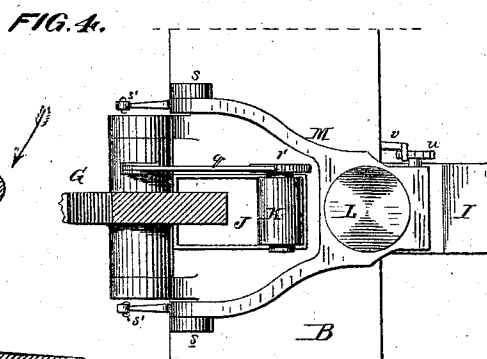
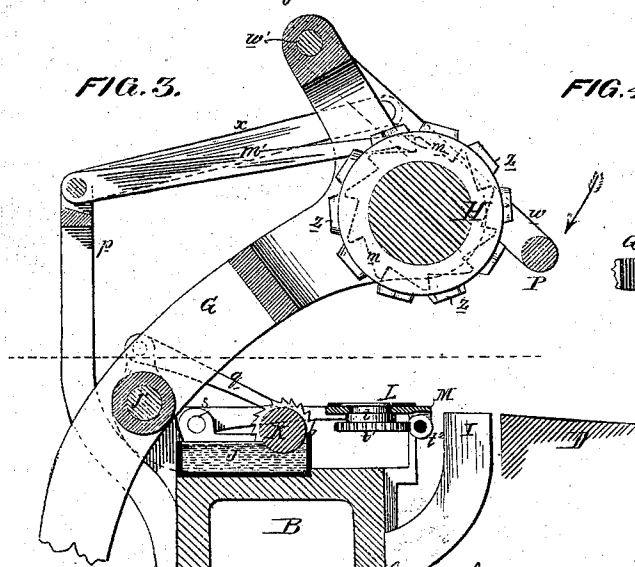
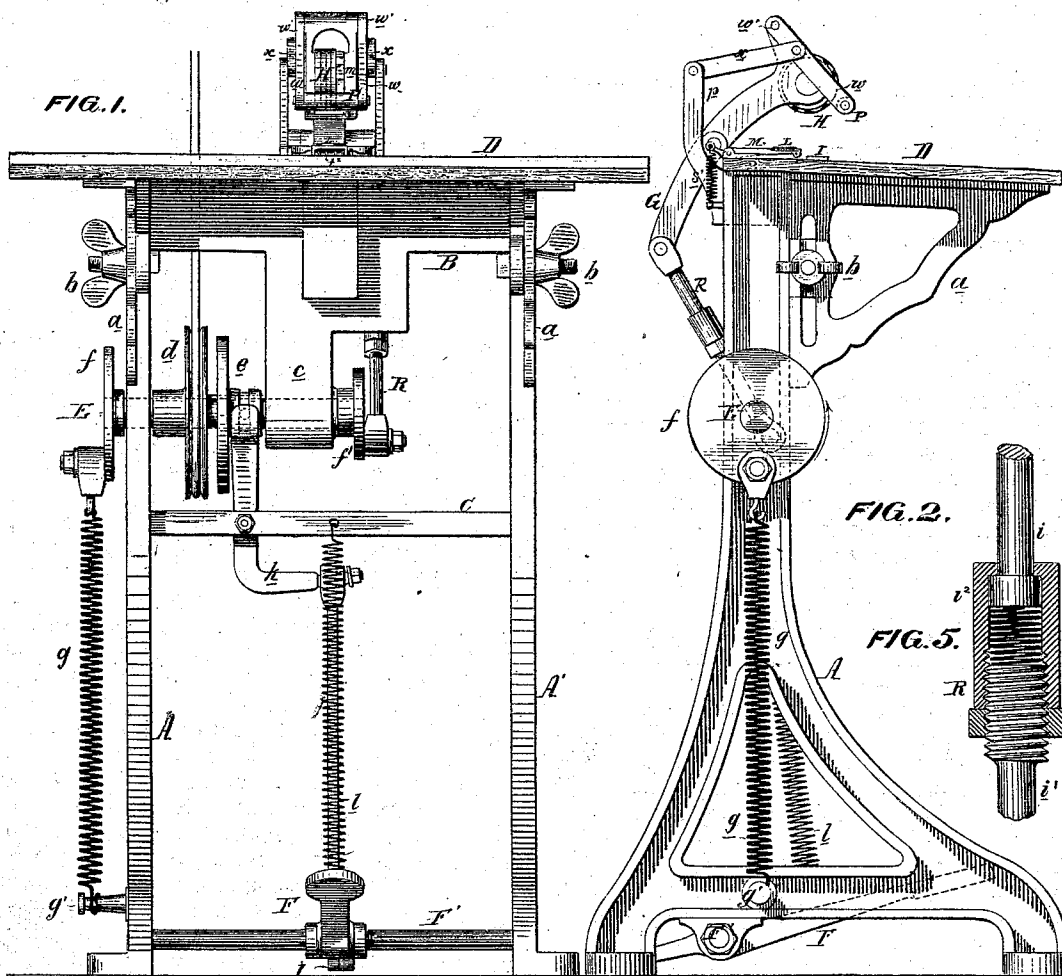


W. H. MANN.
Paging and Numbering Machines.
 No. 150,591. Patented May 5, 1874.



WITNESSES { *Harry Smith*
John Parker

W. H. Mann
 by his Attys
Howson and Son.

UNITED STATES PATENT OFFICE.

WILLIAM H. MANN, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN PAGING AND NUMBERING MACHINES.

Specification forming part of Letters Patent No. **150,591**, dated May 5, 1874; application filed April 24, 1872.

To all whom it may concern:

Be it known that I, WILLIAM H. MANN, of Philadelphia, Pennsylvania, have invented an Improved Paging and Numbering Machine, of which the following is a specification:

My invention consists of certain improvements, too fully explained hereafter to need preliminary description, in presses for paging books and for printing consecutive numbers upon loose sheets, such as bank-checks, tickets, &c., the said improvements having been designed especially to enable the press to be operated rapidly by power, to enable the motion of the parts to be instantly stopped at any time without risk of misnumbering the pages or sheets, and to insure a thorough and uniform inking of the numbering-type.

In the accompanying drawing, Figure 1 is a front view of my improved paging or numbering press; Fig. 2, an end view of the same; Fig. 3, an enlarged sectional view of part of the press; Fig. 4, a sectional plan on the line 1 2, Fig. 3; and Fig. 5, a detached sectional view, drawn to an enlarged scale.

A and A' are the opposite side frames of the press, connected together by cross-pieces B and C, and at the top of the frame is a table, D, supported by brackets *a a*, Figs. 1 and 2, which are secured to the side frames A A' by set-screws *b*, in such a manner as to be rendered vertically adjustable thereon, for the purpose of fixing the said table at any convenient height. The driving-shaft E, Fig. 1, has its bearings in the side frame A, and in a projection, *c*, of the cross-piece B, and upon the said shaft there is a loose driving-pulley, *a*, and adjacent to the same a friction disk and clutch, *e*, capable of sliding upon without turning independently of the shaft. At the outer end of the driving-shaft there is a crank-wheel, *f*, to the crank-pin of which is connected a strong spiral spring, *g*, also connected to a stud, *g'*, projecting from the fixed frame, and at the inner end of the said driving-shaft there is a crank-wheel, *f'*, from which motion is transmitted to the printing mechanism, as hereafter described. A treadle, F, hung to a treadle-shaft, F', at the base of the machine, is connected by a rod, *j*, to one arm of a clutch-lever, *k*, by which the friction-clutch *e* is controlled, the operator, by depressing the treadle,

being enabled to hold the clutch in frictional contact with the pulley *a*, which will cause the driving-shaft to be rotated, while, when the motion of the latter and the parts connected therewith is to be stopped, the pressure upon the treadle is relieved, when the clutch will be immediately drawn back from the loose driving-pulley by the action of a spring, *l*, connected to the treadle and to the cross-bar C. From the crank-wheel *f* at the inner end of the driving-shaft a vibratory motion is, through the medium of a connecting-rod, R, imparted to a lever, G, pivoted to the rear upper edge of the frame at *j'*, and carrying the printing-disks H. The latter are constructed as usual, with numbers *z* at regular distances apart upon their peripheries, and they are arranged, by the vibration of the lever G, to be alternately forced down upon and raised from a platen, I, Figs. 3 and 4. The printing-disks X can all be rotated so as to bring any of their numbers lowermost, and to one of the said disks is secured a ratchet-wheel, *m*, which, when the lever G and disks are raised, is turned to the extent of one tooth by a pawl, *m'*, attached to an arm, *p*, of the fixed frame. (See Fig. 3.) The said ratchet-wheel has ten teeth to correspond with the ten numbers of its disk, and the latter is, therefore, turned to the extent of one-tenth of a revolution whenever it is raised so as to bring a new number directly over the platen. The second disk derives its motion from the first, and makes one-tenth of a revolution for every complete revolution of the latter, and the third disk makes one revolution for every hundred revolutions of the first, or ten of the second, so that as consecutive numbers from 0 to 9, inclusive, are arranged upon each disk, any number from 0 to 999 can be printed by the said disks; and if another disk be added, higher numbers can be printed.

The inking devices are as follows: An ink-well, J, Figs. 3 and 4, is secured to the cross-bar B of a frame, and at one end of the same, and partially submerged in the ink, is a roller, K, to which a slow intermittent rotary motion is imparted by a pawl, *q*, hung to the lever G and engaging with the teeth of a ratchet-wheel, *r*, secured to the spindle of the said roller. Adjacent to the latter is a circular

ink-distributing plate, L, supported by and arranged to be rotated upon a frame or yoke, M, pivoted to the fixed frame at the points *s s*, and acted upon by springs *s'*, Fig. 2, which tend to slightly elevate the front end of the said yoke, and with it the distributing-plate. The latter is secured to a short spindle, *t*, Fig. 3, to which is also secured a worm-wheel, *t'*, gearing into a worm, *t''*, the latter being operated intermittently by a ratchet-wheel, *u*, at the outer end of its spindle, which is struck and partially turned by a fixed pawl, *v*, Figs. 3 and 4, whenever the yoke M is elevated by the action of its springs *s'*. The inking-roller P is hung to arms *w w*, pivoted to the lever G at *w'*, and connected to the arm *p* of the fixed frame by links *x*, the said roller being drawn across the face of the type or numbers on the disks, and across the ink-feeding roller K and distributing-plate L, as hereafter described.

To start the press, the operator depresses the treadle F, which will force the friction-clutch *e* against the driving-pulley *a*, and thus cause the driving-shaft to be turned as long as the clutch is thus held. A regular vibratory motion will be imparted to the lever G by the crank-wheel *f'* on the driving-shaft and connecting-rod R, the printing-disks being lowered and raised with the same toward and from the platen, and being at the same time turned by means of the pawl *m'*, for the purpose of changing the numbers, as before described. As the printing-disks descend to make an impression upon the sheet resting upon the platen, the inking-roller P will, owing to the manner in which it is connected to the fixed arm *p*, move across the face of and ink the number by which the impression is to be made, the said roller moving in the direction of the arrow, Fig. 3, and continuing the motion in the same direction across the circular distributing-plate L, which it depresses, and across the feeding-roll K, from which it receives a supply of ink. As the printing-disks are raised, the inking-roller is drawn forward across the plate L, by which the ink is evenly distributed over the same, and after the passage of the roller the said distributing-plate will be raised, with the yoke M, by the action of the springs *s'*, and be thus partially turned by the devices before described, in order that it may be presented in a different position to the inking-roller when the latter next passes over it. The inking-roller, in moving forward from the distributing-plate, passes beneath and inks the type, which is inked a second time during the rearward movement of the said roller, as before described, the thorough inking of the type and a clear impression being by this means insured. The spring *g*, during the operation of the press, is alternately extended and contracted as its crank-wheel *f* rotates; but when the press is temporarily stopped for

any reason, by removing the foot from the treadle F, and thus permitting the friction-clutch *e* to spring back from the driving-pulley, the motion of the driving-shaft, and consequently of the printing mechanism, will be instantly arrested, owing to the contraction of the said spring *g*, the latter also elevating the printing-disks, as shown in Fig. 2. As the driving-shaft is thus prevented from turning by its own momentum, the disk will not be re-set, and the pages or sheets misnumbered—an accident which could only be prevented by the exercise of the greatest care if the motion of the shaft was not thus suddenly arrested by the spring.

The connecting-rod, by which motion is transmitted from the crank-wheel *f'* to the lever G, is made in two sections, *i* and *i'*, secured together by a screw-coupling, *i''*, by means of which the said rod can be lengthened or shortened, for the purpose of regulating to a nicety the extent of the downward movement of the printing-disks, and consequently the degree of pressure upon the platen, or, rather, upon the sheets resting thereon. The coupling is also formed with a spring and swivel, as plainly shown in Fig. 5, so that the rod may be capable of yielding longitudinally, or, in other words, be self-extending, so that the printing-disks, which, on commencing to page a book, may be raised an inch above the platen, shall, as the pages are successively numbered and turned from beneath the same, be gradually lowered toward the said platen, owing to the pressure of the spring and tightening of the rod.

I claim as my invention—

1. The combination, with the driving-shaft, of a loose driving-wheel, friction-clutch, crank-wheel, and spring *g*, as described, so as to elevate the printing devices when the shaft is thrown out of gear with the driving-wheel.
2. The combination, with the lever G, carrying the printing-disks, and with the driving-shaft, of a connecting-rod in two sections, connected by an adjustable spring-coupling, as and for the purpose set forth.
3. The combination, with printing devices, of an arm, G, carrying said devices, overhanging a table and vibrating on a fulcrum, *j'*, adjacent to the edge of the table-frame, substantially as set forth.
4. The combination, with the vibrating lever or arm G and its printing devices, of the suspended roller P, roller K, and distributing-plate L, as specified.

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

W. H. MANN.

Witnesses:

WM. A. STEEL,
HARRY SMITH.