

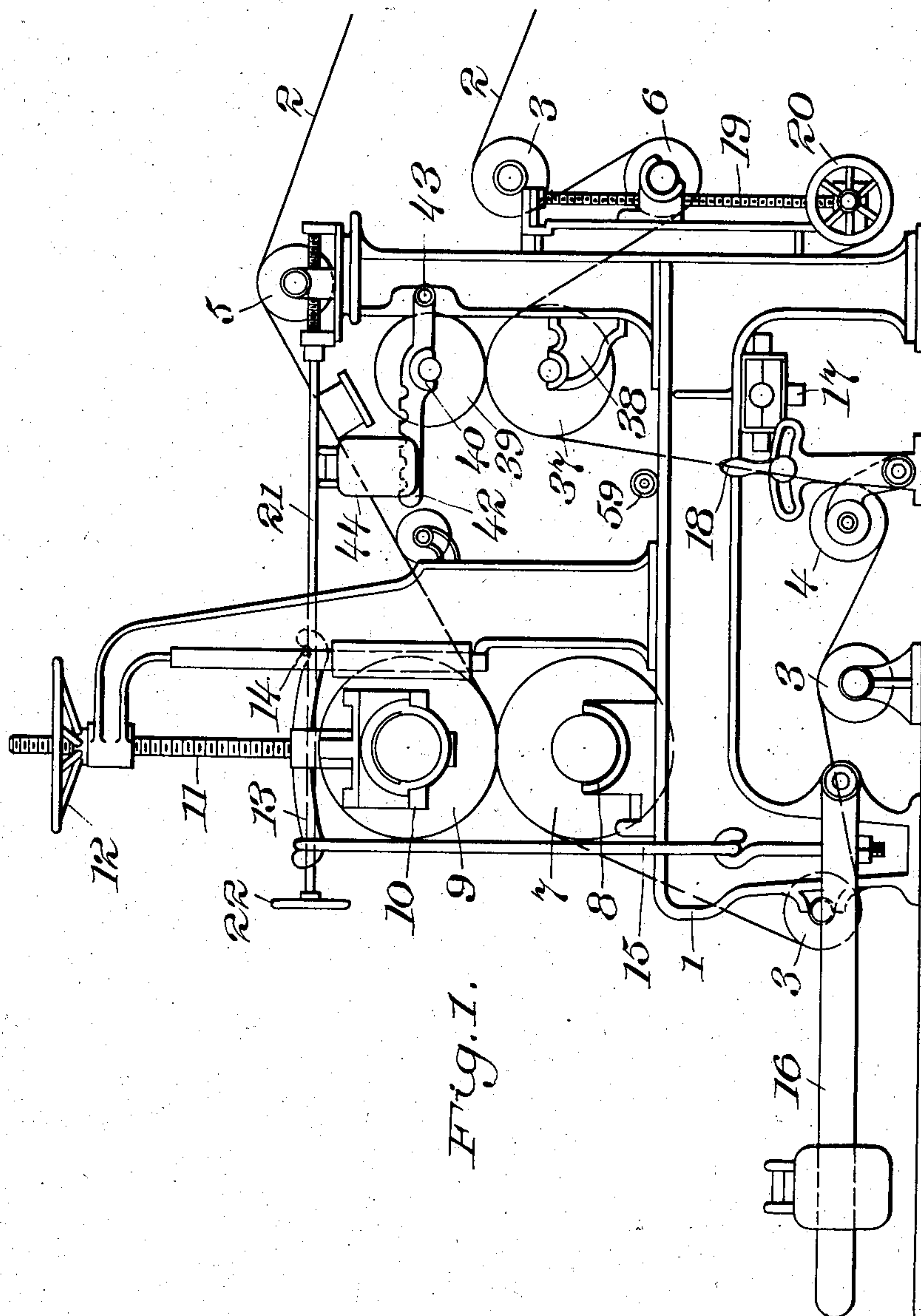
No. 833,806.

PATENTED OCT. 23, 1906.

W. SILLMAN.
MACHINE FOR MAKING MILLBOARD.

APPLICATION FILED JUNE 11, 1906.

2 SHEETS—SHEET 1.



Witnesses
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Inventor
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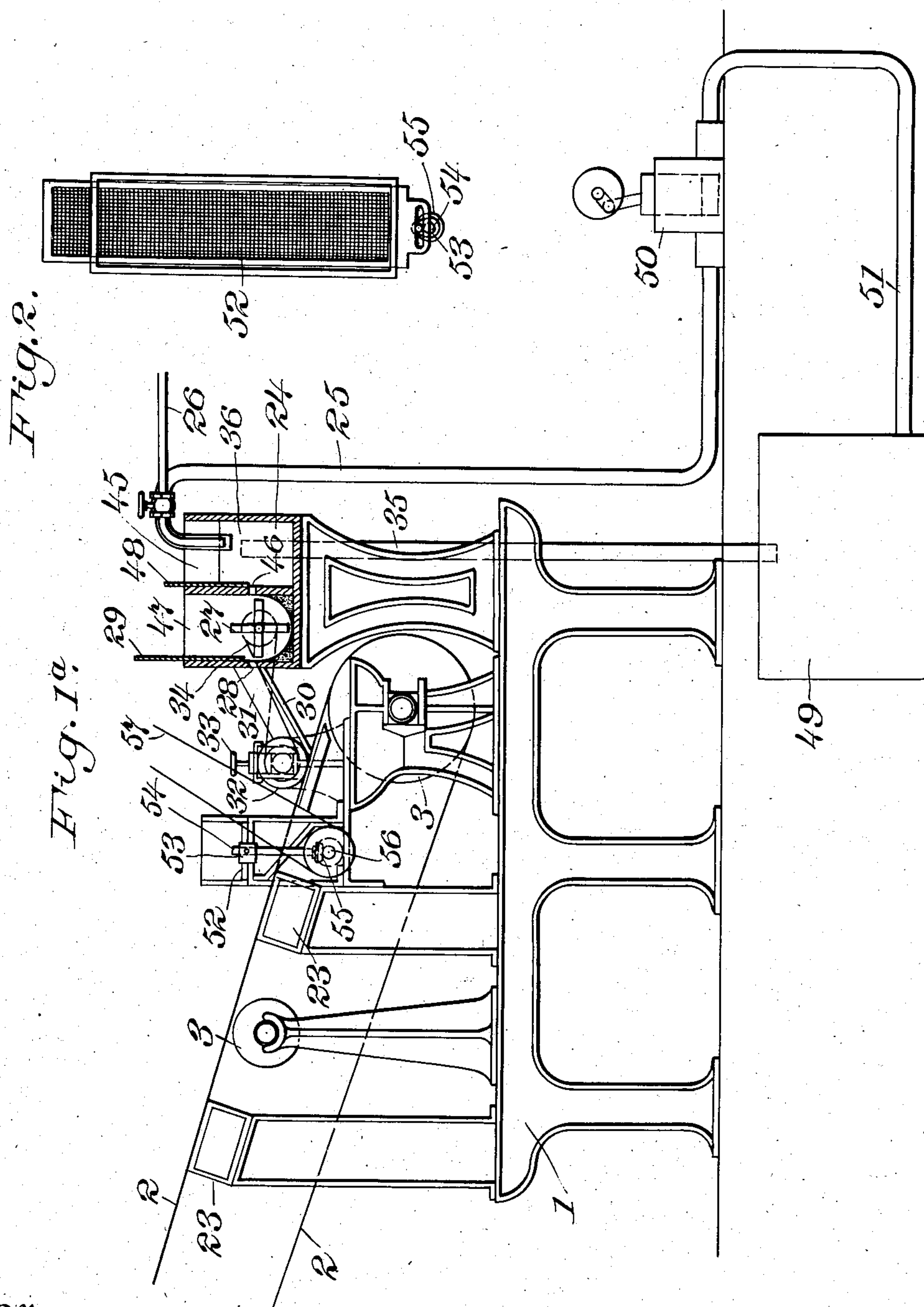
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UNITED STATES PATENT OFFICE.

WILLIAM SILLMAN, OF NEW YORK, N. Y.

MACHINE FOR MAKING MILLBOARD.

No. 833,806.

Specification of Letters Patent.

Patented Oct. 23, 1906.

Application filed June 11, 1906. Serial No. 321,112.

To all whom it may concern:

Be it known that I, WILLIAM SILLMAN, a citizen of the United States of America, and a resident of the borough of Brooklyn, county of Kings, city and State of New York, have invented certain new and useful Improvements in Machines for Making Millboard, of which the following is a specification.

My invention relates generally to the manufacture of plates, sheets, or boards out of pulp-like mixtures, and more specifically consists of improved mechanism for economically handling mixtures containing ingredients of great fineness of pulverization and considerable specific gravity.

Heretofore it has been customary to employ apparatus of the general paper-making or cardboard-making machine type known in the art as "wet machines" for the purpose of making millboard and heavier plates or sheets out of various pulped fibrous materials, including short asbestos fibers mixed with various pulverized materials as fillers and as active constituents in the composition. When a material which is finely pulverized, such as hydraulic cement, and which has considerable specific gravity is employed in large quantity in such manufacture, the same is wasted in large part by being drawn through the meshes of the wire-cloth-covered roll upon which the pulp material is originally deposited by the action of suction and so carried away and also by being deposited in the bottom of the tank of the wet machine by virtue of its greater specific gravity. My invention overcomes this feature of waste by practically compelling all of the heavier and finely-divided constituent to enter into the finished product, prevents any premature setting of the cement, and has other advantages and economies.

One form of apparatus embodying my invention is illustrated in the accompanying two sheets of drawings, in which—

Figures 1, 1^a are a side elevation and partial section of the machine, and Fig. 2 is a detail of the sieve-shaking apparatus.

Throughout the drawings like reference-figures indicate like parts.

1 1 represent parts of the main frame of the machine, and 2 is an endless band of felt running over a series of guide-rollers 3 3, &c. 17 is a beater for cleaning said felt; 4, an adjusting-roll for guiding the felt in proper relation to the beater, the position of which is controlled by the adjusting-lever 18.

23 23, &c., are suction-boxes of any convenient form, over which the felt 2 passes. The suction may be produced by steam jets, blowers, or in any convenient manner. (Not here illustrated.) The felt 2 is properly guided with reference to these suction-boxes by the adjustable roll 5, the position of which is controlled by the screw 21, operated by the hand-wheel shaft 22.

6 is a tightening-roll for the endless band of felt, the position of which is controlled by the screw 19 and the hand-wheel 20.

7 is a lower press-roll mounted in stationary journal-bearings 8, and 9 the upper press-roll, mounted in movable journal-bearings 10, carried by the lever 13, pivoted to the main frame at 14 and pulled downward by the link 15, which is connected to the weighted pressure-lever 16.

11 is a screw for limiting the downward motion of the upper press-roll 9 by means of the adjustable hand-wheel nut 12. The endless felt of course passes between the press-rolls, as shown.

37 is the lower drying-roll for the felt-mounted in stationary journal-bearings 38, and 39 is the upper drying-roll, mounted in journal-bearings 40 in the lever 42, pivoted to the main frame at 43 and pressed downward by the adjustable weight 44. Before entering these drying-rolls the felt is further cleansed by the water-spray 59.

24 is a mixing-box to which one portion of the stock or material, such as asbestos fiber, beaten up with a sufficient quantity of water, is delivered through the stock-pipe 25.

26 is a water-pipe through which a suitable quantity of water is delivered.

46 is a passage leading from the mixing-box to the distributing-trough 47. This passage is controlled by a gate 48. The trough 47 has a curved bottom, as shown in cross-section.

27 is an agitator of any convenient form, located in the distributing-trough. The side of the distributing-trough which is next the agitator has a horizontal delivery-slot 28 formed therein at a height approximately corresponding to the axis of the agitator 27. 29 is an adjustable gate for said slot.

30 is an inclined apron of oil-cloth or similar material extending from the edge of the distributing-trough below the slot 28 down to a point over the upper strand of the endless felt 2. This apron has upturned sides, one of which is shown at 31.

32 is a regulating-roll having a face of rubber or similar suitable material, mounted in journal-bearings which can be adjusted toward or away from the felt 2 by means of the adjusting-screw 33. This roll may cooperate with the felt 2 or with the apron 30 or with both at their juncture. It is rotated by the belt 34 in the direction to produce circumferential travel on its under side opposite to the travel of the felt at the point of contact therewith or opposite to the direction of flow of the material down the apron 30.

35 is an overflow-pipe from the mixing-tank, and 36 a partition which permits any excess of material to flow over into the compartment 45, which serves as an overflow-box and which is drained by the overflow-pipe 35.

49 is a stock-chest from which the fiber pulp is drawn by any suitable means, as the pump 50, through pipe 51 and delivered to stock-pipe 25. The overflow-pipe 35 returns the surplus pulp to this stock-chest.

52 is a sieve of any preferred construction containing dry finely-pulverized cement. A suitable shaking or jiggling motion is given to this sieve by any convenient mechanism, such as the crank 53 on the shaft 54, which is rotated by bevel-gearing 55 from the pulley-shaft 56, driven by a belt 57, deriving its motion from any convenient portion of the driving mechanism. (Not shown.)

The operation of my invention is as follows: The guide-roller system and the endless band of felt 2 carried thereby being set in motion by means of power (not shown) and the supply of pulp stock and water being turned on to the mixing-box, the same will overflow through the slot 28 in an even stream down the inclined apron 30 to the upper strand of the endless felt 2, upon which it will be deposited in a thin even layer or film by means of the action of the regulating-roll 32 and the traveling motion of the felt. Upon this is deposited a suitable quantity of finely-divided cement by the sieve 52. A compound layer of cement and pulp is thus formed on the felt 2, and as this passes over the suction-boxes 23 23, &c., a considerable quantity of the water or other liquid is sucked down through the felt and the layer of material on the felt is left in a sufficiently-dry condition to adhere to the upper press-roll 9 as the felt passes through said press-rolls. This press-roll is usually made of iron. A film of material is therefore wound upon the upper press-roll 9, the same rising as the thickness of the winding on its surface increases until a predetermined thickness is attained, when the cylindrical covering thus formed is slit longitudinally of the cylinder by a knife in the hands of the operator and removed in the shape of a plate or sheet whose length is the length of the cylinder and whose width is the circumference thereof. The felt from which the major por-

tion of the material has thus been removed passes on down around the guide-rolls 4 and up by the beater 17, which knocks out of the felt the small quantity of material remaining therein. The felt then passes between the drying-rolls 37 39, which squeeze the moisture out of it, and thence around the tightening-roll 6, back to the neighborhood of the mixing-tank, where it again has deposited upon it the film of material.

The advantages of my invention comprise the practically complete saving of all waste of material, there being no opportunity for any of the cement or other substance to escape deposition upon the felt 2, the prolonged life of the felt itself, which is not forced into destructive contact with the wire-cloth roll used in former machines, and the ease of regulation of the raw materials and the machine and process at every point of operation, the possibility of cleaning and drying the felt, &c.

It is evident, of course, that various changes could be made in the relative arrangement and form of the parts of my invention without departing from the spirit and scope thereof so long as the general principle of operation above set forth be adhered to. In case more water were needed to dissolve and set the dried cement the action of the suction-boxes may be modified or dispensed with and, if desired, more water added to the pulp in the mixing-tank, or water may be sprinkled upon the layer of material formed on the endless belt 2.

Having, therefore, described my invention, I claim—

1. In a machine for making millboard and similar substances, the combination of a pair of press-rolls, a flexible endless band passing through said rolls, means for depositing a fluid film of pulped fiber upon the upper section of said band and means for depositing finely-pulverized dry material on said film of pulped fiber prior to its passage through the press-rolls.

2. In a machine for making millboard and similar substances, the combination of a pair of press-rolls, a flexible endless band passing through said rolls, means for depositing a fluid film of pulped fiber upon the upper section of said band and means for depositing finely-pulverized dry material on said film of pulped fiber prior to its passage through the press-rolls, together with a series of suction-boxes located under the upper strand of the endless band and in operative relation thereto.

3. In a machine for making millboard and similar substances, the combination of a pair of press-rolls, a flexible endless band passing through said rolls, means for depositing a fluid film of pulped fiber upon the upper section of said band and means for depositing finely-pulverized dry material on said film of pulped fiber prior to its passage through the

press-rolls, said first-mentioned means comprising a mixing-tank, having a delivery-slot in its side and an inclined apron extending therefrom to the endless band.

5 4. In a machine for making millboard and similar substances, the combination of a pair of press-rolls, a flexible endless band passing through said rolls, means for depositing a fluid film of pulped fiber upon the upper section of said band and means for depositing
10 finely-pulverized dry material on said film of pulped fiber prior to its passage through the press-rolls, said first-mentioned means comprising a mixing-tank, having a delivery-slot
15 in its side and an inclined apron extending therefrom to the endless band, and an agitator in said mixing-tank.

5. In a machine for making millboard and similar substances, the combination of a pair
20 of press-rolls, a flexible endless band passing through said rolls, means for depositing a fluid film of pulped fiber upon the upper section of said band and means for depositing

finely-pulverized dry material on said film of pulped fiber prior to its passage through the
25 press-rolls, said last-mentioned means comprising a sieve located over the endless band and mechanism for agitating said sieve.

6. In a machine for making millboard and similar substances, the combination of a pair
30 of press-rolls, a flexible endless band passing through said rolls, means for depositing a fluid film of pulped fiber upon the upper section of said band and means for depositing
35 finely-pulverized dry material on said film of pulped fiber prior to its passage through the press-rolls, together with means for regulating the amount of water in the mixture on the endless band when the same reaches the
40 press-rolls.

Signed at Brooklyn, New York, this 8th day of May, 1906.

WILLIAM SILLMAN.

Witnesses:

CHAS. CURNOW,
E. N. ROBER.