

Sheet I.

Oliver Norelius *Feed for Printing Presses.*
100059 PATENTED FEB 22 1870

Fig 1.

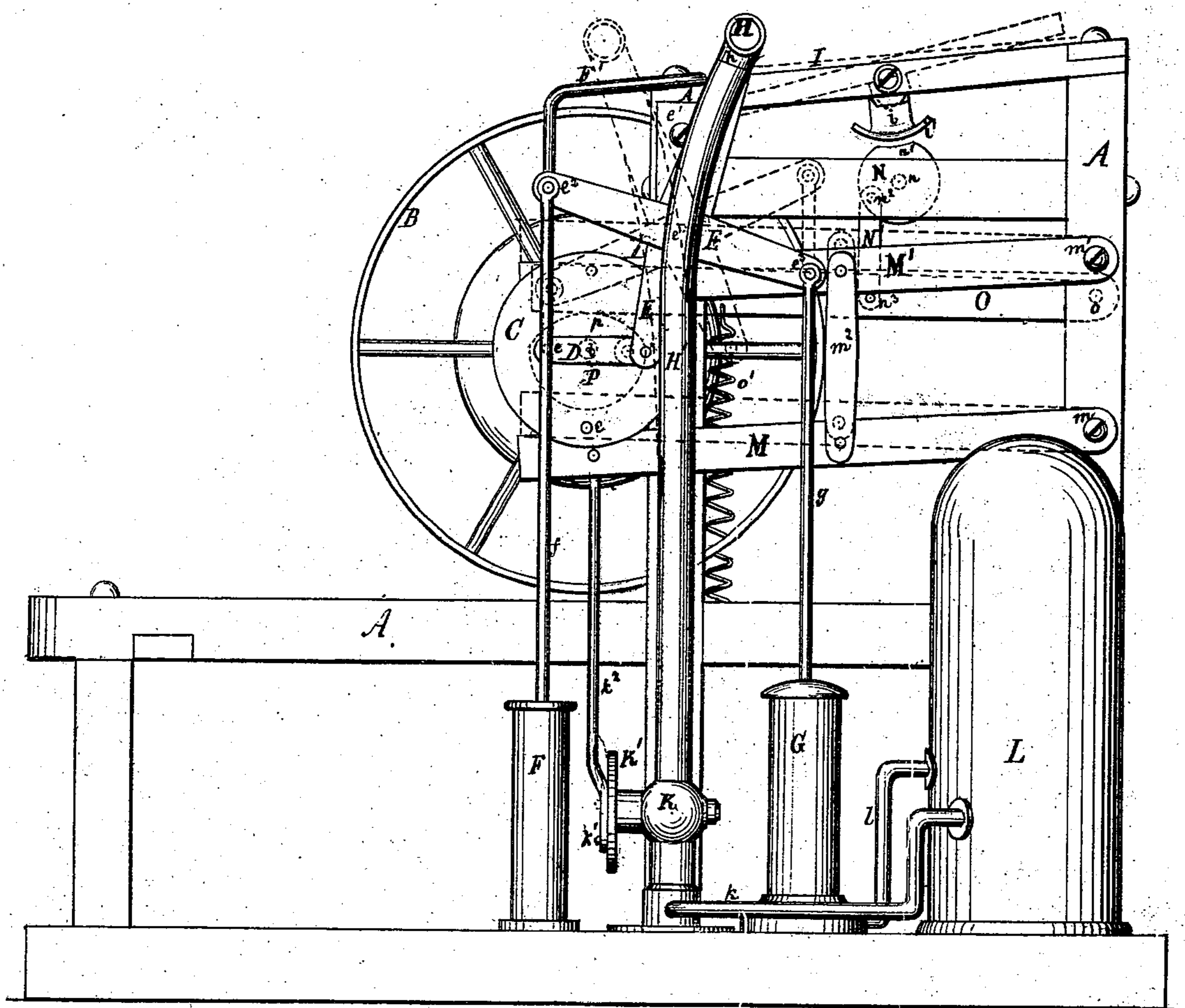
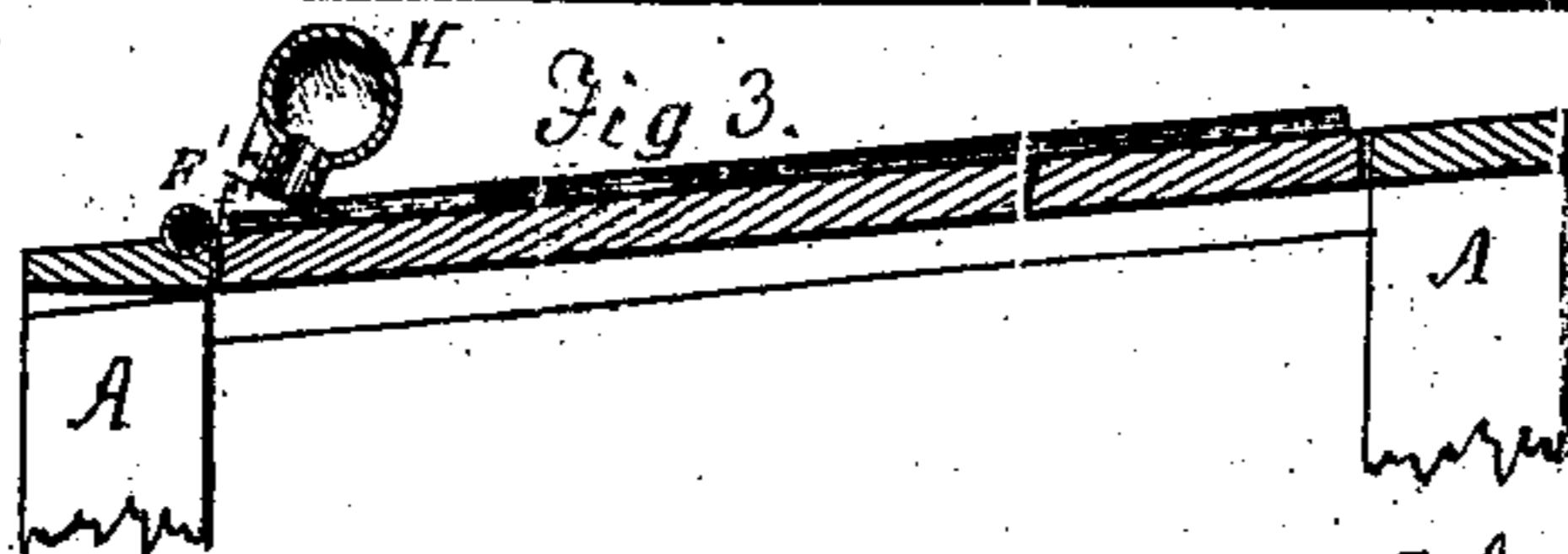


Fig 3.



Witnesses
Charles Wilson
Wm. H. H. H.

Oliver Norelius
by his attorney
G. W. Conn

United States Patent Office.

OLIVER NORELIUS, OF MINNEAPOLIS, MINNESOTA.

Letters Patent No. 100,059, dated February 22, 1870.

IMPROVEMENT IN PAPER-FEEDERS.

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

I, OLIVER NORELIUS, of Minneapolis, in the county of Hennepin, and State of Minnesota, have invented an Improvement for Feeding Printing-Presses, of which the following is a specification, viz:

My invention relates to a new method of feeding paper to printing-presses by machinery. This is done by a suction apparatus which, by the aid of a vacuum produced in a laterally-oscillating pipe, provided with a series of cups connected to and communicating with said pipe, from which the air is exhausted by a common air-pump, which causes one sheet of paper to adhere closely to the mouth of the cups. At this time the movable table is caused to drop a little from the cups holding the sheet. Then, to make the operation successful, another pipe is placed parallel with the oscillating pipe, and is furnished with a current of air, and provided with several perforations opposite the table, from which currents of air pass under the raised sheet of paper, passing back its whole length and separating it from the other paper lying on the table. Then the oscillating pipe moves forward, and delivers the sheet to the grippers. At this instant the suction ceases and the paper is released from the cups.

Description of the Accompanying Drawings.

Figure 1 is a side elevation of a machine, embodying my invention.

Figure 2 is a front elevation of the same.

Figure 3 is a section of the suction and blowing-pipes together and in position.

Figure 4 is a detached view of a gearing for the oscillating feed-table.

General Description.

A frame, A, supports, with suitable bearings *a a*, the printing-cylinder B, which has a face-plate, C, fastened to one end of its shaft *b*.

An eccentric pin, *c*, fastened to said face-plate, imparts motion through a connecting-rod, D, to a cross-lever, E, pivoted at *e* to a bearing, *e'*, fastened to the frame A.

One end of said cross-lever operates, with the pin *e''*, a piston-rod, *f*, of a force-pump, F. The other end of said cross-lever operates, with the pin *e'''*, a piston-rod, *g*, of suction-pump G, both of ordinary and well-known construction.

The upright end *e'* of the cross-lever E supports and operates a pipe, H, which runs across the frame above the feed-table I, and is supported at the other end by a lever-arm, E'. This pipe H is, by means of the cross-lever E, moved on the paper upon table I and closely to the cylinder alternately.

A flexible pipe, *h*, fastened to an elbow-joint, *h*, on pipe H, connects the same, through the medium of stop-cock K and connecting-pipe *k*, with a reservoir or

vacuum chamber, L, which is again connected, through pipe *b*, with the vacuum pump G.

To facilitate the sucking up of the paper sheets, I provide the pipe H with a number of cups or short tubes, *h' h' h' h'*, which will lift one sheet of paper, carry it forward and deliver it to the grippers on the press. These said cups or tubes *h' h' h' h'* have an inclined position while resting with the back edge on the paper, and the front edge is up from the paper at an angle of about forty-five degrees. These cup or tubes *h' h' h' h'* are brought in this position when in action to suck the top sheet from those beneath, thus making a space between the two sheets for the admission of air from blowing-pipe F' in front of table I.

I also lay a pipe, F', in front of the paper on the table I, and direct, through a number of small openings, *f'*, jets of air between the upper sheet (raised by the cups) and the package below, whereby the upper sheet is separated through its entire length from those beneath, and also kept partly suspended over the other sheets while being drawn over to the cylinder, which makes that part work very easy and removes all danger of tearing the damp sheets asunder. The pipe F' receives compressed air from the pump F.

When the cross-lever E and pipe H are moved into the position shown by dotted lines, the sheet which was taken along by means described is released when delivered to the grippers on the printing machinery. To effect this I shut up the cock K with a rod, *k''*, which acts on the eccentric pin *k'* on plate K', forming a part of the plug of cock K.

The rod *k''* receives its motion through two parallel levers, M M', pivoted, at *m m'*, to the frame A, and laterally connected by a link, *m''*, which is pivoted to them so that the motion of one lever necessitates a like motion of the other. The eccentric pin *e'* on the revolving face-plate C, with the described lever arrangement, produces and communicates to rod *k''* the movement necessary to open and shut the cock K with the proper intervening pauses.

A remarkable assistance is afforded for parting and drawing off the top sheet by the table I. This table is made to oscillate around an axis parallel to that of the cylinder, and as soon as a sheet of paper is caught by the inclined cups or short tubes *h' h' h' h'*, it drops its front end, and leaves a space between the upper sheet and the next under one for the admission of air from the blowing-pipe F', and thereby assists the separation of the top sheet from the others.

To effect the described dip of the table I, I fasten a lever, *i*, to it, which is provided with a segmental bearing, *i'*. Below this a circular plate, N, with a small indentation, *n'*, is pivoted to the frame A at *n*, and is connected by an eccentric pin, *n''*, and link N' with pivot *n'''*, to a lever, O, which is pivoted to the frame

at *o*, and kept in contact with the surface of a cam, *P*, by a spring, *o'*, fastened to it and the frame.

The cam *P* is depressed at *p*, while the other part of it is circular and concentric with its axis, and the revolution of this cam, which is fastened to shaft *h*, creates an oscillating motion of cam *N*. This oscillation causes the circular part of the cam to come in contact with the friction-plates *i'* and communicate its own motion to it, thus giving to the table *I* the desired dip, as represented in fig. 4 by dotted lines.

When lever *O* bears on the depressed surface *p* of cam *P* again, the plate *N* is in such position that its indentation *n'* is parallel with the friction-plate *i'*, thereby relieving the table *I*, which resumes its original position, being slightly overbalanced at the back end.

When the machine is to be operated, the paper is put on table *I* with the fronting edges at a suitable distance from pipe *F'*. By action of the revolving face-plate *C* and connecting-rod *D* on the cross-lever *E*, the cups or short tubes *k' k' k' k'* are brought in contact with the top sheet of paper at the same time the cock *K* is opened, in the manner already described, the vacuum chamber *L*, through the communications *K K' H H'*, immediately sucks the same sheet up to the mouths of the tubes *k' k' k' k'*.

At this instant the table *I* drops down and parts

the paper sheets, leaving a space between the top sheet and those beneath, and jets of air from the openings *f* in the pipe *F'* are directed between the upper sheet and those below, the table *I* remaining down until the sheet is drawn off.

As soon as the paper is brought over to the cylinder *B*, the suction in pipe *H* ceases by action of the cock *K* shutting off the communication with the vacuum chamber *L*, and it is grasped by the grippers of the printing-press and there worked in the ordinary manner.

Claims.

I claim as my invention—

1. The combination of pump *G*, chamber *L*, pipes *l* and *k*, cock *K'*, with its moving-gear pipes *H* and *H'*; also pump *F* and pipe *F'*, substantially as and for the purpose herein before set forth.

2. The combination of the dipping table *I* with friction-cam *i'*, friction-plate *N*, connection *N'*, lever *O*, and cam *P*, substantially as and for the purpose herein before set forth.

OLIVER NORELIUS.

Witnesses:

ISAAC ATWATER,
RICHARD MARTIN