



# United States Patent Office.

LORENZO DEAN, OF FORT EDWARD, NEW YORK,

Letters Patent No. 109,595, dated November 29, 1870.

## IMPROVEMENT IN BOILERS FOR PREPARING 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, LORENZO DEAN, of Fort Edward, in the county of Washington and State of New York, have invented a new and useful Improvement in Boilers for Preparing Paper-Pulp; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which—

Figure 1 is a longitudinal central section of a boiler, illustrating my invention.

Figure 2 is a cross-section of the same taken through the line  $x x$ , fig. 1.

Similar letters of reference indicate like parts.

My invention relates to boilers for paper-pulp, and consists in certain improvements which will first be described in connection with all that is necessary to a full understanding thereof, and then clearly specified in claim.

A is the boiler, which is revolved upon the journals B in the ordinary manner.

The journals B are perforated longitudinally for the introduction of the steam or water and for the escape of the steam.

$a^1$  is the ordinary man-hole of the boiler, through which the material is introduced into it.

C are two false heads placed in the boiler, at a short distance from its heads, so as to form spaces  $a^2 a^3$ .

The heads C are perforated with numerous holes, of such a size as to allow the water to circulate freely through them, but entirely prevent the stock.

D are troughs or spouts, with their open sides placed close against walls of the boiler A, as shown in figs. 1 and 2.

The open ends of the troughs D are connected with openings through the heads or partitions C, so that the water can pass from the space or chamber  $a^2$  to the space or chamber  $a^3$  without having to drain through the stock in the main chamber of the boiler A. The sides of some or all of the troughs D may, if desired, be perforated, so that the water from the stock may drain directly into the said troughs D.

E is a short egress-pipe, provided with a stop-cock, F, and with a screw-cap, G, screwed upon its outer end.

This device allows the stock to be gauged, tried, or tested, to see if it be sufficiently reduced, for by opening the cock F some of the stock will flow out and fill the cap G.

The cock F may then be closed and the cap G unscrewed from the pipe E, and examined without its being necessary to open the boiler to do this.

H is an egress-pipe which leads into the space  $a^3$  in the end of the boiler A that projects from the furnace, and which should be provided with a stop-cock in the ordinary manner.

When the stock has been sufficiently reduced the water may be drawn off through the egress-pipe H, leaving the stock in the central compartment of the boiler A. This enables the stock to be washed through any desired number of waters without its being necessary to remove the said stock from the said boiler until it has been thoroughly washed, thus saving a great deal of time and labor in the preparation of the pulp.

This construction of the boiler also enables the stock to be bleached without removing it from the boiler A in which it has been reduced.

After bleaching, the stock is again washed to remove all trace of the bleaching chemicals, which washing prevents all tendency of the paper to turn yellow.

Having thus described my invention,

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

1. The arrangement, upon the bottom of a steam or hot-water cylinder A, and beneath the pulp-cylinder, of the detachable chamber G and valved pipe E F, to form a convenient means of testing the condition of the pulp, as set forth.

2. The arrangement, in a pulp-cylinder and with respect to auxiliary end chambers  $a^2 a^3$ , of the open channel-ways D, as and for the purpose specified.

3. The combination of perforated channel-ways D in the pulp-cylinder, with an outlet-pipe H at the bottom of the cylinder A, to promote a rapid discharge and change of the liquids, as 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.