confine myself to the exact quantities, as the ingredients may be varied to suit the objects to which the plastic compound is to be afterward applied.

By the use of the above-described compound solvents in about the proportion specified, and the further use of the olibanum frankincense, either with or without the addition of paraffine or vegetable wax, the preparation of the pyroxyline is greatly facilitated, and the shrinkage and warping caused by the use of camphor avoided.

I am aware that camphor, alcohol, various hydrocarbons, and vegetable and animal oils, have before been employed as solvents for pyroxyline.

I am also aware that it has been proposed to use as a solvent a compound consisting, mainly, of alcohol, hydrocarbons, ether, and camphor, with a small quantity of nitro-benzole, or oil of almonds, but in said compounds the nitro-benzole formed but about one seventieth of the whole solvent, being intended merely as a scent, and was not used in sufficient quantities to have much effect as a solvent, whereas in my compound solvents the mirbane forms one-twentieth of the whole and is an essential part thereof. Moreover, the compound referred to requires nearly seven parts of solvent to one of pyroxyline, while mine require only two parts of the solvents to one of pyroxyline.

I make no claim in this application to the use of paraffine or vegetable wax independent of olibanum frankincense, as I propose to make separate applications for the use of these substances.

What I claim as new is—

1. The process herein described of treating pyroxyline and similar substances, by dissolving them in a compound of mirbane, oil of lavender, benzole, and alcohol, substantially as specified.

2. The process herein described of treating pyroxyline and similar substances, by first reducing the pyroxyline to a pasty mass by dissolving it in a compound of mirbane, oil of lavender, benzole, and alcohol, and then adding olibanum frankincense, with or without paraffine or vegetable wax, substantially as specified.

3. The process herein described of treating pyroxyline and similar substances, consisting in mixing with the same olibanum frankincense, with or without paraffine or vegetable wax, whereby the pyroxyline is rendered plastic without the liability of subsequently shrinking and warping, substantially as specified.

LEONARD SPROAT BEALS. [L. S.]

In presence of—
GEO. WISKER,
DANIEL P. MAHONY.