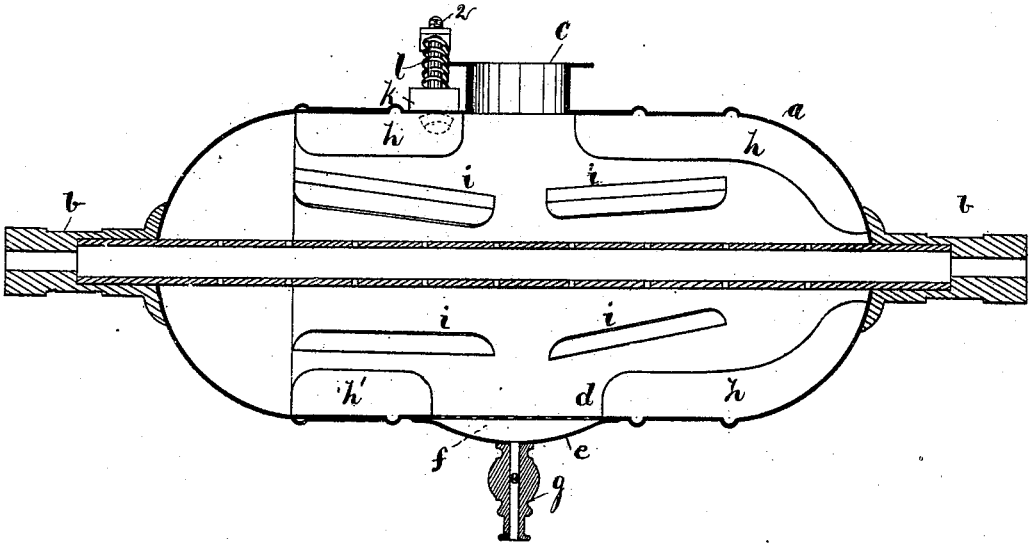
S. & J. DEACON.

Treating Pulp-Stock for Paper-Making.

No. 212,447. Patented Feb. 18, 1879.



Witnesses.

L. F. Connor.

N. E. Whitney.

Inventors

Samuel Deacon and
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by Crosby & Gregory Attys

UNITED STATES PATENT OFFICE.

SAMUEL DEACON AND JAMES DEACON, OF LAWRENCE, MASSACHUSETTS.

IMPROVEMENT IN TREATING PULP-STOCK FOR PAPER-MAKING.

Specification forming part of Letters Patent No. **212,447**, dated February 18, 1879; application filed January 17, 1879.

To all whom it may concern:

Be it known that we, SAMUEL DEACON and JAMES DEACON, of Lawrence, county of Essex, State of Massachusetts, have invented an Apparatus for Treating Pulp-Stock for Paper-Making, of which the following description, in connection with accompanying drawing, is a specification:

This invention relates to apparatus for preparing paper-pulp stock from wood, straw, &c., wherein the material, placed in a strong metal cylinder, is subjected to the pressure and action of steam and chemicals, such as are commonly employed, according to the material being prepared for pulp.

Our invention consists, chiefly, in a pulping apparatus composed of a rotating cylinder, provided within it with diagonally-placed shelves or agitators which extend from at or near the ends of the said cylinder toward the center of the length of the said cylinder, but which are terminated at one side of the center of the cylinder, so as to leave an unobstructed open central space for the passage and circulation of the material being treated, the said material by the action of the diagonal shelves being crowded from the ends of the cylinder toward its center, and being thoroughly tumbled and agitated, which accelerates the pulping process, and improves the evenness or uniformity of the material. We have also provided the cylinder with a strainer and a depressed portion next to it, in connection with which is a valve for drawing off the chemicals preparatory to discharging the contents of the cylinder—wood, or straw, or other material—through the man-hole.

The drawing represents, in longitudinal section, a pulping apparatus embodying our invention.

The said apparatus is composed of a cylinder, *a*, of proper length and diameter, it, in practice, being usually about twenty-five feet long and six feet in diameter. This cylinder has at its ends hollow journals *b b*, which will be mounted in boxes, so as to properly hold the cylinder during its rotation when filled with stock through the man-hole *c*, which, in practice, will have a close steam and liquid tight cover. At one side, preferably just opposite the man-hole, the cylinder is perforated to produce a strainer, as at *d;* or a piece of perforated metal may be attached to the cylinder for a strainer. Outside of this strainer *d* the cylinder is bulged or turned outward; or an outwardly-bulged portion, as at *e*, is secured to the cylinder, forming a chamber, *f*, into which the chemicals and liquid used for the treatment of the material in the cylinder will flow when the cylinder is stopped, as shown in the drawing, so that said chemicals or liquid may, by means of the valve *g*, of usual construction, be drawn off.

The central pipe, *h*, is perforated for the passage of steam into the cylinder, the said pipe receiving steam from any proper steam-supply. The shelves or agitators *h*, *h'*, and *i* within the cylinder, instead of being parallel with the axis of the cylinder, are arranged spirally upon the inner surface of the said cylinder, as shown in the drawings, and their ends nearest the center of the cylinder are made to terminate at one side of the center of the length of the cylinder, such separation in a working-cylinder of twenty-five feet in length being about two feet, thereby leaving a free open space at or about the center of the cylinder, as shown in the drawing, in which the contents of the cylinder have free course, as the said material is by the inclined position of the said shelves or agitators continuously forced from the ends of the cylinder toward its center.

Upon the cylinder we have placed a valve, *k*, the stem of which is operated upon by a spring, *l*, to hold the valve to its seat in the cylinder. At each rotation of the cylinder the end 2 of the valve-stem will be struck by a suitable projection located in the path of movement of the valve-stem, and the valve will be opened, thereby permitting an intermitted discharge of air, or air and steam, which keeps the cylinder and its contents warmer, and prevents the accumulation of air therein.

We claim—

1. In an apparatus for the production of paper-pulp stock, a rotary steam-supplied cylinder, combined with diagonally-placed shelves or agitators, the ends of which are made to terminate short of the center of the cylinder,

to cause the material to be gradually forced from the ends of the cylinder toward its center, where the material has free course between the inner ends of the shelves, substantially as described.

2. In an apparatus for the production of paper-pulp stock, a rotating steam-supplied cylinder, provided with shelves or agitators, combined with a strainer, a chamber, and a valve connected with the said chamber, to draw off the chemical liquid contained in the said cylinder, substantially as described.

3. In an apparatus for the production of paper-pulp stock, a rotating steam-supplied cylinder, provided with shelves or agitators, combined with a spring-valve, which may be intermittently opened at each rotation of the cylinder, to operate substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

SAMUEL DEACON.
JAMES DEACON.

Witnesses:
JAMES P. MARKEY,
WILLIAM HUBY.