

United States Patent Office.

ASAHEL K. EATON, OF PIERMONT, NEW YORK.

Letters Patent No. 106,143, dated August 9, 1870.

IMPROVEMENT IN THE MANUFACTURE OF PAPER PULP.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern :

Be it known that I, ASAHEL K. EATON, of Piermont, in the county of Rockland and State of New York, have invented certain new and useful Improvements in the Art of Manufacturing Paper Pulp from Straw, Wood, and other Vegetable Fiber; and I do hereby declare the following to be such a full, clear, and exact description thereof as will enable any one skilled in the art to which my invention appertains to work or practice the same.

In the manufacture of paper pulp after the process described in the patent heretofore granted to me, and dated the 22d of March, 1864, it is necessary to reproduce the caustic, soda, or potash to insure the desired profit as the commercial result of the process, but the expense of apparatus and labor necessary to the reproduction of the soda or potash makes it desirable to substitute in its place a solvent, the recovery whereof is unnecessary to insure at least as large a profit as can be obtained in the use of soda or potash as a solvent, even though the whole of it contained in the refuse water be recovered, which is scarcely possible in the practical manufacture of the pulp.

Now, I have discovered that the incrusting matter of the cellulose of the wood, straw, or other vegetable material suitable for paper pulp, can be dissolved readily, and with great economy, by the use of oxysulphide of calcium, a substance of such little cost that the refuse liquor can be thrown away without material loss to the manufacturer.

In the practice of this improvement, I first put the straw, wood, or other fibrous substance out of which the pulp is to be made, in the water-tank, and raise it to the boiling point. I then take, to a ton of straw or wood, from two to five hundred pounds of lime, which I first make into a milk of lime. To this I add about twenty pounds of sulphur. I then throw the mixture into the tank of boiling water containing the straw or wood, leaving the combination of the sulphur and lime to take place in the tank, thus saving the preparation of the sulphide beforehand, and continue the treatment as though a caustic soda were used.

The result is a pulp in all respects equal, if not superior, to that made by the use of caustic soda or potash, and in even a more favorable condition for bleaching.

The proportions given above may, of course, be somewhat varied, as will appear by those given, but the lime should always be in chemical excess of the sulphur, that is, more than is necessary for the sulphur to combine with to form the sulphide of calcium, the ordinary quantity of water being used in all cases.

The rationale of the process seems to be as follows:

The sulphide formed in the solution first dissolves the resinous and incrusting matter of the straw or wood, which it immediately gives up to the excess of lime, the sulphide being thus left in its original condition to act again and again.

In referring to the patent heretofore granted to me, I do not intend to limit this improvement to the method described there, as this sulphide can be substituted for the caustic alkali in all processes where the same is used as a solvent with beneficial and economical results; the cost of treating fiber with alkali after the old process being from two to three cents per pound of pulp produced for the alkaline treatment alone, while by the use of the sulphide the cost will be very much reduced, even by the old process; and, in connection with the process described in the patent above referred to, the cost is reduced to one-half cent or less per pound of pulp for this part of the process, which, itself, is a great advantage considered merely in the light of commerce.

Having now described the nature and extent of my improvement in the art of manufacturing paper pulp,

I claim as new herein, and desire to secure by Letters Patent—

The use of oxysulphide of calcium as a solvent in the manufacture of paper pulp from straw, wood, or other vegetable substance suitable for that purpose.

A. K. EATON.

Witnesses:

AMOS BROADNAX,
PETER D. KENNY.