

Engraving Machine,

N^o 60,506.

Patented Dec. 18, 1866.

Fig: 1.

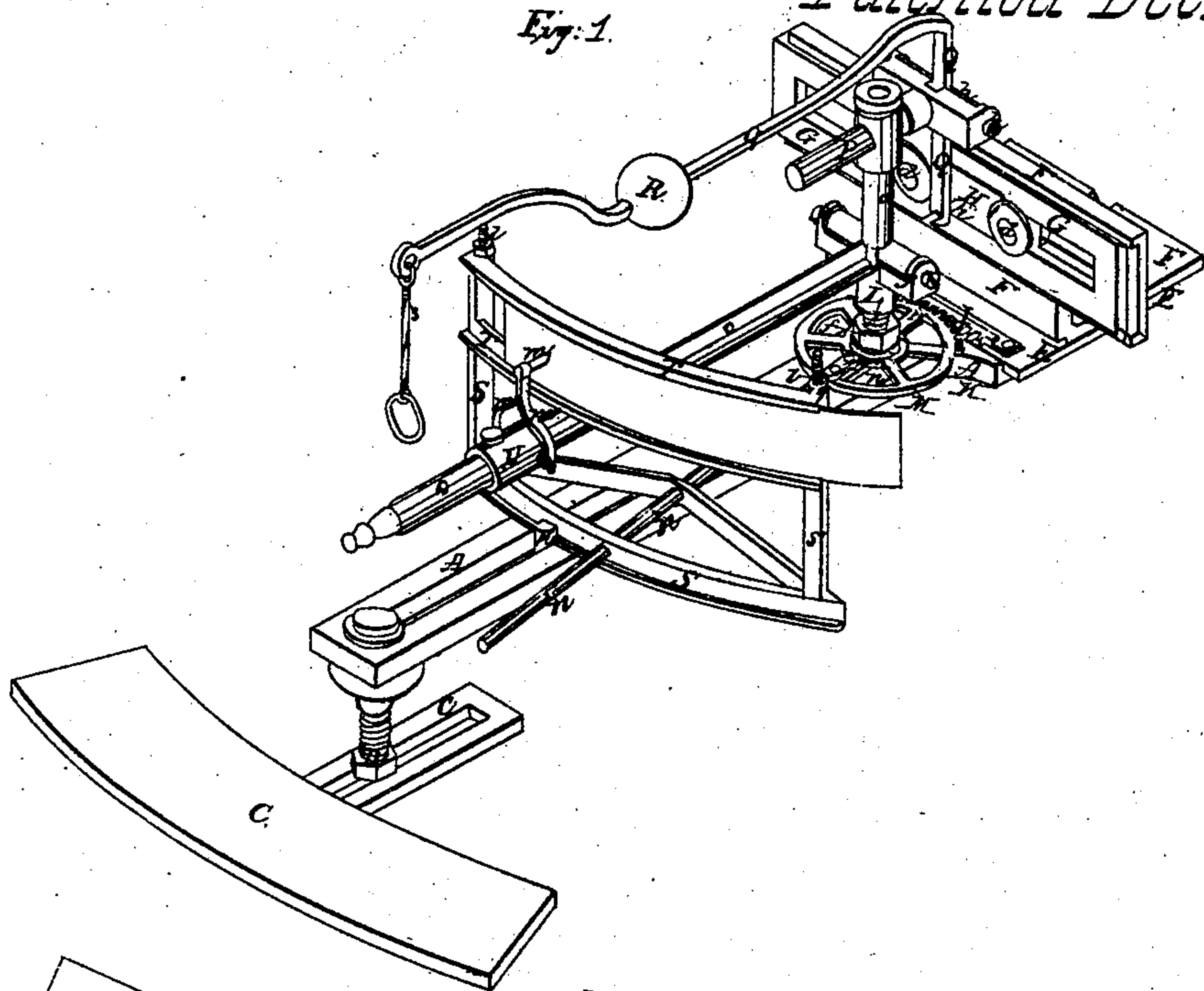
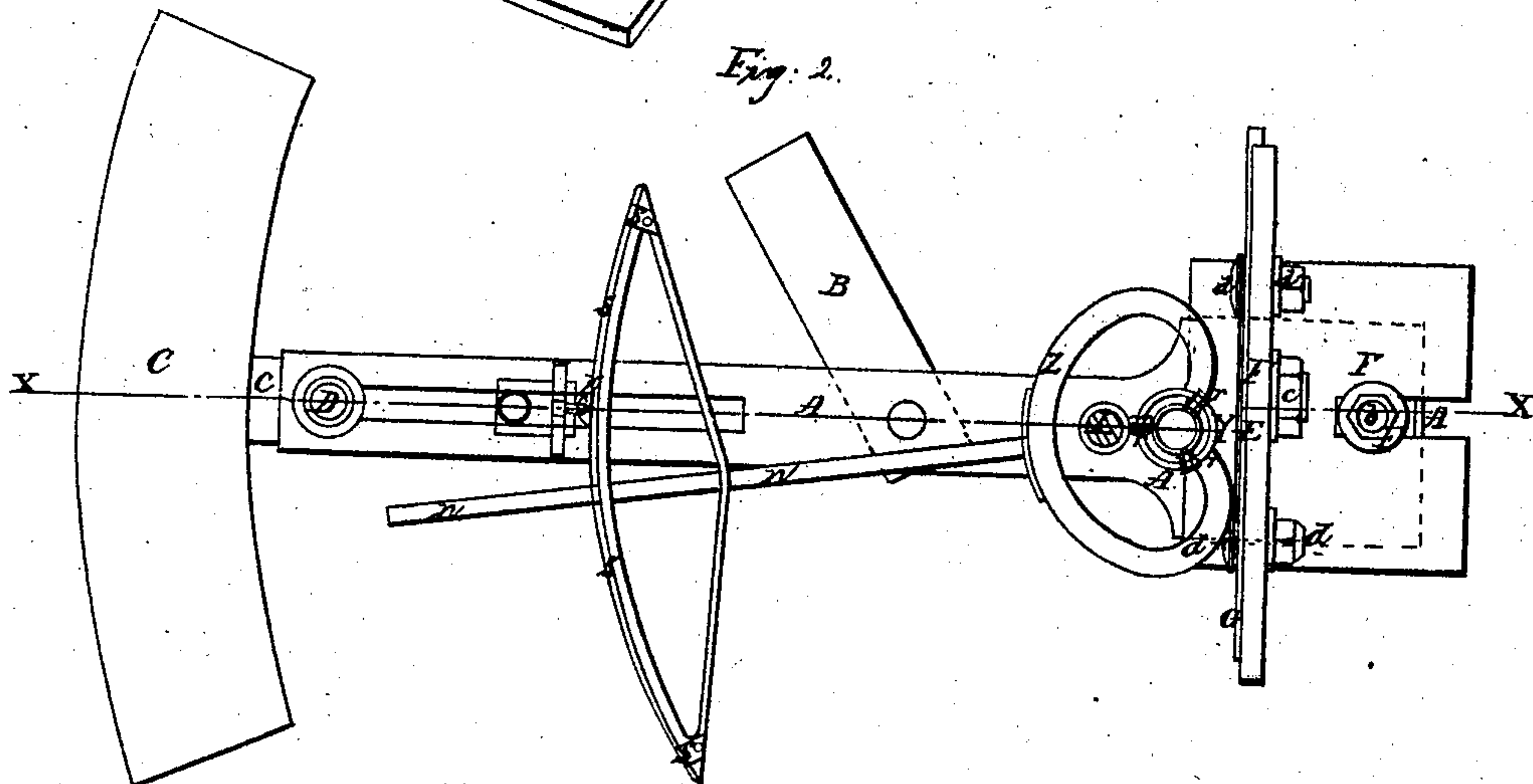


Fig. 2.



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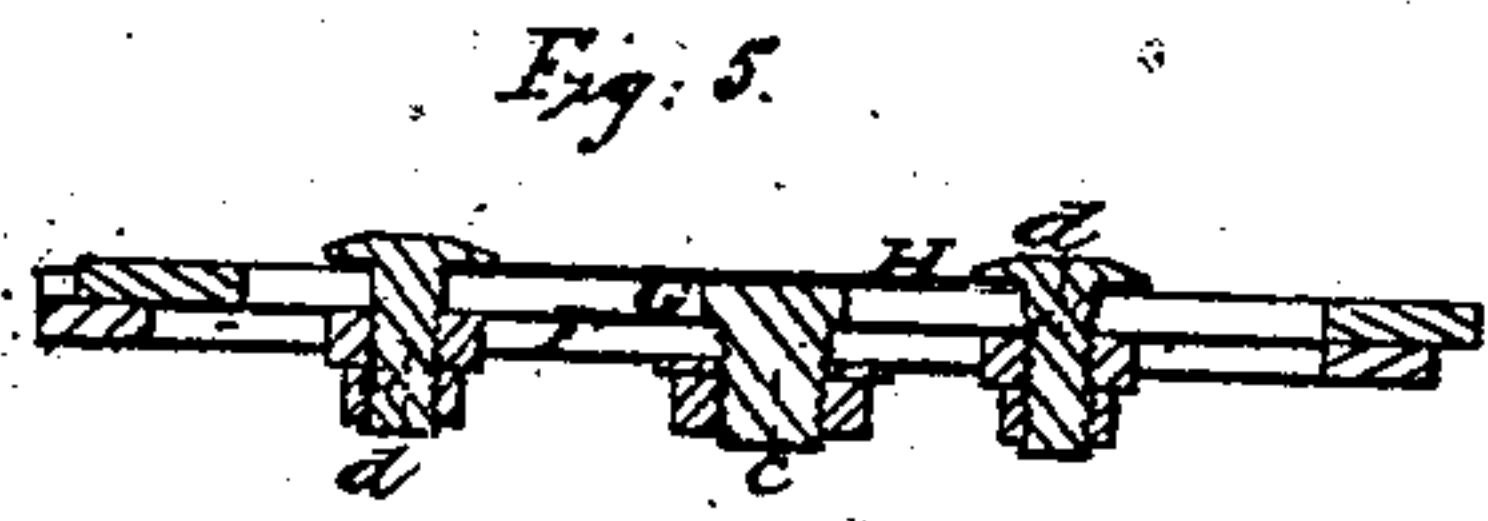
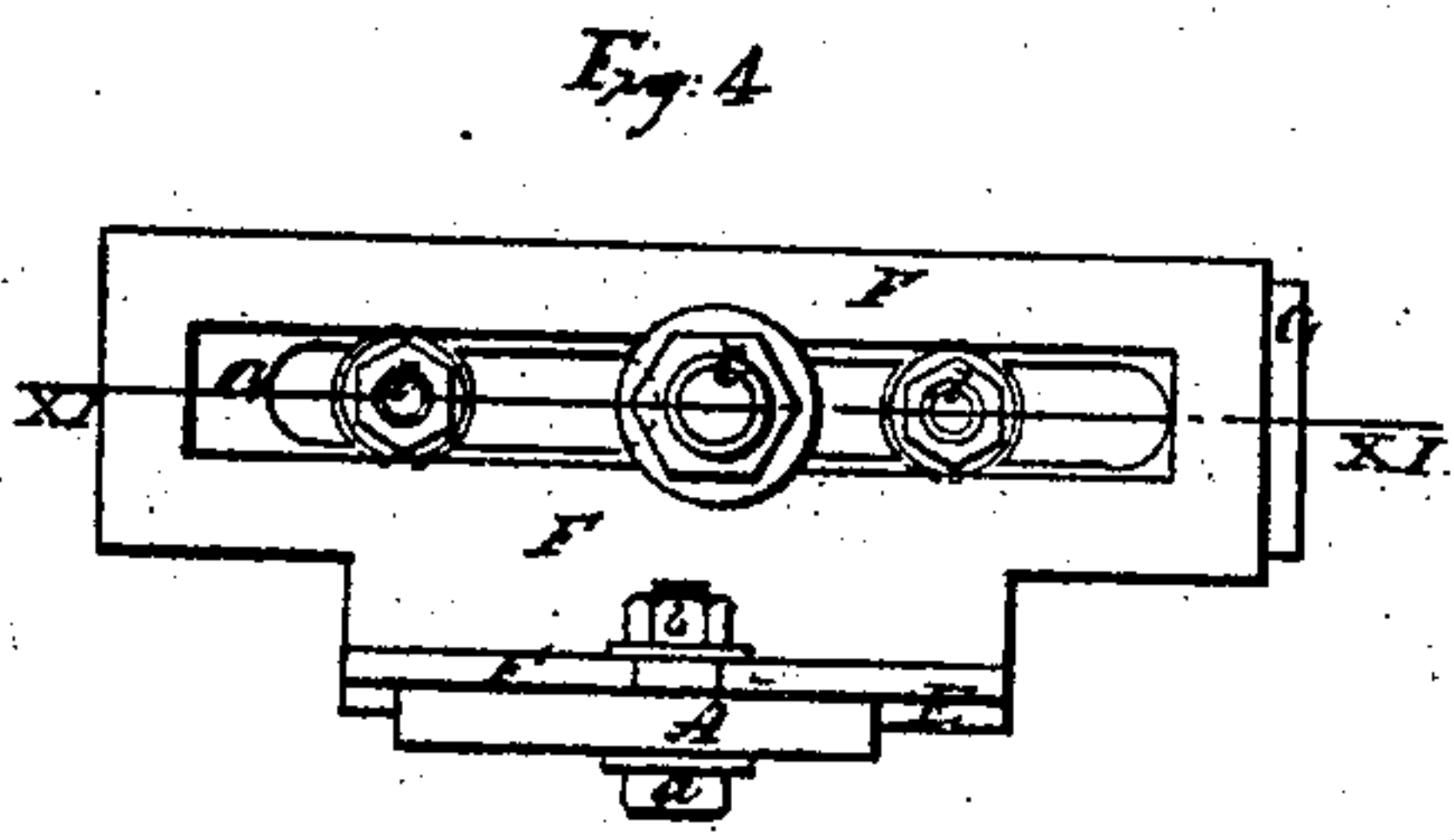
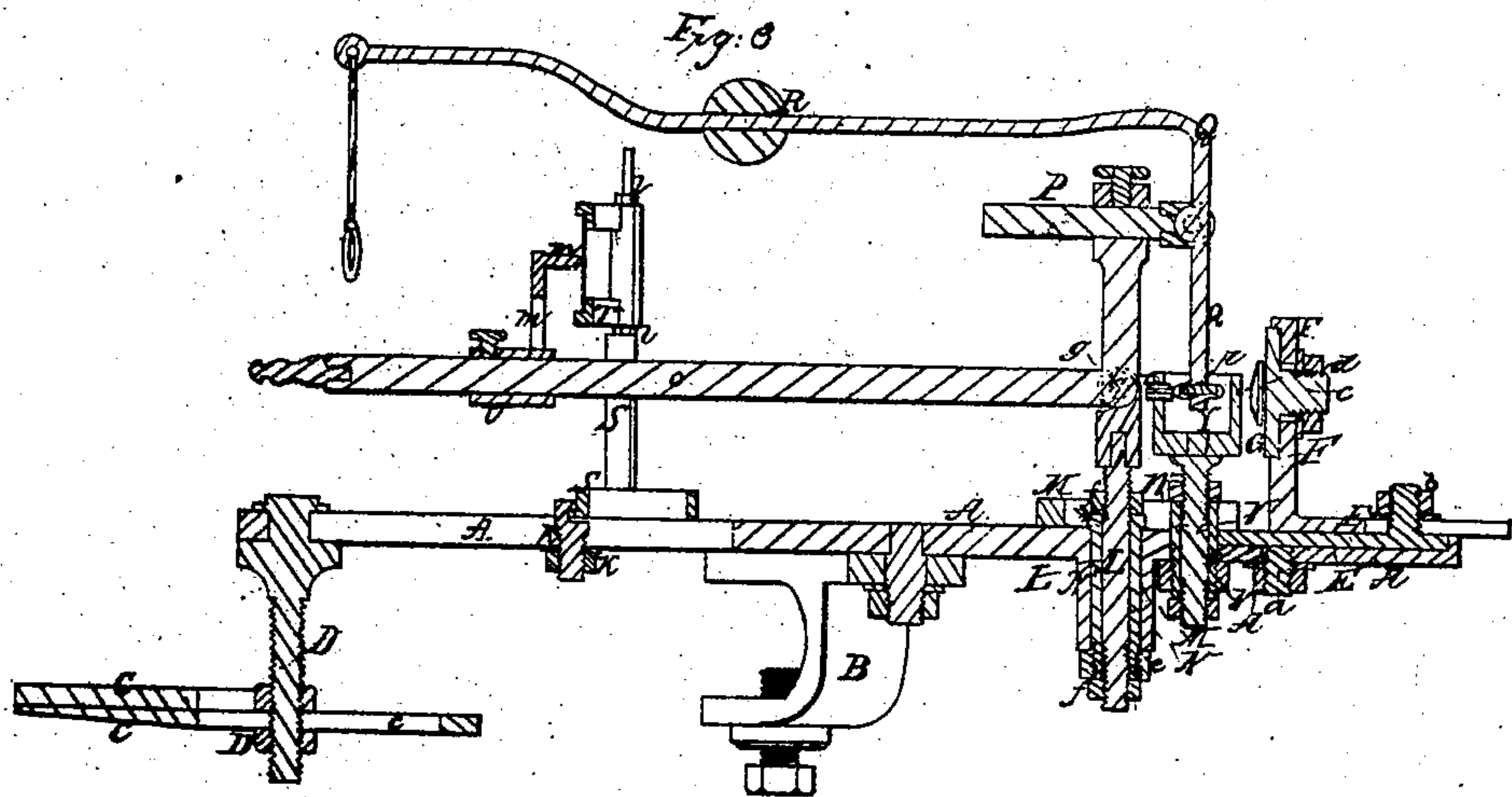
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UNITED STATES PATENT OFFICE.

J. C. GUERRANT AND B. J. FIELD, OF LEAKSVILLE, NORTH CAROLINA.

MACHINE FOR ENGRAVING.

Specification forming part of Letters Patent No. 60,506, dated December 18, 1866.

To all whom it may concern:

Be it known that we, J. C. GUERRANT and B. J. FIELD, of Leaksville, in the county of Rockingham and State of North Carolina, have invented a new and useful machine for the purpose of rendering the art of engraving upon plates of metal or other material easy to accomplish by any person of ordinary mental capacity; and we do hereby declare the following to be a full, clear, and exact description thereof, so that any one skilled in the art of working wood and metals will be enabled to construct and apply the same to use, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1 is an isometrical projection showing our engraving-machine. Fig. 2 is a plan or top view of the same with a portion of the apparatus removed. Fig. 3 is a vertical longitudinal section on the line XX of Fig. 2. Fig. 4 is an end elevation, and Fig. 5 is a horizontal section on the line XI XI of Fig. 4.

In Fig. 1 the machine is represented as in condition for engraving upon a plane surface, as a plate, and in Figs. 2 and 3 it is shown as adapted to engrave upon the inside of a finger-ring.

In all the figures like parts are indicated by the same letters of reference.

A A is a plate which supports all the working parts of the apparatus, and which may be secured to a bench or table by means of the screw-clamp B or any equivalent device. At or near the front end of the plate A is attached a hand-rest, C, rendered adjustable vertically and horizontally by means of the screw and nuts D and the slot in the bar C'. At the rear end of the plate A is a depression to receive the plate E, which has liberty to slide freely crosswise on the plate A, which is here widened to give bearing to the plate E, which last has its top surface flush or in the same plane with the surface of the plate A, not forming a bed for itself. The plate A has an adjusting-slot, A', (seen in the section Fig. 3,) extending across it, through which a screw-bolt, a, passes from the plate E, and the two plates are secured together in adjustment by the nut on the screw-bolt a. Another plate F F' rests upon the plate E, and is free to move to and from the operator on the plate E, to which it can be adjusted and secured by means of the screw-bolt and nut b. The upright part F' of

the plate F has on its front face a depression or recess to receive another plate, G, which also has a longitudinal motion independent of the plate F F', to which it may be adjusted and secured by the bolt and nut c through the longitudinal slot in the part F' of the plate F F'.

To the plate G is secured the plate or surface H upon which the device is to be engraved. This is effected by means of the clamping-screws d d, (shown distinctly in Figs. 1, 4, and 5,) which pass through slots in the plate G without being in contact with the plate F F'.

To the front edge of the plate E is secured a rack, I, meshing with a segmental spur-gear, K, (seen only in Fig. 1,) playing loosely on the staff L, for a purpose to be hereinafter described. This staff L, Fig. 3, passes vertically through the sleeve M, which is free to turn in the socket N, attached to and forming part of the plate A. The sleeve M has a shoulder at its upper end, which rests upon the eye of the spur-gear K and prevents it from getting out of the rack I when it is used. At other times the shoulder rests upon the top of the plate A, and a nut, e, keeps the sleeve M in its place in the socket N. The staff L is kept to its adjustment in the sleeve M, and is regulated in its vertical position by the nuts f f above and below the sleeve M.

To the staff L is jointed at g the lever O O', which, it will be seen, has a universal motion around the axis of the vertical staff or spindle L and on the horizontal joint g. The upright O' on the end of the lever O supports at its top an arm, P, made adjustable through the head of the upright O', to which arm is jointed at h the lever Q Q', descending vertically from the joint to a point in the prolongation of the axis of the lever O, which also passes through the axis of the joint g, where it receives the graving-tool i. The lever Q Q', carrying the graving-tool, is bent forward so as to extend toward the operator, and is furnished with a weight, R, which, by shifting its position on the lever Q', will exert a varying force, as may be desired, to press and keep the point of the graving-tool i against the surface to be operated upon.

A metallic arc, S, rests on the plate A, and is secured in position by means of the pin k passing through the slot in the plate A, where it is held by a nut, k', pressing against the under side of the plate. From the extremities

of this arc rise standards $S' S'$, supporting a frame, T , of about the same curvature as the arc, and made adjustable vertically by means of the screws and nuts $l l$. Fitting between ledges or in grooves in the top and bottom of the frame T is a thin plate, on which the pattern of the device or design to be engraved is secured. An adjustable sleeve, U , slides freely on the lever O , and is held in adjustment by a set-screw. A stylus or pointed follower, m , is attached by thin elastic arms $m' m'$ to the sleeve U by means of small pivots passing through the ends of the arms m' , around which pivots, between the sleeve U and the ends of the arms m' , small spiral springs are so set as to have one end secured to the sleeve, while the other end presses against the arm m' and keeps the point of the stylus against the pattern on the thin plate in the frame T .

The arc S and frame T are attached to the spur-gear K by a rod, n , which passes through the arc in a direction normal to its curve, near the plate A ; and as the arc and frame supporting the pattern may be swung or vibrated around the staff L as a center, so the spur-gear K will cause the plate E to slide upon its bed, carrying with it the plates F and G , in a direction contrary to that taken by the arc. The object of this arrangement is to change the position of the plate to be graven, as well as that of the pattern, without altering the field of motion of the lever O .

When it is required to engrave on the inner or concave surface of a ring, the spur-gear and rack are removed and a staff or spindle, V , adjustable in the sleeve W , is used, carrying on its upper end the ring-holder Y , Figs. 2 and 3. This ring-holder is a cup or hollow cylinder, within which the ring can be placed concentrically and held by the set-screws $r r$, which press upon the outer surface of the ring and leave the inner surface uninterrupted for the action of the graving-tool, as seen in section, Fig. 3. In this case the rod n connects the arc S and its adjuncts with the ring in the holder by means of the yoke Z , within which the staff or spindle L rises, out of the way of interference with the rod n .

To the front end of the bent lever Q is attached an elastic cord, s , furnished with a ring for the finger, which is to be used whenever it is necessary to give the graver more force than would be derived from the weight R .

The operation of our machine is as follows: The plate or the ring to be engraved, as the case may be, having been fixed in position, the pattern is secured upon the plate in the frame T , which is then adjusted vertically and laterally by the means described of the pin k and

the rod M and screws $l l$. The sleeve V , supporting the stylus m , is then adjusted so that the point of the stylus may press upon the pattern and follow it in tracing every part. Motion is then given to the lever O , causing the stylus to follow the lines of the pattern, when the graver will produce an exact fac-simile upon the surface to be wrought upon, the joint h in the arm P allowing the graver to compensate for the difference between the plate to be engraved and the curved surface of the pattern. It will be seen that the difference in size between the pattern and the result will correspond with the difference in distance from the center of the joint g of the stylus-point and the point of the graving-tool.

For the use of persons who are nervous or are unaccustomed to the business, or whose hands are unsteady from any cause, the letters or device to be copied upon the plate may in the pattern be sunk, embossed, or grooved, so that the point of the stylus may follow the pattern without wavering.

Having thus fully described our invention, what we claim as new therein, and desire to secure by Letters Patent, is—

1. The arrangement, substantially as described, of the adjustable plates $E F G$, with their slots and set-screws, in combination with the supporting-plate A , for the purpose and substantially in the manner set forth.

2. The levers $O O'$ and $Q Q'$, with the adjustable arm P and joints g and h , arranged substantially as set forth, in combination with the adjustable staff L and sleeve M , for the purpose of allowing universal motion and adjustment to said levers $O O'$ and $Q Q'$, as set forth.

3. The vibrating arc S and pattern-frame T , constructed, arranged, and operating substantially as described, and for the purpose set forth, in combination with the plate A and its adjuncts, as set forth.

4. The arrangement, substantially as set forth, of the stylus or tracing-point m and its adjuncts, whereby it will be always kept against the pattern, as described, in combination with the adjustable sleeve U , as set forth.

5. The ring-holder Y , with its set-screws $r r$, or equivalent device, arranged and made adjustable by means of the staff V and sleeve W , substantially as set forth.

To the above specification of our improvement in engraving-machines we have set our hands this 6th day of August, 1866.

J. C. GUERRANT.
B. J. FIELD.

Witnesses:

P. D. WADE,
D. E. FIELD.