UNITED STATES PATENT OFFICE.

CHARLES B. CARTER, OF LAWRENCE, MASSACHUSETTS.

IMPROVEMENT IN PROCESSES FOR MAKING WOOD PULP.

Specification forming part of Letters Patent No. **219,567**, dated September 16, 1879; application filed August 16, 1879.

To all whom it may concern:

Be it known that I, CHARLES B. CARTER, of Lawrence, county of Essex, and State of Massachusetts, have invented new and useful Improvements in Processes for Making Wood Pulp, which improvements are fully set forth in the annexed specification.

My invention relates to the manufacture of wood pulp by grinding or abrasion, and has for its object the production of pulp so made which can be bleached like pulp made by chemical process; and it consists in removing from the wood before grinding it such of its natural constituents as prevent the bleaching solution usually employed for this purpose from acting upon the wood fiber to whiten it, and in so preparing the wood for grinding that the fibers separate much more easily, thus facilitating this operation.

Wood pulp which is made by grinding it off from pieces of wood, in the usual manner, retains in its composition the constituent elements of the wood from which it was ground.

The woods commonly used for making pulp are charged more or less with pitch or tar, which consists in variable proportions of turpentine-oil, sylvic acid, and pinic acid.

The above-named acids and oil, together with a certain quantity of albumen and salts natural to the wood, so envelop, so to speak, the woody fiber as to render it impracticable to attempt to bleach pulp made by grinding wood in its natural state, as above set forth.

The said obstacles to bleaching—*i. e.*, acids, oil, albumen, salts, &c.—act as repellents to the chloride of lime and other materials used for that purpose, and such a degree of strength in the latter as would overcome said repellents would destroy the wood fiber; hence the impracticability of so attempting to bleach such pulp.

On account of the aforesaid difficulties in the way of whitening ground wood pulp, its employment is limited in the manufacture of papers to those of dark or yellowish colors.

My improved process, as herein set forth, overcomes the aforesaid obstacles to bleaching said pulp, and makes it a desirable material for the manufacture of white papers.

In practicing my process for the manufacture of bleachable ground wood pulp, I do not grind the wood in its natural state; but I first prepare it for grinding by extracting from it by distillation, under such a heat as will not injure its fiber, the above-named repellent elements, such as tar, turpentine-oil, acids, &c., which oppose the bleaching effects of chloride of lime, and after having so distilled the wood, I grind it in any of the well-known ways to reduce it to pulp, after which it is susceptible of being easily bleached by chloride of lime and acid solutions of less strength than is required generally for bleaching rag pulp.

After wood has been subjected to such a degree of heat as will expel from it the aforesaid gum and acids and freed from their adherent qualities, the wood is much more easily ground than when in its natural state.

What I claim as my invention is—

The hereinbefore-described improved process for manufacturing white wood pulp from disintegrated wood fiber made by grinding the wood, which consists in first extracting the natural gums and acids from the wood; second, reducing said wood to pulp by grinding; and, third, in bleaching said ground pulp by the application to it of chloride of lime or other suitable bleaching materials, substantially as set forth.

CHARLES B. CARTER.

In presence of—
H. A. CHAPIN,
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