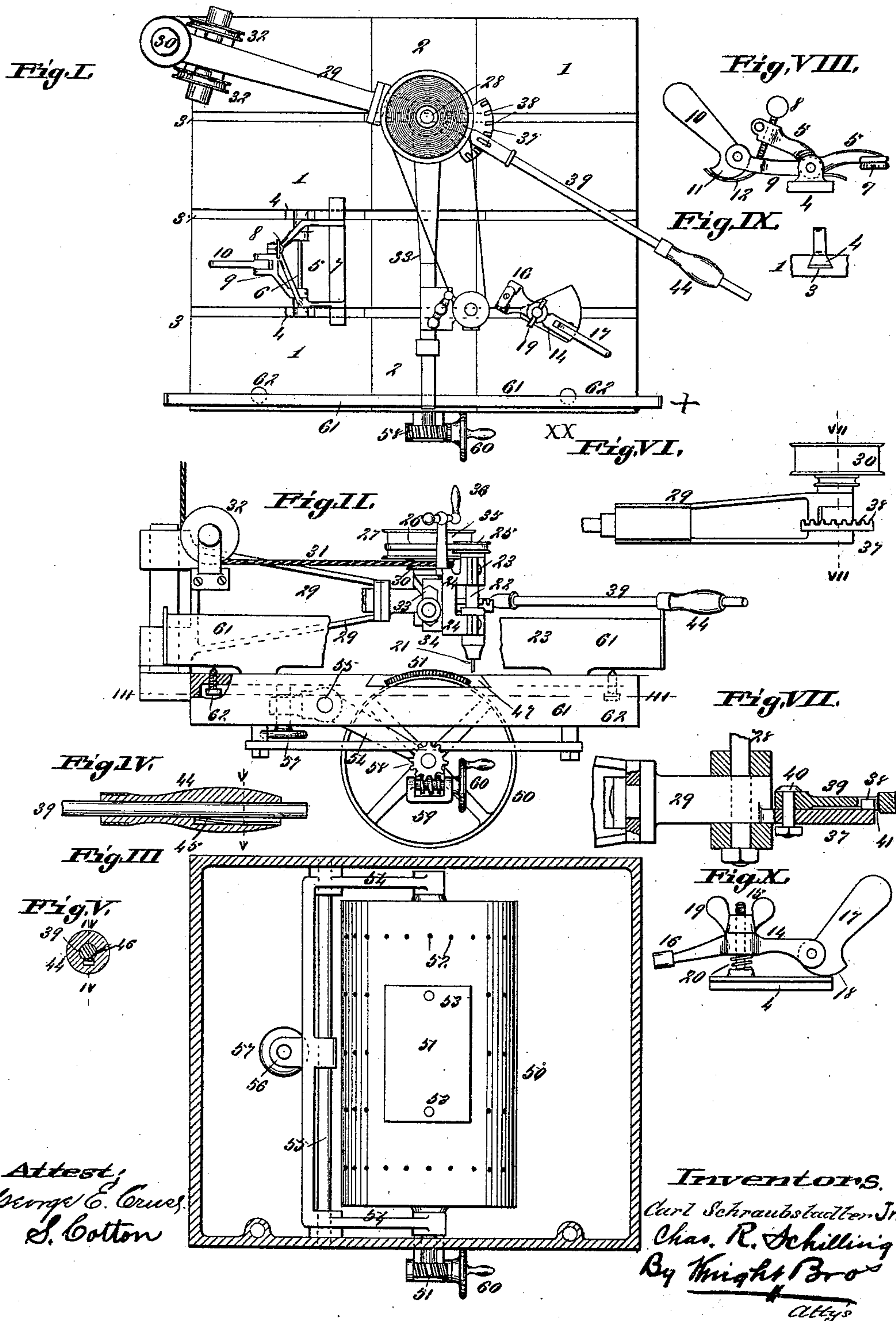


(No Model.)

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ENGRAVING MACHINE.

No. 454,774.

Patented June 23, 1891.



UNITED STATES PATENT OFFICE.

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ENGRAVING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 454,774, dated June 23, 1891.

Application filed January 2, 1891. Serial No. 376,532. (No model.)

To all whom it may concern:

Be it known that we, CARL SCHRAUBSTADTER, Jr., and CHARLES R. SCHILLING, both of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Engraving-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

Our invention relates to certain improvements in machines for engraving electrotypes, stereotype casts, or other printing-surface; and our invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Figure I is a top or plan view illustrative of our invention. Fig. II is a side elevation. Fig. III is a horizontal section taken on line III III, Fig. II. Fig. IV is an enlarged section through the handle of the adjusting-lever, showing a portion of the lever in elevation, the section being taken on line IV IV, Fig. V. Fig. V is a transverse section taken on line V V, Fig. IV. Fig. VI is an enlarged elevation showing the inner end of the adjusting-lever, its ratchet, and one of the belt-pulleys. Fig. VII is a section taken on line VII VII, Fig. VI. Fig. VIII is an enlarged side elevation of one form of clamp for holding the matrix, and Fig. IX is a detail view of same. Fig. X is a side elevation showing another form of clamp for holding the matrix.

Referring to the drawings, 1 represents a suitable table, the central portion 2 of which is removable. In the upper surface of the table are dovetail-shaped grooves 3, (see Figs. I and IX,) for receiving the clamps that hold the plate or block to be engraved, the clamps having blocks or slides 4, which are shaped to fit in the grooves, and which form such a connection between the clamps and the table as will permit the former to be shifted along the latter without being capable of vertical movement.

We have shown two forms of clamps, one being represented in Figs. I and VIII and the other in Fig. X. In the form shown in Figs. I and VIII the clamp has two slides 4 to fit in two of the grooves 3, the slides being held

to the yoke 5 of the clamp by a rod 6. Secured to the inner end of the yoke 5 is a bar 7, which fits down on the plate or block and holds it in place. 8 represents a set-screw passing through the outer part of the yoke 5 and jamming at its lower end against a frame 9, which is mounted on the rod 6, and to which is pivoted a lever 10, having a cam-shaft head 11. By turning the set-screw the plate 7 of the yoke 5 may be changed in position relatively to the frame 9, so as to admit plates or blocks of various thicknesses. By raising up on the lever 10 the clamp may be moved along the table, and then by forcing down on the outer end of the lever the clamp may be held to its adjustment with the plate 7, forced firmly upon the plate or block, for, as will be seen, the downward movement of the outer end of the lever will cause the cam 11 to be pressed against the table 1, which lifts the outer end of the frame 9, and through it the outer end of the yoke 5, which depresses the inner end of the yoke. I prefer to locate a plate 12 beneath the cam 11 of the lever, and which would be secured to the frame 9. The office of this plate is to prevent the cam from wearing the table 1 by friction.

In the form of clamp shown in Fig. X, a bar 14 is fitted on a vertical rod or stud 15, extending upward from the slide 4. The bar has at its inner end a head 16 for engaging the plate or block, and to the outer end of the bar a lever 17 is pivoted, and this lever is provided with a cam 18, adapted to press against the table or against the slide 4. On the stud 15, above the bar 14, is fitted a thumb-nut 19, and between the bar 14 and the slide 4 is a spring 20. In this form of clamp the lever 17 is raised and the slide 4 is moved along the table until the head 16 of the bar 14 is over the plate or block, and the outer end of the lever 17 is then depressed, which forces the head 16 down upon the plate or block, holding it firmly in place. The spring 20 holds the bar 14 up against the thumb-nut 19, and by adjusting the thumb-nut, the height of the bar may be regulated to take in various thicknesses of plates.

21 represents the engraving-tool, which is movable over the table upon which the plate

to be routed is placed. This tool is secured to a spindle 22, journaled in boxes 23, secured to a sliding head 24. On the upper end of the spindle is a pulley 25, connected by a belt 26 to a pulley 27, mounted on the upper end of a shaft or spindle 28. The shaft 28 is supported on an arm 29, pivoted at 30 to the table 1. Upon the shaft 28, beneath the pulley 27, is another pulley 30 connected by a belt 31 to the power that operates the tool, the belt preferably passing under pulleys 32 journaled to the outer end of the arm 29. It will thus be seen that the turning of the shaft 28 will give a rotary action to the tool 21. The head 24 is supported on an arm 33, extending from the shaft 28, the connection being preferably made through means of a sliding block 34, having dovetail connection with the arm 33, as shown in Fig. II. The head 24 has preferably a dovetail connection with the block 34, the same as the block 34 has with the arm 33, so that the head can be raised and lowered to change the elevation of the tool, and this may be done by a shaft 35, having a handle 36, and which has a worm or screw connection with the head 24. No novelty is claimed in these parts, and therefore they have not been as fully illustrated as might otherwise be necessary. The inner end of the arm 29 has a head 37, provided with teeth 38, as shown clearly in Figs. I and VI. 39 represents a lever pivoted to the arm 29, or to the inner part of the head 37, as shown by dotted lines in Fig. I, and as shown at 40, Fig. VII. The lever has a notch or opening 41 to engage with one or more of the teeth 38 of the head 37, and the connection of the lever with the head at 40 is sufficiently loose to permit the outer end of the lever to be raised to disengage the lever from the teeth 38, so that by raising up on the outer end of the lever, and then by moving the lever in either direction it may be made to engage any desired one or more of the teeth 38. 44 represents a sliding handle on the lever 39. The handle is simply made with a socket fitting over the lever, as shown in Figs. IV and V, and is provided with a spring 45. I prefer to provide the lever with a flattened side, as shown at 46, Fig. V, against which the spring will bear. By slightly turning the handle, the spring will bind against the corner of the flat part of the lever, which will hold the handle from movement on the lever, and a slight turn in the opposite direction will loosen the handle.

The operator in using the machine stands at the corner, indicated by an X, or at X X in Fig. I, with one hand upon the handle 44, by which he moves the tool through means of the described connection between the handle and the tool, and by shifting the lever on the head 37 he can, without moving from his position, change the position of the tool, and the sliding handle permits him to do this by changing the length of the leverage as the position of the lever is changed upon the head

38. When a flat plate is to be engraved, the central portion 2 of the table is used, this portion of the table being held by a dovetail-groove 47 in the main portion of the table. (See Fig. II.) It is often the case that a convex plate or a plate in the form of a segment of a circle has to be routed, and when this is the case the portion 2 of the table is removed and the plate is placed on a cylinder 50 or segment of a cylinder. (See Figs. II and III, where 51 represents the plate.) The cylinder or segment has a number of holes 52 to receive screws 53, by which the plate is held to the cylinder, or is provided with slides or other suitable devices, or it may be made of wood, so that the plate can be screwed or nailed upon it. The cylinder is mounted in a frame 54, supported on a rod 55. The frame has an extension 56, through which passes a set-screw 57, the upper end of which impinges against the under side of the table, as shown by dotted lines in Fig. II. When the central portion 2 of the table is being used, the cylinder is dropped down out of the way by loosening on the screw 57, and then, when the cylinder is to be used, it is raised by adjusting the screw 57, so as to bring the upper surface of the cylinder to the proper elevation, so that the plate can be operated upon by the tool. By using cylinders or segments of various diameters, plates of different diameters can be routed, it being only necessary to adjust the height by the screw 57. The cylinder may be turned to shift the plate under the tool by means of a worm-wheel 58 on the shaft of the cylinder, and which is engaged by a worm 59, provided with an operating-handle 60, as shown clearly in Figs. II and III. We thus provide an engraving-machine which may be used for either a flat plate or a curved one.

61 represents a bar located at one end of the table and upon which the outer end of the arm 33 rides, and which may be adjusted as may be desired by set-screws 62.

We claim as our invention—

1. In an engraving-machine, the combination of a suitable tool, mechanism for supporting and moving the tool, and an adjustable hand-lever 39, provided with a sliding handle 44, substantially as and for the purpose set forth.

2. In an engraving-machine, the combination of a suitable tool, mechanism for supporting and moving the tool, an adjustable lever 39, provided with a flattened portion 46, and a sliding handle 44, provided with a spring 45, substantially as and for the purpose set forth.

3. In an engraving-machine, the combination of a tool, mechanism for supporting and moving the tool, a head on said mechanism provided with teeth, and an adjustable lever pivoted to said head and having an opening adapted to receive said teeth, substantially as and for the purpose set forth.

4. A clamp for engraving-machines, consist-

ing of a supporting-block 4, a clamping head or plate adjustably supported upon said block, a cam for clamping the head in position, and a thumb-screw adapted to control the pressure between the clamping-head and the object operated upon, substantially as and for the purpose set forth.

5 5. A clamp for engraving-machines, consisting of a suitable supporting-block, an adjustable clamping head or plate pivoted to said supporting-block, a cam also pivoted to said supporting-block, and a set-screw controlling the relative positions of the clamping head and cam, substantially as and for the purpose set forth.

15 6. In an engraving-machine, the combination of the movable slide 4, a clamping-plate pivotally supported upon said slide, a cam controlling the position of said clamping-plate, and a plate 12, upon which said cam bears, substantially as and for the purpose set forth.

20 7. In an engraving-machine, the combination of a suitable tool, mechanism for operating the tool, a grooved table for holding the plate or block, and a clamp consisting of a plate, a yoke to which the plate is secured, slides fitting in the grooves of the table and

supporting said yoke, a frame connected to the slides, a cam-lever pivoted to the frame, 30 and a set-screw for adjusting said yoke, substantially as and for the purpose set forth.

8. In an engraving-machine, in combination with a suitable tool and mechanism for operating the tool, a table having a removable 35 portion and a cylinder located beneath the table, substantially as and for the purpose set forth.

9. In an engraving-machine, in combination with a tool and mechanism for operating the 40 tool, a table having a removable portion and an adjustable cylinder beneath the table, substantially as and for the purpose set forth.

10. In an engraving-machine, in combination with a tool and mechanism for operating 45 the tool, a table having a removable portion, a cylinder, and a frame in which the cylinder is mounted, provided with a set-screw for adjusting the cylinder, substantially as and for the purpose set forth.

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In presence of—

E. S. KNIGHT,
E. M. EBERSOLE.