

UNITED STATES PATENT OFFICE.

ALBERT SCHLUMBERGER, OF PARIS, FRANCE.

PROCESS OF MAKING SAFETY-PAPER.

SPECIFICATION forming part of Letters Patent No. 491,858, dated February 14, 1893.

Application filed January 4, 1892. Serial No. 417,034. (Specimens.) Patented in France May 6, 1891, No. 213,285.

To all whom it may concern:

Be it known that I, ALBERT SCHLUMBERGER, chemist, residing in the city of Paris, France, have invented a new and useful Process of Making Safety-Paper, (for which I have obtained a patent in France, No. 213,285, dated May 6, 1891,) of which the following is a specification.

The present invention relates to a process of producing safety paper, which consists in providing so-called splash paper with marks similar in appearance to water-marks either colored on a white ground or white upon a colored ground. Papers with marks thus produced are particularly adapted for checks, bank-notes, stock-certificates and bonds.

Under the present invention I first obtain splash-paper,—the fibers producing the splashes having first been dyed preferably with permanent colors. The paper so prepared is printed in an unsized condition with gummed reagents or compounds containing bleaching or color-modifying substances, on those portions where the marks are to appear, whereby the splashes in the paper are so changed as to appear white upon a colored ground. Or, to reverse the operation, the ground alone is printed, the portion whereon the water-mark is to appear being left free, whereby colored marks upon a white ground are obtained. To carry out this process the white paper-pulp is intimately mixed, in a hollander or mixing rag-engine, with colored fibers which produce the splashed appearance of the paper. These splash-fibers are mordanted and dyed with fast colors, such, for example, as indigo, madder, alizarine and chrome-yellow and the like. The splash-paper is then printed with gummed liquid or semi-liquid solutions containing bleaching or color modifying reagents such as chromic acid or similarly acting destructive substances. Thus for indigo I employ as a reagent for destroying the color of the splash-paper, a gummed compound containing red prussiate of potash and caustic soda and having the following composition: dextrine water, one liter; glycerine, 0.25 liter; red prussiate of potash, one hundred grams; caustic soda (38° Baumé), thirty grams.

This bleaching or color-modifying compound reacts only on indigo, but not on madder. For madder alone acid caustic compounds and chlorinated lime are employed, while chrome yellow (chromate of zinc) is modified or bleached with oxalic acid.

A bleaching or color-modifying compound for madder and indigo, which acts on both colors, consists in a gum-compound in which alum and citric, or another weak acid, are dissolved, and having the following composition: dextrine-water, one liter; glycerine, 0.25 liter; citric acid, twenty-five to forty grams; alum, thirty grams. After printing, the paper is drawn through a very weak solution of chlorinated lime, carefully rinsed and dried. The color of the splashes is now destroyed at the printed places, causing them to appear white.

For obtaining the marks, printing-forms of the character used in printing wall-papers are employed, by means of which the above-mentioned and suitably prepared gummed compound is printed, either on those parts only on which the mark is to appear, or only on the ground, so that the portions for the marks remain unprinted.

Inasmuch as the gum-compounds containing the converting or bleaching or color-modifying chemicals, completely penetrate the unsized paper, thus taking out the color of the splash-fibers at the portions of the paper treated, the same is made more translucent at the said portions, so that the mark in all cases appears in clear relief from the ground and becomes plainly visible. The paper thus provided with marks is guided, in the shape of sheets or webs, through machines provided with running cloths of sheep's-wool, so as to remain perfectly smooth and even. At the same time it is rinsed with water. It is then carried over drying rollers, likewise provided with running cloths of sheep's-wool, stretched over the same. Finally it is sized in the usual manner.

It is to be observed that the above method may be modified in many particulars without departing from the spirit of my invention. Thus, instead of the permanent dyes for the splash-fibers above set forth, other dyes may

be employed, one of the essential features of the invention being that the splash-fibers are dyed with some color which is subsequently modified in some way in a portion of the paper.

5 What I claim and desire to secure by Letters Patent is:

1. In the art of making safety paper the process which consists in first dyeing the splash fibers, mixing them with paper-pulp, making paper from the mixture and finally acting upon the fibers in a portion of the paper by reagents which modify the dye in the splash-fibers, substantially as set forth.

15 2. In the art of making safety-paper, the process which consists in dyeing splash-fibers with indigo, then mixing them with paper-pulp and making paper from the resulting mixture and then applying to portions of

such paper a substance containing citric acid and alum, substantially as set forth. 20

3. In the art of making safety-paper, the process which consists in dyeing splash-fibers with indigo, then mixing them with paper-pulp and making paper from the resulting mixture, then applying to a portion of the paper a solution of citric acid and alum to remove the dye from the splash-fibers and finally rinsing the paper, substantially as set forth. 25

In testimony whereof I sign this specification in the presence of two subscribing witnesses. 30

ALBERT SCHLUMBERGER.

Witnesses:

ROBT. M. HOOPER,

E. P. MACLEAR.