

No. 707,014.

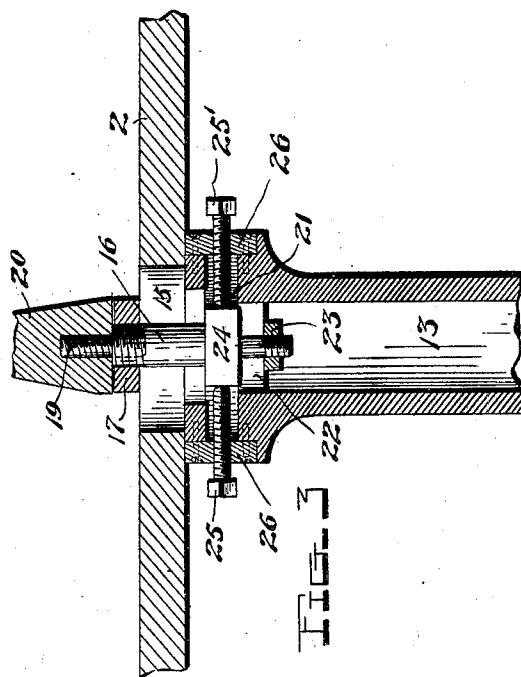
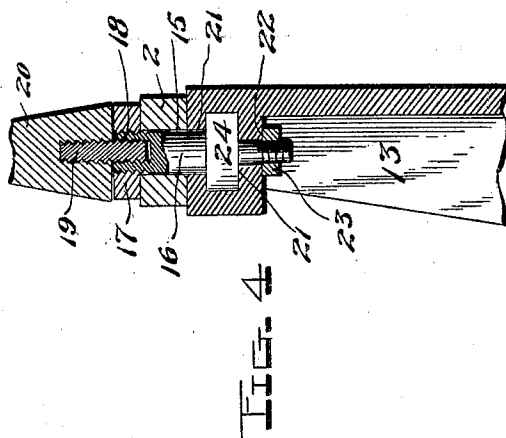
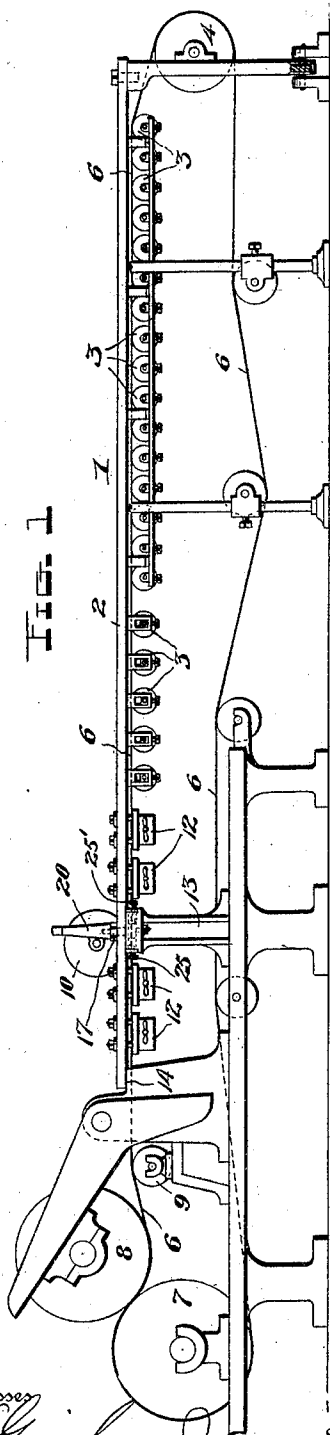
Patented Aug. 12, 1902.

J. F. RICHARDS.
PAPER MAKING MACHINE.

(Application filed May 29, 1902.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses
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E. Wilson

By

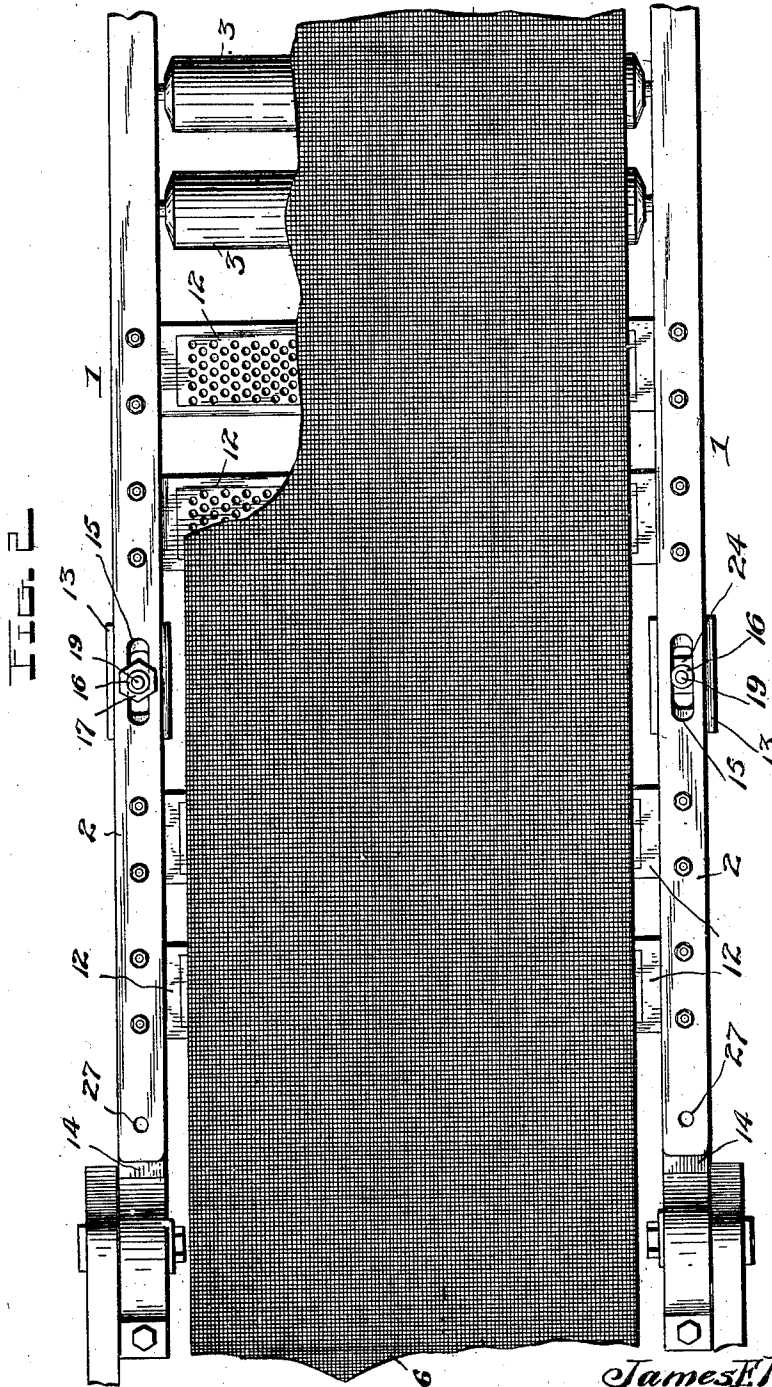
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2 Sheets—Sheet 2.



Inventor

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UNITED STATES PATENT OFFICE.

JAMES FRANKLIN RICHARDS, OF LUKE, MARYLAND.

PAPER-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 707,014, dated August 12, 1902.

Application filed May 29, 1902. Serial No. 109,466. (No model.)

To all whom it may concern:

Be it known that I, JAMES FRANKLIN RICHARDS, a citizen of the United States, residing at Luke, in the county of Allegany and State of Maryland, have invented certain new and useful Improvements in Paper-Making Machines; and I do 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.

This invention relates to improvements in paper-making machines of the "Fourdrinier" class, and particularly to the shaking-section thereof, whereby the saturated pulp carried by the traveling wire cloth or apron is shaken laterally and agitated to cause the particles or fibers of the pulp to intermingle, whereby a web-like structure of the saturated stuff is secured. Heretofore the shaking-table in this class of machines has been pivoted at or adjacent to one end to the couch-frame, either in front or in rear of the suction-boxes, and has been operated upon at its opposite end by appropriate shaking mechanism, whereby the suction-boxes, which are suitably fixed upon the shaking-table, are all caused to swing or vibrate in the same direction and to different degrees, according to their respective distances from the pivot-point, the boxes closest to said point thus having little or no vibratory action relative to the traveling apron. Such constructions are defective for the reason that when the apron is loaded and drawn down by the action of the suction-boxes the vibratory action of those boxes nearest to the pivot-point is not sufficient to prevent the apron from sticking to said boxes, and whereby the latter prevent the apron from having the vibratory action it should at this point. As a consequence the strands of the wire apron are caused to cut into the perforated tops of the boxes and form grooves which are engaged by the diagonal stitches connecting the ends of the apron, said stitches acting as threads to force the apron laterally or toward one side of the machine, causing the guide-roll to lose control of the apron and by the lateral pressure thereon to be jammed against one of its boxes. It then be-

comes necessary to break the vacuum by supplying air to the suction-boxes, whereupon the apron is freed and becomes responsive to the guide-roll; but owing to the rapid lateral return movement of the apron to its normal position the edges of the same frequently bend or double up, sometimes rendering it useless and at least requiring the stoppage of the machine for the purpose of adjusting the apron and planing off the mutilated suction-boxes to a smooth surface. Hence great skill and care must be exercised in order to keep the machine in running order, and much valuable time is lost from frequent stoppages and repairs.

The object of my invention is to provide simple and effective means for overcoming these objections and for regulating the vibratory play of the suction-boxes in such manner as to secure the best results.

With the above and other objects in view, which will readily appear as the nature of the invention is better understood, said invention consists in certain novel features of construction and combination and arrangement of parts which will be hereinafter fully described and claimed, and illustrated in the accompanying drawings, in which—

Figure 1 is a view in side elevation of a Fourdrinier paper-making machine embodying my invention. Fig. 2 is a top plan view, on an enlarged scale, showing that portion of the machine bearing the invention. Fig. 3 is a vertical section through the head of the supporting-post, showing the pivot-bolts and coacting parts. Fig. 4 is a vertical section taken at right angles to Fig. 3.

Referring now more particularly to the drawings, the numeral 1 represents the shaking-table of the machine, comprising the side bars 2 and table-rolls 3; 4, the breast-roll; 6, the endless-wire apron mounted in the usual way; 7 and 8, the couch-rolls; 9, the guide-roll; 10, the wire-covered "dandy-roll," and 12 the suction-boxes, which are constructed and arranged, except as hereinafter specified, in the ordinary way.

In carrying my invention into practice I bolt or otherwise secure the suction-boxes in one or more transverse pairs or series to the

bars 2 on opposite sides of the pivot and pivotally mount the vibrating table to supporting-posts 13 in the following manner: The inner or front ends of the bars rests upon
 5 a seat 14, formed upon the couch-frame, and are provided at a desired distance in rear thereof with longitudinal slots 15, such distance being sufficient to leave a space for a desired number of transverse pairs or series
 10 of boxes between the posts and seat. Through each slot 15 passes the upper end of a bolt 16, which is threaded to receive a top adjusting-nut 17, holding the bar against upward displacement, and is formed with a threaded recess 18 for the reception of a stud-bolt 19,
 15 upon which is mounted the bracket 20, supporting the adjacent end of the dandy-roll. The lower end of the bolt 16 is horizontally adjustable in a cross-shaped slot 21, formed in the upper end or head of the post 13 and extends beneath a shoulder 22 to receive a nut 23, which bears against said shoulder and secures the bolt from upward movement. On the bolt is formed a head
 25 24, which occupies the transverse portion of the slot and against which bear adjusting-screws 25 25', working in threaded openings in bearing-plates 26, located on opposite sides of the post-head. By this construction it
 30 will be seen that the shaking-table is mounted to vibrate laterally on the bolts 16 and that the latter are adjustable longitudinally of the machine and in the slots 15 to vary the pivot-point relative to the front or adjacent end of the table, which adjustment is obtained
 35 through the medium of the screws 25 25'.
 As heretofore stated, it is customary to mount all the suction-boxes either on one side or the other, but generally in rear of the
 40 pivotal point of the table, thus causing those rolls nearest the pivots to have little or no swing or vibration, whereby the apron, as previously described, cuts into the suction-boxes and is forced toward one side of the machine by the diagonal stitches of the apron
 45 acting as threads in the grooves thus formed in the boxes. By mounting the boxes on opposite sides of the pivots, so that one or more boxes stand in rear and one or more in front
 50 of the transverse plane of the pivots, this objection is entirely overcome, as the front boxes have a lateral swing or vibration equal to that of the rear boxes, and as this swing or vibration effectually prevents sticking of the apron
 55 to the boxes no cutting or grooving action can ensue, and hence there will be no surfaces for the threads at the end of the apron to work on and crowd said apron to one side of the machine. Furthermore, by adjusting
 60 the pivot-bolts by means of their adjusting-screws in the slots 15 the vibratory action of the front set of suction-boxes—i. e., those nearest the couch-rolls—may be regulated to the utmost nicety. It will therefore be seen
 65 that the invention is productive of great advantages in rendering the machine less liable

to injury and in saving the time and labor ordinarily expended for more or less frequent repairs.

The front ends of the bars or rails 2 are ap- 70
 ertured to receive bolts 27, adapted to be passed through openings in the seat 14, so that the table may be held fixed against movement when desired.

From the foregoing description, taken in 75
 connection with the accompanying drawings, it is thought that the construction, mode of operation, and advantages of my improved paper-making machine will be readily apparent without requiring a more extended explanation. 80

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of 85
 this invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a Fourdrinier paper-making machine, 90
 the combination with a traveling apron, of a shaking-section pivotally mounted at a point adjacent to one of its ends, and suction-boxes mounted upon the shaking-section at the front and rear of the pivotal connection, sub- 95
 stantially as described.

2. In a Fourdrinier paper-making machine, the combination with a traveling apron, of a shaking-section pivotally mounted at a point adjacent to one of its ends, suction-boxes 100
 mounted upon the shaking-section at the front and rear of the pivotal connection, and means for varying the position of the pivotal connection, substantially as specified.

3. In a Fourdrinier paper-making machine, 105
 the combination with a traveling apron, and a shaking-section, of suction-boxes located at different points longitudinally of said shaking-section, and means for pivotally mounting the shaking-section at a point between 110
 the boxes, substantially as set forth.

4. In a Fourdrinier paper-making machine, the combination with the couch-frame, and a traveling apron, of posts mounted upon said frame, a shaking-section, means for pivotally 115
 connecting the shaking-section to the posts, and suction-boxes upon the shaking-section at the front and rear of the pivotal connection, substantially as and for the purpose set forth. 120

5. In a Fourdrinier paper-making machine, the combination with the couch-frame, and a traveling apron, of posts mounted upon said frame, pivot-bolts upon the posts, a shaking-table slotted to receive said bolts, suction- 125
 boxes upon the table at the front and rear of the pivotal point, and means for adjusting the bolts in said slots to vary the pivot-point, substantially as described.

6. In a Fourdrinier paper-making machine, 130
 the combination with a traveling apron, of a shaking-section pivotally mounted at a point

adjacent to one of its ends, suction-boxes mounted upon the shaking-section at the front and rear of the pivotal connection, and means for securing the shaking-section against movement, substantially as described.

means for varying the position of the pivotal connection, and means for securing the shaking-section against movement, substantially as specified.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

7. In a Fourdrinier paper-making machine, the combination with a traveling apron, of a shaking-section pivotally mounted at a point adjacent to one of its ends, suction-boxes mounted upon the shaking-section at the front and rear of the pivotal connection,

JAMES FRANKLIN RICHARDS.

Witnesses:

EDWARD STIRLING,

D. E. PARKE.