(No Model.)

J. D. & W. F. PICKLES.

SUCTION BOX FOR PAPER MAKING MACHINES.

No. 384,276. Patented June 12, 1888.

Fig. 1

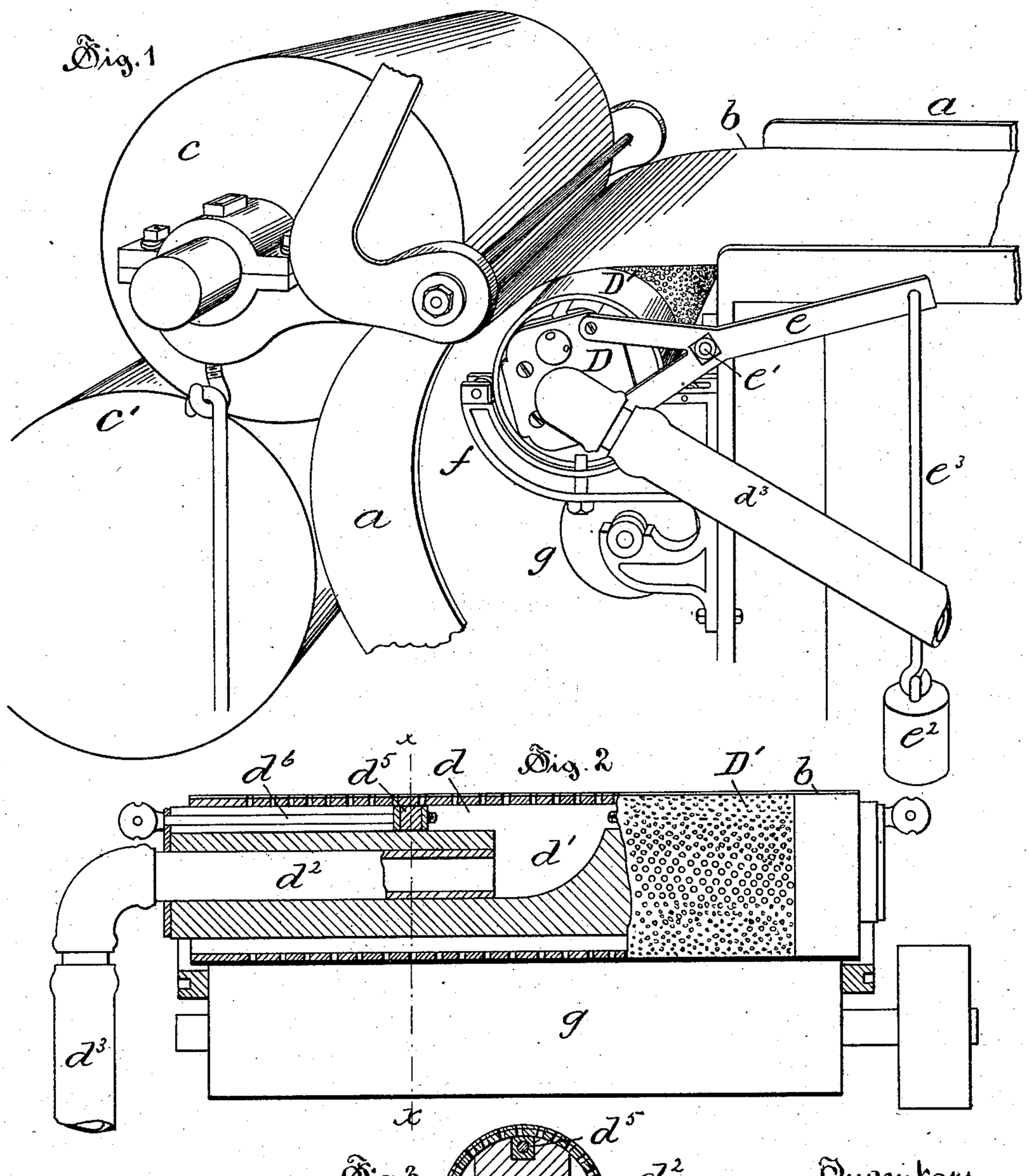
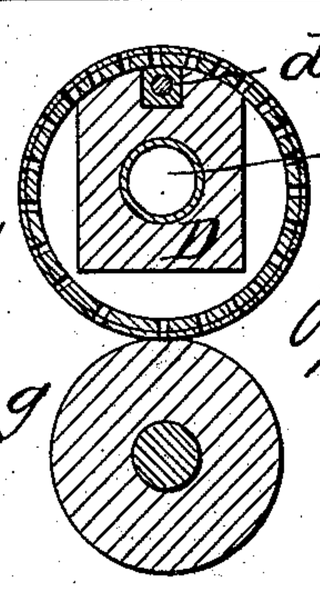


Fig. 2

Fig. 3



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UNITED STATES PATENT OFFICE.

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SUCTION-BOX FOR PAPER-MAKING MACHINES.

SPECIFICATION forming part of Letters Patent No. 384,276, dated June 12, 1888.

Application filed October 25, 1887. Serial No. 253,336. (No model.)

To all whom it may concern:

Be it known that we, JAMES D. PICKLES, of Manchester, in the county of Hartford and State of Connecticut, and WILLIAM F. PICKLES, of Lafayette, White Marsh township, in the county of Montgomery and State of Pennsylvania, have invented certain new and useful Improvements in Suction-Boxes for Paper-Making Machines, of which the following is a full, clear, and exact description, whereby any one skilled in the art can make and use the same.

The object of our invention is to provide a suction-box that will effectively remove moisture from the pulp while it is on the wire of the paper-making machine and without wearing the wire.

To this end our invention consists in the combination, with the wire of a paper-making machine, of a non-rotary suction-box, a revolving perforated shell turning on the box, and the shell-supporting carrier-roll; and it further consists in the combination of the suction-box, its perforated and revolving shell, and the carrier-roll that supports and drives the shell; and it further consists in details of the suction-box and its connected parts and their combination, as more particularly hereinafter described, and pointed out in the claims.

Referring to the drawings, Figure 1 is a perspective view showing part of a paper-making machine with our improved suction-box embodied therein. Fig. 2 is a detail view, in lengthwise section, of the suction-box. Fig. 3 is a detail view, in cross-section, of the suction-box on plane *x x* of Fig. 2.

In the accompanying drawings, the letter *a* denotes the frame of a paper-making machine having the usual wire, *b*, and coucher-rolls *c c'*.

Our improvement is shown in the accompanying drawings as attached to an old machine, and for convenience our improved suction-box D is mounted across the frame beneath the wire in the position usually occupied by the guide-roll that is used to change the direction of and support the wire. This suction-box is made up of any convenient material, as wood, and is supported at its opposite ends on vertically-adjustable bearings that in this instance consist of the levers *e*, that are pivoted to the frame by bolts *e'*, and are connected to the outer ends of the suction-box by bolts or screws.

To the rear ends of these levers are attached the weights e^2, by means of the rod e^3, the effect being to lift the suction-box toward the wire on its under side. On the upper side of this suction-box is a lengthwise channel, *d*, that deepens at the center *d'*, where it connects with an outlet-pipe, d^2, that extends to an end of the suction-box, where it is connected with a pipe, d^3, that leads to a pump or similar suction device. In each end of the channel *d* in the suction-box is located a tightly-fitting head, d^5, that is borne on the inner end of a rod, d^6, by means of which the head is movable longitudinally in the channel, the object of this adjustability of the head being to adjust the suction-box proper to the width of the sheet of paper moving over it. On the outside and inclosing the sides of this suction-box is a perforated shell, D', that is mounted on suitable bearings, *f*, and revolves upon the suction-box D, being supported, however, upon the carrier-roll *g*, that extends beneath the shell and for substantially its whole length. This carrier-roll *g* is driven by a belt or gearing in any suitable manner, and it in turn drives the perforated shell and causes it to turn upon the suction-box in the same direction and at the same rate that the wire is moved along the machine. As the paper borne on the wire that in turn is supported on the shell moves across the channel of the suction-box, the moisture in the pulp is drawn into the suction-box and out by the pump. In each of the bearings *f* the shell is supported on opposite sides on anti-friction rollers or similar devices that tend to hold it in a central position. In this structure it will be seen that the perforated shell that forms the cover of the suction-box moves at the same rate of speed with the wire, and therefore has no tendency to wear it. The shell is supported throughout its whole length by the carrier-roll, the surface of which may be covered with rubber or other suitable material that will enable it to drive the shell by frictional contact. The box is held to suitable contact with the inner surface of the revolving shell by means of the adjusting device of levers and weights, as already described.

The method and operation of our improved suction-box will be sufficiently understood by any one skilled in the art without a more extended description.

It is obvious that this suction-box may be used in connection with a felt, as well as with a wire, for the purposes herein described, and we do not limit ourselves to the use of this suction-box in combination with the wire alone, but consider the combination of the suction-box with any porous fabric as within the scope of our invention.

We claim as our invention—

1. In combination with the wire of a paper-making machine, the suction-box fixed against rotation, with a revolving perforated shell movable on the box, and the carrier-roll *g*, supporting the shell throughout the length of the perforated part, all substantially as described.

2. In combination, in a paper-making machine, the revolving and perforated shell, the suction-box held within the shell against rotation and having a lengthwise channel with an outlet-opening, the weighted levers pivoted to the frame of the machine and each secured to the suction-box at one end of the lever, the rotary carrier-roll extending beneath and supporting the revolving shell, and the roll-driving mechanism, all substantially as described.

3. In combination, the suction-box D, adjustably supported on the frame of a paper-making machine, with the lengthwise channel *d* and outlet d^2, the adjustable heads d^5, movable in the said channel *d*, the revolving shell mounted on the suction-box, and the rotary carrier-roll that supports and drives the perforated shell, all substantially as described.

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