(No Model.) 2 Sheets—Sheet 1.

J. W. & J. G. BEDALE.

SUCTION BOX MECHANISM FOR PAPER MAKING MACHINES.

No. 524,299. Patented Aug. 14, 1894.

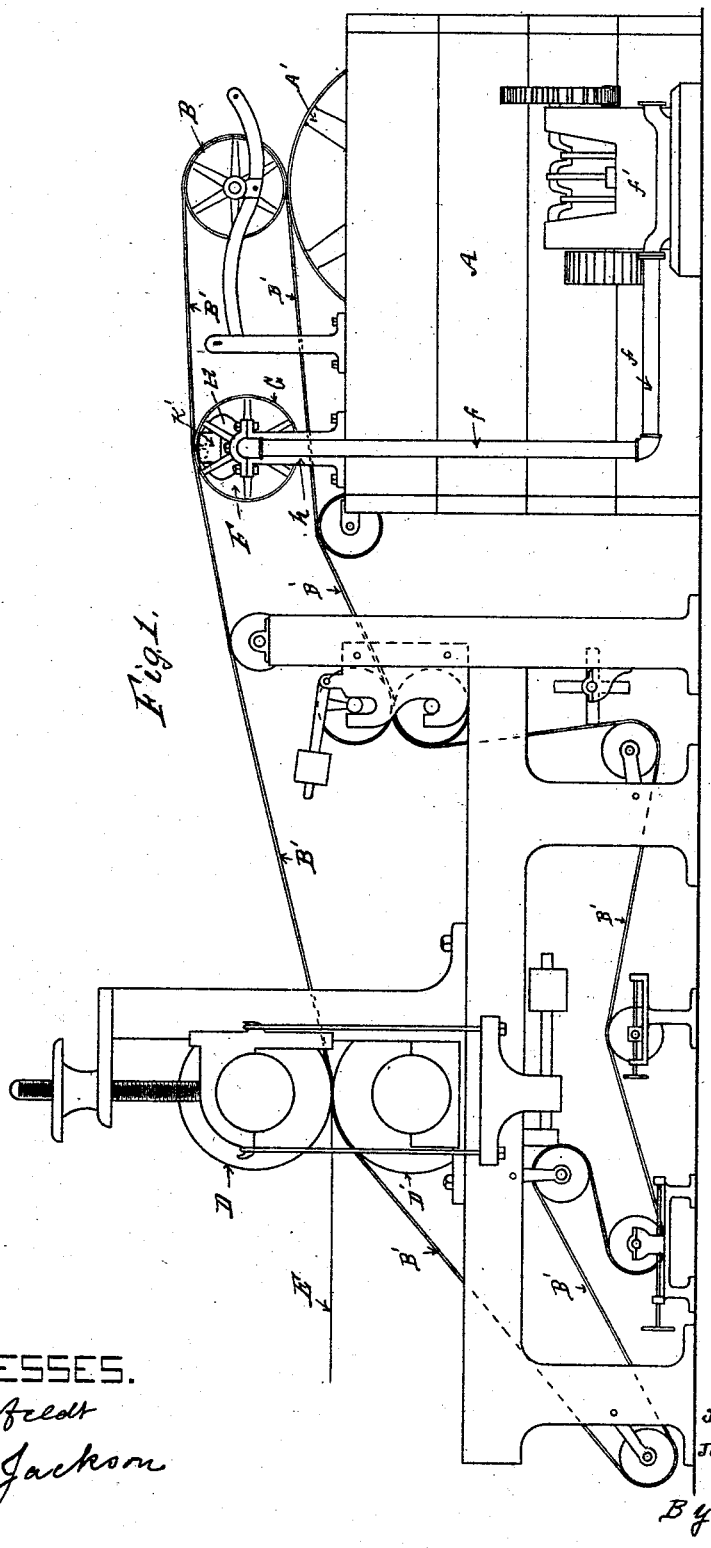

Fig. 1.

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Fig. 2.

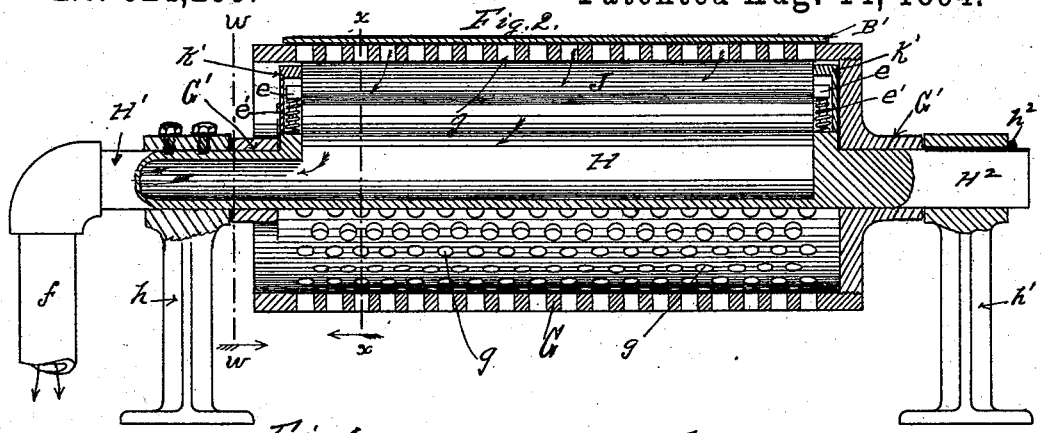


Fig. 4.

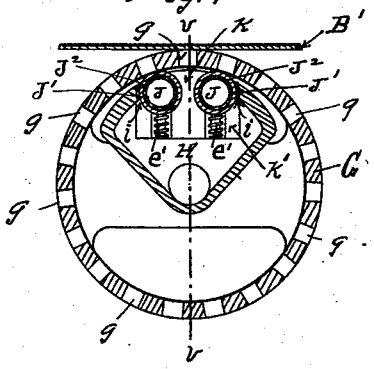
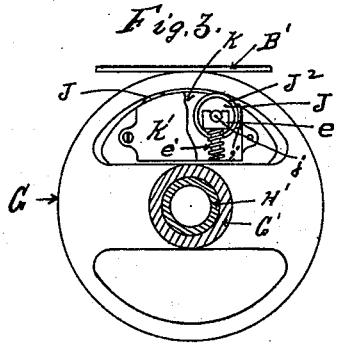


Fig. 3.



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JAMES W. BEDALE AND JOSEPH G. BEDALE, OF ERIE, PENNSYLVANIA.

SUCTION-BOX MECHANISM FOR PAPER-MAKING MACHINES.

SPECIFICATION forming part of Letters Patent No. 524,299, dated August 14, 1894.

Application filed January 25, 1894. Serial No. 497,991. (No model.)

To all whom it may concern:

Be it known that we, JAMES W. BEDALE and JOSEPH G. BEDALE, citizens of the United States, residing at the city of Erie, in the county of Erie and State of Pennsylvania, have jointly invented certain new and useful Improvements in Suction-Box Mechanism for Paper-Making Machines; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, forming part of this specification.

Our invention consists in the improvements in suction box mechanism for paper making machines, hereinafter set forth and described, and illustrated in the accompanying drawings, in which—

Figure 1. is a side elevation of a paper making machine embodying our improved suction box mechanism. Fig. 2. is a longitudinal section of our improved suction box mechanism, on the line *v*, *v*, in Fig. 4. Fig. 3. is a transverse section of the same on the line *w*, *w*, in Fig. 2, looking in the direction of the arrow, with parts in elevation and parts broken away. Fig. 4. is a transverse section of the same on the line *x*, *x*, in Fig. 1, looking in the direction of the arrow.

Our improved suction box mechanism consists of a perforated cylinder, rotating on suitable bearings, so as to be in contact with the under side of the wet felt, bearing the layer of wet pulp thereon, and rotate in unison with the travel thereof from the pulp supply tank to the drying rolls; within this perforated cylinder is a chamber having an opening therein along the top thereof, and longitudinal rollers at the sides thereof, and caps at the ends of said rollers in close contact with the inside of said perforated cylinder, said chamber being provided with an exhaust pipe, communicating with a pump or other suitable exhaust mechanism, whereby a strong suction is brought to bear upon that portion of the wet felt, and the layer of pulp thereon, in contact with said perforated cylinder, so that as the wet felt and layer of pulp thereon travel over said cylinder, the water is exhausted therefrom into said chamber, from which it passes away through the suction pipe connected therewith.

In Fig. 1, of the drawings A is the pulp tank, A′ the pulp cylinder, B the couch roll, B′ the wet felt, D, D′ the press rolls and E the web of paper issuing therefrom. These features, however, form no part of our improved suction box mechanism F, over which the wet felt B′ passes; this suction box mechanism F being connected by means of pipes *f* with a suction pump *f′* which operates to withdraw the air and water from the wet felt B′, and the layer of pulp thereon, through the suction box mechanism F. This suction box mechanism F we construct of a perforated cylinder G within which is a chamber H, provided at one end with a hollow trunnion H′ which is supported by a standard *h* and connects with the suction pipe *f*, the opposite end of the chamber H is provided with a solid trunnion H^2 which is firmly secured against rotation in a standard *h′* by means of a key h^2, or other convenient device.

The cylinder G is provided with bearings G′ at each end thereof which rotate on the trunnions H′ and H^2 of the chamber H, so that the cylinder G is adapted to be rotated around the chamber H by means of the wet felt B′ which contacts with the upper surface thereof.

In the upper surface of the chamber H we make a longitudinal slot or opening I, in which we preferably place two longitudinal rollers J, J, made preferably of pipe J′ and covered with rubber or other elastic covering J^2; these rollers J, J, are provided with journals *j* on the ends thereof which rotate in boxes *e* supported by springs *e′*, by means whereof the rollers J are always kept in close contact with the inner surface of the perforated cylinder G. These rollers J, J, are set some distance apart so as to have a longitudinal slot or opening K between them, through which opening K air and water from the wet felt B′, and the layer of pulp thereon, passing over the cylinder G are drawn down through the holes *g* therein into the chamber H by the operation of the suction pump *f′* thereon. The openings at the ends of the rollers J, J, are covered by means of caps K′ (shown clearly in Fig. 3.) the peripheries of which fit closely up against the inside of the ends of the cylinder

G, so as to prevent the air passing into the chamber H between the ends of the rollers J, J; and the rear portions of the rollers J, J, rotate in close contact with the edges *i* of the opening I in the top of the chamber (see Fig. 4.) so that very little or no air can be drawn into the chamber H, except that drawn into it through the longitudinal space K between the rollers J, J.

In operation as the wet felt B′ travels over the perforated cylinder G it contacts with the top thereof sufficiently to rotate it at a peripheral speed equal to that of the travel of the wet felt B′ contacting therewith, and as the felt travels forward, the water therein is sucked through the holes *g* in the top of the cylinder during the time each row of such holes *g* is passing over the opening K between the rollers J, J, in the top of the chamber H, and this action on the felt is continuous, so that all of the surplus water is removed from the wet felt and from the layer of pulp thereon during its passage over the perforated cylinder G.

In the drawings we have shown but one construction of our device, but we are aware that other modifications of the same can be readily made without departing from the spirit of our invention; therefore,

Having described our invention, so as to enable others to construct and operate the same, what we claim as new, and desire to secure by Letters Patent of the United States, is—

1. The combination in a suction box mechanism for paper making machines, of a perforated cylinder in contact with the wet felt of a paper making machine, and rotating in unison with the travel of said felt, a chamber within said cylinder supported upon trunnions, which operate also as the bearings upon which said cylinder rotates, and one of which is hollow and connected with suction mechanism, a longitudinal opening in said chamber at the point at which the felt contacts with the perforated cylinder, longitudinal rollers at the sides of said opening contacting with the inside of the perforated cylinder, and caps at the ends of the rollers, substantially as and for the purpose set forth.

2. The combination in the suction chamber of a suction box mechanism for paper making machines, of a chamber having a longitudinal slot or opening in one side thereof, a longitudinal roller at each side of said slot, elastic surfaces on said rollers, and boxes in which said rollers are journaled mounted upon springs, substantially as and for the purpose set forth.

3. The combination in a suction box mechanism for paper making machines, of a chamber H supported on a hollow trunnion H′ and a solid trunnion H^2, a perforated cylinder G mounted on said trunnions H′, H^2 and rotating around said chamber H in close contact with the upper part thereof, a longitudinal opening I in the top of said chamber, longitudinal rollers J, J, in said opening I close to the sides thereof, boxes *e* in which said rollers J, J, are journaled, supported on springs *e′* and caps K′ closing the opening I at the ends of said rollers, substantially as and for the purpose set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

JAMES W. BEDALE.
JOSEPH G. BEDALE.

Witnesses:
F. E. ALLEN,
ISADOR SOBEL.