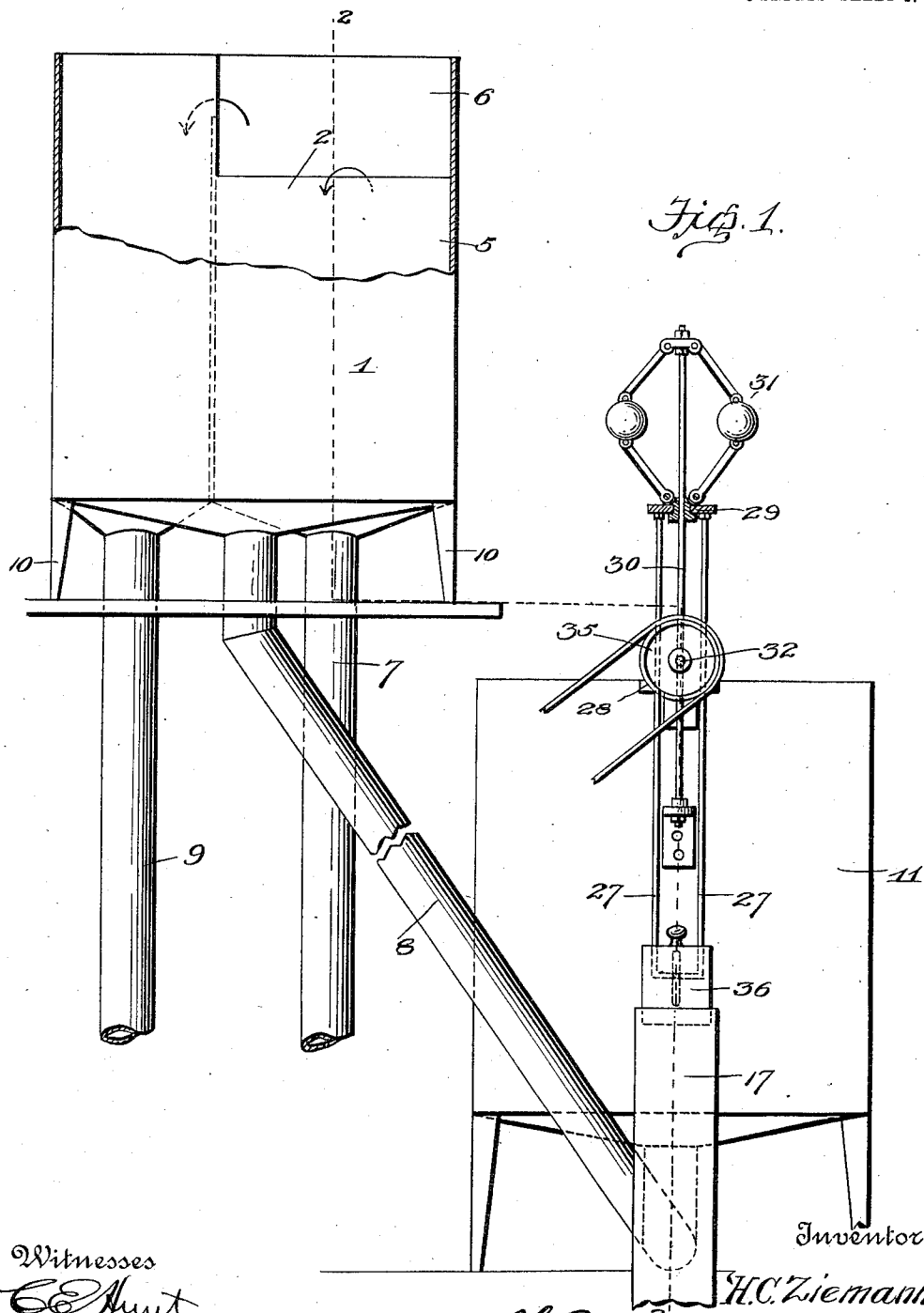


H. C. ZIEMANN.
 AUTOMATIC FEED REGULATING MECHANISM FOR PAPER MAKING MACHINES.
 APPLICATION FILED NOV. 6, 1911.

1,019,580.

Patented Mar. 5, 1912.

3 SHEETS—SHEET 1.



Witnesses
 C. E. Hunt.
 C. W. Somers

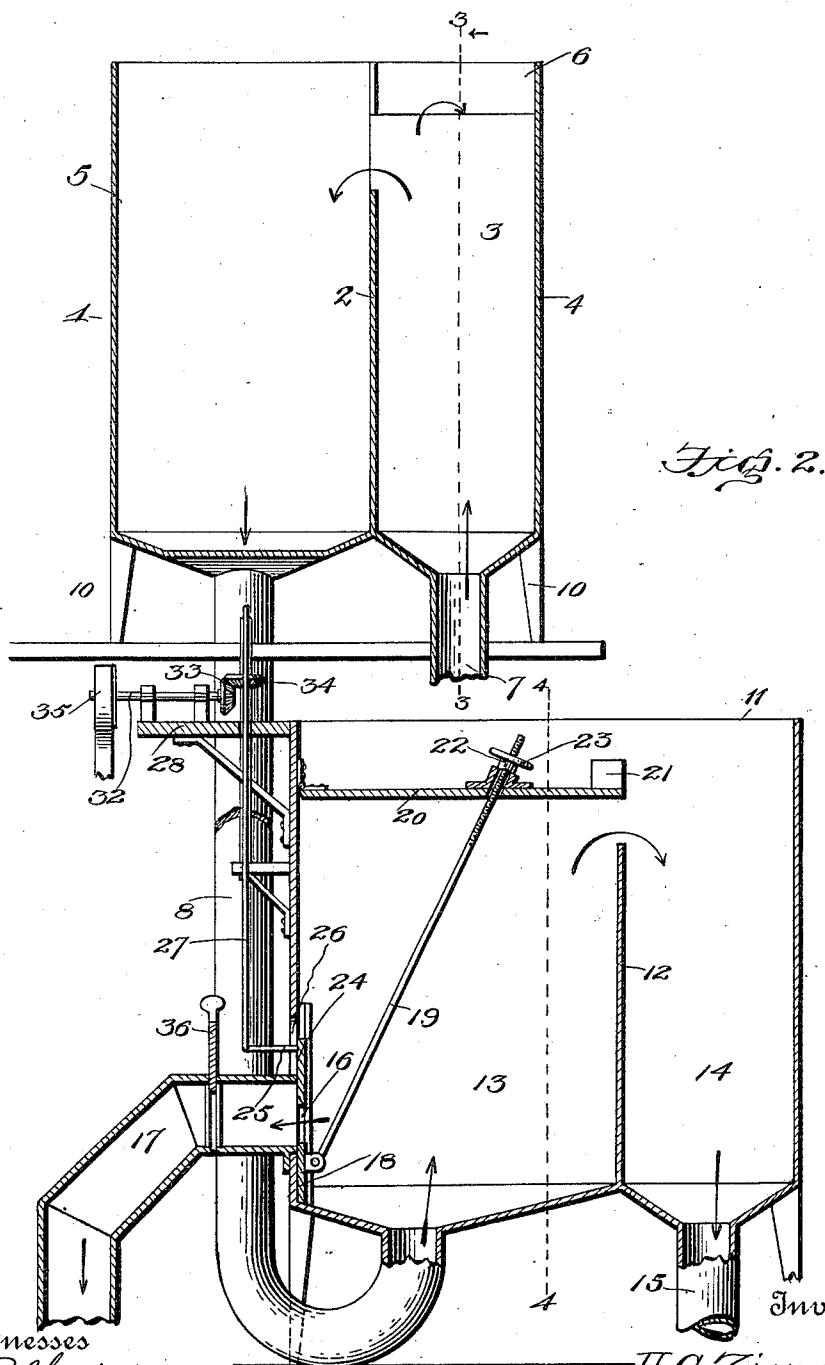
Inventor
 H. C. Ziemann
 by *A. B. Wilson & Co*
 Attorneys

H. C. ZIEMANN.
 AUTOMATIC FEED REGULATING MECHANISM FOR PAPER MAKING MACHINES.
 APPLICATION FILED NOV. 6, 1911.

1,019,580.

Patented Mar. 5, 1912.

3 SHEETS—SHEET 2.



Witnesses
 C. E. Hunt.
 O. M. Blomgren

Inventor
 H. C. Ziemann
 by *A. B. Wilson & Co.*
 Attorneys

H. C. ZIEMANN.
 AUTOMATIC FEED REGULATING MECHANISM FOR PAPER MAKING MACHINES.
 APPLICATION FILED NOV. 6, 1911.

1,019,580.

Patented Mar. 5, 1912.

3 SHEETS—SHEET 3.

Fig. 3.

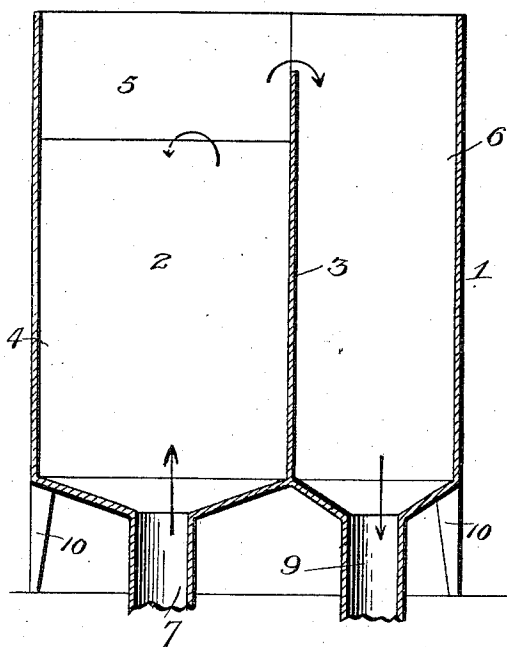


Fig. 4.

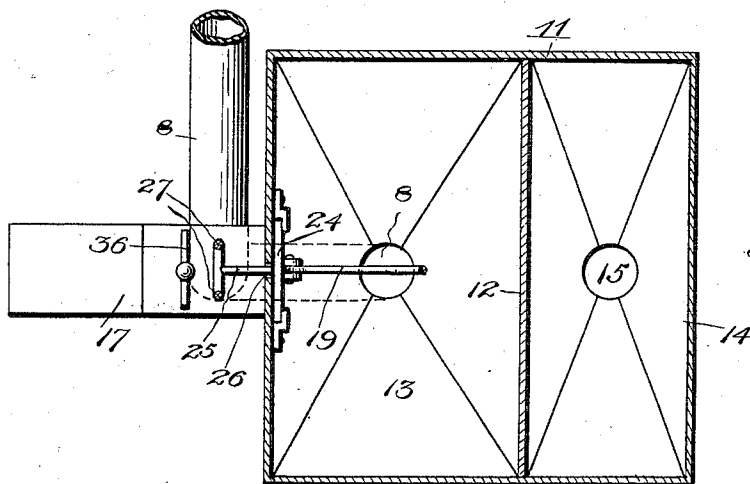
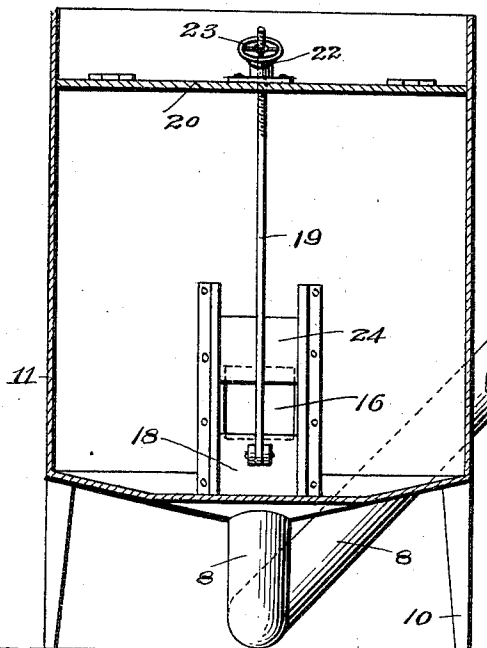


Fig. 5.

Witnesses
E. E. Hunt
N. W. Somers

Inventor
H. C. Ziemann
 by *A. B. Wilson & Co.*
 Attorneys

UNITED STATES PATENT OFFICE.

HENRY C. ZIEMANN, OF MILLINOCKET, MAINE.

AUTOMATIC FEED-REGULATING MECHANISM FOR PAPER-MAKING MACHINES.

1,019,580.

Specification of Letters Patent.

Patented Mar. 5, 1912.

Application filed November 6, 1911. Serial No. 658,894.

To all whom it may concern:

Be it known that I, HENRY C. ZIEMANN, a citizen of the United States, residing at Millinocket, in the county of Penobscot and State of Maine, have invented certain new and useful Improvements in Automatic Feed-Regulating Mechanism for Paper-Making Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in automatic feed regulating mechanism for paper making machines.

One object of the invention is to provide an automatic pulp or stock feeding mechanism for paper making machines having an improved means controlled by the flow of the pulp or stock from which the paper is made for feeding the pulp or stock according to the consistency thereof.

Another object is to provide a feeding mechanism of this character having means whereby the feeding of the pulp is automatically controlled according to the speed at which the machine is working.

With these and other objects in view the invention consists of certain novel features of construction, and the combination and arrangement of parts as will be more fully described and claimed.

In the accompanying drawings; Figure 1 is a side view of my improved pulp feeding mechanism, parts being broken away and in section; Fig. 2 is a vertical sectional view of the same on the line 2—2 of Fig. 1; Fig. 3 is a vertical sectional view of the upper pressure box of the mechanism on the line 3—3 of Fig. 2; Fig. 4 is a similar view through the lower pressure box of the mechanism on the line 4—4 of Fig. 2; Fig. 5 is a horizontal sectional view through the lower pressure box.

In the embodiment of the invention, I provide a box or tank 1 which is preferably of rectangular form and is divided by partitions 2 and 3 into a feed box or compartment 4, a gravity pressure box or compartment 5 and an overflow box or compartment 6. The partition 2 between the feed box and the gravity pressure box is somewhat lower than the partition 3 between the feed box and the overflow box as clearly shown in the drawings, so that the pulp entering the feed box will flow over the par-

tion 2 and into the pressure box until the flow of the pulp into the box exceeds the discharge of the pulp from the pressure box whereupon the surplus pulp will flow over the partition 3 and into the overflow box 6.

The bottoms of the feed box or compartment, gravity pressure box and overflow box are inclined from all sides toward the center and with the center of the feed box is connected the upper end of a feed pipe 7 through which the pulp or stock is pumped or forced into the feed box 4 and from which the pulp overflows into the gravity pressure box 5 as hereinbefore described. With the center of the bottom of the pressure box 5 is connected the upper end of a pressure or pulp conducting pipe 8, the lower end of which connects with another part of the feed regulating mechanism hereinafter described. Through the center of the bottom of the overflow box 6 is connected an overflow or discharging pipe 9, which leads to and is connected with any suitable receptacle (not shown). The box 1 containing the feed, gravity pressure and overflow compartments is preferably supported upon suitable legs 10 as shown.

Arranged at a suitable distance below and to one side of the box 1 or upper portion of the apparatus is a lower box 11 which is divided by a partition 12 into a pressure box or compartment 13 and an overflow or compartment 14. The compartments 13 and 14 are also provided with bottoms which incline from all sides toward the center and to the center of the bottom of the compartment 13 is connected the lower end of the pressure or pulp conducting pipe 8. To the center of the bottom of the overflow compartment 14 is connected an overflow or pulp conducting pipe 15. Connected with the discharge opening 16 in one side of the pressure box or compartment 13 at a suitable distance above the bottom of the box is a pulp conducting pipe 17 which leads to the paper making machine (not shown). Slidably engaged with the inner side of the compartment 13 and adapted to open and close to regulate the size of the discharge opening 16 is a feed regulating valve 18, said valve comprising a plate to which is loosely connected the lower end of a valve operating rod 19 the upper end of which has an adjustable connection with a pressure or valve operating plate 20 hingedly connected at one edge to one side of the com-

partment 13 and forms a hinged cover for said compartment. The free edge of the overflow plate 20 is disposed above and spaced a suitable distance from the upper end of the plate 12 and on said free end of the plate is arranged a weight 21, which, together with the weight of the plate holds the valve 18 in a normally open position through the medium of the operating rod 19. The normal position of the cover or pressure plate 20 with respect to the upper edge of the partition 12 is controlled or regulated by a nut or threaded adjusting block 22 suitably secured to the upper side of the pressure plate and which is provided with a hand wheel 23 for readily adjusting the same. The pulp enters the box or compartment 13 faster than it is discharged from the opening 16 and consequently fills the compartment and flows over the partition 12 into the overflow box or compartment 14. In thus filling the compartment 13 and flowing over the partition 12, the pulp or stock comes into engagement with the lower side of the cover or pressure plate 20 and exerts an upward pressure on said plate to a greater or less extent according to the consistency of the pulp. In thus lifting the plate 20 the plate 18 is also lifted to some extent through the operating rod 19 thus closing the discharge opening 16 to a greater or less degree and thereby controlling the discharge of the pulp from the compartment 13 to the machine according to the consistency or density of the pulp.

In addition to the feed regulating mechanism just described, I also provide means for regulating the flow of the pulp according to the speed of the machine, said means comprising a feed valve or gate 24 which is slidably mounted on the inner side of the compartment 13 above the discharge opening 16 therein and is provided with a stem 25 which works through a slot 26 in the adjacent side of the box 11 and is connected to the lower end of a pair of valve shifting rods 27 which extend upwardly through guide openings in a governor supporting bracket 28 secured to the side of the box and are connected at their upper ends to an adjusting block 29 slidably mounted on the shaft 30 of a centrifugal governor 31. The weighted arms of the governor are suitably connected to the block 29 whereby the latter is raised and lowered on the shaft 30 by the centrifugal action of the governor, thus raising and lowering the gate or valve 24 to open and close the discharge opening 16 to a greater or less extent which will permit more or less pulp to flow through the pipe 17 to the machine according to the speed at which the latter is working, the machine being connected with the governor by a suitably mounted drive

shaft 32 having on one end a bevel gear 33 which meshes with a similar gear 34 on the shaft 30 of the governor and has mounted on its opposite end a drive pulley 35 adapted to receive the belt from a moving part of the machine.

In addition to the automatically operated valves 18 and 24 the discharge of the pulp from the pressure box or compartment 13 may also be controlled by a manually operated valve 36 arranged in the pulp conducting pipe 17 adjacent to the discharge opening 16 as shown.

From the foregoing description taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of the invention as claimed.

Having thus described my invention, what I claim is;

1. In a feed regulating mechanism for paper making machines, the combination of a pressure box having a pulp discharging opening, a valve for regulating the size of said opening and a valve operating mechanism arranged in said box and adapted to be connected with a moving part of the engine whereby the position of the valve is automatically regulated to control the flow of the pulp from the box according to the speed at which the machine is working.

2. In a feed regulating mechanism for paper making machines the combination with a pressure box having therein a discharge opening, of valves adapted to regulate the size of said opening and thereby control the flow of pulp from the box, a valve operating mechanism connected with one of said valves and adapted to be actuated by the overflow of the pulp from the box whereby the valve is regulated according to the consistency of the pulp, and means connected with the other valve and adapted to be connected with a moving part of the engine whereby the latter valve is automatically regulated to control the flow of the pulp from the box according to the speed at which the machine is working.

3. In a feed regulating mechanism for paper making machines, the combination with a pressure box having therein a discharge opening, an overflow box adapted to receive the overflow of the pulp from said pressure box, valves adapted to regulate the size of said discharge opening, a valve operating mechanism connected with one of said valves and with the machine whereby the valve is regulated to control the discharge of the pulp according to the speed at which the

machine is working, a pressure actuated operating mechanism connected with the other valve, said mechanism comprising a pressure plate hingedly connected in the upper end of the pressure box and adapted to be engaged and operated by the overflow of the pulp from said compartment, an operating rod connected at one end with said valve and having its opposite end adjustably connected with said pressure plate whereby the valve is opened and closed by the movement of said plate according to the consistency of the pulp overflowing from the box and pressing against the plate.

4. In a feed regulating mechanism for paper making machines, the combination with a pressure box having therein a discharge opening, valves to open and close said opening, a valve operating mechanism connected with one of said valves and adapted to be actuated by the pressure of the pulp overflowing from the box whereby the discharge of the pulp through said discharge opening is regulated according to the consistency of the pulp, a valve controlling mechanism connected with the other valve, said mechanism comprising valve shifting rods secured at their lower ends to the valve, a centrifugal governor having an operative connection with the upper ends of said rods, and means whereby said governor is connected with and driven by the machine thereby regulating said valve to control the flow of pulp through the discharge opening in the box according to the speed of the engine.

5. In a feed regulating mechanism for

paper making machines an upper box having arranged therein a feed compartment, a gravity pressure compartment and an overflow compartment, a feed pipe connected to said feed compartment, an overflow pipe connected with said overflow compartment, a lower box arranged below said upper box and having formed therein a pressure compartment, and an overflow compartment, said pressure compartment having formed therein a discharge opening, a pulp conducting tube to connect said upper gravity pressure compartment with the pressure compartment in the lower box, valves adapted to regulate the size of the discharge opening in said lower pressure compartment, a valve operating mechanism connected to one of said valves and comprising a pressure plate hingedly connected to one side of the compartment and adapted to be actuated by the pressure of the pulp therein, a valve operating rod to connect said valve with said plate, a nut adapted to be screwed onto the upper end of said rod whereby an adjustable connection is provided between the same and said plate, a weight arranged on said valve plate and a valve operating mechanism connected with the other valve whereby the latter is regulated by the speed of the machine.

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

HENRY C. ZIEMANN.

Witnesses:

J. F. STEVENS,

G. B. MORAN.