

UNITED STATES PATENT OFFICE.

FRANK J. MARSHALL, OF TURNER'S FALLS, MASSACHUSETTS.

PAPER-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 635,266, dated October 17, 1899.

Application filed November 17, 1898. Serial No. 696,665. (No model.)

To all whom it may concern:

Be it known that I, FRANK J. MARSHALL, of Turner's Falls, in the county of Franklin and State of Massachusetts, have invented a new
5 Improvement in Paper-Making Machines; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact descrip-
10 tion of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a broken view of a paper-making machine embodying my invention; Fig. 2, a
15 sectional view of the endless pulp-receiving web; Fig. 3, a sectional view of the endless supporting-web.

My invention relates to an improvement in paper-making machines of the Fourdrinier
20 type, which, as is well known, employ endless webs or aprons of wire-cloth, on which the pulp is floated.

In the manufacture of very thin papers, such as cigarette-papers, on machines of this
25 type wire-cloth webs of extremely fine mesh are employed. These webs, being made of very fine wire, have less resistance to weight and wear than webs fabricated from coarse wire. The result of this is that webs of very
30 fine mesh wear and stretch and get out of shape and require such frequent renewal as to make the item of webs a very heavy one in maintaining the machines in working order.

The object of my invention is to reduce the
35 expense of maintaining such machines in order by providing means for relieving the strain imposed upon the pulp-receiving webs.

With these ends in view my invention consists in the employment of a wire-supporting
40 web which is arranged so as to virtually carry the endless pulp-receiving web when the same is sustaining a mass of paper-pulp, the supporting-web being coextensive with the pulp-receiving web.

45 My invention further consists in providing tension devices by means of which the tension of the two webs may be regulated independently or together.

50 My invention further consists in certain details of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.

For the illustration of my invention I have shown a section of a paper-making machine of the Fourdrinier type, enough of the ma- 55
chine being shown to illustrate the invention.

In carrying out the invention I employ a complete, continuous, or endless wire-support-
ing web A, which is placed within the com-
plete, continuous, or endless pulp-receiving 60
web B, so as to virtually carry the same when the same is supporting a mass of paper-pulp, whereby the pulp-receiving web is largely re-
lieved from weight and strain and prevented
from wearing or sagging or otherwise getting 65
out of operative condition. The supporting-web will be made of wire-cloth of coarser mesh than the wire-cloth employed for the pulp-re-
ceiving web, which under my invention may
be made much finer in mesh than it would be 70
practical to use without a wire-supporting web.

The devices employed by me for taking up the slack in the two webs and for maintain-
ing them under proper tension may of course 75
vary. As herein shown, I employ in conjunction with the supporting-web a drum C, hung in a frame C', which swings upon a stud C², mounted in a head C³, located at the lower end of a screw C⁴, passing through an arm C⁵ 80
of a frame D, which is vertically adjustable upon a threaded post E. By shifting the nuts F and F' upon the screw C⁴ the drum C may be raised or lowered, as desired, for changing
the tension of the web B without disturbing 85
the tension of the web A. For the adjustment of the tension of the web A, I employ a drum G, mounted in a frame G', swinging upon a stud G², supported in the head G³ of
a screw G⁴, mounted in an arm G⁵, offsetting 90
from the upper end of the frame D. Nuts G⁶ and G⁷ are provided for raising and lower-
ing the drum G independently of the drum C. Both of the drums may be simultaneously
raised and lowered by raising or lowering the 95
frame D by shifting the nuts D' D² upon the threaded post E, the upper end of which is entered into a socket H, formed at the lower
end of a threaded bolt H', vertically adjust-
able in the upper portion of the frame of the 100
machine.

In view of the modifications herein suggested and of others which may apparently be made, I would have it understood that I

do not limit myself to the exact construction shown, but hold myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of my invention.

5 I am aware that it has been proposed to employ webs of wire-cloth to partially support the pulp-receiving web of a paper-making machine, and hence I do not broadly claim the support of a pulp-receiving web by means
10 of a supporting-web.

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

15 1. In a paper-making machine, the combination with a pulp-receiving web upon which the paper-pulp is floated, of a wire-supporting web coextensive with the pulp-receiving web and coacting therewith to relieve the strain thereupon.

20 2. In a paper-making machine, the combination with a pulp-receiving web, of a wire-

supporting web coacting with the said pulp-receiving web with which it is coextensive, to relieve the strain thereupon, and means for adjusting the said webs in tension, independently and simultaneously. 25

3. In a paper-making machine, the combination with a pulp-receiving web and a wire-supporting web therefor, of means for adjusting the tension of the two webs independently or simultaneously, consisting of two independently-adjustable drums, a frame by which the drums are carried, and means for adjusting the said frame in position. 30

In testimony whereof I have signed this specification in the presence of two subscribing witnesses. 35

FRANK J. MARSHALL.

Witnesses:

F. L. MINER,

J. W. STEVENS.