(No Model.)

A. H. LEFEBVRE.

FEED FOR PULP GRINDING MACHINES.

No. 483,458. Patented Sept. 27, 1892.

Fig. 1.

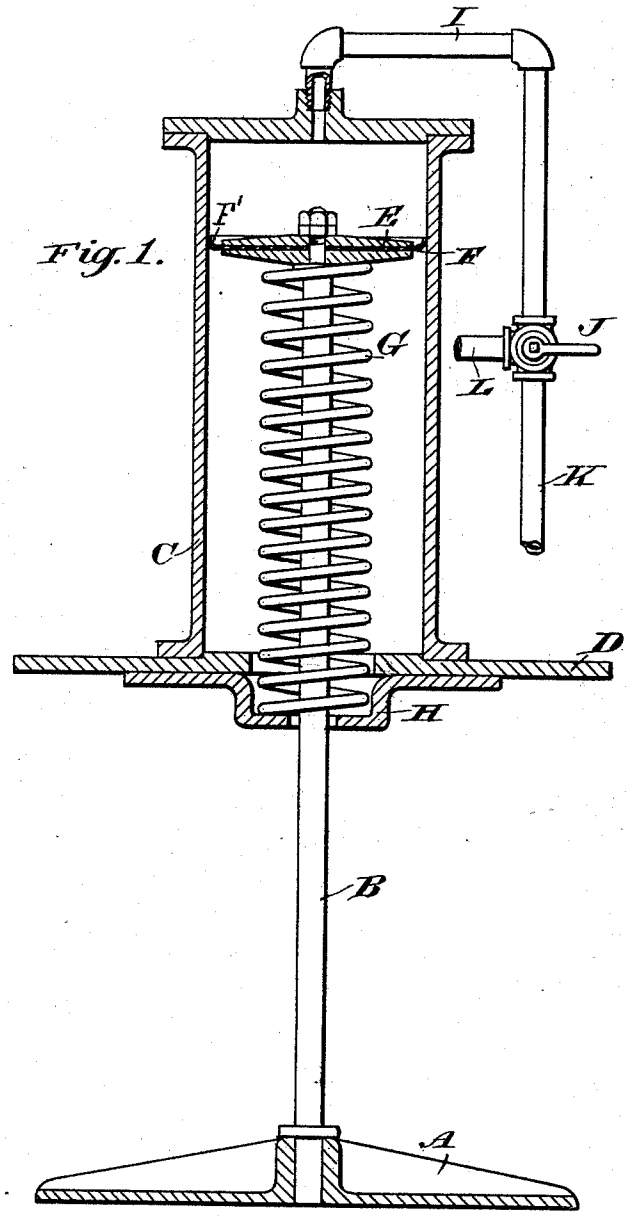
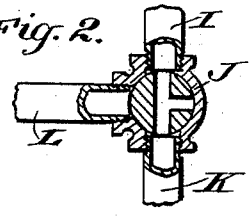


Fig. 2.



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ALBERT H. LEFEBVRE, OF WATERTOWN, NEW YORK, ASSIGNOR TO THE HARMON MACHINE COMPANY, OF SAME PLACE.

FEED FOR PULP-GRINDING MACHINES.

SPECIFICATION forming part of Letters Patent No. 483,458, dated September 27, 1892.

Application filed December 22, 1891. Serial No. 415,866. (No model.)

To all whom it may concern:

Be it known that I, ALBERT H. LEFEBVRE, of Watertown, in the county of Jefferson and State of New York, have invented a new and Improved Feed for Pulp-Grinding Machines, of which the following is a full, clear, and exact description.

The invention relates to machines for making paper-pulp from wooden blocks.

The object of the invention is to provide a new and improved hydraulic feed for wood-pulp-grinding machines and which is simple and durable in construction, very effective in operation, and arranged to quickly return the follower after the wood block is ground up.

The invention consists of a cylinder adapted to be connected at one end alternately with a water-supply and an overflow, a piston carrying the follower and fitted to slide in the said cylinder, and a spring pressing on the piston opposite the inlet to the cylinder.

The invention also consists of certain parts and details and combinations of the same, as will be fully described hereinafter, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in both the figures.

Figure 1 is a sectional side elevation of the improvement, and Fig. 2 is an enlarged sectional side elevation of the three-way valve.

The follower A of the wood-pulp-grinding machine is supported on the lower end of a piston-rod B, extending into the lower end of a cylinder C, attached in the usual manner to the bridge D of the wood-pulp-grinding machine.

On the upper end of the piston-rod B is secured a piston E, provided with a suitable packing F, preferably made of leather and fitting close onto the walls of the cylinder C, so as to prevent leakage. On the under side of the piston E presses one end of a coiled spring G, resting with its lower end on a cross-plate H, secured to the under side of the bridge D, as is plainly shown in Fig. 1.

Into the upper end of the cylinder C leads a pipe I, provided with a three-way valve J, adapted to connect alternately with the supply-pipe K and with the overflow or discharge pipe L. The pipe K is connected with a suitable source of water-supply for forcing the water past the three-way valve J into the pipe I and finally into the upper end of the cylinder C to press onto the piston E to force the latter downward, so that the follower A presses and feeds the block to the grinding-wheel.

On the downward movement of the piston E the spring G is compressed, and when the block is ground up the piston E rests on the bottom of the cylinder C—that is, on that part of the bridge D extending across the open end of the said cylinder. The spring G is then compressed into the space between the bridge D and the plate H. As soon as the operator shifts the three-way valve J so that the pipe K is disconnected and the pipe I is connected with the discharge or overflow L, then the spring G forces the piston E, the piston-rod B, and follower A upward. The upward movement of the piston E forces the water out of the upper end of the cylinder through the pipe I and three-way valve J into the overflow or discharge L. When the follower A has been returned to its uppermost position, the operator again shifts the valve J so as to disconnect the overflow L from the pipe I and to connect the latter again with the supply-pipe K. The above-described operation is then repeated.

The flexible packing F projects beyond the edge of the piston-disk a sufficient distance to form a flange F′, extending along the under wall of the cylinder in an upward direction. Now when the spring returns the piston the flange remains in the same position, and hence is not liable to be broken, as is so frequently the case in other pistons and cylinders. The packing thus lasts so much longer.

It is understood that the packing F, with its flange F′, does not change its position by bending downward on the reverse or upward motion of the piston, and hence is not liable to break at the corner of the flange.

It will be seen that by the arrangement described no water or other motive agent passes below the piston E and the latter is returned to a normal position after the wood block has been ground up by the spring G. It will fur-

ther be seen that by this construction all packing and stuffing boxes and the like are dispensed with and a quick discharge of the water in the cylinder C takes place by the action of the spring G on the piston E.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a feed for wood-pulp-grinding machines, the combination, with a cylinder adapted to be alternately connected with a supply and an overflow or discharge, of a piston carrying a follower and fitted to slide in the said cylinder and a spring pressing on the said piston opposite the inlet in the cylinder, substantially as shown and described.

2. In a feed for wood-pulp-grinding machines, the combination, with a cylinder adapted to be alternately connected with a supply and an overflow or discharge, of a piston fitted to slide in the said cylinder and provided with a flexible packing having a flange extending along the wall of the cylinder in opposition to the pressure of the water entering the cylinder at one end thereof and a spring pressing on the said piston opposite the inlet in the cylinder, substantially as described.

3. In a feed for wood-pulp-grinding machines, the combination, with a cylinder, of a pipe leading into one end thereof, a three-way valve for alternately connecting the said pipe with a water-supply and a discharge, a piston fitted to slide in the said cylinder and adapted to be forced in one direction by the pressure of the water-supply, and a spring pressing on the said piston in an opposite direction to the water-supply, so as to return the piston to a normal position, and a piston-rod attached to the said piston and carrying a follower, substantially as shown and described.

ALBERT H. LEFEBVRE.

Witnesses:
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