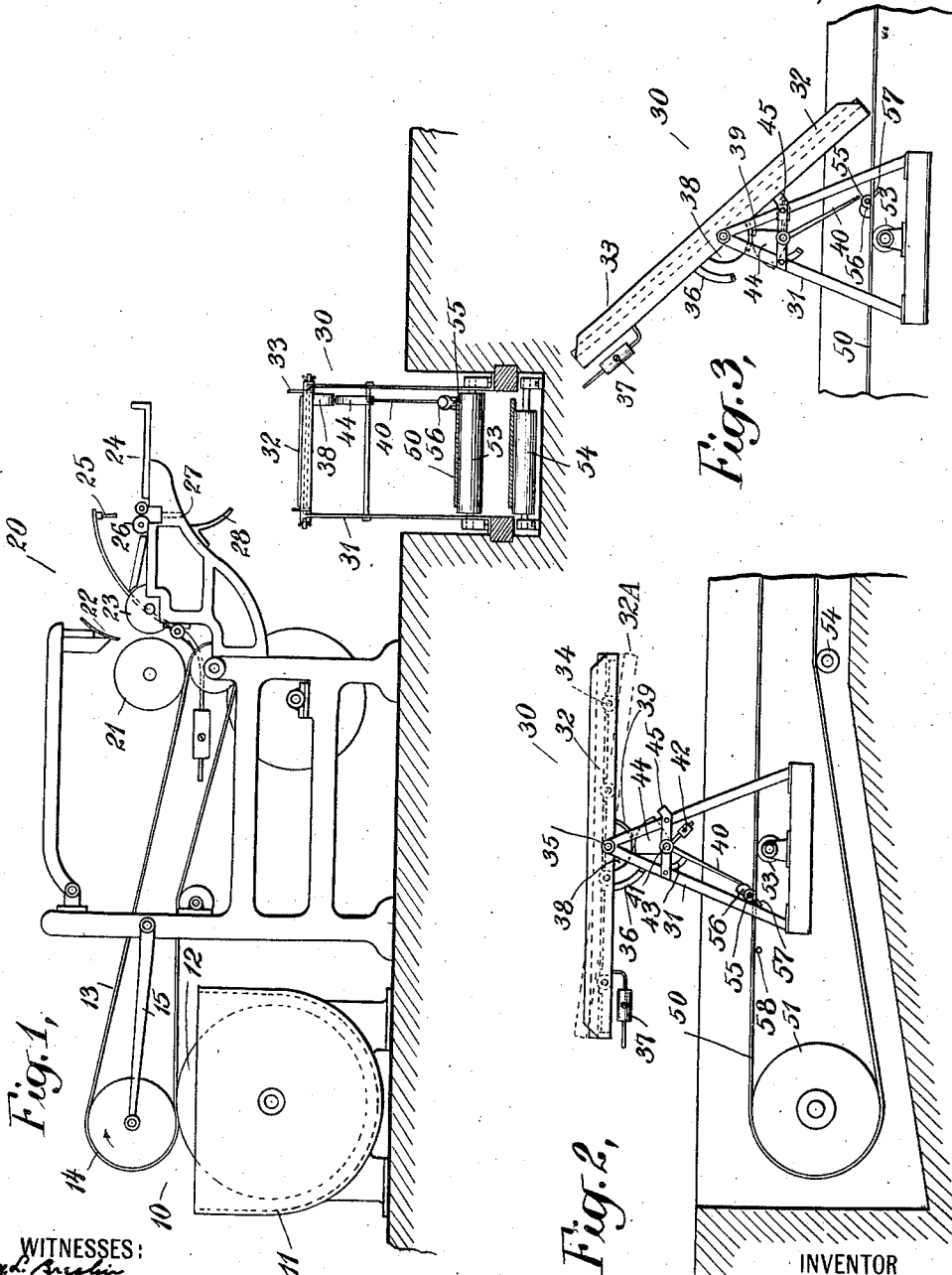


J. H. WALLACE.
PULP MILL APPARATUS.
APPLICATION FILED APR. 19, 1911.

1,049,423.

Patented Jan. 7, 1913.

2 SHEETS—SHEET 1.



WITNESSES:
W. H. ...
...

Fig. 2,

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2 SHEETS—SHEET 2.

Fig. 4,

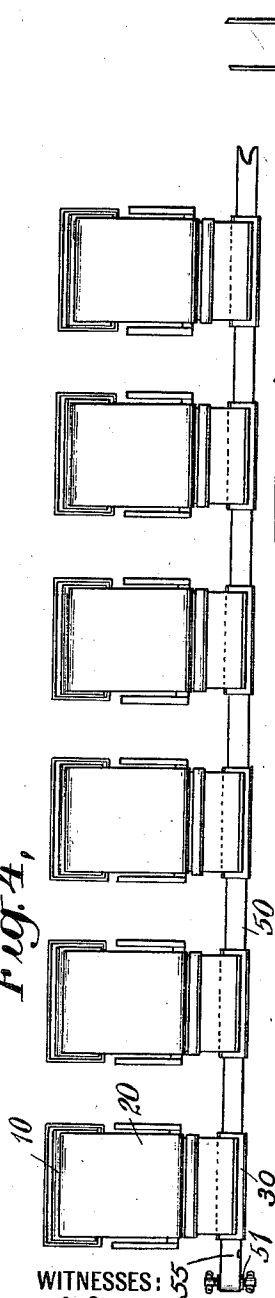


Fig. 5

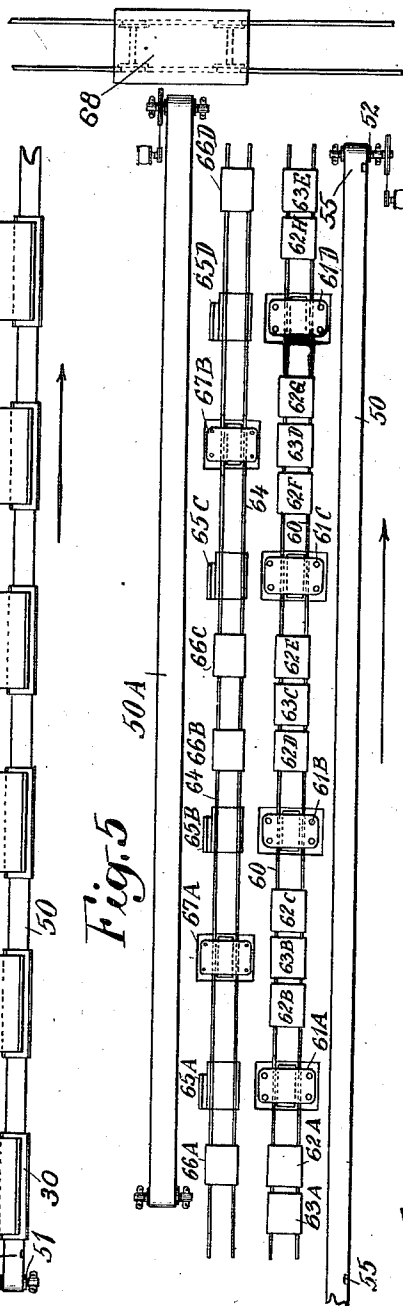


Fig. 7,

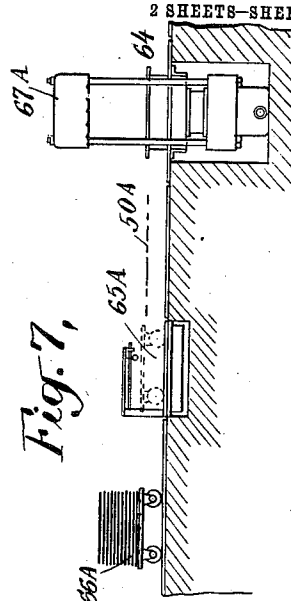
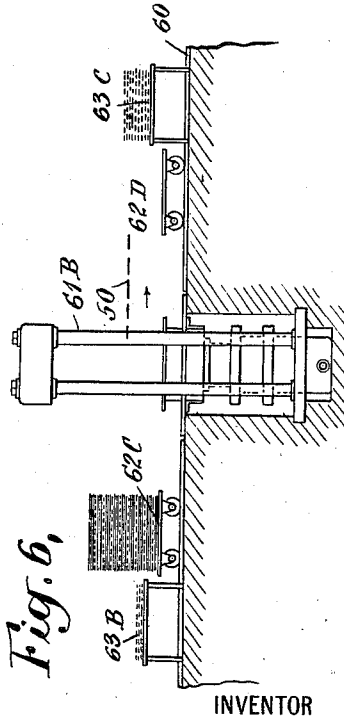


Fig. 6,



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JOSEPH H. WALLACE, OF NEW YORK, N. Y.

PULP-MILL APPARATUS.

1,049,423.

Specification of Letters Patent.

Patented Jan. 7, 1913.

Application filed April 19, 1911. Serial No. 621,980.

To all whom it may concern:

Be it known that I, JOSEPH H. WALLACE, a citizen of the United States, and a resident of the borough of Manhattan, in the city, county, and State of New York, United States of America, have invented certain new and useful Improvements in Pulp-Mill Apparatus, of which the following is a specification.

My invention relates to pulp mill apparatus, and its object is to provide power-driven machinery for performing certain parts of the process of manufacturing paper pulp which have hitherto been done by manual labor, and to provide intermediate mechanisms and automatic devices in conjunction with and in definite relation to such machines as have heretofore been known in this art, by means of which they may be more effectively associated with each other and their use greatly facilitated.

I will describe my invention in the following specification and point out the novel features thereof in the appended claims.

Referring to the drawings, Figure 1 is a side elevation of a wet machine for making paper pulp, together with a pulp cutting and folding machine. This figure also shows an end view of a tilting table of novel construction, and a portion of a conveyer in section. Side elevations of the tilting table and the conveyer are shown in Figs. 2 and 3. These figures show the tilting table in different positions, and illustrate its operation. Fig. 4 is a plan view of a plurality of units such as are shown in Fig. 1, and shows the positions in which they are placed relative to one another and to a belt-conveyer which is also shown in this figure. In Fig. 5 the same conveyer is shown in plan view together with another parallel conveyer, and between them are shown various devices placed in definite relations to the conveyers and to one another for a purpose which will appear hereinafter. Fig. 6 is a side elevation of some of the devices which are shown in Fig. 5, and Fig. 7 is a similar view of some other devices which are shown in Fig. 5.

Like characters of reference designate corresponding parts in all of the figures.

10 designates a pulp machine of the usual wet type. 11 is the receptacle for the wet pulp stock, and 12 is a rotary cylinder which picks it up and deposits it upon the endless felt 13 which runs over a roller 14 on the end of a pivoted arm 15. 20 is a

pulp sheet cutting and folding machine of a standard construction. The felt 13 runs through this machine, and the pulp upon it becomes collected upon a roller 21. As soon as a sufficient amount of the pulp has accumulated upon this roller a knife 22 descends and cuts and scrapes it off. The pulp sheet, guided by the knife, then runs over a roller 23 onto a shelf 24. Then a blade 25 descends and forces the central portion of the pulp sheet down between rollers 26, one of which is positively driven so that the folded sheet is discharged from the machine through a slot 27 over a deflecting apron 28. These mechanisms are described but briefly as they form no part of the present invention. They are also illustrated more or less diagrammatically, and many of their parts are not shown. Heretofore it has been customary to collect by hand the folded pulp sheets thus formed and to carry them to other devices where they are subjected to further treatment, thus entailing a large amount of manual labor. I have, however, invented the arrangement of parts herein shown for the purpose of facilitating the process of treating the pulp sheets, formed as above described, and preparing them for delivery or shipment. The tilting table 30 which is shown in the drawings is so placed that the pulp sheets are discharged upon it. Each of these tables comprises a stationary frame 31 near the upper portion of which is pivoted the table top 32 which is flanged along its longitudinal edges as at 33. The table top preferably comprises a plurality of transverse rollers 34, and is affixed to a shaft 35 at one side of its center of gravity and is held in its horizontal position against a fixed stop 36 by an adjustable weight 37.

38 is a sector affixed to the shaft 35. From a portion of this sector projects a concentric friction member 39 of some soft resilient material such as rubber.

40 is an actuating arm which is pivoted in the frame 31 at 41. A weighted lever holds this arm against a fixed stop 43.

44 is a sector which is preferably an integral part of the arm 40 above its pivot 41. The curve of this sector is such as to allow it to swing freely under the sector 38.

The weight 36 may be so adjusted that when one or any other desired number of pulp sheets have been discharged onto the table top 32 the latter will swing into the

position in which it is indicated by the dotted line at 32^A in Fig. 2. This will bring the friction member 39 into engagement with the sector 44 so that it will arrest the movement of the table top. Now, however, when the actuating arm 40 is moved, the sector 44 which has come into engagement with the friction member 39, will cause the table top to be tilted into the position in which it is shown in Fig. 3. Its movement in this direction is limited by stops 45.

50 designates a belt conveyer which runs under the tables 30 and over rollers 51 and 52 at its opposite ends, and is supported by intermediate rollers 53 and 54. Movement is imparted to the belt by the roller 52 which is motor driven.

55 is a tripping device affixed to the upper surface of the belt 50 and so arranged that it will engage the lower end of the arm 40 to tilt the table in the manner described so that the pulp sheets upon the table will slide off onto the conveyer. The conveyer belt may be placed higher so that the pulp sheets from the machine 20 will be discharged directly onto it, but it is preferable to use the device shown as the pulp sheets are not then subjected to any strains. Each tripping device comprises a weighted body 56, from one side of which extends an arm 57 which is pivoted to the belt 50 transversely to its direction of movement. When these trips come up over the roller 51, their arms 57 become engaged by a fixed abutment 58 and the weighted bodies become thrown over thereby into the position shown in Fig. 2. When in this position they are high enough above the surface of the belt to engage the arms 40. The bodies 56 are heavy enough to remain in this position when they merely swing the arms 40 idly. But if the movement of the arm actuates the table, the added load thus put upon the arm is sufficient to swing the weighted body 56 back into the position in which it is shown in Fig. 3. In this position it is too low to touch the arms 40.

Referring now to Fig. 4, the manner in which this arrangement is to be used may be seen. Here six units placed side by side are shown, each of which consists of a wet machine, a pulp sheet cutting and folding machine, and a tilting table. The conveyer belt runs under all of the tilting tables. The trips 55 are preferably spaced at equal distances throughout the entire length of the conveyer belt along one of its edges. As the tripping devices 55 pass under the actuating arms 40 they merely swing them over without further result until a table is reached which has received its required number of pulp sheets. Such a table will be tilted and the pulp thereon will slide onto the conveyer. At the same time the tripping device which did this will be

thrown over into its inoperative position so that it will not tilt the next tables even if they are already loaded. But the succeeding tripping device will tilt the next loaded table. The result of this will be that piles of the pulp, each with the same number of sheets therein, will be scattered along the conveyer, and these piles will not be nearer together than the interval between the tripping devices. The pulp sheets will then be carried along by the conveyer to the other devices by which they are to be treated.

60 in Figs. 5 and 6 designates a pair of rails along one side of the conveyer and parallel therewith. Spaced at intervals along these rails are the usual presses 61^A, 61^B, 61^C, and 61^D for squeezing surplus water from the pulp sheets. 62^A, 62^B, 62^C, 62^D, 62^E, 62^F, 62^G and 62^H are trucks upon the rails, one such being provided on either side of each press. 63^A, 63^B, 63^C, 63^D and 63^E are stationary tables near the trucks. These tables are used to support the usual wire or felt separating mats. Now, as the pulp sheets come forward upon the conveyer, an operator may pile them up upon the truck 62^A, placing between some of them, at desired intervals, the separating mats from the table 63^A. When the truck has received its desired load it may be run into the press 61^A, subjected to its pressure, and allowed to remain in the press. In the meantime, the truck 62^B may be similarly loaded, and then the trucks 62^C, 62^D, 62^E, etc. After the pulp sheets on the truck 62^A have been sufficiently pressed in the press 61^A, the pressure may be released and this truck run back to its first position. The loaded truck 62^B may then be run into the press 61^A. In a similar manner the loaded trucks 62^C and 62^D may be run into the press 61^B, and the other trucks on the rails 60 into their adjacent presses. Another pair of rails is shown at 64 parallel with rails 60. These rails 64 run over scales 65^A, 65^B, 65^C and 65^D. Trucks 66^A, 66^B, 66^C and 66^D on these rails 64 are arranged to be moved alongside of the trucks on track 60, or onto the scales or into the baling presses which are designated in the drawings by 67^A and 67^B. After the truck 62^A has been moved back out of the press 61^A to its first position, an attendant transfers the dry pulp sheets from it to the truck 66^A, taking out or separating the mats and laying them back upon the table 63^A. The truck 66^A is then run onto the scale 65^A for the purpose of weighing the pulp which is on it, after which it is run into the baling press 67^A where it is pressed and tied up into bales. After the pressure is released and the truck 66^A is run out of the press, the finished bale is run out onto the second conveyer 50^A which carries it out to a railway-car 68, or to some other desired place for storage or for shipment.

By this novel arrangement of the parts the number of attendants necessary for carrying on this process of manufacture is reduced to a minimum. It will be noted that

5 there are fewer presses for removing the water from the pulp sheets than there are wet machines in operation, and that there are fewer baling presses than there are other presses. All of the mechanisms are placed
10 in definite relation to each other, where they are accessible to the attendants and are so arranged that the different steps in the process of treating the pulp may be carried on with the greatest ease. The conveyer driving mechanism may be stopped at any time
15 by the attendants as devices for this purpose may be placed where they are readily accessible. The arrangements herein shown and described provide means for transferring the pulp sheets through the mill during
20 the process of manufacture without subjecting them while in their soft and easily damaged condition to the rough treatment of being handled by attendants, does away
25 with a large number of the help usually employed, and reduces the cost of manufacture to a minimum.

What I claim is:—

1. The combination with apparatus for forming pulp sheets, of a power driven conveyer, means automatically actuated by the movement of the conveyer for dumping said pulp sheets onto the upper surface of the conveyer, and independent devices for subjecting the pulp sheets to desired treatment,
35 said apparatus and devices being placed in definite relation to the conveyer.

2. The combination with apparatus for forming pulp sheets, of a tilting table positioned to receive the pulp sheets from said apparatus, a power driven belt conveyer, and a tripping device on said conveyer arranged to tilt said table to cause it to discharge the pulp thereon onto the conveyer.
40

3. The combination with apparatus for forming pulp sheets, of a tilting table positioned to receive the pulp from said apparatus, a power driven conveyer under said table, and a tripping device on said conveyer arranged to tilt said table to cause
50 it to discharge the pulp thereon onto the conveyer in the direction of the conveyer's travel.

4. The combination with apparatus for forming pulp sheets, of a power driven conveyer, a table positioned to receive the pulp from said apparatus, mechanism for tilting said table to cause it to discharge the pulp thereon, onto the conveyer, and a tripping device on the conveyer arranged to cause the movement of the conveyer to actuate said tilting mechanism, said table comprising means for rendering the tilting mechanism inoperative except when there is a desired
65 amount of pulp upon it.

5. The combination with apparatus for forming pulp sheets, of a power driven belt conveyer, a table positioned to receive the pulp from said apparatus, a pivot for the table at one side of its center of gravity, mechanism for tilting said table about its pivot to cause it to discharge the pulp thereon onto the conveyer, a tripping device on the conveyer arranged to cause the movement of the conveyer to actuate said tilting mechanism, said table comprising an adjustable weight arranged to render the tilting mechanism inoperative except when there is a desired amount of pulp upon it. 70

6. The combination with apparatus for forming pulp sheets, of a power driven conveyer, a table positioned to receive the pulp from said apparatus, a pivot for the table at one side of its center of gravity and transverse to the movement of the conveyer, mechanism for tilting said table about its pivot to cause it to discharge the pulp thereon onto the conveyer, said tilting mechanism comprising an actuating arm projecting toward the conveyer, and a member arranged to be engaged by a portion of said arm; a tripping device upon the conveyer arranged to cause the movement of the conveyer to be imparted to the actuating arm, and an adjustable weight on the table arranged to hold said member out of engagement with the actuating arm until a desired amount of pulp has been discharged onto the table. 80 85 90 95

7. The combination with apparatus for forming pulp sheets, of a power driven conveyer, a table positioned to receive the pulp from said apparatus, a pivot for the table at one side of its center of gravity and transverse to the movement of the conveyer, mechanism for tilting said table about its pivot to cause it to discharge the pulp thereon onto the conveyer, said tilting mechanism comprising an actuating arm projecting toward the conveyer, a sector connected with the arm, and a friction member on said shaft arranged to be engaged by the sector; a tripping device upon the conveyer arranged to cause the movement of the conveyer to be imparted to the actuating arm and its sector, and an adjustable weight upon the table arranged to hold the friction member out of engagement with said sector until a desired amount of pulp has been discharged onto the table. 100 105 110 115 120

8. The combination with a plurality of units of apparatus placed side by side for forming pulp sheets, of a power driven belt conveyer having its direction of movement transverse to that of units, means automatically actuated by the movement of the conveyer for discharging the pulp sheets onto the conveyer, and devices for subjecting the pulp sheets to desired treatment, 125 130

said units and devices being placed in definite relation to the conveyer.

9. The combination with a plurality of independent units of apparatus for forming pulp sheets, of a conveyer arranged to receive the pulp from said units and to carry it to a plurality of points away from the units, and means for causing the pulp from the units to be delivered from the conveyer successively and in definite quantities.

10. The combination with a plurality of units of apparatus for forming pulp sheets, a device opposite each unit for receiving the pulp therefrom, a power driven conveyer for continuously carrying the pulp forward as delivered, and means automatically actuated by the conveyer for releasing the receiving devices after intervals of time and dumping the pulp thereon onto the conveyer in definite quantities.

11. The combination with a plurality of units of apparatus placed side by side for forming pulp sheets, of a power driven belt conveyer having its direction of movement transverse to said units, a tilting table for each unit positioned to receive the pulp from said unit, and means for tilting said tables, one at a time, to cause them to discharge the pulp thereon onto the conveyer.

12. The combination with a plurality of units of apparatus placed side by side for forming pulp sheets, of a power driven belt conveyer having its direction of movement transverse to said units, a table for each unit positioned to receive the pulp from said unit, each table comprising mechanism for tilting it to cause it to discharge the pulp thereon onto the conveyer, and a plurality of tripping devices on the conveyer arranged to cause the movement of the conveyer to actuate the tilting mechanism of the tables at intervals.

13. The combination with a plurality of units of apparatus placed side by side for forming pulp sheets, of a power driven belt conveyer having its direction of movement transverse to said units, a table for each unit positioned to receive the pulp from said unit, each table comprising mechanism for tilting it to cause it to discharge the pulp thereon onto the conveyer, a plurality of tripping devices on the conveyer, means for throwing the tripping devices into operative position that it may cause the movement of the conveyer to actuate the tilting mechanism of one of the tables, means for throwing a tripping device out of operative position when it actuated said mechanism, and an adjustable weight on each table arranged to render its tilting mechanism inoperative except when there is a desired amount of pulp upon it.

14. The combination with a plurality of units of apparatus placed side by side for forming pulp sheets, of a power driven belt

conveyer having its direction of movement transverse to said units, a table for each unit positioned to receive the pulp from said unit, each table having a shaft transverse to the direction of movement of the conveyer at one side of the center of gravity of the table and comprising mechanism for tilting the table about its shaft to cause it to discharge the pulp thereon onto the conveyer, said mechanism comprising an actuating arm projecting toward the conveyer, a sector connected with said arm, and a friction member on said shaft arranged to be engaged by the sector; an adjustable weight on each table arranged to hold its friction member out of engagement with said sector until a desired amount of the pulp has been delivered onto the table; and a plurality of tripping devices on the conveyer spaced at intervals along the length thereof, arranged to cause the movement of the conveyer to be imparted to the actuating arms of the tables.

15. The combination with apparatus for forming pulp sheets, of a power driven conveyer arranged to receive the pulp, a truck at a distance from said apparatus for receiving the pulp, a press for receiving the truck and its load; a second truck located alongside of the first truck for receiving the pressed pulp, a baling press for receiving said second truck and its load, and another conveyer for carrying the baled pulp to a point of delivery.

16. The combination with apparatus for forming pulp sheets, of a power driven conveyer arranged to receive the pulp, a press adjacent to the conveyer, a pair of trucks for taking the pulp into said press; a baling press, a truck arranged to be moved alongside of either one of said pair of trucks for taking the pulp into the baling press, and another conveyer for carrying the baled pulp to a point of delivery.

17. The combination with apparatus for forming pulp sheets, of a power driven conveyer arranged to receive the pulp, a press adjacent to the conveyer, a track parallel with the conveyer upon said track for taking the pulp into said press; a baling press, a second parallel track running through the baling press, a truck upon said second track arranged to be moved alongside of either one of said pair of trucks for taking the pulp into the baling press; and another conveyer parallel with the first conveyer for carrying the baled pulp to a point of delivery.

18. The combination with a plurality of units of apparatus for forming pulp sheets, of a power driven conveyer arranged to receive the pulp from all of said units, a plurality of presses adjacent to said conveyer, a pair of mat-sustaining tables for each press, a pair of trucks for each press be-

5 tween the tables and the presses for taking
 the pulp into the presses; one or more bal-
 ing presses, and a truck for each baling
 press, said baling press truck or trucks be-
 10 ing arranged to be brought alongside of
 the other trucks; a weighing scale for each
 baling press truck, and another conveyer
 for carrying the baled pulp to a point of
 delivery.
 15 19. The combination with a plurality of
 units of apparatus for forming pulp sheets,
 of a device for each unit positioned to re-
 ceive the pulp, means operated by the con-
 veyer for discharging the pulp onto the
 20 conveyer from said devices at intervals when
 a desired quantity of pulp has been re-
 ceived on said devices, a power driven belt
 conveyer arranged to receive the pulp from
 all of said devices, a plurality of presses ad-
 25 jacent to said conveyer, a track parallel with
 the conveyer running through the presses, a

pair of mat-sustaining tables for each press,
 a pair of trucks for each press upon said
 track between the tables and the presses for
 taking the pulp into the presses; one or 25
 more baling presses, a second parallel track
 running through the baling press or presses,
 a pair of trucks for said baling press upon
 said second track, said baling press trucks
 being arranged to be brought alongside of 30
 the other trucks, a weighing scale for each
 baling press truck in said second track,
 and another conveyer parallel with the first
 conveyer for carrying the baled pulp to a
 point of delivery. 35

In testimony whereof I have signed my
 name to this specification in the presence of
 two subscribing witnesses.

JOSEPH H. WALLACE.

Witnesses:

ELLA LERCH,

MARIE L. BRESLIN.