

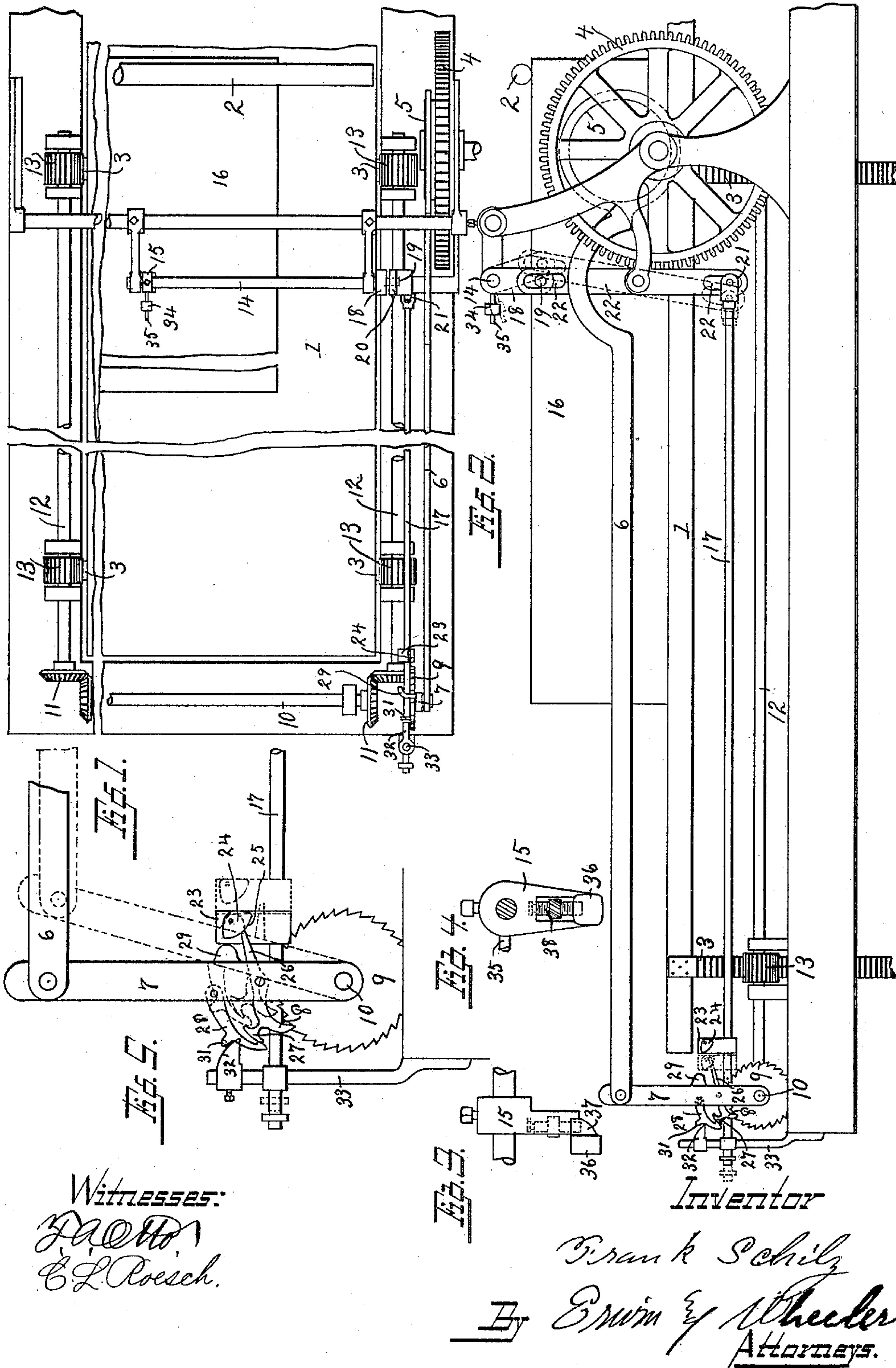
No. 696,381.

Patented Mar. 25, 1902.

F. SCHILZ.  
PAPER FEEDING MACHINE.

(Application filed Mar. 1, 1900.)

(No Model.)





# UNITED STATES PATENT OFFICE.

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## PAPER-FEEDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 696,381, dated March 25, 1902.

Application filed March 1, 1900. Serial No. 7,039. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK SCHILZ, a citizen of the United States; residing at Milwaukee, county of Milwaukee, and State of Wisconsin, have invented new and useful Improvements in Paper-Feeding Machines, of which the following is a specification.

My invention relates to improvements in paper-feeding devices, and pertains especially to improvements in devices for controlling the movement of the paper-supporting platform or table.

The object of my invention is to provide means for automatically regulating the movement of the supporting platform or table to correspond with the thickness of the sheets discharged, whereby no adjustment of the actuating mechanism of the platform is necessary to adapt the machine for feeding paper of any desired thickness.

In the following description reference is had to the accompanying drawings, in which—

Figure 1 is a plan view showing a portion of a simple form of paper-feeding device with my invention applied thereto. Fig. 2 is a side view of the same. Fig. 3 is a detail view of the gage or contact-finger as seen from the front. Fig. 4 is a detail view of the finger as seen from the side. Fig. 5 is a detail view, enlarged, of the pawl-and-ratchet mechanism for actuating the paper-supporting platform.

Like parts are identified by the same reference-figures throughout the several views.

The paper-supporting platform 1, feeding device or roller 2, and actuating mechanism of the platform may be of any ordinary construction. In the drawings I have shown the platform as provided with depending rack-bars 3, to which motion is communicated from the drive-wheel 4 of the machine through eccentric 5, crank-rod 6, lever 7, pawl 8, ratchet 9, cross-shaft 10, bevel-gears 11, shafts 12, and gear-wheels 13, the latter being arranged to engage the rack-bars 3 and lift the latter, with the platform 1, when actuated in one direction. The particular construction and combination of the shafts, gearing, and rack-bars are not claimed herein, as any ordinary means for lifting the platform may be used in connection with my invention, if desired.

It will be observed, Fig. 1, that I have pro-

vided the feeding-machine with a cross-shaft 14, on which is located a finger 15, which normally hangs suspended from the cross-shaft above the package of paper to be fed and slightly out of contact therewith when the platform is properly adjusted. The actuating mechanism of the platform is arranged to lift the platform more rapidly than is required to compensate for the thickness of the sheets withdrawn, and when the upper sheet of the package of paper 16 comes in contact with the finger the movement of such sheet when withdrawn by the feed-roller 2 is communicated to the finger to move the latter forwardly, thus rocking the shaft 14 and an arm 18 on one end thereof, the movement of the arm (shown in dotted lines in Fig. 2) coinciding with that of the finger, both being fast on the same shaft.

The finger 15 has no effect on the operation of the pawl and ratchet except when actuated by frictional contact with the discharging paper; but when the top sheet contacts with the finger and moves it to the position in which it is shown by dotted lines in Fig. 2 the motion of the finger is communicated through intervening connections, hereinafter described, to cause an elevation of the pawl 8 out of its operative position. This elevation of the pawl 8 takes place during the backward movement of the lever 7, and the pawl is then held in a raised position during the next forward stroke by latch-and-catch mechanism, which releases it at the termination of such stroke and leaves it free to operate upon the ratchet unless again raised during the succeeding stroke of the lever 7. The mechanism for accomplishing these results will now be described.

The movement of the finger 15 is communicated to a sliding rod 17 through the shaft 14, arm 18, pin 19, slotted lever 20, and pin 21, the pins 19 and 21 being loosely engaged in slots 22 of the lever 20. The rod 17 is provided with a standard 23, to which a guide-block 24 is pivotally secured, the block being allowed a limited movement on its pivot and being supported with one face 25 in an angular position with reference to a rearwardly-extending arm 26 of the pawl 8. The arm 26 is so positioned that the forward or right-hand



movement of the lever 7 tends to cause the free end of the arm to impinge on the face 25 of the block 24, when its continued movement will obviously depress the arm 26 and raise the pawl 8 out of contact with the ratchet-wheel 9. The block 24 is, however, normally positioned at such a distance from the arm 26 that the latter will not contact therewith during the movement of the lever 7; but when the finger 15 contacts with the upper sheet of paper and is drawn forwardly thereby, as heretofore explained, its movement is communicated through the intervening connections to push rod 17 backwardly. The block 24 is thus carried to a position with its angular face 25 in the path of the pawl-arm 26, so that when the lever 7 next moves in the direction of the dotted lines shown in Fig. 5 the pawl-arm 28 impinges on the angular face of the block 24 and is forced downwardly as it passes along the face of the block until the pawl is lifted out of engagement with the ratchet, and a catch 27, carried by the pawl, is engaged by a latch 28, pivoted to the lever 7 above the point at which the pawl is attached. The lever 7 is, however, provided with a lug 29, and when the rod 17 and bracket 23 are in their backward position the lug 29 will during the forward movement of the lever 7 impinge against the bracket 23 and push the bracket, together with the rod 17, forwardly, thus communicating motion through the intervening connections to restore the finger 15 to its normal vertical position and also pushing the block 24, carried by the bracket 23, to its inoperative position, as indicated by dotted lines in Fig. 5. The stroke of the lever 7 will then fail to carry the pawl-arm 26 into such contact with the block 24 as to lift the pawl to the latch-engaging position until the finger 15 is again actuated by the movement of the paper to readjust the block into closer proximity to such arm. When the lever 7 again moves backwardly, a laterally-projecting pin 31, connected with the latch 28, engages on the upper surface of the guide-bar 32, carried by a bracket 33, connected with the frame 17, which guide-bar is so disposed that as the pin 31 rides upon it the latch 28 will be lifted out of engagement with the catch 27, when the pawl is again permitted to drop into contact with the ratchet-wheel. It will therefore be obvious that the forward movement of the finger 15 will result in the pawl 8 being lifted and held out of contact with the ratchet-wheel 9 during one stroke of the lever 7, and the continued forward movement of the lever 7 serves to restore the block 24, rod 17, and finger 15 to their normal positions, and the next backward movement of the lever 7 serves to cause the release of the latch 28 from the catch 27 through the medium of the bar 32, whereby the pawl 8 again drops in contact with the ratchet. It is also obvious that as the next succeeding sheet of paper is discharged if the finger 15 is again

actuated thereby the pawl 8 will again be lifted and supported by the latch 28 for an equal period of time, the movement of the ratchet-wheel 9 and the lifting mechanism of the platform connected therewith being thus checked until the finger 15 fails to contact with the paper when in its vertical position.

The standard 23 is preferably so positioned on the rod 17 that each forward movement of the lever 7 will bring the lug 29 into engagement with the standard and actuate the latter when the finger 15 is in a vertical position, the motion of the standard thus produced being communicated through intervening connections to swing the finger backwardly: As soon, however, as the lever 7 moves backwardly and releases the standard 23 from the pressure exerted by the lug 29 the weight of the finger causes it to reassume a vertical position and actuate the intervening connections to push the standard 23 backwardly to its normal position. An adjustable weight 34, located on the arm 35, connected with the shaft 14, is adapted to assist in holding the finger in its normal position.

In order that contact-surface of the finger may be adjusted to the exact position desired, I have provided a tip 36, of rubber or similar material, which tip is supported on a block 37, connected with the body of the finger by an adjusting-screw 38. With this construction the tip may be adjusted for contact with the paper at a point slightly above or below the normal level, it being desirable in some classes of paper-feeding machines to have the upper surface of the package of paper at slightly-different levels for different qualities of paper.

Briefly reviewing the operation of the device and assuming that the platform is adjusted so that the upper surface of the package of paper is slightly below the finger, the machine will operate in the ordinary manner until the platform is lifted, so that the upper surface of the paper-package touches the tip 36 of the finger. When the sheet so touching the finger is drawn off, the finger will be drawn forwardly by frictional contact and communicate its motion through the intervening connections to adjust the block 24 in the path of the arm 26 of the pawl 8, thus causing the arm to be depressed during the forward movement of the lever 7, when the pawl 8 is lifted out of engagement with the ratchet sufficiently to cause the catch 27 to be engaged by the latch 28. The latch 28 holds the pawl 8 out of contact with the ratchet-wheel 9 during the backward movement of the lever 7; but on the completion of such movement the pin 31 engages the guide 32 and lifts the latch 28 to release the catch 27, when the pawl again drops upon the ratchet-wheel. If, however, during the next forward movement of the lever 7 the finger 15 is still in its forward position, as drawn by the contacting sheet of paper above mentioned or by the next succeeding sheet, if the same con-



tacts therewith, then the arm 26 will obviously again engage the block 24 to lift the pawl out of engagement with the ratchet in a position to be again supported by the latch

5 28. The pawl is therefore rendered inoperative to actuate the ratchet-wheel 9 until sufficient paper has been withdrawn to permit the finger 15 to swing to a vertical position without contacting therewith. In such case  
10 the block 24 will no longer be pushed rearwardly far enough to engage the arm 26. Hence the pawl 8 will be left in contact with the ratchet-wheel 9 and will be operative to actuate the latter with the successive move-  
15 ments of the lever 7 until the paper is again brought in contact with the finger 15.

It will be understood that a great variety of connections may be devised to communicate motion from the finger 15 to connect and  
20 disconnect the actuating mechanism of the paper-supporting platform and that my invention may with slight modifications be applied to any ordinary form of platform-actuating mechanism.

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

1. In a paper-feeding device, the combination with the actuating mechanism of a paper-supporting platform; of a device suspended above the paper on said platform, and adapted to be oscillated by frictional contact with a moving sheet of paper; and connections adapted to communicate motion from  
30 said device to connect and disconnect the platform-actuating mechanism and its driving connections.

2. In a paper-feeding device, the combination with the actuating mechanism of a paper-supporting platform; of a device arranged in the vertical path of the paper, and adapted to be actuated by frictional contact with a moving sheet of paper; connections adapted to communicate motion from said device to  
40 connect and disconnect the platform-actuating mechanism and its driving connections.

3. In a paper-feeding device, the combination with the actuating mechanism of a paper-supporting platform; of a device located

for contact with the paper on the platform at  
50 a fixed point, and adapted to be actuated by frictional contact with the surface of a discharging sheet; and means for communicating motion of said device to temporarily disconnect the platform-actuating mechanism. 55

4. In a paper-feeding device, the combination with the actuating mechanism of a paper-supporting platform; of a device located for contact with the paper on the platform at a fixed point, and adapted to be actuated by  
60 frictional contact with the surface of a discharging sheet; and means for communicating the motion of said device to disconnect the platform-actuating mechanism, until such sheet is discharged. 65

5. In a paper-feeding device, the combination with the actuating mechanism of the paper-supporting platform; pawl-and-ratchet driving connections therefor; an oscillatory finger arranged for contact at a predetermined  
70 level with the paper supported on said platform; a sliding rod connected with said finger, and provided with a guide adapted to engage and lift said pawl out of contact with the ratchet during the movement of the pawl in  
75 one direction; a latch adapted to temporarily hold said pawl in its raised position during its movement in the opposite direction; and a releasing-guide carried by the sliding rod and adapted to disengage the latch from said pawl, 80 as the latter completes such movement.

6. In a paper-feeding device, the combination with the actuating mechanism of a paper-supporting platform; of an oscillatory finger supported for contact at a predetermined  
85 level with the upper surface of the paper supported on said platform; and adjustable contact-tip connected with said finger; and connections adapted to communicate motion from said finger to connect and disconnect  
90 the platform-actuating mechanism and its driving connections.

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

FRANK SCHILZ.

Witnesses:

LEVERETT C. WHEELER,  
H. R. BAUMGARTH.