

(No Model.)

N. BRYANT.
FEED REGULATOR FOR PAPER MACHINES.

No. 495,013.

Patented Apr. 11, 1893.

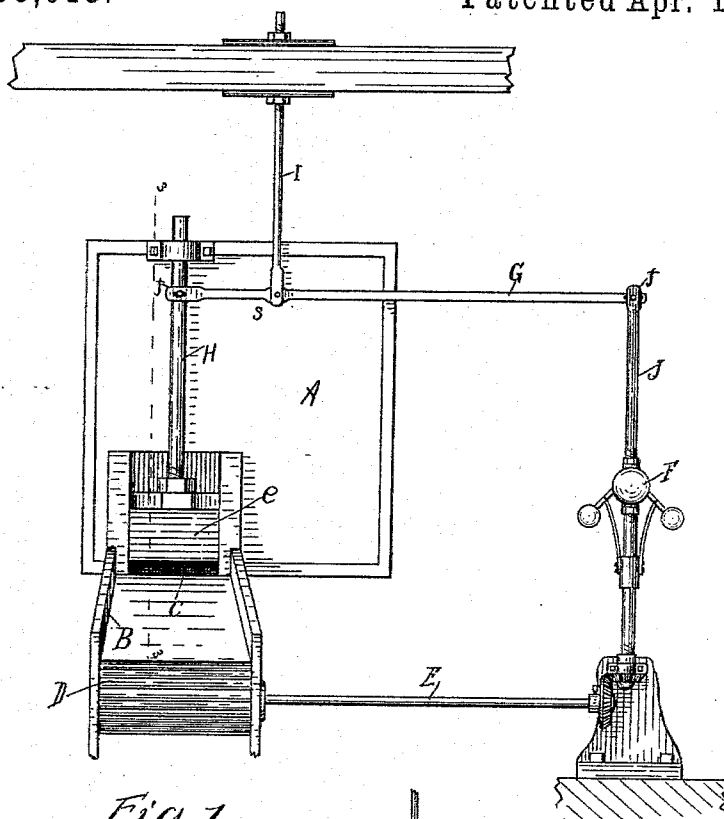


Fig. 1.

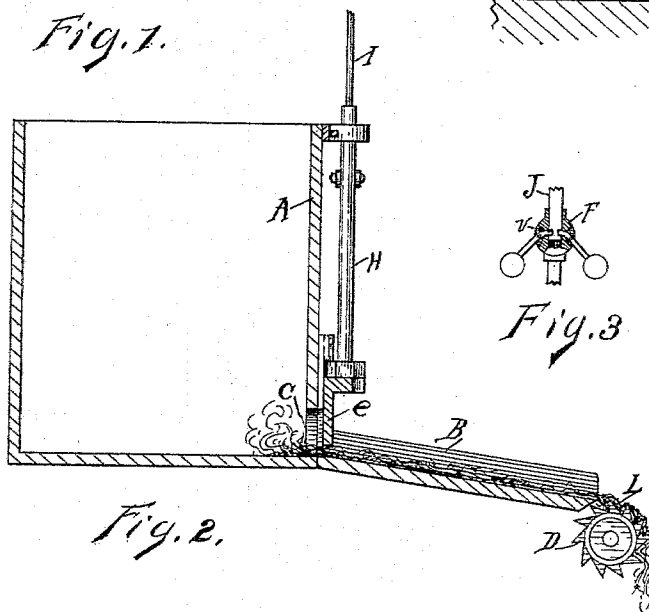


Fig. 3

Witnesses
Clara A. Williams,
 Newton G. Leslie.

Noah Bryant Inventor
By his Attorney Lucius C West

UNITED STATES PATENT OFFICE.

NOAH BRYANT, OF OTSEGO, MICHIGAN, ASSIGNOR OF ONE-HALF TO JACOB HOEK, OF SAME PLACE, AND GEORGE E. BARDEEN, OF KALAMAZOO, MICHIGAN.

FEED-REGULATOR FOR PAPER-MACHINES.

SPECIFICATION forming part of Letters Patent No. 495,013, dated April 11, 1893.

Application filed April 11, 1892. Serial No. 428,603. (No model.)

To all whom it may concern:

Be it known that I, NOAH BRYANT, a citizen of the United States, residing at Otsego, county of Allegan, State of Michigan, have invented a new and useful Feed-Regulator for Paper-Machines, of which the following is a specification.

This invention has for its object to produce an automatic "stuff" feed regulator for paper machines, in which the condition of the "stuff," in connection with a governor, automatically regulates the feed of the "stuff" to the paper machine, so as to produce paper of a uniform weight and thickness; all as more particularly described below. In order to accomplish this result, when the "stuff" is too thin, more of it in volume must be fed to the paper machine, and consequently when too thick, less of the "stuff" in volume must be fed; from the fact that the "stuff" is composed of pulp and water and water will not make paper.

The invention in general consists of a receiving tank, into which the "stuff" is pumped or delivered, said tank being provided with a feed-gate, a revoluble wheel, which is revolved by the stuff flowing on to it from the feed-gate, and a governor operatively connected with said wheel and feed-gate, whereby the speed at which the wheel revolves controls the distance the gate is open.

In the drawings forming a part of this specification, Figure 1 is a front elevation, looking from a point at the right of Fig. 2. Fig. 2 is a section on line 3—3 in Fig. 1, looking from a point at the left; and Fig. 3 shows details from Fig. 1, hereinafter described.

Referring to the lettered parts of the drawings, A represents the receiving tank, into which the "stuff" is delivered from the source of its production, usually by a pump employed for the purpose. The means for producing the "stuff" and the pump for delivering it into the receiving tank, A, are not here shown, since they form no part of this invention, and since it matters not how the "stuff" is delivered into said tank.

The receiving tank, A, is provided with a

delivery opening, *c*, which opening is opened and closed by the sliding gate *e*. At B is an inclined spout, leading outward from the gate *e*. At the free end of this spout is a revoluble wheel, D, having buckets to receive the flowing "stuff," L, Fig. 2, which "stuff" propels the wheel, on the principle of a water wheel. To the shaft, E, of the wheel, D, is gear-connected a ball governor, F, as in Fig. 1. The gate is provided with a reciprocating rod, H, having sliding bearings in the side of the receiving tank A. A reciprocating rod, J, is connected at one end to the governor, the same having a swiveled connection with the ends of the governor arms at *v*, Fig. 3. Connection is made between the rod J, of the governor, and the rod H, of the gate, by means of a lever, G, pivotally attached at *t t* to said rods, said lever being fulcrumed between its two ends at *s*, to the lower end of the pendent support, I.

So far as the particular means here shown for operatively connecting the wheel D and the gate *e* with the governor, F, and also the construction of the governor, are concerned; any other suitable construction and arrangement may be employed which will produce the automatic regulation of the gate, as set forth in the description of the operation. It will, of course, be understood that the "stuff," L, after leaving the wheel, D, is conveyed to the paper machine, said machine and the means for conveying the "stuff" not being here shown.

In the operation, supposing the receiving tank, A, to be filled with "stuff" of a given thickness or density, and the gate to be open sufficiently far to allow such a volume of the "stuff" to flow on to the wheel D, as will make paper of a given heft or thickness. So long as this state of affairs exists the paper is uniform and no automatic regulation of the feed is needed, but the "stuff" being delivered into the receiving tank is not always of uniform density, and when it is too thin, that is, contains too much water, it will flow faster on to the wheel, causing said wheel to revolve faster, consequently running the governor

faster, causing the centrifugal force to raise the governor balls, which action would open the gate *e* farther, allowing a greater volume of the "stuff" to flow on to the wheel; thus
5 supplying to the rollers the required amount of pulp, which the thin "stuff" did not contain, to preserve the uniform thickness or weight of the paper. On the other hand, when the "stuff" in the receiving tank is too
10 thick, it will flow through the gate slower, causing the wheel *D* to run slower, the governor balls to fall and the gate to partially close; thus permitting a less volume of the thick "stuff" to be fed through the gate; thus
15 always automatically controlling the volume of "stuff" fed through the gate in accordance with its degree of density. This will be more readily understood by taking into consideration the fact that the water merely forms an
20 element in the "stuff" to make it in a liquid form, so that it will flow, and forms no element of the manufactured paper.

While I have shown an inclined spout, *B*, leading from the delivery opening of the tank,

and which I prefer to use, it will of course be
25 seen that said spout might be dispensed with and the wheel located beneath said opening.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

30 An automatic "stuff" feed regulator, comprising a "stuff" receiving tank having a delivery opening and an adjustable gate to said opening, a revoluble wheel adapted to be run by the "stuff" flowing from said tank, a governor, and means for connecting said governor
35 with the wheel and gate; whereby said gate will rise when the flowing "stuff" is too thin and will lower when it is too thick; substantially as set forth.

40 In testimony to the foregoing I have hereunto subscribed my name in the presence of two witnesses.

NOAH BRYANT.

Witnesses:

H. H. MARTINDALE,
W. C. EDSSELL.