No. 789,036. PATENTED MAY 2, 1905.

L. F. JURGENSON.

PAPER MAKING MACHINE.

APPLICATION FILED OCT. 19, 1904.

2 SHEETS—SHEET 1.

Fig. I.

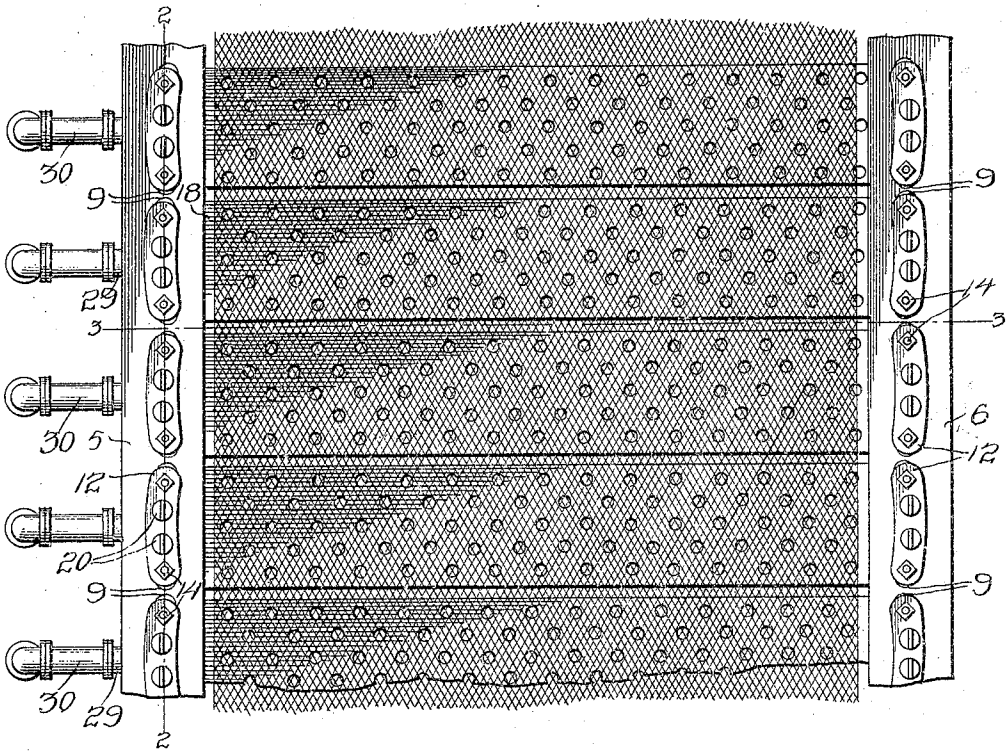
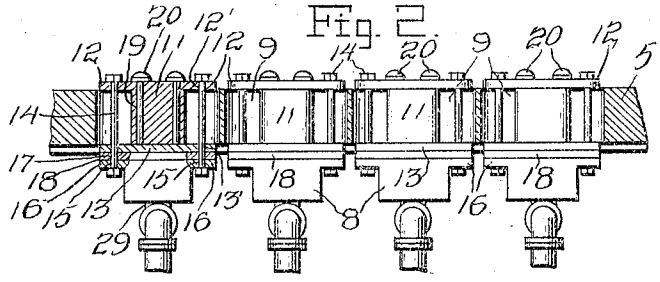


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

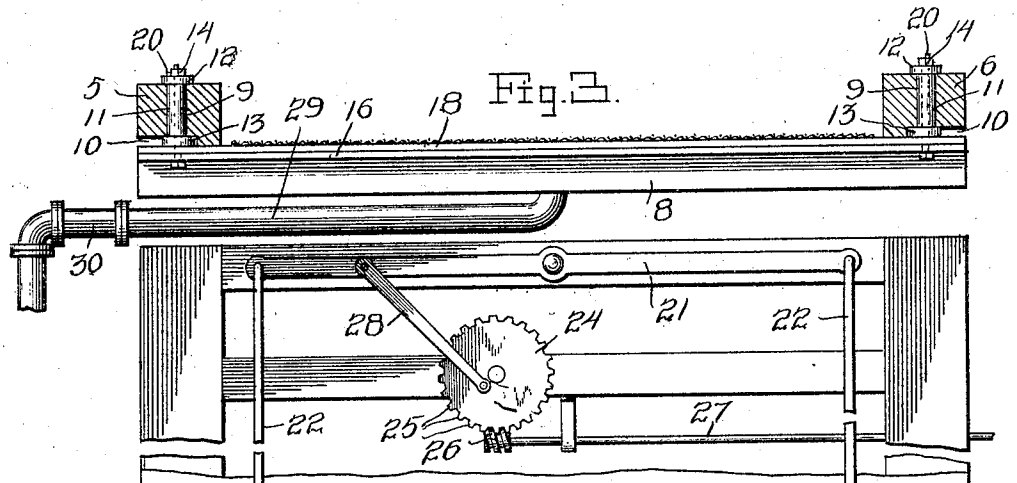
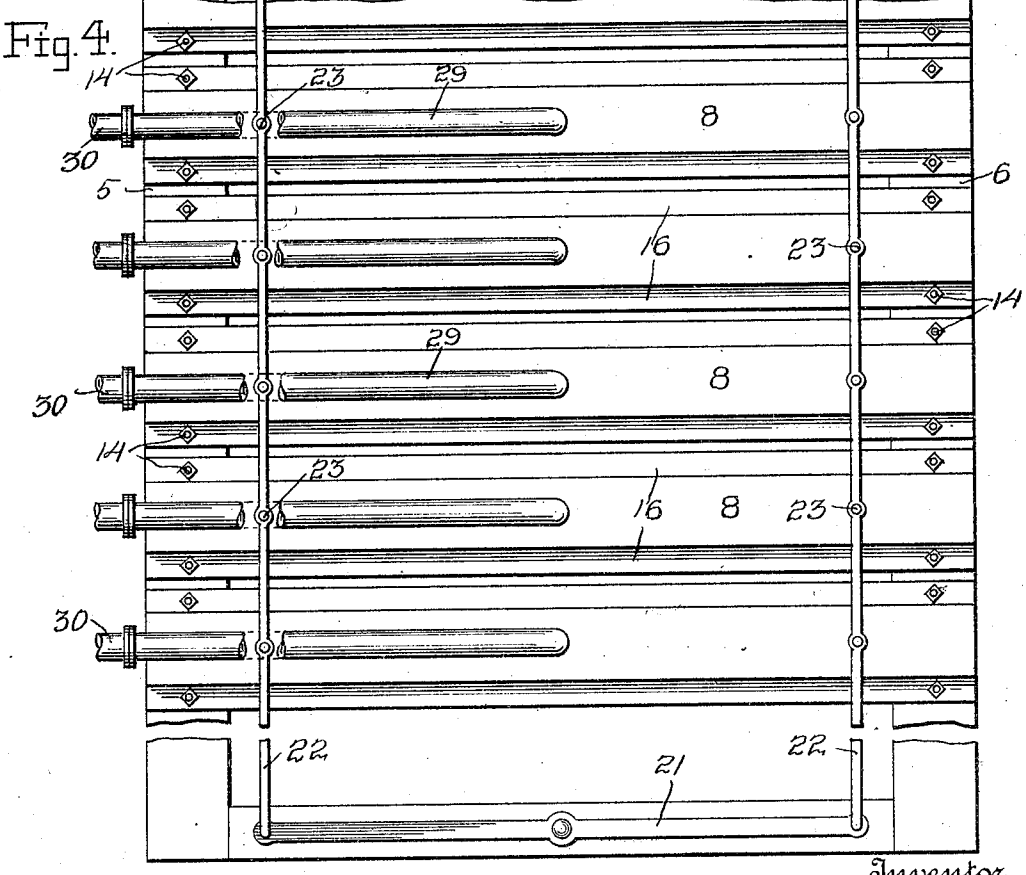


Fig. 4.



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UNITED STATES PATENT OFFICE.

LOUIS F. JURGENSON, OF GRAND RAPIDS, MINNESOTA.

PAPER-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 789,036, dated May 2, 1905.

Application filed October 19, 1904. Serial No. 229,151.

To all whom it may concern:

Be it known that I, LOUIS F. JURGENSON, a citizen of the United States, residing at Grand Rapids, in the county of Itasca, State of Minnesota, have invented certain new and useful Improvements in Paper-Making Machines; and I 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.

This invention relates to paper-making machines, and more particularly to the suction-boxes thereof, and has for its object to provide an arrangement of the suction-boxes which will permit of their being shifted to different positions.

It has been found that through constant rubbing of the Fourdrinier wire against the suction-boxes channels are worn in the faces of the boxes. Through the movement from side to side of the rearward portion of the wire these channels cause considerable wear of the wire, so that the life thereof is greatly reduced, and the arrangement mentioned above, which permits of shifting of the suction-boxes, prevents the wearing of the channels in the faces thereof.

Objects and advantages other than those mentioned above will be apparent from the following description, and it will be understood that changes in the specific construction may be made and that any desired materials may be used without departing from the spirit of the invention.

In the drawings forming a portion of this specification, and in which like numerals of reference indicate similar parts in the several views, Figure 1 is a top plan view of the suction-boxes of a paper-making machine and illustrating the Fourdrinier wire partly broken away. Fig. 2 is a section on line 2 2 of Fig. 1. Fig. 3 is a section on line 3 3 of Fig. 1 and illustrating one of the suction-boxes in side elevation. Fig. 4 is a bottom plan view of the suction-boxes and illustrating the shifting mechanism.

Referring now to the drawings, there is shown a portion of a paper-making machine including side rails 5 and 6, between which is mounted the movable Fourdrinier wire, which is spaced at its edges from the rails.

The suction-boxes 8 are disposed transversely of the rails 5 and 6, with their ends lying therebeneath, and formed vertically through the rails, one above each of the suction-boxes, are a plurality of transversely arc-shaped passages 9, these passages extending vertically through the rails. Formed in the under faces of the rails are a plurality of recesses 10, one communicating with each of the passages 9, these recesses having the same general shape of the passages which are concentric therewith.

Disposed one in each of the passages 9 are a plurality of blocks 11, which conform to the shape of the passages and are slidable longitudinally thereof, and these blocks are provided with flanges 12 at their upper ends, which extend beyond the edges of the passages and rest upon the upper face of the rails. Disposed in the recesses 10 are plates 13, which coincide with the flanges 12, these plates being somewhat shorter than the recesses. The lower ends of the blocks 11 rest against the upper faces of the plates 13, and these plates are held to the block by means of bolts 14, which are engaged in openings 12′ and 13′, which lie adjacent to the ends of the flanges 12 and the plates 13, respectively, these bolts being also passed through openings 15 in the flanges 16 of the suction-boxes 7 and through alining openings 17 in the suction-plates 18.

Formed vertically through the blocks 11, one on either side of the centers thereof, are passages 19, which are threaded, and engaged in these passages are bolts 20, which bear at their lower ends against the upper faces of the plates 13. It has been found

that there is a tendency of the suction-boxes to rock sidewise, thus bringing the faces of their plates 18 out of the horizontal, and it will be apparent that by operating the bolts 20 the boxes may be adjusted to the desired position. It will thus be apparent that the ends of the boxes may be swung in opposite directions, this movement being permitted by the longitudinal movement of the blocks 11 in the passages 9, and by tightening the bolts 14 the boxes may be held at different points of their movement. In this way the positions of the boxes with respect to the wire may be varied to prevent the wire from wearing the surfaces of the suction-plates unevenly.

In Fig. 4 there is shown a mechanism for automatically shifting the boxes. Pivoted centrally, one at either end of the series of suction-boxes, are walking-beams 21, which extend horizontally, and the corresponding ends of these two walking-beams are connected by rods 22, which extend beneath the boxes 7 adjacent to the ends thereof and pivoted thereto, as shown at 23. Mounted adjacent to one of the walking-beams 21 there is a revoluble disk 24, provided with teeth 25 at its periphery, with which there meshed a worm 26, carried by a shaft 27, this shaft being connected with the mechanism operating the machine for rotation thereby. Pivoted at one end to the disk 24 eccentrically thereof is a pitman 28, which is pivoted at its opposite end to one end of the adjacent walking-beam 21.

It will thus be apparent that while the machine is in operation the boxes will be slowly oscillated, it being understood that the bolts 14 are left sufficiently loose to permit of this movement.

The exhaust-pipes 29 of the suction-boxes are provided with flexible sections 30 to permit of the movement of the boxes.

As will be apparent, the shifting of the suction-boxes will prevent the Fourdrinier wire from wearing channels in the surfaces of the suction-plates. The surfaces of the plates are thus worn smooth, so that the wear of the wire is greatly reduced and the life thereof prolonged proportionately.

What is claimed is—

1. In a paper-making machine, the combination with a traveling web, of suction-boxes mounted beneath the web and arranged for engagement thereby, said suction-boxes being arranged for horizontal oscillatory movement and means for moving the boxes.

2. In a paper-making machine, the combination with spaced rails and a movable web disposed therebetween, of suction-boxes connected with the rails and extending beneath the web and arranged for engagement thereby, said boxes being arranged for horizontal oscillatory movement.

3. In a paper-making machine, the combination with a movable web, of suction-boxes arranged for engagement by the web, said suction-boxes being arranged for horizontal oscillatory movement, and means for holding the suction-boxes at different points of their movement.

4. In a paper-making machine, the combination with a movable web, of suction-boxes arranged for engagement by the web, said suction-boxes being arranged for oscillatory movement.

5. In a paper-making machine, the combination with a movable web, of suction-boxes disposed beneath the web and arranged for engagement thereby, said suction-boxes being also arranged for movement beneath the web, means for automatically moving the boxes when the machine is in motion and means for holding the boxes at different points of their movement.

6. In a paper-making machine, the combination with spaced rails having arcuate longitudinally-extending vertical passages formed therethrough, and a movable web mounted between the rails of blocks disposed in the passages and arranged for sliding movement longitudinally therewith, and suction-boxes connected with the blocks and arranged for movement therewith.

7. In a paper-making machine, the combination with spaced rails and a movable web disposed therebetween, said rails having vertical arcuate longitudinally-extending passages therein, the passages of one rail coinciding with those of the other, of blocks disposed in the passages and movable longitudinally thereof, and suction-boxes secured at their ends to the blocks in the coinciding passages of the two rails.

8. In a paper-making machine, the combination with spaced rails and a movable web disposed therebetween, said rails having longitudinally-extending arcuate vertical passages therein, the passages of one rail coinciding with those of the other, of blocks disposed in the passages and arranged for movement longitudinally thereof, said blocks having laterally-extending flanges, plates disposed beneath the blocks, said plates and the flanges of the blocks having alining perforations therethrough, bolts passed through the alining perforations, suction-boxes disposed with their ends beneath the rails and arranged for engagement by the web, said bolts being engaged with the suction-boxes to hold the latter to the blocks, said boxes being arranged for movement with the blocks, and means for varying the transverse pitch of the boxes.

9. In a paper-making machine, the com-

bination with a movable web of movable suction-boxes disposed therebeneath and arranged for engagement thereby, and means for holding the suction-boxes at different points of their movement.

10. In a paper-making machine, the combination with a traveling web, of suction-boxes disposed beneath the web and arranged for horizontal oscillatory movement.

11. In a paper-making machine, the combination with a movable web, of suction-boxes disposed beneath the web, said suction-boxes being arranged for oscillatory movement in a plane parallel with the web upon their central lateral axes as a center.

In testimony whereof I affix my signature in presence of two witnesses.

LOUIS F. JURGENSON.

Witnesses:
J. P. MITCHELL,
ALFRED L. THWING.