

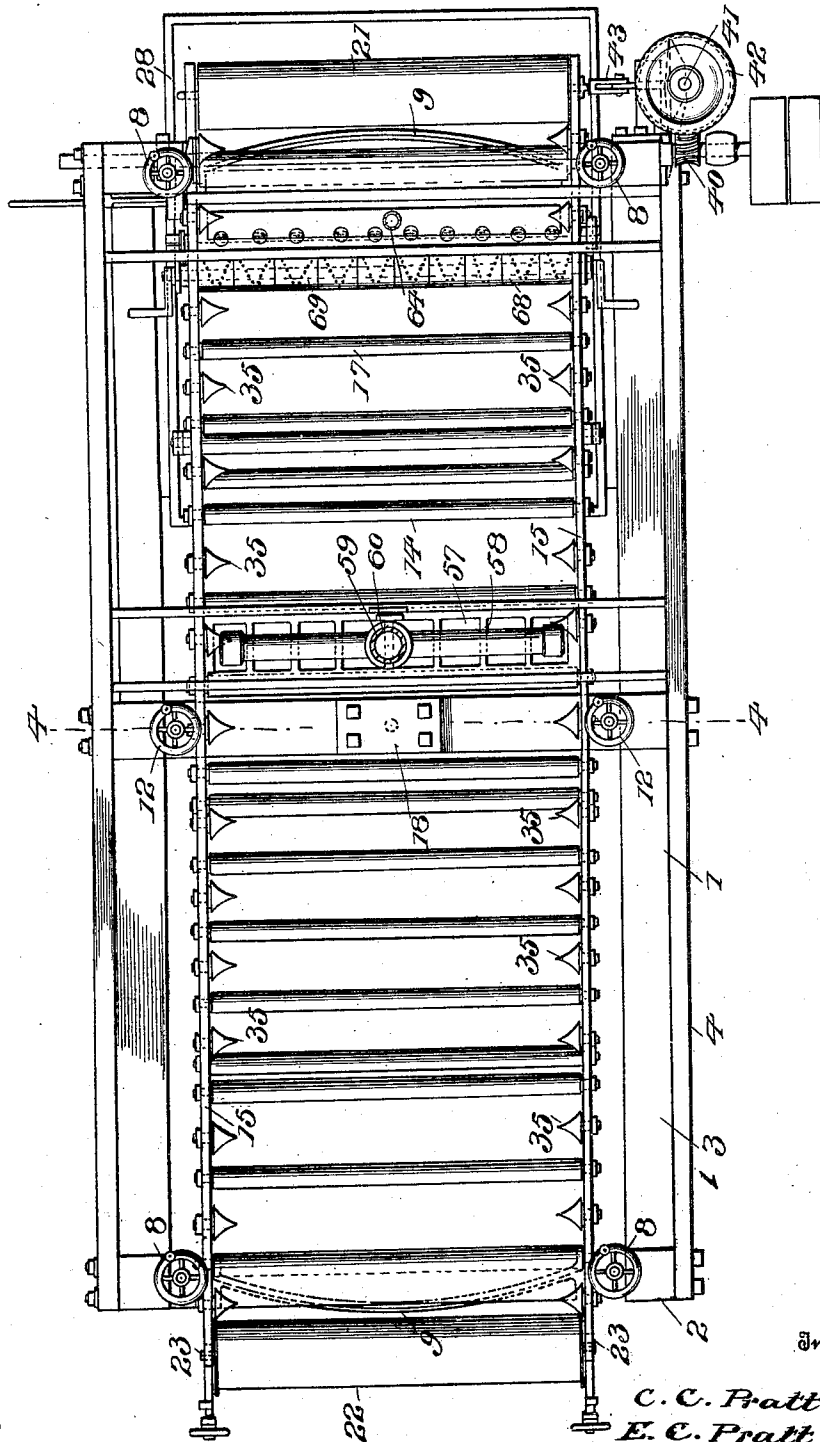
C. C. & E. C. PRATT.
VANNER.
APPLICATION FILED APR. 26, 1907.

934,693.

Patented Sept. 21, 1909.

4 SHEETS—SHEET 1.

Fig. 1.



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Witnesses

For Inven
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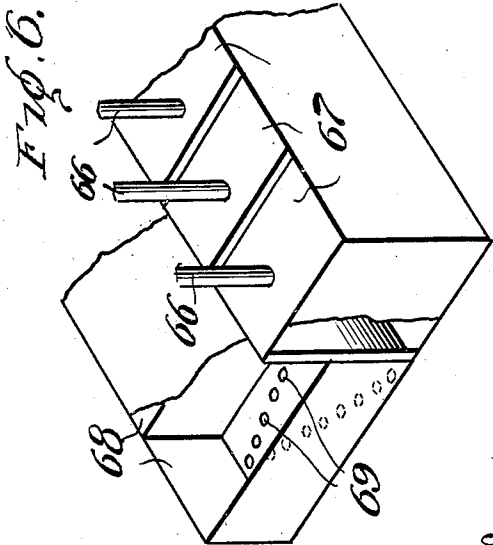
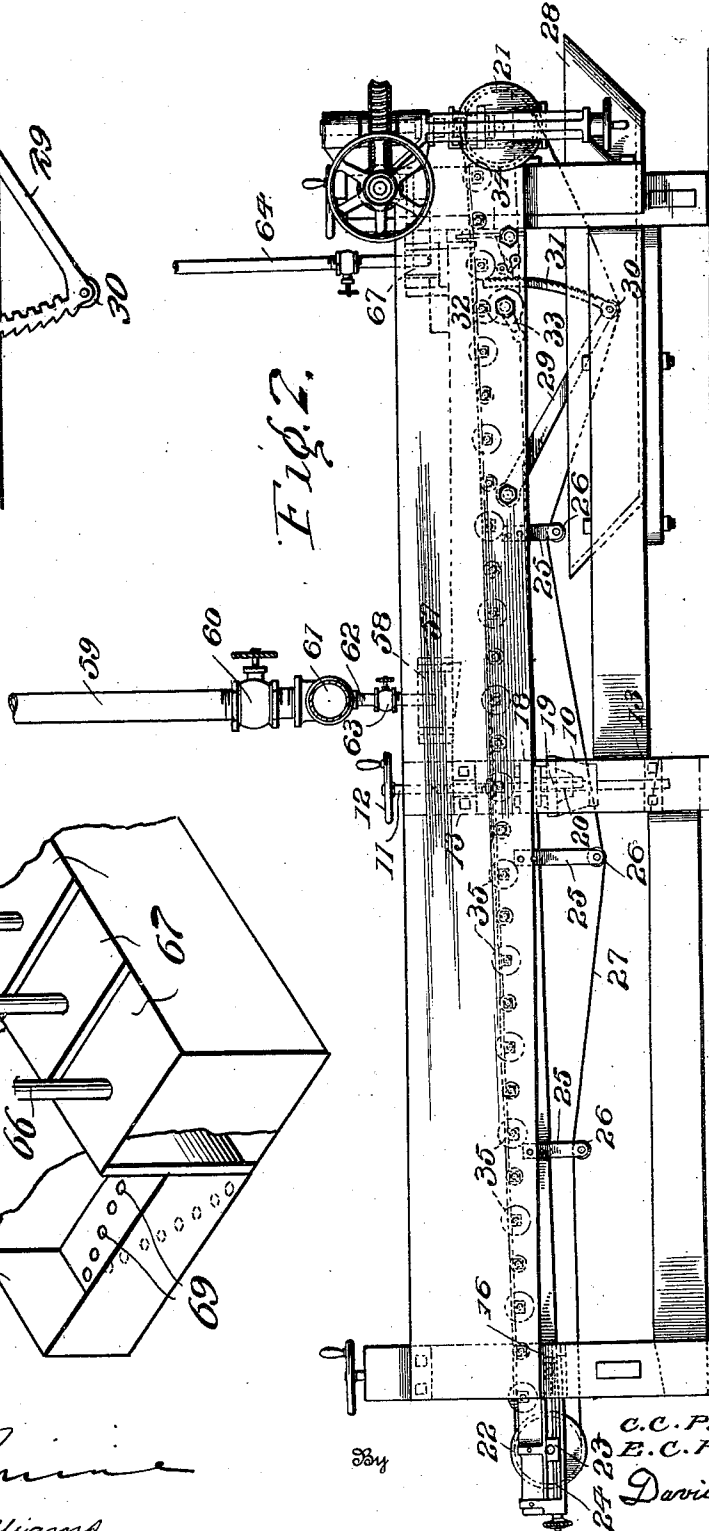
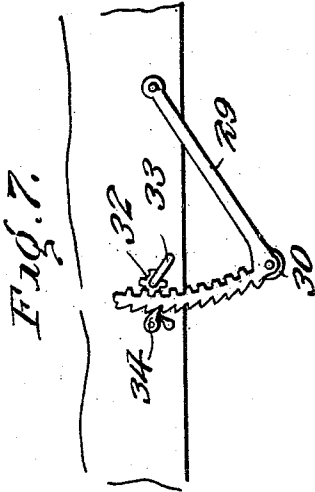
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4 SHEETS—SHEET 2.



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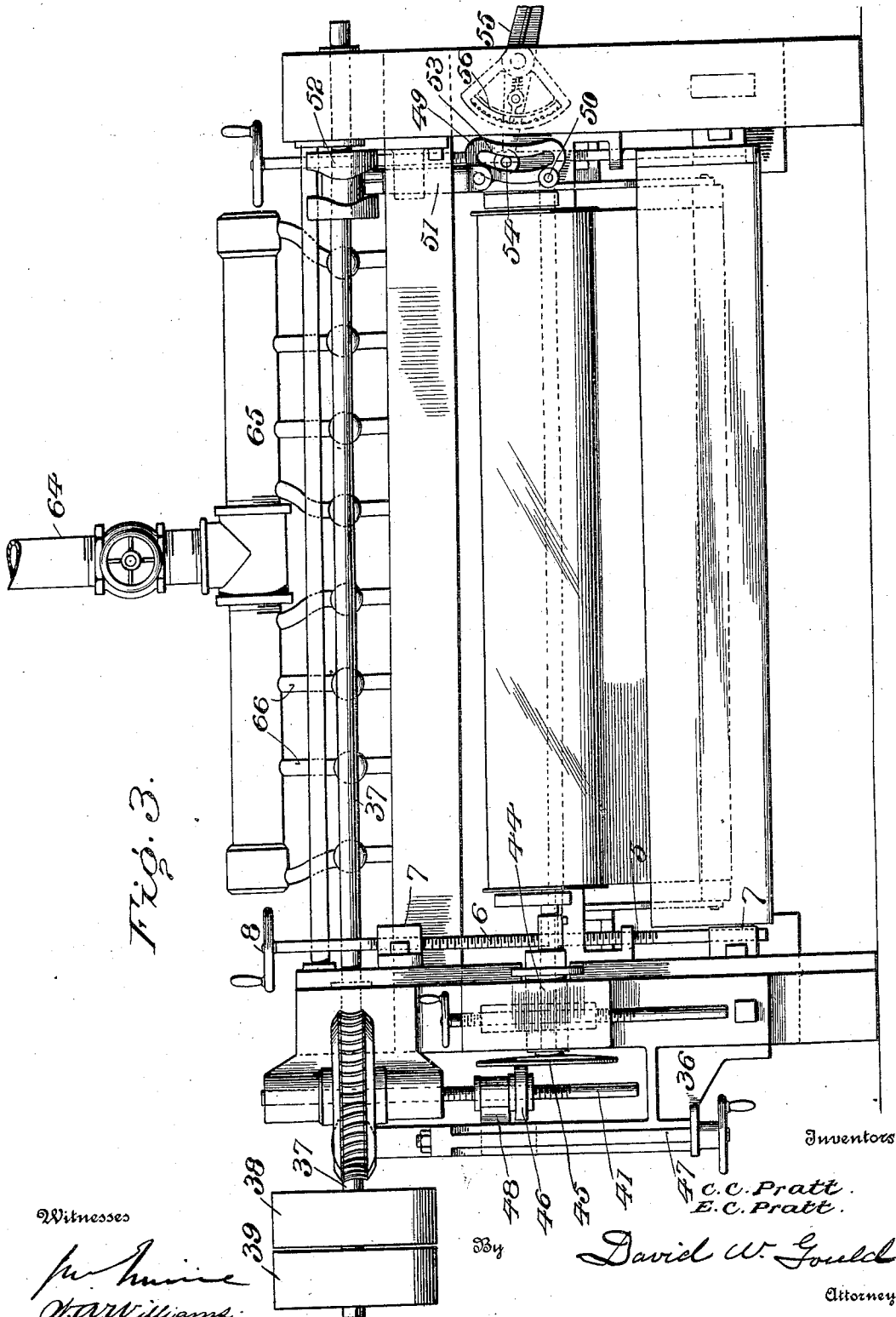
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4 SHEETS—SHEET 3.



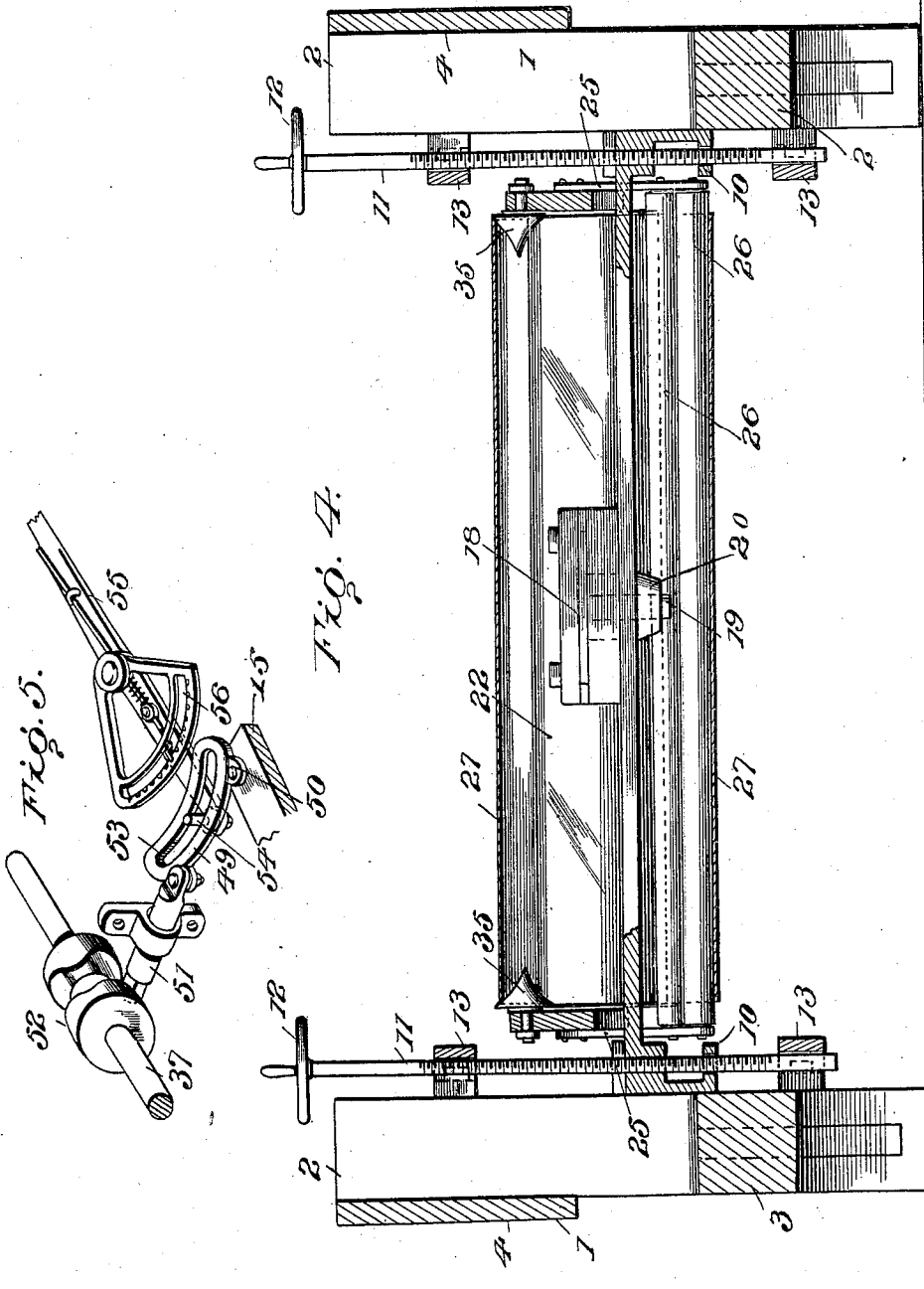
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4 SHEETS—SHEET 4.

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UNITED STATES PATENT OFFICE.

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VANNER.

934,693.

Specification of Letters Patent. Patented Sept. 21, 1909.

Application filed April 26, 1907. Serial No. 370,410.

To all whom it may concern:

Be it known that we, CYRUS C. PRATT and ELMER C. PRATT, citizens of the United States, residing at Portland, in the county of Multnomah and State of Oregon, have invented certain new and useful Improvements in Vanners, of which the following is a specification.

The invention relates to an improvement in vanners, comprehending specifically a construction wherein provision is made for the economic handling of the material and the saving of a comparatively large proportion of the values.

One object of the invention is the provision in a vanner of means for adjusting and controlling the moving parts, whereby the operator may readily adjust or stop the movement of any particular part as may be required by the particular material being handled.

Another object of the invention is to simplify and reduce the number of parts heretofore required in a machine of this character, without in any manner interfering with the effectiveness of the device.

With the above objects in view, the invention consists in certain details of construction and combinations of parts, which will be described in the following specification, reference being had to the accompanying drawings, in which:—

Figure 1 is a plan of a vanner constructed in accordance with our invention, the belt being omitted. Fig. 2 is a side elevation of the same. Fig. 3 is an end elevation of the same. Fig. 4 is a transverse section on line 4—4 of Fig. 1. Fig. 5 is a detail view showing the means for controlling the table shake-mechanism. Fig. 6 is a broken perspective view illustrating the arrangement of the water tank and spray box. Fig. 7 is an elevation of the means for adjusting the concentrating belt within the concentrate receiver.

Referring particularly to the accompanying drawings, wherein similar reference numerals indicate like parts throughout the several views, our improved vanner comprises a framework 1, which may be constructed of any material and of any size.

The frame preferably includes standards 2, stay bars 3, and braces 4, all of which may be arranged as required in the particular vanner, as the details of these parts form no material part of the present invention, the sole requirement being that they be so disposed as to provide a strong, substantial supporting frame for the operating parts.

Slidably disposed between the opposing standards 2 of the framework are arranged end lifts 5, preferably comprising metallic strips of the shape shown arranged to bear against the proximate faces of the transversely-alined end standards 2. The end lifts are supported in position and vertically adjusted at the will of the operator through the medium of a rod 6 supported in bearings 7 secured to the respective end standards and having threaded connection with the end lifts. The rod 6 is manually operated through the medium of a hand wheel 8 secured on the upper end of the rod, it being understood that two of such adjusting rods are provided for each end lift and disposed at the respective ends of the lift, as shown. Each end lift is formed or provided on its upper surface with a runway 9, suitably formed for the reception of a series of balls to provide a ball bearing support for the concentrating table. The runways are of segmental form in plan, curving outwardly from the end adjacent the standard 2 toward the longitudinal center of the machine. The central standards 2 are also arranged to adjustably support a pivot lift 10, comprising a bar slidably disposed between the proximate faces of the central standards, and vertically adjusted through the medium of a rod 11 having threaded connection with the pivot lift and operated through a hand wheel 12, said rod being supported in bearings 13 secured to the standard.

14 represents the concentrating table, preferably of skeleton form comprising side bars 15 connected by end plates 16, and provided intermediate the end plates with a series of regularly-shaped transversely-disposed rollers 17. The end plates 16 of the table are arranged to overlie and bear upon the balls carried in the runway 9, whereby a complete ball bearing is provided for the table in

movement. The table is also provided with a centrally-arranged transversely-disposed pivot bar 18, from which centrally depends a pivot pin 19 adapted to seat in a pivot bearing plate 20 supported in the pivot lift 10. The forward and rear ends of the table are provided with end rolls 21 and 22 respectively, the latter being mounted in bearings 23 slidably supported in the side bars 15 of the table, and adjusted longitudinally of said side bars through the medium of manually operated rods 24 supported in bearings in the side bars and arranged for threaded connection with the roll bearings 23. By this arrangement the rear end roll 23 may be adjusted longitudinally of the table, with the effect to tension the concentrating belt as desired. Hangers 25 depend from the side bars of the table and support at their lower ends guide rolls 26 for guiding the relatively lower portion of the concentrating belt, as will later appear.

27 represents the concentrating belt designed to be carried by the concentrating table, passing around the end rolls 21 and 22, and overlying and resting upon the table rolls 17. Beneath the table the belt is supported by means of the guide rolls 26, the central one of which is arranged to provide a tension roll in that the belt passes beneath it instead of over it, as plainly shown in Fig. 2.

The concentrate receiver 28 is removably supported immediately beneath the forward or discharge end of the belt, said receiver being of the usual type and slightly exceeding in width the transverse dimension of the belt. As it is frequently desirable to control the position of the belt within the receiver, we arrange an adjustable means to this end comprising arms 29 pivotally secured to the side bars 15 of the frame, and carrying at their free ends a depressing roll 30. The free ends of the arms also support segmental rack bars 31 which extend upwardly in contact with the inner surfaces of the respective side bars of the table, being at all times in mesh with pinions 32 fixed on a shaft extending transverse the table and operated through the medium of a crank 33. By manual operation of the crank handle 33 it is obvious that the roller 30 may be adjusted with relation to the receiver to any extent desired, an ordinary pawl 34 serving to lock the racks 31 in their adjusted position. In this connection it is to be understood of course that the belt 27 passes beneath the depressing roll 30, so that movement of the roll correspondingly effects the belt.

In machines of this character it is highly desirable that the edges of the concentrating belt be protected from rapid wear, and with this particular object in view, I provide the

side bars 15 of the table with cone supports 35. These supports are disposed intermediate the rollers 17, and revolvably connected with the side bars of the table. The base of the cones are of greater diameter than the rollers 17, thereby slightly concaving the surface of the belt to provide a more effective retention of the pulp, and at the same time providing a roller bearing for the extreme edges of the belt and thereby minimizing the wear at this particular point.

Supported at one end of the frame, preferably the forward end, is a metallic framework 36, arranged to support the power mechanism of the machine. Power shaft 37, is arranged transverse the main framework, supported in suitable bearings therein and provided with the usual fast and loose pulleys 38 and 39. The power shaft is provided with a worm gear 40, and immediately in advance of this gear, and supported in the frame 36 is the drive shaft 41. The shaft 41 is vertically disposed and is provided at the upper end with a worm gear 42 normally in mesh with the worm pinion 40. The shaft of the forward belt roll 21 is connected through the medium of a hinge link 43 with a stub shaft 44 supported in the main frame and carrying at its free or outer end a friction disk 45. A friction pinion 46 is keyed for longitudinal movement on the drive shaft 41, and arranged to engage the disk 45 and drive the roll 21 with the effect to cause travel of the belt. The position of the friction pinion 46 relative to the center of the disk 45 is controlled through the medium of a rod 47 arranged for manual operation and having threaded connection with a sleeve 48 loosely encircling a collar projecting from the pinion 46. The speed of the belt may, by this construction, be increased or decreased, entirely stopped, or the direction of travel reversed, at the will of the operator.

The means for imparting movement to the table comprises a segmental plate 49 having hinged connection with one of the side bars 15 of the table, as at 50, and connected at the upper end with an oscillating lever 51, pivotally supported on the framework of the machine and operated through the medium of a cam 52 carried on the power shaft 37. By this construction the table is reciprocated in a transverse plane on the pivot 19. To provide for controlling the degree of vibration, we form the plate 49 with an arcuate slot 53, and mount within the same a pin 54 carried on the end of a hand-operated lever 55 pivotally supported on the framework of the machine. The lever is maintained in adjusted position by the use of the ordinary dog and notched segment 56, as clearly shown in Fig. 3. By the adjustment of the lever the relatively free or upper end of the plate 49

is forced toward or from the adjacent side plate of the table, thereby giving the oscillating lever 51 a greater or less degree of influence on the table, thereby permitting the operator to control the degree of table vibration as he may desire.

The pulp distributor comprises an iron box arranged transversely of the machine and above the concentrating belt, as at 57. The box is provided with a series of transversely-arranged partitions 58, dividing the box into a series of independent receptacles, each of which has an independent outlet to direct the material onto the belt. A main pulp feed pipe 59, having a suitable controlling valve 60 is supported above the feed box, and communicates at its lower end with a transversely-arranged pipe 61 from which depends a series of pipes 62, each having a suitable valve 63 and opening within one of the independent feed receptacles. By this means the distribution of pulp to any or all of the independent receptacles is under the direct control of the operator, and he is thereby enabled to deliver the pulp in desired quantity to any particular portion or portions of the belt.

The clear water supply is arranged in advance of the pulp feed and comprises a valved supply pipe 64 delivering water to a transversely-disposed pipe 65 from which depends a series of independent valved pipes 66, the latter opening into independent tanks 67 formed by transversely dividing the main tank in the manner described in connection with the feed tank. Each independent water tank is in communication with a spray box 68, closed against the escape of the water except through the medium of a series of perforations 69 formed in the bottom of the box. These perforations are arranged relative to each other to provide an approximate V form in outline whereby to more effectively distribute the clear water onto the pulp, the V-form perforations serving to effectively deliver the maximum quantity of water and simultaneously spread the same both longitudinally and transversely of the belt. By the use of the independent pipes 66, the operator has full and complete control of the water delivery, and may gage it in accordance with the particular condition of the pulp on any portion of the belt.

The construction described provides a vanner or ore washer in which the pulp is effectively handled, with the result of saving a comparatively large portion of the values of the material; the agitation or shake of the table is absolutely at the control of the operator, and it may be increased or decreased or stopped altogether without interfering with or effecting in any way the operation of any other portion of the machine; through the medium of the end lifts

and pivot lifts, the table may be given any degree of inclination; through the use of the friction disk and pinion, the degree of speed of travel of the belt may be controlled as desired, increasing or decreasing, stopping, or reversing the same, without in any manner interfering with the operation or function of any other portion of the machine; and the independent pulp and water feeds permit the operator to control the material for the most effective results.

Having thus described our invention, what we claim as new is:—

1. In a vanner, a concentrating belt, a pulp feed, and a water feed, said water feed comprising a series of independent water tanks, and a spray box connected with and in communication with each tank, each of said boxes being formed with a series of outlet perforations in its bottom arranged in V-form with the apex toward the pulp feed.

2. A vanner including a pivoted table, a lever supported above the table, means for oscillating the lever, a segmental plate connected at one end to the lever and at the opposite end to the table, said plate being formed with an arcuate slot, a pin movably mounted in the slot, and means for adjusting the pin whereby to adjust the plate.

3. A vanner comprising a framework, a pivot bar arranged transverse the framework, rods having threaded connection with the framework and with the ends of the pivot bar, a table, a pivot depending from the table and mounted in the pivot bar, and independently-adjustable end supports for said table.

4. A vanner comprising a framework, a pivot bar arranged transverse the framework, rods having threaded connection with the framework and with the ends of the pivot bar, a table, a pivot depending from the table and mounted in the pivot bar, an end bar arranged transverse the frame near each end thereof, said end bars being formed with arcuate channels, balls fitting in said channels to support the table, and rods having threaded connection with the framework and with each end of each end bar, whereby said end bars may be independently adjusted to vary the inclination of the table.

5. A vanner comprising a framework, a concentrating belt, a concentrate receiver carried by the framework, arms pivoted to the framework on opposite sides of the belt, a roller carried by the free ends of the arms and arranged between the belt sections, an arcuate rock bar projecting from the free end of one arm, a gear wheel mounted on the framework to engage the rock bar, means for operating said wheel from the side of the frame opposite that on which it is mounted, and means for automatically engaging and locking the rock bar in adjusted position.

6. In a vanner, a concentrating belt, a
pulp feed, and a water feed comprising a
water tank and a spray box in communica-
tion with said tank, said box being formed
5 with a series of outlet perforations in its
bottom, the perforations being arranged on
lines converging toward the pulp feed.

In testimony whereof we have signed our

names to this specification in the presence of
two subscribing witnesses.

CYRUS C. PRATT.
ELMER C. PRATT.

Witnesses:

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W. P. BENNETT.