

UNITED STATES PATENT OFFICE.

ALFRED A. NESBIT, OF LONDON, ENGLAND.

BANK CHECK, DRAFT, &c.

SPECIFICATION forming part of Letters Patent No. 248,198, dated October 11, 1881.

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To all whom it may concern:

Be it known that I, ALFRED ANTHONY NESBIT, of London, England, have invented new and useful Improvements in Bankers' Checks and other Monetary Instruments, in order to prevent fraud or to facilitate the detection of fraud by the alteration of the said instruments, which improvements are fully set forth in the following specification.

10 The object of my invention is to prevent fraudulent alterations or to facilitate the detection of fraudulent alterations of bankers' checks and other monetary instruments, which alterations are usually effected by the removal by chemical means of the writing or part of the writing. In thus altering the said instruments it is generally necessary to use at some stage of the process either an acid or an alkaline solution; and my said invention consists, principally, in printing the said instruments with dyes or on paper stained with dyes, the color of which in contact with acids is different from that produced by contact with alkalies, the dye or dyes on parts of the said instruments (when the printing thereof is completed) being acid and the dye or dyes on the other parts being alkaline. When an instrument thus printed is treated with an alkaline solution the whole of the dye or dyes become alkaline, and when treated with an acid solution the whole becomes acid; and by the effect thus produced on the color of the inscription or part thereof or of the paper the fact of the instrument having been so treated is made plainly apparent. Any dye or coloring-matter having the property or properties hereinbefore stated may be used. The dyes known in commerce as "eosene litmus" and "alkaline blue" are suitable for the purpose.

40 According to one method of carrying out my invention I use ordinary paper and print on it the required inscriptions or marks partly with an acid ink and partly with an alkaline ink, the same coloring-matter being used for both inks. The acid I prefer to use is oxalic acid. The alkalies I prefer to use are bicarbonate of soda and potash for a weak alkaline ink or solution and caustic soda for a strong alkaline ink or solution, the strength of the acid or of the alkali being reduced as required by dilution. When a check thus printed is treated

with a solution which is alkaline or acid the whole of the printing is reduced to the same color.

Instead of using the same coloring-matter for both the alkaline ink and the acid ink, a different coloring-matter may be used for each ink.

According to another method of carrying out my invention, I use paper colored or stained with an acid dye, and I print thereon with a colorless ink or solution containing free alkali or an alkaline carbonate, or I use paper colored or stained with such a dye made alkaline and print thereon with a colorless acid ink or solution, the effect in the first case being to produce an inscription in the color of the alkaline dye on a ground of the color of the acid dye, and in the second case vice versa. When a check thus printed is treated with a solution of either an alkali or an acid the difference between the color of the printing and that of the ground is destroyed, and the printed inscription is consequently effaced or rendered illegible.

Instead of printing on the stained or dyed paper with a colorless ink or solution the inscription may be printed thereon with an ink or solution colored with the same dye as that used for the paper or with any other suitable dye, the said ink containing free alkali or alkaline carbonate if the paper be stained with an acid dye, and containing acid if the paper be stained with an alkaline dye.

Instead of printing checks so that the dye or dyes or parts thereof may be acid and that or those on other parts alkaline, they may be so printed that the dye or dyes on parts may be neutral, and that or those on other parts either acid or alkaline; or they may be so printed that the dye or dyes on all parts may be acid, the dye or dyes on the different parts being of different degrees of acidity; or the checks may be so printed that the dye or dyes on all parts may be alkaline, the dye or dyes on different parts being of different degrees of alkalinity.

In printing checks according to the two methods hereinbefore last described dyes should be used the colors of which vary considerably in depth or strength according to the strength of the acid or of the alkali used.

Dyes which, like litmus, do not change materially in color or depth of color when in contact with different strengths of acid or when in contact with different strengths of alkali are not suitable for the purpose.

Instead of using coloring-matters or dyes the color of which is apparent both in contact with acids and in contact with alkalies, those may be used the color of which is apparent only when they are in contact with an acid, or those the color of which is apparent only when they are in contact with an alkali. In all cases the printing should be so effected as to render it impossible by chemical means to remove or alter and restore the color on one part without simultaneously affecting the color on other parts. This may be done by printing lines or other marks or inscriptions in acid-ink solution or dye of one color or shade of color over or in close proximity to lines or other marks or inscriptions printed in alkaline-ink solution or dye of another color or shade of color, or by printing in acid-ink solutions or dyes on paper the whole surface of which is stained with an alkaline dye, or vice versa. In printing in fine lines in the manner indicated above the entire ground or body of the check may be covered with such lines, part in acid and part in alkaline ink, or a design composed of fine lines may be printed partly with the one and partly with the other kind of ink.

Many combinations may be produced by the use of one dye or coloring-matter on plain paper printed from two blocks. As an illustration I will describe the combinations which may be produced by using litmus as the coloring-matter. I will suppose the two blocks to be, one the check-block or block on which the inscription is engraved and the other a block engraved with a device, such as fine lines suitable for the ground or plain part of the check. The following are the combinations which may thus be produced: First, a blue-lined ground with white lettering interlined with pink may be produced by printing on plain paper first from the lined block with alkaline litmus, and secondly from the check-block with acid colorless ink; second, a blue-lined ground with pink lettering may be produced by printing first from the lined block with alkaline litmus, and secondly from the check-block with acid litmus; third, a blue-lined ground with pink lettering with blue lines may be produced by printing first from the check-block with acid litmus, and secondly from the lined block with strong alkaline litmus; fourth, pink lettering with blue lines on a plain paper ground may be produced by printing first from the check-block with acid litmus, and secondly from the lined block with strong colorless alkaline ink; fifth, a pink-lined ground with white lettering with blue lines may be produced by printing first from the lined block with acid litmus, and secondly from the check-block with colorless alkaline ink; sixth, a pink-lined ground with blue lettering may be produced by printing first from the lined block with acid litmus, and

secondly from the check-block with alkaline litmus; seventh, a pink-lined ground with blue lettering and pink lines may be produced by printing first from the check-block with alkaline litmus, and secondly from the lined block with strong acid litmus; eighth, blue lettering with pink lines on a ground of plain paper may be produced by printing first from the check-block with alkaline litmus, and secondly from the lined block with strong acid colorless ink.

By using a paper stained with litmus and printing on it with one block two combinations may be produced: first, with a paper stained with alkaline litmus and printed with colorless acid ink a blue ground with a red inscription is produced; second, with a paper stained with acid litmus and printed with alkaline colorless ink a red ground with a blue inscription is produced.

Instead of printing checks according to my invention on plain paper or on paper stained or colored with dyes of the kind hereinbefore described, paper may be used the color of which will be totally destroyed by acids or by alkalies. Thus an ordinary foolscap-paper colored blue with ultramarine may be printed first from the check-block with acid litmus and secondly from the lined block with alkaline litmus, thus producing a pink inscription crossed with blue lines on a blue ground.

Any or all of the checks printed as hereinbefore described, if treated with an alkali or an acid, or with an alkaline or acid solution, will be so altered as to render it evident that they have been so treated, and their original appearance cannot be restored except by reprinting them from the original blocks or from other blocks exactly corresponding with them.

My invention consists, further, in printing inscriptions or marks on the said instruments, partly by any one or more of the methods hereinbefore described, and partly in ordinary printers' ink, or other ink which resists the action of acids and alkalies, and can be removed from the paper on which it is printed only with great difficulty or not at all, the said inks being so printed that the marks or inscriptions are composed of fine lines or lettering of the said die alternating with lines or lettering of printers' ink, the printing being effected in a machine of very delicate registration. The effect of this is that should all the colored part of the printed inscription be removed from a check it would be practically impossible to reprint the said colored part, even if blocks or plates were made with sufficient accuracy or even if the block with which the colored part was originally printed were used.

If desired, two or more of processes hereinbefore described may be combined in the printing of one check or other like instrument.

Checks printed in any of the ways hereinbefore described may be written on with as much facility as those printed in the ordinary manner.

It is obvious that the inscription or other

matter is to be so arranged that it will be impossible to tamper with the writing without interfering with the printed matter also. This can be done by having the inscription arranged as customary in checks, so that the writing will extend more or less over the said inscription, which is colored with one kind of ink, as well as over the ground colored or printed with ink of another character.

10 Having thus described the nature of my invention and the manner in which it is to be performed, I wish it to be understood that I make no claim to the use of any special dye or dyes; but

15 I claim—

1. The method of preparing checks and other instruments by printing the said instruments with two different inks, one alkaline and the other acid, or one of a higher degree of acidity or alkalinity than the other, the said inks being used in conjunction with a dye or dyes having the properties hereinbefore described, substantially as and for the purpose set forth.

2. The method of preparing checks and other instruments by printing with an acid or alkaline ink, or with both acid and alkaline inks, upon paper stained or printed with a dye or dyes of the character described.

3. The method of preparing checks and other instruments by printing said instruments partly

in inks the appearance of which is altered by the action as well of acid as of alkali and partly with ordinary printers' ink or other similar ink, substantially as described, so that the marks constituting the impressions made with the first-named inks alternate with those made with the printers' ink, as set forth.

4. A bank-check or similar instrument printed with two different inks, one alkaline and the other acid, or one of a higher degree of acidity or alkalinity than the other, said inks being used in conjunction with a dye or dyes having the properties herein described, as set forth.

5. A bank-check or similar instrument printed with an acid or alkaline ink, or both, upon paper stained or printed with a dye or dyes of the character described.

6. A bank-check or similar instrument printed partly in inks the appearance of which is altered by the action of either an acid or an alkali and partly in ordinary printers' ink or similar ink, substantially as described, the marks made with the first-named inks alternating with those made with the printers' ink, as set forth.

A. ANTHONY NESBIT. [L. S.]

Witnesses:

I. E. COVENTON,
EDWIN RICH.