

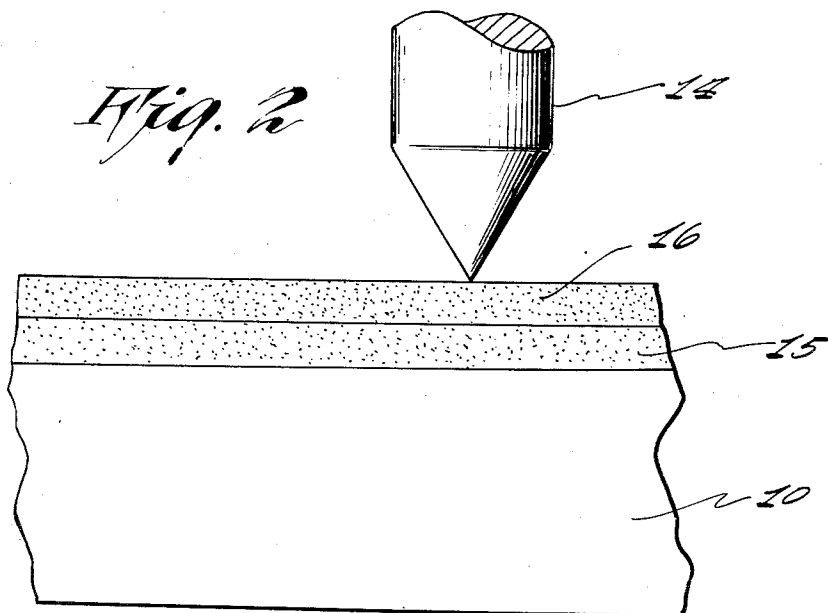
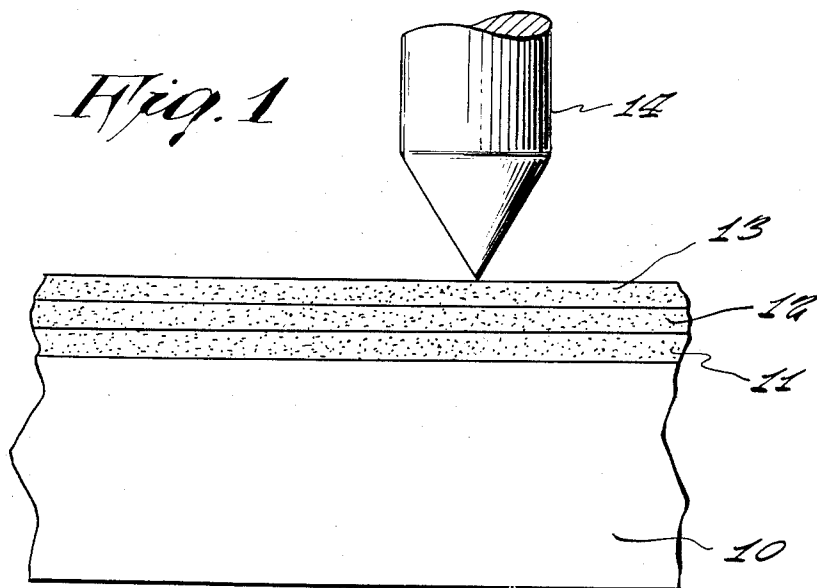
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METHOD AND PRODUCT OF WATER WRITING AND MARKING

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METHOD AND PRODUCT OF WATER WRITING
AND MARKING

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This invention relates generally to a method and specially treated paper as a result of practice of the method in which contrasting color delineation or blocked areas will be produced by chemical reaction with water.

It is an object of the present invention to provide a specially treated surface such as paper and a process for producing the same wherein a delineation including writing may be effected with any handy or other suitable implement merely by localized application of water to the surface of the material treated.

It is another object of the present invention to provide a chemically treated paper of the above nature which is adapted to be used in typewriters to receive impressions of typewriter type by water wetting said type instead of conventional ink application.

It is still another object of the present invention to provide a chemically treated writing or drawing surface of the above nature which is particularly adapted for children in primary grades and which will enable them to write with pens free of possibility of soiling themselves, their clothing, upholstery and other environmental elements by the substitution of water as a writing fluid instead of the use of ink.

It is still another object of the present invention to provide a chemically treated impression receiving surface such as writing paper which may be used in post-offices, banks, institutions, public buildings, and in unexpected locations allowing use of water as the inking medium for conventional pens. Moreover, in the absence of a pen, any pointed article may be used as a stylus for writing by dipping in water, and in the absence of water even the saliva of the mouth will suffice in an emergency.

It is still another object of the present invention to provide a chemically treated paper of the above type which is particularly adapted for schools for class work, and examinations wherein normal expenditures for ink and contamination damage can be saved.

The invention has important application to typewriters as has been mentioned by the elimination of the inconvenience of frequent replacement of conventional and inked typewriter-ribbons and the substitution of a typewriter-ribbon consisting essentially of a wick-like tape connected to water reservoir.

Other objects of the present invention are to provide a chemically treated writing surface which is of simple construction, inexpensive to manufacture, is easy to use and is efficient in operation.

For other objects and a better understanding of the invention, reference may be had to the following detailed description taken in connection with the accompanying drawing, in which:

Figure 1 is a fragmentary vertical sectional view through a writing surface such as paper embodying the features of the present invention and shown on a large scale; and

Figure 2 is a view similar to Figure 1 of a modified form of the present invention.

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The present invention comprises essentially the treating of the surface of an impression-receiving and chemically inert bed such as paper with two or more chemicals, each highly soluble in water and capable of instant reaction with each other upon application of water to produce a highly colored product simulating the appearance of ink. One of the chemical reagents is also soluble in a second solvent in which the other chemical is insoluble. Or alternately, a film of water-soluble material insoluble in the second solvent may be interposed between the reactants, such as gelatin or starch.

The invention especially consists of application of at least two independent layers of chemical compositions on a writing or drawing surface capable of reaction in aqueous solution to form a colored end product in contrast with the color of the surface and the color of the said chemical compositions in dry form.

Thus, referring to the drawing and particularly to Figure 1, numeral 10 represents a conventional writing or drawing surface such as paper coated with a layer 11 of a color producing chemical composition or reagent soluble in water. An intermediate protective layer 12 of a water soluble composition is applied thereabove, said intermediate layer, however, being soluble in water but insoluble in the solvent for the complementary color producing chemical composition constituting the third layer 13, the latter also being soluble in water.

Upon the application of water thereto by a suitable implement 14, the complementary, color producing compositions or reagents of layers 11 and 13 will interact to produce a highly colored product almost instantaneously which stimulates the appearance of ink, this colored product being limited to the area of contact with implement 14.

Referring now particularly to Figure 2, there is shown a modified form of the present invention wherein the paper 10 is coated with a layer of a chemical composition 15 soluble in water but insoluble in the solvent of the second layer 16. The second layer 16 of a complementary and color producing chemical composition in a solvent other than water is applied, the said complementary composition being soluble also in water.

Thus upon application of water by the writing implement 14 such as a fountain pen, inkograph, ball or dippen to the paper, the compositions in the layers 15 and 16 will instantaneously react with each other to produce a highly colored product, the coloring being limited to the area of contact with the implement 14.

The following examples will further illustrate the invention as applied to Figures 1 and 2 respectively although it must be understood that the invention is not limited thereto.

Example 1

A sheet of conventional writing paper is treated with a mixture of one part aqueous potassium iodide and seven to fifteen parts of cold water-soluble starch and this layer permitted to thoroughly dry. A second layer of pure gelatin in aqueous solution is then applied to the paper, and likewise permitted to thoroughly dry. A third layer of a saturated cupric chloride solution in 99% isopropyl alcohol (the chloride is also soluble in water) is then added and permitted to thoroughly dry. The gelatin is not soluble in the alcohol. Upon application of water to the above treated paper with any suitable writing implement, an instantaneous reaction takes place to provide a highly colored product directly below the point of application of the writing implement and simulating conventional ink.

Example 2

A sheet of conventional writing paper is treated with

a layer of saturated ferric ammonium sulfate in aqueous solution, utilizing one part of the aforesaid solution with two parts water. This layer is thoroughly permitted to dry whereupon a saturated solution of antipyrine in 99% isopropyl alcohol is applied over the aforesaid first layer, this second layer being permitted to thoroughly dry. The said sulfate is not soluble in isopropyl alcohol while the antipyrine is soluble in water.

Upon the application of water to the above treated paper by a writing implement, the ferric ammonium sulfate reacts almost instantaneously with the antipyrine to produce a highly colored product directly below the point of application of the writing instrument thereby simulating ink in a realistic manner.

The above proportions in the aforesaid examples may be considerably varied without affecting the efficiency of the writing paper, the said proportions being set forth merely to illustrate a formula that I have found to work well in practice.

During the writing operation, the water may be applied to the above treated papers in any suitable manner. As stated, the water may be applied by any standard fountain pen, inkograph, ball-point pen or dip-pen. It may also be typed on, using a typewriter-ribbon consisting essentially of a wick-like tape connected to a water reservoir and eliminating the conventional typewriter-ribbon having printing ink thereon. Upon application of the water-wetted type to the paper, the color change produces clear characters simulating those attained with the conventional and inked typewriter-ribbon. The paper may also be used in printing for example by applying the water directly to the printing type.

The impression creating implement may be in the form of a combination writing pen and pencil and the treated surface is capable of receiving lead pencil impressions. The lead pencil, moreover, may be used as a pen by dipping same in water before application to the writing or drawing surface.

While various changes may be made in the detailed compositions and proportions of my improved writing paper, it should be understood that such changes should be within the spirit and scope of the invention and as defined in the appended claims.

It is understood that the above reacting chemicals may be added to the writing or working surface in dry powder form by applying a pre-mixed powdered aggregation thereof to a suitable adhesive on said surface or by applying successive layers through suitable adhesive media.

I claim:

1. A process of writing and drawing with a stylus, pen or any other implement utilizing water whereby the area of contact between the stylus carrying the water and the receiving surface turns to a dark color simulating ink, comprising successively treating the paper with at least two layers of water soluble chemical compositions, one of said chemical compositions being soluble in a solvent other than water in which the other of said chemical compositions is insoluble, said chemical com-

positions reacting with each other upon the application of water to the receiving surface to produce a highly colored product simulating ink, wherein one of said layers is applied by treating the receiving surface with aqueous ferric ammonium sulfate and the other of said layers is applied by treating said surface with a solution of antipyrine in isopropyl alcohol.

2. A process of writing and drawing with a stylus, pen or any other implement utilizing water whereby the area of contact between the stylus carrying the water and the receiving surface turns to a dark color simulating ink, comprising successively treating the paper with at least two layers of water soluble chemical compositions, one of said chemical compositions being soluble in a solvent other than water in which the other of said chemical compositions is insoluble, said chemical compositions reacting with each other upon the application of water to the receiving surface to produce a highly colored product simulating ink, wherein one of said layers is formed by treating the surface with an aqueous saturated ferric ammonium sulfate solution in the proportions of one part of said solution to two parts of water and the other of said layers is formed by treating said surface with a saturated solution of antipyrine in isopropyl, the lower of said layers being permitted to thoroughly dry before the application of the upper layer.

3. A writing surface having successive layers of at least two chemical compositions, both of said chemical compositions being soluble in water, one of said chemical compositions being soluble in a solvent other than water and in which the other of said chemical compositions is insoluble, said chemical compositions reacting with each other upon the application of water to the writing surface to produce a highly colored product simulating ink at the area of application, wherein one of said layers comprises a mixture of aqueous ferric ammonium sulfate, and the other of said layers comprises a solution of antipyrine in alcohol.

4. A writing surface having successive layers of at least two chemical compositions, both of said chemical compositions being soluble in water, one of said chemical compositions being soluble in a solvent other than water and in which the other of said chemical compositions is insoluble, said chemical compositions reacting with each other upon the application of water to the writing surface to produce a highly colored product simulating ink at the area of application, wherein one of said layers comprising a mixture of aqueous saturated ferric ammonium sulfate solution one part, and water two parts, and wherein the other of said layers comprises a saturated solution of antipyrine in isopropyl alcohol.

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