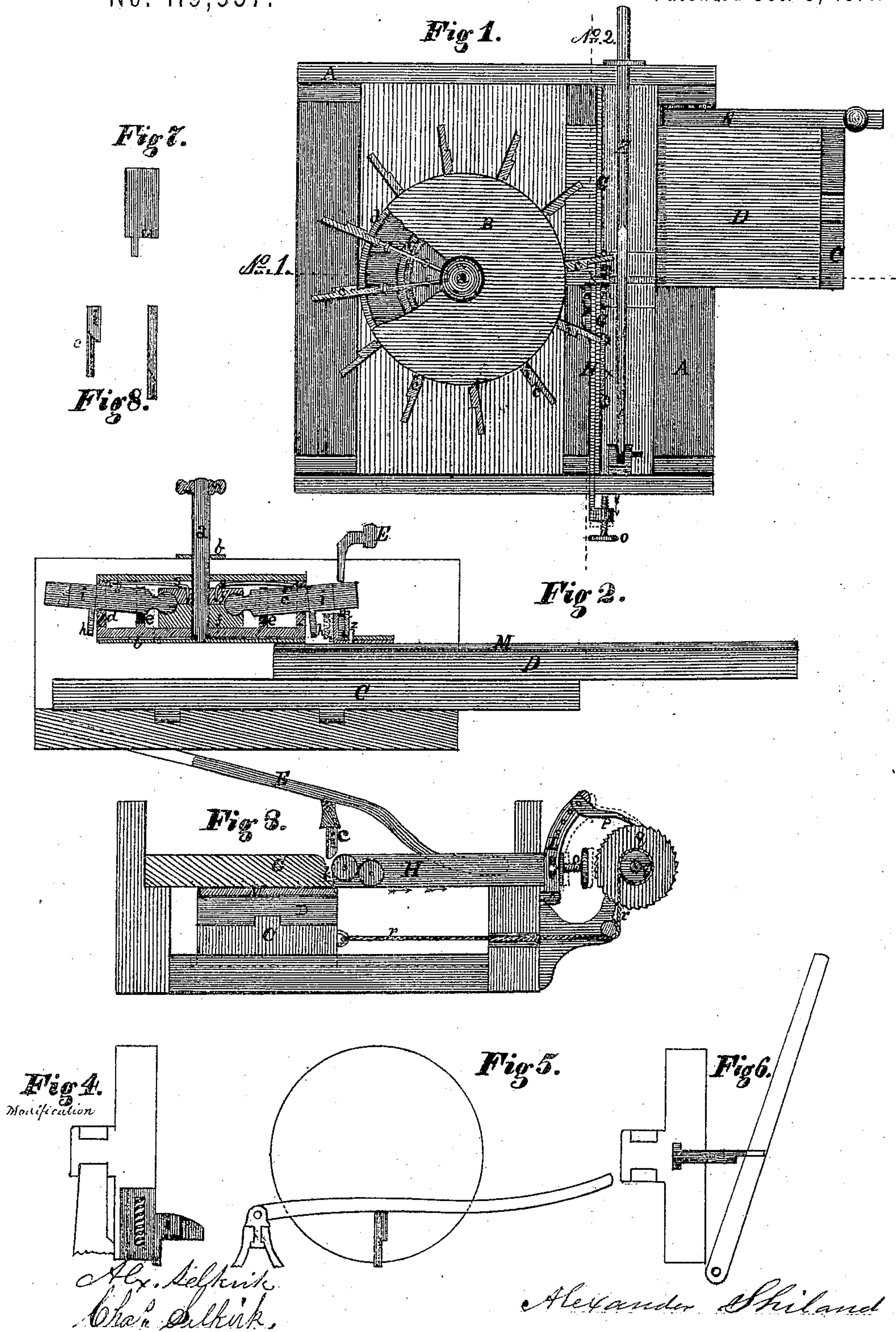


Alexander Shiland. West Troy, N.Y.  
 Improved method of making moulds for Electrotypes, Stereotypes and of Printing  
 No. 119,537. Patented Oct. 3, 1871.





# UNITED STATES PATENT OFFICE.

ALEXANDER SHILAND, OF ALBANY, NEW YORK.

## IMPROVEMENT IN MACHINES FOR PRODUCING STEREOTYPE MATRICES.

Specification forming part of Letters Patent No. 119,537, dated October 3, 1871.

*To all whom it may concern:*

Be it known that I, ALEXANDER SHILAND, of West Troy, in the county of Albany, State of New York, have invented certain new and useful improvements in an apparatus for making impressions of letters, characters, or figures in wax and other suitable material, for forming electrotypes and stereotype-molds, and for printing or cutting out of paper or stamping in wood or soft metal the said letters or figures; and I do hereby declare that the following is a description thereof, reference being had to the accompanying drawing forming a part of this specification, in which—

Figure 1 represents a plan view of the apparatus illustrating my invention. Fig. 2 is a cross-section of the same at line No. 1 in Fig. 1. Fig. 3 is a cross-section of the same at line No. 2 in Fig. 2. Fig. 4 is a longitudinal vertical cross-section of a modification of a part of the apparatus. Fig. 5 is a front view of the same. Fig. 6 is a vertical view from above of the same. Figs. 7 and 8 are some of the many modifications of the fingers or arms carrying the type.

My invention relates to certain improvements in an apparatus for impressing characters, figures, or letters in any soft or yielding material, or for printing on paper or similar material, or cutting with stencil-punches; the said letters or figures in paper or other sheet material from a set of single type or punches, in any order or number, as may be desired by the operator; and consists in an arrangement of mechanical elements, constructed in the manner hereinafter set forth, which I will proceed to describe to enable others skilled in the art to make and use the same.

In the drawing, A represents any suitable frame-work of the apparatus. B is a revolving disk, carrying type-bearing arms. C is the carriage to carry the material to be operated upon in a direction to form lines. E is the impressing-lever to operate upon the type-arms. The disk B is constructed of the pieces *f f'*, each of which is provided with half-round grooves, as shown. Made continuous with one of the said pieces is the vertical rim or flange *d* into which is cut a number of vertical slots. The said disk is provided with a vertical shaft, *a*, on which the said disk revolves, and is steadied above by the bearings *b* secured to the frame-work, as shown. *c c* are type-bearing arms, radiating out from the

disk B. The rear ends of the said arms *c c c* are rounded, and correspond with the rounded annular groove formed in the plates *f f'*, in which the said rounded or knuckle ends work, as shown. The said arms *c c c* work in the slots made in the rim or flange *d* of one of the pieces *f* or *f'* of the said disk B. Springs *s s* are arranged with the piece *f'* and each arm *c*, as shown in Figs. 1 and 2, to cause the said arms *c c* to lift up. The said arms *c*, being arranged with the disk B, are thus rendered capable of a vertical movement of their outer ends, and also of a circular horizontal movement of their said outer ends to or from and over a given point. To each of the outer ends of the said arms *c c* I attach a punch or cutter, *h*, bearing a letter, figure, or other character, which punches or cutters *h h* will be operated vertically with the outer ends of their arm *c c*, and also horizontally with the same to or from over a given point, as desired by the operator. I also make, with the said punches *h h* or their arms *c c*, the wedge-shaped or beveled pieces *i i*, which beveled or wedging pieces are intended to operate with the beveled end of the rack to move the same in one direction when the said arms *c c* are operated vertically downward. I place beneath the arms *c c* the guard G, having the slot *k*, Figs. 1 and 3, at a point in line with and opposite to the shaft *a* of the disk B, as shown. The said guard G is intended to prevent the punches or cutters *h* being thrown down until over the said slot *k*, while the said slot *k* is intended to permit the said punches or cutters *h* being thrown down, and also to guide the same in a direct vertical line over one given point. Friction-rollers *m m* may be placed on each side of the said slot *k*, between which the arms *c c* would move when operated vertically. H is the feed-bar, one end of which, terminates at the slot *k* with a bevel against which the wedging or equivalent piece *i* of the arms *c* is intended to strike when the said arms *c* are cast down, and cause the said feed-bar H to move outward to a distance equal to the thickness of the said wedge *i*. L is a lever, pivoted at one end to some proper point on the frame, which lever is operated by the movement of the feed-bar H to and from the slot *k* in the guard G. The said lever operates a pawl or dog, *p*, so as to act on a ratchet-wheel, *q*, and cause it to wind up the cord *r*, which connects with the carriage C. The feed-bar H is



provided at its outer end with a regulating screw, *o*, which screw operates against a suitable stop, and may be set so as to regulate the movement of the feed-bar or throw of the pawl operating the ratchet-wheel or rack which moves the carriage C. The carriage C rests on the lower part of the frame, and is guided by suitable ways and grooves in a lateral direction, and carries a second carriage, D, which carriage D has a movement at right angles to the movement of the lower carriage, and is guided by suitable ways and grooves. E is the impressing-lever, provided with a pressing-foot, which foot is attached to the said lever at a point which will bring it (the foot) over the radiating arms *c c c* of the disk B when any of the said arms *c* are brought over the slot *k* of the guard G.

The material M to be operated upon, whether wax, paper, soft metal, wood, or other impressible material, is placed on the carriage D and secured thereto, and is brought in position under the range of the slot *k* in the guard at a point where the first impressions are to be made on the material. The operator will then cause the disk or plate to move in either direction to bring some one of the punches or cutters *h* with its desired figure or character over the slot *k* in the guard G, when he will press down the lever E and cause its pressing-foot to bear down the type-bearing arms *c*, to which the punches or cutters (having the letters or characters to be impressed) are attached; the downward moving of the said arms *c* causes the wedging or beveled piece *i* on the said arms *c* to act against the end of the feed-bar H to throw it to one side the width of the base of the wedging piece *i*, when the dog or pawl *p* will operate the ratchet or rack and cause the carriage to move a short distance. Immediately after this operation is effected, the lever E being pressed down yet further, the punches or cutters *h* will be pressed down on the material placed on the carriage D to give an impression, print, or cut to the material, according to the character of the punches or cutters and the material operated upon. The lever E is then thrown up, when the spring, acting with the feed-bar H, will cause a return movement of the said feed-bar toward the slot *k* in the guard G to the limit allowed by the regulating-screw *o*, which screw limits the movement of the said feed-bar and regulates the spaces between the letters or figures to be im-

pressed. All subsequent downward and return movements of the said impressing-lever will be attended with like results. When a line of characters or letters has been stamped, printed, or cut in the material M the carriage C is moved back to its first position, and the carriage D is moved toward the disk B to any desired distance, when the operation before described is repeated.

By my improvements a person of ordinary intelligence and quickness of motion can, after a little experience, prepare molds for electrotype and stereotype plates, or print directly on paper; or by operating on soft metal or wood can form lettered stamps or blocks for printing or forming matrices for embossing stamps or dies when punches having properly-formed letters or characters are used with the type-bearing arms; and, when stencil-cutting punches are used with this apparatus, stencil-plates can be readily formed by operating on paper or thin sheet metal.

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

1. The revolving disk B, constructed as described, and provided with vertical vibrating arms *c c* bearing type-punches, or cutters *h h*, arranged so as to be capable of being brought singly over a given point, in combination with the guard G, and feed-bar H provided at one end with a bevel and the other end with a regulating-screw, *o*, operating against a stop, and made elastic by a spring, when all are constructed and arranged substantially as and for the purposes set forth.

2. The feed-bar H, when operated by the beveled or wedging pieces *i i* attached to the type-punches, or cutters *h h*, or their arms *c c*, in combination with the dog or pawl *p*, ratchet-wheel *q*, or their equivalent, and the carriage C, when all are constructed and arranged substantially as and for the purposes set forth.

3. The combination of the impressing-lever E provided with the pressing-foot, described, with the revolving and vertically-vibrating arms *c c*, feed-bar H, ratchet-wheel *q*, and dog *p*, or their equivalents, substantially as and for the purpose set forth.

ALEXANDER SHILAND.

Witnesses:

ALEX. SELKIRK,  
CHAS. SELKIRK.