(No Model.) 2 Sheets—Sheet I.

C. E. JOHNSON.

PAPER MAKING MACHINE.

No. 421,574. Patented Feb. 18, 1890.

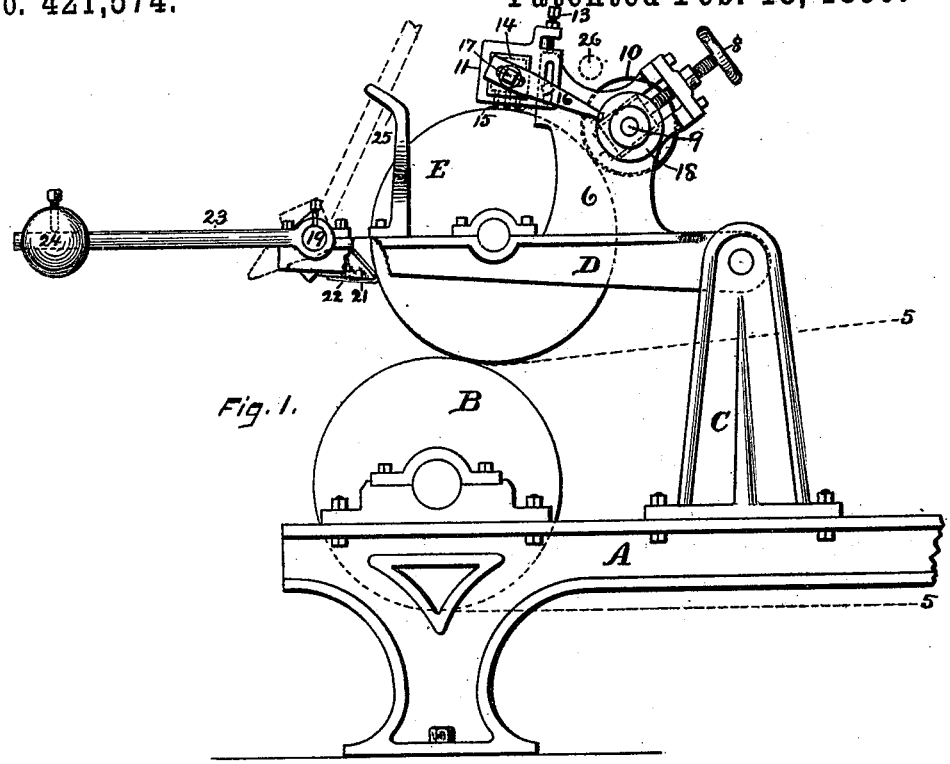

Fig. 1.

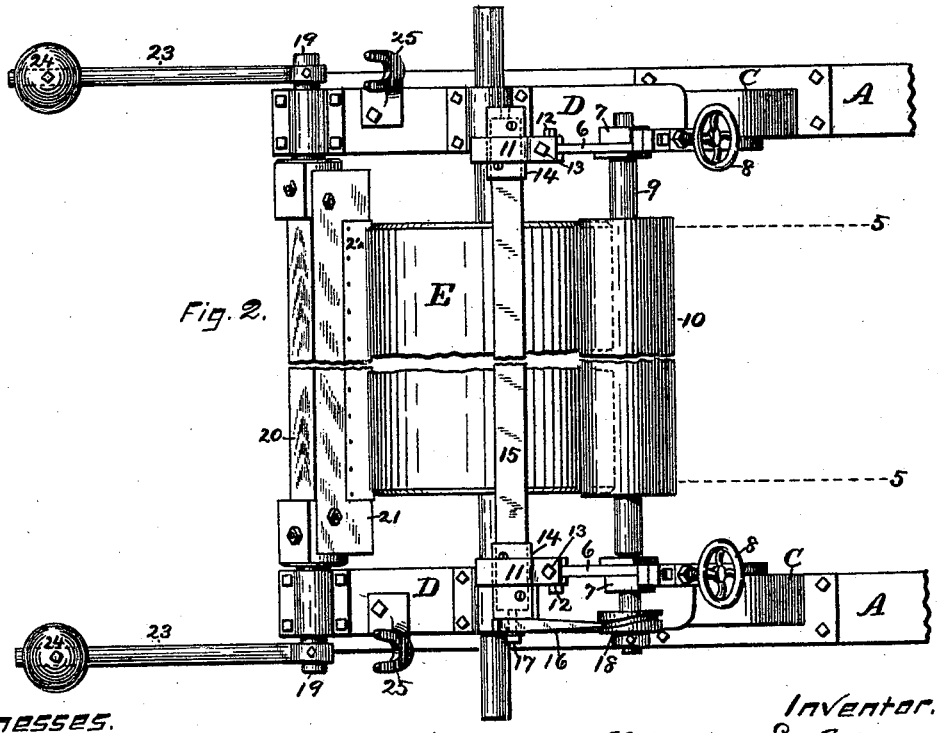

Fig. 2.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

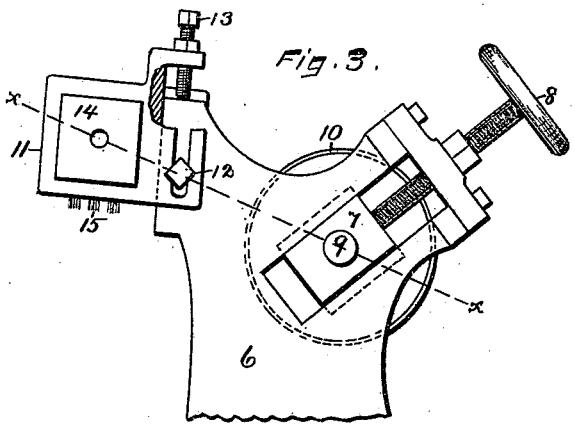
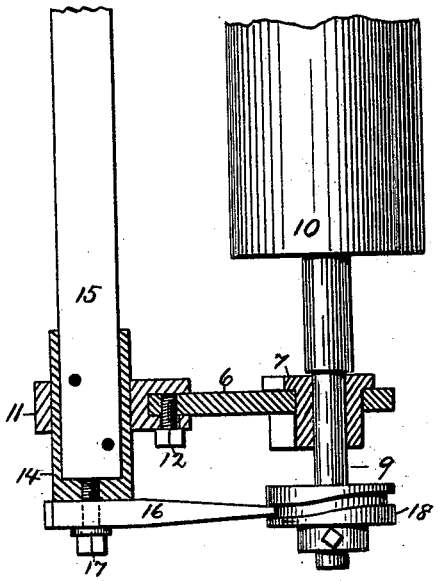


Fig. 4.



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By James Shepard
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UNITED STATES PATENT OFFICE.

CHARLES E. JOHNSON, OF WATERTOWN, NEW YORK.

PAPER-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 421,574, dated February 18, 1890.

Application filed June 26, 1889. Serial No. 315,575. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. JOHNSON, a citizen of the United States, residing at Watertown, in the county of Jefferson 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 to improvements in that class of paper-making machines which are known as "Fourdrinier machines," and relates particularly to attachments for use in connection with the couching-rollers; and the principal object of my invention is to reduce friction and prevent the rapid wearing of the nap from the jacket of the upper couching-roller.

In the accompanying drawings, Figure 1 is a side elevation of so much of a paper-making machine as is necessary to show my improvement. Fig. 2 is a plan view of the same. Fig. 3 is an enlarged side elevation and partial section of a detached portion thereof; and Fig. 4 is a sectional view of the standard 6 and frame 11 on the line *x x* of Fig. 3, with other parts in plan view.

A designates the frame of the machine, upon which is mounted in suitable bearings the lower couching-roller B and uprights C for the attachment of the swinging arms D, upon which the upper couching-roller E is mounted. The lower couching-roller B has an endless apron of wire-cloth running over it, as indicated by the broken lines 5, in the same manner and for the same purpose as in well-known machines of this class.

My improvements are attached to the arms D in connection with the upper couching-roller E.

6 designates the standards, which extend upwardly from the swinging arms D and contain sliding boxes or bearings 7, made adjustable to and from the upper couching-roller E by means of screws 8. Within these boxes 7 there is a shaft 9, upon which I mount a pressing-roll 10, which is designed to bear upon the periphery of the upper couching-roller E. This roller I prefer to provide with a rubber periphery; but a plain metal roller may be employed.

Upon the standards 6, I mount frames 11, which are adjustably secured by means of screws 12, which pass through vertical slots in said frames, and the adjusting-screws 13 on the upper side thereof, the lower ends of which bear upon the upper edge of the standards, as shown in Fig. 3. These frames 11 are each provided with a square opening, within which I place the sockets 14 of the brush 15. The ends of the brush are received within these sockets, which suspend the brush with its working-surface in contact with the working-face of the upper couching-roller E. These brush-sockets 14 are fitted to the frames 11 so as to slide therein and permit a longitudinal reciprocating movement of the brush. To one of the sockets I attach an arm 16, which is secured by means of a bolt 17, preferably passing through a slot and into a threaded hole at the end of one of the sockets 14. I prefer to provide each of these sockets with a threaded hole, so that the brush can be changed end for end when desired to compensate for wear. The rigid arm 16 enters the groove of the cam 18, which is secured to the shaft 9, whereby the rotation of said shaft imparts a reciprocating longitudinal motion to the brush. By making the frames 11 adjustable the brush may be properly adjusted with relation to the surface of the couching-roller E.

In Fig. 3 I have represented the parts with the arm 16 and cam 18 removed; but they are shown in Fig. 4.

At the outer ends of the arms D, I hang upon suitable journals 19 a doctor 20, which is eccentrically mounted on said journals, so that its working-edge 21 may be brought against or away from the couching-roller E. This working-edge is covered with a jacket 22, of felt or other suitable material. At the outer ends of the journals 19, I secure operating bars or handles 23, preferably provided with weights 24, and upon the arms D, I arrange forked uprights 25, which serve as stops for the bars 23 when they are swung into a position to throw the doctor out of action, as indicated by the broken lines in Fig. 1.

As in ordinary machines of this class, the upper couching-roller E is covered with a jacket of felt or analogous material. The pressing-roller 10 is adjusted by means of the adjusting-screws 8 to bear firmly against the roller E, and the brush 15 is adjusted by

means of the set-screws 13 and holding-screws 12 so as to bring it in contact with the couching-roller E. The doctor is thrown into position to bring its working-edge against said roller and the machine set in operation. If the pulp follows the upper couching-roller, it will be thoroughly removed therefrom by the doctor. After the material properly follows the wire-cloth apron the doctor may be flung back out of action and the machine allowed to run as long as it works properly. If at any time the pulp follows the upper couching-roller, the operator can instantly throw the doctor into action, it being hung, in the manner before described, so as to be quickly thrown into or out of action. The reciprocating motion of the brush will loosen up from the jacket of the couching-roller such particles of pulp as may adhere thereto. A spray of water is then thrown upon the upper couching-roller at a point between the brush and pressing-roller 10 to wash off and remove the pulp thus loosened from the jacket. This water may be applied by any suitable devices—as, for instance, by means of a perforated horizontal pipe extending across the machine, as indicated by the small broken circle 26 in Fig. 1.

The pressing-roller 10 serves as a dam to prevent the water from following the jacket of the roller E and for turning the water off at the ends of said roller. It also, by the pressure thereon, serves to partially dry the jacket preparatory to its action on the pulp upon the wire-cloth.

By my invention I run the machine with much less friction, and particularly with much less wear of the jacket of the couching-roller. I also dry the jacket more efficiently and the doctor is arranged so that the operator can conveniently and quickly throw it into or out of action, as occasion may require.

I claim as my invention—

1. In a paper-making machine, the combination of the upper couching-roller, the swinging arms upon which it is mounted, and the doctor 20, eccentrically mounted upon said swinging arms, so as to be readily thrown into or out of action, substantially as described, and for the purpose specified.

2. In a paper-making machine, the combination of the upper couching-roller, the swinging arms upon which it is mounted, the doctor 20, eccentrically mounted on said arms, the operating bar or handle 23, and stop 25, substantially as described, and for other purpose specified.

3. In a paper-making machine, the combination of the upper couching-roller E, the brush 15 in contact therewith, and operating devices for imparting a longitudinal reciprocating motion to said brush, substantially as described, and for the purpose specified.

4. In a paper-making machine, the combination of the upper couching-roller E, a doctor, and the pressing-roller 10, mounted in adjustable bearings, substantially as described, and for the purpose specified.

5. In a paper-making machine, the combination of the upper couching-roller E, the brush 15, pressing-roller 10, and devices for imparting a longitudinal reciprocating motion to said brush, substantially as described, and for the purpose specified.

6. In a paper-making machine, the combination of the upper couching-roller E, a doctor, a brush 15, devices for imparting a longitudinal reciprocating motion to said brush, and the adjustable pressing-roller 10, substantially as described, and for the purpose specified.

7. In a paper-making machine, the combination of the upper couching-roller E, the swinging arms upon which it is mounted, the standards 6, mounted on said arms, the frames 11, adjustably mounted on said standards, and the brush 15, adapted to slide longitudinally in said frames, substantially as described, and for the purpose specified.

CHARLES E. JOHNSON.

Witnesses:
JAMES SHEPARD,
JOHN EDWARDS, Jr.