(No Model.)

I. BRATTON.

SUCTION BOX FOR PAPER MAKING MACHINES.

No. 280,564. Patented July 3, 1883.

Fig. 1.

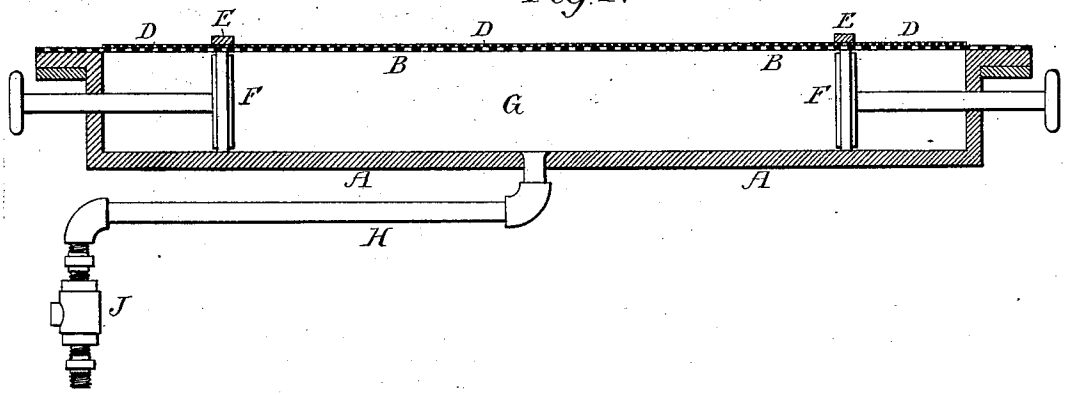


Fig. 2.

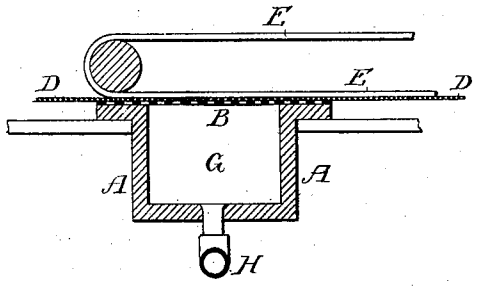
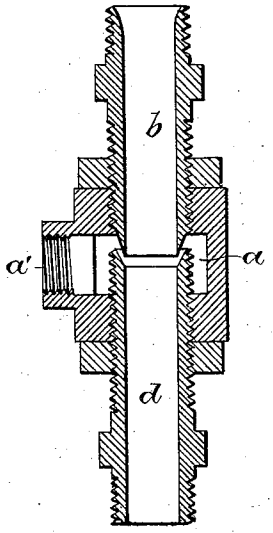


Fig. 3.



Witnesses:
Harry Drury
James J. Dobin

Inventor:
Isaac Bratton
by his Attys.
Howson and Sons

N. PETERS. Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

ISAAC BRATTON, OF WILMINGTON, DELAWARE.

SUCTION-BOX FOR PAPER-MAKING MACHINES.

SPECIFICATION forming part of Letters Patent No. 280,564, dated July 3, 1883.

Application filed February 7, 1883. (No model.)

To all whom it may concern:

Be it known that I, ISAAC BRATTON, a citizen of the United States, and a resident of Wilmington, Delaware, have invented certain Improvements in Paper-Making Machines, of which the following is a specification.

My invention relates to certain improvements in connection with the suction-box of a paper-making machine, the object of my invention being to facilitate the operation of the machine and improve the product.

In the accompanying drawings, Figure 1 is a longitudinal section of the suction-box of a paper-making machine with my improvements; Fig. 2, a transverse section of the same, and Fig. 3 a sectional view of an ejector which I use in carrying out my invention.

A represents a suction-box of an ordinary Fourdrinier paper-machine; B, the perforated plate forming the top of the same; D, part of the endless web or apron of wire-gauze on which the sheet of pulp is deposited; E E, the usual deckle-straps for limiting the width of the sheet, and F F the adjustable heads or plungers, which coincide with the deckle straps, and are intended to prevent leakage of air into the suction-chamber G of the box. A partial vacuum being established in said chamber, the water is drawn from the sheet of pulp as the endless apron D carries the same over the perforated cover of the box A, the water being drawn from the box through a pipe, H. Ordinarily a pump is used for this purpose, and it becomes necessary to prevent the entrance of air to the suction-chamber G, as a mixture of air with the water would interfere with the operation of the pump; hence it has been usual to seal the suction-chamber by filling the box A with water outside of the adjustable heads F. A portion of this water finds its way beneath the deckle-straps and wets the edges of the sheet of pulp on the apron D, thus weakening the edges of the sheet and interfering with the proper uniform drying and calendering of said sheet by the rollers used for that purpose.

In carrying out my invention I dispense with the usual pump and use in place of the same an ejector, J, which effects the rapid removal of the water from the box A, and is not affected in its action by the admixture of air with the water. For this reason I am enabled to dispense with the water-seal for the heads F, and thus obviate the objections above mentioned, and there being no leakage of air to guard against, I am enabled to maintain in the suction-chamber G a condition more nearly approaching a perfect vacuum than is possible with the pump, the water being thus rapidly drawn from the sheet of pulp, so that the speed of the apron can be materially increased without risk of carrying off the pulp while it still retains a surplus of moisture. Another advantage of using the ejector in place of the pump is the facility with which said ejector can be cleansed by passing a current of clean water through the same.

It is the common practice to convey the discharge from the suction-box of the machine back to the mixing-box, in order to save the particles of pulp carried off with the water.

In making colored paper the particles of colored pulp fill the interstices in the cylinder, valve-boxes, and other parts of an exhaust-pump to such an extent that it is difficult to properly clean the latter when changing from the manufacture of paper of one color to that of another color, or from colored to white paper, and in consequence the first paper produced after the change is apt to be streaky or spotted. This objection is effectually overcome by my invention, there being no parts in the ejector which would serve to retain the colored particles of pulp, so that the thorough cleansing of the ejector can be effected in a few moments.

Incidental to the use of the ejector in place of the pump are the further advantages of its compactness, its freedom from liability to get out of order, and the facility with which it can be used in positions where the use of a pump would be impossible.

Various forms of ejectors may be used in carrying out my invention; but the form which I have found to answer well in practice, and which I prefer, is that shown in Fig. 3, *a* being the steam-chamber of the ejector, having a branch, *a'*; *b* the inlet and *d* the outlet branch. The branch *b* has a conical end and the branch *d* a flaring mouth, and the steam passes from

the chamber *a* through the tapering annular passage thus formed, the water from the suction-box being drawn through the branch *b* and forced from the branch *d*. A free and unbroken flow of water through the branches *b* and *d* is thus permitted, whereas in an ordinary ejector the water takes a more or less circuitous course through a contracted passage, and when the water carries with it numerous particles of pulp it has a tendency to clog such a passage and interfere with the proper working of the device.

I have shown the ejector in a vertical position at the side of the machine; but it may be located wherever convenience or circumstances may suggest.

I claim as my invention—

The combination of the suction-box of a paper-making machine and its discharge-pipe with a steam-ejector connected to said pipe, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ISAAC BRATTON.

Witnesses:

JOSEPH W. VANDEGRIFT,

THOMAS E. WEER.