No. 840,386. PATENTED JAN. 1, 1907.

W. SILLMAN.

MACHINE FOR MAKING MILLBOARD.

APPLICATION FILED JUNE 11, 1906.

2 SHEETS—SHEET 1.

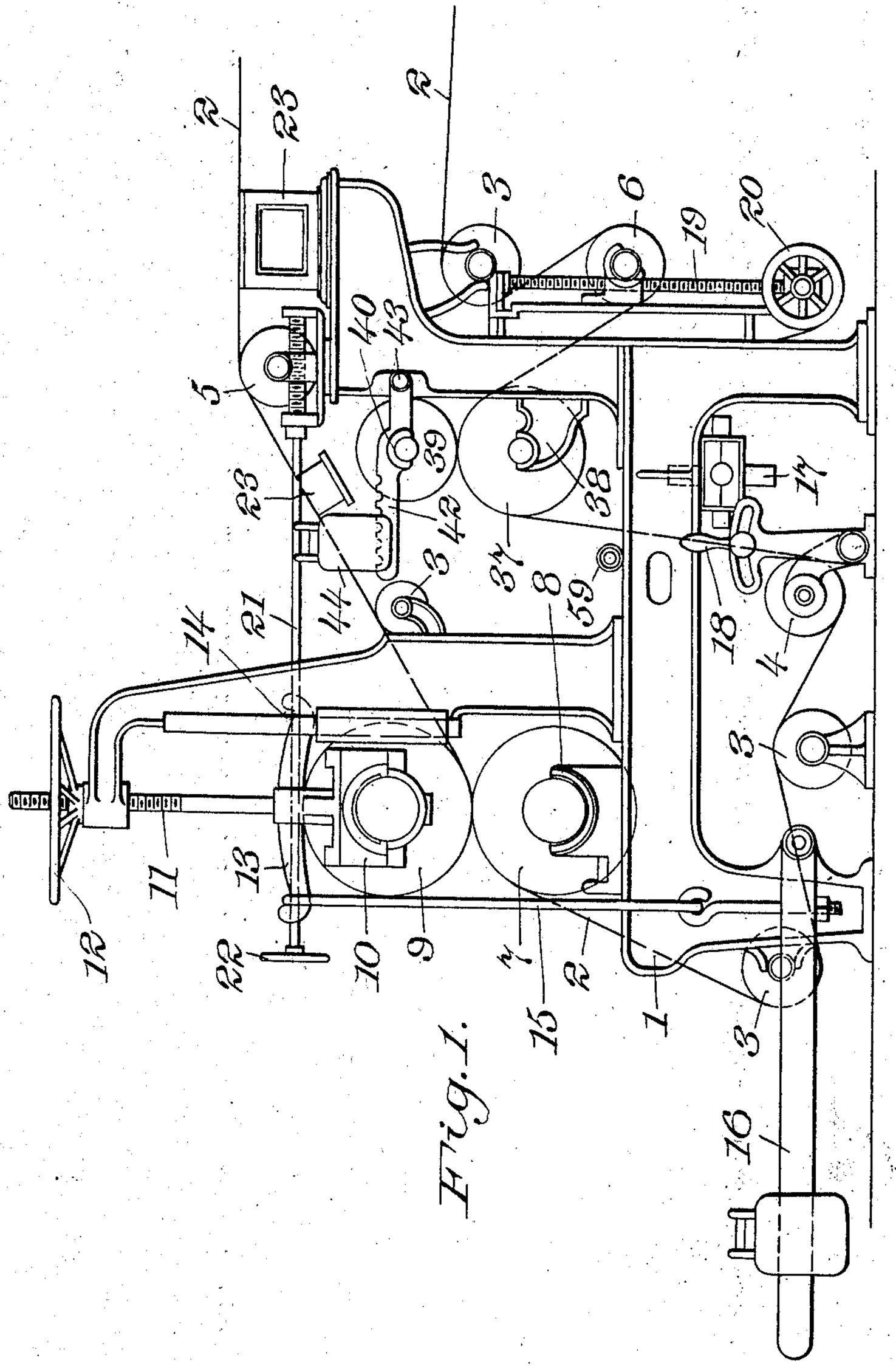

Fig. 1.

Witnesses
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W. H. Pumphrey.

Inventor
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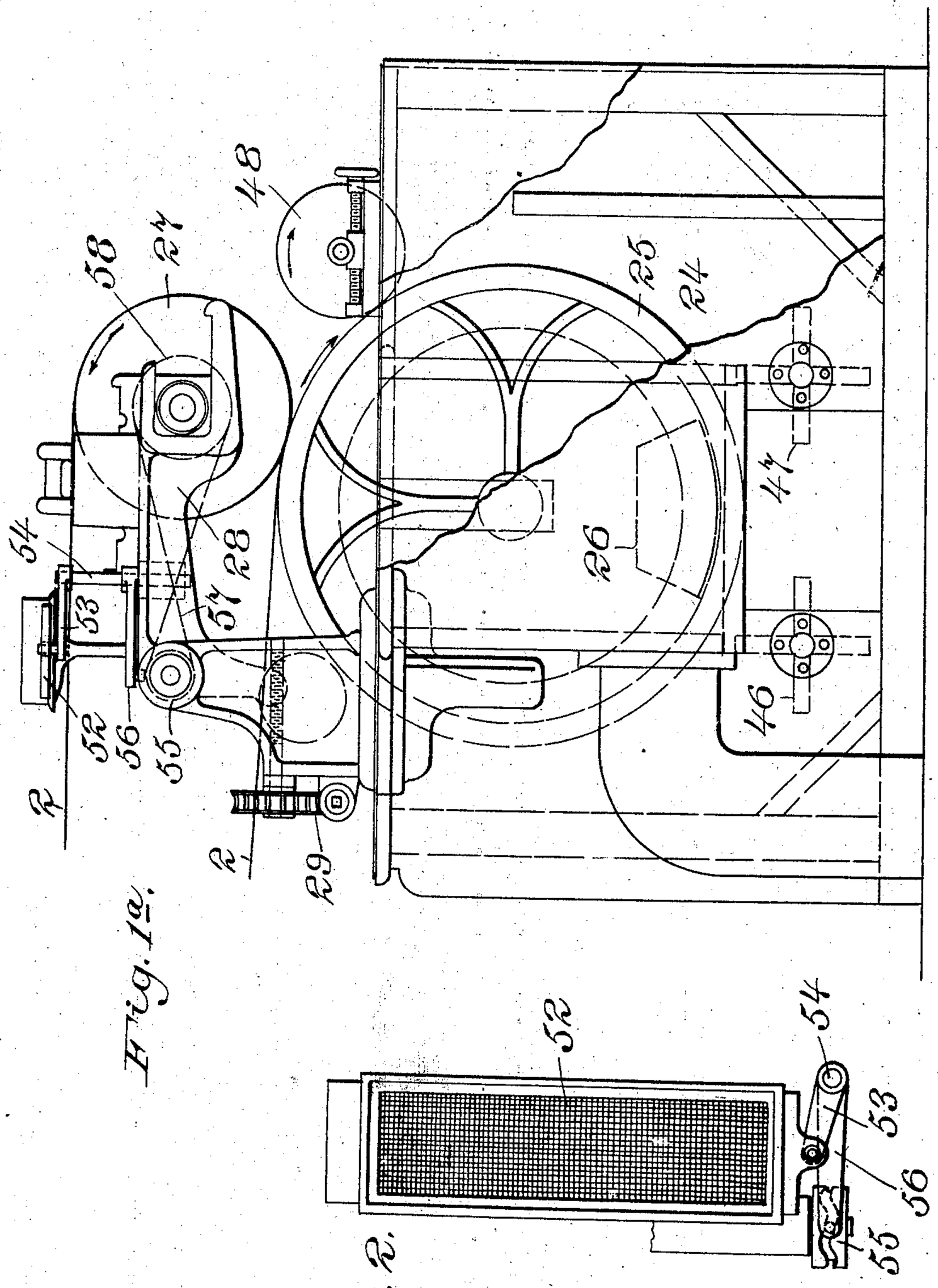

Fig. 1a.

Fig. 2.

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UNITED STATES PATENT OFFICE.

WILLIAM SILLMAN, OF NEW YORK, N. Y.

MACHINE FOR MAKING MILLBOARD.

No. 840,386. Specification of Letters Patent. Patented Jan. 1, 1907.

Application filed June 11, 1906. Serial No. 321,113.

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—

Figure 1 1^a is a side elevation of the machine with parts broken away, 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 tank or vat to which one portion of the stock or material, such as asbestos fiber, beaten up with a sufficient quantity of water is delivered, together with additional water, if required, as in the process heretofore used upon the wet-machine. In this vat is the usual rotating wire-cloth cylinder 25, the interior portion of which is drained by the outlet connection 26.

46 47 are stirrers or agitators located in the bottom of the vat.

48 is a cleaning-roll by which any material picked up by the wire-cloth and not transferred to the endless belt 2 may be removed.

The guide-roller 27 is carried on the bell-crank 28, pivoted to the main frame and adjustable through the worm-wheel and worm-screw mechanism 29.

52 is a sieve of any preferred construction containing dry finely-pulverized cement. A suitable shaking or jigging motion is given to

this sieve by any convenient mechanism, such as the crank 53 on the shaft 54, which is rocked by arm 56, engag ng a grooved cam-wheel 55, rotated by belt 57, running over pulley 58 on the shaft of guide-roller 27.

The operation of my invention is as follows: The apparatus being set in motion, a semifluid film or layer of felted asbestos fiber will be deposited upon the wire-cloth cylinder and in turn will be transferred to the endless felt 2 in the ordinary and well-understood manner. As this layer of material passes under the sieve 52 a suitable quantity of finely-divided cement is deposited upon it. 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 up on 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 portion 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 wire-cloth cylinder, where it again has deposited upon it the film of asbestos, to which cement is subsequently added, as before described.

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, 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 with the ordinary mechanism of a "wet" paper-making machine including an endless band of felt on which a semifluid film of felted fibers is collected, of a mechanism located over said endless band of felt adapted to deposit finely-divided dry material thereon.

2. In a machine for making millboard and similar substances, the combination with the ordinary mechanism of a "wet" paper-making machine including an endless band of felt on which a semifluid film of felted fibers is collected, of a mechanism located over said endless band of felt adapted to deposit finely-divided dry material thereon, said last-mentioned mechanism comprising a sieve and connections to the paper-machine for shaking said sieve.

3. In a machine for making millboard and similar substances, the combination with the ordinary mechanism of a "wet" paper-making machine including an endless band of felt on which a felted film of fibers is collected, of a mechanism located over said endless band of felt adapted to deposit finely-divided dry material thereon, and means for varying the amount of water in the mixture formed on the felt.

Signed at Brooklyn this 8th day of June, 1906.

WILLIAM SILLMAN.

Witnesses:
CHAS. CURNOW,
E. N. ROBER.