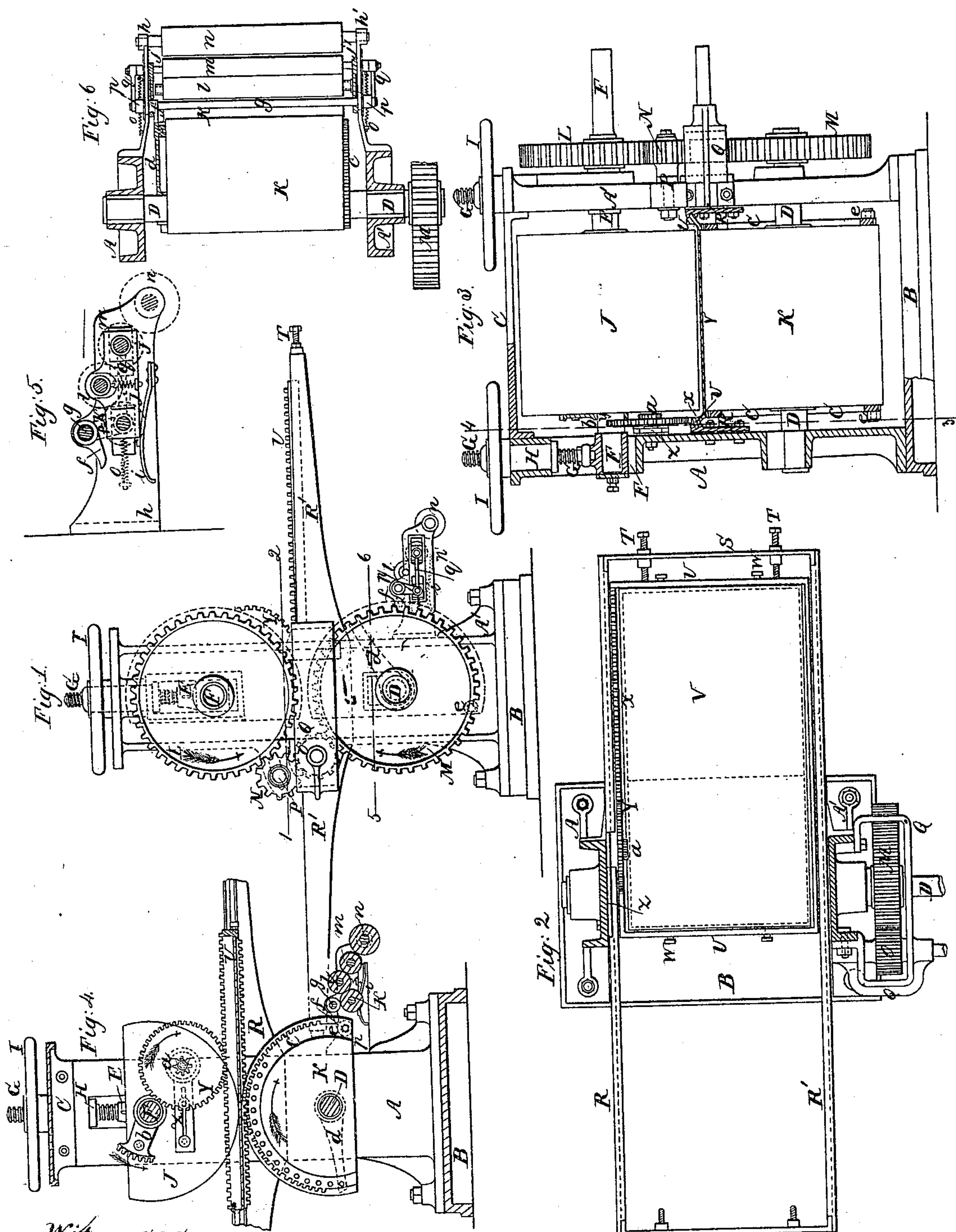


*S. W. Lowe.*  
*Printing Press.*

*Nº 14789.*

*Patented Apr. 29. 1856.*



Witnesses;  
*Henry Newton*  
*Theodore Bergner*

Inventor;  
*Saml W Lowe*



# UNITED STATES PATENT OFFICE.

SAML. W. LOWE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO HIMSELF AND  
JACOB M. BECK.

## MACHINE FOR EMBOSSING AND PRINTING.

Specification of Letters Patent No. 14,789, dated April 29, 1856.

*To all whom it may concern:*

Be it known that I, SAMUEL W. LOWE, of the city of Philadelphia and State of Pennsylvania, have invented a new and Improved  
5 Machine for Embossing and Printing; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing and to the figures and letters of  
10 reference marked thereon.

My invention relates to improvements in that class of printing machines in which segmental or D rollers are used, and consists in the employment of two such rollers  
15 in combination with a traversing table having a loose plate by removing and replacing which, the said segmental rollers may be used for embossing, for printing from engraved plates, prepared by a process for  
20 which a patent was granted to me, on the 18th day of September 1855, or for printing from common type. When the machine is used for printing from these plates, which are attached to the rounded surface of the  
25 lower segmental roller, an inking apparatus (hereafter fully described) is brought to bear on them, in such a manner that the ink may be distributed over the plate at the exact moment required and when this is ac-  
30 complished the inking rollers may be instantly removed from contact with the same.

In order to enable others skilled in the art to make and use my invention, I will now proceed to describe its construction and op-  
35 eration.

On reference to the drawing which forms a part of this specification, and in which the same letters of reference allude to similar parts throughout the several views, Figure  
40 1 is a side elevation of my improved printing and embossing machine. Fig. 2 is a sectional plan on the line 1—2 (Fig. 1); Fig. 3, an end view in which part of the machine is shown in section; Fig. 4, a sectional view  
45 on the line 3—4 (Fig. 3); Fig. 5, a detached view to an enlarged scale of the inking apparatus; Fig. 6, a sectional view on the line 5—6 (Fig. 1) also showing the inking apparatus.

50 A and A' are the two frames or standards of the machine, secured at the bottom to the base plate B, and tied together at the top to the cross piece C. These frames have openings at the bottom, in which are the  
55 bearings for the shaft D and toward the top

oblong openings, in which slide the blocks E which form the bearings for the upper shaft F. To these blocks are attached the screws G, of which H are the nuts, the latter fit accurately in holes bored in the top of the  
60 standards, and are furnished at the top with hand wheels I, the hubs of which together with the collars on the bottom of the nuts, maintain the latter in the same vertical position, so that on turning the wheels I, the  
65 shaft F may be raised or lowered at pleasure. To this shaft F is secured the segmental roller J and to the lower shaft D the segmental roller K, and these rollers are so arranged in regard to their position with  
70 each other that the edges of one formed by the meeting of the flat side with the rounded portion always coincide with the edges of the other as they revolve. On the shaft and  
75 outside the frame A' is secured the toothed wheel L and to the shaft D a similar toothed wheel M. The wheel L gears into a pinion N which runs loose on a stud P, the latter passes through a slot in the frame A', of  
80 such a form that by unscrewing the nut of the pin, the pinion N may be so adjusted as to be always in gear with the wheel L at whatsoever height it may be raised by turning  
85 the wheels I, and still remain in gear with a second pinion O which is secured to a shaft having its bearings in the brackets Q on the frame A'. The pinion O gears into  
90 the toothed wheel M and thus a connection is formed between the latter and the wheel L which on turning the pinion O causes the shafts F and D with their respective seg-  
95 mental rollers to revolve in the direction of the arrows.

On the inside of the frames A and A' are bolted the beams R and R'. These are con-  
95 nected together at their ends by the bars S in which are the adjusting screws T. Extending the whole length of these beams and on the inside of the same are V shaped  
100 grooves adapted for receiving the similarly shaped edges of the movable table V which consists of a frame having ledges on which rests the plate V, small bolts W screwing  
105 into the ends of the table and pressing with their points against the edge of the plate serve to keep the latter steady within the frame.

One edge X of the frame U is furnished with teeth on the top forming a rack and  
110 into this rack gears the wheel Y which to



gether with the pinion *a* runs loose on a pin in the bracket *Z* the latter being bolted to the inside of the frame *A*. On the shaft *F* and secured to the side of the segmental roller *J* by means of a screw is the arm *b*, furnished at the end with a segment of a wheel, the teeth of which at a given point in the revolution of the shaft gear into those of the pinion *a* on the wheel *Y*.

On each side of the lower segmental roller *K* are secured segments *c* on the edges of which are teeth gearing at a given point in the revolution of the shaft *D*, into the teeth of racks under both edges of the table *U*. In the side of one of the segments *c* are a number of holes into any of which fits a screw which passing through the end of the arm *d* (radiating on the shaft *D*) may secure the end of the said arm to any required point on the segment *c*. This point of the radiating arm *d* is situated at such a distance from the center of the shaft *D* as to strike the point of the lever *f* which is secured to the shaft *g*, the latter having its bearings on brackets *h* and *h'* which are secured to the frames *A* and *A'*. These two brackets have openings into which fit projections from the sliding pieces *j* and *j'* and in these sliding pieces are the bearings for the spindles of the rollers *k*, *l*, and *m* shown in red lines in the enlarged view Fig. 5.

To the shaft *g* and outside both the brackets *h* and *h'* are secured the levers *p*, the ends of which are connected to the ends of the spindle of the roller *m* by the rods *q* so that on the depression of the levers *f* (on being struck by the rollers *e* on the sides of the segmental roller *K*) the sliding pieces *j* and *j'* with their rollers *k*, *l*, and *m* are pushed in the direction of the arrow (Fig. 5) a projection on the spring *i* catching the end of the sliding pieces keeps the latter in the position to which it has been moved by the depression of the lever *f* until the rollers *e* on the segmental roller *K* strike the points of the springs and release the sliding pieces *j* and *j'* which through the action of the spiral springs *O* are drawn back in a contrary direction to that pointed out by the arrow. The spindle of the roller *l* passes through holes of such a form in the pieces *j* and *j'* that it may be allowed a slight vertical but no lateral movement and on each end of the spindle is a loose ring connected by means of a spiral spring to projections on the lower edge of the pieces *j* and *j'* the said springs having a tendency to keep the surfaces of the rollers *k*, *l*, and *m* together. The spindle of the roller *n* has its bearings in the ends of the brackets *h* and *h'* and is the roller on which the printing ink is placed in the first instance the rollers *l* and *m* serving as carrying and spreading rollers and the roller *k* delivering the ink to the face of segmental roller *K*.

Operation: When the above described machine has to be used for embossing, the rollers *e* on the segmental roller *K* are removed and the pieces *j* and *j'* are slid in the direction of the arrow, the notch on the spring *i* retaining them in such a position that the inking apparatus becomes inoperative. A plate engraved to the desired pattern is now introduced into the movable table *U* and a corresponding pattern in relief is secured to the rounded surface of the segmental roller *J* the projections of the pattern on the latter corresponding exactly with the cavities in the pattern on the table. The upper segmental roller *J* is now adjusted by means of the wheels *I* to a proper distance from the lower segmental cylinder *K* so that the required pressure may be given on the material to be embossed. The shaft secured to the pinion *O* is now caused to revolve by any convenient driving apparatus causing the wheel *M* and (through the carrier pinion *N*) the wheel *L* with their respective shafts and segmental rollers to revolve in the direction of the arrows. As the machine is shown in Fig. 1 the plate *V* in the table *U* has just passed between the rounded portions of the segmental rollers, and the material embossed by their action has been removed from the plate. As the rollers continue to revolve the arm *b* is brought down, so that the teeth on its end catch the teeth on the pinion *a* which being attached to the wheel *Y* causes the latter to revolve in the direction of the arrow and gearing into the rack on the side of the table *U*, draws the same rapidly back to the opposite ends of the arms *R* and *R'*. This movement of the table is accomplished so suddenly that before the rounded portions of the segmental rollers again meet each other a sufficient time elapses to allow the attendant to place another sheet of the material to be embossed on the plate *V*. As the rounded surfaces of the segmental rollers approach each other however the teeth on the segments *c* catch into the teeth on the racks on the underside of the table, and cause the plate *V* with the material upon it to be caught by the rounded portion of the rollers which carry it through to the point from which we started, when a repetition of the former movements takes place as the rollers revolve.

When the machine has to be used for printing from engraved plates prepared by the process for which a patent was granted to me on the 18th day of September 1855 these plates are secured by clamps to the rounded portion of the segmental roller *K*. The small roller on the side of the latter is now replaced, and the plate *V* in the table *U* removed. In the place of this plate *I* introduce a frisket with paper or other suitable substance stretched over it, a hole



being cut out of the paper of the size of the surface to be printed. The upper segmental roller J is now stripped of the embossing plate its surface being perfectly smooth and covered with a blanket similar to that used by copper plate printers. The paper to be printed upon is placed on the top of the frisket and over the hole in the paper stretched on the same, when the table is passed as before backward and forward and submitted to the pressure of the segmental rollers in the manner already described giving the desired impression on the paper.

The manner in which the ink is applied to the surface of the engraved plate is as follows. When the segmental rollers are in the position shown in Fig. 4 the engraved plates are about giving the required impression to the paper on the frisket and the delivering ink roller is free from contact with the surface of the segmental roller K and is retained in this position by the projections on the springs *i* catching the ends of the sliding pieces *j* and *j'* until the roller *e* catches the end of the spring and releases the sliding pieces which through the action of the spiral springs *o* move toward the segmental roller so that the roller *f* delivers the ink onto the plate. The arm *d* has been so adjusted as regards the size of the plate that the moment the ink has been delivered completely to its surface, the end of the arm (as the segmental rollers revolve) depresses the lever *f* which moves the sliding pieces back as already described, when the inking roller *k* is removed from the plate on the segmental roller and retained by the projection on the spring *i* until the rollers *e* strike the latter as before. When the sliding pieces are moved back by the depression of the lever *f* the roller *m* is receiving ink from the roller *n* and this ink is distributed over the surface of the roller *l* and thence over that of the roller *k* preparatory to being applied to the engraved plate. It should be understood that the roller *n* is caused to revolve by a cord passing around a pulley on its shaft and around another pulley on either of the shafts of the segmental rollers.

When the machine has to be used for type

printing I render the above described inking apparatus inoperative as before by removing the roller *e* and the form being set on the top of a plate in the table *v* the paper is placed thereon in the usual manner by means of a hinged frisket and submitted to the action of the segmental rollers as in both the above described instances the type may be inked by an apparatus somewhat similar to that shown but attached to the framework of the machine above the table instead of below.

It will be easily seen that copper or steel plates may be printed from in this machine by placing them likewise on the table *v* and submitting them with the paper on which it is required to give the impression to the action of the two segmental rollers as before.

It will thus be seen that my improved machine may be used for embossing, printing from engraved plates or from type, and this without any considerable delay and with comparatively little change of the working parts.

I do not desire to claim exclusively the employment of segmental or D shaped rollers for printing and embossing, or the use of such rollers in combination with a traversing frame neither do I claim the movable inking apparatus described. But

What I do claim and desire to secure by Letters Patent is—

1. The employment of two segmental rollers in combination with a traversing frame or table said table having a loose plate, by removing, and replacing which, the said segmental rollers may be used for embossing, for printing from the engraved plates, for which a patent was granted to me, on the 18th of September 1855, or for printing from common type, in the manner set forth.

2. The radial adjustable arm *d* in combination with the lower segmental roller *k*, for the purpose of limiting the distribution of the ink to the engraved plates attached to said roller.

SAML. W. LOWE.

Witnesses:

HENRY HOWSON,  
THEODORE BERGNER.