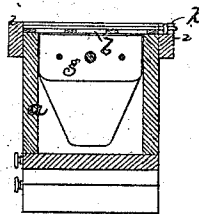
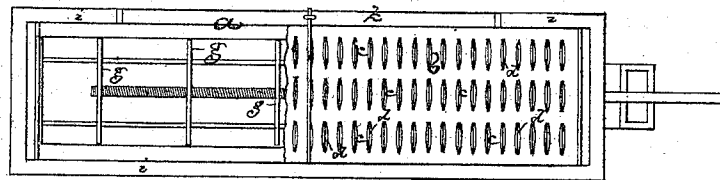


L. HOLLINGSWORTH.

Improvement in Apparatus for Straining Paper-Pulp.

No. 128,625.

Patented July 2, 1872.



Witnesses.
M. W. Frothingham.
J. B. Kidder.

Lyman Hollingsworth.
By his Attys.

Crosby & Gould

UNITED STATES PATENT OFFICE.

LYMAN HOLLINGSWORTH, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN APPARATUS FOR STRAINING PAPER PULP.

Specification forming part of Letters Patent No. 128,625, dated July 2, 1872.

To all whom it may concern:

Be it known that I, LYMAN HOLLINGSWORTH, of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in the Manufacture of Paper; and I do hereby declare that the following, taken in connection with the drawing which accompanies and forms part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

My invention relates to that step in the process of making paper which consists in forcing the diluted pulp through a strainer or screen to separate therefrom knots and other foreign matters, whose presence in the paper tends to injure its texture.

The screens usually consist of metallic plates, in which parallel grooves are sunk until only thin webs are left, through which webs fine saw-slits are cut, the pulp being delivered upon the flat surfaces of the screen-plates or the surfaces opposite the grooves, and the liquid pulp, passing down through the slits, leaves the foreign matters or impurities upon the top. In this method all the impurities lodge and must lodge upon the upper surface of the screen, clogging the slits thereof, and, by the abrasion of the more gritty impurities, soon wearing and destroying the edges of the screen-slits.

In my invention I use the common form of screens; but, instead of delivering the pulp upon the top to percolate through the slits, I reverse the screen-plates, and form with them the top of an otherwise tight box, into which box the pulp is forced under pressure, so as to be driven upwardly through the screens, the knots, sand, and other gritty or foreign impurities sinking to the bottom of the box instead of lodging upon the screens, the pulpy liquid being agitated by a series of vertical slides to which rapid reciprocating movements are imparted; these slides being within the box, and extending across in the upper part thereof, directly under but not in contact with the screens, and by their movement keeping the screens clear from attachment of the pulpy fibers or the felting thereof against the under surfaces of the screens. It is in this construction and method of screening the pulp that my invention consists.

The drawing represents a plan of the box—one of the screens being removed—and a cross-section of it.

a denotes the box, which is or has a long rectangular compartment or chamber; upon the tops of the walls of which are fastened the screens or screen-plates *b*, each plate being made in the ordinary way with the grooves *c* and the saw-slits *d*, the plates being so laid that the slits extend from the bottom and flat side of the plate. Into one end of the box leads a pulp-spout or conveyer, *e*, and through it the box is charged with the liquid pulp under such head or pressure as shall fill and keep filled the box, the fine pulpy liquid passing freely upward through the screen, while the heavier impurities settle to the bottom, from which they may be removed at suitable times. Within the upper part of the box is a series of thin slides or sliding blades or agitators, *g*, fixed upon a slide rod or rods, and having a quick reciprocating movement imparted to them by a suitable crank or other mechanism, the agitators being placed at such distance apart and the throw of the crank being such as shall cause them to sweep under the whole surface of the plates above them, the upper edge of each blade or slide extending nearly but not quite up to the under surface of the screens, and their quick movements being such as to keep the pulp in a proper uniform condition as to consistency, and to prevent lodgment of the fibers against the under surface of the screens. Around the top of the box extends a guard-rail, *i*, through an opening, *k*, in which the screened pulp may flow to any suitable receptacle.

By these means the pulp is more rapidly screened, and the endurance of the screens is greatly increased.

I claim—

The box *a*, charged with pulp under pressure, and covered by the screens, and containing a series of rapidly-reciprocating agitators, *g*, located and operating substantially as described.

LYMAN HOLLINGSWORTH.

Witnesses:

FRANCIS GOULD,
M. W. FROTHINGHAM.