

UNITED STATES PATENT OFFICE.

CHARLES C. HALL, OF PORTLAND, MAINE.

IMPROVEMENT IN THE PREPARATION OF PAPER FROM RESINOUS BARKS.

Specification forming part of Letters Patent No. **12,414**, dated February 20, 1855.

To all whom it may concern:

Be it known that I, CHARLES CONANT HALL, of Portland, in the county of Cumberland, in the State of Maine, have invented a new and Improved Mode of Making Paper from the Entire Bark of Resinous Trees; and I do hereby declare that the following is a full and exact description thereof.

The nature of my invention consists in using the entire bark of resinous trees—to wit, pine, fir, spruce, hemlock, hackmetac, and cedar, with their species—as it is stripped off, without cutting, dusting, or picking, in combination with hard stock consisting of flax, hemp, cotton waste, &c., and through the instrumentality of steam.

To enable others skilled in the art to make and use my invention, I will proceed to describe the process.

First. The bark as stripped from the tree is placed in a boiler or digester, and, being covered with water, is digested at a slow heat for the purpose of softening the scales or outer portion without materially affecting the resinous, gummy, and extractive matter, which substances are to be retained as a size and for the purpose of giving to the paper an impermeable and very desirable property. A small quantity of lime may be thrown into the boiler at the commencement of this part of the process to facilitate the softening of the scales or outer portion of the bark without materially affecting its resinous constituents. This addition of lime, however, I do not claim as my invention. Neither is it indispensable, inasmuch as the high temperature and pressure of steam

employed in the next stage of the process is sufficient to bring the bark to the condition required.

Second. A moderate heat having been applied to the boiler for the space of two or three hours, the quantity of water is doubled, and a steam-heat is raised in which the bark is digested for four or five hours until its fibers are so far detached from each other that by the usual machinery it is easily reduced to a pulpy condition.

Third. The bark thus brought to a pulpy condition is then taken to the pulp-engine, and there operated upon for two hours, when, the hard stock having previously been partially pulped, the two are mixed in the proportion of three parts of bark to one part of hard stock, and the whole is then pulped four additional hours.

Fourth. These processes having been pursued, the combined pulp is then bleached, and the usual known process of making paper is observed.

What I claim as my invention, and desire to secure by Letters Patent, is—

The process of preparing paper-pulp, substantially as described, using the entire substance of the bark of resinous wood, in which I retain the resinous and gummy matter within the substance of the barks to act as a size or stiffening for the paper.

CHARLES C. HALL.

Witnesses:

S. F. RAND,
I. T. BALL.