

N. HART & R. A. BACON.
Celluloid Playing Cards, &c.

No. 241,004.

Patented May 3, 1881.



Fig. 1.

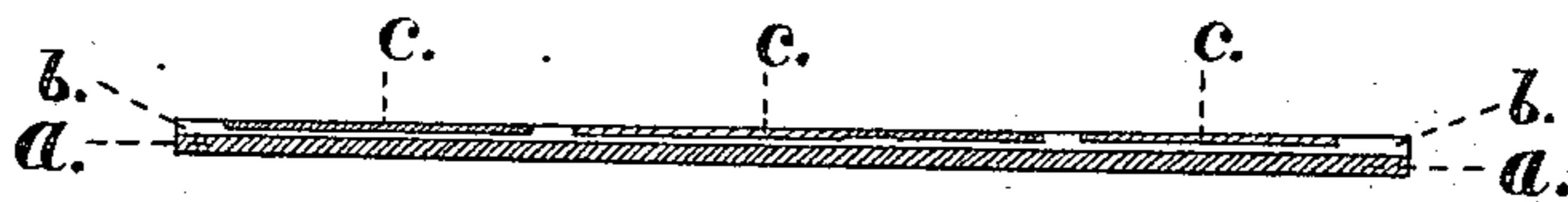


Fig. 2.

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UNITED STATES PATENT OFFICE.

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

CELLULOID PLAYING-CARDS, &c.

SPECIFICATION forming part of Letters Patent No. 241,004, dated May 3, 1881.

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, in the county of New York and State of New York, have invented certain new and useful Improvements in Playing-Cards and other Surfaces composed of compounds of pyroxyline, such as celluloid and other similar 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 ap-
15 pertains to make and use the same.

Heretofore all attempts to make a permanent mark upon celluloid surfaces have failed, the tints or colors being easily washed or rubbed off; but in our specification dated January 29, 1880, and annexed to our application for a patent now pending, we have described and claimed a mode of securing permanent decorations. Attempts have before been made to accomplish this by giving the article colored, as above described, a coating of colorless celluloid or varnish; but this, although making the colors more permanent, did not wholly accomplish the desired effect, as the varnish and color could be scraped off or would soon wear off, besides it added considerably to the cost of the manufacture. Celluloid and other similar substances 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 with such substances a cloudy or mottled appearance has been produced, which, although durable, was not capable of being used to produce regular designs.

40 The present invention is the application of our discovery to the articles of manufacture herein described and other similar goods.

Before our invention cards were made of solid celluloid, printed by a process different from that employed by us, which process required a coating of transparent celluloid or varnish to protect the printing, and such solid celluloid cards have been found to be expensive and easily defaced and broken.

50 To avoid these difficulties, we make cards with a foundation of linen or paper covered

with a compound of pyroxyline, such as celluloid and similar substances, and print the figures or designs with materials that form an intimate union with such substances and become incorporated therein, in the manner more fully set forth in the following description and accompanying drawings, in which—

Figure 1 shows a face view of a playing-card made according to our invention, and Fig. 2 a cross-section of the same.

The foundation of such cards should be made of linen paper or other sufficiently tenacious material, (see *a*, Fig. 2,) and the surface then coated with a compound of pyroxyline, such as celluloid or other similar substance, in any well-known manner. (See *b*, Fig. 2.) The decorating of such surface may be then effected, as stated in the application already referred to, by the application of aniline color dissolved in some substance which is a solvent both of aniline and of the substance to be decorated, and which solvent, when evaporated, will leave the coloring-matter in intimate union, or incorporated with the surface thereof, without injury to its substance. The colors are indicated as so incorporated with the material of the surface at *c* in Fig. 2.

To carry our invention into effect we dissolve, in any ordinary manner, aniline coloring-matter in carbolic acid, preferably combining the carbolic acid with alcohol and ether, or with either alcohol alone or ether alone. The solution should be of such consistency that it could be applied by printing, and we apply the aniline color in solution directly to such surface by the use of type or other plates, or by the brush, pen, or pencil. The ether or alcohol, or the combination of them, acts as a drier, and enables the moisture of the colors to evaporate rapidly, and the mixture of alcohol and ether being a solvent of such surfaces, and also of aniline colors, its use has the effect of forcing the color more rapidly and deeply into the material. We then allow the surface, marked as aforesaid, to dry, and when the moisture has evaporated the marks will be found firmly and permanently united with the surface, so that they cannot be washed or rubbed off. In the drawings, Fig. 1 represents a playing-card so decorated. We find that the best result is obtained by the application of a

solution of two grains of the aniline color in carbolic acid, alcohol, and ether in equal parts—namely, forty minims of each.

We have also used successfully the following solutions in marking upon such surface, but do not find the results so satisfactory, viz: two grains of blue aniline dissolved in one-half dram of carbolic acid, one-half a dram of alcohol, two grains of red aniline dissolved in two drams of carbolic acid, two grains of green aniline dissolved in one dram of carbolic acid and an equal portion of alcohol, two grains of orange aniline dissolved in carbolic acid and ether in equal proportions—namely, one-half a dram of each. The same principle underlies all these modifications of our invention, and that is the application, upon the compound of pyroxyline, such as celluloid and other similar substances, of aniline color dissolved in some material which is also a solvent of celluloid.

We do not intend to limit ourselves closely to the proportions above named, for the proportions of the color to the carbolic acid alone, or in combination as above used, may effect the intensity of the color or tint produced upon such substances, but does not necessarily alter the scope of the invention. When the surface is of celluloid mixed with other component parts, we have found that the application above described will produce a similar result.

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

1. The playing-card herein described, consisting of a foundation of woven or other fibrous material covered with a compound of pyroxyline, such as celluloid and similar substances, or with a coating of which such substances are a component part, and marked or printed in colors, substantially as described.

2. The process of decorating surfaces composed of compounds of pyroxyline, such as celluloid and similar substances, or of which such substances are a component part, by marking or printing such surfaces with aniline colors dissolved in a material which is a solvent of both aniline and of such substances, and which, when dry, leaves the color in intimate union or incorporated with such substances without injuring the same, substantially as described.

Witness our hands this 31st day of January, 1880.

NATHAN HART.
ROBERT A. BACON.

Witnesses:

ARTHUR S. HENDRICKS,
MICHAEL H. CARDOZO.