

UNITED STATES PATENT OFFICE.

ARTHUR VARNHAM, OF LONDON, ENGLAND.

IMPROVEMENT IN THE MANUFACTURE OF PAPER FOR NOTES, CHECKS, &c.

Specification forming part of Letters Patent No. **4,143**, dated August 9, 1855.

To all whom it may concern:

Be it known that I, ARTHUR VARNHAM, a subject of the Queen of Great Britain, and now residing in the Strand, in the county of Middlesex, within the said Kingdom, stationer, have invented or discovered certain new and useful Improvements in the Manufacture of Paper in order to Prevent Fraud, which I intend to call "Safety and Protective Paper;" and I, the said ARTHUR VARNHAM, do hereby declare that the nature of my said invention and the manner in which the same is to be performed are particularly described and ascertained in and by the following statement thereof—that is to say:

The invention consists of a colored or test sheet of paper covered with a white sheet or surface or a delicate-colored sheet or surface on one or both sides, as follows: The rags for the colored test or middle sheet having been cut, sorted, washed, and reduced into half-stuff, and, if necessary, bleached, and, if bleached, thoroughly deprived of the bleaching-liquid, the half-stuff is then filled into the beating-engine, which should have steel or brass bars and fittings, according to the color required for the colored test or middle sheet. When the engine is half beat coloring-matter, as herein-after set forth, is to be added. The engine is then reduced to pulp and emptied into chest called No. 2.

The coloring-matter for the colored test or middle sheet must be prepared with the utmost care. Vessels only of glass or earthenware must be employed, in order to prevent the delicacy of the color being impaired.

The coloring-matter may consist of any coloring-matter usually employed for coloring paper, and also of all others susceptible of change from chemical action.

The rags for the outer sheet or sheets, surface or surfaces, are to be of a more tender kind, having been cut, sorted, boiled, washed, and reduced into half-stuff, and, if necessary, bleached, and, if bleached, thoroughly deprived of the bleaching-liquid. The half-stuff is then filled in the beating-engine, and if the paper be required engine-sized a resinous size is added to the pulp, together with a small quantity of alum. When reduced to pulp the engine is emptied into chest called No. 1; and if the

outside sheet or sheets, surface or surfaces, are to be of a delicate color, then add the color. It is necessary that two vats be simultaneously employed in the manufacture of this paper. Vat called No. 1 is to be furnished with stuff from a chest called No. 1. Vat No. 2 is to be furnished with stuff from a chest called No. 2. The vatman will first make a white or delicate-colored sheet or surface on a mold of the usual form and description generally employed, or that may be required to be employed, from vat called No. 1, and deliver the same to the coucher, who will couch the same on the first or bottom felt. The vatman will then make a colored sheet on a mold of the same size and form vat called No. 2, (the color-vat,) and deliver the same to the coucher, who will couch the same on the white or delicate-colored sheet or surface made from vat called No. 1. The coucher will then place a felt upon the paper thus made; but should the test or colored sheet be required to have another white or delicate-colored sheet or surface the vatman will then make a sheet or surface on the first mold from vat called No. 1 and deliver the same to the coucher, who will couch the same on the sheets made from vats called No. 1 and No. 2, thereby placing the colored or test sheet in the center of two white or delicate-colored sheets or surfaces. The coucher will then place a felt upon the paper thus made. The vatman and coucher will then continue to complete the post of felts in the same manner. The post having been well pressed, the pack-pressing, parting, drying, and sizing (if necessary) are to be performed in the usual manner and with the modes of sizing usually employed with colored paper.

Description of the mode of manufacturing safety and protective paper by machine.—The pulp intended for the test colored or middle sheet and outside sheet or sheets, surface or surfaces, having been prepared in the manner described for the hand-made paper, the pulp for the outside sheet or sheets, surface or surfaces, and the pulp for the test colored or middle sheet are caused to flow from the chests into the servers, thence simultaneously onto the wires attached to them, thence onward to the marking-dandy, and then, in the usual manner, to the couch-rolls, where the test or colored sheet, with the

one or more white or delicate sheets, surface or surfaces, now unite in a compact body. The sheet of paper thus united and formed then passes onto the felt and is pressed, dried, and finished in the usual manner.

My object is to protect the test or colored sheet from being tampered with by chemical agents employed to obliterate writings, and to prevent the using of any sharp instrument or rubbers for scraping or erasing writing, as should any chemical agent be employed the test or colored sheet would be so changed as to alter conspicuously the former appearance of the paper, and the white or delicate sheet or sheets, surface or surfaces, would likewise be imbued with a stain or color produced by the action of those chemical agents on and thence from the color of the test-sheet. The result therefore would destroy the appearance of both—viz., the outer white or delicate-colored sheet or sheets, surface or surfaces, and the test or colored sheet. This being done, it would be impossible to make the said safety and protective paper assume its original appearance, for if you attempted to whiten or renew the delicate color of the outer sheet or sheets, surface or surfaces, you would thereby completely destroy the appearance of the test or colored

sheet, and if you attempted to color the test-sheet you would likewise produce a darker color on the white or delicate outer sheet or sheets, surface or surfaces. The one is a protection to the other. As to the application of any sharp instrument or rubber for scraping or erasing writing being employed, the effect produced would be such that when applied sufficiently to obliterate either a figure or a word the test or colored sheet would appear conspicuous and the part disfigured could not be renovated. Consequently the obliteration would always be detected.

What I claim as my invention is—

The above-described improvement or manufacture or combination of a colored sheet of test-paper and one or more plain white or lighter or darker or different-colored sheets or surfaces of paper applied to one or both sides of the test-sheet, substantially as above specified.

ARTHUR VARNHAM.

Witnesses:

JOHN ALCOCK,

Lincoln's Inn, London.

G. M. HARRISON,

George Yard, Lombard Street, London.