(No Model.) 2 Sheets—Sheet 1.

C. POTTER.

STOCK REGULATOR FOR PAPER MACHINES.

No. 337,080. Patented Mar. 2, 1886.

Fig. 1

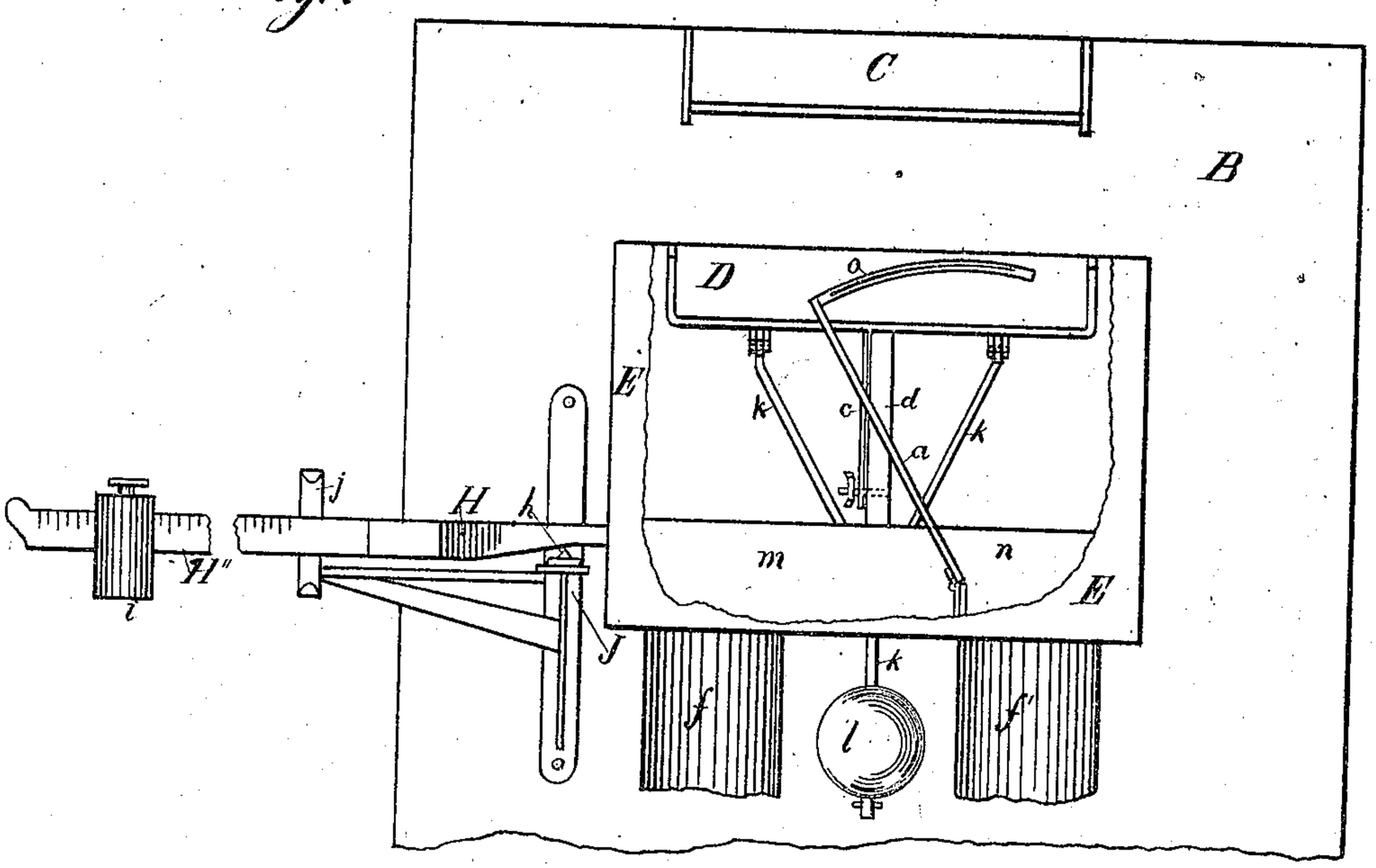
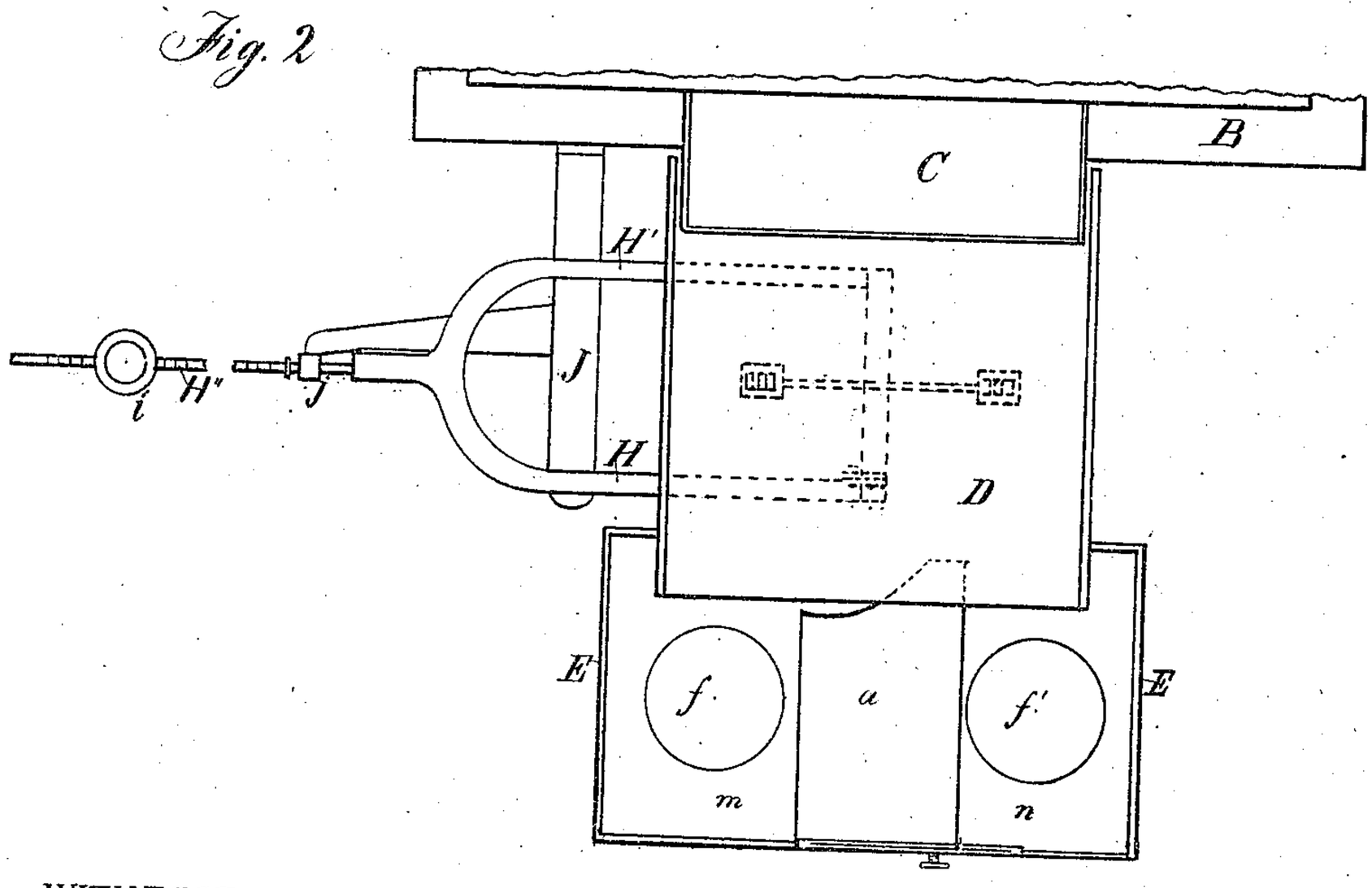


Fig. 2



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3

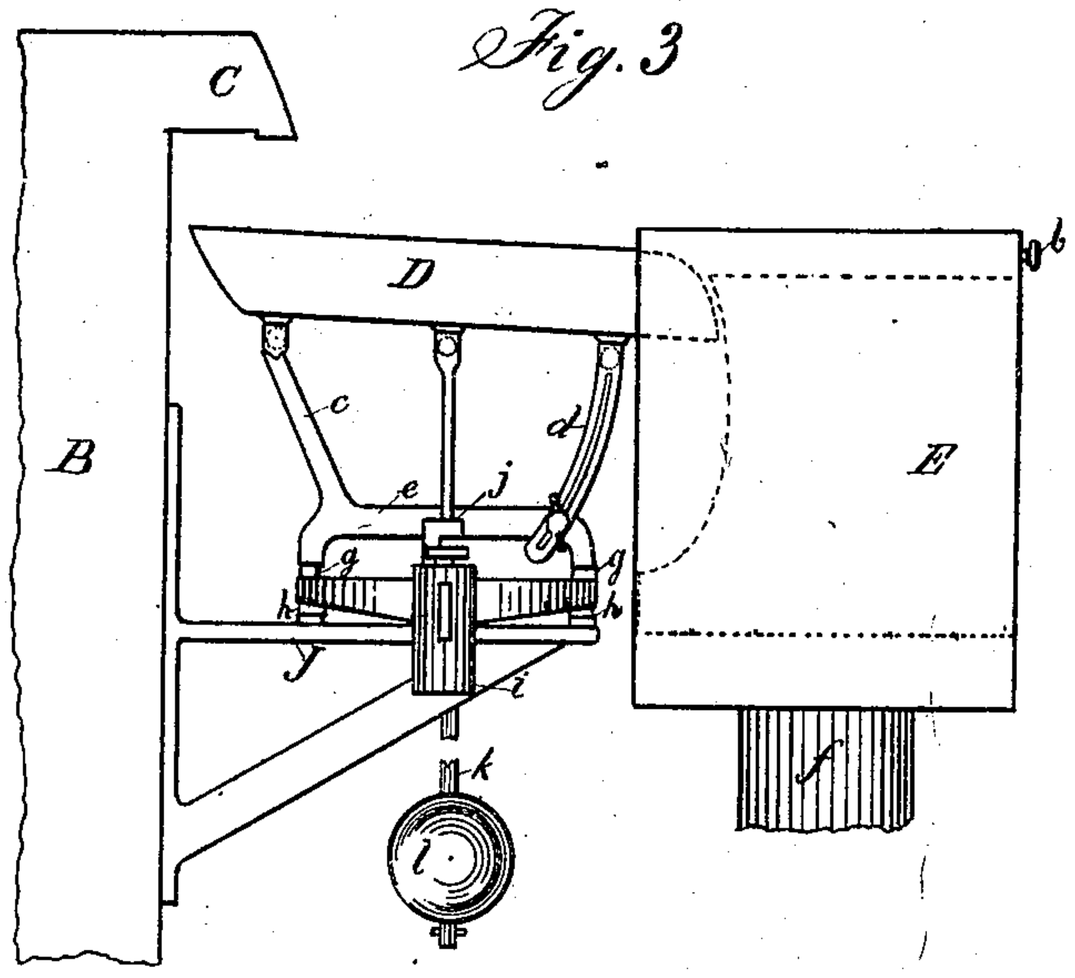
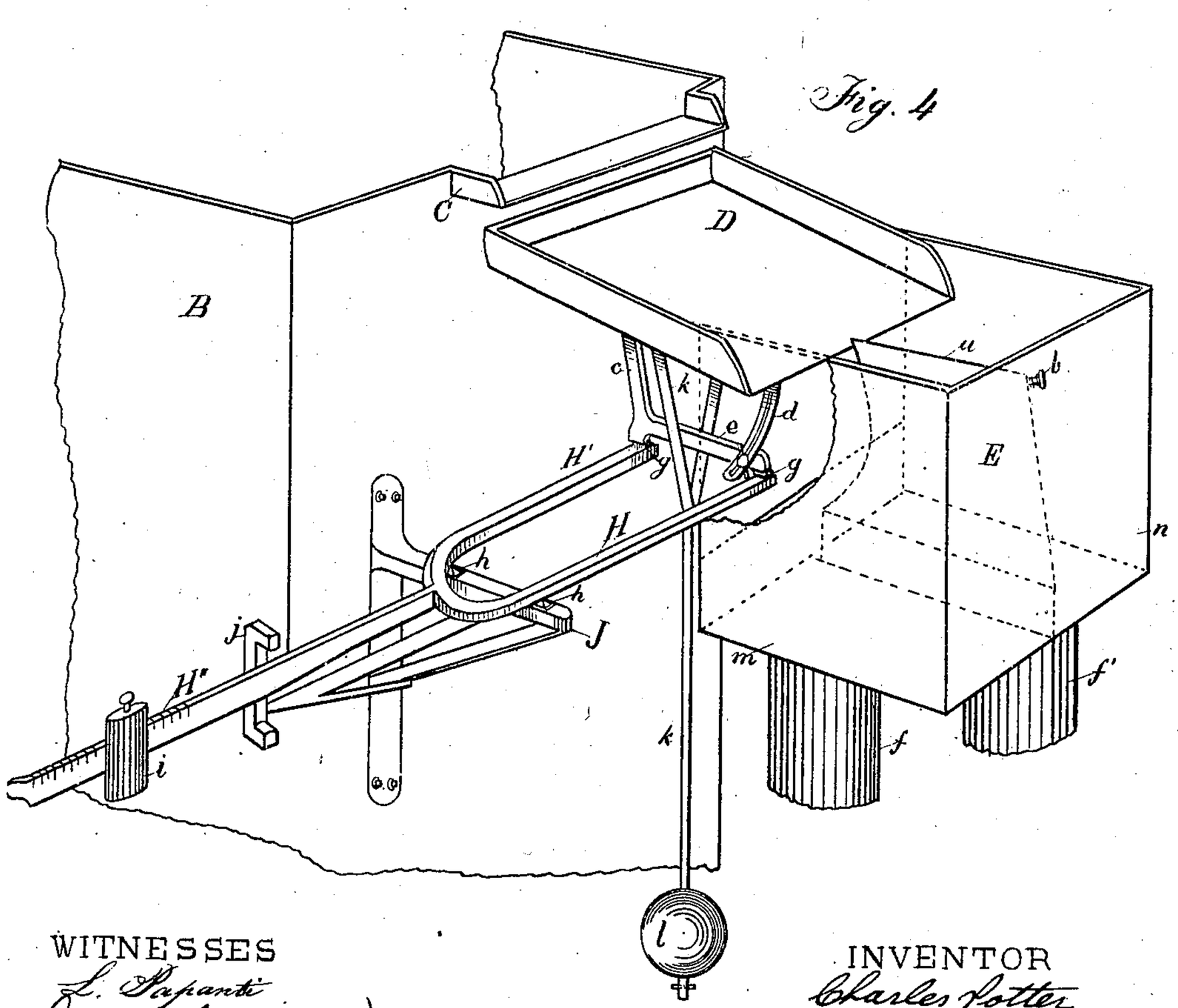


Fig. 4



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STOCK-REGULATOR FOR PAPER-MACHINES.

SPECIFICATION forming part of Letters Patent No. 337,080, dated March 2, 1886.

Application filed December 12, 1884. Serial No. 150,158. (No model.)

To all whom it may concern:

Be it known that I, CHARLES POTTER, a citizen of the United States, residing in Holyoke, Hampden county, Massachusetts, have invented new and useful Improvements in Stock-Regulators for Paper-Machines, of which the following is a specification, reference being had to the accompanying drawings.

The invention relates to machinery for the manufacture of paper from pulp; and the object of my invention is to accurately gage the flow of stuff to the paper-machine in order to secure uniformity in the thickness and weight of the paper.

Heretofore a movable gate has been used to regulate the flow, and the paper weighed at intervals to determine the adjustment of the gate. The paper is, however, liable to vary between these adjustments on account of the constant variation in the density of the pulp. An apparatus has also been devised adapted to cause the automatic adjustment of the gate by the variations in the weight of the pulp as it is fed to the machine by sustaining the feed-box upon a scale in such manner that the box rises and falls according to the varying weight of the stock, and the outlet is opened and closed by the variations in the position of the feed-box. This construction is objectionable, as the gate as used in this device closes the outlet in such manner that the free operation of the scale is prevented, and the tendency is with some stock to create an intermittent flow rather than the uniform flow to be desired. A flexible connection has also been made between the supply and feed box. This is objectionable, as the flexible material will not at all times retain the same degree of flexibility, and consequently constant adjustment of the scale is required to compensate for these variations. In short, it has not been found possible heretofore to obtain an accurate, delicate, and automatic adjustment or variable feed, which will prevent variations in the weight of the paper. To this end therefore is the object of my invention.

In the accompanying drawings, in which similar letters of reference indicate like parts, Figure 1 is a side elevation of my device. Fig. 2 is a plan view. Fig. 3 is a front elevation with a portion of the box E broken away, and Fig. 4 is a perspective.

The construction and method of operation will be readily understood on reference to the drawings. From a stock-chest, B, the stock flows through a spout, C, to the chute or pan D, and from the pan D to the box E. The box E is divided into two compartments by a movable partition, *a*, adapted to swing from side to side, and to be locked in position by a set-screw, *b*, which passes through the box E into a nut which slides in a slotted segment, *o*, attached to the top of the partition *a*. This partition separates the stock as it flows from the pan D, one portion flowing to the compartment at the right and one to the left of this partition or gate. Each compartment is provided with a conduct-pipe, *f* and *f'*. The pipe *f* leads to the machine, and the pipe *f'* leads back to the stock-chest. The pan D is supported by the arms or supports *c d*, to which it is pivotally connected, and the arm *d* is adapted to be adjusted, as shown, thus allowing of the changing of the incline of the pan D. These arms are secured to the cross-piece *e*, and this cross-piece is supported upon knife-edges *g* upon the scale-arms H, which in turn are supported upon knife-edges *h* upon a support, J. A graduated scale or weight-arm, H, projects, as shown, and is provided with a weight, *i*, adapted to be moved upon the arm. A stop, *j*, prevents the arm H from passing a given limit. The weighted arm or pendulum *k* is pivotally attached to the lower side of the pan D. This pivotal connection is shown in Figs. 1 and 3. This connection allows the pan to be adjusted to the desired incline, while the weight *l* keeps the sides in the same plane—*i. e.*, a line on the bottom of the pan D at right angles to a line drawn through the center of the pan from the closed to the open end will be maintained in a horizontal position without regard to the movement of the scale or supporting beams.

The edge of the separating-partition forms for the pan two outlets, the stock flowing through one outlet entering the compartment at the right of the separating-partition, and the stock from the other outlet entering the compartment at the left. If, now, the edge of

the partition *a* were perpendicular, then the vertical movement of the pan would not affect the amount of the flow of pulp to the two compartments, as the size of each of the outlets of the pan would be the same regardless of its elevation; but with this partition standing at an angle it will be seen that the lowering of the pan exposes a greater portion of its outlet to the compartment *m* and a lesser portion to the compartment *n*. Thus the variation in the elevation of the pan will vary the size of its two outlets, that which is taken from one being given to the other, and the stock flowing from the pan will be conducted to the two compartments whose line of separation is formed by the partition *a*, the proportion of stock entering these compartments being governed by the elevation of the pan D. If, now, the paper-stock flows from the stock-chest B to the pan D, the pan being adjusted to the desired incline to give the requisite rapidity of flow, and the weight upon the graduated arm H being properly placed to balance and maintain the scale-beam in an approximately horizontal position, when the desired weight of stock is flowing through the pan, and the partition or gate *a* being set at an incline, it will be seen that so long as the weight of stock flowing through the pan D is the same, the pan will remain in the same position, and that the division of the stock by the partition *a* will not vary; but that if the weight of stock be increased it will cause the pan to descend, thus increasing the flow of stock to the compartment *m*, and lessening the flow of stock to the compartment *n*.

As before stated, the stock from the compartment *n* is conducted to the machine, while the remainder, or that which flows to the compartment *m* is conducted back to the stock-chest. By this arrangement variations in the weight of the stock may be readily detected and the weight of stock which forms the paper be automatically controlled. A slotted piece, *o*, is connected with the partition or gate *a*, and the set-screw *b* engages with it. The gate may thus be readily adjusted to any incline and firmly held in place. The knife-edges are turned upward to prevent the clogging which might occur if they were turned downward.

It will readily be seen that very many modifications may be made without departing from my invention, and I do not confine myself to the exact construction shown.

Having therefore described my invention, what I claim is—

1. A pan or box, D, and box E, having partition *a*, in combination with the scale and stock-chest, substantially as shown.

2. The combination, with the feed-box of a paper-machine, of an indicatory balance and dividing-gate, *a*, whereby the flow of stock to the machine is automatically controlled, substantially as shown.

3. In a paper-machine, a chute or box, D, adapted to be moved by a variation in the weight of the stock, and two receiving-compartments separated by an inclined gate, whereby the amount of stock flowing to the machine is varied by a change in position of box D, substantially as shown.

4. In combination with the feed mechanism of a paper-machine, a chute, D, adapted to be changed in position by variations in the weight of the stock flowing through it, and a receiving box or compartment having a receiving-opening of tapering form, whereby the flow of material to the receiving-box is varied by a change in the position of the chute D without changing the amount or rapidity of the flow of pulp from the chest, substantially as shown.

5. The combination, in a paper-machine, of a chute, D, adapted to be varied in its incline, and a supporting-balance and a box, E, with gate *a*, substantially as shown.

6. In a paper-making machine, a conducting-chute, D, having a weight suspended from it, whereby the chute is maintained in the desired position, substantially as shown.

7. The combination of chute D, supporting arms *c d*, weighted pendulum *k*, balance-lever H, box E, and gate *a*, substantially as and for the purposes shown.

CHARLES POTTER.

Witnesses:
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