

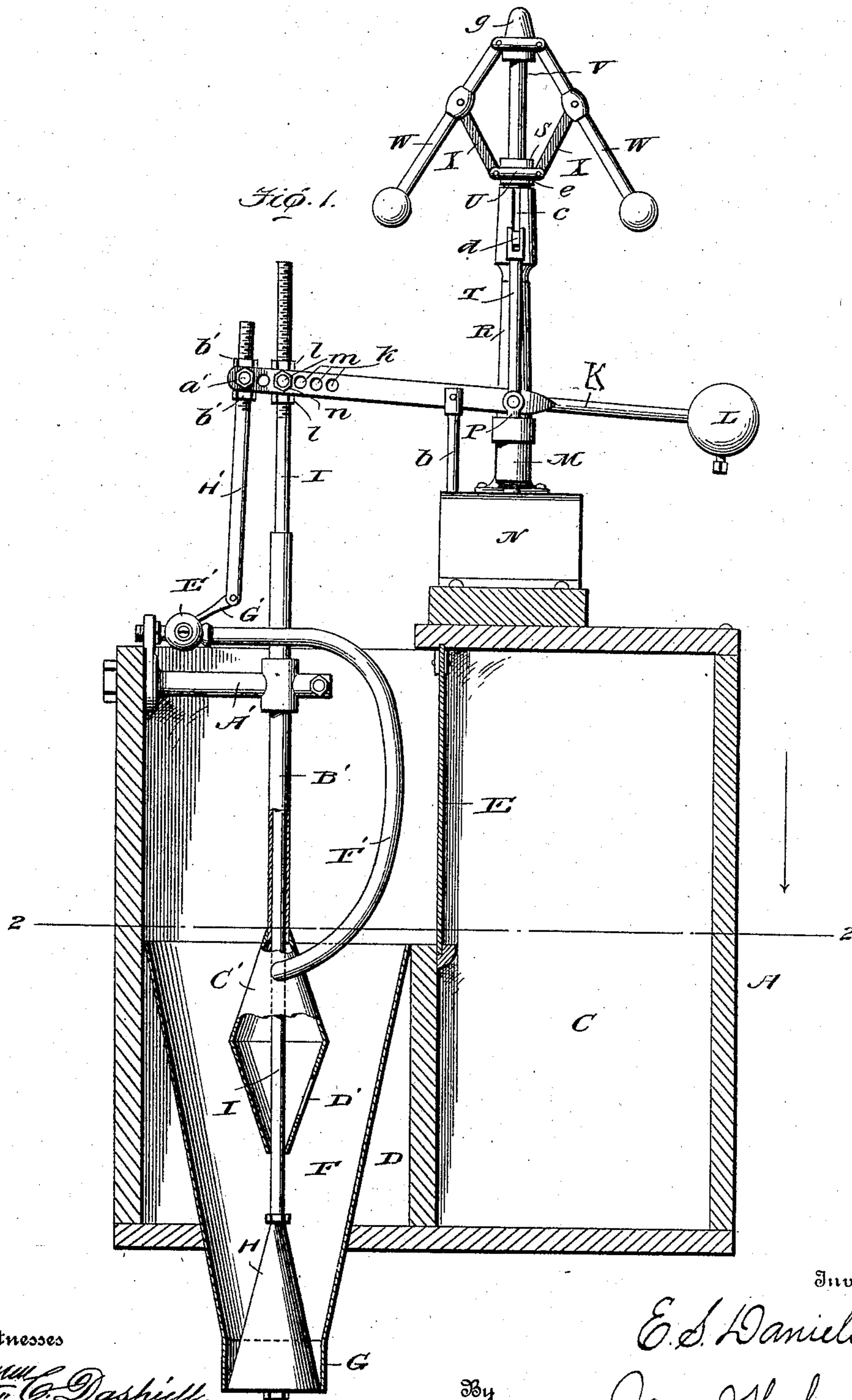
No. 806,115.

PATENTED DEC. 5, 1905.

E. S. DANIELS.
STUFF FEEDER.

APPLICATION FILED JULY 14, 1905.

2 SHEETS—SHEET 1.



Witnesses

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J. J. Sheehy Jr.

By

Inventor

E. S. Daniels.

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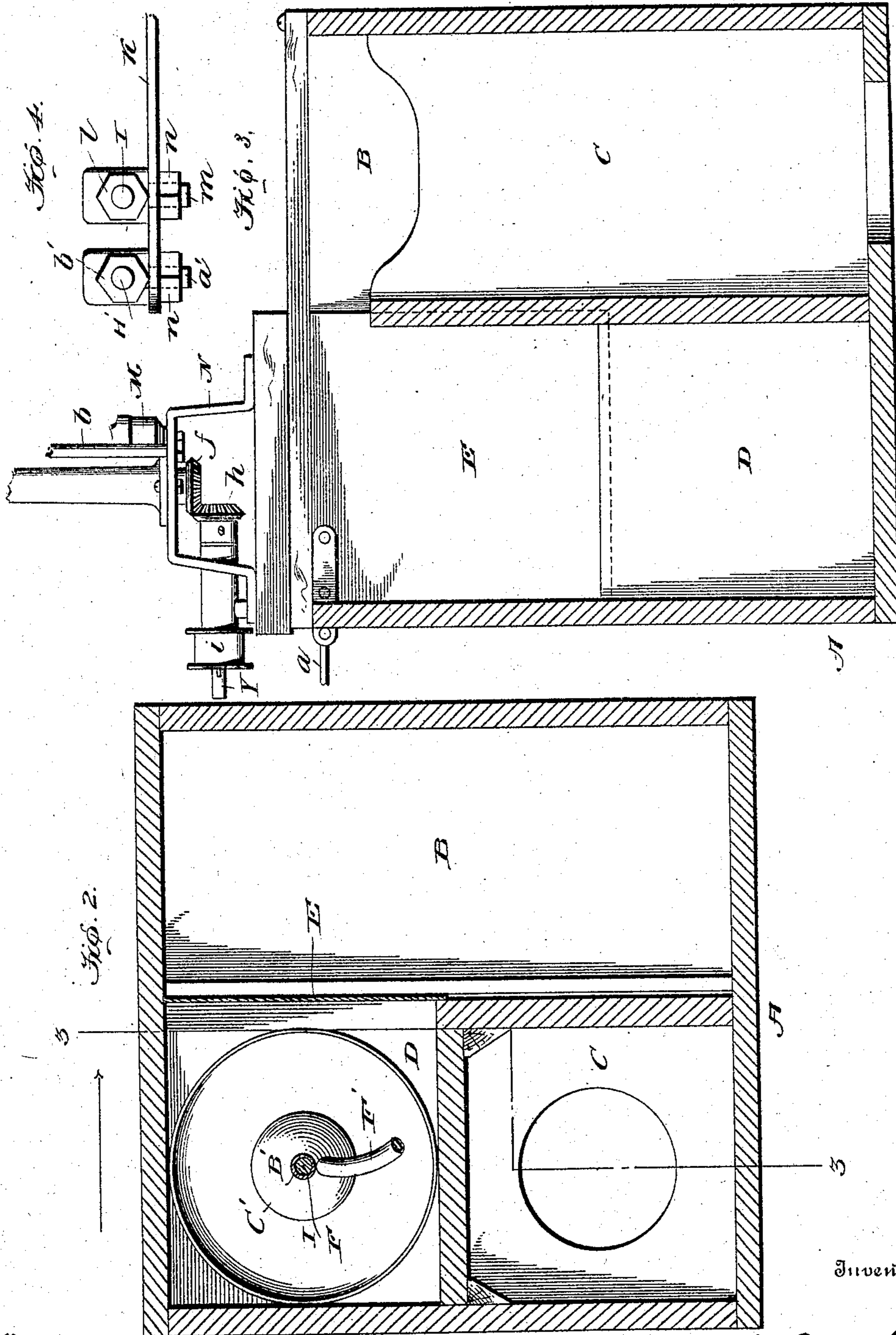
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UNITED STATES PATENT OFFICE.

ELWIN S. DANIELS, OF ALPENA, MICHIGAN.

STUFF-FEEDER.

No. 806,115.

Specification of Letters Patent.

Patented Dec. 5, 1905.

Application filed July 14, 1905. Serial No. 269,634.

To all whom it may concern:

Be it known that I, ELWIN S. DANIELS, a citizen of the United States, residing at Alpena, in the county of Alpena and State of Michigan, have invented new and useful Improvements in Stuff-Feeders, of which the following is a specification.

My invention pertains to pulp and paper making, and more particularly to stuff-feeders for paper-pulp engines and paper-making machines; and it contemplates the provision of efficient means controlled by the speed of the machine for regulating the consistency and feed of the stuff, so as to assure the same being at all times commensurate with the speed of the machine with a view of making the product uniform.

With the foregoing in mind the invention will be fully understood from the following description and claims, when taken in connection with the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical section taken through my feeder in a plane at one side of the governor and the parts connected therewith and illustrating the funnel as partly broken away. Fig. 2 is a horizontal section taken in the plane indicated by the line 2 2 of Fig. 1 looking downwardly. Fig. 3 is a vertical section taken at right angles to Fig. 1 and in the plane indicated by the line 3 3 of Fig. 2. Fig. 4 is a detail enlarged view illustrative of the adjustable manner in which the stem of the stuff-valve and the rod for operating the water-valve are connected with the lever of the governor.

Similar letters designate corresponding parts in all of the views of the drawings, referring to which—

A is a stuff-box. This stuff-box is provided with a compartment B, a corner-compartment C, which extends from its bottom to a point adjacent to its top, and a comparatively shallow corner-compartment D, arranged alongside of the first-mentioned corner-compartment. Intermediate of the compartment B and the compartments C and D is arranged a slidable cut-off E, which is preferably a metallic plate disposed vertically, as shown, and is provided with a handle *a*, extending through one of the side walls of the box A, whereby it may be conveniently adjusted by an attendant without the necessity of said attendant reaching into the box.

F is a funnel or funnel-shaped hopper arranged in the compartment D of box A with its upper end flush with the upper edge of the wall between said compartment D and the compartment B and having its lower portion depending below the bottom wall of the compartment D and terminating in a circular portion G of even diameter throughout its height.

H is a vertically-movable cone-shaped valve for controlling the lower portion or discharge G of the funnel-shaped hopper. I is the stem of said valve; K, a vertically-swinging lever fulcrumed on a fixed support *b* and having one of its arms connected with the valve-stem I and its other arm weighted, as indicated by L; M, a dash-pot mounted on a fixed support N and receiving a piston P, connected to the weighted arm of the lever K, so as to cushion the downward movement of said weighted arm; R, a sleeve fixed to and rising from the support N and having a bifurcation *c* in its upper end; S, a sleeve movable vertically in the upper portion of the fixed sleeve R and having a cross-bar *d* movable vertically in the bifurcation of said fixed sleeve and also having a circumferential groove *e* in its upper portion; T, a rod connecting the cross-bar of the vertically-movable sleeve S and the weighted arm of the lever K; U, a head mounted to rotate in the circumferential groove *e* of the sleeve S; V, a shaft extending through the sleeves S and R and having a miter-gear *f* on its lower portion below the top of the support N and also having a head *g* at its upper end; W, W, weighted arms hinged to the head *g*, so as to swing vertically under the influence of centrifugal action; X X, links connecting the rotary head U on the sleeve S with the said arms W, and Y is a shaft bearing in the support N and having a miter-gear *h* intermeshed with the before-mentioned miter-gear *f* and also having a band-pulley *i* designed to be connected with the paper-pulp engine, the paper-making machine, or the engine from which the said paper-pulp engine and paper-making machine derive motion. By virtue of this connection and the construction described in the foregoing it will be observed that when the apparatus is in operation the arms W, which constitute a centrifugal governor, will be raised by an increase of speed of the shafts Y and V and will fall of themselves when the speed of the said

shafts diminishes. When the said arms are raised as stated, the head U, the sleeve S, and the weighted arm of the lever K will be raised with the result that the other arm of said lever K will be depressed, as will also the cone-shaped stuff-valve H, so as to permit the stuff to pass through the discharge G to the machine at a speed and in a volume commensurate with the speed of the machine. In the event of the speed diminishing from any cause whatsoever the arms W will fall so as to permit of downward movement of the weighted arm of lever K and a consequent upward movement of the stuff-valve H to diminish the speed and volume of the stuff fed to the machine, and it will further be apparent that intermediate the full opening and the entire closing of the stuff-valve H the governor and the parts connected therewith will nicely regulate said valve, so as to vary the feed of the stuff in the proportion to the variations in speed of the machine. The weight L on the lever K counterbalances the load of stuff in the funnel or funnel-shaped hopper F, so as to enable the governor to work freely and quickly, while the funnel shape of the hopper and the cone shape of the stuff-valve regulate the passage of the stuff in proportion to its consistency—i. e., if the stuff is thick the said peculiar-shaped hopper and valve will retard its passage, while if it is thin said hopper and valve will permit of its passing freely and in this way will contribute materially to the uniformity of the sheet of paper being made. The stuff-valve H is vertically adjustable relative to the lever K by means presently described, and it will be apparent that when the said valve is lowered the weight of the sheet of paper being made will be increased, while when the valve is raised the sheet of paper will be rendered lighter in weight.

In order to permit of the valve H being conveniently adjusted relative to the lever K, I prefer to thread the upper end of the valve-stem I, to provide the lever with a plurality of apertures *k*, and to effect connection of the valve-stem to the lever through the medium of nuts *l*, mounted on the valve-stem, a bolt *m*, arranged on the valve-stem between the nuts and having a threaded shank extending through one of the apertures of the lever K, and a nut *n*, mounted on said threaded shank of the bolt *m*. When it is desired to raise or lower the stuff-valve H relative to the lever K, it is simply necessary to loosen the nuts *l*, move the valve-stem I to the position desired through the bolt *m*, and then tighten the said nuts *l*.

A' is a bracket fixed to one of the side walls of the stuff-box and having a clamp at its inner end. B' is a vertically-disposed sleeve held in the said clamp of the bracket and ter-

minating at its lower end in a hollow body C', having an aperture D'; E', a valve supported, by preference, on the bracket A' and adapted to be connected with a street-main or other source of water-supply; F', a conduit, preferably a flexible tube, connecting the valve E and the hollow body C'; G', an arm on the stem of the valve E', and H' is a rod pivotally connected to the arm G' and also connected to the lever K, preferably through the medium of a bolt *a'*, having a threaded stem secured by a nut in one of the apertures of the lever, and nuts *b'*, mounted upon the threaded portion of the rod H', which extends through the bolt *a'* and arranged above and below the bolt *a'*. In virtue of this construction it will be observed that as the speed of the machine increases and the arms W are raised the valve E' will be opened to increase the supply of water to the stuff through the conduit F', the hollow body C', and the aperture D' in said hollow body, while when the speed falls and the arms W move downwardly the valve E' will be closed in proportion to the diminution of speed, so as to make the consistency of the stuff in the funnel-shaped hopper F commensurate at all times with the speed of the machine. The valve E' may be positioned relative to the lever K to suit different conditions by simply changing the position of the nuts *b'* on the rod H'.

In the practical operation of the feeder the shaft Y is rotated, as before described, and stuff is fed from a main chest or other source of supply to the compartment C of the stuff-box A through the bottom of said compartment. From the compartment C the stuff passes over the upper edge of one wall thereof into the compartment B, and from this latter compartment the stuff passes, subject to the control of the cut-off E, into the funnel-shaped hopper F, where water is added to the stuff in the manner and for the purpose before set forth. From the hopper F the stuff passes, subject to the control of the valve H, to the proper machine.

It will be gathered from the foregoing that both the consistency and the feed of the stuff are varied in proportion to the speed of the machine, with the result that the product will be uniform, notwithstanding slowing down of the engine or slipping of the drive-belt to the shaft Y; also, that all of the working parts of the feeder are susceptible of ready adjustment to meet different conditions and that the feeder is reliable in operation and embodies no parts that are likely to get out of order after a short period of use. It will further be gathered from the foregoing that the feeder is compact and requires but very little power for its proper operation.

Having described my invention, what I

claim, and desire to secure by Letters Patent, is—

1. A stuff-feeder comprising a hopper having a vertical discharge at its lower end, a vertically - movable, downwardly - opening valve tapered toward its upper end and arranged in and adapted to control said discharge of the hopper and having an upwardly-extending stem, a lever having one of its arms weighted and its other arm connected with the stem of the said valve, and a mechanical governor connected with the weighted arm of the lever and adapted to be driven from a paper-pulp engine, a paper-making machine or an engine from which said paper-pulp engine and paper-making machine derive motion.

2. A stuff-feeder comprising a mechanical governor adapted to be driven from a paper-pulp engine, a paper-making machine or an engine from which said paper-pulp engine and paper-making machine derive motion, a lever having a weighted arm connected with the said governor, a valve connected with the other arm of said lever for delivering stuff at a speed corresponding to the speed of the machine, and a valve connected with the last-mentioned arm of the lever for supplying water to the stuff at a speed corresponding to the speed of the machine.

3. A stuff-feeder comprising a hopper having a discharge at its lower end, a vertically-movable valve controlling the discharge of the hopper and having an upwardly-extending stem, a water-supply conduit communicating with the interior of the hopper, a valve controlling the said conduit and having a stem, a lever having a weighted arm and also having an arm connected with the stems of the valves, and a mechanical governor connected with the weighted arm of the lever and adapted to be driven from a paper-pulp engine, a paper-making machine or an engine from which said paper-pulp engine and paper-making machine derive motion.

4. A stuff-feeder comprising a hopper having a discharge at its lower end, a vertically-movable and downwardly - opening valve controlling the discharge of the hopper and having an upwardly-extending stem, a lever having one of its arms weighted and its other arm connected with the stem of the said valve, and a mechanical governor connected with the weighted arm of the lever and adapted to be driven from a paper-pulp engine, a paper-making machine or an engine from which said paper-pulp engine and paper-making machine derive motion.

5. A stuff-feeder comprising a hopper having a vertical discharge at its lower end, a vertically - movable, downwardly - opening valve tapered toward its upper end and arranged in and adapted to control said discharge of the hopper and having an up-

wardly-extending stem, a lever having one of its arms weighted and its other arm connected with the stem of the valve, and a mechanical governor connected with the weighted arm of the lever and adapted to be driven from a paper-pulp engine, a paper-making machine or an engine from which said paper-pulp engine and paper-making machine derive motion.

6. A stuff-feeder comprising a hopper having a vertical discharge at its lower end, a vertically - movable, downwardly - opening valve tapered toward its upper end and arranged in and adapted to control said discharge of the hopper and having an upwardly-extending stem, a lever having one of its arms weighted and its other arm connected with the stem of the valve, a water-supply conduit communicating with the interior of the hopper, a valve arranged to control said conduit and connected with the unweighted arm of the lever, and a mechanical governor connected with the weighted arm of the lever and adapted to be driven from a paper-pulp engine, a paper-making machine or an engine from which said paper-pulp engine and paper-making machine derive motion.

7. In a stuff-feeder, the combination of a hopper having a discharge at its lower end, a mechanical governor, a hollow body having an aperture, a vertically-movable valve controlling the discharge of the hopper and having a stem guided in the hollow body and connected with the governor, a valve connected with the hollow body and adapted to be connected with a source of water-supply, and a connection intermediate the governor and said valve.

8. In a stuff-feeder, the combination of a drive-shaft, a vertical shaft connected by gearing with said drive-shaft, centrifugal governor-arms hinged to said shaft so as to swing vertically, a vertically-movable sleeve loosely surrounding the vertical shaft, connections between said sleeve and the governor-arms, a vertically-movable lever having one of its arms connected with the vertically-movable sleeve, a weight for depressing said arm of the lever and a dash-pot for cushioning downward movement of the lever, a hopper having a discharge in its bottom, a valve for controlling said discharge connected with the other arm of the lever, and a valve for supplying the hopper with water also connected with the latter arm of the lever.

9. A stuff-feeder comprising a mechanical governor, a stuff-box having a compartment extending throughout its width, a corner-compartment extending from its bottom to a point adjacent to its top and a comparatively shallow corner-compartment arranged alongside the first-mentioned corner-compartment, a slidable cut-off movable between the

compartment which extends throughout the width of the box and the corner-compartment, a funnel-shaped hopper arranged in the shallow corner-compartment and having
5 a discharge at its lower end, and a vertically-movable valve controlling said discharge and connected with the mechanical governor.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ELWIN S. DANIELS.

Witnesses:

GUY EATON,
J. L. CUNIER.