

# UNITED STATES PATENT OFFICE.

JOHN W. HYATT, JOHN H. STEVENS, AND WILLIAM H. WOOD, OF NEWARK,  
NEW JERSEY, ASSIGNORS TO THE CELLULOID MANUFACTURING COM-  
PANY, OF NEW YORK, N. Y.

MANUFACTURE OF CELLULOID AND OTHER COMPOUNDS OF PYROXYLINE.

SPECIFICATION forming part of Letters Patent No. 296,970, dated April 15, 1884.

Application filed March 22, 1884. (No specimens.)

*To all whom it may concern:*

Be it known that we, JOHN W. HYATT, JOHN H. STEVENS, and WILLIAM H. WOOD, citizens of the United States, and residents of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in the Manufacture of Celluloid and other Compounds of Pyroxyline, of which the following is a specification.

The invention relates to improvements in the manufacture of celluloid and other compounds of pyroxyline; and it consists in certain novel processes, hereinafter described, and particularly pointed out in the claims, whereby the process of manufacture is facilitated and simplified, and the necessity of breaking the cakes of material into pieces and stirring in the alcohol or other solvents prior to their subjection to heat and pressure, as has heretofore been the practice, is entirely avoided.

In carrying our invention into effect we first grind the pyroxyline to a pulp, in connection with camphor and whatever pigments or coloring-matter may be required. In practicing this step in the manufacture we prefer to make use of the process described in Letters Patent of the United States No. 105,338, granted to John W. Hyatt and Isaiah S. Hyatt, July 12, 1870. We next form the pulp, produced as above described, into cakes of convenient proportions and subject them to pressure between layers of bibulous material, (preferably blotting-paper,) for the purpose of abstracting the moisture therefrom, the bibulous material being renewed from time to time until the cakes are dry. The cakes are then formed into a pile, applying at the time a sufficient quantity of liquid solvent to the surfaces of each cake to soften the pyroxyline. The pile of cakes just described is allowed to remain in an air-tight receptacle of any convenient nature until the solvents have permeated all of the cakes and reduced the pile to a solid mass. The length of time required for the solvents to thus affect the pile of cakes may vary according to circumstances; but it will usually be found that if they are permitted to remain in the receptacle for a space of about fifteen hours the desired effect will ensue.

The block of material formed by the action of

the solvents upon the pile of cakes is now cut into pieces of convenient size and shape for handling, which are subjected to mixing or mastication in heated rolls of the usual kinds, after which the material will be in a condition for manipulation in a stuffing-machine; or it may be pressed into blocks and cut into sheets or other convenient forms.

The thickness of the cakes formed from the pulp as above set forth and the consistency of the solvent applied to soften them will in a measure depend upon each other. For instance, if the liquid solvent is employed in its ordinary fluid condition, it will be found desirable to make the cakes thin—say about one-sixteenth of an inch in thickness—since but a comparatively small amount of solvent is held by their surfaces. Where it is desired to form the pulp into thicker cakes, the fluidity of the solvents should be reduced by dissolving a small proportion of pyroxyline in them. If the solvent be made of about sixty parts of wood-alcohol to one part of camphor and two parts of pyroxyline, it may be successfully used in treating cakes of about three-sixteenths of an inch in thickness; and when a larger proportion of pyroxyline is dissolved in the solvent, a cake of greater thickness may be treated according to our process without difficulty.

Whenever it is desired to make use of the clear liquid solvents, we retain the necessary proportion thereof between the cakes by means of some suitable absorbent material—such as cloth, linen toweling, &c.—the thickness of the absorbent material depending mainly upon the size of the cake, and the consequent amount of solvent necessary. Where about fifty per cent. of liquid to the weight of the pyroxyline in the material is required, the thickness of the linen pad should be about one-half of the thickness of the cake next to it, or, say, one-fourth of the weight of the cake. In the preparation of the absorbent pad care should be taken that its exterior, at least, should be of a nature which will not readily adhere to the cakes.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. A process in which pyroxyline is first



ground to a pulp, then pressed into cakes and dried, and the said cakes softened with the required amount of liquid solvent by being formed into a pile with the solvent between the cakes, and then mixed or masticated in heated rolls or other suitable apparatus.

2. A process in which pyroxyline is first ground to a pulp, then formed into cakes and dried, and the cakes softened with a liquid solvent by being formed into a pile, the solvents being held between the cakes by means of suitable pads, the material being afterward mixed or masticated in heated rolls or other suitable apparatus, substantially as described.

15 3. A process in which pyroxyline is first ground to a pulp and pressed into cakes and

dried, the proper amount of liquid solvent introduced by spreading the solvent in a viscid condition between the cakes, and the whole then mixed or masticated in heated rolls or other suitable apparatus, substantially as described.

Signed at New York, in the county of New York and State of New York, this 20th day of March, A. D. 1884.

JOHN W. HYATT.  
JOHN H. STEVENS.  
WILLIAM H. WOOD.

Witnesses:

CHAS. C. GILL,  
HERMAN GUSTOW.