UNITED STATES PATENT OFFICE.

HENRY A. FRAMBACH, OF KAUKAUNA, WISCONSIN.

PROCESS OF TREATING WOOD FOR CONVERSION INTO PAPER-PULP.

SPECIFICATION forming part of Letters Patent No. 239,041, dated March 22, 1881.

Application filed October 21, 1880. (No specimens.)

To all whom it may concern:

Be it known that I, HENRY A. FRAMBACH, of Kaukauna, in the county of Outagamie and State of Wisconsin, have invented certain new and useful Improvements in the Process for Treating Wood for Conversion into Paper-Pulp; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

The first step of my process relates to the preparation of the wood to be pulped. I cut it into bolts about one inch less in length than the width of the grindstone used in its final reduction. I then divide it into slices about half an inch in thickness, using for this purpose a knife, such as is used in stave-cutting machines, having a thick edge, and so ground and set as to bend and check the slice cut off and open it in as many places as possible, to allow of the easy penetration of the chemical liquors to all parts of the wood. In this operation one side of the knife-edge is, as nearly as possible, parallel with the grain of the wood. The wood thus prepared is next placed in open or closed tubs or vats and steamed, with or without pressure, from two to four hours, the time varying somewhat according to the kind of wood under treatment and the kind of paper to be made. The water of condensation is then completely drawn off. I next fill the tub with a weak solution of caustic alkali and boil the wood for about forty-eight hours. For making a manila or dry-goods paper, from twenty-five to fifty pounds of soda-ash for each cord of wood will be sufficient. If the wood is allowed to remain in the hot caustic liquor from four to seven days a better result will be obtained. The caustic liquor is then drawn off and the wood again steamed for from two to four hours, and during this stage of the process if hot water is allowed to flow over and through the wood the pulp made from it will be better in quality and lighter in color. The wood thus treated is finally reduced to pulp by the usual grinding process, and its subsequent treatment is the ordinary one.

I have found that when pine or other resinous wood is used the resin and pitch in the wood are converted, by the action of the steam and caustic liquors, into a good sizing, and no other size is required when the pulp is run into paper.

Having thus fully described my improved process for pulping wood, what I claim, and desire to secure by Letters Patent, is—

The above-described treatment of wood preparatory to its conversion into pulp for the manufacture of paper, the same consisting in the following series of steps: first, subjecting the wood to the action of a thick-edge knife, for the purpose of cutting the wood into thin slices, and bending, checking, and partially splitting and opening the same to the ready entrance of the chemical solutions; second, steaming the wood thus prepared in open or closed vessels, with or without pressure, from two to four hours, and then drawing off the water of condensation; third, boiling the wood in a weak solution of caustic alkali for forty-eight hours, preferably allowing it to remain in the hot solution from four to seven days before drawing off the liquor; fourth, removing the alkali and the dissolved resinous and agglutinating materials from the wood by again steaming it for from two to four hours, while hot water is allowed to flow upon and through it; fifth, grinding the wood into pulp and running it into paper by the ordinary methods.

In testimony that I claim the foregoing as my own invention I affix my signature in presence of two witnesses.

HENRY A. FRAMBACH.

Witnesses:

P. D. NORTON,

G. C. LOVE.