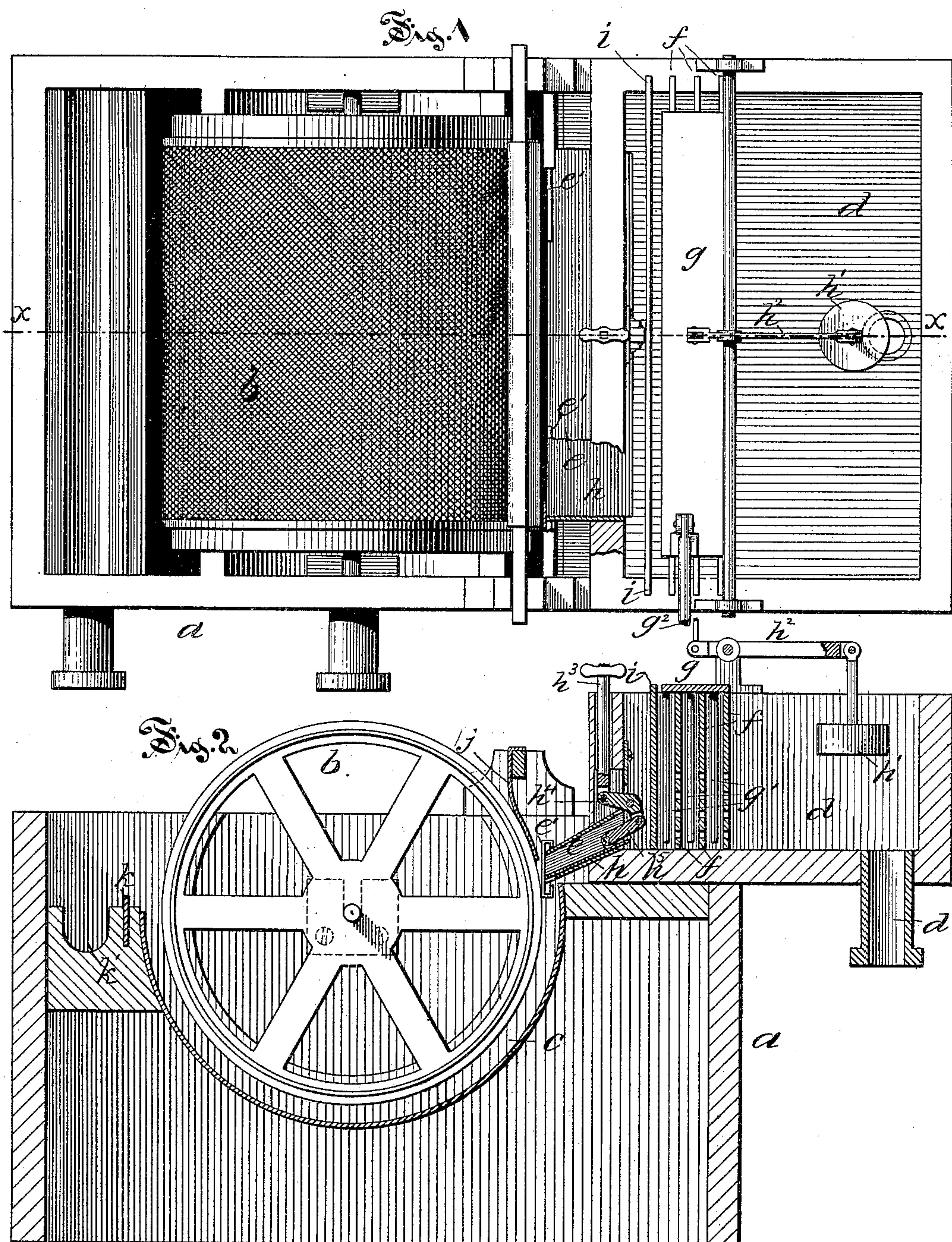


(No Model.)

J. HATCH.  
PAPER MAKING MACHINE.

No. 409,201.

Patented Aug. 20, 1889.



Witnesses:  
Wm. Dyorkman,  
H. R. Williams,

Inventor:  
Jonathan Hatch,  
by Simonds & Burdett,  
attys.



# UNITED STATES PATENT OFFICE.

JONATHAN HATCH, OF SOUTH WINDHAM, CONNECTICUT.

## PAPER-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 409,201, dated August 20, 1889.

Application filed March 12, 1887. Serial No. 230,578. (No model.)

*To all whom it may concern:*

Be it known that I, JONATHAN HATCH, of South Windham, in the county of Windham and State of Connecticut, have invented certain new and useful Improvements in Paper-Making Machines, of which the following is a full, clear, and exact description, whereby any one skilled in the art can make and use the same.

My invention relates more especially to the class of cylinder paper-machines, and such a machine is herein described, and is illustrated in the accompanying drawings, forming a part of this application.

The object of my invention is to provide an improved machine for making paper that will render it possible to produce paper of more uniform texture and density than has before been possible, and one that will enable paper to be formed of increased strength as compared with prior machines; and to this end my invention consists in the combination, in a paper-making machine, of the pulp-box with a spout projecting from the box and terminating close against the wire on the cylinder, and the blanket, the lower edge of which defines the line of application of the pulp to the surface of the cylinder.

It further consists in the several devices making up the machine, including the reservoir with the delivery-spout, the mixer, and the regulating-gate, and in their combination, as more particularly hereinafter described, and pointed out in the claims.

Referring to the drawings, Figure 1 is a top or plan view of a cylinder paper-making machine embodying my improvements. Fig. 2 is a view in vertical central section through the said machine, on plane denoted by line X X of Fig. 1.

In the accompanying drawings, the letter *a* denotes the frame of a paper-making machine as a whole, and *b* the cylindrical mold supported in suitable bearings in the vat *c*. On one side of the cylinder and with its floor above the level of the point of application of the stuff to the face of the cylinder is arranged the stuff-receiving reservoir *d*, into which the liquid stuff from which the paper is to be formed flows from the screen-vat, as through the inlet-pipe *d'*. Within this res-

ervoir *d*, and extending across it on the side adjacent to the flume *e*, through which the stuff flows upon the mold *b*, are arranged a series of partitions *f*, that have a number of openings through them for the passage of the stuff. A mixer *g* is supported above or on these partitions, and it bears rods or arms *g'* that extend down between the partitions, so that when the mixer is moved rapidly back and forth, as by means of the rod *g*<sup>2</sup>, that is connected to a suitable oscillating or reciprocating device, the stuff lying between the partitions will be thoroughly mixed just before it flows out from the reservoir upon the mold. On the front side of the reservoir and lying on the bottom of the spout *e* is a sliding gate *h*, the position of which is controlled by means of a handle fast to the rod *h*<sup>3</sup>, connected to the gate by the bell-crank lever *h*<sup>4</sup> and link *h*<sup>5</sup>. A float *h'* is suspended in the reservoir from one end of the lever *h*<sup>2</sup>, that is pivoted on suitable bearings or supports, and the other end of this lever is connected by means of a rod to a valve or gate that controls the flow of stuff into the reservoir, and when the supply of stuff in the reservoir becomes low the falling of the float causes an increased flow of material into the reservoir, as by opening the valve. When the gate *h* is open, the stuff will flow through the spout onto the mold with a pressure depending upon the height of the mass of liquid stuff in the reservoir. The gate *h* has a sliding play on the bottom of the spout, so that the edge that is adjacent to the cylinder is movable toward or from the latter, so as to contract or widen the outlet from the spout for the liquid stuff to pass onto the wire, and this gate may be used to practically close the outlet and stop the flow, as well as control it. A stop-gate *i* is provided in the reservoir, and it is arranged between the mixer and the flume, and by means of this gate the outflow of stuff can be directly controlled. When this stop-gate *i* is opened and a supply of stuff filled into the reservoir, and the gate *h* is opened, the stuff is pressed out through the flume *e* and forcibly against the mold *b*, to which it adheres.

When the pulp emerges from the spout on the liquid mass in the reservoir, the fiber is fixed and set on the mold by impact and in



its thoroughly mixed condition, the pressure causing the fiber to remain in substantially the same condition and relative position in the mixture as it held when it left the mixer  
5 in the reservoir.

By the use of this peculiar device a much larger quantity of stuff in a denser condition can be formed on the mold, the ordinary suction from within the latter being kept up to  
10 hold the paper on the surface of the mold while the latter is moved through the vat and until the paper is couched in the ordinary manner. In order to hold the blanket *j* against the surface of the mold and thus regulate the  
15 line of application of the stuff to the mold, the regulating-gate *k* is arranged on the opposite side of the vat, so that it may be raised or lowered to fix the point at which the stuff will overflow from the vat into the return-channel  
20 *k'*, from which it can flow or is withdrawn by suitable pipes to be again worked over. The height of the upper edge of the regulating-gate *k* determines the height at which the stuff will stand against the blanket as it flows  
25 from the spout, for the reason that with the regulating-gate low the outflow of stuff on the farther side of the vat is freer than when the gate is high, the latter condition of the gate setting back the liquid by obstructing  
30 its outflow and causing it to rise higher on the inlet side of the vat near the spout and against the blanket, along the under edge of which it strikes the mold-face of the cylinder.

In order to determine the width of the paper as it is formed on the mold, the adjustable gages *e'* are arranged on opposite sides of the flume or spout *e* in such manner that by sliding them toward or from each other the width of the opening or mouth of the spout  
40 can be determined, and these gates have the width of the ordinary deckel.

I am aware that it is not new to apply the

stuff to the mold of a paper-making machine from a reservoir, and in prior devices in which this is done the stuff is moved through the  
45 vat at the same speed as the surface of the cylinder moves.

I claim as my invention—

1. In a paper-making machine, the combination of the paper-mold, the reservoir adapted to receive and hold a quantity of stuff, the outlet consisting of a spout that projects from the reservoir and terminates near the wire of the paper-mold, the blanket that defines the line of application of the pulp, and the mixer  
55 located in the reservoir, all substantially as described.

2. In a paper-making machine, the combination of the vat in which the cylinder is located, the paper-mold, the reservoir adapted to receive and hold a certain quantity of stuff and having an outlet controlled by a gate located at the spout, the said gate and the regulating-gate arranged at the opposite side of the vat in which the cylinder turns, all substantially as described.  
65

3. In a paper-making machine, the reservoir for holding the stuff with crosswise perforated partitions, and the mixer having arms extending between the partitions, all substantially as described.  
70

4. In combination with the cylinder, the reservoir, the mixer arranged therein, the sliding gate, the spout having the gages that determine the width of its outlet, and the regulating-gate, and the blanket that rests against the receiving side of the cylinder near the outlet of the spout from the reservoir, all substantially as described.  
75

JONATHAN HATCH.

Witnesses:

CHAS. P. HATCH,  
CHAS. L. BURDETT.