

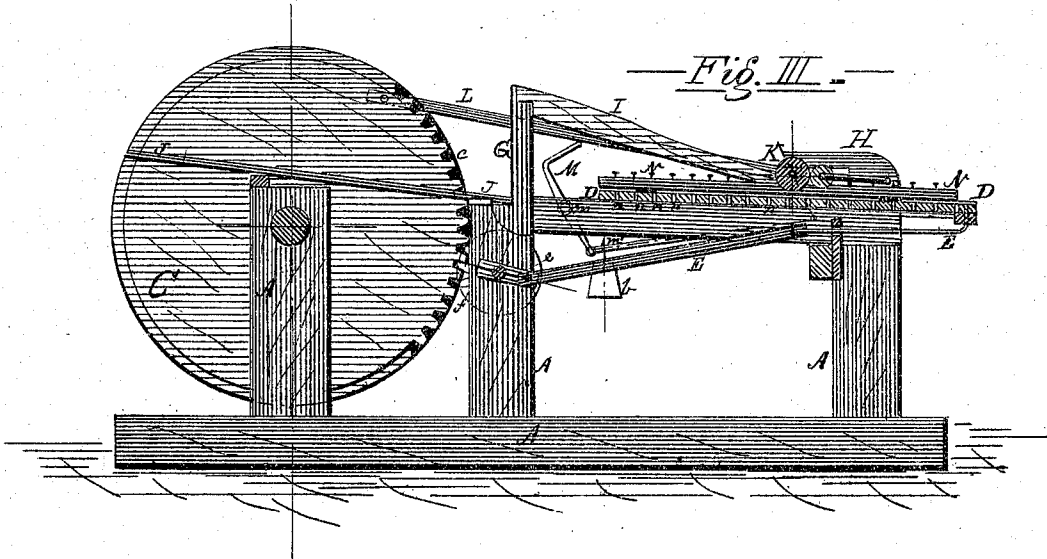
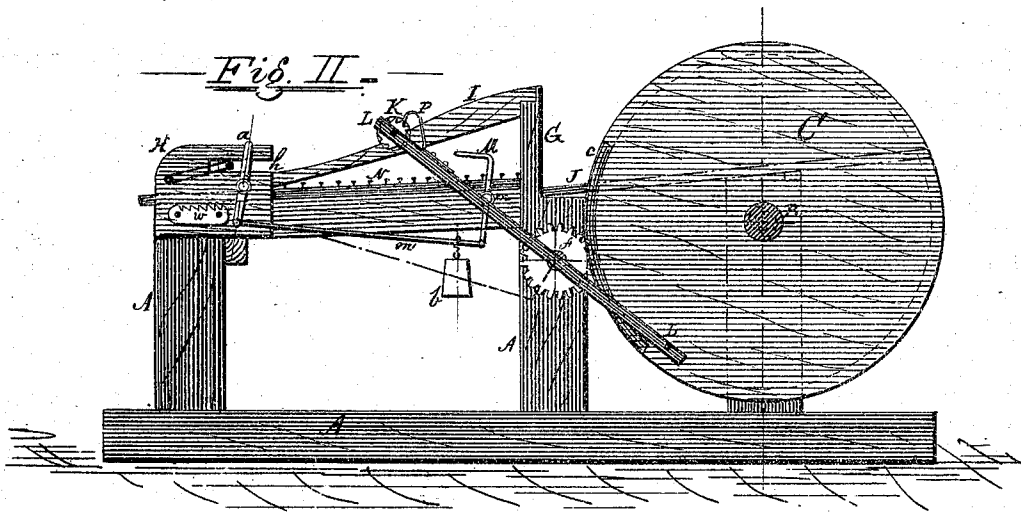


A. M. CRANE.

Paper Feeding Machine.

No. 124,550.

Patented March 12, 1872.



WITNESSES :-

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# UNITED STATES PATENT OFFICE.

AARON M. CRANE, OF STAUNTON, VIRGINIA.

## IMPROVEMENT IN PAPER-FEEDING MACHINES.

Specification forming part of Letters Patent No. 124,550, dated March 12, 1872; antedated March 1, 1872.

*To all whom it may concern:*

Be it known that I, AARON M. CRANE, of Staunton, in the county of Augusta and State of Virginia have invented an Improved Feeding and Registering Attachment for Printing-Presses; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing forming part of this specification, in which—

Figure 1 is a plan, the paper-board having been broken away to show the parts beneath. Fig. 2 is a side elevation, and Fig. 3 is a longitudinal vertical section in line *x x*, Fig. 1.

Similar letters of reference in the accompanying drawing indicate corresponding parts.

The object of this invention is to provide for public use a simple apparatus or attachment for printing-presses, so constructed and operating that it will take the sheets of paper from a board or platform where they are piled, carry them one by one forward to the press, registering them as they go, and deliver them with certainty and accuracy to the fingers of the press. To this end the invention consists in the devices and their combinations, as hereinafter described.

In the drawing, A A represent the frame of the machine or attachment, which may be of any suitable form, and composed of metal or wood, as preferred. In this frame is mounted a transverse shaft, B, carrying two wheels, C C, one on each side of the machine. In front of the shaft is a horizontal or slightly-inclined feed-table, D, constructed to slide forward and backward on ways *d d*, and operated by means of a pitman, E, connected to a crank, *e*, on a small shaft, F, which carries a cog-wheel, *f*, that gears with a segment, *c*, on the inner edge of one of the wheels C. At the rear end of the ways *d d*, on each side, is an upright, G, and at the forward end a wide vertical plate, H, having a horizontal open slot, *h*, in its rear edge. An inclined guide, I, extends on each side from the top of the upright G to the mouth of the slot *h*. A removable platform or paper-board, J, rests on suitable supports above the shaft B, extending forward to the rear end of the feed-table D, where it is drawn back to the limit of its track. K is an adhesive roller, mounted on a rod or shaft, *k*, the ends of which project beyond the guide I, and bear in arms

L L, having their rear ends attached to wrist-pins on the outer side of the wheels C C, as shown in Figs. 2 and 3. The paper to be fed to the press is piled upon the front part of the platform J, and the operation of the wheels C C, arms L L, and roller K is to cause the roller resting upon the front edge of the upper sheet to rise over the uprights and slide down the inclined guides till its journals enter the slots *h*, dragging said sheet of paper from the pile forward upon the feed-table, and dropping it there with its forward edge extending an inch or two beyond the front edge of the feed-table, so as to be readily caught by the press-fingers, when the table moves forward, and presents it to the press. The roller or lifter K may be made of the composition commonly employed for printers' rollers, or of any other substance that will adhere to the upper sheet sufficiently to raise and drag it forward without tearing, straining, smearing, or defacing it; and the lifter may be of any form and size that will answer the purpose best.

Having thus provided means for raising the sheets one by one from the pile, carrying them forward and depositing them upon the feed-table, it remains to provide means to accomplish four other purposes—viz.: first, to insure the detaching of the paper from the roller at the right moment; secondly, to carry the feed-table itself forward at the proper time to present the sheet to the press-fingers; thirdly, to accomplish the proper registering of the sheets; and fourthly, to keep the roller clean and free from lint, &c., liable to be taken up by it from the paper, and also to keep it damp or moist and in a uniformly-adhesive condition. These four objects are accomplished in the following manner: First, to insure the detaching of the paper from the roller at the right moment, I provide a bent rod, M, pivoted to each side of the frame, as shown at *m*, and connected at each end by a rod, *m'*, to a lever, *a*, so adjusted that its upper end projects up past the slot *h*, where it will be struck by the shaft or axle *k* at every forward movement of the adhesive-roller or lifter, and just before the end of such forward movement. Thus struck and forced forward, it throws back the rods *m' m'*, and brings the bent transverse rod M down upon the rear end of the sheet, clamping it firmly to the feed-table, while the roller, moving for-

ward slightly, necessarily becomes detached from the paper, and the latter falls flat upon the table beneath, its edge projecting over and beyond it, as above described. As the roller commences to return, its shaft strikes the levers in the other direction, and by reverse motion raises the clamping-rod and sets it for another operation. To insure the proper action of the levers, weights *b b* are attached near the lower ends of the rod *M*, below its pivots, which tend at the same time to raise the clamp and to bring the levers *a a* to a vertical position as soon as they are free.

The action of the pitman *E*, crank *e*, shaft *F*, cog-wheel *f*, and segmental-gear *c* on the wheel *C* insures the proper forward movement of the feed-table to present the sheet to the press-fingers, and also its immediate return to its former position, where it quietly awaits the time for another advance. The segmental-gear occupies, it will be observed, but a small portion of the circumference of the wheel *C*, and carries a number of cogs or teeth just equal to the number on the small wheel *f*, so as to give the latter wheel one full revolution and no more. The result is that the wheel *f*, and with it the feed-table, remains quiet during all that part of the revolution of the large wheel *C* in which the segment *c* is not in contact with the wheel *f*; but when the segment strikes the wheel *f* the latter rotates rapidly, throwing the feed-table quickly forward, and as quickly retracting it. One revolution of the shaft *F* and crank *e* having thus been made, the segment ceases to engage with the small gear-wheel, and the table remains stationary again, as before.

To accomplish the proper registering of the sheets, I employ a registering-guide, *N*, lying longitudinally upon the feed-table, between and parallel to the edges thereof, and capable of moving forward against the edge of the paper at the proper moment, so that, if the paper is awry, it will be pushed around till its edges come parallel with those of the table. Any suitable means may be employed to advance and retract the registering-guide; but preferably I construct the table with parallel lateral slots *n n*, and make the guide of two bars, one above and one below the table, connected by vertical pins extending through the slots, which prevents the paper from slipping under the guide and thus failing to register. This apparatus I attach to the side of the frame by means of two arms, *n' n'*, operating like the connecting-arms of a parallel-ruler. The forward and backward movement of the table itself thus operates the registering-guides, dispensing with all complicated mechanism, and rendering the parts simple, inexpensive, and yet perfectly effective and certain in their operation.

To keep the roller *K* damp, and at the same time clean, I employ a wiper and moistener, *O*, supported upon a bent rod, *o*, in the shape of a double crank, which is capable of rising or falling to accommodate itself to the action of the roller *K*. The roller *K*, as it nearly

reaches the end of its forward movement, comes in contact with the wiper and moistener just at the instant that a little ratchet or cog-wheel, *v*, on the end of the shaft or axle *k*, engages with a short rack, *w*, affixed to the side of the frame, thereby causing the roller to rotate rapidly while in contact with the wiper and moistener, and thus insuring at the same time the proper cleansing and moistening of the roller. *P* is a pawl, provided for the purpose of preventing unnecessary rotation of the roller when at other points of its movement.

It may be mentioned here that the table or platform *J* may be made either inclined or horizontal, and of any convenient form. The feed-table may be constructed with two sets of slots, *n n*, one on each edge, for use in connection either with two registering-guides or with only one made reversible. The object of such construction is to provide for printing both sides of the sheet, the paper registering in one direction for printing one side, and in the opposite direction for printing the other side.

I do not limit myself to the precise construction of details herein shown, but desire to be at liberty to use any obvious mechanical equivalent of any of the parts—as, for example, a crank instead of a wrist-pin, and vice versa. I may also modify the form of the guides and of the clamping-rod *M*, the precise form of either not being essential; and I may construct the feed-table of parallel transverse wires or with slots extending clear across, so as to register on either side. So, too, a single bar, *N*, with pins projecting down through the slots *n*, may be used, or the bar beneath the table may be added, as described. All these modifications are not essential to the operation of the machine, and are believed to be mere equivalents of the details of construction shown and described herein.

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

1. A platform to support the pile of papers and a reciprocating feed-table, which delivers the individual papers to the press-fingers, in combination with an adhesive-roller or mass, which travels between the platform and feed-table for the purpose of carrying the papers, substantially as described.

2. The feed-table *D*, in combination with the pitman *E*, the crank *e*, the shaft *F*, the small gear-wheel *f*, and the segment *c* upon the wheel *C*, substantially as described, for the purposes specified.

3. A slotted feed-table *D*, which delivers the papers to the press, in combination with a lateral moving guide, *N*, which registers them properly while on the table, substantially as described.

4. A longitudinally-reciprocating slotted feed-table, *D*, in combination with a laterally-moving bar, *N*, attached to the frame of the machine by parallel arms *n' n'*, and provided with pins or their equivalents, which project

into or through the slots of the table, substantially as described.

5. The bent pivoted rod M, in combination with the rod  $m'$ , the lever  $a$ , the roller K, and the feed-table, substantially as described, for the purposes set forth.

6. The rack-plate  $w$ , ratchet  $v$ , and pawl P,

in combination with the wiper O and roller K, substantially as and for the purposes herein specified.

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Witnesses:

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