

# United States Patent Office.

LORENZO DEAN, OF FORT EDWARD, NEW YORK.

Letters Patent No. 109,596, dated November 29, 1870.

## IMPROVEMENT IN THE PREPARATION OF STRAW FOR THE MANUFACTURE OF PAPER.

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, LORENZO DEAN, of Fort Edward, in the county of Washington and State of New York, have invented a new and useful Improvement in Preparing Straw before Converting it into Pulp; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention or discovery relates to the preparation of straw and fibrous materials for conversion into pulp or paper-stock, and consists in a new method of preparing the straw, which will first be described in connection with all that is necessary to a full understanding thereof, and then clearly specified in the summary or claim.

In the first place, I take the long straw and macerate it between rolls, to destroy the tough texture of the fiber and crush the joints thereof; while, secondly, I remove the color and gluten therefrom by repeated soakings (continued in length of time according to the condition of straw when harvested) in a succession of tepid waters. After these two operations the condition of the straw presents important advantages.

First, the fiber has become so completely broken down, and the cohesion of its parts so weakened, that a much smaller quantity of chemicals will be required to thoroughly disintegrate and reduce the mass to a state of pulp. By this means the cost to the manufacturer, and consequently to the public, is greatly lessened.

Second, the crushing of the joints enables the bleaching process to eradicate the colored spots which usually distinguish the points of location of the said knots or joints.

Third, the removal of the gluten and waxy substance before submitting the straw to the action of the chemicals destroys the cohesion which naturally exists between the constituent parts of the straw, and enables the manufacturer to produce not only a finer and more perfect pulp, but a more uniform and homo-

I am aware of the patent of Tait and Holbrook, who cut straw into short pieces, grind it to powder between stone or "grain"-burs, sift the gritty particles therefrom, and then bleach it preliminarily before the application of chemicals. The cutting of the straw, however, into small pieces necessitates an outlay for machinery, and expensive labor, which I dispense with altogether. Next, the maceration by simple rollers is itself a cheaper operation than grinding, while the result is equally well adapted to prepare the fiber for being saturated with liquid. The winnowing-machine I also dispense with entirely. Again, the said patentees merely soak it in water to decolorize partially, while I saturate the macerated fiber with a succession of tepid waters until a much larger portion of the coloring-matter and the gluten are removed.

When prepared to submit to the action of chemicals, my pulp has been prepared at fifty per cent. less cost than that of Tait and Holbrook, while it is in much better condition on account of the nearly insoluble gluten and waxy substance being removed. They require three separate machines, and more than three times the skilled labor.

Having thus described all that is necessary to a clear understanding of my invention,

What I esteem to be new, and desire to protect by Letters Patent, is—

The method of preparing fibrous material for conversion into paper-pulp, by macerating the long straw between rolls and then saturating and soaking it in repeated and successive tepid waters, as and for the purpose described.

The above specification of my invention signed by me this 3d day of July, 1868.

LORENZO DEAN.

### Witnesses:

ALEX. F. ROBERTS,  
JAMES T. GRAHAM.