

(No Model.)

4 Sheets—Sheet 1.

W. SPENCER.  
MACHINE FOR ENGRAVING BRASS OR OTHER RULES, BARS, OR  
SIMILAR ARTICLES.

No. 559,822.

Patented May 12, 1896.

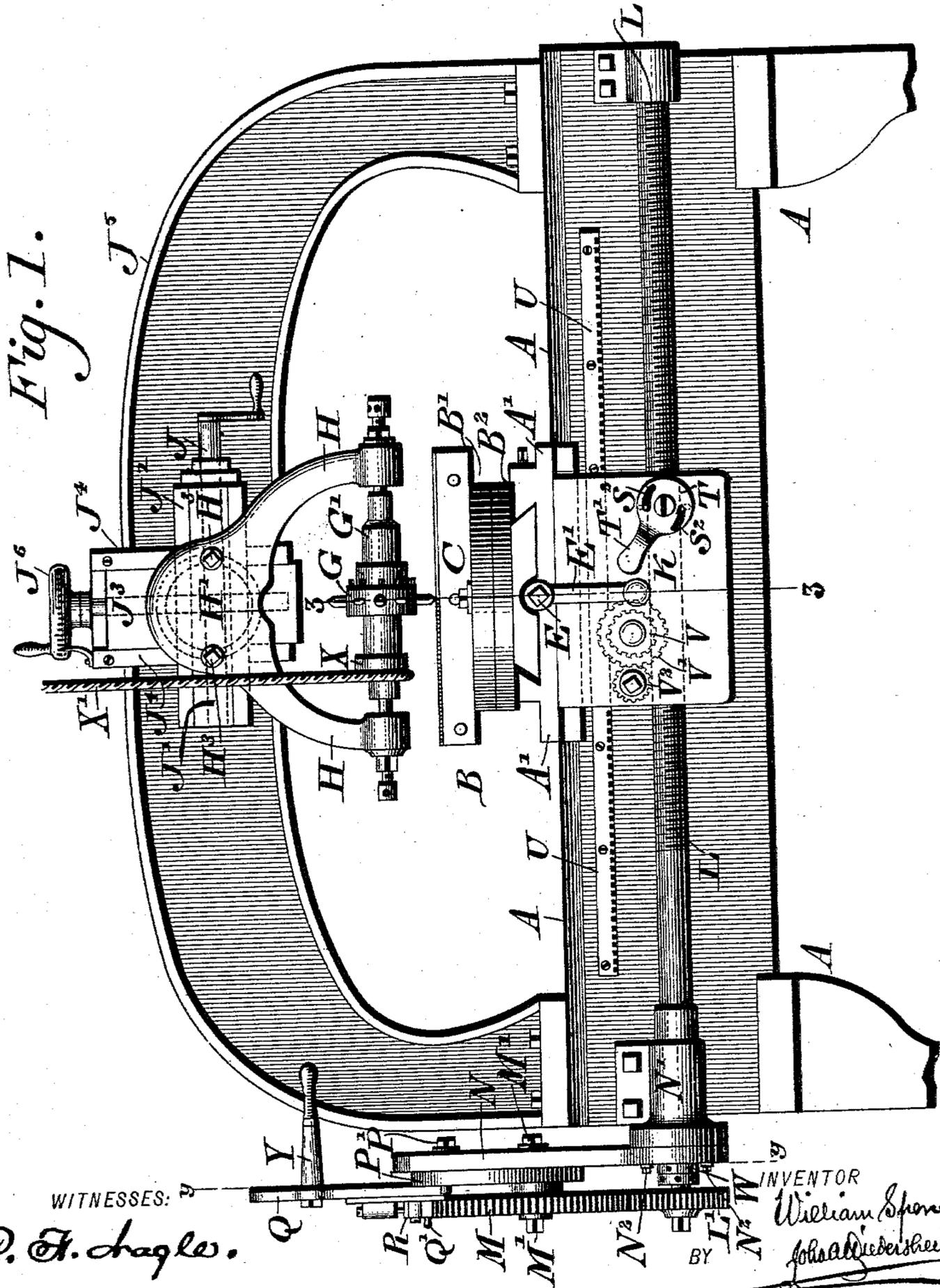


Fig. 1.

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(No Model.)

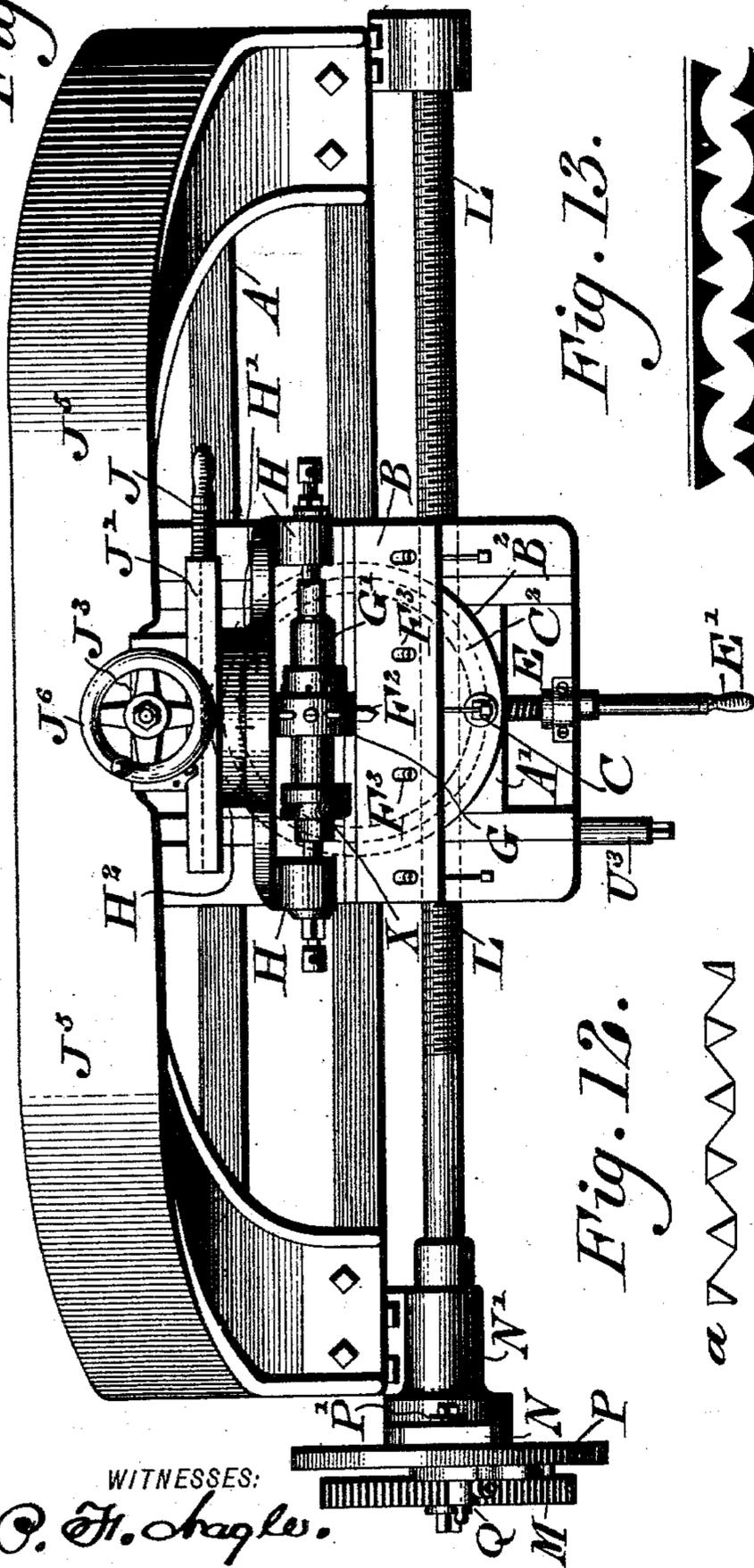
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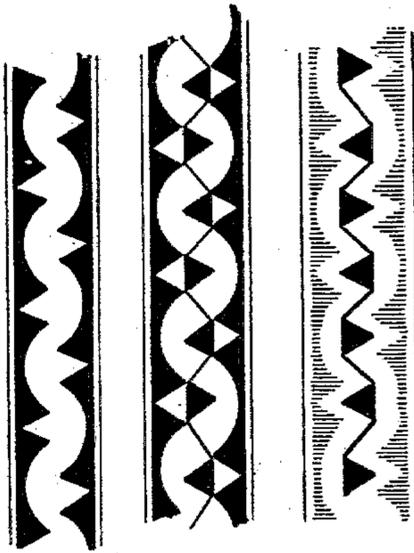
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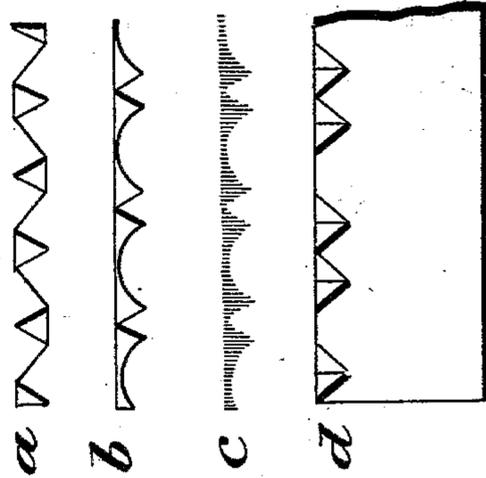
*Fig. 2.*



*Fig. 13.*



*Fig. 12.*



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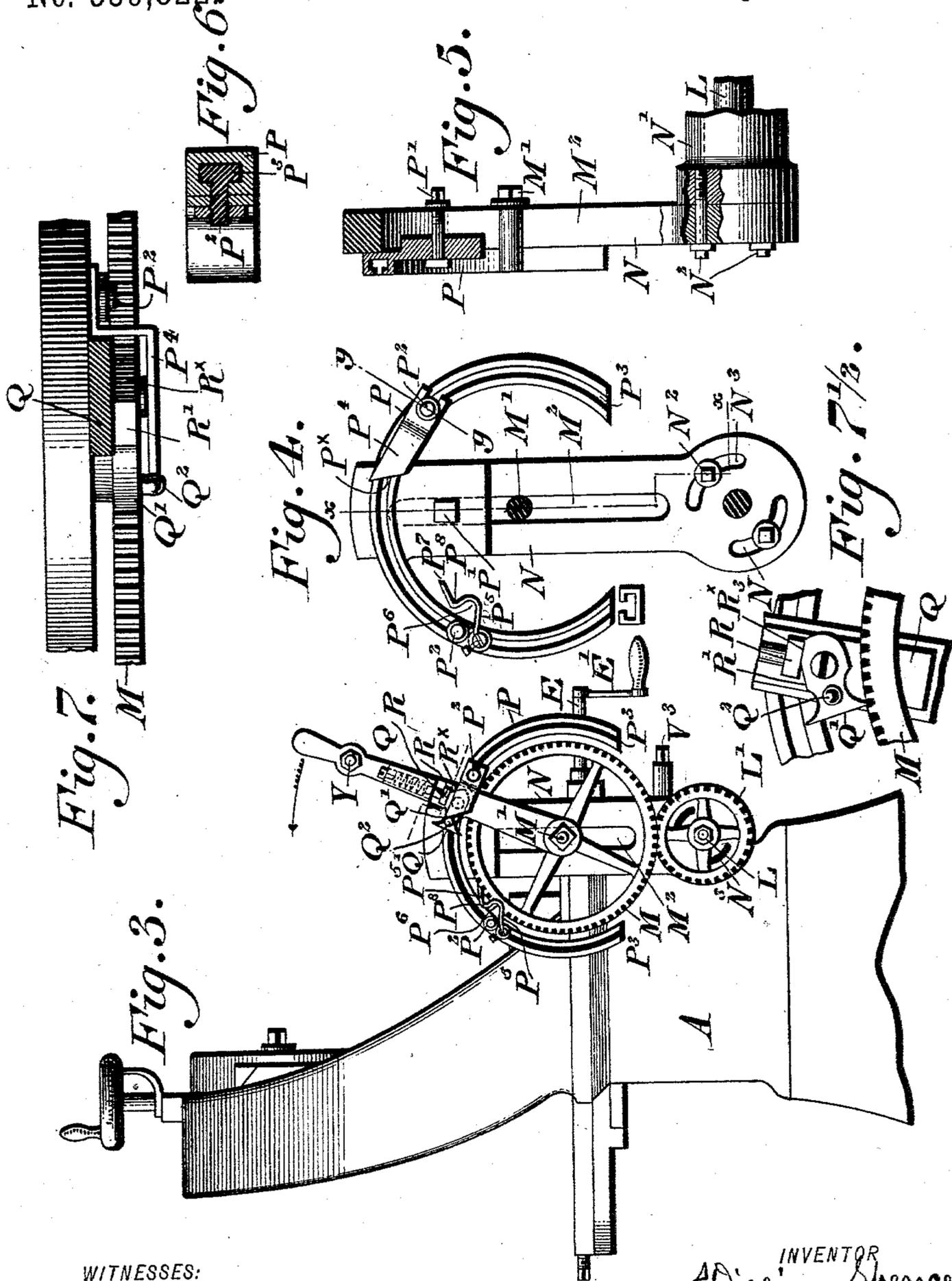
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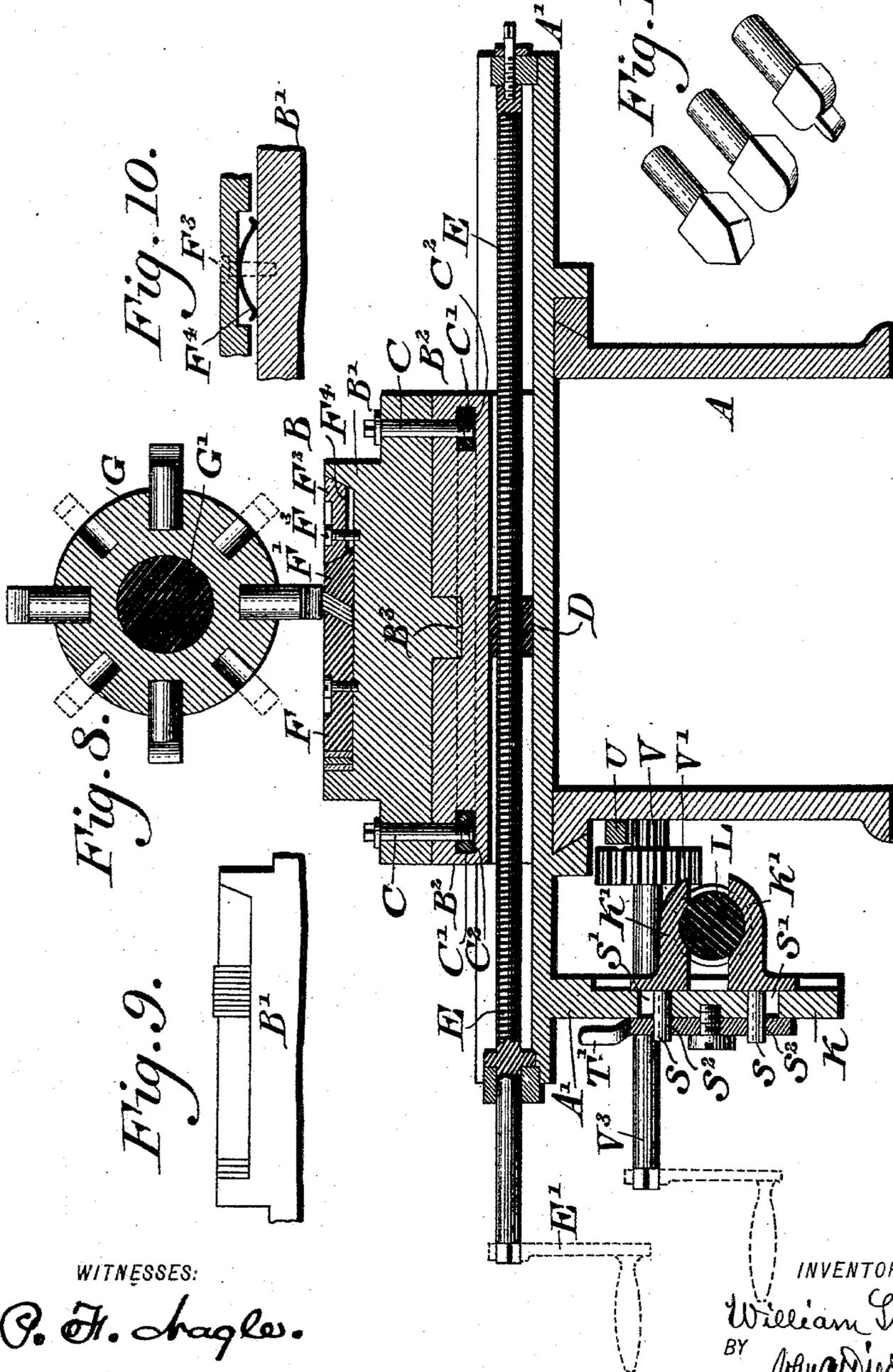
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MACHINE FOR ENGRAVING BRASS OR OTHER RULES, BARS, OR SIMILAR ARTICLES.

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# UNITED STATES PATENT OFFICE.

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MACHINE FOR ENGRAVING BRASS OR OTHER RULES, BARS, OR SIMILAR ARTICLES.

SPECIFICATION forming part of Letters Patent No. 559,822, dated May 12, 1896.

Application filed September 4, 1893. Serial No. 484,742. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM SPENCER, a subject of the Queen of Great Britain, (having resided one year last past in the United States and declared my intention of becoming a citizen thereof,) residing at Brooklyn, in the county of Kings, State of New York, have invented a new and useful Improvement in a Machine for Ornamenting Brass or other Rules, Bars, &c., which improvement is fully set forth in the following specification and accompanying drawings.

My invention consists of improvements in a machine for ornamenting rules, bars, strips, &c., whether of brass or other metal, wood, &c., whereby endless designs for unlimited combinations may be readily produced. The rule, &c., is placed in such position on a bed-plate that the entire face or edge of the same may be ornamented with a predetermined design, and then by reversing the same a different or similar design may be formed on the opposite edge or face, and provision is made for forming parallel lines on the edges or faces. Means are also employed for placing the bed-plate at different angles to the cutter and for imparting motions to the same in directions at a right angle to each other for properly feeding the rules, &c., to the cutters, and for restoring the bed-plate to its normal position, the construction of parts being hereinafter set forth, and the novel features of the invention pointed out in the claims that follow the specification.

Figure 1 represents a front elevation of a machine embodying my invention. Fig. 2 represents a top or plan view thereof. Fig. 3 represents a side elevation thereof. Fig. 4 represents a view of a detached portion on an enlarged scale. Fig. 5 represents a vertical section on line  $xx$ , Fig. 4. Fig. 6 represents a transverse section on line  $yy$ , Fig. 4, on an enlarged scale. Fig. 7 represents a partial top view and partial horizontal section of a detached portion. Fig. 7½ represents a view of a detached portion. Fig. 8 represents a vertical section of a portion on line  $zz$ , Fig. 1, on an enlarged scale. Fig. 9 represents a side elevation of a portion of the bed-plate, showing rules, &c., in perpendicular

position thereon. Fig. 10 represents a vertical section of a portion of the bed-plate and means for holding the rules in position thereon. Fig. 11 represents perspective views of forms of tools that may be employed on the cutter-head. Fig. 12 represents forms of work that may be produced by the machine. Fig. 13 represents forms of combinations of designs that may be effected by the product of the machine.

Similar letters of reference indicate corresponding parts in the several figures.

Referring to the drawings, A designates the frame of the machine.

B designates a bed-plate, which is formed in sections B' B², the section B' being rotatably fitted to the section B² by the journal B³ and connected therewith by the screws C, which pass through the section B' and engage with nuts C' in a circular recess C² in the section B², said recess being shown full in Fig. 8 and dotted in Fig. 2. Depending from the bed-plate is a threaded boss or nut D, with which engages the rotary screw-threaded rod E, whose bearings are on the carriage A' on the frame A.

The bed is adapted to support the rules, bars, strips, &c., to be cut, the same being shown in oblique position in Fig. 8 in a recess in the upper part of said bed and retained therein by the blocks F F' F², between which the rules, &c., are placed, the block F being adjustably secured to the bed by a screw which passes through a slot in said block and the block F' being held down by the block F², which latter is connected with the bed by the screw F³, there being interposed between said block F² and the bed the spring F⁴, which serves to elevate said block when the screw is released, so that it may be readily removed. The adjacent faces of the blocks F and F' are oblique to the floor of the recess and parallel with each other, so as to be securely held between the rules to be operated on.

G designates a cutter-head which is secured to a horizontal shaft or axis G', whose bearings are on a bracket H, the latter having a head H', which is rotatably connected with the head H², and connected therewith by the screws H³. Lateral motions may be imparted

to the cutter-head by means of a screw J, which is fitted to the horizontal slide J', to which the head H<sup>2</sup> is attached, said slide being mounted in guides J<sup>2</sup>, which are secured to a vertical slide J<sup>3</sup>, which is mounted in guides J<sup>4</sup> on the arm J<sup>5</sup>, which rises from the frame A. The slide J<sup>3</sup> is engaged by a screw J<sup>6</sup>, which is fitted to a proper part of the arm J<sup>5</sup>, or frame of the guides J<sup>4</sup>, and serves to raise and lower the slide J<sup>3</sup>, and thereby the cutter-head, when so desired.

On the carriage A' is a hanger K, which is provided with jaws K', which engage with a screw L, whose bearings are on the frame A, and which extends at a right angle to the screw E. Mounted on said screw L is a pinion L', which engages with a spur-wheel M, which is mounted on the axis or stud M', the latter being fitted in a vertical slot M<sup>2</sup> of an arm N, whose lower end is connected with the boss N', through which one end of the rod L passes, and which is secured to the frame A, as most plainly shown in Fig. 1, and made adjustable thereon by means of screws N<sup>2</sup>, which pass through curved slots N<sup>3</sup> in the end of the arm and enter the boss N'. (See Figs. 4 and 1.) On the end of the screw-rod L, between the pinion L' and the lower end of the arm N, are the jam-nuts W for tightening said arm against the boss N' when said arm is in adjusted position, and preventing the shifting thereof.

P designates a slotted segment, which is secured to the upper end of the arm N by means of the bolt P', which enters the slot M<sup>2</sup> of said arm, so as to be adjusted in vertical directions, said segment being provided with screws or bolts P<sup>2</sup>, which are adjustably fitted in different portions of the slot P<sup>3</sup> of the segment, so as to form stops for limiting the throw of a lever Q, which plays between said stops and is mounted on the stud M' and carries a pawl Q', which is hung on said lever and adapted to engage with the spur-wheel M, said lever having mounted on it the spring-pressed head R, which bears against either of the faces R' of the pawl Q', it being noticed that said pawl may be raised and lowered, and when it is lowered it will be held in engagement with the teeth of the wheel M by the action of the spring R<sup>2</sup>, which bears against said head R, said spring being properly held on the lever Q.

The jaws K' on the hanger K are connected with the pins S, which pass through slots S' in the hanger K and slots S<sup>2</sup> in a rotary head T, the latter being mounted on the hanger and provided with a handle T', it being evident that when the head is turned in the proper direction the jaws K' are engaged with the screw L, and thus the rotation of the latter imparts motion to the hanger K, and consequently to the bed-plate B, on which the rules, bars, &c., to be cut or operated upon are seated, as has been stated. Now when the head T is turned in the opposite direction the jaws K' are removed from the screw L and the hanger, and consequently the bed-

plate, are released of said screw, by which provision the bed-plate may be run back or restored to its normal position. For this purpose I secure to the frame A the rack U, and mesh therewith the pinion V, which is carried on the shafts of a spur-wheel V', the latter meshing with a pinion V<sup>2</sup>, which parts are mounted on the hanger K. A proper handle—say that E' of the screw-rod E—(see Fig. 8) is now fitted on the shaft V<sup>3</sup> of the pinion V<sup>2</sup> and rotated, whereby the hanger K and the carriage A', with the superimposed parts, are run back.

The head G, which is adapted to carry different forms of tools, some of which are shown in Fig. 11, has on its shaft the pulley X, around which passes the endless belt or band X', whereby motion may be communicated to said head and the cutter may operate on the rules, &c., on the bed-plate.

In order to operate the screw L from the front of the machine, convenient at the same time with the operation of the screw E, there is attached to the lever Q the handle Y, which extends at a right angle from the same, as most plainly shown in Fig. 1.

It will be seen that the rules, &c., are properly placed on the bed-plate and securely held, so that their edges may be in the path of the cutters when the bed-plate is properly advanced.

Power is applied to the cutter-head and the screw E rotated, whereby the bed-plate carries the rules, &c., to the cutters, and the shape of the latter is imparted to the edges or sides of said rules, &c. The bed-plate is now run back, so that the rules, &c., are clear of the cutters, after which the handle Y is operated, so that owing to the wheels M and L' the screw L is rotated, so as to advance the carriage A' through the medium of the hanger K, whereby the bed-plate is moved the distance required for the next action of the cutters on the rules, &c., said distance being nicely adjusted by the location of the stops P<sup>2</sup>, the same limiting the motion of the lever Q, and consequently the extent of rotation of the screw-rod L. The screw-rod E is again rotated, and thus the carriage is advanced and the rules, &c., are again presented to the cutters, and so the work continues as long as desired, it being evident that when one side or edge of the rules, &c., has been acted on said rules, &c., may be removed, reversed, and again secured to the bed-plate, when the cutting or ornamenting operations on the rules, &c., may be repeated.

It is evident that by loosening the screws C the section B' of the bed-plate B may be rotated on the section B<sup>2</sup>, whereby the rules, &c., may be presented at an acute or obtuse angle to the cutters for work requiring such angular position, after which said screws are tightened, and thus the bed-plate, with the rules, &c., thereon, retains its adjusted position. It is also evident that the cutter-head may be vertically adjusted, so as to groove

the material on the edges of the rule, &c., after the manner of chamfering, as illustrated at *a*, *b*, and *d*, Fig. 12, or have parallel lines cut in the edge, as shown at *c* in said figure.

5 In order to cause the automatic operation of the pawl *Q'*, whereby it is thrown into engagement with the wheel *M* and the screw *L* is accordingly rotated, I secure to the segment *P*, in the present case by means of the right-  
10 hand stop *P<sup>2</sup>*, the projecting angular arm *P<sup>4</sup>*, whose end *P<sup>x</sup>* toward the lever *Q* is inclined and adapted to be engaged by a knob or projection *Q<sup>2</sup>* on the pawl *Q*.

Adjacent to the left-hand stop *P<sup>2</sup>* is a shoe  
15 *P<sup>5</sup>*, which is secured to the segment *P*, said shoe being depressed, as at *P<sup>6</sup>*, so that said knob *Q<sup>2</sup>* may drop into the same, the end of the shoe toward the lever *Q* constituting a tongue *P<sup>7</sup>*, the position of the shoe at the junction  
20 of the depressed portion *P<sup>6</sup>* and tongue *P<sup>7</sup>* forming a shoulder *P<sup>8</sup>*. (See Fig. 4.)

When the lever is fully to the left, the knob *Q<sup>2</sup>* is in the depression *P<sup>6</sup>*. Then when said  
25 lever is drawn to the right the knob strikes the shoulder *P<sup>8</sup>*, whereby the pawl is raised clear of the teeth of the wheel *M* and has its face *R'* engaged by the head *R*, whereby the pawl is carried in its elevated position over  
30 the wheel *M*. When the knob *Q<sup>2</sup>* reaches the inclined end *P<sup>5</sup>* of the arm *P<sup>4</sup>*, it rides on the same (see Fig. 13) in such manner that the pawl is turned downwardly and thrown off  
35 of said arm *P<sup>4</sup>*, and so directed into the adjacent tooth of the wheel *M*, into which it is now held by the pressure of the head *R* on  
the face *R<sup>x</sup>* of said pawl. (See Fig. 7½.)

It is evident that when the lever *Q* is thrown  
40 to the left the wheel *M* is rotated by the same, and the screw *L* is accordingly operated. When the knob *Q<sup>2</sup>* reaches the tongue *P<sup>5</sup>*, it rides on and depresses the same, and then enters the depression *P<sup>6</sup>*, where it remains until  
45 again thrown off of the wheel by its engagement with the shoulder *P<sup>8</sup>* when the lever *Q* is moved to the right, it being noticed that the rotation of the screw *L* ceases when said  
lever strikes the left-hand stop *P<sup>2</sup>*.

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

1. A machine for ornamenting brass and other rules, having a bed with a recess in its upper part, a block having a slot therein, and  
55 with an oblique face, a fastening-screw in said slot, a second movable block in said recess, and a clamping-block with a securing-screw and an interposed spring between said clamping-block and the bed, said parts being  
combined substantially as described.

60 2. In a machine for ornamenting or otherwise cutting rules, &c., a feed-screw for the bed-plate which supports the rules, &c., gearing for said screw, a lever for operating said  
gearing, and adjustable means including an  
65 adjustable arm with a slotted segment having stops therein for limiting the throw of

said lever and consequent feed of the screw, substantially as described.

3. In a machine for ornamenting or otherwise cutting rules, &c., a feed-screw for the  
70 bed-plate, gearing for said screw, a lever with a pawl for operating said gearing, an arm on the frame of the machine, and a segment with stops secured thereto on opposite sides of said  
75 lever, said parts being combined substantially as described, whereby the feed of said screw, and consequently of the bed-plate may be adjusted.

4. In a machine for ornamenting brass and other rules, the screw *L*, the gearing *L'*, *M*,  
80 connected with said screw, and the lever *Q* for operating said wheel *M*, in combination with the reversible pawl *Q'*, having faces *R'*, and mounted on the lever so as to engage said  
85 wheel, and the pressure-head *R* on said lever bearing against said pawl, substantially as described.

5. In a machine for ornamenting brass and other rules, the arm *N*, with the segment *P*  
90 adjustably connected therewith, the wheel *M*, and lever *Q* mounted on said arm, and the boss *N'* on the frame *A*, with the feed-screws *E* passing through said boss, in combination with the adjusting-screw *N<sup>2</sup>* which connects  
95 said arm with said boss, said arm having a segmental slot *N<sup>3</sup>*, through which said screw passes into the boss, substantially as described.

6. An arm with a segment having a slot  
100 therein, stops adjustably secured in said slot, a lever movable on said stops, and carrying a pawl with a knob thereon, and the shoe *P<sup>5</sup>* having a tongue and provided with a depression, said shoe being secured to said segment  
105 at or near one of said stops substantially as described.

7. A lever having a pawl with the knob *Q<sup>2</sup>*, a segment with stops therein and a stationary  
110 shoe secured on said segment and provided with a tongue, and having a depression to receive said knob, substantially as and for the purpose set forth.

8. The arm *N* having the segment *P* secured  
115 thereto, said segment having a slot therein, stops adjustable in said slot, a lever with a pawl connected thereto, and the spring-pressed head *R* adapted to bear against either  
120 of the faces of said pawl when said pawl is raised and lowered, said parts being combined substantially as described.

9. The arm *N* with the slotted segment *P*,  
125 stops adjustable in the slot of said segment, a lever with a pawl having a projecting knob thereon, the angular arm *P<sup>4</sup>* secured on said segment and having the inclined end *P<sup>x</sup>* adapted to be engaged by said knob, said  
parts being combined substantially as described.

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