L. B. DECKER.

STUFF REGULATOR.

APPLICATION FILED NOV. 19, 1919.

1,374,286.

Patented Apr. 12, 1921.

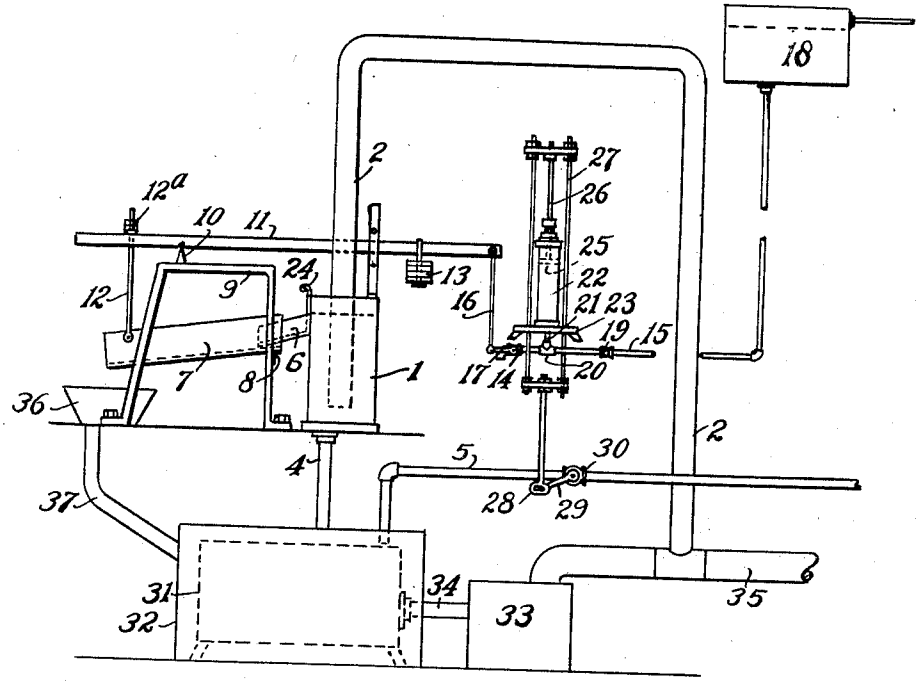


FIG. 1

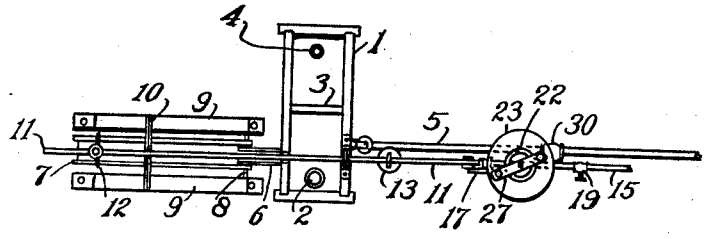


FIG. 2

INVENTOR
LEMUEL B. DECKER
BY
A. T. Palmer
ATTY.

UNITED STATES PATENT OFFICE.

LEMUEL B. DECKER, OF KENOGAMI, QUEBEC, CANADA.

STUFF-REGULATOR.

1,374,286. Specification of Letters Patent. Patented Apr. 12, 1921.

Application filed November 19, 1919. Serial No. 339,189.

To all whom it may concern:

Be it known that I, LEMUEL B. DECKER, a citizen of Canada, residing at Kenogami, in the Province of Quebec, Canada, have invented a new and useful Stuff-Regulator, of which the following is a specification.

This invention relates to stuff regulators such as are used in paper mills, and has for its object the automatic regulation of the fluidity of the pulp or "stuff" used in the manufacture of paper.

It consists, primarily, of a hinged trough mounted in connection with a regulator box so as to receive the discharge therefrom, and a weighted arm fulcrumed above the trough and adapted to automatically introduce water to the stock or "stuff" tank, as it is called, when the pulp is too dry and sluggish, and to check the introduction of water thereto when the pulp is sufficiently fluid. In connection with the hinged trough, I employ a liquid pressure cylinder, vertically mounted so that the raising and lowering of the piston therein, by which the water supplied to the tank is alternately accelerated and checked, respectively, is caused by an increase or decrease of the liquid pressure beneath said piston.

In the drawings, which accompany and form part of this specification, Figure 1 is a diagram showing my system in side elevation.

Fig. 2 is a plan view of a portion of Fig. 1.

The regulator box 1 is provided with a supply tube 2 for the admission of pulp, this tube being branched from the main stuff pipe 35 which leads from a pump 33 to the mixer, not shown.

Box 1 is preferably divided by a partition 3 that is sufficiently high to maintain a constant pulp level in the supply compartment of said box while permitting the excess to overflow to the other compartment and thence return to the stuff tank 31 through tube 4.

A fixed trough 6 is connected with the supply compartment of box 1 and the opening thereto is guarded by the gate 24. Mounted in communication with trough 6 is a hinged trough 7, pivotally supported at 8 by a frame 9, said frame being in pairs, as seen in Fig. 2, and being adapted to support a fixed knife-edge 10 upon which the bar 11 is fulcrumed. The bale 12 and nuts 12^a adjustably connect trough 7 with bar 11 and form a swinging support for the free end of trough 7.

Bar 11 is preferably counterweighted at 13 and is connected with a liquid-waste-cock 14 by means of rod 16 and handle 17. Waste-cock 14 is mounted at or near the open end of a liquid-pressure pipe 15 that may be connected with a suitable pressure source, as box 16.

A valve 19 serves to control the supply fed from box 18. Intermediate between waste-cock 14 and valve 19 I introduce, in pipe 15, a T connection 20 from which a short supply tube 21 connects pipe 15 with a cylinder 22 that may be rigidly mounted on a support 25.

Within cylinder 22 is a piston 25 whose stem 26 is connected with a vertically movable cross-head 27, the lower end of said cross-head being connected with a valve 30 in a pipe 5, by means of an eye-bolt 28 and a handle 29. Pipe 5 is adapted to convey water to the stuff tank 31.

Beneath the free end of trough 7 I place a tub 36 to receive the pulp passing through said trough; and from tub 36 a tube 37 conveys this pulp back to tank 31, through the agency of the enveloping tank 32, of any usual construction. Pump 33 is connected with stuff tank 31 by the tube 34.

The operation is as follows;—

Gate 24 being raised, the pulp from tube 2, which is of the same consistency as that which goes to the mixer, fills the supply compartment of box 1 and overflows through trough 6 and into trough 7.

If this pulp is too dry, it will move sluggishly and tend to pile up in trough 7, thus increasing the force of gravity exerted thereon.

Weights 13 are so adjusted that this increase of gravity force will cause the free end of trough 7 to descend, thus raising the long arm of bar 11. (See Fig. 1.) This raising will cause the rod 16 and handle 17 to close waste cock 14 and, valve 19 being open, the liquid pressure under piston 25 is increased sufficiently to raise the same and, consequently, the cross-head 27. The raising of cross-head 27 will operate handle 29 to open valve 30 and permit more water to flow into tank 31 and thus increase the fluidity of the pulp. When the pulp is sufficiently moist to flow more freely through trough 7 (through the action of pump 33),

the weight in said trough will lessen and the free end will rise to reverse the foregoing operations. This balancing movement is entirely automatic and pulp of proper consistency is always insured.

It is to be understood that the weighting apparatus may be attached directly to tank 31, without departing from the spirit of my invention.

What I claim is;

1. A stuff regulator comprising a receptacle; means for introducing pulp into said receptacle; a discharge outlet from said receptacle; a water pipe; and a movable member positioned to receive the discharge from said outlet; in combination with a vertically positioned cylinder; a piston within said cylinder; means for introducing liquid under pressure beneath said piston; means whereby the movements of said member may vary the liquid pressure beneath said piston; and means whereby the said variations in pressure may automatically vary the flow in said pipe.

2. A stuff regulator comprising a regulator tank; means for introducing pulp into said tank; a water pipe; a discharge outlet for said tank; and a hinged trough mounted independently of said tank and positioned to receive the pulp passing through said discharge outlet; in combination with a counterweighted arm adapted to pendently support said trough about its hinge; a liquid-pressure cylinder; a rigid support for said cylinder; a movable piston within said cylinder; means whereby said arm may automatically cause variations in pressure within said cylinder; and means whereby said variations may automatically cause variations in the flow through said pipe.

3. A stuff regulator comprising a stuff tank; a water supply for said tank; a regulator box; means for transferring pulp from said tank to said box; a discharge outlet from said box; a movable receptacle positioned to receive the discharge from said outlet; and means whereby the movements of said receptacle will automatically vary the amount of water supplied to said tank.

4. A stuff regulator comprising a stuff tank; a regulator box; a water supply for said tank; means for transferring pulp from said tank to said box; a discharge outlet for said box; a hinged trough positioned to receive the discharge from said outlet; a liquid-pressure cylinder; a piston within said cylinder; a control for said water supply; means whereby the movements of said trough may vary the liquid pressure in said cylinder; and means whereby such variations may automatically operate said control.

5. In a stuff regulator, the combination of a regulator box; means for introducing pulp into said box; a discharge outlet for said box; a hinged trough positioned to receive the discharge through said outlet; a water pipe; a valve in said pipe; a cylinder; a piston within said cylinder; means for introducing liquid pressure within said cylinder; means for varying said pressure; means for connecting said trough with said pressure-varying means; and means for connecting said piston with said valve.

LEMUEL B. DECKER.