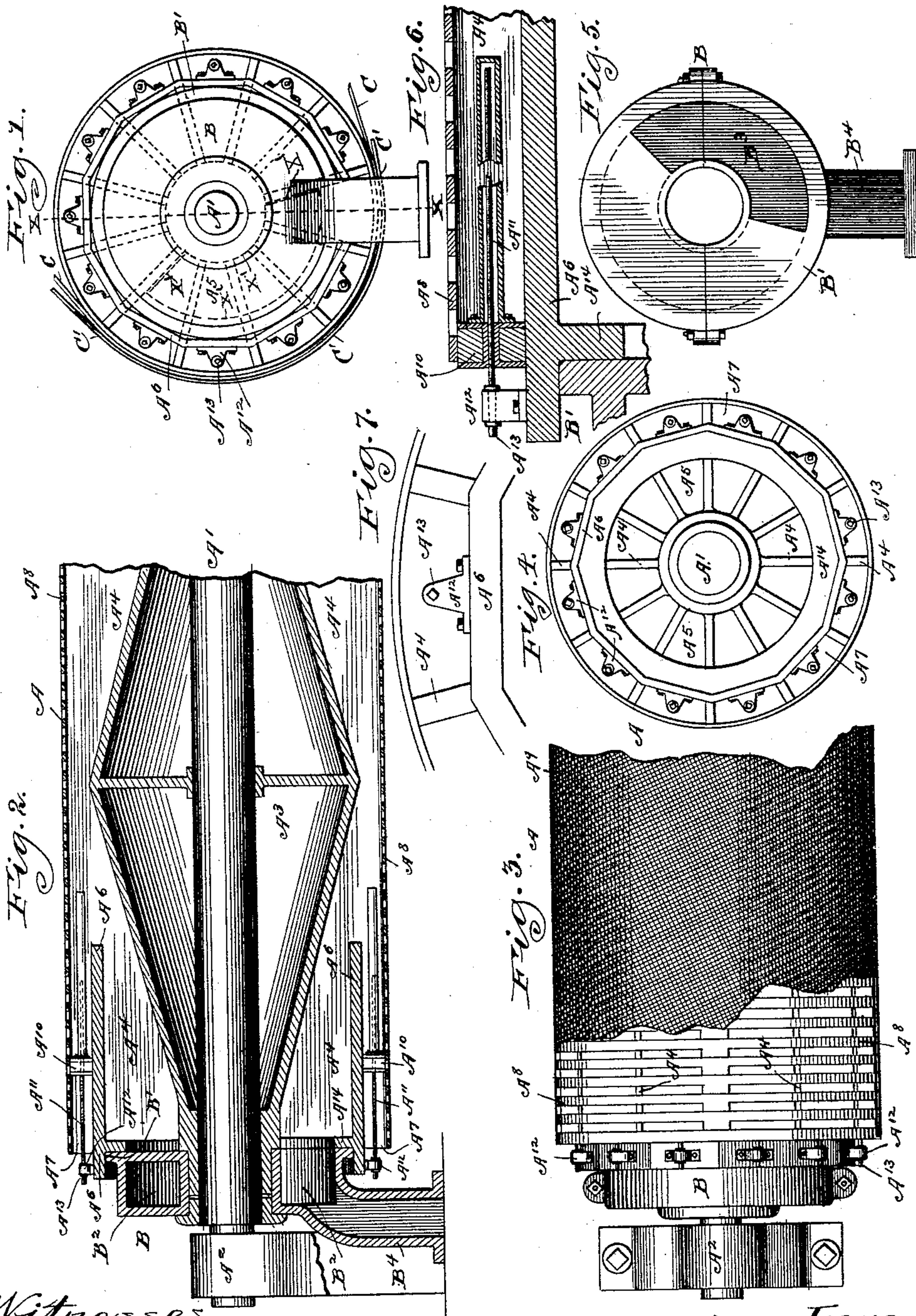


(No Model.)

E. E. JOHNSON.
PAPER MAKING MACHINE.

No. 480,770.

Patented Aug. 16, 1892.



Witnesses,
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UNITED STATES PATENT OFFICE.

EDWARD E. JOHNSON, OF SENECA FALLS, NEW YORK.

PAPER-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 480,770, dated August 16, 1892.

Application filed March 7, 1891. Serial No. 384,169. (No model.)

To all whom it may concern:

Be it known that I, EDWARD E. JOHNSON, a citizen of the United States, residing at Seneca Falls, in the county of Seneca and State of New York, have invented certain new and useful Improvements in Paper-Making Machines, of which the following is a specification.

My invention relates specifically to suction-rolls for paper-making machines, consisting, essentially, of a hollow roll or cylinder divided into longitudinal compartments, arranged to be successively exhausted of air and presented to the inner surface of the paper-carrying medium and suck therefrom the water contained in the layer of pulp deposited on the outer surface thereof as the roll is revolved, and means for exhausting the air from said compartments; and it consists of certain new and useful features of construction and combinations of parts hereinafter described, and pointed out in the claims.

Referring to the accompanying drawings, which form a part of this specification, Figure 1 is an end view of my improved suction-roll. Fig. 2 is a longitudinal section of a portion of the same at the dotted line X X in Fig. 1. Fig. 3 is a top plan view of the same denuded of a portion of its wire-cloth covering. Fig. 4 is an end view of the suction-roll with the suction-valve removed therefrom. Fig. 5 is a view of the inner face of the suction-valve—that is, the face that is next to the suction-roll in Figs. 1 and 2. Figs. 6 and 7 are enlarged detailed views of parts shown in Figs. 2 and 4, respectively.

Like letters of reference indicate corresponding parts throughout the several views.

A is the suction-roll considered as a whole, mounted on an axis A', having bearings A².

A³ is an interior centrally-located chamber intended simply to diminish the capacity of the roll to contain air and may be of any suitable form and construction.

A⁴ are radial partitions dividing that portion of the interior of the roll lying outside of the chamber A³ into longitudinal compartments A⁵, which in the cylinder shown are twelve in number.

A⁶ are partial sub-partitions extending

transversely between the outer ends of the radial partitions A⁴ to form the ways A⁷.

A⁸ A⁹ are rings and wire-cloth forming the periphery of the roll in the usual manner. Wherever a wire-cloth paper-carrying medium is employed in lieu of one of felt or other material, the wire-cloth covering A⁹ of the roll may and had better be dispensed with.

A¹⁰ are adjusting-heads adapted to slide in the ways A⁷ and should be made of some elastic non-porous substance or have the surfaces of the same that are in contact with the roll provided with packing suited to form air-tight joints between said heads and the sides of the ways.

A¹¹ are screws for actuating the adjusting-heads A¹⁰ and are mounted in bearings A¹². Whenever it is desired to slide any head in its way, apply a handle to the end A¹³ of the screw A¹¹ and revolve the same until the head is caused to travel to the proper place therein. The function of the ways and heads is to render the roll longitudinally adjustable in order to adapt it to be used in making paper of any desired width.

B is a stationary suction-valve, the inside of the flange B' whereof is fitted to the annular head A¹⁴ of the roll, forming an air-tight joint therewith, the joint, however, not being sufficiently close to prevent free revolution of the roll A. The interior of the valve B is simply an annular chamber B², having a port B³ in its inner face registering with the open or port ends of the compartments A⁵ in the roll A and a port (not shown) opening into the suction-pipe B⁴. The dotted lines X' in Fig. 1 indicate the outlines of the port B³, registering with the port ends of five of the compartments A⁵ in the roll A. The lower end of the port B³ is shown in section in Fig. 2, the lower portion of the annular chamber B² opening through the port B³ into the port end of one of the compartments A⁵ and the upper portion of the chamber B² being shut off from communication with the compartments A⁵ by means of the inner face of the valve B. Obviously, if desired, the port B³ could be made of greater or less dimensions than shown or so constructed that its size might be regulated by means of a slide or otherwise.

B⁴ is a suction-pipe connecting the valve B with a suction-pump or exhauster.

C is so much of a felt or other paper-carrying medium as is contiguous to the five compartments A⁵.

C' is a layer of pulp deposited on the outer surface thereof to be converted into paper.

If suction be applied to the pipe B⁴, the air contained in the five compartments A⁵ (see Fig. 1) contiguous to the port B³, would be drawn out of said five compartments through the port B³ into the valve B and through a port (not shown) in the bottom of the valve B into the pipe B⁴ and from thence out through the exhauster. The partial exhausting of the five compartments A⁵ would produce a powerful suction immediately below the layer of pulp C', and a large percentage of the water contained therein would thereby be drawn down through the medium C into the compartments A⁵ and pass out through the port B³ into the valve B and thence into the pipe B⁴. Evidently if the roll A were continuously revolved the compartments A⁵, as fast as they registered with the ports B³, would be partially exhausted of their air, and the operation of sucking the water out of the layer of moving pulp or strip of partially-formed paper into the partially-exhausted compartments A⁵ of the roll would be a continuous one.

In the mechanism described the entire force of the exhausting apparatus is constantly directed to that portion of the periphery of the suction-roll that is adjacent to the strip of saturated partly-formed paper, the

paper-carrying medium C being in close contact below with the perforated periphery of the roll A and above with the paper C'.

I claim—

1. In combination, the suction-roll having a perforated periphery and being divided by radial partitions into longitudinal compartments, the sub-partitions extending transversely between the outer ends of the radial partitions to form ways, the adjusting-heads adapted to be slid in said ways, means for sliding said heads in their ways, and the suction-valve connected and successively registering with said compartments as the suction-roll is revolved, substantially as and for the purpose specified.

2. In combination, the suction-roll having a perforated periphery, being divided by radial partitions into longitudinal compartments and being provided with an interior centrally-located chamber to diminish the capacity of the same, the horizontal sub-partitions extending transversely between the outer ends of the radial partitions to form ways, the adjusting-heads adapted to be slid in said ways, the screws for actuating the adjusting-heads, and the suction-valve connected and successively registering with said compartments as the suction-roll is revolved, substantially as and for the purpose specified.

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Witnesses:

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