J. SANGSTER.

Paper for Bank Notes, Checks, &c.

No. 228,221. Patented June 1, 1880.

Fig. 1

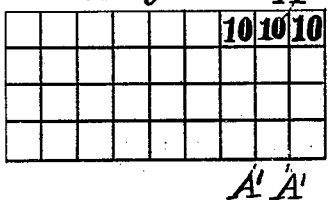


Fig. 2

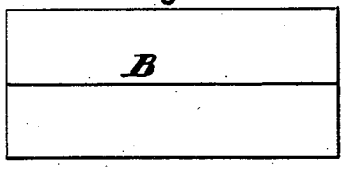


Fig. 3

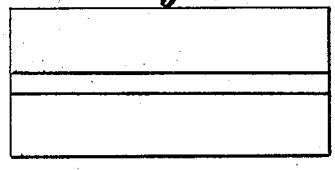


Fig. 4

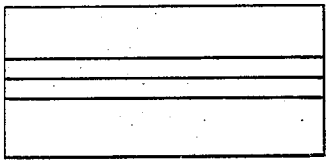


Fig. 5

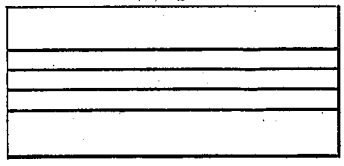


Fig. 6

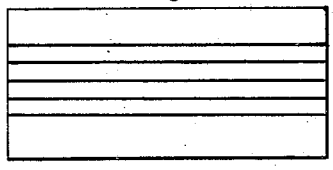


Fig. 7

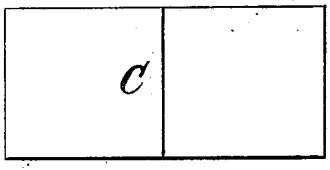


Fig. 8

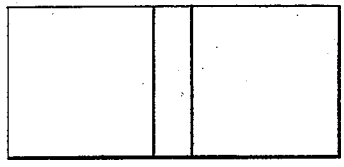


Fig. 9

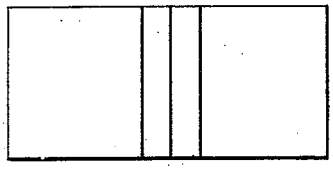


Fig. 10

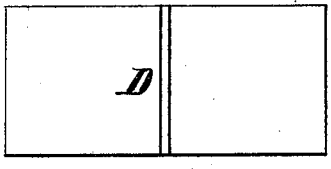


Fig. 11

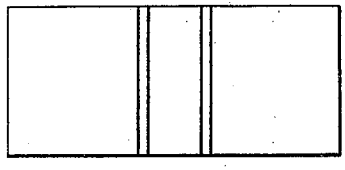


Fig. 12

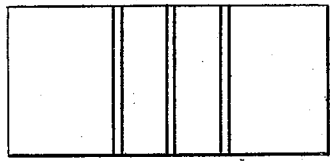


Fig. 13

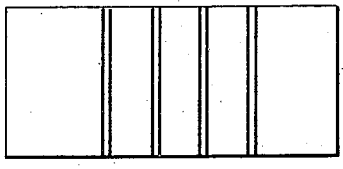
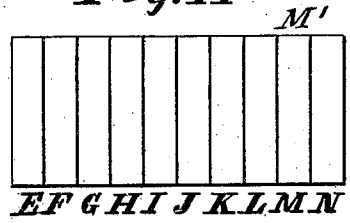


Fig. 14



Witnesses.

S. M. Sangster

R. J. Sangster

Inventor:

James Sangster

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JAMES SANGSTER, OF BUFFALO, NEW YORK.

PAPER FOR BANK NOTES, CHECKS, &c.

SPECIFICATION forming part of Letters Patent No. 228,221, dated June 1, 1880.

Application filed May 17, 1879.

To all whom it may concern:

Be it known that I, JAMES SANGSTER, of the city of Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Bank-Note Paper, which improvements are fully set forth in the following specification and accompanying drawings.

The object of this invention is to prevent counterfeiting, also the changing of a bank-note, or other article representing value, from one denomination to another; and it consists of a certain process of treating the paper, whereby water-mark lines are produced in the body of the paper itself, which cannot be erased without destroying it, and which will show what the amount of the note should be without reference to any matter printed or otherwise on the paper, as will be more clearly hereinafter shown.

The first part of the invention relates to the mode of treating the paper, and consists of three operations: first, the treating of the paper by impressing or ruling characters or lines on its surface by an ink composed of a strong alkali, such as caustic soda, potash, or its equivalent, which eats or thins the paper, and allowing it to dry; second, immersing the paper so prepared in a bath of diluted muriatic acid or its equivalent, so as to partly neutralize the alkali; third, washing the paper so treated in water, so as to thoroughly remove the alkali from the lines and leave them thinner and more transparent than the rest of the paper, thereby rendering them visible.

The object in immersing the paper in a bath of acid before washing is to so neutralize the alkali as to prevent it from spreading and acting on other portions of the paper, which would destroy the outline of the lines during the process of washing. This operation leaves them sharp and clear.

The second part of the invention relates to the characters and the arrangement of the water-mark lines by which the amount of the note or other similar article is known, even if the face of the printing is changed or altered, and will be more readily understood by reference to the drawings, in which—

A in Figure 1 represents a suitable arrangement of figures arranged between parallel water-mark lines A′, large enough to fill the space between said lines, so that another figure or character cannot be added without going over or on a line. In this way any denomination may be shown in water-mark lines, which cannot be erased without destroying the paper, so that any attempt to change the steel-plate or other printing would be at once detected.

The remaining figures show how a simple system of water-mark lines may be made to designate the value of the note, check, or other similar article of value without using the other characters.

One water-mark line, B, arranged lengthwise, as in Fig. 2, would indicate a one-dollar note; two such lines, as in Fig. 3, a two-dollar note, and so on up to five dollars, as shown in Figs. 4, 5, and 6, and a ten-dollar note could be represented by a single water-mark line, C, across the note, as in Fig. 7; a twenty-dollar note by two such lines, as in Fig. 8; a fifty-dollar note by three such lines, as in Fig. 9, and a double line, D, as in Fig. 10, would indicate a one-hundred-dollar note, two such double lines a five-hundred-dollar note, as in Fig. 11, and three such double lines, as in Fig. 12, would indicate a one-thousand-dollar note, and four double lines, as in Fig. 13, a ten-thousand-dollar note, and so on; or this system might be reversed, so that the greater number of lines would represent the smallest note, with a like result. All these water-mark lines—that is, lines where the paper is thinner than at other parts—should be made by the process hereinbefore described. After the paper is thus treated or manufactured, the notes are printed in the usual way, either on one or both sides, and as the water-mark lines are a part of the paper and cannot be changed or erased without destroying it, any attempt to raise or enlarge the amount of the note would be instantly detected by holding the bill or note to the light and examining the water-marks, which cannot be changed or removed.

After the lines are made it will be impossible to add any more of such lines after the note or draft is printed with the usual printers' ink used for such purposes, as in one case

the alkali would affect the oils in the ink, and in some cases its color, so that the protection against such fraud is perfect.

I am aware that notes, &c., have been prepared by writing with chemical ink upon colored paper to indicate the value, the ink remaining in contact with the paper, so as to affect any subsequent writing thereon, and I do not claim, broadly, marking the paper of notes, checks, &c., by chemical solutions; but my improved note and check paper is marked in lines transversely or longitudinally, so that it can be economically prepared in large sheets by machinery and cut into smaller sheets, while the marked parts, being thinnner and more absorbent, take firm hold of the ink, rendering it more difficult of removal at such points, but without having any chemical action upon the ink, which is, therefore, not affected thereby.

I claim as my invention—

1. The within-described mode of preparing paper for bank notes, checks, or other similar articles representing value, which consists in treating portions of its surface with an alkali, so as to form characters or lines thereon, then immersing the same in a weak acid, and afterward washing it in water, as specified, so as to produce water-mark lines, for the purposes described.

2. The mode of making a safety-paper by ruling lines across the surface of an ordinary paper with alkali, and then removing or neutralizing the alkali, substantially as set forth.

JAMES SANGSTER.

Witnesses:
CHARLES SANGSTER,
A. G. THUM.