

# UNITED STATES PATENT OFFICE.

GEORGE E. VAN DERBURGH, OF MAMARONECK, NEW YORK, ASSIGNOR TO CHAS. E. HODGES AND WM. B. NEWBERY, OF DORCHESTER, N. D. SILSBEE, OF ROXBURY, AND JOHN RICHARDSON, OF BOSTON, MASS.

## IMPROVEMENT IN SIZING PAPER.

Specification forming part of Letters Patent No. 42,450, dated April 19, 1864.

*To all whom it may concern:*

Be it known that I, GEORGE E. VAN DERBURGH, of Mamaroneck, in the county of Westchester and State of New York, have invented the application of soluble silicate of soda or other alkali for sizing in the manufacture of paper; and I hereby declare that the following is a full, clear, and exact description thereof.

The object of this invention is to use a sizing in the manufacture of paper which is considerably less expensive than the ordinary sizing now in use, and to prevent the waste which is occasioned by the frothing of the latter, while the combination of the usual filling materials—such as clay, &c.—is very much facilitated; and this invention consists in mixing with the pulp in the engine or feeding-chest a soluble silicate sizing composed of the ingredients and in the proportions hereinafter mentioned.

To enable others skilled in the art to understand and apply my invention, I will now proceed to describe the manner in which it is carried out.

A solution of an alkaline silicate is used, containing about two and one-half ( $2\frac{1}{2}$ ) per cent. of the dry salt of the specific gravity indicated by five (5) degrees of Twaddle's hydrometer; or, what is more convenient, a concentrated solution of silicate of soda, found in the market in the form of a thick paste and

standing at about  $35^{\circ}$  to  $40^{\circ}$  of Baumé's hydrometer, is employed, and to every pound of this paste is added about twelve pounds of water.

In the manufacture of brown or wrapping paper about three gallons of the dilute solution formed as above is used with every one hundred and fifty pounds of pulp.

In making white paper from six to nine gallons of the said dilute solution, according to the desired strength and the nature of the materials, is used with one hundred and fifty pounds of pulp.

It is found that a highly-silicious alkaline silicate produces the best results, the soluble silicate of soda which is used with the most success containing from twenty-three to twenty-seven per cent. of alkali to seventy-seven and seventy-three per cent. of silicic acid, being the proportions of that patented by me on the 29th of May, 1860, and reissued April 1, 1862.

What I claim as my invention, and desire to secure by Letters Patent as an improvement in the manufacture of paper, is—

The application of a sizing of soluble alkaline silicate, substantially as set forth.

GEORGE E. VAN DERBURGH.

In presence of—

THEODORE J. WHITING,  
WM. H. RIBLET.