

I. Hoffman,
Paper Machine.
No. 102,265. *Patented. Apr. 26 1870.*

Fig. 1.

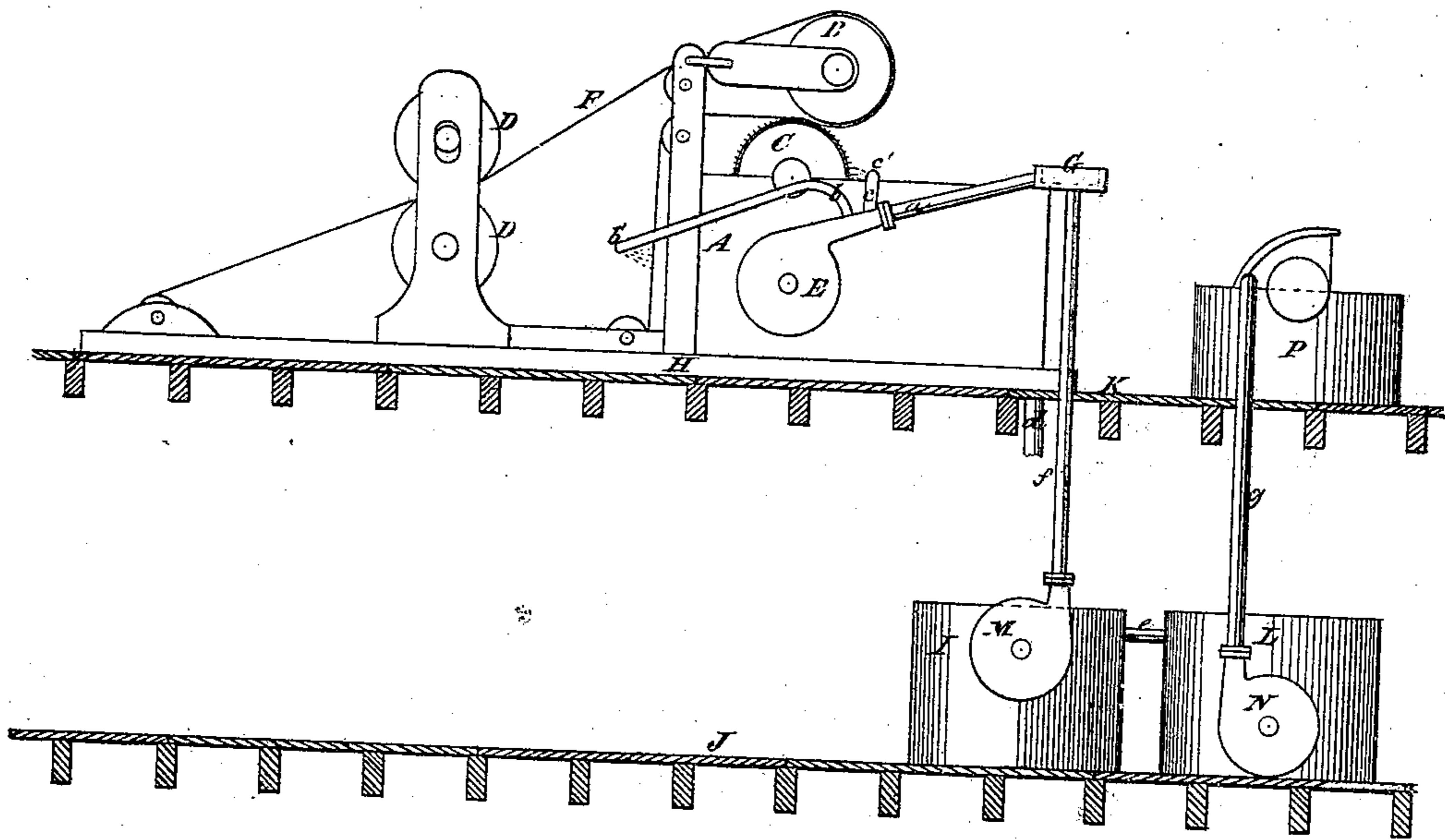
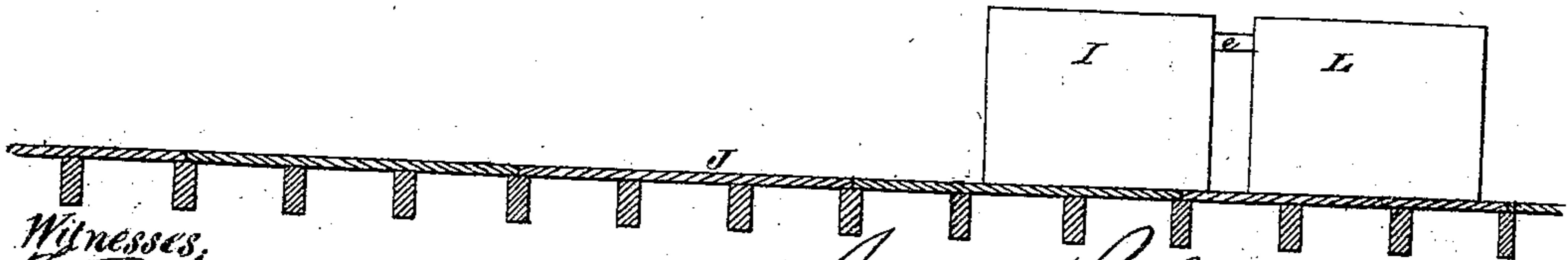
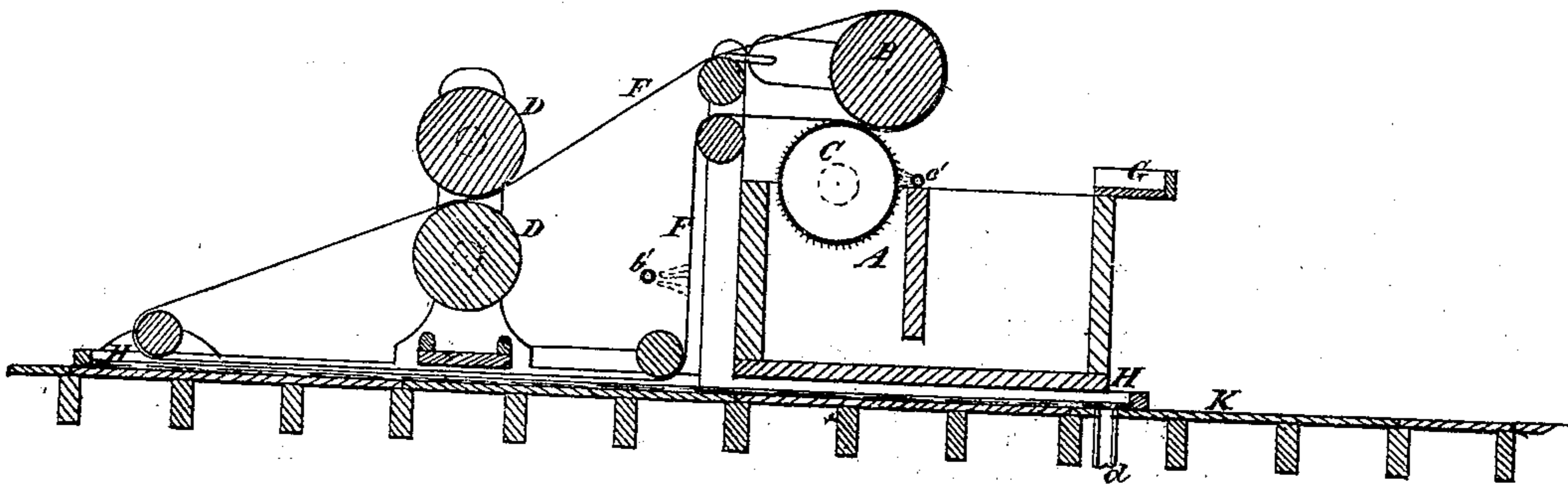


Fig. 2.



Witnesses,
Geo. Haynes
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United States Patent Office.

ISAAC HOFFMAN, OF OREGON, NEW YORK, ASSIGNOR TO MARY AND MARY C. HOFFMAN.

Letters Patent No. 102,265, dated April 26, 1870.

IMPROVEMENT IN THE MANUFACTURE OF PAPER.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, ISAAC HOFFMAN, of Oregon, in the county of Westchester and State of New York, have invented a new and useful Improvement in the Manufacture of Paper; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings.

In the manufacture of paper there has heretofore commonly, if not always, been a great loss of stock, owing to the quantity of fine pulp that is carried off by and with the waste water from the machine. The principal object of this invention is to prevent this loss; and to this end

It consists in causing the return of the waste water, or a portion thereof, to the machine for repeated use, thereby returning much of this fine pulp.

The invention also consists in certain means of returning the waste water, and certain means of collecting from said water a portion of such fine pulp as is carried off with it, before the return of such water to the machine.

Figure 1 in the accompanying drawing is a side elevation of a cylinder paper-making machine with the appliances for carrying out my invention.

Figure 2 is a longitudinal vertical section of the same.

Similar letters of reference indicate corresponding parts in both figures.

The vat A, the cylinder C, the coucher B, the press rolls D D, and felt F are or may be all arranged in the usual manner, and are so represented.

The fan-pump E, which takes the water from the cylinder, is also represented as arranged in the usual manner.

The discharge-pipe *a* of the pump E leads to a box, G, which is arranged above the back part of the vat A in such manner that the water delivered into it by the said pipe may run back into the vat; but the said pipe is also provided with branch pipes *b* and *c*, the pipe *c* communicating with the shower-pipe *c'* for washing the cylinder, and the pipe *b* communicating with the shower-pipe *b'* for washing the felt; and by this means a portion of the waste water taken from the machine by the pump E is returned to the machine, and used over again for the showering operations.

The whole machine is arranged upon or in a shallow trough, H, in which is collected all the showered water from the pipe *b'*, and all the water which runs from the felt or is expressed therefrom, and from the web of paper by the press-rolls D D, and the water collected in the said trough runs therefrom through a hole or pipe, *d*, into a waste-vat, I, arranged on the floor J of the paper-mill, below the floor K on which the machine is arranged.

This vat I is connected near the top by an overflow-

pipe, *e*, with another vat, L, arranged by the side of it on the same floor.

The vat I has connected with it, near the top, the inlet-pipe or opening of a pump, M, the discharge-pipe *f* of which leads to the box G.

The vat L has connected with its lower part the inlet-pipe or opening of a pump, N, the discharge-pipe *g* of which is represented as leading to a pulp-engine, P.

The waste water from the trough H all runs into the vat I, which is kept filled to the pipe *e*, and much of the fine pulp which has been contained in the said waste water collects in the lower part of the said vat, from the bottom of which it may be drawn off from time to time to be mixed with new pulp, either in the stuff-chest or the vat A.

The water which overflows from the vat I by the pipe *e* into the vat L, and which will contain a certain quantity of fine pulp, is pumped up from the bottom of the latter vat to the engine P, to be used for working new stock.

A large proportion of the waste water which has been collected in the vat I is returned by or through the pump M, pipe *f*, and box G, to the vat A, to replace a portion of what has been taken off from the said vat by the pump E, while all that has been taken off by the said pump, and that is not used for the showering of the cylinder and felt, is also returned to the vat.

In this way nearly all of the fine pulp which runs or is taken away from the paper-making machine with the waste-water is returned to the machine and saved, instead of being allowed to run to waste as it commonly has been. Besides effecting this saving of fine pulp, my invention effects a great economy in the use of water in the manufacture of paper.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. Causing the return to the paper-making machine for repeated use, of the waste-water which runs or is drawn therefrom in its operation, substantially as herein described.

2. The showering-pipes *b' c'*, or either of them, in combination with the pump E, substantially as and for the purpose herein described.

3. The discharge-pipe *a* of the pump E, in combination with the box G and vat A, substantially as and for the purpose herein set forth.

4. The vat I and the pump M in combination with the paper-making machine, substantially as and for the purpose herein set forth.

5. The vat L and pump N, in combination with the vat I and the pulp-engine, substantially as herein described.

Witnesses:

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