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H. HAYWARD.

Preparation of Bank-Note Paper.

No. 225,279. Patented Mar. 9, 1880.

Fig. 1

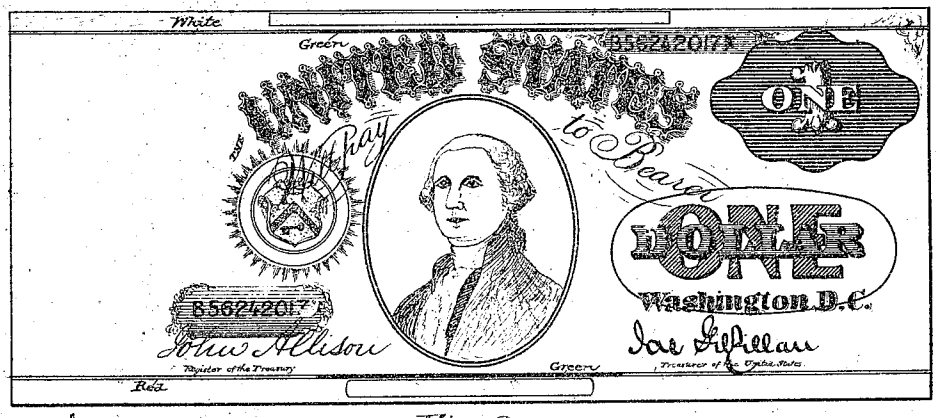


Fig. 2.

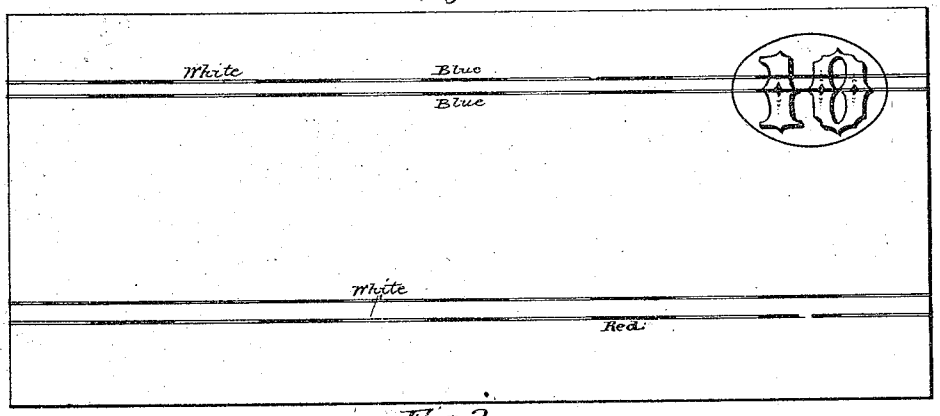
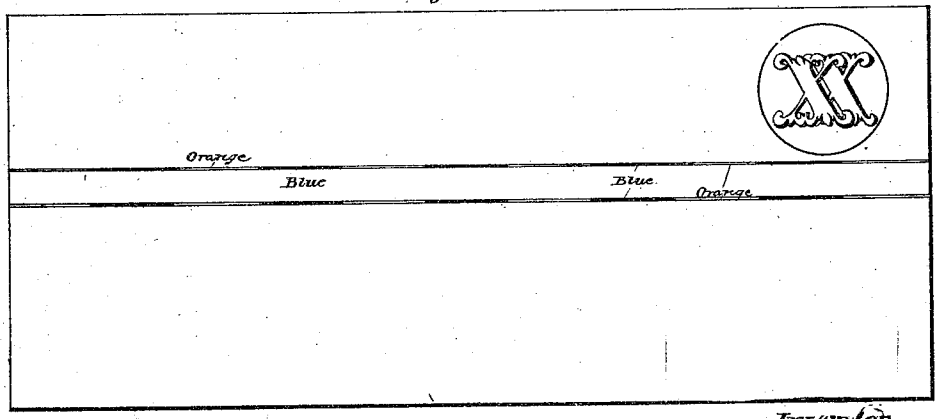


Fig. 3.



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UNITED STATES PATENT OFFICE.

HENRY HAYWARD, OF NEW YORK, N. Y.

PREPARATION OF BANK-NOTE PAPER.

SPECIFICATION forming part of Letters Patent No. 225,279, dated March 9, 1880.

Application filed January 29, 1880.

To all whom it may concern:

Be it known that I, HENRY HAYWARD, of New York city, in the county of New York and State of New York, have invented certain Improvements in Preparation of Bank-Note Paper, of which the following is a specification.

My invention relates to an improved method of and paper for indicating the value and series of bank and similar notes and ascertaining the genuineness or spuriousness thereof; and it consists in providing the paper with one or more threads having printed or colored spaces to indicate the value, a similar thread to indicate the series, and a chemically-prepared thread, which, upon the application of certain other chemicals, shall by the effect produced, indicate the character of the note. One and the same thread may be made to serve all the purposes stated, or two or more threads may be employed, as hereinafter more fully set forth.

The objects of my invention are to provide a means whereby the denomination of a note may be instantly ascertained and its alteration prevented, whereby the series to which the note belongs may be readily determined, and whereby the character of the note, whether genuine or counterfeit, may be ascertained with certainty at once.

The first of these objects I attain by introducing into the pulp, during the process of manufacturing the paper, one or more threads or strands of silk or other fiber, placing the same in a fixed and definite position, preferably at or near the top of the note, the thread or strand being previously printed or colored at one or more points in its length to indicate the value of the note, one colored space indicating one dollar, two spaces two dollars, and so on.

For small denominations a single thread or strand will be sufficient, but for larger denominations two or more such threads may be employed, or there may be a series of large spaces divided by cross-marks printed across the thread or on the face of the note.

Instead of this plan, however, a combination of colors may be employed—as, for instance, an orange-colored thread with blue spaces, the color of the thread indicating a fixed number, and the colored space or spot denoting how many times such number is multiplied.

In the accompanying drawings the several figures show the manner of applying my markings, Figure 1 showing the white or plain thread, the value indicated by the spacing only; Fig. 2, the two threads, the value again indicated solely by the spaces; and Fig. 3 indicating the manner of marking by a combination of colors, the orange color of the thread representing the numeral 2, and the ten spaces or colored portions of blue denoting that two is multiplied by ten, or that the value is twenty.

The second object is attained by the same method of marking as the above—that is to say, the series to which the note belongs will be indicated by one or more threads or fibers having printed or colored spaces, which may be so spaced off as to denote the year or the number of the series. This marking will be preferably applied to the lower part of the note, or across the same at right angles to that which denotes the value, or in such other position as not to be confused with or mistaken for the value-mark.

In some cases it may be desirable to make a single thread or series of threads serve both to indicate the value of the note and the series to which it belongs, in which case a table of colors will be adopted, each representing one series, and this color will then be applied to the body of the thread, while the thread will be printed or colored in spots or spaces to indicate the denomination, as before. This plan can only be adopted in the case of small denominations, if a combination of colors be employed for denoting the value of larger notes.

It will, of course, be understood that, as the paper is manufactured in sheets of sufficient size to produce a number of notes, threads will be introduced in proper position and number to give to each note produced therefrom its proper allowance and arrangement; and it will also be understood that the disposition of the threads may be modified as desired, provided only that all notes of a given series and denomination shall be uniform. The thread being embodied in the paper and being thus made a part thereof, it will be impossible

to get at the same to alter its marking or coloring without leaving unmistakable signs of tampering therewith; and as this manner of marking is in no way intended to supplant the usual marking or printing on the note, but is supplemental thereto, it will be seen that it affords a ready and reliable means of verifying the denomination, as indicated by the printing, or of exposing any alteration of the same. It would also be found exceedingly difficult to so alter the color or the spacing of the thread as to indicate a different denomination, for the reason that it is almost impossible to match and join upon a color used, and even more difficult to remove any portion of the coloring already applied, without detection.

Again, the raising of notes by cutting off the ends of two notes and transposing them, or the formation of an extra note by cutting a number of notes into small pieces and pasting the fragments together in such manner as to produce more notes than are actually cut up, will be prevented, because, positions of the threads in notes of one denomination not corresponding with the position of those of another denomination, the line or lines of cutting will be rendered apparent as soon as the parts are placed side by side, while the omission of any portion of the note, however small, will alter the length of the spacing, which alteration will be readily noticeable.

The last object of my invention is secured by treating the thread or one or more of its strands with chemicals previous to its introduction into the pulp of which the paper is to be made, the chemicals being such as not to alter the color of the thread when applied thereto, but at the same time of such character that upon the subsequent application of certain other chemicals to the thread a predetermined effect or result shall be produced, such, for instance, as a change of color, either permanent or temporary.

The chemicals employed in the treatment of the thread will be kept a secret by the government or other body issuing the notes; but those employed in making the test, as also the effect which should be produced if the note be genuine, will be made generally known.

Different chemical tests may be employed for different denominations or series, if desired, the treatment of the thread being correspondingly varied.

A solution of copperas is found to answer well for treating the thread, the application of acid to thread so treated causing the latter to turn to a bluish-green color. I do not, however, limit myself to any particular chemicals, especially as they will naturally be made and kept a secret, if possible, by the particular parties issuing the notes, each one devising or preparing a test for his own issue of notes.

It will be apparent that the paper prepared according to my invention may be used for all kinds of notes, bonds, and similar papers.

The invention herein described is to be distinguished from the plan heretofore proposed of relying solely upon the color of threads to ascertain the denomination, such plan being defective in that, unless the meaning of each particular color be remembered, no assistance is secured therefrom.

The essential features of my invention consist in the spacing of the threads and the introduction of a chemically-treated thread for the purposes stated.

Having thus described my invention, what I claim is—

1. The herein-described method of designating the value or series of notes and rendering notes capable of verification, consisting in introducing into the paper a chemically-prepared thread colored in whole or in part.

2. The herein-described method of indicating the denomination and series of notes, either or both, consisting in introducing into the paper, in a fixed position, a thread or fiber colored at intervals.

3. The herein-described method of rendering notes capable of verification, consisting in introducing into the paper a chemically-prepared thread.

4. A prepared blank for notes and similar purposes having embedded in it a thread colored at intervals.

5. A blank for notes and similar purposes having embedded in it a chemically-prepared thread, substantially as and for the purpose described.

HENRY HAYWARD.

Witnesses:
G. W. H. ZEGLIO,
ASHER R. MORGAN.