

UNITED STATES PATENT OFFICE

SAMUEL BROWN, OF CHILLICOTHE, OHIO.

IMPROVEMENT IN THE PROCESS OF SAVING CAUSTIC ALKALI IN THE MANUFACTURE OF PAPER-PULP.

Specification forming part of Letters Patent No. **181,405**, dated August 22, 1876; application filed April 15, 1876.

To all whom it may concern:

Be it known that I, SAMUEL BROWN, of Chillicothe, in the county of Ross, and State of Ohio, have invented a new and valuable Improvement in the Manufacture of Fine Paper-Pulp from Straw; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same.

The nature of my invention consists in a new process for preparing straw for paper-pulp whereby the resinous substance or gluten of the straw is entirely destroyed, as will be hereinafter more fully set forth, the object of my invention being to save caustic alkali in the process of manufacturing paper-pulp by treating the material with lime, and passing it through heavy rollers before the caustic alkali is applied to it.

The straw is first boiled in weak lime-water until it becomes soft, when it is taken out and let lie for about thirty-six or forty hours. It is then passed between heavy weighted rollers and crushed into a pulpy mass, whereby a large portion of the gluten is set free. The pulpy mass of straw is then washed and reduced to what paper-makers call "half stuff," or a coarse paper condition. After the straw has been thus reduced it is placed in a common rotary pressure-boiler and boiled in caustic alkali, made of soda-ash and lime. With caustic alkali two degrees strong and a pressure of steam of forty pounds to the square inch, the gummy, resinous, and other matters from which the fiber is to be set free, are entirely subdued or destroyed.

In the first stage of this process the straw is boiled in open tubs, with lime-water, for printing and book paper, for the purpose of softening the straw, so that it can be properly crushed. By thus boiling the straw and afterward crushing it, the bulk is reduced to about one-fourth, so that a rotary boiler of comparatively small capacity may be used.

By the crushing of the straw, after it has been boiled in lime-water, a large portion of the resinous matter is destroyed, while the remainder of such matter is pressed through the ordinary rag-engine, to be washed and made into "half stuff," which also opens the straw, so that the caustic alkali will act properly.

I am aware that the separate steps of the process claimed by me are not new, *per se*, and I therefore lay no claim to them taken separately.

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

The within-described process for preparing straw for paper-pulp, consisting of the following stages, namely: boiling the straw in a weak solution of lime, crushing the same, reducing it in a rag-engine to "half stuff," and then subjecting it under steam pressure to the action of caustic alkali, substantially as and for the purpose set forth.

SAMUEL BROWN.

Witnesses:

ALBERT D. JOHNSON,
SAMUEL JOHNSON.