

# UNITED STATES PATENT OFFICE.

NATHAN HART AND ROBERT A. BACON, OF NEW YORK, N. Y.

## DECORATING CELLULOID.

SPECIFICATION forming part of Letters Patent No. 233,851, dated November 2, 1880.

Application filed February 2, 1880.

*To all whom it may concern:*

Be it known that we, NATHAN HART and ROBERT A. BACON, (said HART being a citizen of the United States and said BACON being a citizen of Canada,) both residing at the city of New York, county of New York, and State of New York, have invented certain new and useful Improvements in Printing or Marking upon Celluloid or Analogous Substances; and we do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

Before the date of our invention celluloid surfaces have been colored with tints which washed or rubbed off. Attempts have been made to overcome this difficulty by giving the article so colored a coating of varnish or colorless celluloid; but this, although it overcame the difficulty to some extent, did not entirely do so, as the varnish and color could be readily scraped off. Besides this it added considerably to the expense of manufacture.

Celluloid had also been colored in the mass by the addition of various pigments, so as to make one uniform color throughout, or by partially mixing the pigments and celluloid a cloudy or mottled appearance had been produced, which, although durable, was not capable of being used to produce regular designs.

The object of our invention is to enable figures or designs or letters in tints or colors to be permanently printed or marked upon surfaces composed wholly or in part of celluloid or of similar substances, such as xyloidin.

In the specification dated this day, and to be filed simultaneously herewith, we have described one mode of accomplishing this result.

According to the present invention we accomplish this result by dissolving aniline colors in carbolic acid, adding to such carbolic acid either alcohol alone or ether alone, substantially as hereinafter described.

Carbolic acid is a solvent both of aniline colors and of celluloid, and when the solvent above described has evaporated, after decorating the celluloid surface with colors, such colors will be found to be intimately united with the celluloid without injury to the substance of the celluloid.

A proper mode of carrying out our invention is as follows: We dissolve two grains of aniline color—purple, red, blue, or other color—in one dram of carbolic acid and add thereto an equal portion of either alcohol or ether, or both. The liquid coloring-matter thus prepared may be used for decorating celluloid surfaces either by printing or with a brush or pen.

We do not intend to limit ourselves closely to the proportions above named. The proportion of the color to the solvent can be varied within reasonable limits, as may be also the relative proportions of the carbolic acid and the alcohol or ether, such proportions affecting the intensity of the color or tint produced and the rapidity of drying and absorption.

It is obvious that any color which is soluble in carbolic acid, and which, when so dissolved, is not injurious to the surface of the celluloid, may be substituted for the aniline colors.

We do not in this application claim the use of ether or alcohol, or both combined, as a solvent for celluloid; nor do we claim in this application the ornamentation of celluloid by securing the incorporation of colors with the surface by the use of either ether or alcohol, unless carbolic acid is also used.

Having fully described our invention, that which we desire to claim, and secure by Letters Patent, is—

1. The process of decorating surfaces composed wholly or in part of celluloid or its equivalent by the application of aniline or equivalent colors dissolved in carbolic acid and ether, and applied substantially as described.

2. The process of decorating surfaces composed wholly or in part of celluloid or its equivalent by the application of aniline or equivalent colors dissolved in carbolic acid and alcohol, and applied substantially as described.

Witness our hands this 29th day of January, 1880.

NATHAN HART.  
ROBERT A. BACON.

Witnesses:

ARTHUR S. HENDRICKS,  
MICHAEL H. CARDOZO.