

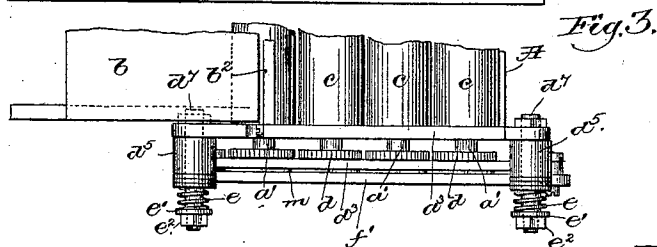
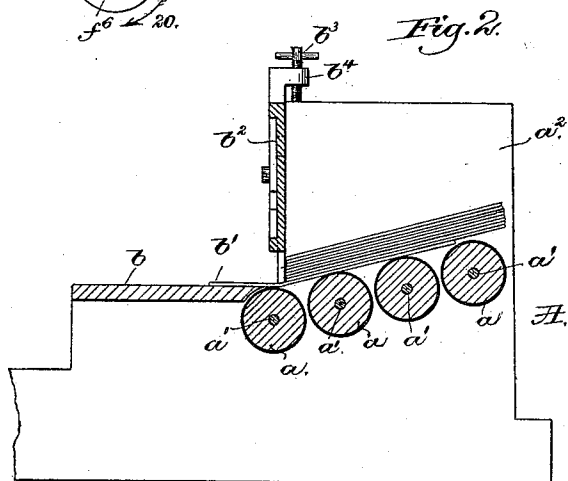
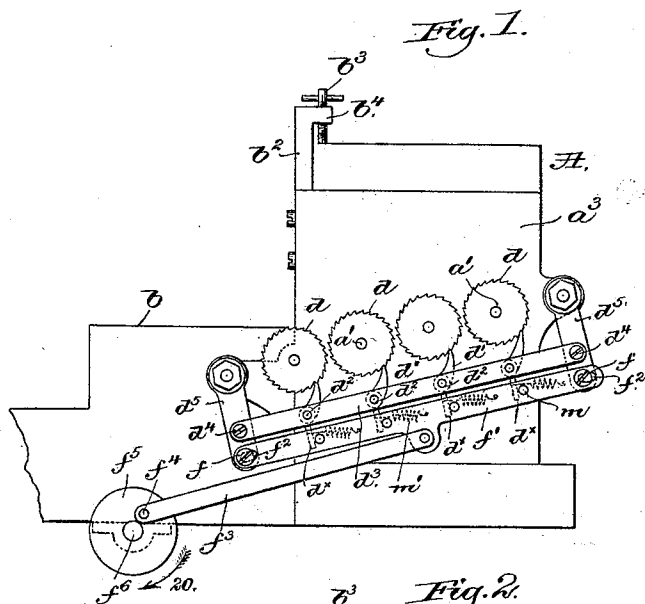
(No Model.)

E. WOODWARD.

MECHANISM FOR FEEDING PAPER OR OTHER SHEETS FROM A PILE.

No. 407,985.

Patented July 30, 1889.



Witnesses,
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UNITED STATES PATENT OFFICE.

ERASTUS WOODWARD, OF SOMERVILLE, MASSACHUSETTS, ASSIGNOR TO THE
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MECHANISM FOR FEEDING PAPER OR OTHER SHEETS FROM A PILE.

SPECIFICATION forming part of Letters Patent No. 407,985, dated July 30, 1889.

Application filed December 10, 1886. Serial No. 221,206. (No model.)

To all whom it may concern:

Be it known that I, ERASTUS WOODWARD, of Somerville, county of Middlesex, and State of Massachusetts, have invented an Improvement in Mechanism for Feeding Paper and other Sheets from a Pile, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object to provide mechanism whereby paper and other sheets or layers of material laid in a pile may be fed one by one and preferably from the bottom of the pile.

In accordance with my invention a pile of sheets or layers of material to be fed—as, for instance, paper, or it may be newspapers folded one or more times—are laid in a box or receptacle containing a series of feeding-rollers, which, as herein shown, receive directly upon or against them the lowermost sheet or paper of the pile. These rollers will, preferably, have roughened surfaces of such character as to move out from the box and away from the pile the sheet or paper in contact with them.

The feeding-rollers shown are so mounted as to be moved positively in one direction, and in the present embodiment of my invention this movement is derived through ratchet-wheels mounted on the shafts of the rollers and engaged by a pawl; and, as herein shown, all the pawls are actuated by one and the same pawl-carrying bar; but I do not desire to limit my invention to the exact mechanism shown for moving the feeding-rollers, as that may be variously modified without departing from my invention so long as the means employed act to move the feeding-rollers in the forward direction and do not move the said rolls in a backward direction to any material extent.

I have provided the front or delivery end of the box with an adjustable gage, which is set at a distance from the periphery of the roll next to it, so as to leave just the proper space for the delivery of one sheet or paper or other flat article from the end of the pile which bears against the roller.

My invention consists, essentially, in a paper or sheet feeding mechanism comprising a box or receptacle to contain a pile of papers or sheets and a series of feeding-rollers to act against a paper or sheet at the end of the said pile, combined with mechanism adapted to rotate the feeding-rollers positively in one direction only to feed the sheet or paper but partially out of the box or receptacle, and adapted to thereafter become inactive with relation to the said feed-rollers to permit the rollers to be rotated as the sheet or paper fed forward is drawn out of the box or receptacle, substantially as will be described.

Other features of my invention will be pointed out in the claims at the end of this specification.

Figure 1 is a side elevation of a sufficient portion of a box or receptacle provided with my improved feeding mechanism to enable my invention to be understood; Fig. 2, a sectional view of the box or receptacle in Fig. 1, showing the feeding-rollers and sheets or layers of paper or other material laid thereon, the lowermost sheet or layer being shown as fed forward; and Fig. 3, a top view of part of Fig. 1.

The box or receptacle A contains within it a series of rollers *a*, having their arbors *a'* supported, as shown, in the sides *a² a³* of the said box or receptacle, the arbors of the said rollers being preferably so supported that the rollers will be on an incline extending from the rear toward the front of the box, as shown in Fig. 2. The box or receptacle, as herein shown, is made so as to provide for a table or platform *b* at its front or delivery end, upon which a single sheet or layer *b'*, of paper or other material, is fed forward by the rollers *a*, as will be described. The front or delivery end of the box or receptacle is provided with a gage *b²*, adjustable vertically, as herein shown, by means of a set-screw *b³*, extended through an arm *b⁴* of the said gage, and bearing, as herein shown, upon the side *a³* of the box or receptacle. The sheets or layers *b'*, of paper or other material, for the best results are laid in a pile upon the rollers *a*, the latter

having wound upon them sand or emery or other like paper c , by which sufficient friction may be obtained between the lowermost sheet or paper and the said rollers, so that the rotation of the said rollers will feed the lowermost sheet or paper forward. The rollers a are rotated positively in one direction, as herein shown, by means of ratchet-wheels d , one upon each arbor a' . Each ratchet-wheel is rotated positively in one direction by a pawl d' , pivoted at d^2 to a carrying-bar d^3 , and is provided with an arm d^x , the said carrying-bar being secured, as shown, by screws d^4 to arms d^5 , pivoted upon studs d^7 , secured to the side a^3 of the box or receptacle. Each arm d^5 is pressed against the side a^3 of the box or receptacle by a spring e , (see Figs. 1 and 3,) one end of which bears against the said hub and the other against a washer e' , or it might be the nut e^2 on the stud d^7 . Each arm d^5 has secured to it near its end by screw f one end of a bar f' , the screws f being inserted through slots f^2 , near the ends of the said bar, the latter being joined, as shown, near its center by a link, with a crank or pin f^4 on a disk f^5 , the said disk being mounted on a shaft f^6 , driven in any suitable manner. The bar f' , on its side nearer the box or receptacle, is provided with studs m , (see dotted lines, Fig. 1, and full lines Fig. 3,) there being a stud for each pawl-arm d^x . Each arm d^x has secured to it one end of a spring m' , having its other end fastened to the bar f' , the said spring keeping the said arm in engagement with the stud m .

In the operation of my improved feeding mechanism, and as shown in the drawings, the rollers are feeding one sheet or paper b' forward, as shown in Fig. 2, the gage b^3 having been adjusted to permit of the passage of but a single sheet or paper, and the mechanism operating the rollers occupying the position shown in Fig. 1, the disk f^5 rotating in the direction indicated by arrow 20. The lowermost sheet or paper b' , after being fed forward by the rollers, is seized by a finger or gripper, (not herein shown,) such as commonly employed on printing-presses, which pulls the said sheet or paper out of the box or receptacle, the rollers, as the latter is drawn forward, being rotated by the friction between them and the said sheet. At the end of the forward movement of the bar f' the other parts, comprising the feeding mechanism employed to rotate the rollers, are held stationary by the pressure of the spring e upon the arms d^5 , the said parts being held stationary until the lost motion due to the slots f^2 is overcome on the backward movement of the bar f' . During that portion of the backward movement in which the lost motion is overcome the pawls are thrown out of engagement with the ratchet-wheels by the studs m , which press against the arms d^x and turn the pawls on their pivots.

The pawls remain out of engagement with the ratchet-wheels during the remainder of the backward movement of the bar f' , they being thus maintained until the lost motion on the forward movement of the bar f' is overcome, the studs m during the lost motion on the forward movement ceasing to press upon the arms d^x , thus permitting the springs m' to turn the pawls into position to again engage the ratchet-wheels and rotate the feeding-rollers on the forward movement of the pawl-carrying bar.

While the pawls are disengaged from their ratchets on the backward movement of the bar f' the feeding-rollers are free to be rotated by the paper or sheet as the latter is drawn out of the box or receptacle by the finger or gripper referred to. The pawls being disengaged from their ratchets permit the rollers to be revolved easily and with the least possible friction, thereby obviating resistance of the rollers to the forward feed of the paper, consequently obviating strain upon the said sheet, which would occur if the rollers offered any resistance to the forward feed of the said paper, which would be the case if the pawls remained in engagement with their ratchets.

I do not desire to limit my invention to feeding the lowermost paper or sheet, as it is evident that the mechanism may be readily changed so that the topmost paper or sheet may be fed from the box or receptacle.

I claim—

1. A paper or sheet feeding mechanism comprising a box or receptacle to contain a pile of papers or sheets, and a series of feeding-rollers to act against a paper or sheet of the said pile, combined with pawl mechanism, substantially as described, adapted to rotate the feeding-rollers positively in one direction only to feed a sheet or paper but partially out of the box or receptacle, and adapted to thereafter become inactive with relation to the said feed-rollers, to permit the said rollers to be rotated by the paper or sheet as the latter is being drawn out of the said box or receptacle, substantially as described.

2. In a paper or sheet feeding mechanism, the combination, with the feed box or receptacle, of a series of independent feed-rolls constituting the supporting-bed for the pile of papers or sheets therein, pawl mechanism, substantially as described, to engage and rotate the said rolls in one direction only, and means, substantially as described, to disconnect the pawl mechanism and rolls, to thereby permit the rolls to be moved independently at a faster speed by the action of the paper against them as the paper is being drawn from the feed box or receptacle, substantially as described.

3. In a paper or sheet feeding mechanism, the combination, with a box or receptacle, of an inclined series of feeding-rollers consti-

tuting the supporting-bed for a pile of papers or sheets to be fed out of the box or receptacle, each roller of the said inclined series being adapted to be rotated in one direction only to feed the papers or sheets out of the box or receptacle, substantially as described.

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

ERASTUS WOODWARD.

Witnesses:

G. W. GREGORY,
F. L. EMERY.