

# UNITED STATES PATENT OFFICE.

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## PROCESS OF RENDERING WRITING INERADICABLE.

SPECIFICATION forming part of Letters Patent No. 630,255, dated August 1, 1899.

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*To all whom it may concern:*

Be it known that I, STANLEY J. MORROW, of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Processes of Rendering Writing Ineradicable, of which the following is a specification.

My invention is in the nature of a process of rendering writing permanent and ineradicable for the purpose of greater security in the drawing of checks, notes, and other valuable papers whose figures or written words as written in ordinary ink are liable to be erased or changed after signature and also for the preservation of records where age is liable to cause the writing to fade.

My invention consists in making the paper with a small percentage of asbestos in it, then writing upon it with an ink composed of a strong mineral acid, such as sulfuric or muriatic acid, and then subjecting the writing to heat, as and for the purpose hereinafter described.

The writing fluid which I prefer to employ consists of the following ingredients: water, (substantially pure,) mineral acids, (muriatic or sulfuric,) and coloring-matter of any kind. The water, acid, and coloring-matter are combined in proportion so as to form a solution or fluid suitable for writing upon paper, and that when so written the lines will be distinctly visible, and that when artificial heat is properly applied to the written paper the coloring-matter and fiber of the paper will carbonize to the depth to which the fluid has penetrated. I do not confine myself to any particular proportions for several reasons, among which are the following: When applied to thick paper carrying much starch or size, the acid and coloring-matter should be in larger proportions than for a thin or pervious paper, and when used in books of record the percentage of acid must be still more reduced, so that all the acid will be driven off by the heat. The proportions will vary from one part acid with two parts water to one part acid with thirty-five parts water. The coloring-matter is added to enable the writer to see his lines of writing and may be in any desired proportions.

By the use of the above composition writing

is easily traceable, which is essential to the successful use of this fluid, and the strength of the acid largely determines the depth to which it penetrates. In this condition it is easily removed, and in order to render it ineradicable I apply artificial heat, which may be accomplished by an oil-lamp, gas-jet, special ovens, or in any other manner, either while the writing is fresh or when it becomes dry. Artificial heat is an important factor, as it causes the mineral acid to attack the cellulose of the paper and eliminates the hydrogen and oxygen, leaving only the indestructible carbon, which cannot be removed without destroying the paper. The carbon tracings thus formed are not on the surface of the paper like a pigment, but extend into the fiber to such depth as may be desired by the user. By introducing into the paper a proportion of asbestos its fibers cross the lines of writing and prevent the carbonized cellulose from becoming brittle and falling out.

It will be remembered that the strength of the mineral acid is reduced, so that with ordinary temperatures the carbonization does not take place; but the chemical affinity of the mineral acid for hydrogen is stimulated by the heat, and the carbonization of both coloring-matter and the fiber of the paper promptly takes place.

I am aware that asbestos paper is not new, and also that "invisible" ink (so called) is produced by dilute mineral acids, which may be developed by heat; but I am not aware that a specially-prepared asbestos paper has ever been treated by an acid ink and then carbonized by heat. The action of the acid in the ink when developed by heat is to carbonize ordinary paper, which leaves the lines of writing as mere cuts so far as strength is concerned, for the carbonized paper is perfectly brittle and fragile, so much so that the tops of "l's" and "h's" and the centers of "o's" and "a's," &c., will fall out upon merely folding the paper. Here the value of the specially-prepared paper comes in, for the acid has no influence upon the asbestos fibers, and they are laced across the lines of writing, so as to hold all inclosed or circumscribed areas much like the little supporting-arms of a stencil-plate, so that the sheet of paper is

maintained intact. There is therefore in my invention a direct correlation between the acid ink and the asbestos fibers.

Having thus described my invention, what  
5 I claim as new, and desire to secure by Letters Patent, is—

The process of writing ineradicably which

consists in writing on paper containing asbestos with an acid ink and then carbonizing the lines by heat substantially as described.

STANLEY J. MORROW.

Witnesses:

S. LYONDER,

G. W. ELLEN.