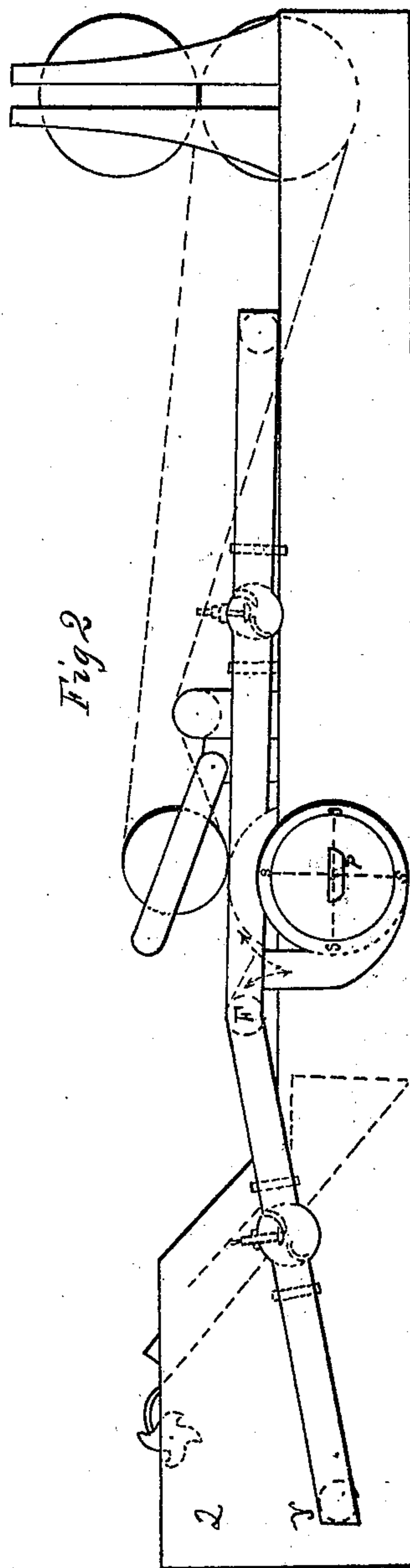
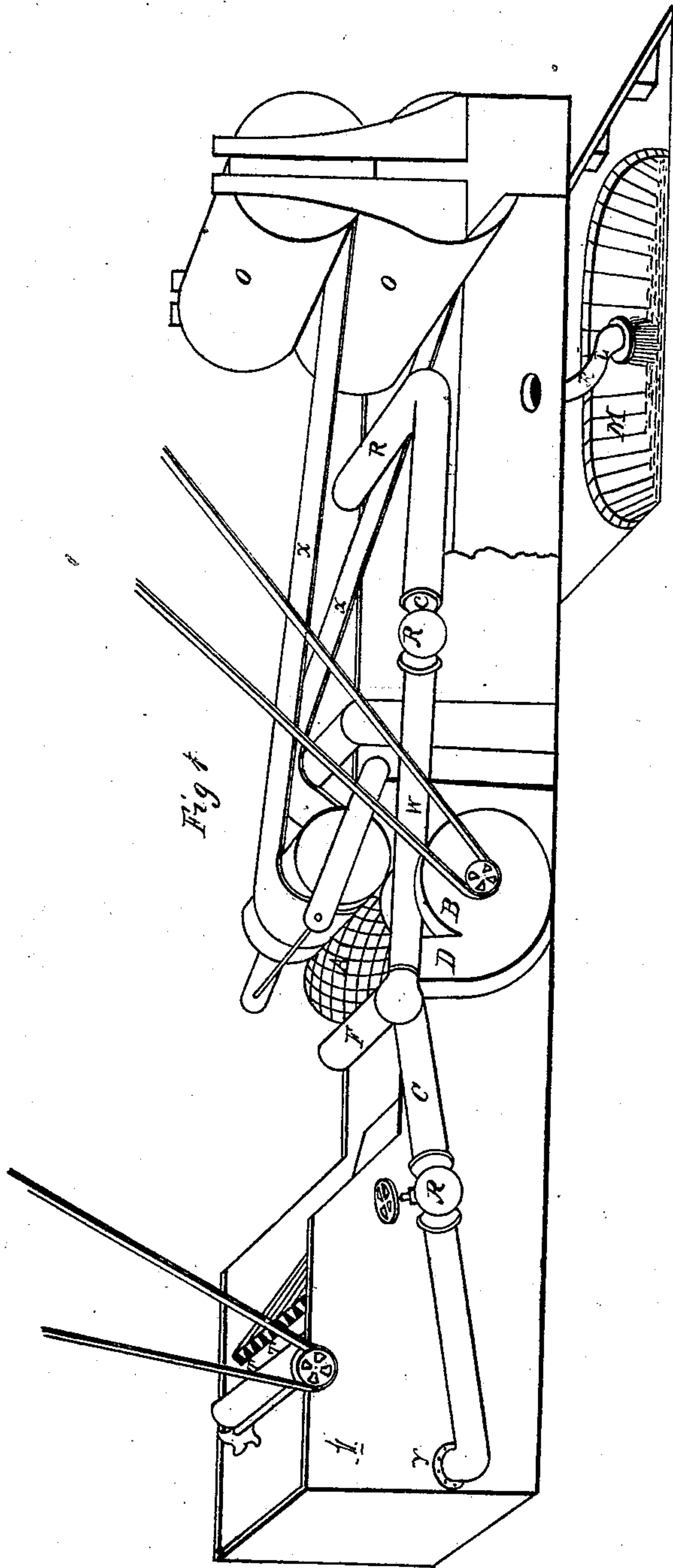


P. Clark.
Paper Mach.
Nº 17,917. Patented Aug. 4. 1857.



UNITED STATES PATENT OFFICE.

PATRICK CLARK, OF RAHWAY, NEW JERSEY.

MACHINE FOR MAKING PAPER.

Specification of Letters Patent No. 17,917, dated August 4, 1857.

To all whom it may concern:

Be it known that I, the undersigned, PATRICK CLARK, of Rahway, in the county of Essex and State of New Jersey, have invented a new and useful improvement in the manufacture of paper and in one of the machines used in the manufacture of paper, known technically as "the machine."

The nature of my invention consists in the arrangement of a pipe to connect the pump which receives the water from the cylinder mold with the perforated pipes by which the cylinder mold and endless apron (usually called the felt) is washed, using the same water again and again, thus avoiding a necessity of introducing water from another source for these purposes and consequently obviate any necessity of an overflow which would carry away a large percentage of the stock or pulp suspended in it.

It may be proper before describing my invention to state some facts connected with the manufacture of paper to enable the honorable Commissioner of Patents to understand the value and utility of my invention. In the manufacture of paper particularly of the lower grades such as pasteboard, wrapping paper, &c., either from straw or waste paper stock there occurs a very considerable loss of stock sometimes amounting to 25 per cent, and the greater part of this loss occurs during the process of forming the pulp into paper on what is called technically "the machine." The loss occurs in the following manner: in the kind of stock spoken of above and in all stock to a greater or less extent there is always in the process of making it into pulp in the rag engines more or less of it (according to the kind of stock used) converted into an extremely short fiber approximating more or less to dust and this extremely short fiber escapes through the meshes of the facing of the mold or cylinder or if a Fourdrinier machine be used through the meshes of the endless web of wire. Another fact is that in the formation of one ton of paper on the machine 40,000 gallons of water is used for washing the felt and cylinder as these parts of the machine require to be washed constantly and copiously with a shower of water. When the quantity of water necessary to thin the pulp is added to the above the quantity of water leaving the machines is not less than 50,000 gallons. Now the amount of water necessary to beat and thin one ton of stock is

not more than 10,000 gallons so that if the water leaving the machine was caught in a cistern yet still the amount of water leaving the machine being 50,000 gallons and the quantity necessary to beat and thin the pulp being only 10,000 it is plain that 40,000 gallons of water must overflow from the cistern in which the water is collected that runs from the machine and must carry away with it a very large proportion of the fine pulp which escapes the machine.

The object of my invention is to avoid or prevent this overflow and the consequent loss of stock resulting therefrom, as explained above, and this I accomplish by using the water which is separated from the pulp (during the formation of paper from the pulp) to wash the cylinder and felt (instead of using water obtained from some other source as is now done).

To enable others skilled in the art of paper making to make and use my invention I will describe it in the following specification and the accompanying drawings which make a part of this specification.

In the drawings referred to, Figure 1 is a perspective and Fig. 2 a sectional representation of the principal parts in their proper place of a cylinder machine.

A A Figs. 1 and 2 is the cylinder or mold with its fine wire facing to separate the pulp from the water in which it is suspended.

B B is a centrifugal pump (made in any convenient manner). It has communication with the interior of the cylinder A A through the opening P Fig. 2. Connected with its outlet D is the pipe C leading to and entering the vat at Y. The water conveyed by this pipe mixes with the pulp that enters the vat in the usual way well known to all paper makers. Connected also with the outlet of the pump at D is the pipe W which runs in an opposite direction from pipe C and connecting with the pipe K which is perforated with small holes about one fourth of an inch apart for nearly its entire length and through which jets of water issue and fall on the felt X as shown at or near K Fig. 1. Connected also with the outlet of the pump B B is the pipe F perforated in the same manner as K and performs the same office for the cylinder A that K does for the felt X X. The stop valves R R are used to graduate the quantity of water which may be allowed to flow through either pipe.

L is the spout through which the waste water flows into the cistern M after having been used to wash or shower the felt X X by means of the perforations in the pipe K.

5 O O are the press rolls and I I is the pulp dresser.

S, S, S, S, Fig. 2 are the 4 vanes or wings of the centrifugal pump. It is too well known to need describing here.

10 The operation of my invention is as follows: The vat in which the cylinder A is partially submerged being filled with water in which paper pulp is suspended in the usual manner and the pump B being put in
15 motion by means of the belt N water will be drawn through the facing of the cylinder and forced through the pipes C and W into the pipes K and F and through the perforations in said pipes onto the cylinder A and
20 felt X which serves to wash or shower those parts of the machine. Water from the pump also passes through the pipe C and enters the vat at Y for the purpose of thinning the pulp as it enters the vat. The
25 water passing through the pipes F and C makes a continuous circuit from the interior of the mold or cylinder to the interior of it again so that all the water that leaves the machine is what passes through the pipe
30 K and through its perforations before described and what is carried away in the pressed web of paper after leaving the press rolls. This water (that is the water which
35 in the pipe K) after falling on the felt and

washing it falls down in the bottom of the machine and runs off through spout L into the cistern M and is there collected to be again pumped into the rag engines together with all the pulp escaping from the machine with it. 40

Having described my invention I desire to state that I am aware that the pump B or an equivalent device together with the pipe C entering the vat at Y is old and well known in connection with such machines as I have described, and the pipes F and K are also old and well known therefore I do not claim those pipes separately and in themselves. Neither do I claim to have invented 50 the use of a cistern to collect the water which is separated from the pulp during the process of forming pulp into paper by means of a machine.

What I claim as my invention and desire 55 to secure by Letters Patent is—

The arrangement of the conducting pipes W connecting the pump B with the jet pipes F and K for the purpose of washing the felt X and cylinder A with the water which 60 has been separated from the pulp, and thus avoid the necessity of introducing for that purpose water from any other source into the machine all substantially as described and for the purpose specified.

PATRICK CLARK.

Witnesses:

G. W. SAVAGE,
S. COOKE.