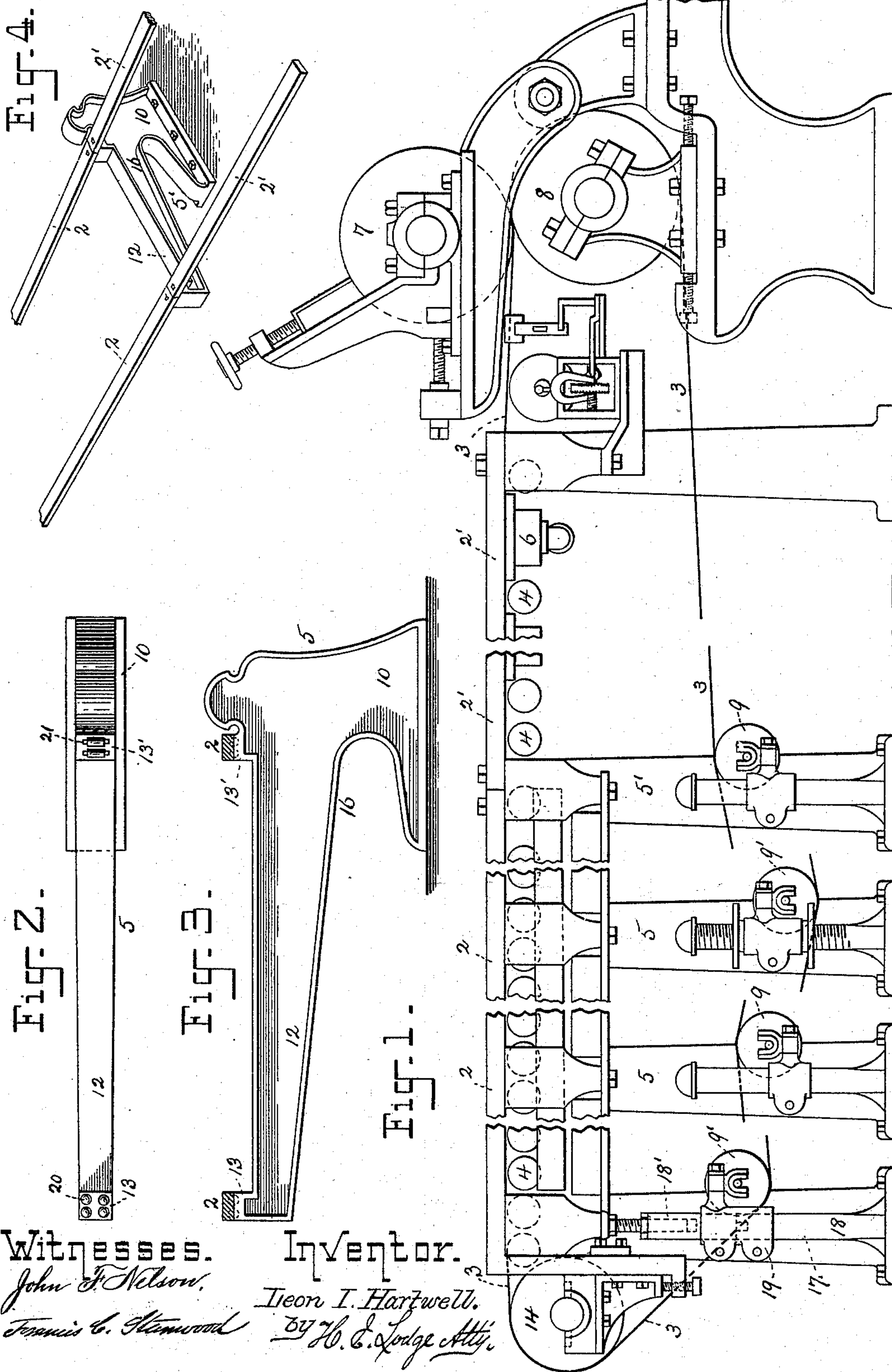


(No Model.)

L. I. HARTWELL.
FOURDRINIER PAPER MAKING MACHINE.

No. 540,309.

Patented June 4, 1895.



Witnesses.

John F. Nelson.

Francis C. Hammond

Inventor.

Leon I. Hartwell.

by H. C. Lodge Atty.

UNITED STATES PATENT OFFICE.

LEON I. HARTWELL, OF MANCHESTER, NEW HAMPSHIRE.

FOURDRINIER PAPER-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 510,309, dated June 4, 1895.

Application filed September 5, 1894. Serial No. 522,162. (No model.)

To all whom it may concern:

Be it known that I, LEON I. HARTWELL, a citizen of the United States, residing at Manchester, in the county of Hillsborough and State of New Hampshire, have invented certain new and useful Improvements in Fourdrinier 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, reference being had to the accompanying drawings, and to figures of reference marked thereon, which form a part of this specification.

This invention relates to Fourdrinier paper making machines.

The purpose of my invention is to facilitate the operation known as the removal, or renewal of the Fourdrinier wire. To this end I have changed the construction of the supports for the shake rails on which the various co-operating elements, which comprise the Fourdrinier part are mounted and supported, and have omitted the entire front of said frame. This latter has hitherto consisted of legs or stands rigidly bolted to the shake rails and extending to the base plate on the floor were connected by swinging joints. Under my invention the save-alls are also supported from above, thus leaving the entire front portion of the machine open. Thus in lieu of the legs or stands, which support the shake-rails and save-alls, I have grouped a series of goose-necked stands which are secured at the rear or back side of the Fourdrinier portion to the floor of the building. Thus the endless wire is enabled to pass above and beneath these several stands, while the necessity of removing the top couch roll, the breast roll, guide roll, table rolls, suction-boxes, save-alls, and numerous other parts is obviated, as will be further more fully explained.

The drawings represent, in Figure 1, a side elevation of such parts as are necessary of the Fourdrinier part of a paper-making machine to illustrate the changes embodied in my invention. Fig. 2 is a plan of one of the stands which embody my invention and adapted to support the shake-rail. Fig. 3 is a side elevation. Fig. 4 is an isometric view

of a stand and the shake-rails and permanent rails which extend longitudinally the whole length of the Fourdrinier part of the machine.

In the construction of the Fourdrinier part of a paper machine the numerous rolls about and between which the endless wire passes have been journaled at both ends in two similar parallel frames or longitudinal rails, the supports at the front ends as before mentioned extending down and being bolted to the floor. Hence in the act of taking off an old worn-out wire and substituting a new one, this portion of the machine was literally dismantled and then set up again. This was due to the fact that the endless wire traveled above certain rolls and other operating parts, and again beneath such parts and it was impossible to slip the wire beneath certain rolls, or save-alls or other parts, without raising such from their bearings, or removing them altogether.

In the present instance I have shown the essential elements in the Fourdrinier part of a paper machine to illustrate the application of my invention. The shake rails are at 2 2'. The supporting permanent rails are at 2', 2'; the wire at 3; table rolls at 4; suction boxes at 6, and the top and bottom couch rolls respectively at 7, 8, while stretch and carrying rolls appear at 9', 9 and the breast roll at 14.

In the old style the act of taking off the wire required that the top coupler should be removed, while the breast roll is dismantled. In addition the save-alls are disconnected from the pumps and removed, while every table roll, the dandy roll, stretch and carrying rolls, dekle frame, wire guide, and suction boxes have to be taken out, requiring much tedious labor and the shutting down of the machine for hours with the consequent loss of labor, product and profit during such interval, in addition to the risk of spoiling the new wire in rebuilding the machine through it. In the performance of the same act under my improvements almost all labor and the shifting of numerous parts are done away with. To this end in lieu of the legs or stands before mentioned I arrange a number of stands or supports 5, 5, which are preferably integral castings. The base 10 or that portion which is bolted to the floor is located at the rear or

back side of the machine and these several stands are to be in proper alignment, while the neck or bracket portions 12 extend unsupported to the front side of the machine. 5 Upon these stands at the points 13, 13' rest the longitudinal rails 2, 2', to which the various co-operating elements comprising this portion of the machine are attached or journaled. These rails consist of two sets; the 10 shake rails 2, 2, front and rear which are movably mounted, and the permanent rails 2', 2'. These latter are continuations of the shake-rails and extend from the stand 5' to the coucher rolls and are moreover held fast by 15 bolts. Thus it is evident that the front of the machine for its entire length is open and the wire can be readily adjusted in position by slipping it over the front ends of the stands, while the breast roll may remain in 20 place. In the act of taking off or putting on a Fourdrinier wire the only rolls removed under my construction are the carrying and stretch rolls 9, 9'. This latter roll is employed to guide the wire beneath and clear of the 25 portion 16 which is here, or at the back side, lower than on the front end of the goose-neck.

It may be here observed that in the removal or renewal of the wire, either under the old construction or with my improved arrangement, it is necessary to take off the 30 dekle frame, dandy roll and stands. None of these parts are shown, since their position and mode of operation are well known to those skilled in the art of operating this class 35 of machine.

In some instances separable supporting posts or legs 17 may be employed on very wide and heavy machines, or whenever necessary. These posts can be positioned under 40 the front end of any stand and are preferably to consist of two lengths 18, 18', the contiguous ends being united by a dowel or other connection and the joint inclosed by a sleeve 19, which serves as a clamp and which may 45 act as a support for the journal of the guide rolls or stretch rolls. In addition the top length 18' of the posts is equipped with an adjusting screw. Thus, if it is desired, each bracket portion 12 may be supported by a 50 post. Hence in the removal or renewal of the wire, the tops of the posts are quickly removed when the wire can be passed above and beneath the bracket stands while the various elements are mounted and in position upon 55 them.

Under my invention the upper coucher roll is hung just oppositely from what is ordinarily practiced; that is, instead of being pivotally mounted upon the Fourdrinier part of 60 the machine said coucher is now oppositely attached to the "wet part" of the machine. Thus in the removal of the wire, said roll 7, see Fig. 1, is lifted and swung toward the right. By this method it is separated from 65 and removed away from the Fourdrinier part of the machine. This is an essential require-

ment in the act of taking off or putting on a wire. Hence it is evident that it need not be removed from its bearings, and the wire is 70 passed around the bottom coucher roll in the customary manner, which consists in attaching a chain fall to the front journal and raising the roll until the wire can be slipped over and about said roll. The only parts which 75 require removal are the stretch rolls before mentioned, together with the dekle frame, dandy roll, and stands therefor.

In Figs. 2 and 3 is illustrated a form of stand adapted to support the shake-rails 2, 2, shown in section in Fig. 3, but omitted in Fig. 80 2, in order to show the bearings therefor, those at the front end consisting of chilled balls 20, while steel rollers are located at the rear, either of which are well adapted to allow the customary shake to the rail without 85 any strain on the machine.

What I claim is—

1. A support for the Fourdrinier portion of a paper machine, composed of two or more brackets or stands these latter including an 90 upright, and an arm transversely of the machine, whereby the endless wire may be passed transversely across the machine both above and below the numerous instrumentalities mounted upon the rails without dismounting 95 such parts, substantially as described.

2. A support for the Fourdrinier part of a paper machine, composed of a number of bracketed stands having a single permanent 100 point of support, two parallel rails transversely of said stands, and groups of rolls having journals on each rail, said frames being adapted to allow an endless wire to be thrust above and beneath the individual 105 stands without removal of the rolls from their journals, substantially as stated.

3. In combination with a support or stand, composed of an upright with a horizontal arm, and serving to uphold the various coöperating elements of a Fourdrinier part of a paper 110 machine, a removable post for position beneath the extremity of the horizontal arm, substantially as set forth and stated.

4. A support for the Fourdrinier part of a paper making machine, comprising a number 115 of bracketed stands having a single permanent point of support, and two parallel rails transversely of said stands, combined with groups of rolls having journals on each rail, a lower couch roll, and an upper couch roll pivotally mounted on the wet part of the machine, said groups of rolls and the lower couch 120 roll being adapted to carry an endless wire cloth, substantially as and for the purposes explained. 125

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

LEON I. HARTWELL.

Witnesses:

ALLAN M. WILSON,
ALBERT O. BROWN.