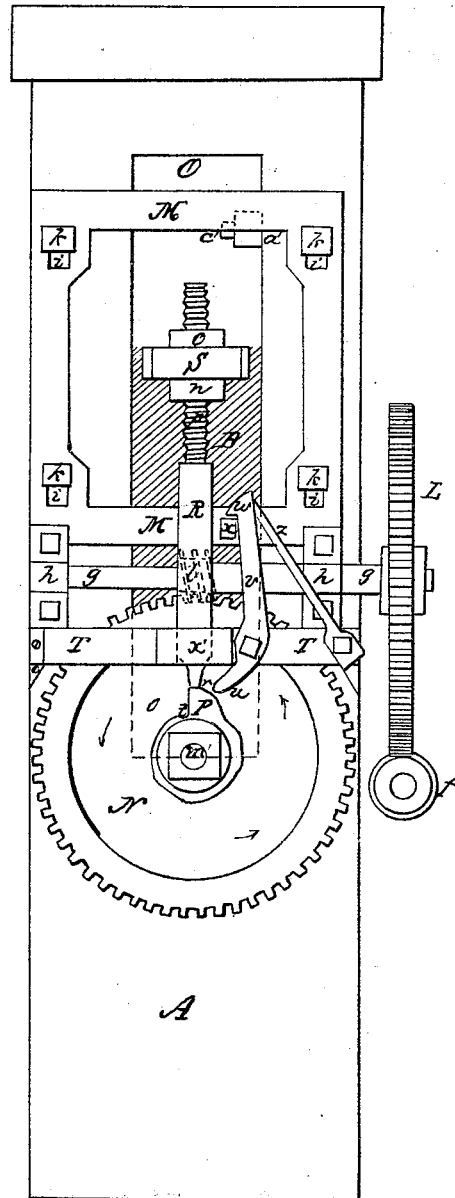


*J. M. Hollingsworth. Sheet 1, 3 Sheets.*

*Paper Mach.*

*N<sup>o</sup> 1,059. Patented Dec. 31, 1838.*

*Fig. 1.*

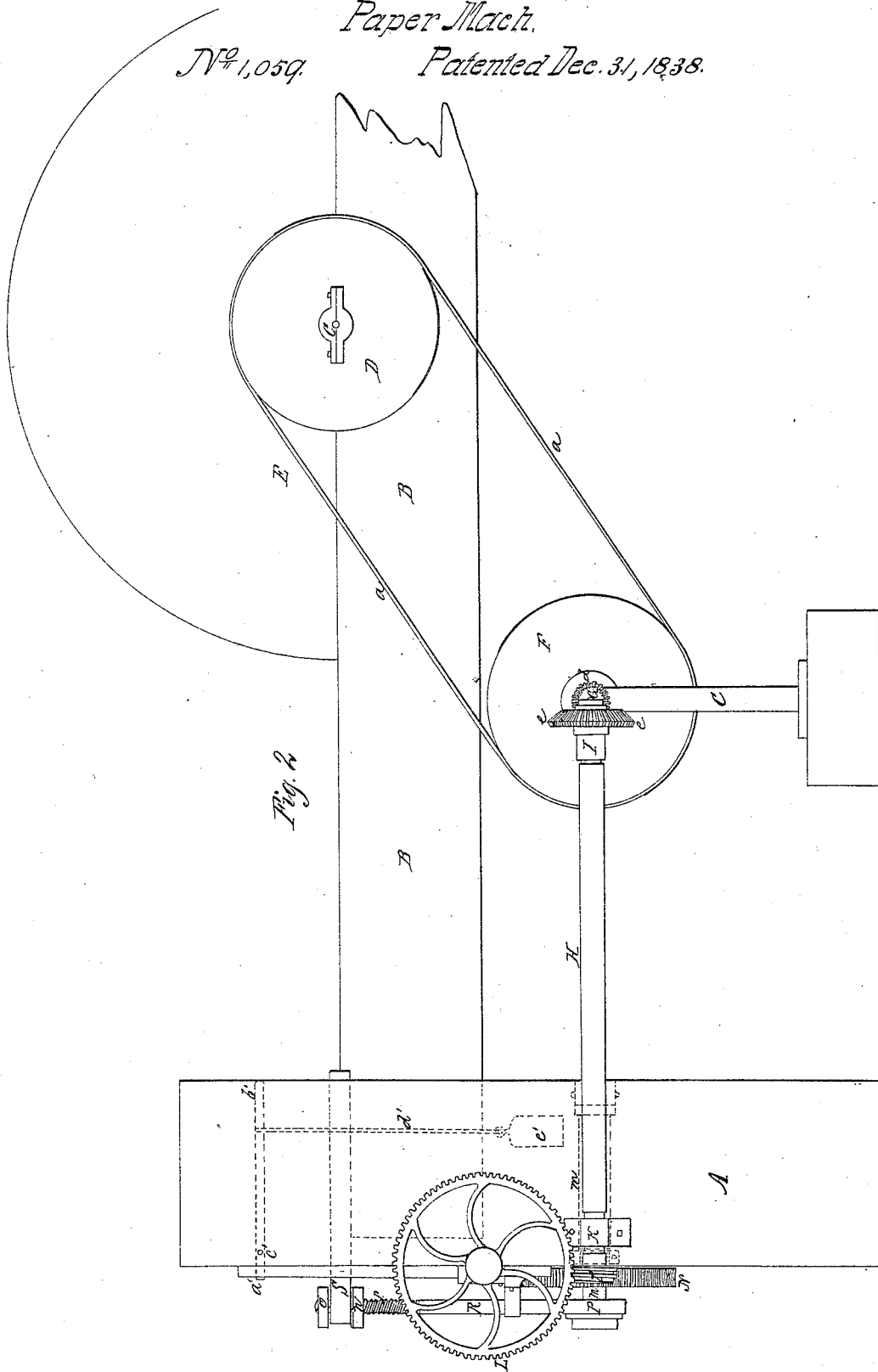


*J.M. Hollingsworth. Sheet 2, 3 Sheets.*

*Paper Mach.*

*N<sup>o</sup> 1,059.*

*Patented Dec. 31, 1838.*



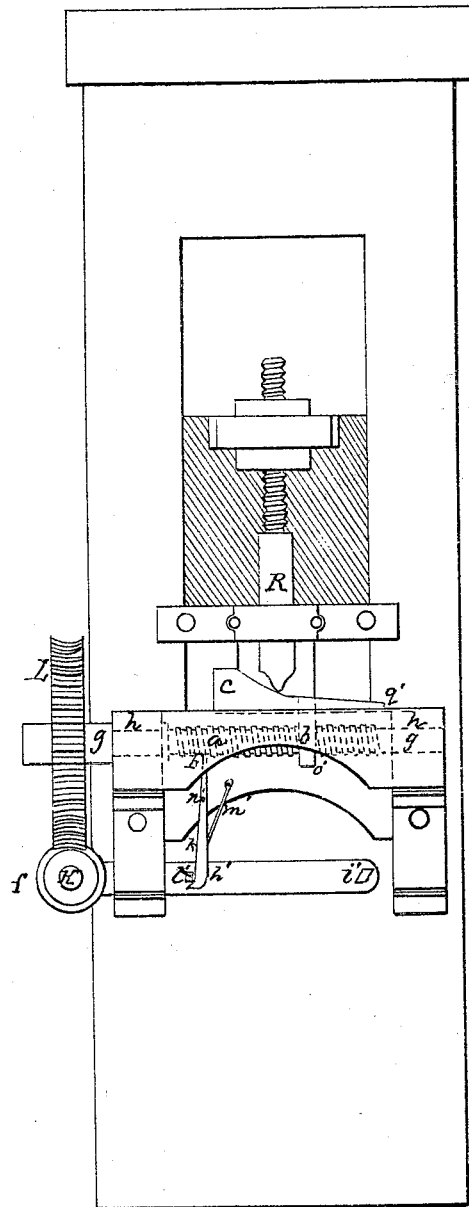
*J.M. Hollingsworth. Sheet 3, 3 Sheets.*

*Paper Mach.*

*N<sup>o</sup> 1,059.*

*Patented Dec. 31, 1838.*

*Fig. 3.*



# UNITED STATES PATENT OFFICE.

JOHN M. HOLLINGSWORTH, OF BRAINTREE, MASSACHUSETTS.

REGULATOR TO BE APPLIED TO ENGINES USED IN THE MANUFACTURE OF PAPER  
FOR CONVERTING RAGS INTO PULP.

Specification of Letters Patent No. 1,059, dated December 31, 1838.

*To all whom it may concern:*

Be it known that I, JOHN M. HOLLINGSWORTH, of Braintree, Norfolk county, State of Massachusetts, have invented new and  
5 useful improvements of machinery to be applied to engines used in the manufacture of paper for the purpose of converting rags into pulp.

The said improvements, the principles thereof and manner in which I have contemplated their application, together with such parts or combinations I claim to be my inventions and hold to be original and new,  
15 I have herein set forth and described, which description, in connection with the accompanying drawings, herein referred to, composes my specification.

In ordinary engines the gudgeons of the shaft of the beating cylinder rest in bearings attached to the upper faces of two beams or "lighters," the end of one of which is capable of being raised or depressed by a screw operating thereon. The object of the above is to regulate the distance, from  
25 time to time between the cutting edges of the knives of the beater and those of the knives of the block. As these regulating screws have heretofore been turned by the hand of the workman or attendant of the engine, the same depending on his judgment and skill, it will be evident that any neglect of duty or want of necessary judgment on his part has been of material disadvantage,  
30 not only to the operation of converting rags to the consistence of pulp, but to the interests of the paper maker.

In order to insure regularity in the action of the beating cylinder and to change the distance between its teeth and those of the block in such quantity and at such  
40 proper intervals of time as may be necessary I have invented the following machinery:

Plates 1 and 2, Figures 1, 2, represent  
45 front and side views of my improvements.

A, A, denotes one of the "lighter" posts of the engine, placed and situated in the usual manner or in any other convenient position.

50 B, B, is the beam or "lighter," on which one of the journals of the shaft of the roll or cylinder rests and is supported in a proper box or bearing. On the end of the shaft C, Fig. 2, of the roll or cylinder E, a  
55 pulley D of any convenient size is affixed

From this pulley a band *a, a*, passes to and around another pulley F, on a small horizontal shaft G supported by a frame-work or standard *c*. On one extremity of the shaft G a small beveled pinion is placed, 60 which operates and turns a beveled wheel *e, e*, on the end of a long horizontal shaft H. The shaft H rests in suitable boxes or bearings I, K, the former of which bearings is attached to the standard *c*, and the latter K to the post A. On the other extremity of the shaft H a small endless screw *f*, Figs. 1, 2, is fixed, which operates and turns around a gear wheel L, Plates 1 and 2. The gear wheel L is attached to the  
70 end of a shaft *g, g*, Plate 1, which rests and turns in suitable boxes or bearings *h, h*, connected to the lower part of a metallic frame M, M, held up to the side of the post A, by screws or bolts *k, k, k, k*, passing through  
75 the elongated slots *i, i, i, i*. Toward the middle of the shaft *g, g*, an endless screw *l*, (represented in Plate 1 by dotted lines) is fixed on said shaft, which plays with the teeth of a gear wheel N, Plates 80 1 and 2. The gear wheel N, is placed near the extremity of a shaft *m*, which revolves in suitable boxes or bearings, attached to the lower side of the rectangular opening  
85 *o, o*, of the post A. A cam P of any suitable shape may be placed on one end of the shaft *m*. A pitman R, rests at its foot on the curved surface of this cam, and is attached at its upper extremity by nuts *n, o*, and screw *p*, to a piece of metal S, connected to the end of the beam or "lighter"  
90 B. The opposite end of the lighter B, turns on a bolt pin or hinge in the usual manner. As the gear wheel N, is revolved in the direction of the arrows, (Plate 1), by the  
95 other machinery the lower end of the pitman R, passes over the curved surface of the cam P, and descends to *t*, the cam being of such shape as to give the pitman, and of course the "lighter" B, such a movement  
100 downward as may be desirable. When the foot of the pitman R, arrives at *t*, the end *r*, of the cam P comes in contact with the end *u*, of a lever or latch *v*, causing, the upper part of *w* of said lever to be borne  
105 away from a pin *x*, of the frame M. A spring *z*, presses the end *w*, of the latch *v*, against the pin *x*. The pitman R, is guided during its motion by passing through a slot  
110 *x'*, formed in the cross bar T, T, Plate 1.

It was before mentioned that the frame M, was attached to the post A, by bolts  $h, h$ , passing through elongated slots  $i, i$ .

$a', b'$ , is a lever turning on a fulcrum  $c'$ , in the upper part of the side of the rectangular opening  $o, o$ , Plates 1 and 2. The end  $a'$  of the short arm of this lever presses against the underside of the upper cross bar of the frame M. On the other end  $b'$ , a weight  $e'$ , is suspended by a rod  $d'$ . As the end  $w$ , of the latch  $v$ , is pressed away from the pin  $x$ , the weight  $e'$ , acting on the lever  $a' b'$  raises the frame M, sufficiently to lift the endless screw  $l$ , and cog wheel L, out of gear with the wheel N, and screw  $f$ , and thus stops the operation of the shaft H, on the "lighter" B, and the rest of the machinery.

I have devised several other modes of regulating the downward motion of the beating cylinder, which possess the advantages of and in some respects may be preferred to that above described.

Instead of the wheel N and cam P, I can cut a screw  $a'$ , Fig. 3, of any requisite thread on the shaft  $g, g$ , between the boxes  $h, h$ , Plate 3, which screw should operate in a female screw  $b'$ , attached to the lower side of a wedge or inclined plane  $c'$ , whose upper surface may be straight or curved. On the upper surface of this elongated cam or wedge the foot of the pitman R, may rest so that when the wedge is drawn toward the gear L, the pitman R, may descend with such a downward motion as may be required. In this plan the shaft H, Figs. 1 and 2, turns and rests near the pinion  $f$ , in a box on the end of a lever  $h'$ , whose fulcrum is at  $i'$ .

$h'$  is a latch or catch the foot of which hooks around a pin  $l'$ , projecting from the lever  $h'$ .  $m'$  is a spring to press said latch against the pin  $l'$ . The latch or catch  $h'$ , moves on a pin  $n'$ .

When the projection  $o'$  of the female screw  $b'$ , comes in contact with the upper

part  $p'$  of the latch  $h'$  (or in other words when the pitman R, has moved over the entire surface of the inclined plane  $c'$  to  $g'$ ), it presses the latch away from the pin  $l'$  which suffers the endless screw and the shaft H, to drop downward, so as to throw the screw  $f$  and the gear wheel L, out of gear and stop the action of the machine.

The inclined plane  $c'$  may have any desirable shape, or any number of different shapes may be made use of to be attached to the female screw  $b'$ , in any convenient manner.

I have also contemplated attaching a gear wheel to the top of the screw usually employed to raise the lighter and by suitable intervening machinery between the same and the cylinder shaft cause the said screw to turn around and lower the end of the lighter such a quantity, from time to time, as may be desirable. But as such a mode of accomplishing the object of my improvements is attended with much complication of machinery and consequent expense and liability of becoming deranged or out of repair, I have preferred those which I have herein particularly set forth and described.

In the above I claim as follows:

Regulating the downward motion of the lighter by means of the cam P (of the shape represented in Plate 1 or otherwise properly formed) and also by means of the inclined plane  $c'$ , Fig. 3, acting on the lighter, or on the extremity of a pitman R, connected to the lighter, or a projection from the same as herein above set forth.

In testimony that the above is a true description of my said invention I have hereto set my hand this sixth day of July, in the year eighteen hundred and thirty eight.

JOHN M. HOLLINGSWORTH. [L. s.]

Witnesses:

R. H. EDDY,  
EZRA LINCOLN, Jr.