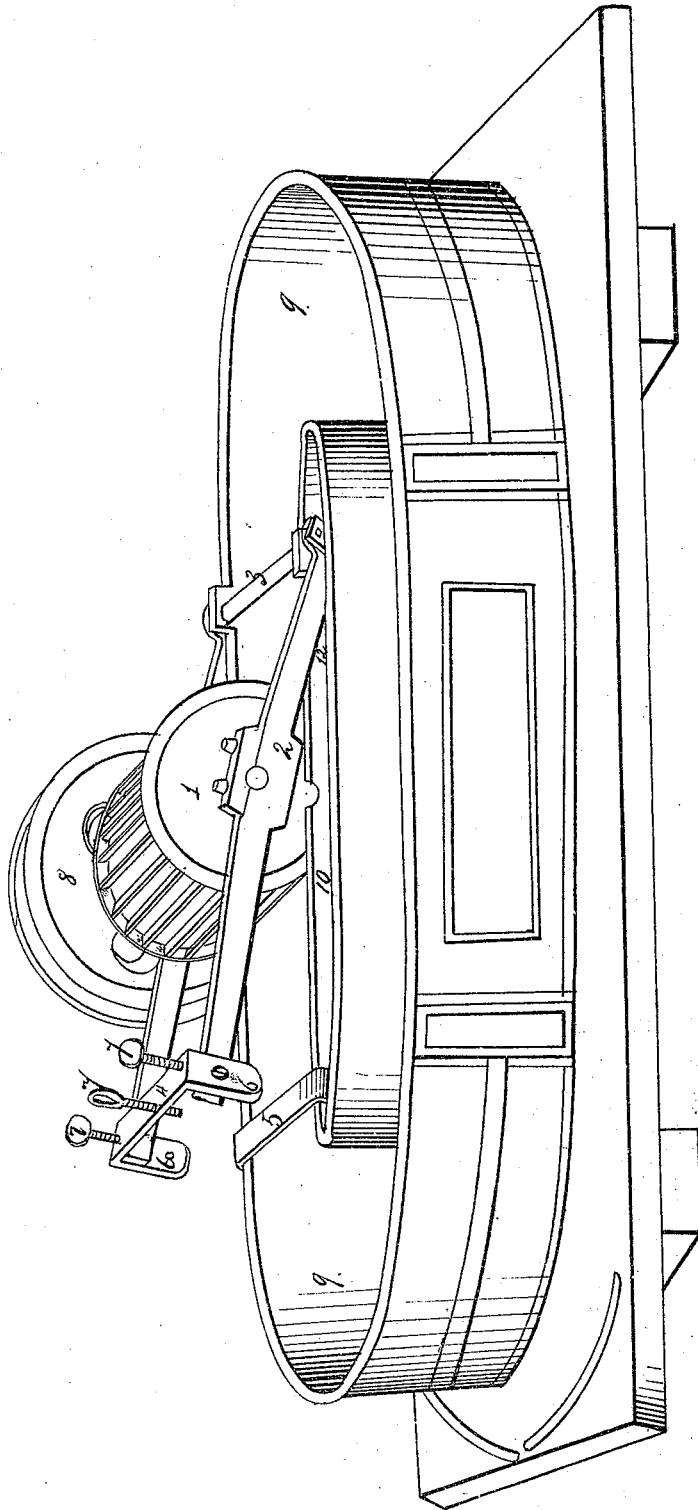


W. Dickinson.
Pulp Washer.
N^o 1,460. Patented Sept. 3, 1840.



UNITED STATES PATENT OFFICE.

WM. DICKINSON, OF WORCESTER, MASSACHUSETTS.

PAPER-ENGINE.

Specification of Letters Patent No. 1,760, dated September 3, 1840.

To all whom it may concern:

Be it known that I, WILLIAM DICKINSON, of Worcester, in the county of Worcester and State of Massachusetts, have invented
5 a new and useful Improvement in Paper-Engines Used in the Manufacture of Paper, of which the following is a description.

To understand my improvement more perfectly however, some knowledge of the
10 engine now in use is essential, and before describing the improvement, I will describe some parts of the engine as now used, the most important of which are, first, an elliptical vat which contains the material to be reduced to pulp; second, the roller having
15 steel plates inserted lengthwise in the surface of the cylinder, parallel to each other and vertical to the center, with the edges rising above the surface; third, steel bars fastened to the bottom of the vat under the
20 roller in such a manner that when it revolves the edge of each plate successively passes over the bars and so near thereto as to cut somewhat in the manner of shears, whatever may be between them. The roller
25 has an axis upon which it revolves, one end of which rests upon a beam or bar called by papermakers a "lightener" which is fitted so that it may be elevated or depressed
30 by a screw. One end of the roller being thus elevated or depressed while the other end is not materially affected in either way. This operation therefore necessarily tends to throw the axis out of its bearings, to
35 increase considerably the friction, and as one end of the roller is nearly in contact with the steel bars while the other is raised from them, the friction becomes unequal.

My improvement is designed to correct
40 this imperfection in the engine and to give it greater power and efficiency, by raising and depressing the whole roller and shaft alike and thus making the space between the plates and the steel bars equal from one
45 end of the roller to the other in all stages of the work. To accomplish this desirable object I hang the roller, as in the drawing No. one, upon a double lightener, No. two, so that it revolves between beams or bars
50 with its axis resting upon each. At one end these bars or beams or lighteners are united as in my drawing by a strong round bar of iron No. three, which passes through them and also through two upright supporters
55 rising a little above the top of the vat, which supporters are firmly fixed to sustain

the work and thus when the other end of the double lightener is raised or lowered this end coupled with the round bar No. three works upon it in the manner of a hinge. 60 The other end is united by a broad flat bar of iron No. four, with the ends turned down at right angles toward the bottom of the vat, the lighteners are bolted to this a little below the angle. This bar rests also upon sup- 65 porters No. five much like those at the other end, the ends of this bar thus turned down may extend a little below the lighteners as in No. six and serve to keep them firm when raised or depressed. The lighteners 70 should be bolted on the outside of this broad bar, and not to the inner side as in the drawing. The double lightener being thus prepared rests in a nearly horizontal position with the upper part nearly on a 75 level with the surface of the water in the vat No. nine. The roller being inserted as in No. one is according to my drawing to receive its motion from a band applied to a pulley No. eight, and is raised or lowered at 80 pleasure by a screw, or by screws as in No. seven, inserted in the flat connecting bar of the double lightener which bear against the boards 5 as appears by the drawing. This screw, or these screws necessarily 85 carry up or down the whole double lightener No. two, and with it the whole roller and shaft No. one, while that in the engine now in use elevates and depresses but one end. The engines in use as far as I have 90 seen or known have a long, heavy, clumsy axis or shaft to the roller connecting it with the moving power usually by a gear. In my improvement which admits the easy application of a band I am able to dispense 95 with a large portion of this axis or shaft, and by an improvement in the vat No. nine constructing therein a hollow midfellow as it is called of sufficient length and width (as in No. ten,) to receive the inner bar or 100 beam of the double lightener (and the band and pulley to drive the machine if desired) I am able to raise the roller and shaft entirely out of the vat No. nine. This vat No. ten or what I call the hollow midfellow 105 is a vat within the vat No. nine, as represented in the model and drawing around which when the roller is in motion, the water carrying with it the material to be ground flows, and from which the water is 110 wholly excluded—by this arrangement the improved engine is more easily repaired

than any now in use. It may be conveniently placed in almost any part of the mill with less regard to the moving power than is now necessary, as the belt may be carried
5 to it with very little trouble in whatever part of the mill it may be. Is less expensive—more likely to keep itself in repair than any engines now used in the manufacture of paper, and when repairs are necessary it is much more easy to make them,
10 as the whole engine can be easily seen by raising the double lightener, and thus the roller. It combines many other advantages which it may not be necessary to mention.

15 What I claim therefore as my invention is—

The act of raising and lowering at pleas-

ure, and to any desirable extent, the whole of the roller and shaft of the paper engine, so that the knives or bars in the roller and
20 the steel bars or plates in the bottom of the vat shall always be parallel, or nearly so, and the space between them as nearly equal from one end to the other as desirable, and
25 this is done by means of the application and combination of machinery above described.

In testimony whereof I, the said WILLIAM DICKINSON, hereunto subscribe my name in presence of the witnesses whose names are hereunto subscribed.

WM. DICKINSON.

Witnesses:

CLARENDON HARRIS,
M. B. GREEN.