2 Sheets—Sheet 1.

T. LIPPIATT.

MACHINE FOR ENGRAVING AND CHASING ARTICLES OF METAL.

No. 102,950. Patented May 10, 1870.

Fig. 1.

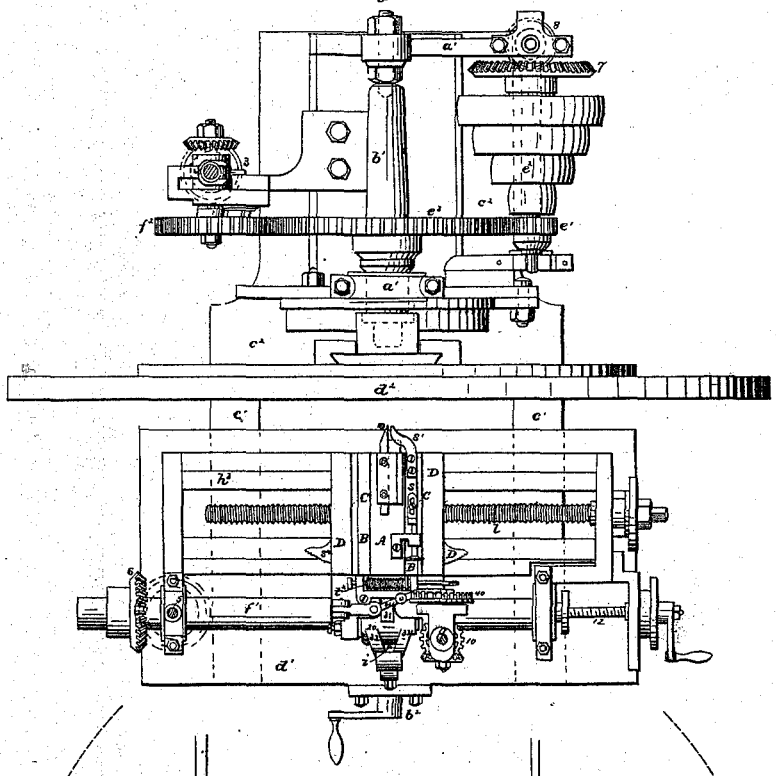
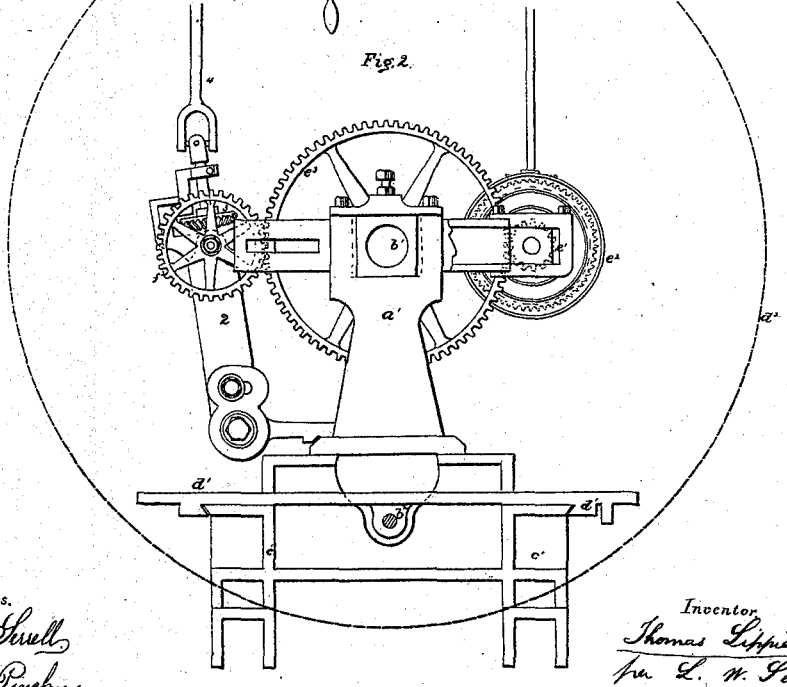


Fig. 2.



Witnesses.

Harold Serell

Ed. F. Pinckney

Inventor,

Thomas Lippiatt.

per L. W. Serell

Atty

2 Sheets—Sheet 2.

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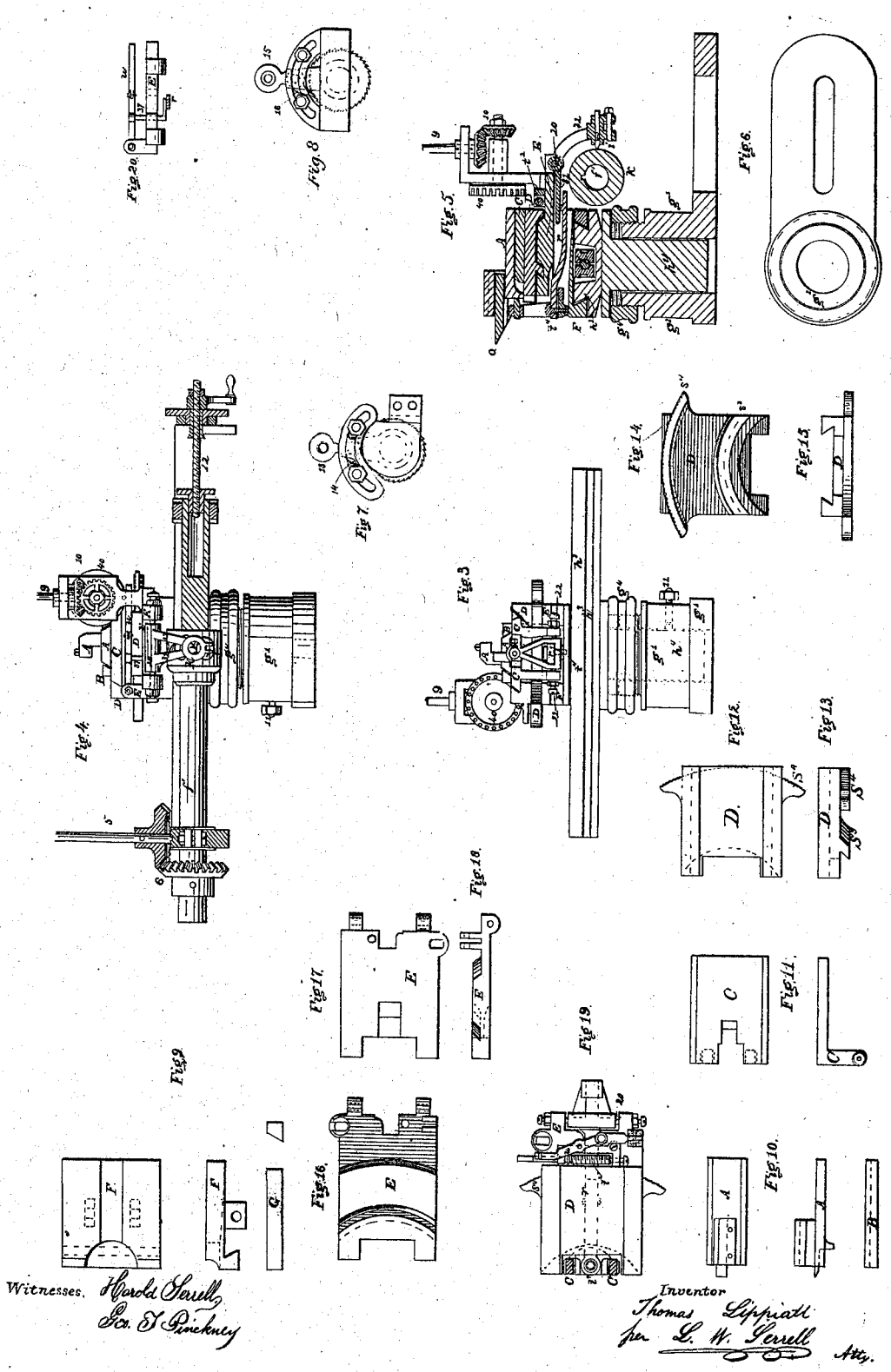

Witnesses. Harold Serrell
Fra. T. Pinckney

Inventor
Thomas Lippiatt
per L. W. Serrell
Atty.

nited States Patent Office.

THOMAS LIPPIATT, OF ORANGE, NEW JERSEY.

Letters Patent No. 102,950, *dated May* 10, 1870.

MACHINE FOR ENGRAVING AND CHASING ARTICLES OF METAL.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, THOMAS LIPPIATT, of Orange, in the State of New Jersey, have invented and made a new and useful Improvement in Engraving and Chasing Articles of Metal; and I do hereby declare the following to be a full, clear, and exact description of the said invention, reference being had to the annexed drawing making part of this specification, wherein—

Figure 1 is a general plan of the machine;

Figure 2 is an elevation of the mandrel-head of the engine or machine, and the gearing connected therewith;

Figure 3 is an elevation of the slides and beds that carry the tool, as seen from the end where the tool is carried;

Figure 4 is an elevation of the last-named parts from the opposite ends of said beds and slides, part of the pattern-shaft being in section; and

Figure 5 is a vertical section of said slides and beds transversely of the pattern-shaft.

The other figures are separately referred to, and similar marks of reference denote the same parts.

This invention relates to the machine usually known as the Rose engine lathe, for engraving silver-ware and other articles of metal.

The article to be engraved is rotated, and the tool pressed toward or withdrawn from the surface by means of a raised pattern, revolved at the same time as the surface to be engraved.

My invention relates to peculiarities in the construction of the mechanism that operates upon the tool, to move the same in effecting the engraving.

In the drawing—

a^1 represents the heads or frame carrying the mandrel b^1.

c^2 is the main bed of the machine supporting the heads a^1, and extending forward in the form of slides c^1, for receiving the main sliding rest or bed-plate d^1 that carries the parts that operate upon the tool.

This plate d^1 may be moved nearer to or further from the mandrel b^1, as required by the article operated upon, and for this purpose a screw, b^2, is employed.

The mandrel b^1 carries a face-plate, d^2, (fig. 1, and shown by red line in fig. 2,) Upon this face-plate the article to be engraved is attached, or, in place of a face-plate, a chuck or other holder may be substituted.

The cone of pulleys e^2, pinion e^1, and gear e^3 are employed for rotating the mandrel b^1, and I take motion from the wheel e^3 to the pattern-shaft f^1 through the gear-wheel f^2, on an arm, 2, that allows for changing the wheel f^2, and varying the relative revolutions by a larger or smaller wheel, f^2.

From the wheel f^2, miter-gears 3 3, and a shaft, 4, with a universal joint, give motion to another shaft overhead, and thence, by the shaft 5 and gears 6 6, to the shaft f^1, the shaft and gearing overhead not being shown.

A similar train of shafting and gearing is employed to communicate motion from the wheel 7 and pinion 8 to the shaft 9 and gears 10 that move the chatter-wheel, hereafter referred to.

Upon the bed-plate d^1 is mounted the column g^1, the foot of which is slotted, as seen in figs. 5 and 6, and attached by a bolt to the bed d^1, so as to allow of the column and parts it carries being placed in any desired position relatively to the mandrel b, and this is further facilitated by the frame h^3 being mounted upon the center-bolt h^4 that enters the column g^1, and is clamped by a screw, 11, fig. 3, and the parts are adjusted vertically with accuracy by the screw-ring g^4.

Upon the frame h^3 the pattern-shaft f^1 is mounted, and said shaft f^1 carries the pattern at k, made in a cylindrical form, and having the figure to be engraved sunk into its surface.

This pattern is rotated as aforesaid, and if it is necessary to give end motion to said shaft f^1 and pattern k, (in addition to the movement resulting from the tracer i moving along over the surface of said pattern, as hereafter named,) it is effected by the screw 12 that slides the shaft f^1, endwise through its bearings and the miter-wheel 6 that is provided with a feather taking the slotted key-seat of the shaft.

Figure 7 represents an arm, 13, that may receive motion from a cam or pin, or some part of the lathe, to act, by a pawl, 14, on a ratchet-wheel that moves the said screw 12 progressively with regularity as the parts of the lathe revolve.

A similar arm, 15, and pawl, 16, Figure 8, are employed to give a gradual rotation to the screw 7 that operates upon the first slide F of the tool-holding rests, so as to move those and the tool along bodily upon the slide h^3, and make the lines of engraving the proper distance apart. The slide F and its pawls are shown in detached views, Figure 9.

The tool o is set upon the slide A, (see detached views, Figure 10,) and this slide A is fitted to move in the line of the tool between the bars B, (see figs. 3 and 21,) upon C, the second slide, Figure 11.

This slide C is set upon the bed D, that in turn is upon the secondary bed E, and that rests upon the slide F aforesaid.

The bed D is shown in plan in Figure 12, and side view in Figure 13, inverted in Figure 14, and endwise in Figure 15. The upper portion of the secondary bed E, and its parts, is shown in plan in Figure 16, inverted in Figure 17, and in a side view, Figure 18 and Figure 19, is a plan of the bed and parts below it.

Upon the bed E are ears carrying the rock-shaft 20, with arms 31 32 extending each way. One of them,

32, carries the tracer *i* that is operated on by the pattern *k*, and the other passes in between F and E to operate upon the compound lever *r* that has the screw points 22, fig. 3, for fulcra, and the upright portion of this lever *r* acts against the end of the slide A to draw the tool *o* out of contact with the surface, being engraved in order that the engraving may only be performed at those parts of the pattern *k* that are cut away.

The slides A and C and tool *o* are to be pressed forward by a spring or weight, but an adjustable stop, *s*, (see fig. 1) limits the movement of the slide A in the bed C, and from the bed C projects a finger, s^1, (see fig. 1,) that is adjacent to the engraving-tool *o*, so that the slides C and A may move in the bed D to accommodate inequalities in the surface being engraved, but the cutting cannot be other than a uniform depth, according to the amount that the tool, when forward, projects beyond the finger s^1.

In order to accommodate the curvilinear or angular surface of the article being engraved, the slide D is made upon its under surface with segmental ribs s^3 s^4, described from the point of the engraving-tool *o* as a center.

These sit into or upon the surface of the secondary bed E, and the segmental edge s^4 of this slide D is operated upon by a worm-pinion, t^2, (see figs. 1 and 19,) so as to set and hold said slide at an angle to the secondary bed E.

The compound lever *r* is formed with a joint at t^4, (see fig. 5,) so that the fulcra and upper portion may turn with the bed C, while the horizontal portion extends to the tracer-lever 31.

In some characters of engraving the line that is cut to form the ground-work around the figure, or to form the figure itself, is made of a series of dots instead of a full line, and I arrange to give the tool a rapid forward-and-back vibration without interfering with the action of the aforesaid parts in producing the pattern.

This movement to the tool is given by the chatter-wheel 40 that is formed with a series of teeth or cams, and driven at a greater or lesser speed by the gearing 10 aforesaid.

This chatter-wheel 40 acts upon a lever, *w*, (see figs. 1, 4, and 20,) and by a pusher, 37, operates upon the lever *r* to give the same a vibrating movement to operate upon the slide A, and tool, to give the same a forward and backward movement.

This lever *w* has a joint near the middle, so as to allow it to be turned aside from the chatter-wheel 40, instead of requiring to stop the said wheel 40.

By this construction the engraving of various flat, cylindrical, or circular articles is placed entirely within the easy control of the attendant, and the pattern will be produced in *fac-simile*, or more or less elongated in either direction, according to the relative sizes or speeds of the parts.

The slide A, forming the tool-holder, might be made in the form of a hanging clamp between standards on the bed C, so as to swing instead of slide, and the chatter-wheel 40 might be located in some other portion of the slides or beds.

What I claim, and desire to secure by Letters Patent, is—

1. The beds and slides C D E and tool-holder A, constructed and arranged substantially as set forth, in combination with the pattern-wheel *k* and lever *r*, substantially as described.

2. The chatter-wheel 40 and lever *w*, in combination with the tool-holder A and lever *r*, substantially as set forth.

3. The compound lever *r*, formed with the joint t^4, and hung on the centers 22, in combination with the pattern *k* and tool-holder A, substantially as set forth.

In witness whereof I have hereunto set my signature this 17th day of June, 1869.

THOS. LIPPIATT.

Witnesses:

GEO. D. WALKER,

GEO. T. PINCKNEY.