

(No Model.)

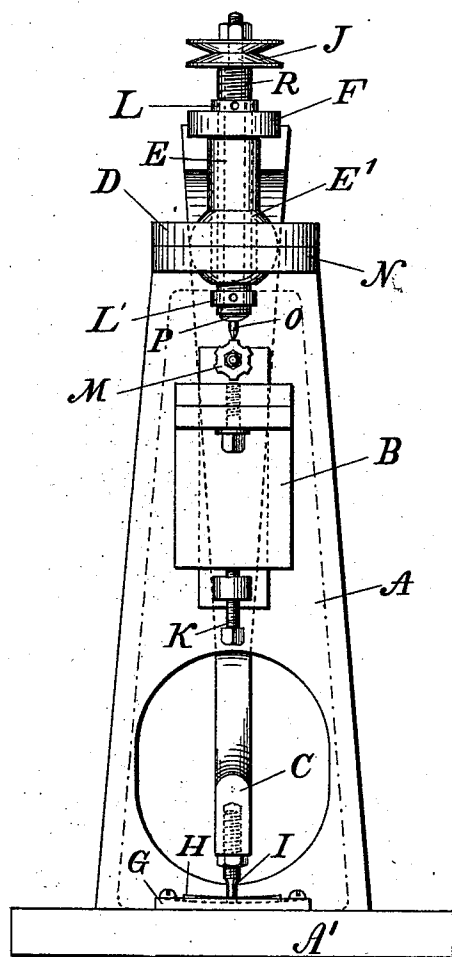
4 Sheets—Sheet 1.

H. A. CHASE.
ENGRAVING MACHINE.

No. 517,680.

Patented Apr. 3, 1894.

Fig. 1.



WITNESSES:

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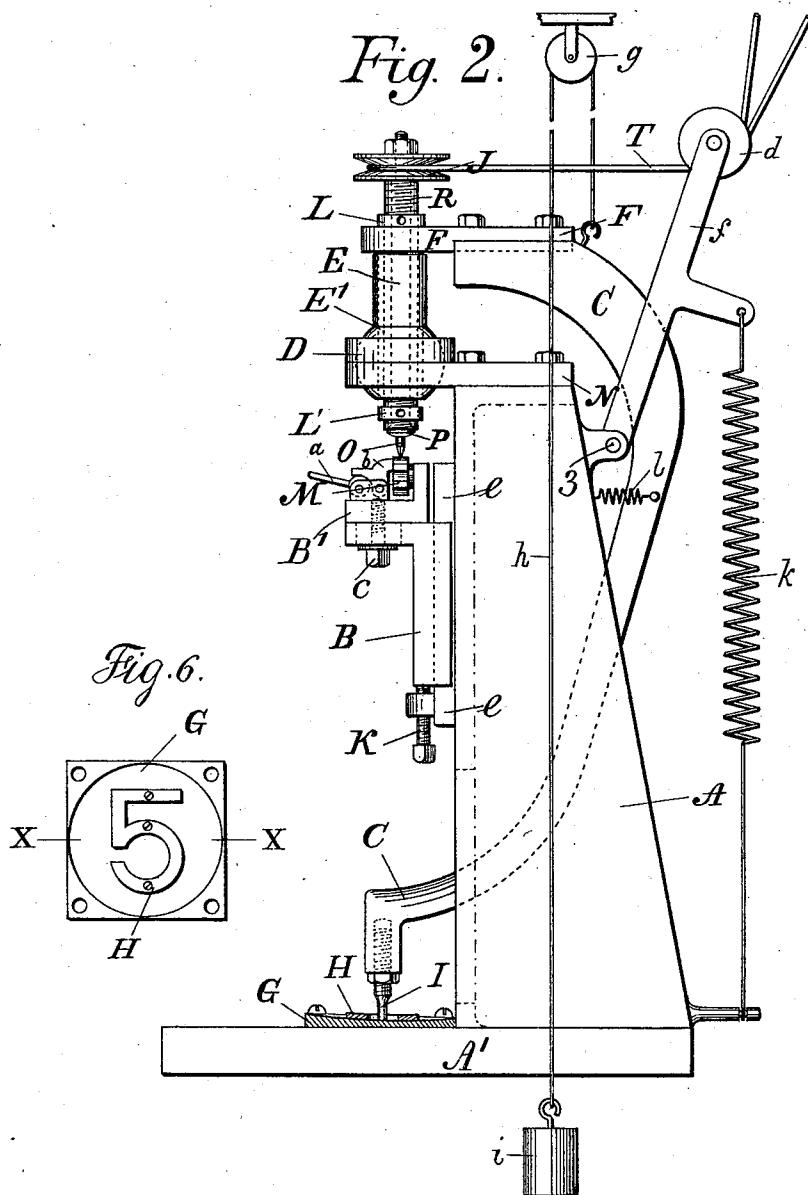
(No Model.)

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H. A. CHASE.
ENGRAVING MACHINE.

No. 517,680.

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Fig. 4.

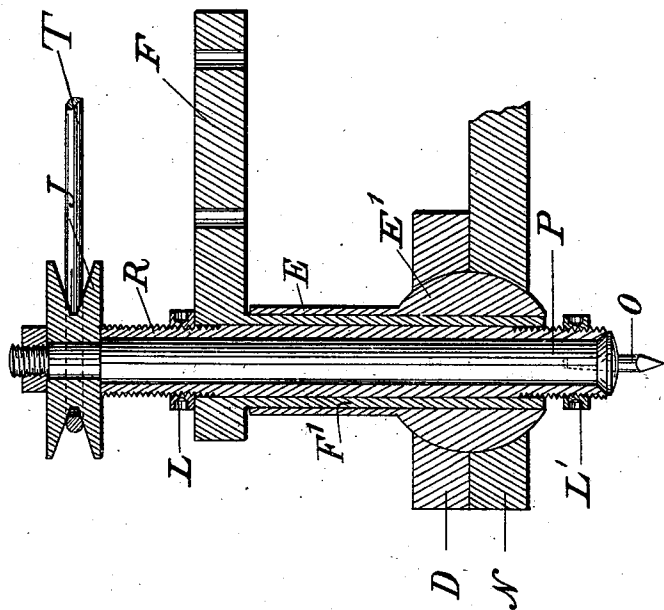
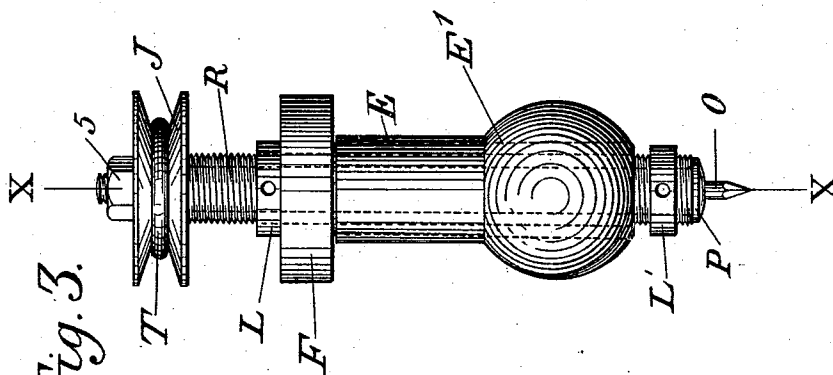


Fig. 3.



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(No Model.)

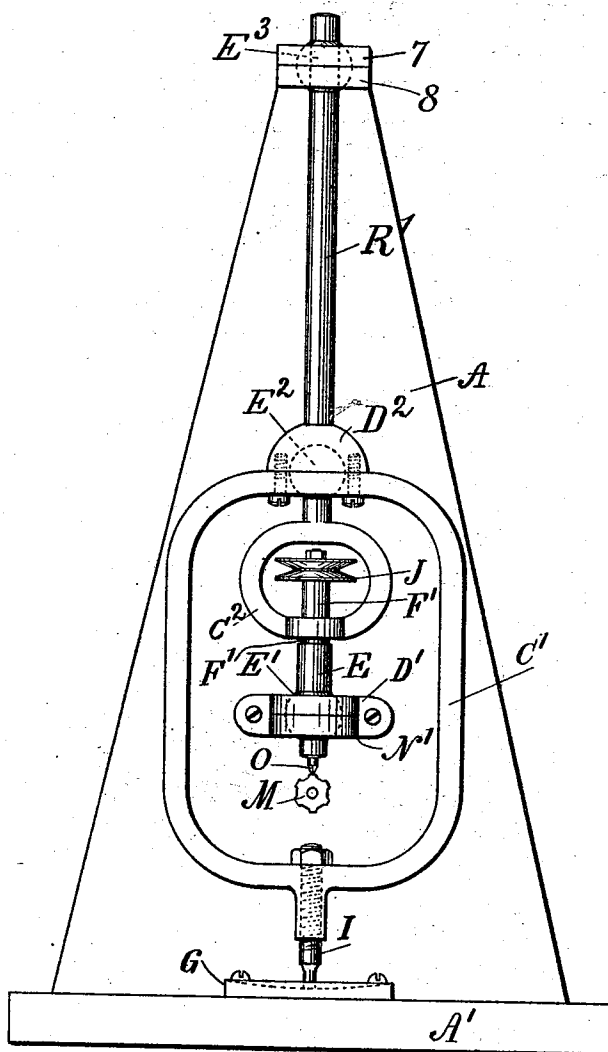
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Fig. 5.



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UNITED STATES PATENT OFFICE.

HENRY A. CHASE, OF BROOKLYN, ASSIGNOR TO WILLIAM A. FORCE & CO.,
OF NEW YORK, N. Y.

ENGRAVING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 517,680, dated April 3, 1894.

Application filed May 29, 1893. Serial No. 475,954. (No model.)

To all whom it may concern:

Be it known that I, HENRY A. CHASE, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Engraving-Machines, of which the following is a specification.

My invention relates to apparatus for engraving letters, numbers and characters, upon metal work blanks, such blanks for instance as are employed in dating and printing stamps and numbering machines. Heretofore letters, numbers or characters formed upon metal work blanks have been cut or engraved by hand, or formed by a rolling or knurling movement, or have been stamped up by means of sectional dies. All of these methods are expensive and more or less unsatisfactory in results and the object of my invention is to expedite and cheapen the production of such engraved metal blanks and also to improve the quality of the work.

In carrying out my invention I make use of a rotary bevel pointed cutter, adapted to act upon the work blank, and the mechanism employed is capable of imparting to the cutter a vertical movement into and out of contact with the work. The cutter and the mechanism carrying the same is also capable of an all around movement within prescribed limits by means of a ball and socket joint and a depending arm connected therewith on whose lower end is a pointer. A pattern plate and pattern is employed around and within whose outline the pointer is moved and caused to "follow copy" and said pattern is copied or transcribed on a greatly reduced scale by the rotary cutter upon the work blank in forming letters, figures and characters. The work blank is held and gripped or locked in and by a carrier or chuck that is adjustable to bring the work blank up in position to the rotary cutter.

In the drawings Figure 1, is a front elevation illustrating my improvement. Fig. 2, is a side elevation of the same. Fig. 3, is a front elevation and Fig. 4, a vertical section sidewise upon an enlarged scale of the cutter mechanism and the ball and socket joint, and

Fig. 5, illustrates a modified form of mechanism, and Fig. 6, is a plan view of the pattern and pattern plate.

The standard A is supported upon a bed plate A' and said standard has an opening in the lower portion of the front through which passes the arm C. The form of the standard is shown by the dotted lines in Figs. 1 and 2.

Upon the face of the standard A, is a slide way *e* with a lug at its lower end through which passes the screw bolt K. An adjustable sliding head B can move vertically on the slide way *e*, the position of the head B, being determined by the bolt K. The upper end of the head B is made as a projecting arm which supports the adjustable chuck or holder B', and a clamping bolt *c*, passes through a mortise in the arm of the head B into the holder B', to secure the parts together; the mortise providing for the forward and backward adjustment desired. The work blank M is supported by passing its open center over a boss projecting from the upturned portion of the adjustable chuck B', and a pivoted clamp block *b*, is operated by a cam lever *a* to clamp and hold the work blank M, while the cutter O, is operating thereon and cutting or engraving letters, figures or characters.

Upon top of the standard A is secured a plate N, which projects from the face of the standard and whose outer end is perforated and concaved to form half of a socket, and the other half of the socket is formed in the under surface of the perforated plate D, which is secured to and upon the plate N. These sockets coincide and receive the ball E' at the lower end of the sleeve E and said ball is free to turn in said socket and the sleeve E to rock therewith. The plate F carries a depending sleeve F' which sleeve sets within the sleeve E and ball E' the plate F being in close proximity to the upper end of said sleeve E. An adjustable sleeve R preferably screw threaded at its respective ends passes through the plate F and down through its sleeve F' and the same is provided with adjusting nuts or collars L, L'. The nut or collar comes against the upper face of the plate F and the nut or

collar L' below the lower end of the sleeve F' and ball E', at a distance represented by slightly more than the vertical working face of the cutting tool.

5 Within the adjustable sleeve R, is the driving spindle P, in whose lower end is provided a taper hole to receive the cutting tool O. The upper end of the spindle P, is reduced to receive the spindle pulley J which is clamped
10 to the spindle by the nut 5. The spindle pulley J rests upon the upper end of the sleeve R, and the lower end of said spindle is preferably made flaring. The spindle pulley is driven by the endless belt T, and a lever *f*
15 pivoted at 3 to the back of the standard A carries at its outer end a pulley *d* around which the belt T passes to the source of power. A helical spring *k* connected at one end to the lever *f* and at the other end to a
20 stud projecting from the back of the standard acts to keep the belt T strained or taut. An arm C of curved conformation has connected at its upper end the top plate F and said
25 arm extends around back of the standard A and forward through the opening in its front face and its lower vertical end is provided with an adjustable pointer I. A pattern plate
30 G is secured to the bed plate A' upon approximately the vertical center of the driving spindle P as seen in the elevation, Fig. 1, and the surface of the said pattern plate is concaved upon an arc struck from the operative center
35 of the ball end E' and a pattern H in the form of the letter, figure or character to be engraved on the work blank is fastened in the concave center of the plate G. A cord *h*
40 passes over a pulley *g* from a hook upon the upper end of the arm C, and at the lower end of this cord *h* is a weight *i*, which is almost equal to the combined weight of the
45 arm C, top plate F and the movable parts supported by said plate F, and within the sleeve E, and ball end E'. The object of this is to cause the arm C and its end pointer I to bear
50 lightly upon the pattern plate G, so as to be readily moved in any direction by the operator without tiring the hands. Small helical springs *l* connect the opposite faces of the arm C, with the back edges of the standard and
55 their object is to maintain the arm C centrally in its relation to the standard.

In working the mechanism and for the sake of the illustration the pattern H to be engraved and which is secured to the pattern
55 plate G, is a figure 5. (See Figs. 2 and 6.) The operator places a work blank M in position on the adjustable chuck or holder B' and clamps it in place by the clamp block and cam lever described, it being understood that
60 while this is being done, the arm C, plate F, sleeve F', sleeve R, spindle P, cutter O, pulley J, nuts L L' and pointer I are all slightly raised with the pointer I turned to one side off the pattern plate G resting on a block slightly
65 thicker than the pattern plate, the cutter O however being run rapidly by the belt T. All now being ready the operator grasps the lower

end of the arm C adjacent to the pointer I and brings the pointer over to one corner of the pattern plate and simultaneously the cutter O down upon the work blank. The operator now moves the pointer back and forth
70 and in any desired direction over the pattern plate concave from the respective edges inward to the edges of the pattern, after which
75 the edges of the figure 5 or other letter or character are carefully followed around with the pointer. Meanwhile the cutter operating upon the face of the work blank has been
80 caused to "follow copy" on the reduced scale and the figure 5 is cut or engraved upon the work blank and the same is removed. Another blank M is now clamped in place and a
85 figure 5 engraved on it in like manner. Other figures, letters or characters replace the figure 5 and one another upon the pattern plate as desired. From the shape of the cutter O it
90 will be understood that the letters, figures or characters engraved have bases that are somewhat wider than their faces.

In the modification shown in Fig. 5 the arm C' carrying the pointer I at its lower end is made as a yoke having a socket D' at its upper end. With the socket D' is connected a
95 shaft R' whose upper end passes freely through a ball E² received in a socket formed within the plates 7 and 8 on top of the standard A. The ball E² is received in the socket
100 D' and it is connected to the small yoke C² through the base of which passes the sleeve F'. The socket plates D' and N' are fastened to the standard A and receive the ball E' of the sleeve E through which passes the sleeve
105 F'. The pulley J and wheel blank M are the same as heretofore described. In this modification the hand or hands grasp the lower end of the yoke C' and move it backward and forward or sidewise in a vertical plane, and
110 this movement swings the parts on the central line and the cutter O, in a decreased ratio, the said cutter being caused to "follow copy" as the pointer is moved around the pattern and over the pattern block in the manner
115 hereinbefore described.

I claim as my invention—

1. The combination with means for holding the article to be engraved, and a pattern plate, of a spindle, a tool carried thereby, a bearing or sleeve for the spindle, a universal joint
120 holding the spindle bearing and in which it is movable endwise, an arm connected with the spindle bearing at one end, and a pointer carried at its other end, whereby the engraving tool receives a proportional movement
125 and is lifted off the work by the lifting of the pointer from the pattern, substantially as specified.

2. In an engraving machine, the combination with a ball and socket device, of a spindle and cutter, a sleeve surrounding the spindle
130 and passing through the ball and socket device, and means for longitudinally adjusting said sleeve, an arm connected to said sleeve and adapted to lift the sleeve, spindle

and cutter vertically, and a stop for limiting the upward movement, substantially as set forth.

3. In an engraving machine, the combination with a rotary cutting device and means for holding the work blank, of a supporting standard having an opening in the face thereof, an arm connected directly with the cutter mechanism and adapted to move the same both vertically and laterally, said arm extending down behind the standard and forward through said opening therein and terminating in a pointer, a pattern plate located in front of the standard and containing a pattern around which the pointer is to be moved, substantially as set forth.

4. In an engraving machine, the combination with a pattern plate, a spindle and cutter, means for rotating the same, and a support therefor, of an arm connected to the spindle support and extending downward to a pattern plate and adapted to move the cutter in a decreased ratio, and a counterbalance mechanism for the spindle mechanism and arm, substantially as specified.

5. In an engraving machine, the combination with a universal joint mechanism, a spindle and a cutter and a support therefor, of an arm connected to the spindle support and extending downward and terminating in a pointer, a pattern plate having a concave surface made as an arc from the center of the universal joint mechanism and containing a number, letter or character around which said pointer is adapted to be moved while the cutter is caused to "follow copy" in a decreased ratio in engraving the work blank, substantially as set forth.

6. In an engraving machine, the combination with a standard and a base therefor; of a slide way *e* secured vertically upon the face of the standard and carrying a screw bolt *K*, a sliding head *B* movable upon said slide way and adjusted by said screw bolt, an adjustable chuck or holder *B'* and a clamping bolt *c* for connecting the same upon the sliding head *B*, and a clamp block *b* and cam lever *a*

for holding the work blank in place, substantially as set forth.

7. In an engraving machine, the combination with the standard *A* and a base therefor, of the socket plate *N* connected to the upper end of the standard and projecting therefrom, the upper socket plate *D*, the sleeve *E*, its ball *E'* received within and between said socket plates, the top plate *F* and its integral sleeve *F'* passing down within said sleeve and ball, the adjustable sleeve *R* screw-threaded at its respective ends and passing through the plate *F* and sleeve *F'* and provided with adjusting nuts *L L'*, the driving spindle *P* passing through the sleeve *R*, the pulley *J* and belt *T* for rotating the same, substantially as set forth.

8. In an engraving machine, the combination with the standard *A* and a base therefor; of the socket plate *N* connected to the upper end of the standard and projecting therefrom, the upper socket plate *D*, the sleeve *E*, its ball *E'* received within and between said socket plates, the top plate *F* and its integral sleeve *F'* passing down within said sleeve and ball, the adjustable sleeve *R* screw-threaded at its respective ends and passing through the plate *F* and sleeve *F'* and provided with adjusting nuts *L L'*, the driving spindle *P* passing through the sleeve *R*, the pulley *J* and belt *T* for rotating the same, a curved movable arm *C* to whose upper end the top plate *F* is securely fastened, a pointer at the lower end of said arm *C* adapted to be moved across the face of a pattern plate *G* and around and within the pattern *H*, whereby the cutter is moved in relation to the pointer and caused to "follow copy" and whereby the cutter can, by the vertical movement of the arm, be raised out of or brought into operative contact with the work blank, substantially as set forth.

Signed by me this 10th day of May, 1893.

H. A. CHASE.

Witnesses:

GEO. T. PINCKNEY,
HAROLD SERRELL.