T. W. MINTER.

Engraving and Carving Machines.

No. 135,998. Patented Feb. 18, 1873.

Fig. 1.

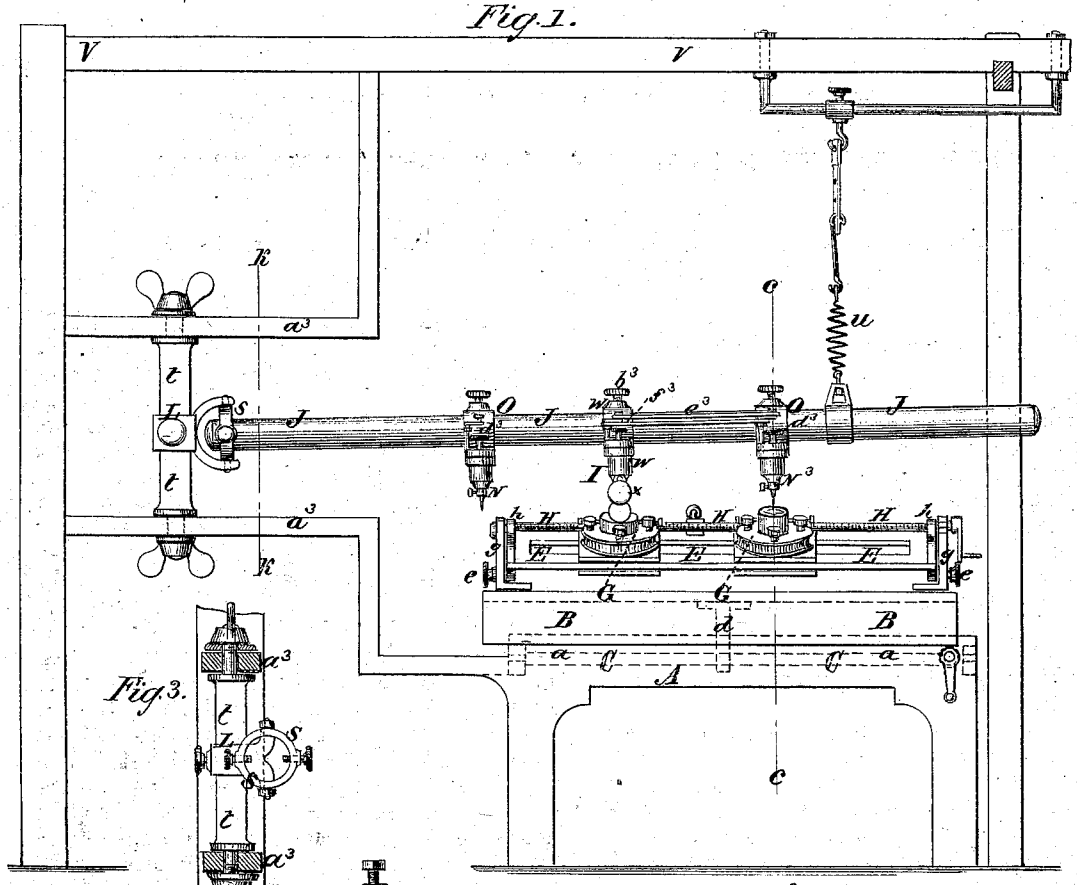


Fig. 3.

Fig. 4.

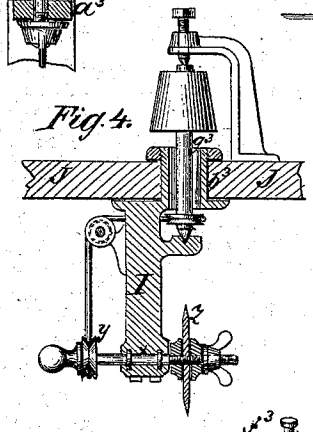


Fig. 2.

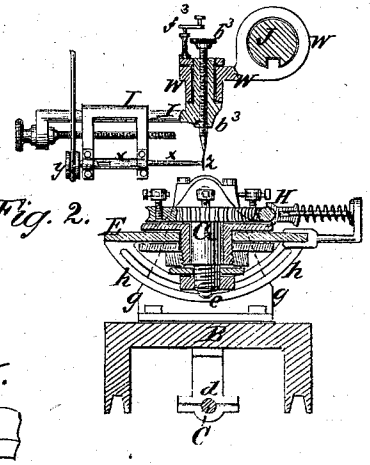
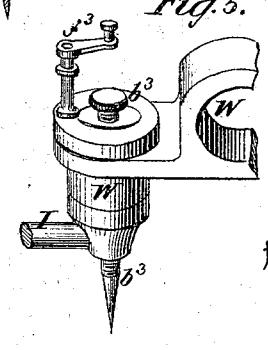


Fig. 5.



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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN ENGRAVING AND CARVING MACHINES.

Specification forming part of Letters Patent No. **135,998**, dated February 18, 1873.

To all whom it may concern:

Be it known that I, THOMAS WILLIAM MINTER, of the city, county, and State of New York, have invented a new and Improved Engraving and Carving Machine, of which the following is a specification:

Figure 1 is a side view of my improved engraving and carving machine. Fig. 2 is a vertical section thereof on the line C C, Fig. 1. Fig. 3 is a detail vertical section on the line K K, Fig. 1. Fig. 4 is a sectional side view of a modification of the cutting apparatus; Fig. 5, a perspective view of the tool-holding bracket and crank-connection.

Similar letters of reference indicate corresponding parts.

This invention relates to improvements on a carving and engraving machine for which Letters Patent of the United States have been recently granted to me. The present invention consists, principally, in simplifying the supports for the article under operation, and for the pattern, and the means for adjusting the same. I fit the holders into a slotted tilting frame, so that they can be adjusted any desired distance apart, and combine them with a single longitudinal screw that hangs in the tilting frame, for turning them on their axes in equal degree. The invention also consists in connecting the swivel-frame of the cutting-tool, by rods, with a crank of the feeling-pin, so that when one is turned on the vertical pivot the other will also be turned in equal manner. The invention finally consists in making the vibrating tool and pin holding beam longitudinally as well as vertically adjustable on and with its holder, so that it can be set to all kinds and sizes of work.

In the accompanying drawing, A represents the supporting-frame of my improved engraving-machine. This frame is preferably made in form of a table, of wood or other material, and of sufficient strength to support the several parts of the machine during operation. *a a* are two horizontal rails, rigidly affixed to the frame and parallel to each other. They serve as supports for a sliding carriage, B, which rests on the rails, as indicated in Figs. 1 and 2, and may have friction rollers or springs bearing against the rails to facilitate the longitudinal adjustment of the carriage. The carriage is provided with a nut, *d*, which is suspended from its under side, as is indicated in Fig. 2. A longitudinal screw, C, which has its bearings in the ends of the frame, passes through the nut *d*, so that the carriage will be moved longitudinally whenever the screw is turned. A crank-handle, for turning it, may be directly applied to the end of the screw; or the latter may, by bevel-gear wheels, be brought in connection with a transverse shaft, which carries a crank-handle, or otherwise provided with means for turning. The carriage supports at its ends a platform or tilting frame, E, pivoted at its ends in posts *g g*, which project from the carriage. A segment, *h*, is affixed to each end of the pivoted platform E′, and is slotted and connected, by screws *e* or pins, with the posts *g*, so that the platform may be freely tilted and fastened in any suitable position. Instead of having the slots in the segments *h*, the posts *g* may be slotted for like purpose. Into a longitudinal slot of the tilting frame or platform E are fitted two swivel disks or plates, G, each of which has a worm-thread around its periphery. A longitudinal screw, H, hanging in the ends of the platform E, is in gear with the disks or plates G, respectively. When the screw H is turned, by means of a handle at its end or by other means, the two disks or holders G will be turned in equal ratio and degree. The screw H will always remain in gear with the disks or holders G, howsoever the frame E may be tilted on its end trunnions.

From the foregoing it will be clear that, by means of the screw C, both holders G are simultaneously adjusted in longitudinal direction; by means of the pivoted frame E, both are simultaneously and equally tilted; while, by the screw H, both disks G will be equally and simultaneously turned on their axes. The disks being part of the platform E, and this again part of the carriage B, the longitudinal adjustment of the latter will be shared in by all other parts mentioned, and the tilting of the platform E shared in by the disks. Whenever the distance between the two holders G is to be varied the nuts at their lower ends are loosened, so that they can be moved in the slot of the platform E to effect the desired change of position, whereupon the nuts are fastened. J is a beam, pivoted in a ring, *s*, which is pivoted in ears of a vertically-ad-

justable slide, L, embracing a post, *t*, that is supported in horizontal brackets a^3, which are slotted to allow the post *t* to be longitudinally adjusted. The free end of the beam J is suspended by a spring, *u*, from a horizontal arm of the frame A. The lower end of the spring *u* is adjustable on the beam J and the upper on the arm V. In a bracket, *w*, which is fastened to and longitudinally adjustable on the beam J, are the bearings of a spindle, X, which carries a pulley, Y, and is prepared for the reception of the cutting-tool Z, in the manner in which spindles are usually prepared for the reception of such tools. The spindle can be revolved by a belt-connection with a driving-shaft operated by means of a treadle or otherwise. From the beam are also suspended two vertical pins, N and N^3, which are attached to slides O adjustable on J.

The pattern to be imitated is secured upon the disk G which is nearest the post *t*, if its copy is to be enlarged in size, or upon the disk G furthest from said post when its copy is to be smaller than the original. The metal, stone, or other material to be cut is fastened in the other disk or holder G. The disks or holders are, by preference, provided with tubular projections for the reception of pieces of wood, upon which the patterns and material to be cut can be fastened. When everything is in place the screws C and H are properly turned by the attendant to bring every part of the pattern-surface in contact with the feeling-needle N or N^3, which is from the beam J suspended against it. The cutting-tool will then also be raised and lowered in conformity with the design to be cut, and will produce such design on the material under it. The spindle X is directly hung in a frame, I, which is, by a pin or tubular vertical projection, b^3, swiveled in the bracket *w*. This gives to the frame I liberty to swing on said vertical pin or tube, and allows the tool Z to be swung in a circle around the pin b^3. The working end of the tool Z is directly under the center of the pin b^3. In the same way, substantially, are the pins N and N^3 swiveled in the slides O, respectively. Double cranks d^3, projecting from the pins N and N^3, can, by rods e^3, be connected with a double crank, f^3, on the frame I. The lower end of the pin N or N^3 which is in use is flattened, to have an edge similar to that of the tool Z, so that when the tool is turned on the pin b^3 the pin N or N^3 will be turned in equal manner, so that the flat faces will always be parallel.

Fig. 4 shows a modification of the tool-hanging device, in which the bracket *w* is dispensed with, the frame I being directly swiveled to the beam J, and the tool-spindle connected by a belt with central spindle g^3, which receives its rotary motion from stationary machinery.

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

1. The tilting platform E applied to the longitudinal carriage B of an engraving-machine, substantially as and for the purpose herein shown and described.

2. The slotted segments *h* applied to the pivoted platform E for connecting the same with the supporting-slide B, substantially as specified.

3. The nut *d d* on the carriage B, when applied substantially as specified.

4. The screw H for moving holders G in the tilting platform E, when hung in said tilting platform to adapt itself to the movements thereof, as set forth.

5. The combination of the longitudinal screws C and H with the carriage B, platform E, and disks G G, substantially as herein shown and described.

6. The beam J, made longitudinally and vertically adjustable, as set forth.

7. The swivel-frame I, arranged to receive and support the tool Z, as set forth.

8. The connecting-rod e^3, arranged between the swivel-frame I and swivel-pin N or N^3, as set forth.

9. The combination of the frame I directly with the beams J, as in Fig. 4, and as described.

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