

UNITED STATES PATENT OFFICE.

J. A. ROTH, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN TREATING PAPER STUFF.

Specification forming part of Letters Patent No. **17,895**, dated July 28, 1857.

To all whom it may concern:

Be it known that I, J. A. ROTH, of the city of Philadelphia and State of Pennsylvania, have invented a new and useful Mode or Process in Treating Woody Fibers, particularly such as contain nitrogen or azote; and I do hereby declare that the following is a full and clear description thereof.

The nature of my process consists in treating the fibers of wood with a sulphurous-acid bath, either in liquid or gaseous form, preparatory to the application of the chlorine solution for bleaching the same, and thereby deoxidizing the woody fibers, as well as to remove the injurious effect existing in the relation of chlorine and the azote contained in wood.

To enable others skilled in the art to make and use my invention, I will here proceed to describe its application and operation.

I generally apply large round tanks, which I fill to about two-thirds of their dimensions with sulphurous acid of moderate strength, and then throw the woody fiber or pulp in the same, the woody fiber or pulp having been previously well and thoroughly opened and separated by mechanical means, so as to allow the acid to unite properly with all the fibers. When the pulp and the acid are thus placed within the tank, a revolving agitator arranged within the same may be set in motion, in order to stir the mass, and thereby facilitate the more uniform action of the acid upon the wood. When the pulp changes its natural color toward a white, it is believed that the azote or nitrogen contained in the same has changed its chemical position, as naturally combined with the woody fiber or pulp, and that this part of the process is completed. The liquid may now be run off and the pulp retained in the tank. Should it be found that the pulp still contains much of the acid, fresh water may be run through the pulp, which is done by opening a spigot above the tank, so that the water spurts equally over

the whole surface of the upper portion of the pulp and descends through the same to the bottom of the tank, where the tap or outlet is left open, by which the water is discharged and the acid carried off. The pulp is now ready to be bleached with chlorine, either in solution or otherwise. If the solution of chlorine is to be applied, I generally run it into the same tank which contains the pulp, and there bleach it. The agitator is again applied, as in the first operation, until the chlorine has performed its functions.

The object in treating woody fibers with a sulphurous-acid bath previous to the application of the chlorine bleaching agents consists in destroying therewith the injurious effect or relation of the chlorine bleaching agents to that of the nitrogen or azote, and by which the fibers are prevented from bleaching pure white, or after being bleached turn yellow when run into paper.

In case sulphurous-acid gas is to be directly employed instead of the acid, the fibers are first moistened with water, then placed in a close room on hurdles or shelves equally divided throughout the chamber, and the gas is introduced in the usual manner, as generally employed for wool-bleachings, until the nitrogen has been changed by the gas. The pulp is then removed from the chamber and exposed to the action of the chlorine bleaching agents, in order to fully whiten it. The pulp is now ready to be worked into paper in the usual manner.

What I claim as my invention or improved process is—

The combined application of sulphurous acid upon woody fibers with that of the chlorine bleaching agents, substantially as hereinbefore described.

JULIUS A. ROTH.

Witnesses:

JOHN APPLE,

WILLIAM Z. HATCHER.