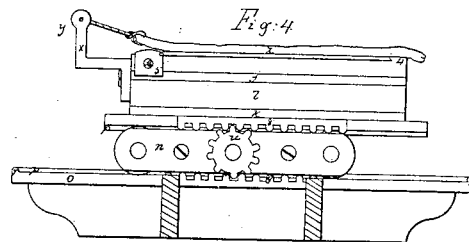
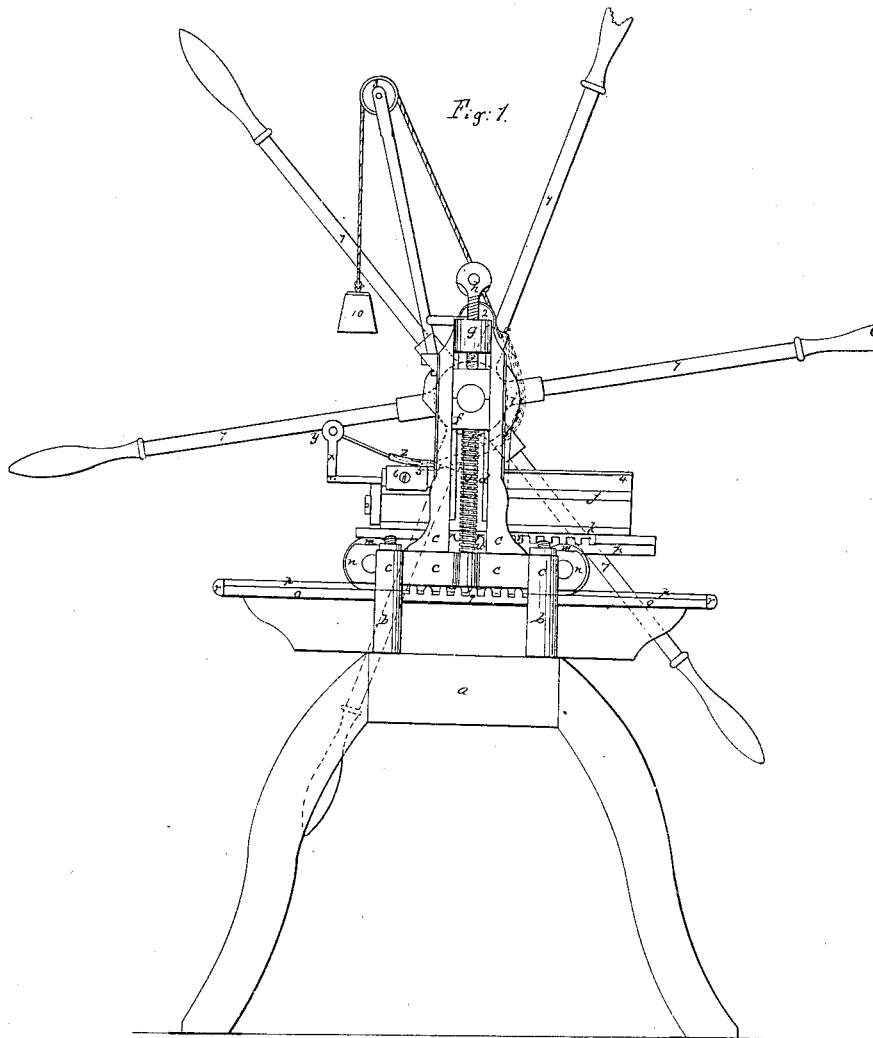


E. C. MIDDLETON, E. NEVERS & R. NEALE.  
COPPER AND STEEL PLATE PRINTING PRESS.

No. 7,786.

Patented Nov. 19, 1850.

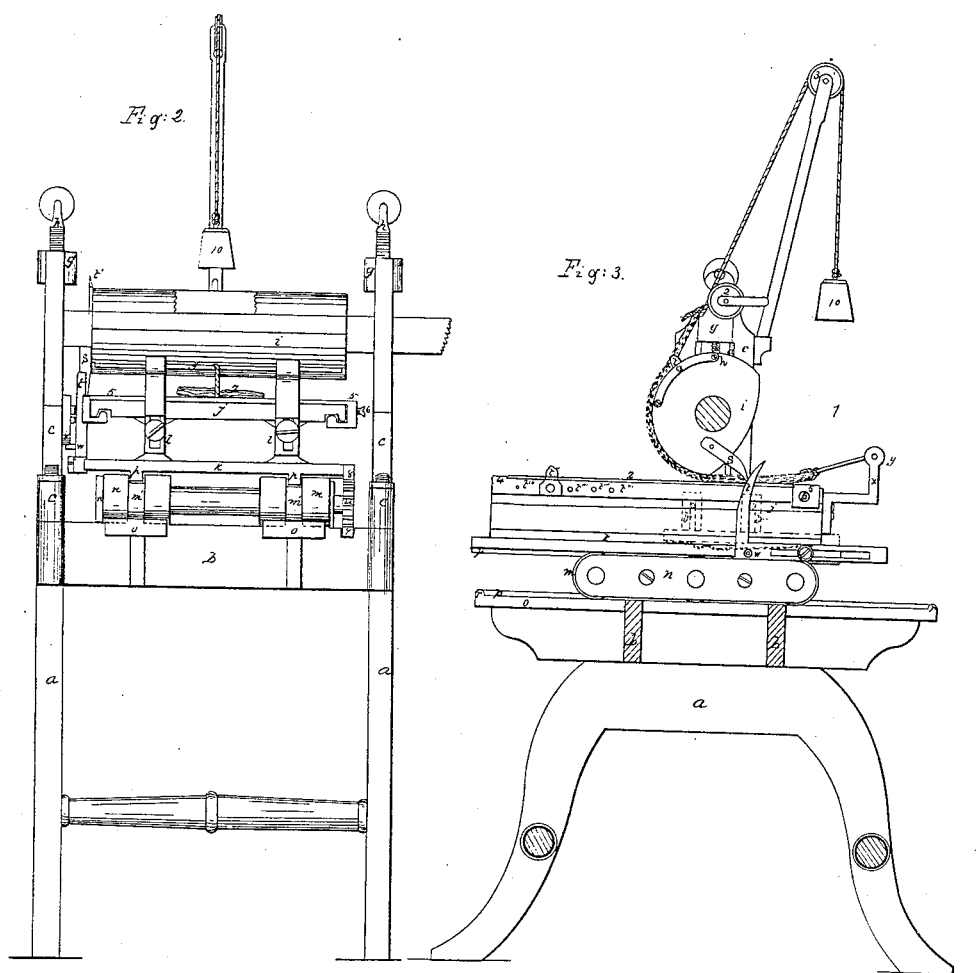


E. C. MIDDLETON, E. NEVERS & R. NEALE.

COPPER AND STEEL PLATE PRINTING PRESS.

No. 7,786.

Patented Nov. 19, 1850.



# UNITED STATES PATENT OFFICE.

E. C. MIDDLETON AND E. NEVERS, OF CINCINNATI, AND R. NEALE, OF MOUNT CARMEL, OHIO.

## COPPER AND STEEL PLATE PRINTING-PRESS.

Specification of Letters Patent No. 7,786, dated November 19, 1850.

*To all whom it may concern:*

Be it known that we, ELIJAH C. MIDDLETON and EDWARD NEVERS, of Cincinnati, Hamilton county, and ROBERT NEALE, of Mount Carmel, Clermont county, Ohio, have invented new and useful Improvements in Copper and Steel Plate Printing Presses; and we do hereby declare the following to be a full, clear, and exact description of the nature, construction, and operation of the same, reference being had to the annexed drawings which are made part of this specification.

Our improvement consists of the following particulars: 1stly, an arrangement by which the edge of the convex part of the D roller is caused to impinge upon any desired part of the platen which traverses beneath it, so that any desired portion of a copper or steel plate can be printed without including other matter which may be upon the same plate, and also preventing the making and defacing of the margin of the paper by the edge of the plate; 2ndly, certain arrangements for securing uniformity of position and regularity of motion between the platen, and the rollers upon which it runs, so that the rollers preserve their places with regard to the platen, and aberration is prevented. 3rdly, an improved method of heating uniformly the platen upon which the plates rest, and to which they are secured, so that the plates need not be removed from the press for the purpose of inking. 4thly, an improved method of securing the plates to the platen readily adjustable to any desired size, and affording facility of removal. 5thly, A method of retracting the platen after its effective stroke.

The first part of our improvement we effect by means of an adjustable tooth or catch, secured to and projecting beyond the periphery of the D roller, which strikes a catch or tooth adjustable longitudinally of the platen, so as to bring the edge of the convex part of the D roller upon any desired portion of the platen as before mentioned, permitting the use of the plate for different sizes of paper without leaving the mark of the margin of the plate. The plate is secured to the platen by the sliding and stationary clamps, and the blankets [which are introduced between the roller and the plate to give an elastic pressure] narrowed so as perfectly to cover the en-

graved surface, but not extending to the ends of the plate. The roller is, as has been described caused to strike the platen at a point between the engraved surface and the advancing edge, and the plate passes underneath. The same remarks apply to the method of obtaining an impression of a part of a plate which has on it a number of detached subjects or designs, or of a vignette ornament, to the exclusion of surrounding writing or other matter.

The second part of our improvement is thus effected. The platen or traversing bed rests upon a gang of rollers, secured together by their journals so as to preserve their relative distances. To prevent lateral aberration these rollers are grooved midway of their length, and corresponding beads are affixed to the lower part of the platen and to the sill upon which the rollers run. Thus the rollers are laterally sustained and in their turn keep the platen from lateral aberration. For the purpose of securing the rollers in their proper position longitudinally, in reference to the platen which traverses upon them, a rack is attached to the platen which gears into a cog wheel attached to the gang of rollers, which again gears into a rack on the sill or bed upon which the rollers run.

The third part of our improvement is as follows: The platen or bed plate is made of two plates stiffened by ribs which connect them, and leaving a space between them into which spirit or oil lamps are placed for heating the platen and keeping the engraved plate at a proper temperature. It is usual to remove the plate between each impression to a charcoal furnace for the purpose of inking, which involves considerable time, and in the case of heavy plates is inconvenient. The fumes of the coal are likewise injurious. A considerable degree of heat is necessary to give fluidity to the ink enabling it to enter the fine lines, as when cold it is very thick and viscid. This difficulty has been imperfectly met by the use of heated bars of iron, but the effect of these is constantly varying and does not fulfill the requirements.

The fourth part of our invention is thus effected. A small plate is attached to the front part of the upper surface of the platen, which being undercut, admits of the insertion of the beveled edge of the en-

graved plate; a sliding gripper stretching across and adjustable at any part of the length of the platen and which is also undercut is then brought forward so as to overlap the other edge of the engraved plate, and is secured by screws at its ends to the edges of the platen. This arrangement gives the requisite immobility and also admits of the ready removal of the plate.

Fifthly, we retract the platen after its effective stroke and while the **D** roller is removed from contact with its surface, by means of a weighted cord which is attached to the blanket which passes under the roller, and which in its turn is attached to a bar on the back of the platen, the bed on which the rollers run being an inclined plane.

In the annexed drawings similar letters refer to corresponding parts in the several figures.

Figure 1, is a side elevation. Fig. 2 is a front view. Fig. 3 is a side elevation partly in section. Fig. 4, is a side view of the traversing apparatus and bed, the trestle and standards removed. (a) is a trestle, from top to top of which extend two transoms (b) from which arise two standards (c) each standard having a vertical groove (d) along its underwidth, for the play of a spring (e) supporting a journal box (f) of the **D** roller and terminating at top with a head (g) containing a set screw (h) by means of which the pressure roller (i) is adjusted to the required altitude. This pressure roller is of what is commonly styled the **D** form, that is partly round, and partly flattened. The platen consists of two slabs (j and k); one, (j) somewhat elevated above the other by ribs (l), so as to leave between them a space for the introduction of spirit lamps. This platen rests upon a gang of rollers (m) which are fixed in a pair of cheeks (n) and grooved around their perimeters (o, o) are a pair of ways or tracks placed lengthwise of the machine, along which the rollers move to and fro; the spines or beads (p) upon the tracks and upon the underside of the platen fit into the grooves (m') in the rollers preventing any lateral aberration. Pivoted to one of the roller cheeks or connecting rod of the gang of rollers is a pinion (u) working in a pair of racks (8 and 9) one rack being attached to the platen and the other to the sill upon which the rollers run. The tracks are furnished with beads (r) at the ends in order to limit the range of the rollers and platen, projecting from the pressure roller (i) is an adjustable tooth (s), and there is a similar tooth (t) affixed adjustably to the platen (j, k) so that the point upon the platen where the roller first impinges can be made matter of regulation and adjustment. Projecting in front of the platen are two arms (x), bearing a rod (y), which affords a point of attachment for the

blanket (z). To the other end of the blanket a cord is attached, which, passing upward and over a pulley (3), has a weight (10) attached which keeps all taut. Appended to the top of the platen are a pair of clamps, one of them (4), being stationary, and the other (5) capable of sliding along the top of the platen the extremities grasping the edge of the platen and being secured thereby by a set screw. The roller is operated by the usual set of handles (7). There are other parts in the machine which have not been particularly described as many of them are in common use.

Having thus fully, clearly and exactly described the nature construction and operation of our improvements in copper and steel plate printing presses, what we claim therein as of our invention and which we desire to secure by Letters Patent, are—

1. The arrangement of a tooth or catch projecting from the roller, and operating upon a tooth or projection upon the platen for the purpose of starting the platen and causing the commencement of the convexity of the roller to impinge upon any required point of the length of the platen, for the purpose described.

2. The combination of the racks (8 and 9) with the cog wheel (w) attached to the connecting rod of a gang of rollers together with the beads (p) and the grooves (m') in the rollers for security uniformity of action and a proper relative position between the platen and the supporting rollers upon which it traverses, thus preventing lateral and longitudinal aberration.

3. The method of heating and retaining at a suitable temperature the plate from which the impressions are to be taken by means of lamps or of vessels containing inflammable material, placed under the upper plate of the platen or traversing bed, within the recess formed between that and the plate resting immediately upon the gang of rollers.

4. The arrangement of a stationary, and sliding clamp adjustable longitudinally of the platen, for securing the plate in position, substantially in the manner described.

5. We claim in combination with the **D** roller the method of retracting the platen by the weighted cord, assisted by making an inclined plane of the bed on which the rollers traverse.

In testimony whereof, we have hereunto set our hands before two subscribing witnesses.

E. C. MIDDLETON.  
EDWARD NEVERS.  
ROBERT NEALE.

Witnesses:

GEO. H. KNIGHT,  
EDWARD H. KNIGHT.