UNITED STATES PATENT OFFICE.

JOHN W. DIXON, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN THE MANUFACTURE OF PAPER-PULP FROM WOOD.

Specification forming part of Letters Patent No. **45,480**, dated December 20, 1864.

To all whom it may concern:

Be it known that I, JOHN W. DIXON, of the city of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in the Manufacture of Pulp from Wood; and I hereby declare the following to be a full and exact description of the same.

Heretofore good white pulp has been manufactured from wood by submitting it to the action of caustic soda in solution and under pressure, due to a heat of, at, near, or about 300° Fahrenheit, and of a strength of solution of 16° Baumé.

I have discovered that at a strength of solution of 18° Baumé good white pulp can be manufactured from wood at, near, or about 212° Fahrenheit and below 290°; secondly, I have discovered that after the solution of caustic soda has been thus used to form wood pulp either at a temperature at, near, or about 212°, or at 16° Baumé, or thereabout, and at a temperature of, at, near, or about 300° Fahrenheit, the same liquor can be used for pulping a second charge of wood by adding thereto a small percentage of fresh caustic soda, and the waste of liquor from that second pulping process can be a third time used for pulping wood by adding again a small percentage of fresh caustic soda.

In applying my discovery I take one hundred pounds of wood—say poplar, gum, bass, or hemlock, which are the principal woods used for making paper—and I chip the wood in the usual manner and treat it with forty gallons of solution of caustic soda of a strength of 18° Baumé, which would require about forty-five pounds of caustic soda to forty gallons of water. Then I boil the wood in this liquor at, near, or about 212° for six hours. Then I drain off the liquor and wash it and treat the wood pulp with chlorine or chloride of lime and obtain a fine white pulp. The waste liquor so drained off is used immediately for treating a fresh supply of wood by adding twenty-five per cent. of caustic soda, or eleven pounds to it, and it is used with the new supply of one hundred pounds of chipped wood, as in the first instance, and gives, after treatment by chlorine, as fine a result as the fresh solution of caustic soda did in the first instance. The waste liquor is a second time drained off, and is treated with about thirty per cent. of fresh caustic soda and used a third time, as in the first and second instances. This waste liquor may be then used for treating straw, as described in an application for a patent made by me, and which has been ordered to be issued. When a heat of, at, near, or about 300° Fahrenheit is used with the solution of caustic soda, the solution should be of a strength of 16° Baumé in the first instance, and the waste liquor from that first process should be treated with twenty per cent. of fresh caustic soda, and then used at the same heat for a second supply of wood, and the resulting liquor treated with twenty-five per cent., or thereabout, of fresh caustic soda, and again used a third time, as before. It can then be evaporated and incinerated, as is now practiced immediately after the first operation.

The advantage of this improved process is that the necessity of evaporating and incinerating is postponed until after the third use of the same liquor, and with an increase of only from twenty to twenty-five per cent. of fresh caustic soda for the second operation, and of twenty-five to thirty-five per cent. on the third operation.

By using caustic soda of a strength of 18° Baumé, and at, near, or about 212°, I can obtain a fine white pulp from wood without the expense and risk of boiling under high pressure; and in connection with this the repeated use of the waste alkaline liquor, as above described, obviates any objection arising from the want of economy due to the increased amount of caustic soda used in the first stage of the process. Although the process can be thus successfully carried on at, near, or about 212° Fahrenheit, yet the heat may be increased to 290° with that percentage of soda.

Having thus described my improvement, what I claim as my invention, and desire to secure by Letters Patent, is—

1. The manufacture of pulp from wood, and by treating the wood with a solution of caustic soda at 18° Baumé or higher, and at, near, or about 212° Fahrenheit and below 290° Fahrenheit.

2. The successive reuse of the waste liquor from the first wood-pulping process in a second or third wood-pulping process by the addition of reduced percentages of fresh caustic soda, substantially as above described.

JNO. W. DIXON.

Witnesses:

GEO. HARDING,

JAMES MCCAHEN.