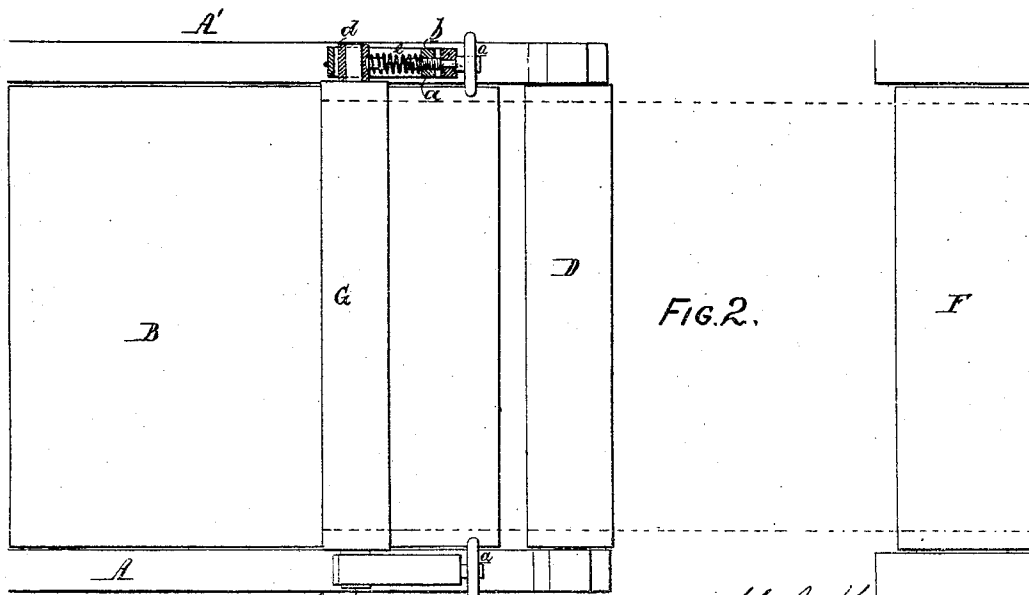
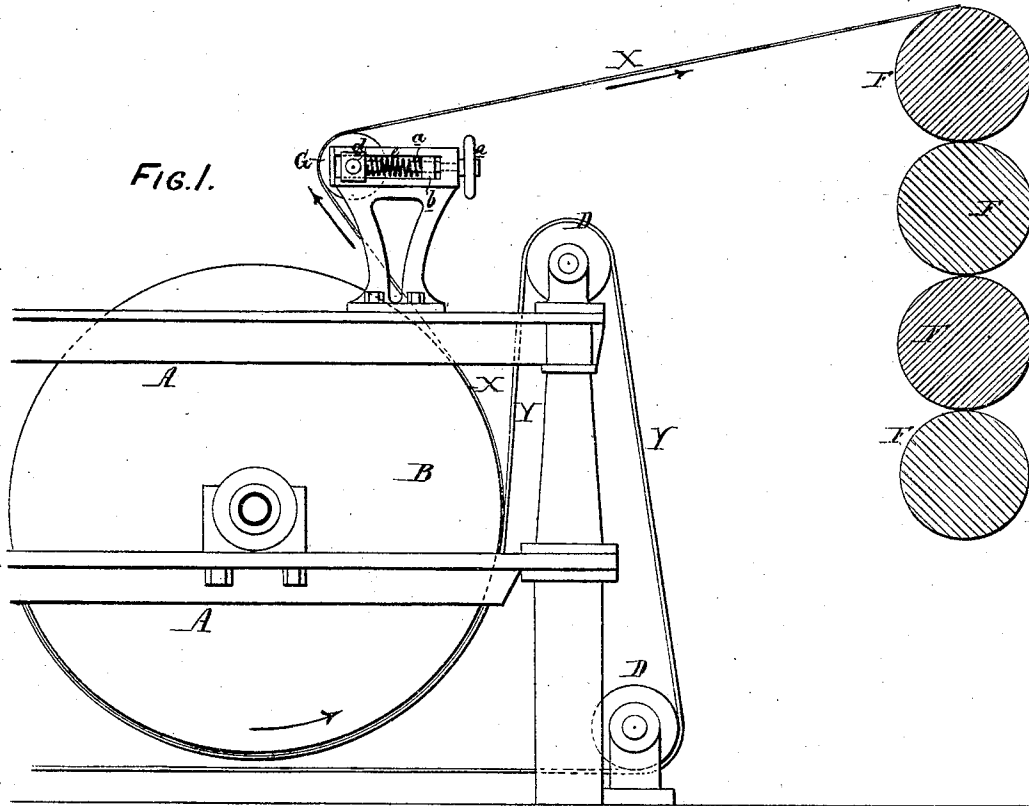


M. J. KEARNEY.  
Improvement in Paper-Machines.

No. 131,103.

Patented Sep. 3, 1872.



WITNESSES  
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# UNITED STATES PATENT OFFICE.

MICHAEL J. KEARNEY, OF PHILADELPHIA, PENNSYLVANIA.

## IMPROVEMENT IN PAPER-MACHINES.

Specification forming part of Letters Patent No. 131,103, dated September 3, 1872.

Specification describing Improvements in Paper-Machines, invented by MICHAEL J. KEARNEY, of Philadelphia, Pennsylvania.

### *Improvements in Paper-Machines.*

My invention consists of certain improvements in paper-machines, fully described hereafter, whereby the delivering-roller is made yielding and adjustable in its bearings for the purpose, mainly, of preventing the tearing of the paper owing to the jerking motion of the calendering and other rollers or cylinders.

In the accompanying drawing, Figure 1 is an exterior view of part of a paper-making machine with my improvement, and Fig. 2 a plan view of the same.

A and A' represent part of the opposite side frames of a paper-making machine; B, the last of a series of steam-heated drying-cylinders; DD, the felt rollers; FFFF, the calendering-rolls, and G the delivering-roll, the latter being arranged upon the top of the frame between the drying-cylinder and calendering-rolls, and above the felt rollers. The paper X passes beneath and partly around the drying-cylinder B, against the heated surface of which it is held by the endless apron Y of felt, and from the said cylinder it is conducted over the delivering-roll G, and thence between the calendering-rolls, as indicated by the arrows in Fig. 1. The delivering-roll serves to hold the paper against the heated surface of the drying-cylinder to a point considerably above a horizontal line drawn through the center of the same, and it also supports the said paper in its passage from the cylinder to the calendering-rolls, enables it to be delivered to the latter at a proper angle, regulates the tension upon the same, and raises it clear of the upper felt roller D.

Ordinarily the journals of the said delivery-roller are unyielding, so that the paper is frequently broken, owing to its contraction or to the jerking movement of the calendering-rolls. Another objection to the fixed journals is that it is impossible to slightly change the angle of the roller when the paper has a tendency to wrinkle at one edge, and to become unduly stretched at the other. Attempts have been made to overcome these objections by adapting the journals of the roller to sliding boxes, to

which strong spiral springs impart an upward tendency.

It has been found, however, that a uniform tension upon the whole width of the paper cannot be maintained by the use of springs alone bearing independently against the opposite journals of the roller, and when the boxes are arranged to slide vertically, as above described, they cannot yield readily to the tension of that portion of the paper between the delivering and the calendering rolls, but are apt, instead of sliding, to bind in their guides and to remain stationary.

I have overcome the first of these objections by combining set-screws *a* with the springs and sliding boxes, and the second by arranging the said boxes to slide horizontally, or nearly so, as shown in the drawing, instead of vertically, so that they may, with the roller, yield to the tension of that portion of the paper between the delivering and calendering-rolls, as well as to that of the portion between the said delivering-roll and the drying-cylinder. The set-screws *a* are adapted to nuts *b* between which and the sliding boxes *d* are confined the springs *e*, so that, by adjusting the said set-screws, the pressure of the springs upon the boxes and journals may be equalized, and increased or diminished, as desired, or one caused to exert a greater degree of pressure than the other when it becomes necessary to increase the tension at one end of the roll and to decrease it at the other in consequence of a yielding and wrinkling at one edge of the paper and a corresponding stretching at the opposite edge. The horizontal or nearly horizontal guides and sliding boxes enable the roller to adjust itself to this paper, and to yield to any jerking movement of the same, whether such movement be caused by the calendering-rolls or drying cylinder, thus preventing the tearing of the paper. The arrangement also enables the delivering-roller to be extended further over the drying cylinder than if the guides were vertical, so that the paper is held against the surface of the said drying cylinder until it nearly reaches the delivering-roll.

I do not claim, broadly, the combination of the delivery-roller of a paper-machine and bearings or boxes supported by springs; but

I claim as my invention—

1. The combination, substantially as de-

scribed, of set-screws and springs with the sliding bearings of the delivery-roller of a paper-machine.

2. The combination of the said sliding bearings of the delivering-roller with horizontal or nearly horizontal guides on the frame of the machine.

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

MICHAEL J. KEARNEY.

Witnesses:

WM. A. STEEL,  
JOHN K. RUPERTUS.