(No Model.)

E. WILMONT.

PAPER MAKING MACHINE.

No. 346,079. Patented July 20, 1886.

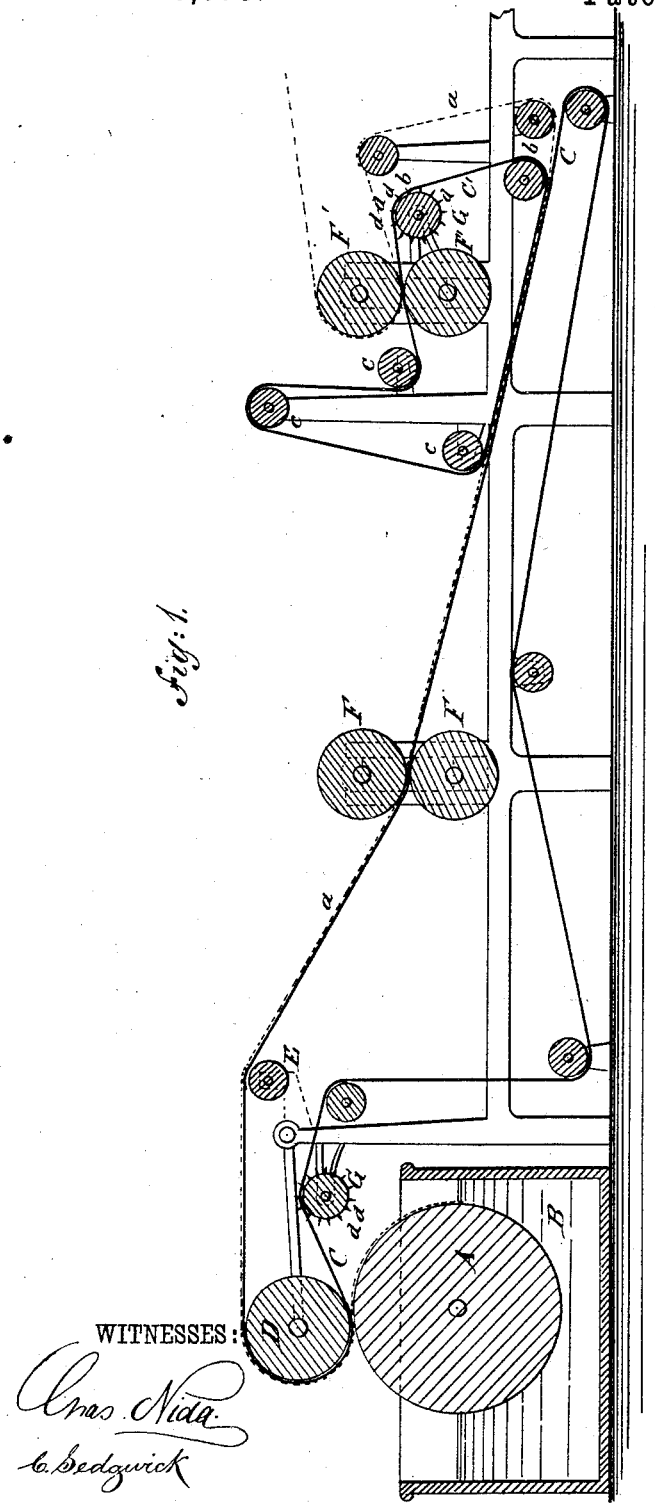

Fig. 1.

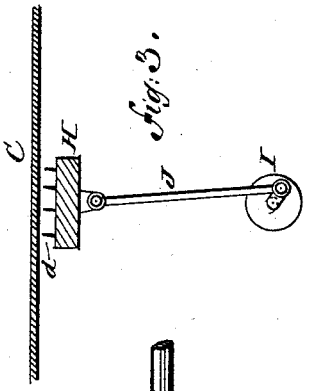

Fig. 3.

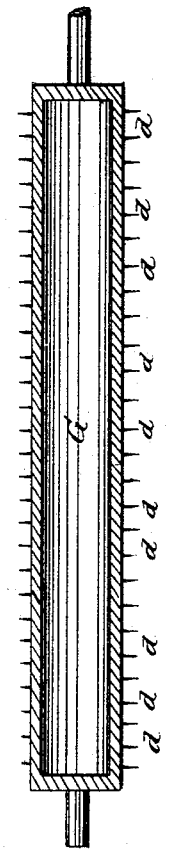

Fig. 2.

WITNESSES:

Chas. Nida.

C. Sedgwick

INVENTOR:

E. Wilmont

BY Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

EDWIN WILMONT, OF LAONA, N. Y., ASSIGNOR OF ONE-HALF TO CLIFFORD J. ALLEXANDER AND WILLIAM S. ALLEXANDER, OF SAME PLACE.

PAPER-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 346,079, dated July 20, 1886.

Application filed December 12, 1885. Serial No. 185,479. (No model.)

To all whom it may concern:

Be it known that I, EDWIN WILMONT, of Laona, in the county of Chautauqua and State of New York, have invented a new and useful Improvement in Paper-Making Machines, of which the following is a specification, reference being had to the annexed drawings, forming a part thereof, in which—

Figure 1 is a vertical longitudinal section of a paper-machine embodying my improvement. Fig. 2 is a longitudinal section of one of the perforating-cylinders. Fig. 3 is a transverse section of a vibrating bar carrying perforating-points.

Similar letters of reference indicate corresponding parts in the different figures of the drawings.

In the manufacture of paper the pulp is taken from the cylinder upon which the paper is formed by means of an endless felt apron, which carries the pulp forward between the rolls for extracting the water from the pulp by pressure upon the felt and pulp. The water is squeezed out through the felt, and after the felt has been used for a time it has commonly been necessary to remove the apron from the paper-machine and wash it, to remove from it very fine particles of paper-pulp and to reopen the fibers of the felt, to render it porous, to permit of the escape through it of the water extracted from the pulp by the rolls.

The object of my invention is to obviate this difficulty by providing means for continually perforating the felt apron, thereby rendering it porous, so that the water pressed from the pulp may readily escape through the felt.

In carrying out my invention I provide a roller having a series of perforating-points projecting from the periphery thereof, and arranged to engage the felt in its passage through the machine after the delivery of the paper web; or, in lieu of the roller provided with perforating-points, I employ a vibrating bar having series of perforating-points, which are rapidly inserted into the material of the apron or removed therefrom.

In my drawings I have represented one form of paper-making machine; but my invention is applicable to all forms of paper-making machines employing endless felt aprons for receiving and carrying the paper web. The cylinder A receives the pulp from the vat B and transfers it to the felt apron C, which carries it around the cylinder D, over the guide-roller E, and between the rolls F, by which the water is extracted from the paper web *a*, carried upon the apron C by the pressure of the rolls upon the web and upon the apron. The web *a* passes from the felt apron C over rollers *b* to the rolls F′, and the web in passing between the rolls F′ is brought into contact with an apron, C′, which is guided by rollers *c* in the usual way. These felt aprons, as commonly used in paper-machines, soon become clogged up with fine particles from the pulp. They are also compressed and rendered close in their texture by the pressure of the rolls.

To render the felt aprons continually porous I perforate them in their passage through the machine by means of pins carried on rollers or upon vibrating bars or plates. In the present case I have placed a roller, G, under the felt apron C, near the point of its return to the cylinder D, and another similar roller, G, is journaled in front of the rollers F′. These rollers G are provided on their peripheries with series of pointed pins *d*, and the felt aprons C C are caused to pass over these rollers, and in so doing are brought in contact with the points of the pins *d*, which pierce the felt and open its fibers, so that it is rendered continually porous.

Instead of employing the rollers G, I may use any other means for forcing the pins through the felt. For example, the bar H, shown in Fig. 3, is provided with the pins *d*, and is vibrated by means of the crank I and connecting rod J, so as to cause the points of the pins *d* to puncture the felt at every revolution of the crank I. The crank I receives its motion from some rotating part of the paper-machine.

In a paper-machine provided with my improvement the frequent removal of the felt aprons is avoided, as by being constantly punctured by the pins *d* the felt is rendered sufficiently porous to permit of the ready escape of the water extracted from the pulp by the pressure of the rolls.

Having thus described my invention, what I

claim as new, and desire to secure by Letters Patent, is—

1. In a paper-making machine, the combination, with the felt aprons, of series of pointed pins *d*, arranged to puncture the aprons, substantially as herein shown and described.

2. In a paper-making machine, the combination, with the felt aprons employed for carrying the pulp and the paper web, of one or more rollers, G, provided with pointed pins *d* projecting from the periphery thereof and arranged to engage the felt apron in its circuit through the machine, substantially as herein specified.

EDWIN WILMONT.

Witnesses:
CHARL KRUSE,
LEWIS D. HAMBLETON.