

(No Model.)

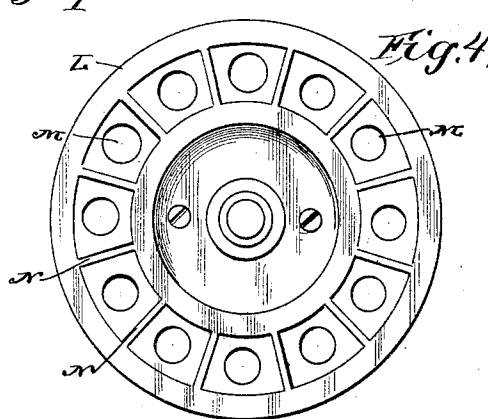
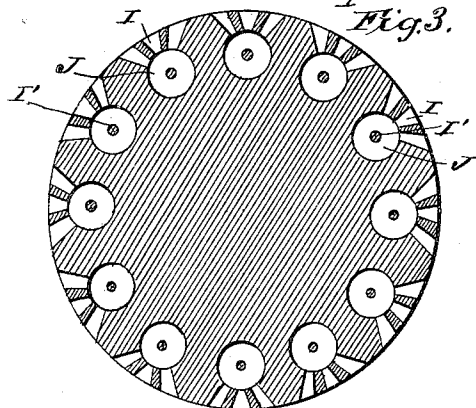
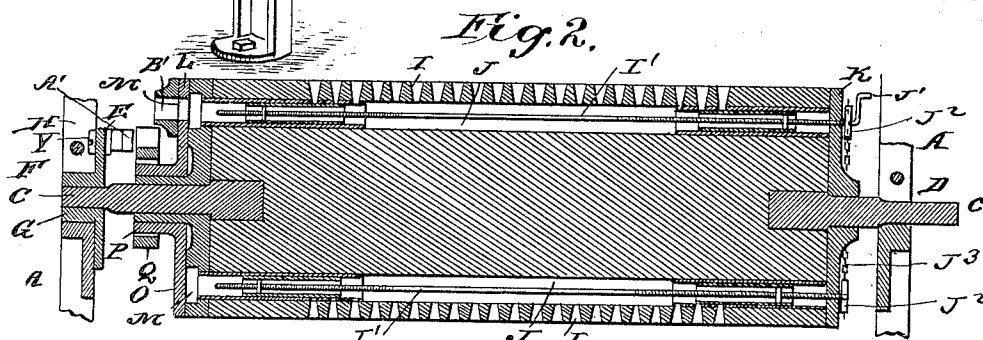
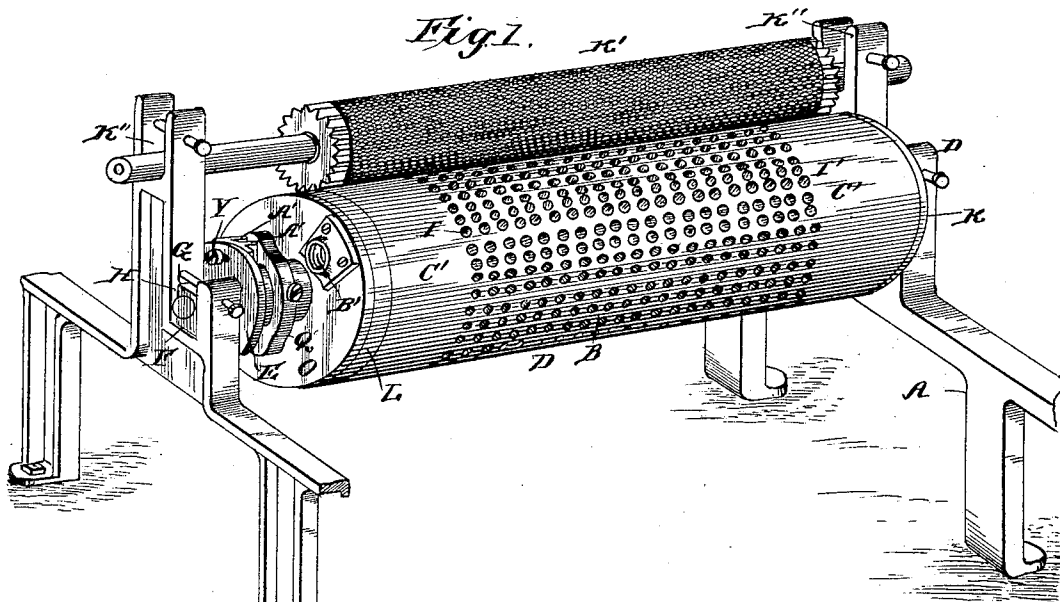
2 Sheets—Sheet 1.

W. A. FLETCHER & W. E. KEIGHTLEY.

SUCTION BOX FOR PAPER MACHINES.

No. 325,165.

Patented Aug. 25, 1885.



WITNESSES:

Wm. A. Fletcher
Wm. E. Keightley

INVENTORS

William A. Fletcher & W. E. Keightley
By *Louis Bagger & Co.*
ATTORNEYS.

(No Model.)

2 Sheets—Sheet 2.

W. A. FLETCHER & W. E. KEIGHTLEY.

SUCTION BOX FOR PAPER MACHINES.

No. 325,165.

Patented Aug. 25, 1885.

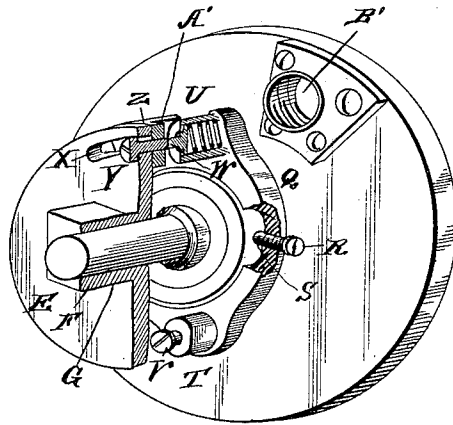


Fig. 5

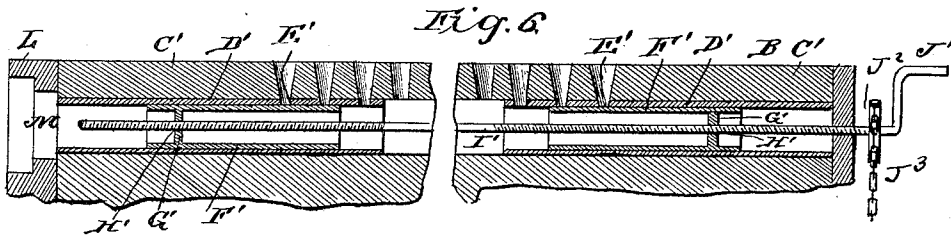


Fig. 6

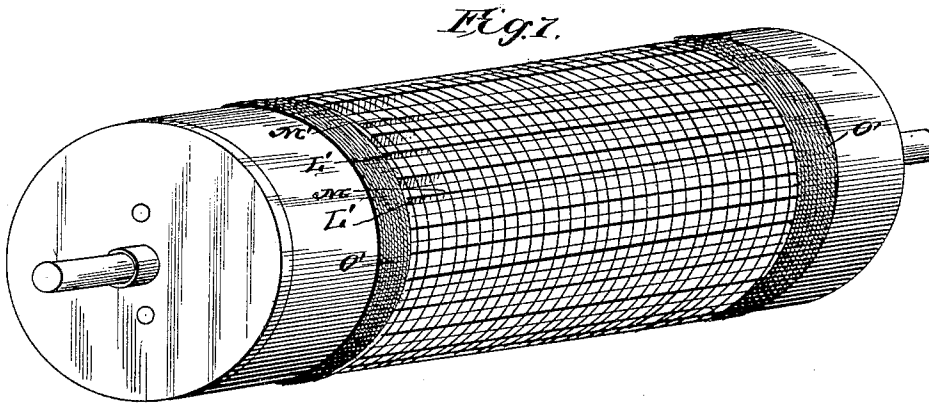


Fig. 7

WITNESSES:

Med. S. Dietrich
John Lecher

William A. Fletcher
Walter E. Keightley
INVENTORS,

By *Louis Bagger & Co.*
ATTORNEYS.

UNITED STATES PATENT OFFICE.

WILLIAM A. FLETCHER AND WALTER E. KEIGHTLEY, OF CLARKSVILLE, MO.

SUCTION-BOX FOR PAPER-MACHINES.

SPECIFICATION forming part of Letters Patent No. 325,165, dated August 25, 1885.

Application filed March 17, 1885. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM A. FLETCHER and WALTER E. KEIGHTLEY, both residents of Clarksville, in the county of Pike and State of Missouri, have invented certain new and useful Improvements in Suction-Boxes for Paper-Machines; and we do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a perspective view of our improved revolving suction-box, showing a portion of the frame of the machinery. Fig. 2 is a longitudinal vertical section of the same. Fig. 3 is a cross-section of the same. Fig. 4 is an end view of the box with the head or valve removed. Fig. 5 is a perspective detail view, on an enlarged scale, of the means for adjusting the suction-aperture to its proper position. Fig. 6 is a detail view of the means for adjusting the width of the suction-surface of the roller, and Fig. 7 is a perspective view of a modified form of the revolving box or roller.

Similar letters of reference indicate corresponding parts in all the figures.

Our invention has relation to revolving suction-boxes for paper-making machinery; and it consists in the improved construction and combination of parts of the same, as herein-after more fully described and claimed.

In the accompanying drawings, the letters A A indicate the portions of the machine-frame between which the revolving box or roller B is journaled, the said roller having a shaft, C, which turns with one end in a bearing, D, in one side of the frame, while the other end of the shaft is journaled in a central box or bearing of a disk, E, the said bearing F forming a square block, G, upon the outer face of the disk, which block rests in a slot, H, in the side of the frame. The surface of the box or roller is perforated, being preferably made with a number of perforations, I, arranged in sets or sections running longitudinally across the surface of the box, and each section of perforations opens into a longitudinal cylindrical compartment, J, which is open at both ends.

The open ends of the compartments are closed at one end by a disk or head, K, while the other end of the box or roller is provided with a circular valve-seat, L, provided with a number of apertures, M, registering with the open ends of the compartments, which apertures are surrounded and separated by means of raised ribs N. A circular head or valve, O, bears against the face of this valve-seat, fitting airtight against it, and has a sleeve, P, or bearing at its center, in which bearing the shaft turns.

Q is an annular yoke, which has two pointed screws, R, passing through it at diametrically-opposite points and bearing with their pointed ends in corresponding recesses, S, in the side of the sleeve or bearing P, and two lugs or lips, T and U, project from diametrically-opposite points of the yoke at right angles to the screws, one, T, of the lugs being provided with a set-screw, V, while the other lug, U, is provided with a spring-cushioned pin, W, which is forced outward by a suitable spring inside of the lug.

The disk E, against the inner face of which the set-screw and the spring-cushioned pin bear, has a slot, X, segmental in shape, near its upper edge, and a set-screw, Y, passes through this slot, sliding in the same, and enters with its inner end a plate, Z, having two inwardly-projecting lips, A' A', between which lips the spring-cushioned pin and its lug fit.

B' is the aperture into which the suction-pipe is secured, and this aperture registers with the valve-apertures M of the end of the suction-box.

The portions C' of the face of the suction-box which are nearest to the ends of the same are imperforate, and tubes D', having perforations E' registering with the perforations in the face of the box, fit in the outer ends of the compartments, and have imperforate tubes F' sliding within them, which tubes are provided at their ends with cross-bars G', having female screw-threaded perforations H', through which perforations a rod, I, passes, which has a right-hand screw-thread at one end and a left-hand screw-thread at its other end, and one of these rods in the roller has a crank, J', for turning it, while the others have

sprocket-wheels J², over which passes a chain, J³, passing also over a sprocket-wheel upon the crank-shaft.

A fluted roller, K', having a covering of wire-netting, is journaled in bearings K'' above the suction-box, impinging upon the same.

In Fig. 7 of the drawings is shown a slightly-modified construction of the box, in which each compartment has a longitudinal slot, L', which opens into a longitudinal recess, M', in the face of the roller, and the entire face of the roller is covered with circumferential wires placed at any desired distance apart, which wires thus cover the open sides of the longitudinal recesses.

For the purpose of regulating the width of the suction-surface of this roller, wide rubber bands O' may be used, although a device similar to the one used in the other roller may be used, the stationary tubes having slots instead of perforations, and where the said bands, which may be made of any other suitable material in place of rubber, will effectually cover the open portions of the recesses.

When the suction-box is to be used, the plate Z having the two lips is adjusted by means of its set-screw so as to bring the aperture for the suction-pipe to register with the line upon the surface of the roller over which the paper passes, thus causing suction to be applied in each compartment as it passes under the line of contact with the paper, the valve turning with the yoke.

It will be seen that the spring-cushioned pin in the lug of the yoke will press against the adjustable plate upon the bearing-disk E, and thus force the yoke, and through it the valve, inward, pressing the valve against the seat and causing it to fit tightly against the same, so as to prevent waste of suction-power, the set-screw V in the opposite lug or lip serving to adjust the tension of the spring and pin against the adjustable plate by bearing more or less against the disk, according to its being screwed farther out or in.

It will also be observed that when the roller or suction-box is revolving the apertures in the valve-seat will pass sufficiently fast by the aperture in the valve that the suction will be continuous.

The fluted roller at the top of the suction-box will assist in pressing out the water from the paper, helping to make the operation of the box more perfect.

By turning the cranks upon the threaded rods passing through the several compartments the width of the suction-surface of the box or roller may be adjusted so as to admit of the box being used with any width of paper, the inner tubes closing the perforations in the lining-tubes and compartments, starting from the ends of the same.

Having thus described our invention, we claim and desire to secure by Letters Patent of the United States—

1. In a revolving suction-box for paper-making machines, the combination of a re-

volving roller or box having a number of longitudinal compartments extending under the perforated face of the roller, the said compartments opening with their ends in the end of the roller, with a valve or head fitting against the end of the roller, and having a perforation for the suction-tube registering with the open ends of the compartments, as and for the purpose shown and set forth.

2. In a paper-making machine, the combination, with a revolving perforated suction-box, of a roller having a perforated covering and journaled above the suction-box, as and for the purpose shown and set forth.

3. In a revolving suction-box for paper-making machines, the combination of a revolving roller or box having a number of longitudinal compartments under its periphery opening into the said periphery through perforations and opening at the end of the roller, a valve seat or disk secured upon the end of the roller and having a number of perforations corresponding to the open ends of the compartments and surrounded by raised ribs, and a stationary disk or valve having an aperture for the insertion of a suction-pipe registering with the apertures in the valve-seat, as and for the purpose shown and set forth.

4. In a revolving suction-box for paper-making machines, the combination of a revolving roller having a number of longitudinal compartments extending under the perforated face of the roller, and opening at the end of the roller with a valve or head fitting against the end of the roller and having a suction-aperture registering with the open ends of the compartments, and having means, substantially as shown, for adjusting the disk in a vertical plane to bring the suction-aperture to register with the line of contact for the paper upon the revolving box or roller, as and for the purpose shown and set forth.

5. In a revolving suction-box for paper-making machines, the combination of the sides of the machine-frame having a bearing in one side and a polygonal slot in the other side, a disk having a segmental slot near its edge and having a polygonal sleeve or bearing fitting in the polygonal slot of the frame, a roller or box having an axial shaft and having a number of longitudinal compartments extending under the perforated face of the roller and opening in the end of the roller, the said shaft turning in the bearing in the frame and in the polygonal sleeve, a valve or disk bearing tightly against the end of the roller, having a suction-aperture registering with the open ends of the compartments, and having a central outwardly-projecting sleeve formed with two diametrically-opposite recesses, an annular yoke having two diametrically-opposite pointed screws bearing in the recesses in the aforesaid sleeve, and having two diametrically-opposite lugs provided, respectively, with an outwardly-pointing set-screw and with a spring-cushioned pin, and a plate having two inwardly-projecting lips clamping the spring-cushioned

pin and its lug and provided with a set-screw sliding adjustably in the slot of the disk having the polygonal sleeve, as and for the purpose shown and set forth.

5 6. In a revolving suction-box having longitudinal cylindrical compartments extending under its perforated face, the combination of the roller having the said compartments, tubes fitting in the ends of the said compartments
10 and having perforations registering with the perforations in the face of the roller and in the sides of the compartments, imperforate tubes sliding in the perforated tubes and having cross-bars at their ends provided with threaded

perforations, and rods having means for turning them and having a right-hand and a left-hand screw-thread, one at each end, fitting in the perforations of the cross-bars of the imperforate tubes, as and for the purpose shown and set forth. 15 20

In testimony that we claim the foregoing as our own we have hereunto affixed our signatures in presence of two witnesses.

WILLIAM A. FLETCHER.

WALTER E. KEIGHTLEY.

Witnesses:

JAMES M. GROOM,

E. J. WAHL.