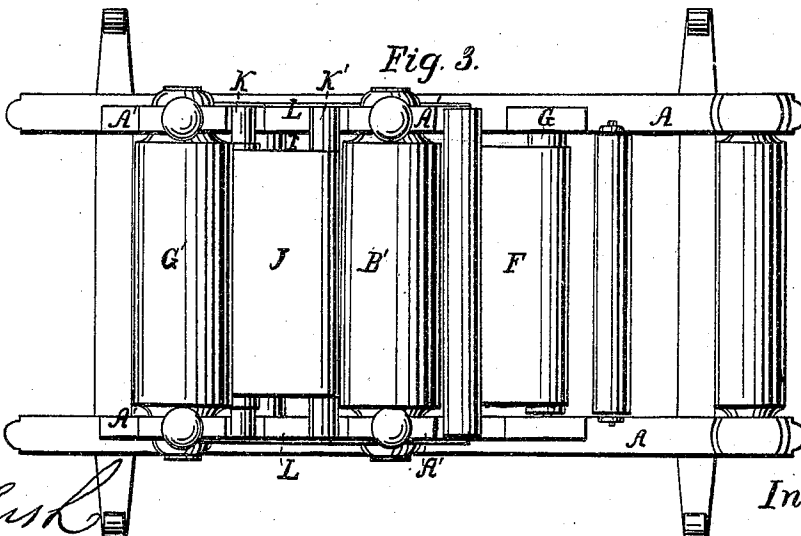
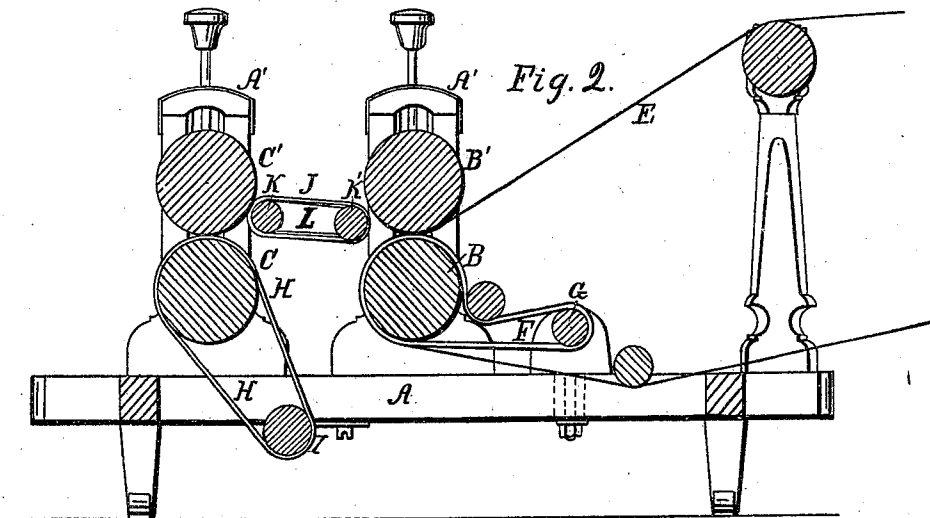
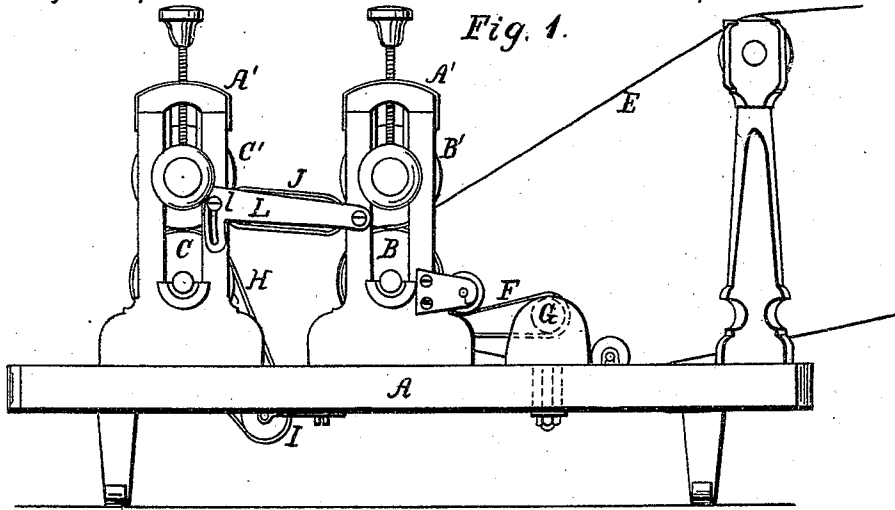


A.B. Lovell.
Paper Mach.

N^o 82,854. Patented Oct. 6, 1868.



Witnesses.

W. H. Forbush
Edward Wilhelm

Inventor.

A. M. O. S. Lovell

United States Patent Office.

AMOS B. LOVELL, OF POMFRET, NEW YORK.

Letters Patent No. 82,854, dated October 6, 1868.

ELASTIC APRON FOR PAPER-MACHINES.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, AMOS B. LOVELL, of the town of Pomfret, in the county of Chautauqua, and State of New York, have invented an Elastic Apron for Paper-Machines; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure I is a side elevation of a portion of a paper-machine, showing the application of my improvements thereto.

Figure II is a sectional elevation of same; and

Figure III is a plan of same.

My improvement relates to the paper-making machine known as "The Fourdrinier," the construction and mode of operation of which are too well known to require special description.

The nature of my invention consists in the combination, with the wet-press or couching-rollers, or with the second or dry-press rollers, or with both, of a Fourdrinier paper-machine, of an endless rubber or gutta-percha apron, arranged and operating in the manner hereinafter described, the combination with the couching-rollers being for the purpose of more thoroughly pressing out the water from the paper in its passage through said rollers, and removing to a great degree the wire-marks therefrom; and thereby dispensing with the use of the "felt," and the combination with the second or dry-press rollers being for the purpose of further removing the water, and giving the paper its finishing pressure before passing to the drier.

In the accompanying drawings, like letters refer to like parts in each of the figures.

The drawings represent only that portion of the machine containing the couching and dry-pressing rollers.

A represents the side frames of the machine, B the lower couching-roller, and B' the upper or pressure-roller.

C is the lower dry-press roller, and C' the upper or pressure-roller.

The lower rollers, B and C, run in appropriate journal-bearings in side frames, and the upper rollers, B' and C', in sliding boxes contained in jaws, A', of the side frames, said jaws having adjusting-screws to regulate the pressure of the upper rollers upon the lower.

E represents the endless wire belt or apron, for receiving the pulp from the vat, and conveying the same to the couching-rollers, around the lower one of which said wire apron passes; the arrangement, operation, and use of the wire apron being as common in Fourdrinier machines.

F represents an endless apron, of rubber or gutta-percha, passing around the lower couching-roller, inside of the wire apron E, and around a tightening-roller, G, located between the upper and lower stretches of the wire apron, the bearing-boxes of said tightening-roller being attached to the side frames in a manner to permit their adjustment to or from the couching-roller, to regulate the tension of said rubber apron.

The sheet of pulp, as brought by the wire apron to the couching-rollers, is saturated with water, which it is the office of the couching-rollers to remove by the compression of the sheet as it passes through the rollers. Supposing the rubber apron not to be used, the wire apron would leave the print of its meshes in the pulp or paper, and would prevent the application of the requisite pressure to remove all or nearly all of the water therefrom, and it is for this reason that the Fourdrinier machines, as heretofore constructed, have required the subsequent passage of the paper over one or more "felt blankets," and through one or more subsequent sets of dry-pressing rollers.

With the rubber blanket, a smooth, elastic surface is given to the lower press-roller, into which the wire apron will embed itself under the pressure of the upper roller, the rubber blanket pressing out and filling the meshes of the wire apron, thereby preventing to a great extent the formation of wire-marks in the paper, and enabling a degree of pressure to be applied to the upper roller which will expel all or nearly all the water from the paper, so that the subsequent passage of the paper over the felts and through at least one set of dry-press rollers may be dispensed with.

By means of a tightening-roller, G, the tension of the rubber apron may be regulated at pleasure, to increase or diminish its elasticity, or the hardness of surface which it presents to the pressure-roller. This is a matter of great importance in adapting the blanket specially to the work it is required to do.

H represents a rubber blanket, similar to F, applied to the lower dry-press roller C, I being an adjustable tightening-roller, operating in the same manner and for the same purpose as roller G.

J is an apron, of rubber cloth or felt, interposed between the couching and dry-press rolls, and passing around rollers K K', the roller K holding the apron in contact with the upper roll C', the motion of said roll driving said apron. The rollers K K' are carried by arms, L, hinged at one end to the side frame, so that the roller K may be swung up or down, to regulate the contact of the apron with the upper roll C', the arms being secured in the required position by the binding-screws Z.

This apron J simply serves the purpose of carrying the sheet of paper from the couching-rolls to the dry-press rolls.

The action of the rubber blanket, as applied to the lower dry-press rolls, is to give a smooth and elastic surface thereto, but sufficiently hard to enable these rolls to give a finishing pressure to the paper, removing most of the remaining water, and erasing, or nearly so, the remaining wire-marks, thus fitting the paper to pass at once to the drying-cylinders.

The advantages accruing from the use of my improvements may be stated simply as follows:

First. It dispenses with the use of the felt blankets and jackets on the couching-rolls, thereby effecting a great saving in the cost of equipping and running the machine, the felt blankets costing, for renewals, from three to seven hundred dollars per annum.

Second. It dispenses with at least one set of dry-press rolls.

Third. It gives a better and smoother surface to the paper, more free from wire and felt-marks.

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

The combination of a rubber or gutta-percha apron with the couching-press rolls of a paper-machine, when the same is provided with a tension-roller, in the manner and for the purpose set forth.

AMOS B. LOVELL.

Witnesses:

W. H. FORBUSH,

EDWARD WILHELM.