Sept. 6, 1938. F. L. SIMONS ET AL 2,129,364

AUTHENTIFICATION DEVICE AND METHOD OF MAKING SAME

Filed Nov. 21, 1936

Fig. 1.

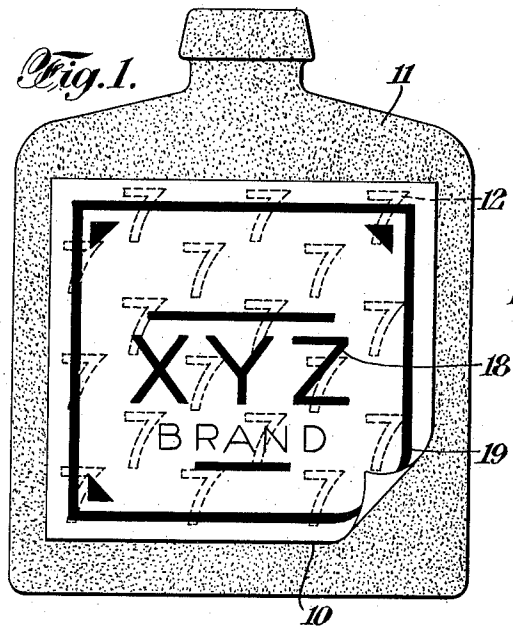


Fig. 4.

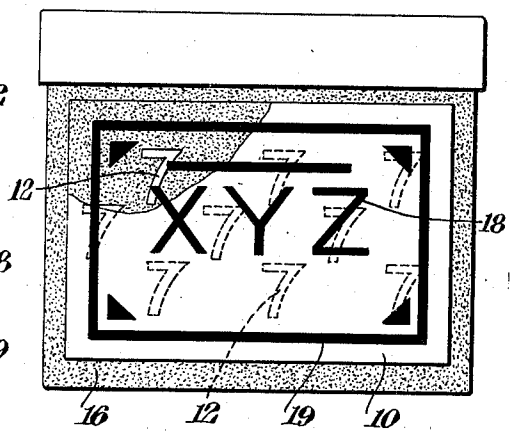


Fig. 2.

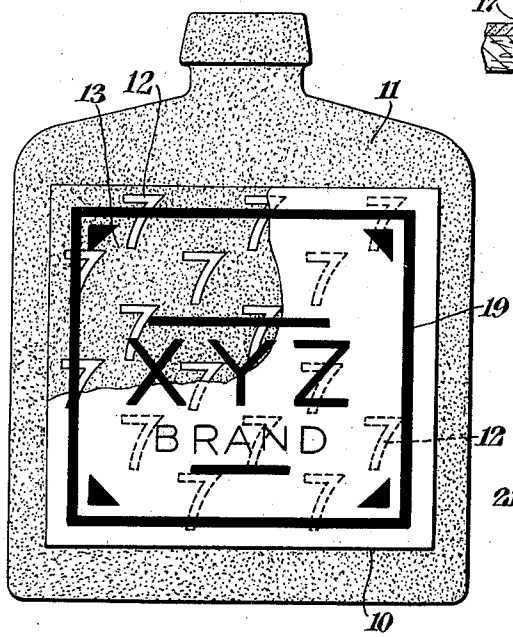


Fig. 5.



Fig. 6.

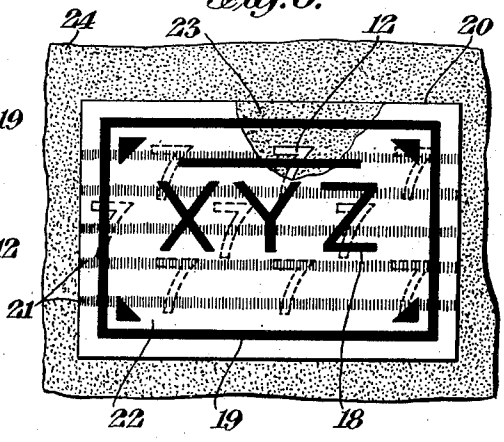
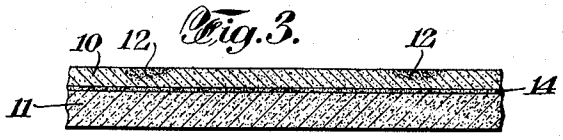


Fig. 3.



INVENTORS
Francis L. Simons
BY Mark N. Heiss
Kenyon & Kenyon
ATTORNEYS

Patented Sept. 6, 1938 2,129,364

UNITED STATES PATENT OFFICE

2,129,364

AUTHENTIFICATION DEVICE AND METHOD OF MAKING SAME

Francis L. Simons, Needham, and Mark W. Weiss, Boston, Mass., assignors to George La Monte & Son, Nutley, N. J., a corporation of New Jersey

Application November 21, 1936, Serial No. 112,010

15 Claims. (Cl. 283—8)

This invention relates to authentification device and method of making same. This invention relates particularly to an authentification device including a web-like material such as paper, whereby the paper or other web material, by appropriate treatment, can be tested to determine its authenticity. According to this invention, means are afforded whereby paper, for example, when treated with a liquid, e. g., by moistening a portion with water, will give visible evidence of its authenticity.

The authentification device of this invention is suitable for many purposes. For example, the authentification device of this invention enables paper suitable for labels, wrapping papers, and the like, to be identified so that the genuineness thereof may be determined. To illustrate, the authentification device of this invention may be employed in connection with and may comprise paper for labels for beverages. In connection with the sale of alcoholic beverages, certain unscrupulous sellers have manufactured counterfeit labels bearing the names of well-known liquors commanding a relatively high price, and have applied them to inferior and inexpensive liquors. According to the present invention, a safety device is afforded which enables one to determine in a convenient, positive and simple manner, whether or not a label such as the label used in connection with alcoholic beverages is genuine or counterfeit. The paper out of which the labels are made can be of normal appearance so as to resemble labels of the ordinary type used for beverages and the like. However, merely upon applying a liquid, e. g. water, to the label or to a portion thereof, visible evidence of the genuineness of the label is at once apparent. After the label has been dried again it preferably assumes its original appearance.

According to this invention, a surfacing web such as a sheet of paper is caused to overlie a subsurface and the color of the subsurface is of such character as to contrast with the color of the surface web. Preferably, the subsurface is of a dark shade such as a deep shade of some primary color. The surfacing web which overlies the colored subsurface is of some color which contrasts with the color of the subsurface, either by being of a different color or by being of a less intense color. If a white label is desired, the surfacing web is white. It is a feature of the present invention that the surfacing web includes first and second portions which are of different character as far as their response to treatment with a liquid is concerned. A first portion of the surfacing web is composed of material which is adapted to have its permeability to light substantially increased by the application of a liquid, e. g., water, thereto so that the color of the subsurface is visible by being rendered visible after having been completely obscured or by becoming substantially more visible after having been partly obscured. A second portion of the surfacing web is of such character that when the paper is treated with the liquid which makes the first portion of the surfacing web more permeable to light, the second portion remains substantially unaffected or else is affected in a substantially less degree than the first portion. Preferably the second portion of the surfacing web is in the form of desired leegnds or other indicia such as lettering, numbers or the like.

To afford one example of the authentification means embodying this invention, such means may comprise a sheet of paper including fiber and a substantial amount of mineral filler such as clay or calcium carbonate. A paper of this character is adapted to become more permeable to light upon application of a liquid, e. g., water, thereto. After the paper of such character has been prepared, a sealing material is then applied to some portion or portions of the surface thereof, leaving other portions untreated. Preferably the sealing material is applied by a printing operation in the form of a plurality of legends of other suitable indicia, using a sealing material which does not substantially alter the color of the material of the paper. For example, some sealing material such as linseed oil or a clear litho-varnish can be applied to the paper in this manner. Wherever the sealing material is applied to the paper such portion or portions are adapted to be substantially less affected upon the application of the testing liquid, e. g. water thereto, than the remaining portion or portions of the paper to which the sealing material has not been applied. If desired, the paper can be finished and printed upon the same as ordinary papers and can be made up into labels, for example. If the paper is to be used as a label, the label is applied to a colored subsurface such as the surface of a bottle which is colored brown or blue, for example. In such case, the label is attached by some substantially colorless and transparent adhesive.

When it is desired to test the paper of the character aforesaid after it has been affixed to the colored subsurface such as the surface of a colored bottle, all that is necessary is to apply a testing liquid such as water to at least a portion of the paper. Upon the application of the test-

ing liquid the portion of the paper which has not been treated with the sealing material becomes permeable to light so that the colored subsurface e. g., the color of the glass of the bottle, is visible therethrough. However, those areas or portions of the surfacing paper which include the sealing material do not become as permeable to light as the remainder thereof and consequently those areas or portions (which may be in the form of letters or numbers, for example) stand out prominently against the background of contrasting color. When the paper dries the surfacing paper in its entirety preferably reverts to its original impermeability to light and assumes its normal substantially uniform appearance.

As aforesaid, the paper as employed in the practice of this invention may be used with or without ordinary printing applied to the surface thereof (although permanent all over solid color printing is preferably not employed). Normally in the production of labels and the like, printing in the form of trade marks, names and ornamental figures is applied to the surface of the paper. Such printing does not in any way interfere with the testing of the paper by the application of a liquid thereto in the manner hereinabove mentioned.

Further purposes, advantages and features of this invention will be apparent from the following description of this invention in connection with the accompanying drawing which shows certain illustrative embodiments thereof, wherein

Fig. 1 is a side view of a bottle carrying a label, the bottle and label embodying an authentification device according to this invention;

Fig. 2 is a similar view to that shown in Fig. 1 and illustrates the color change that is developed upon application of a testing liquid to the paper of the label;

Fig. 3 is a cross-section of the wall of the bottle which bears the label shown in Figs. 1 and 2;

Fig. 4 is a side view of a box bearing a label, the box and label embodying a safety device according to this invention;

Fig. 5 is a cross-sectional view of the wall of the box bearing the label shown in Fig. 4; and

Fig. 6 is a plan view of an alternative form of paper applied to a subsurface so as to constitute an authentification device embodying this invention.

Referring to Figs. 1, 2 and 3, the label **10** is made of paper which is adapted to have its permeability to light substantially increased by application of a liquid, e. g. water, thereto. The paper is preferably made of lightly beaten paper stock and contains a substantial amount, e. g. 20% to 40% of a filler such as clay or calcium carbonate. For example, "India" or "Bible" paper, made from finely cut and moderately beaten pulp containing about 30% of calcium carbonate filler, is very satisfactory. The paper includes a plurality of areas or portions **12** which, as shown in the drawing, may be in the form of suitable legends or indicia. These indicia comprise a sealing material. The sealing material may be a waterproofing material such as clear litho-varnish which does not substantially modify the color of the paper and which is insoluble in an aqueous testing liquid. For the purpose of illustration, the paper of the label **10** is white and indicia **12** are likewise white and are substantially invisible when the paper is in a dry state. When it is stated that the paper is dry, it is understood that complete desiccation is not necessarily indicated, but that a state of dryness which occurs after exposure or "drying" under normal atmospheric conditions is intended. The paper may or may not carry permanent legends **18** or decorative figures **19** of usual character. The paper is deposited on the surface of a body such as the bottle **11** shown in Figs. 1, 2 and 3. The bottle **11** is, for example, made of a dark brown glass as indicated by the stippling in the drawing. The label is preferably affixed by some adhesive **14** which, by virtue of its thinness, transparency and lack of color does not conceal the color of the wall of the bottle. A layer of transparent or translucent material such as adhesive or glass may be between the surfacing web and colored subsurface which may be in the form of part of the wall of the container or colored material within the container.

The appearance of the label when it is in a dry condition and when the indicia **12** are substantially invisible thereon, is indicated in Fig. 1. Fig. 2 illustrates the appearance of the label after a portion of the paper has been moistened with water, for example. The portion of the paper which is occupied by the indicia **12** is substantially unaffected by moistening. However, the other portion **13** of the paper to which water has been applied, becomes permeable to light so that the color of the subsurface, in this case the color of the bottle, will be clearly visible therethrough. When the bottle is made of transparent glass, for example, the tendency of the color of the glass of the bottle or of a colored material such as a colored liquid within the bottle to be transmitted through the moistened paper of the label is somewhat increased. It is apparent that when the paper of the label is moistened in the manner indicated, the indicia **12** will stand out in relief against the background of dark color afforded by portion **13**. Moreover, if the permanent legends **18** and decorative figures **19** are of dark color, they will become of decreasing prominence as the dark background becomes more visible and especially so if they are of substantially the same color as the color of the background, e. g. dark brown. By making these indicia **18** and **19** of about the same color appearance as the color appearance of the portion **13** of the paper which has been tested by application of a liquid thereto, these indicia will become scarcely visible at all except where they overlie the indicia **12**, thus affording a further safety feature.

In Figs. 4 and 5, a label of the character above described in connection with Figs. 1, 2 and 3 is applied to the side wall of a container such as a box. As indicated in Fig. 5, the box may comprise a wall **15** adapted to give strength to the box. Overlying this wall is a colored paper **16** which may, for example, be dark blue. The label **10** is deposited on the surface of the dark blue paper **16** by suitable adhesive **17**. As shown in Fig. 4, the label **10** may, when tested with a suitable liquid, afford visible evidence of its authenticity in the manner described above in connection with Figs. 1 and 2. It is thus apparent that the label **10** may be affixed to any type of subsurface which affords a color that contrasts with the color of the paper in utilizing the authentification device of this invention.

Further illustrations of this invention, wherein a surfacing web is affixed to a colored subsurface afforded by a coating or layer preformed with the back surface of the web, are shown and described in our application, Serial No. 112,008, filed Nov. 21, 1936, for Safety paper and method

of making safety paper, (executed on even date herewith).

In Fig. 6 an alternative embodiment of this invention is shown which includes an additional safety feature. The body of the paper which is again illustrated as constituting a label, may be made of the same composition and materials above described in connection with the embodiments of this invention shown in Figs. 1 to 5. Moreover, indicia 12 and printing 18 and decorative figures 19, may be applied thereto which are, for example, of a character shown in Figs. 1 to 5. In the embodiment shown in Fig. 6, however, the paper of the label 20 is somewhat tinted and the coloring agent employed in the tinting is so applied as to result in a plurality of areas 21 which are of one shade and a plurality of areas 22 which are of slightly different shade. This type of paper, containing areas of somewhat different shade, can be made by running the paper through a bath of some suitable dye or other coloring agent and passing the paper between rollers, at least one of which includes a plurality of irregularities on the surface thereof which cause certain portions of the paper, e. g., the areas 21 to be more highly compressed than other portions, e. g. the areas 22. One method and apparatus for accomplishing this result is described in U. S. Patent No. 123,782, Feb. 20, 1872. The portions of the paper which are more highly compressed become somewhat more highly colored than the other areas. If desired, the coloring agent used in tinting the paper may be a chemical which is of such instability that it can be readily bleached by application of an acid (e. g. hydrochloric, sulphuric, acetic, etc.) or a bleaching agent (e. g. a sodium hypochloride, hydrogen peroxide, etc.) thereto.

The appearance of the paper shown in Fig. 6 when dried is that of an ordinary label possessing an ornamental background of tinted character. When, however, the label is treated with a testing liquid, e. g. water, the color of the subsurface 24 is rendered visible through the portion 23 of the paper to which the testing liquid has been applied. Since the subsurface 24 is of a relatively dark color, in the illustration shown, in contrast with the slightly tinted paper used as the surfacing web, the increased permeability of the surfacing web resulting from application of the testing liquid, causes the indicia 12 to become prominent in the manner hereinabove already described. The tinted areas 21 and 22 do not interfere with this safety feature and have the further advantage of making it extremely difficult to tamper with or alter the paper either by chemical means or mechanical means, e. g. erasure.

In the application of the indicia 12 any suitable sealing material may be used. For example, a non-pigmented or clear printing ink can be used in the application of the indicia 12. Such a clear ink may consist of

	Parts
No. 0 litho-varnish	87
Cobalt drier	8
Rosin oil	5

Clear litho-varnishes of various grades which consist essentially of linseed oil which has been bodied and thickened, are well known and are suitable for the purpose. Those litho-varnishes which are commonly sold under the designations No. 00 to No. 3 have a viscosity well suited for the practice of this invention. In addition, oils may be used as the sealing material, such as linseed oil, China-wood oil, rape seed oil, etc., either plain or modified by blowing or modified by the inclusion or incorporation of gums such as kauri gum or rosin or by the including of any of the oil-soluble waxes. The varnishes of the China-wood oil type or linseed oil type may be used and in such varnishes synthetic resins such as resins of the phenol-formaldehyde type may be used. Lacquers having as a basis a soluble derivative of cellulose can be used, such as cellulose esters (e. g. cellulose nitrate, cellulose acetate, etc.) and cellulose ethers (ethyl cellulose, benzyl cellulose, etc.). Likewise, waxes may be used as the waterproofing material such as paraffin, beeswax, carnauba wax, japan wax, etc., when dissolved in a volatile solvent such as naphtha, ethylene-dichloride, benzene, and the like. It is preferable, of course, that the material used and its consistency be used that it is adapted for the type of printing equipment that is used in the application of the indicia to the paper.

It is usually preferable to employ a sealing material which dries "flat", namely, without a shiny surface, especially when the sealing material is applied to a paper having a "flat" surface. In this manner, the visibility of the sealing material on the surface of the dry paper is minimized. There are certain clear printing inks, varnishes and lacquers which are well-known and which dry to a flat finish. When a pigment is included in the sealing material, preferably one which matches the color of the surface sheet, the pigment aids in preventing any darkening of the portion of the surface of the paper to which the sealing material is applied. In applying the sealing material, it should preferably be applied to the surface of the paper or should penetrate the paper somewhat less than its full thickness as some sealing materials, if permitted to penetrate through the paper, cause it to become of such transparency as to render the subsurface to which the paper is applied permanently visible therethrough.

In the manufacture of the paper used as the surfacing web, it is preferable as aforesaid to use a lightly beaten paper stock such as the paper stock used in the manufacture of "India" paper or "Bible" paper. In order that the paper may have its transparency substantially increased upon the application of a testing liquid thereto, it is desirable to include a considerable amount of mineral filler therein. Hereinabove the fillers clay and calcium carbonate have been mentioned. Other fillers may also be used, such as lithopone, barytes, silica and asbestine.

Materials of the character aforesaid, when incorporated in a surfacing web such as paper, result in a paper which is adapted to have its permeability to light substantially increased on the application of a testing liquid thereto. In general, in the manufacture of the surfacing web, material should be employed which results in a web having such porosity, absorptiveness or the like as to render the web penetrable by the testing liquid without becoming unduly softened by the testing liquid and to include in the web material which when moistened with a testing liquid tends to become more transparent or translucent. The fiber, mineral fillers and binders abovementioned result in a paper which is white or nearly white. If a color other than white is desired, a coloring matter can be incorporated such as a dye or pigment of a color other than white, enough being

used to secure a desired shade. Examples of such coloring materials are as follows: Metanil yellow, Orange II, Bismark brown, Blue black SX and others as examples of aniline dyes, and Prussian blue, carbon black, the various red and brown iron oxides, ultramarine and others as examples of pigment-type coloring matters.

Paper for use in the practice of this invention may be made up with or without an adhesive on the back thereof that is preformed therewith. In the manufacture of labels, for example, it is frequently desirable that the labels be preformed with adhesive on the back so that they can be readily affixed to the surface of a body. Alternatively, an adhesive can be applied when the label is attached to the subsurface.

As aforesaid, it is usually desirable that the surfacing web be white in color and that the subsurface to which it is applied be of a relatively deep shade of color. However, it is apparent that certain features of this invention may be availed of when the subsurface and the surfacing web are of contrasting colors and both are colors other than white. By contrasting colors it is to be understood that the colors of the different strata may be different, e. g., the subsurface may be blue and the surfacing web may be red; or that the subsurface and the surfacing web may be different shades of the same color, e. g., the subsurface may be dark blue while the surfacing web is of a lighter shade of blue. It is preferable, as aforesaid, that the subsurface be of a darker shade than the surfacing web. By this it is meant that the surfacing web is white or more nearly white than the subsurface.

An authentification device having a preferred illustrative color combination according to this invention may comprise a subsurface which is dark blue with a white surfacing web. Alternatively, the subsurface may be black and the surfacing web a light shade of buff. As a further illustration, the subsurface may be red and the surfacing web a light shade of red, e. g., pink. In the illustrations just given, the subsurface and the surfacing web are to be regarded as being of contrasting color, the subsurface being of the deeper shade of color.

It is normally preferable that the surfacing web be of a character which is adapted to have its permeability to light increased when moistened with water. However, other liquids than water may be used by which to test a paper. Thus, saliva is to be regarded as the equivalent to water. Likewise, various dilute aqueous solutions of acids or salts may be applied as the testing liquid. By way of further illustration, when the surfacing web contains lightly beaten fiber and a substantial amount of a filler, such as clay or calcium carbonate, other liquids than water may be used to increase the permeability of the portions of the surfacing web which have not been treated with a sealing material. Thus, various liquids, such as ethyl, methyl or butyl alcohols, ethyl acetate, carbon tetrachloride, benzol, turpentine and the like, may be used with which to test the paper. While an oil such as light mineral oil may be used, such a liquid has the disadvantage that it is non-volatile and leaves a permanent mark on the paper. Preferably, a volatile liquid such as water, alcohol, carbon tetrachloride, or the like, is used which quickly evaporates after the paper has been tested by application of such liquid thereto. It is also preferable that the index of refraction of the particles of filler material of the surfacing web and of the testing liquid be as nearly as possible the same as the transparency of the surfacing web can be increased to a greater extent when a testing liquid of such character is selected. However, even when there is quite a wide difference between the index of refraction of the filler particles and the index of refraction of the testing liquid, a very pronounced increase of transparency of the surfacing web can be obtained.

It is preferable that the sealing material which is deposited on or in portions of the surfacing web to render such portions less affected as to light permeability when treated with a testing liquid, be substantially insoluble in the testing liquid that is to be used. For example, when water is the testing liquid some sealing material, which is insoluble in water, is preferably used. This is not essential, however, as the testing liquid is normally applied only a few moments and any test ordinarily takes insufficient time to permit extensive solution of such materials. As a matter of fact, varnishes, lacquers, drying oils and the like are water-insoluble. While such substances may be slowly soluble in certain solvents therefor, the testing of the paper does not require sufficient time to result in substantial dissolving-out of such sealing materials. It is likewise preferable that the testing liquid be of such character as not to smudge or excessively soften the material out of which the surfacing web is made.

While this invention has been described in connection with certain illustrative embodiments thereof it is to be understood that this has been done merely for the purpose of affording illustrations of this invention and that the scope of this invention is to be limited only by the language of the following claims:

We claim:

1. In combination with a colored sub-surface, a surfacing web of a color which contrasts with the color of said sub-surface, said surfacing web including a first portion adapted to become substantially more permeable to light when said portion in a dry state has a liquid applied thereto so that the color of said sub-surface is visible therethrough, and a second portion which is contiguous with said first portion, which is of substantially the same color as said first portion when said surfacing web is in a dry state, and which is adapted when said second portion in a dry state has said liquid applied thereto to have its permeability to light substantially less affected than said first portion.

2. In combination with a colored sub-surface, a surfacing web of a color which contrasts with the color of said sub-surface, said surfacing web including a first portion adapted to become substantially more permeable to light when said portion is moistened with water so that the color of said sub-surface is visible therethrough and a second portion which is contiguous with said first portion, which is of subtantially the same color as said first portion when said surfacing web is in a dry state and which is adapted when moistened with water to have its permeability to light substantially less affected than said first portion.

3. In combination with a colored sub-surface of a color other than white, a surfacing web of a color which contrasts with the color of said sub-surface and is of a substantially lighter shade, said surfacing web including a first portion which is adapted to become substantially more permeable to light when said portion in a dry state has a liquid applied thereto so that the color of said sub-surface is visible therethrough and a second portion which is contiguous with said first

portion, which is of substantially the same color as said first portion when said surfacing web is in a dry state and which includes a sealing material that prevents said second portion of said surface layer from becoming as permeable to light as said first portion when said liquid is applied to said surfacing web.

4. In combination with a sub-surface of a color other than white, a surfacing web of a color which contrasts with the color of said sub-surface and is of substantially lighter shade, said surfacing web including a first portion which is adapted to become substantially more permeable to light when said portion in a dry state has a liquid applied thereto so that the color of said sub-surface is visible therethrough and a second portion which is contiguous with said first portion, which is of substantially the same color as said first portion when said surfacing web is in a dry state, and which includes a sealing material and a pigment that prevents said second portion of said surfacing web from becoming as permeable to light as said first portion when said liquid is applied to said surfacing web, said pigment being of substantially the same color as the color of said surfacing web when said surfacing web is dry and said first portion being substantially free of said pigment.

5. In combination with a colored sub-surface of a color other than white, a surfacing web of a color which contrasts with the color of said sub-surface and is of a substantially lighter shade, said surfacing web including a first portion which is adapted to become substantially more permeable to light when said portion in a dry state is moistened with water so that the color of said sub-surface is visible therethrough and a second portion which is contiguous with said first portion and which is of substantially the same color as said first portion when said surfacing web is in a dry state and which contains a waterproofing material including a pigment that prevents said second portion of said surface layer from becoming as permeable to light as said first portion of said surfacing web upon being moistened with water.

6. In combination with a colored sub-surface of a color other than white, a surfacing web of a color which contrasts with the color of said sub-surface and is substantially lighter in shade, said surfacing web including a first portion which is sufficiently impermeable to light so that the color of said sub-surface is substantially non-discernable when said surfacing web is dry and which is adapted upon application of a liquid thereto to become permeable to light so that the color of said sub-surface is discernable therethrough and a second portion which is of substantially the same color as said first portion when said surfacing web is dry, which is substantially impermeable to light so that the color of said sub-surface is substantially non-discernable therethrough when said surface layer is dry and which contains a sealing material that is adapted to prevent said second portion from having its permeability to light increased upon application of said liquid thereto to as great an extent as said first portion.

7. In combination with a colored sub-surface of a color other than white, a surfacing web of a color which contrasts with the color of said sub-surface and is substantially lighter in shade, said surfacing web including a first portion which is sufficiently impermeable to light so that the color of said sub-surface is substantially non-discernable therethrough when said surfacing web is dry and which is adapted upon moistening with water to become permeable to light so that the color of said sub-surface is discernable therethrough and a second portion which is contiguous with said first portion, which is of substantially the same color and opacity as said first portion when said surfacing web is dry and which contains a waterproofing material that is adapted to prevent said second portion from becoming substantially more permeable to light when moistened with water.

8. In combination with a sub-surface other than white, a surfacing web of substantially white material, said surfacing web when dry being sufficiently opaque to substantially conceal the color of said sub-surface, and the material of said surfacing web being adapted to have increased permeability to light when moistened with water so that the color of said sub-surface is visible therethrough except at a plurality of areas in the form of indicia which are of material substantially less affected in its permeability to light upon being moistened with water.

9. In combination with a translucent material of a color other than white affording a sub-surface, a surfacing web of a color which contrasts with the color of said transluscent material and is of substantially lighter shade, said surfacing material including a first portion adapted to become substantially more permeable to light when said portion in a dry state has a liquid applied thereto so that the color of said transluscent material is visible therethrough and a second portion which is contiguous with said first portion, wihch is of substantially the same color as said first portion when said surfacing web is dry and which is adapted when said second portion has said liquid applied thereto to have its permeability to light substantially less affected than said first portion.

10. In combination with a sub-surface of a color other than white, a surfacing web of a color which contrasts with the color of said sub-surface and is of substantially lighter shade, said surfacing web being tinted with a coloring agent so as to have a plurality of areas of one shade and a plurality of other areas of slightly different shade and including a first portion adapted to become substantially more permeable to light when said portion in a dry state has a liquid applied thereto so that the color of said sub-surface is visible therethrough and a second portion which is contiguous with said first portion, which is colored substantially similarly to said first portion when said surfacing web is in a dry state and which is adapted when said second portion in a dry state has said liquid applied thereto to have its permeability to light substantially less affected than said first portion.

11. In combination with a sub-surface of a color other than white, a surfacing web of a color which contrasts with the color of said sub-surface and is of substantially lighter shade, said surfacing web being tinted with a color agent so as to have a plurality of areas of one shade and a plurality of other areas of slightly different shade and including a first portion adapted to become substantially more permeable to light when said portion in a dry state has a liquid applied thereto so that the color of said sub-surface is visible therethrough and a second portion which is contiguous with said first portion, which is colored substantially similarly to said first portion when said surfacing web is in a dry state and which is adapted when said second portion in a dry state

has said liquid applied thereto to have its permeability to light substantially less affected than said first portion, said coloring agent being adapted to be bleached by a substance selected from acids and oxidizing agents.

12. In combination with a sub-surface of a color other than white, a surfacing web of a color which contrasts with the color of said sub-surface and is of substantially lighter shade, said surfacing web being tinted with a coloring agent so as to have a plurality of areas in the form of indicia of one shade and a plurality of other contiguous areas of a slightly different shade and including a first portion adapted to become substantially more permeable to light when said portion in a dry state is moistened with water so that the color of said sub-surface is visible therethrough and a second portion which is colored substantially similarly to said first portion when said surfacing web is dry, which is contiguous with said first portion, and which contains a waterproofing material that prevents said second portion of said surfacing web from becoming as permeable to light as said first portion of said surfacing web upon being moistened with water.

13. In combination with a sub-surface of a color other than white, a surfacing web that when dry is of a color which contrasts with the color of said sub-surface and is of substantially lighter shade, and material overlying said surfacing web, said surfacing web including a portion contiguous with said material which is adapted upon application of a liquid thereto to become substantially more permeable to light so that the color of said sub-surface is visible therethrough and said material being of a color which corresponds substantially to the color appearance of said surfacing web when said surfacing web has a liquid applied thereto to render said sub-surface visible therethrough, so that the color of said material contrasts with the color appearance of said surfacing web when said surfacing web is dry and is substantially non-discernable when said surfacing web has said liquid applied thereto.

14. In combination with a sub-surface of a color other than white, a surfacing web that when dry is of a color which contrasts with the color of said sub-surface and is of substantially lighter shade, and material applied to the surface of said surfacing web which corresponds to the color of said sub-surface, said surfacing web including at least a portion thereof which is contiguous with said material and which is adapted upon application of a liquid thereto to become substantially more permeable to light so that upon application of said liquid to said surfacing web the color of said sub-surface is visible therethrough and so that said material is rendered of substantially less prominence against its background.

15. In the manufacture of paper for use in an authentification device, the step comprising making a sheet including fibrous material and mineral filler which sheet is adapted to become of increased permeability to light when a liquid is applied thereto, the step of applying a coloring agent to said sheet in an operation including subjecting a plurality of areas of said sheet to pressure substantially greater than the pressure applied to other portions of said sheet so as to cause said areas subjected to the greater pressure to be of a somewhat deeper shade than said other portions, and the step of applying a sealing material in restricted areas only to the surface of said sheet which sealing material where applied is adapted to render said sheet less susceptible to having its permeability to light increased by applications of said liquid thereto and does not substantially alter the color of said sheet.

FRANCIS L. SIMONS.
MARK W. WEISS.

CERTIFICATE OF CORRECTION.

Patent No. 2,129,364. September 6, 1938.

FRANCIS L. SIMONS, ET AL.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 1, second column, line 16, for "leegnds" read legends; page 3, second column, line 14, for "collulose" read cellulose; and line 20, for "used" read such; page 5, second column, line 35, claim 9, for "wihch" read which; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 22nd day of November, A. D. 1938.

Henry Van Arsdale

(Seal) Acting Commissioner of Patents.