

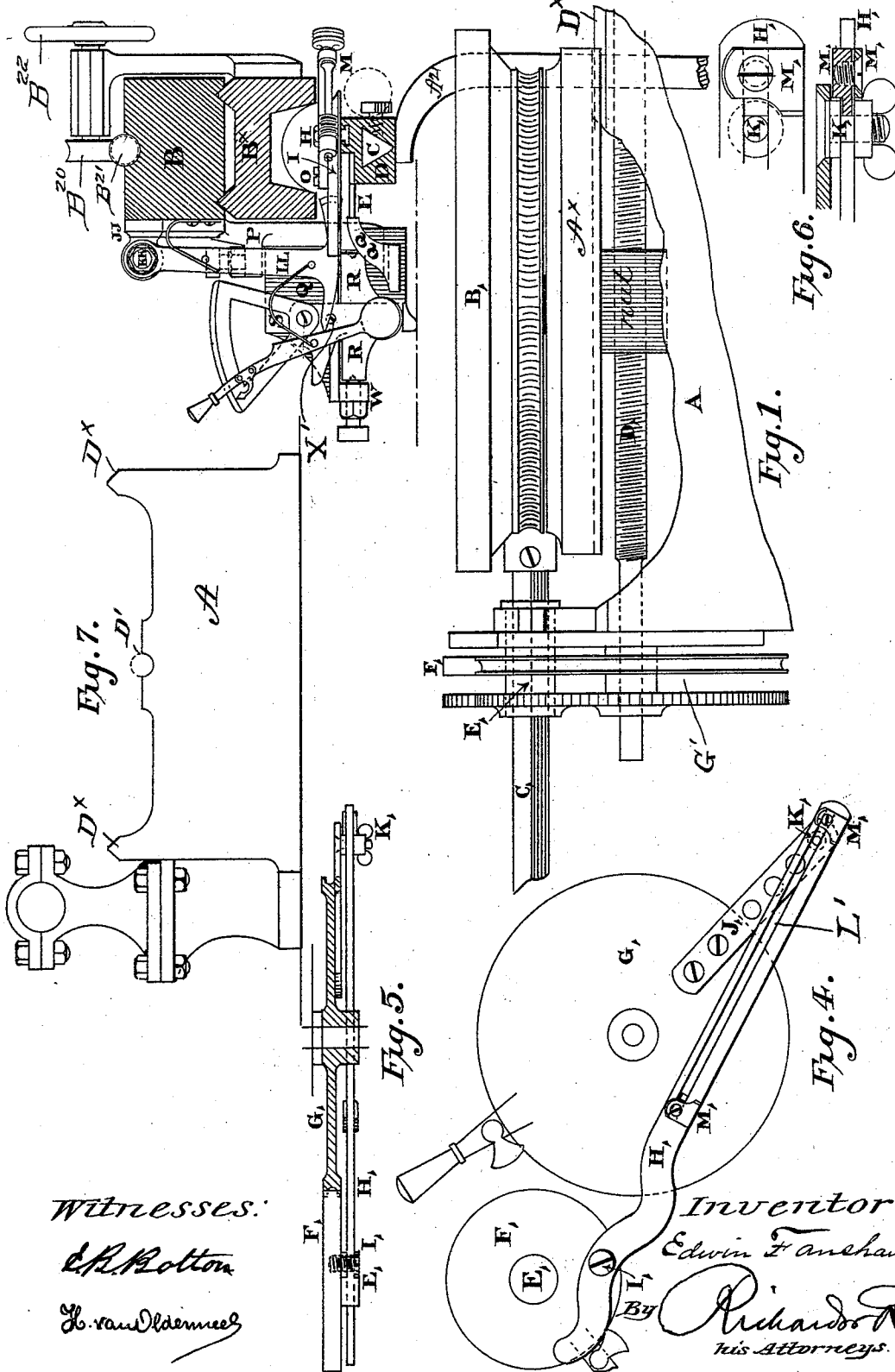
(No Model.)

3 Sheets—Sheet 1.

E. FANSHAW.
ENGRAVING MACHINE.

No. 527,677.

Patented Oct. 16, 1894.



Witnesses:

C. H. Bolton

L. van Oldenmees

Inventor:

Edwin Fanshaw

By *Richard R.*
his Attorneys.

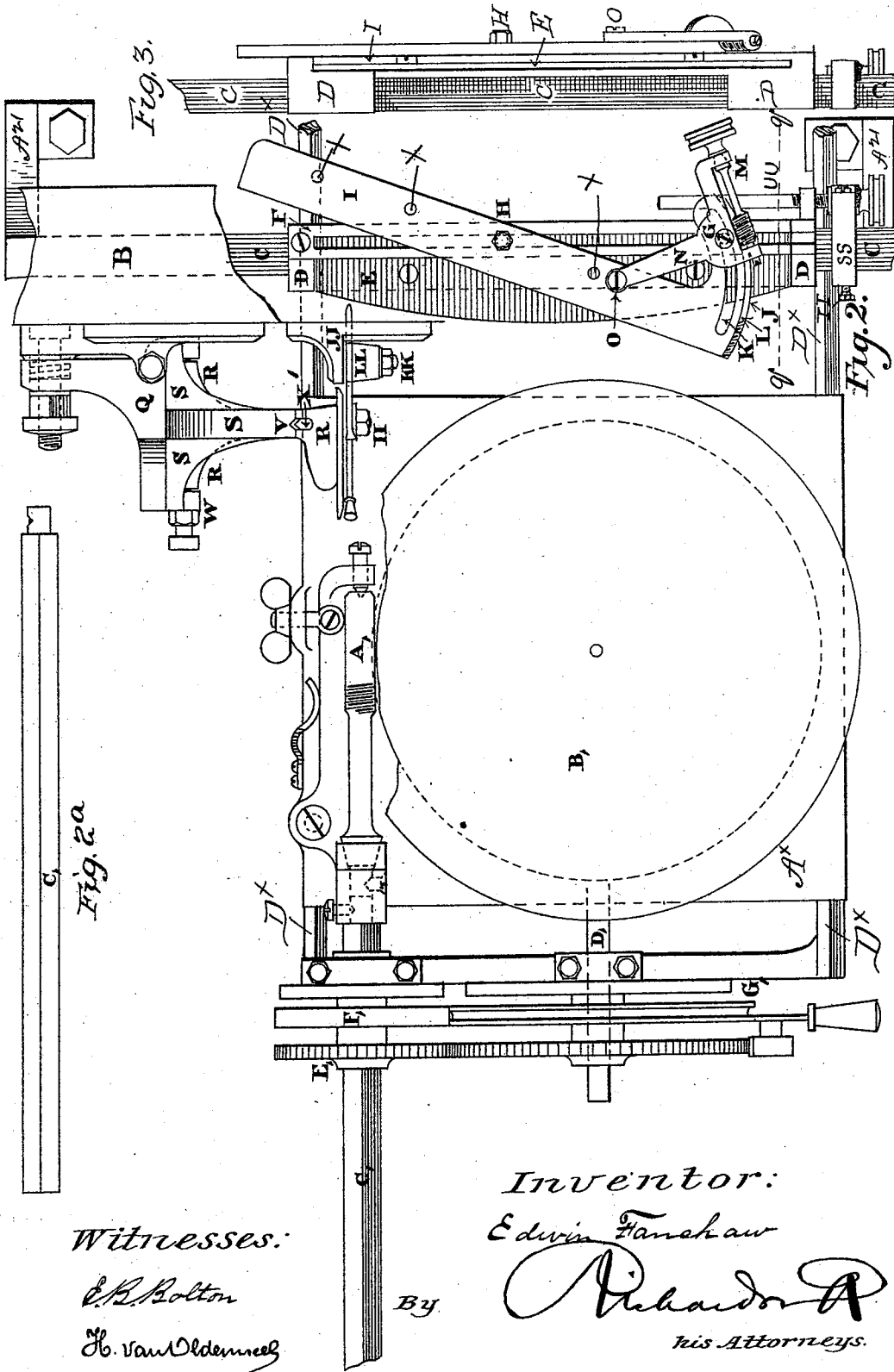
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3 Sheets—Sheet 3.

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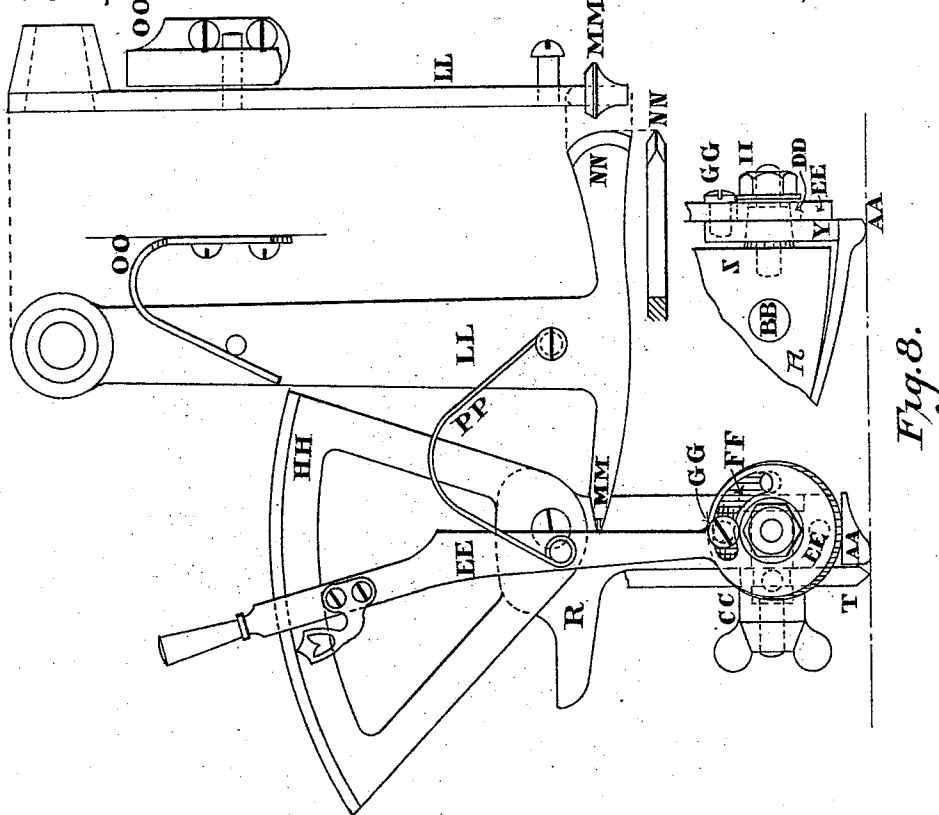


Fig. 8.

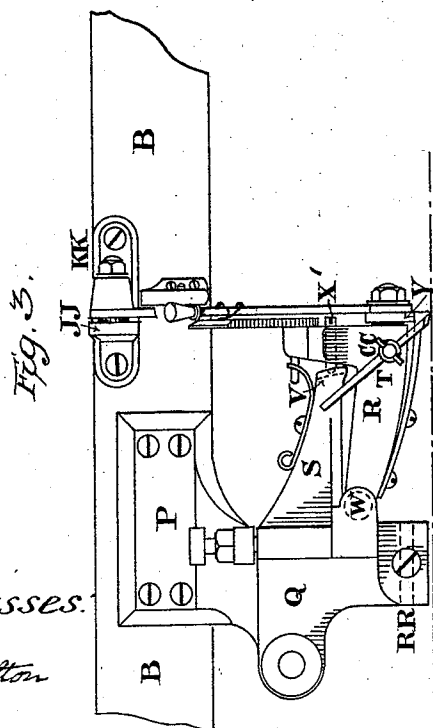


Fig. 3.

Witnesses:

C. H. Rolton

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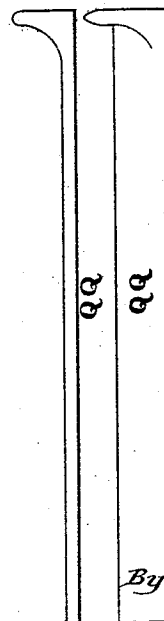


Fig. 3.^a

Inventor:

Edwin Fanshaw

By

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his Attorneys

UNITED STATES PATENT OFFICE.

EDWIN FANSHAW, OF SHEFFIELD, ENGLAND.

ENGRAVING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 527,677, dated October 16, 1894.

Application filed August 22, 1893. Serial No. 483,778. (No model.) Patented in England January 7, 1893, No. 362.

To all whom it may concern:

Be it known that I, EDWIN FANSHAW, engraver, a subject of the Queen of Great Britain, and a resident of Sheffield, in the county of York, England, have invented certain new and useful Improvements in Ruling-Machines for Engravers' Use; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form a part of this specification.

The invention has been patented in England, No. 362, dated January 7, 1893.

This invention relates to improvements in the machines, used chiefly by engravers upon wood, and which are known as "ruling machines," the object of the invention being to enable a much greater variety of work to be accomplished by such machines than heretofore.

A ruling machine may be described as consisting of a base A, see Figure 1, with a perfectly true horizontal facing, upon which is fitted a slide or saddle A^x Fig. 1, moved by a screw D' Fig. 1—in ways D^x and carrying a circular table B', which rotates and upon which the block of wood or other material to be engraved is secured with its face upward. Standards rise from the base, and carry a cross slide with a traversing saddle upon which is fixed a tool carrier, the arm which carries the tool or cutter, being held at its back end between two center points to allow a short vertical movement of the tool. A "presser" is adjusted by means of a hand screw and controls the depth to which the tool may penetrate into the substance of the block which is to be engraved.

I propose to improve the above described class of machine as follows, the said improvements being shown in the annexed drawings, in which—

Fig. 1, is a front elevation of base, circular table, and tool carriage, parts being in section on line q—q of Fig. 2, and parts being broken away. The work holding table and the tool holder and tool above it are shown in their proper relation to each other. Fig. 2 is a plan of same, the table being shifted slightly aside and from under the tool carriage some of the parts being broken away. Fig. 2^a is a detail view of the shaft for turn-

ing the screw which revolves the work table; Fig. 3, a side elevation of tool carriage, and triangular bar with slide. Fig. 3^a shows in plan and elevation the sliding fingers Q, Q; Fig. 4, an end elevation of the two disks F', and G', showing the "perspective attachment;" Fig. 5, a plan of above shown partly in section; Fig. 6, a full size section and elevation of adjusting screw and stop, of the perspective slide H'; Fig. 7, an end elevation of base A, and bracket for perspective wheel F'; Fig. 8, a full size elevation of tool support, scale and lever, side elevation of lever, and sectional elevation of presser and eccentric.

First, I fix between the standards A²¹ extending above the base A, underneath and parallel to the tool carrier slide B, moving on the ways B^x a triangular bar C, fitted with a longitudinally sliding rest D, upon which is fastened a templet-curve or wave E, of any desired form. Above this is fixed a slide F, having a groove or slot down the center, in which are two clamping screws G, and H, for the purpose of securing a straight rule I, preferably made of steel, which may be moved horizontally to any angle with the triangular bar C, the clamping screw H, (which may be placed in any of the holes X made for the purpose in the rule) acting as the center, while the screw G, slides in the groove according to the angle at which the rule is fixed. This angle is adjusted by means of the segmental portion J, of the rule I, which has a segmental groove K, in which is the screw G. The edge of the segment is cut with a screw thread in which works a correspondingly threaded screw M, held by a carrier N, which is pivoted at the center O, of the segment, and through which carrier passes the clamp G, so that when the pinion M, is turned by the fingers, it causes the slide I, to move backward or forward as the case may be. By means of the movable bush S S, which can be tightly secured to the bar C, by the nut T T, the screw U U, will adjust the slide D, to any desired position on the bar.

Second. The tool carriage is made with the usual supporting arm P, Q, for the tool or cutter T, but in addition to its supporting axis W, I construct a projection S, at the end of which is a segmental groove V, the center

of segment being at axis W. In this groove V, is a projecting pin X, which is screwed through the tool support R, and can be adjusted to work smoothly in the groove by a slight turning of the pin. The tool carrier slide B is adjusted by the worm wheel B²⁰ worm B²¹ and hand wheel B²². The tool carriage R, as it rises and falls on its axis W, is thus prevented from any side play. The projection S, also serves as a support for a spring which automatically lifts the tool or cutter out of the wood. Instead of adjusting pressure vertically, by a screw as heretofore, I use an eccentric Y, working upon a conical bearing Z, which is screwed to the tool carriage R. The periphery of the eccentric rests upon the "presser" A A, and when it is turned it causes the presser to rise or fall, allowing the tool T, to cut deeper or shallower as desired. A bolt passes through hole B B, in support R, by which the tool is tightly clamped to the side of the support by nut C C. Attached to the eccentric Y, is a boss D D, upon the edge of which rotates a long arm E E, provided with a segmental slot or groove F F, through which is passed a screw G G, securely clamping the arm E E, to the eccentric, and by means of which groove and four holes in the face of the eccentric itself, into which the screw G G, fits, any portion of the periphery of the eccentric can be brought to bear upon the presser A A, and by moving the arm E E, the pointer attached to it indicates upon the scale H H, and causes the eccentric to raise or lower the presser, thereby regulating the depth of cut with the required accuracy. The nut I I, retains the eccentric in working contact upon its bearings. To the upper portion of tool carriage B, see Fig. 3, I attach a bracket J J, into which is screwed a conical bearing, upon which secured by the nut K K, works a lever L L, see Fig. 8, at right angles to slide B, one point M M, of which bears against the straight portion of arm E E. The other point N N, works against the rule I, so that when the rule is set at an angle as in Fig. 2, the point N N is forced outward, at the same time moving the point M M, which sliding against arm E E, pushes it outward and in doing so alters the depth of the tool. The spring O O, keeps the lever L L, in contact with the rule I, and the spring P P, keeps the point M M, in contact with the arm E E. I also use an improved construction of sliding point Q Q, to bear against the edge of curve or wave templet E, which said point slides through the hole R R, Fig. 3, in the tool support Q, and is secured by a screw, so as to produce variations of the said templet. This templet and the straight rule when acting together will cause the tool to produce a curve or wave-line, graduating from light to dark, or dark to light as desired, or by substituting a wave templet for the straight rule I, a wave-line can be produced lighter in the hollows, or on the tops of the curves than in the other parts, and other like results may be produced

which hitherto have not been attainable in ruling machines.

Third. I also combine the horizontal longitudinal-traverse with the rotary motion of the table, to act simultaneously and by one movement for perspective lines and effects. Thus I connect with the worm shaft A', (by which the table B', is turned) a removable lengthening bar C' parallel with the traverse screw D', and sliding through the hub E', of a suitably supported ratchet wheel, and a loose disk F', carrying the pawl or catch, which can be made to engage with the teeth of the ratchet wheel when desired. This disk F', is arranged in line with a similar disk G' at the end of traverse screw D', and they are connected by a rod H', pivoted upon disk F', by screw I'. Attached to the disk G', is a bar J', having several holes, into any of which a screw K', may be fixed. This screw works in the slide L', in the bar H'. The length of this slide can be varied by means of stops M', which can be firmly screwed in any part of the slide by which means the relative movement of the wheels may be adjusted and varied in any ratio. For example one wheel may move twenty teeth, and the other wheel only one tooth or more, or vice versa.

By the combination of the before described improved mechanical arrangements applied to an engraver's ruling machine a "tint" or series of lines, either even or graduated, can be made of curve-lines radiating from a point, or by the "perspective" and eccentric without the curve, a "tint" of straight lines radiating from a point, either even or graduated. The various parts of the machine may be manipulated by hand or by other means as desired.

Having now described the particular points of my said invention and how it is carried into effect, what I claim, and wish to secure by Letters Patent, is—

1. In combination in an engraver's ruling machine, the support for the work, the sliding tool carrier, the tool carried thereby, the templet curve E, the adjustable rest D carrying the same, the slide F, the straight rule I adjustably carried thereby, and the means intermediate of the rule and tool holder, for controlling the action of said holder from the rule, substantially as described.

2. In combination, the tool carrier, the work table, the screw for giving the same a linear movement, the screw shaft A' arranged parallel with the said screw for giving the table a rotary movement and the adjustable driving connection between the two screw shafts whereby the relative movements may be changed, substantially as described.

3. In combination, the work table, the tool carrier with the tool thereon, the straight rule adapted to act upon the tool carrier and the means for adjusting the straight rule to different angular positions consisting of the toothed segment J, the worm M and the movable carrier N, substantially as described.

4. In combination, the work table, the tool carrier, the tool, the movable presser arranged to regulate the depth of cut and the means for adjusting said presser consisting of the
5 eccentric and the lever for operating the same, substantially as described.

5. In combination, the work support, the tool, the carrier therefor movable about an axis and having a screw pin X', and the pro-
10 jection S having a groove or guide way for the end of the screw, substantially as described.

6. In combination, the work support, the tool, the holder therefor having the presser

A A, the eccentric and arm E E for operating the presser, the lever L L for operating the
15 arm E E and the adjustable straight rule I for operating the lever L L, substantially as described.

In testimony that I claim the foregoing as my own I have affixed hereto my signature, 20
in presence of two witnesses, this 8th day of August, 1893.

EDWIN FANSHAW.

Witnesses:

ROBT. F. DRURY,

BERNARD E. DRURY.