UNITED STATES PATENT OFFICE.

WILLIAM McCAINE, OF ST. PAUL, MINNESOTA, ASSIGNOR TO HELEN J. McCAINE, OF SAME PLACE.

PYROXYLINE COMPOUND.

SPECIFICATION forming part of Letters Patent No. 262,077, dated August 1, 1882.

Application filed November 17, 1881. (Specimens.)

To all whom it may concern:

Be it known that I, WILLIAM McCAINE, of St. Paul, in the county of Ramsey and State of Minnesota, have invented a new and useful Improvement in Pyroxyline Compounds; and I do hereby declare that the following is a full, clear, and exact description of the same.

This invention relates to the preparation of compounds containing pyroxyline; and it consists in combining with the pyroxyline the essential oil of cassia or cinnamon, the object being, first, to form with this oil and other ingredients a compound that will act as a latent solvent of pyroxyline to be developed by heat and pressure; second, such solvent to remain in and become a part of the resulting compound and act as a solvent of the solidified collodion at any time when it is subjected to heat and pressure; third, to form with this oil and other ingredients an active solvent of pyroxyline.

In carrying out my invention I first make a latent solvent of pyroxyline as follows: I use alcohol alone or alcohol in conjunction with any of the hydrocarbons, such as benzine, benzole, gasoline, &c., or such volatile products as are obtained from petroleum, coal-shale, or other bituminous substances, or spirits of turpentine, all in about equal proportions. To about eight parts of alcohol or any of the above compounds I add one part of the essential oil of cassia or cinnamon. The resulting compound is a latent solvent of pyroxyline, but will not dissolve it at ordinary temperatures. I then take of this latent solvent about one part, by weight, and add to it one part, by weight, of pyroxyline. To this may be added such pigments as are necessary to give it the desired weight and color. The whole is then mixed or ground, either by hand or some suitable machinery, until the different ingredients are perfectly combined with each other. It is then placed in a suitable mold and subjected to a moderate degree of pressure for the purpose of bringing the particles more intimately together, and while under pressure subjected to from 150° to 200° of heat. I prefer to communicate the heat by surrounding the mold with water heated to the proper temperature; but it may be done in this or any other convenient way. The pyroxyline will be perfectly dissolved as soon as the proper degree of heat is attained. It is then removed from the mold and allowed to harden by exposure to the air. When sufficiently hard it is again placed in suitable molds and subjected to heat and pressure, and thus molded into any desired form. If it is desirable to make an active solvent, I take eight parts of any of the above compounds used in making the latent solvent and add to them two parts of the oil of cassia or cinnamon. This makes a solvent that will dissolve the pyroxyline at common temperatures.

Another method I have of using my invention is to take, for instance, sulphuric ether and alcohol or any suitable active solvent of pyroxyline, and to about ten parts of this solvent I add one part of the essential oil of cassia or cinnamon, and in about four parts of the resulting compound I dissolve one part of pyroxyline, to which is added such pigments as are necessary to give it the desired weight, elasticity, and color. The whole is then thoroughly mixed together and then mixed with spirits of turpentine, using about two quarts of turpentine to each pound of pyroxyline, or such amount as is necessary to saturate the mixture so as to precipitate a part of the solvent. The whole is then placed in porous molds of any desired form, where it will drain off and harden.

Some of the advantages of using the essential oil of cassia or cinnamon in pyroxyline compounds are the following:

First, a portion of the oil will always remain in the compound and act as a solvent of the solidified collodion at any time when exposed to heat, thus making it practicable to take any number of separate pieces after they have become hard and under heat and pressure form them into one solid homogeneous mass.

Second, its solvent powers are sufficiently developed to dissolve the pyroxyline at so low a degree of heat that it may be imparted to it by surrounding the molds with warm water, thus making the operation perfectly safe.

I am aware of the fact that camphor, in connection with some of the solvents of camphor, has been used as a solvent of pyroxyline, and that also some of the essential oils have been used for the same purpose. I do not know,

however, that the oil of cassia or cinnamon has ever been used in this connection before. When the oil of cassia is used in the compound the nature of the compound is so changed that it can be molded by heat and pressure almost as perfectly and easily as wax. The reason that the oil of cassia produces this change in pyroxyline compounds is, first, it is a solvent of pyroxyline; secondly, it is of such a nature that it will not all evaporate out of the compound after the latter becomes hard; and, third, its solvent powers are greatly increased by heat, so that when the compound is submitted to heat and pressure it may be said to be redissolved by the small amount of oil remaining in the compound. The essential oil of cassia or cinnamon differs from all other essential oils and from all other oils of any kind in that it is a perfect solvent of pyroxyline itself without anything else; but if the pyroxyline is dissolved in it alone it cannot be evaporated out of the compound so as to allow the pyroxyline to harden. Therefore, to make it of any practical value, it must be mixed with the other ingredients, as hereinbefore described, so that when the other fluids with which it is combined have evaporated the quantity of oil left in the compound is so small that the pyroxyline will become hard, but still retain the properties described, and have withal a permanent agreeable odor.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The use of the essential oil of cassia or cinnamon in the manufacture of compounds containing pyroxyline, substantially as herein described.

2. A pyroxyline compound containing a certain proportion of the essential oil of cassia or cinnamon, as and for the purpose described.

WILLIAM McCAINE.

Witnesses:

WARREN H. MEAD,

L. A. VANDERWARKER.