

933,344.

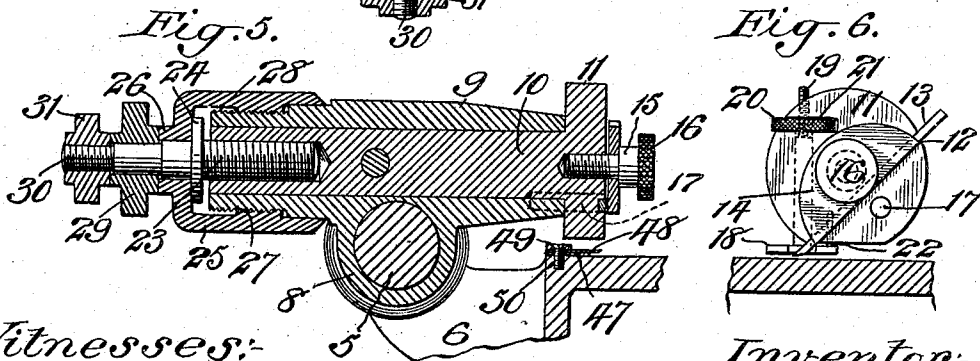
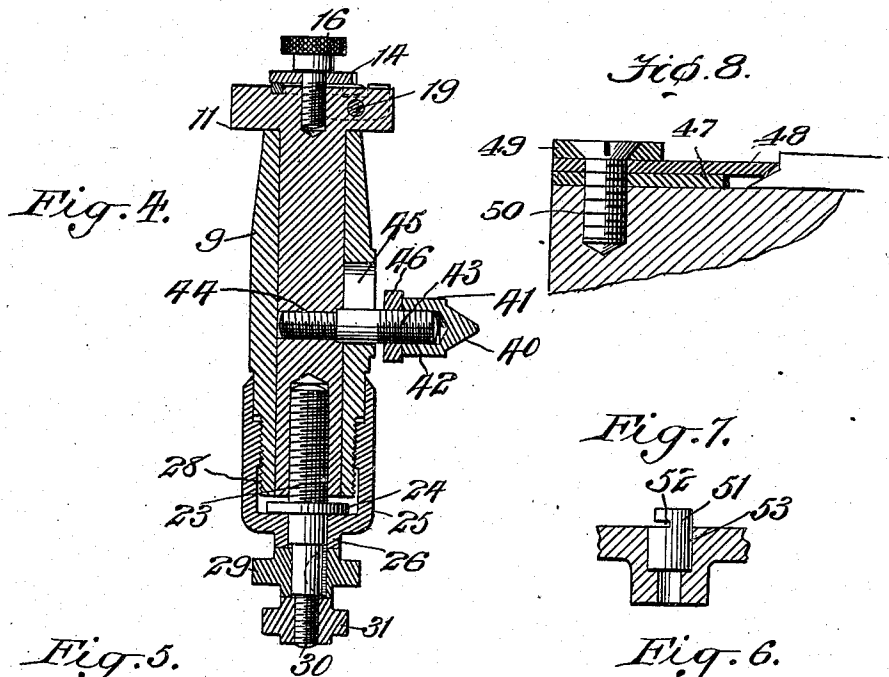
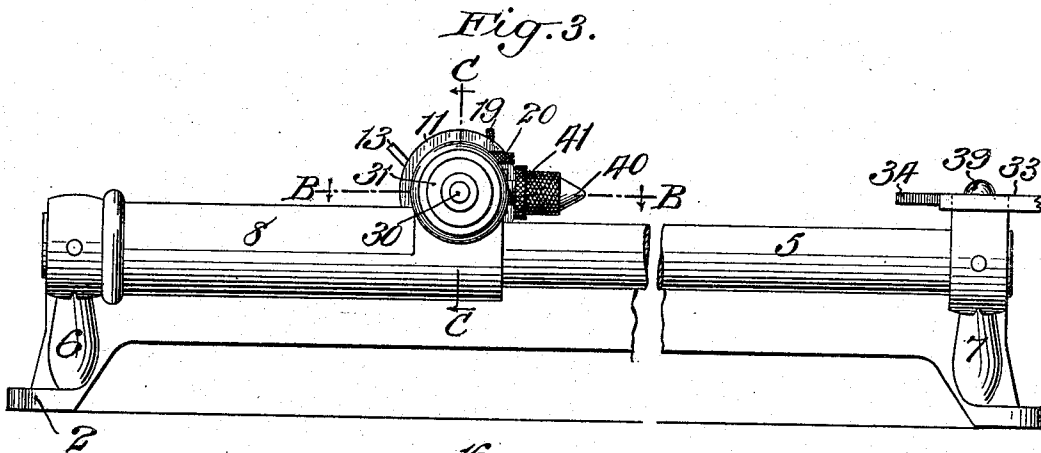
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V. ROYLE.  
ENGRAVING MACHINE.  
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Patented Sept. 7, 1909.  
2 SHEETS—SHEET 2.



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# UNITED STATES PATENT OFFICE.

VERNON ROYLE, OF PATERSON, NEW JERSEY.

## ENGRAVING-MACHINE.

933,344.

Specification of Letters Patent.

Patented Sept. 7, 1909.

Application filed August 9, 1905. Serial No. 273,357.

*To all whom it may concern:*

Be it known that I, VERNON ROYLE, a citizen of the United States, and resident of Paterson, in the county of Passaic and State of New Jersey, have invented a new and useful Engraving-Machine, of which the following is a specification.

My invention relates to an engraving machine and more particularly to a beveler for use in lining photo-engraving plates.

The object is to provide a simple and effective adjustment for terminating the cut at the corner at a point corresponding to the distance of the line from the edge of the plate; to provide accurate means for clamping plates of different width of shoulder in position on the table, and for setting the cutter at a zero point or point of origin at any desired distance from the edge of the plate.

My invention further consists in certain features of construction and combination of parts as will be hereinafter described and pointed out in the claims.

In the accompanying drawings, Figure 1 is a top plan view of the tool showing in dotted lines the position which the plate occupies when clamped in position to be operated upon, Fig. 2 is a transverse section in the plane of the line A—A of Fig. 1, Fig. 3 is a view in side elevation, Fig. 4 is an enlarged horizontal section of the cutter head support in the plane of the line B—B of Fig. 3, Fig. 5 is a vertical section of the same in the plane of the line C—C of Fig. 3, Fig. 6 is a view in detail showing the cutter head in side elevation, Fig. 7 is a view in detail showing the plate holding dog in its position in the table and Fig. 8 is an enlarged sectional view of the clamp for holding the plate in position.

The base of the tool is denoted as a whole by 1 and is supported upon short legs 2, one located at each of its four corners, the section of the base 1 toward the operator being utilized as a tray 3 and the top of the remaining portion as a plate supporting table 4.

Along one side of the base a bar 5 extends serving as a guide for the cutter head carrier and said bar is conveniently connected rigidly with the base by means of arms 6 and 7 extending laterally from the base and provided with suitable bearings for receiving the ends of the bar 5.

The cutter head carrier consists of a sleeve

8 adapted to receive with an easy sliding fit the bar 5 located thereon and a sleeve 9 extending transversely to the sleeve 8 and conveniently formed integral therewith, the sleeve 9 being provided with a bore for receiving with a close sliding fit the shank 10 of the cutter head 11.

The cutter head 11 is provided in its face with a recess 12 extending diagonally across it for the reception of the shank of the tool 13 and the tool is held tightly clamped to the head by means of the segment 14 mounted in swinging adjustment on the shank of a screw 15, the latter being provided with a nurlled head 16 and tapped into the cutter head for the purpose of pressing the segment 14 tightly against the tool when the latter has been adjusted in its recess in the face of the cutter head. The cutter head 11 is locked against rotation in its sleeve 9 by means of a pin 17 extending through it into the end of the sleeve 9.

The depth of cut is determined by means of a shoe 18 through which the point of the cutter 13 projects, the said shoe being provided with a screw threaded shank 19 extending upwardly therefrom through the cutter head and provided with a nurlled nut 20 arranged thereon, the nut being seated in a slot 21 formed in the disk and of such width that the nut 20 shall have a close rotating fit in the slot preventing any lost motion either up or down and hence when turned raising or lowering the shank 19 of the shoe and holding it in its proper relation to the point of the cutter to determine the depth of cut. The shoe 18 is prevented from rotative displacement by means of a pin 22 extending upwardly from its heel into a hole formed in the bottom of the cutter head.

The cutter head with the tool thereon is adjusted bodily inwardly and outwardly over the edge of the plate resting on the table by means of a differential screw arrangement as follows:—A screw 23 is tapped into the end of the shank 10 of the cutter head and is provided with a shoulder or collar 24 thereon against which a sleeve 25 abuts.

The sleeve 25 is provided with a hub which fits on the shank of the screw 23 immediately outside of the collar 24 while the sleeve 25 properly surrounds the end of the supporting sleeve 9 and has an internal screw thread 27 which engages with an ex-

ternal screw thread 28 on the exterior of the end of the sleeve 9.

As the shank of the screw 23 extends outwardly from the hub 26 it is provided with an operating head 29 keyed thereon as, for example, the well known feather and groove so that it may be permitted a longitudinally sliding movement with respect to the shank of the screw while at the same time causing the screw to rotate together with it.

The head 29 is intended to abut against the hub 26 of the sleeve 25.

The shank of the screw 23 extends outwardly from the head 29 and is screw threaded as at 30 to receive a lock nut 31, the latter, when screwed on, serving to force the head 29 against the hub 26 of the sleeve 25 and hence lock it to the screw 23 so as to cause the screw 23 to turn together with the sleeve 25. When, however, the lock nut 31 is released from the head 29, the said head may be turned and hence the screw 23 turned without moving the sleeve 25.

At the inner edge of the sleeve 25 there is formed a scale 32 of fractions of an inch and on the sleeve 9 in proximity to the scale there is formed a fixed point for example a zero point from which the measurement on the scale may be estimated; so that the cutter head 11 may be moved to locate the cutter 13 at any desired distance from the edge of the plate while the sleeve 25 is held at zero by simply loosening the nut 31 and turning the screw 23 by means of its head 29 without turning the sleeve 25 and when the zero position, be it nearer or farther from the edge of the plate as desired, is determined upon, the screw 23 may be locked to the sleeve 25 by screwing up the nut 31 so that the further turning of the screw 23 to adjust the cutter head in or out will also turn the sleeve 25 and hence the scale thereby indicating just the desired distance that the line is to be made from a preceding line or from the edge of the plate.

To make the adjustment accurate, I prefer to make the pitch of the thread on the screw 23 different from that on the sleeve 25, for instance if the pitch on the screw 23 be one-tenth the pitch of the thread on the sleeve 25 might be one-twentieth so that the effect of the screw 23 on the cutter head would be reduced one-half in whichever direction it be turned as the one would work the cutter head in one direction while the other would tend to carry it bodily in the opposite direction.

For the purpose of stopping the cutting of the tool at the same distance from the edge of the plate, toward which the cut is made, as the line being cut is from the edge of the plate parallel therewith, I locate an adjustable stop 33 on the bearing connected with the arm 7, the said stop being provided with a face 34 set at an angle of 45°

to its edge and with an elongated slot 35 which receives a tongue 36 projecting upwardly from the bearing on the arm 7.

An adjusting screw 37 passes through the end of the stop 33 and along within the slot 35 and is tapped into the end of the tongue 36 for forcing the stop 33 in one direction, viz; toward the cutter carrying sleeve while a spring 38 located between the end of the tongue 36 and the end of the slot 35 serves to force the stop 33 away from the cutter carrying sleeve whenever the stop 33 is turned in a direction to permit its movement.

A screw 39 is tapped into the top of the tongue 36 for the purpose of clamping the stop in its adjusted position.

A tapered pin 40 is carried by the shank of the cutter head to coact with the stop 33, the angle of the tapered end of the pin 40 being such that only its point will engage the face 34 of the stop. In the present instance I have shown the pin 40 as having a nurlled exterior 41 and provided with a screw threaded bore 42 for the reception of the end of a screw 43, the said screw 43 being tapped into the shank of the cutter head as at 44 and extending thence outwardly through an elongated slot 45 in the side of the sleeve 9. I have also shown a lock nut 46 engaged with the thread of the screw 43 at the base of the pin 40 for locking it in such adjustment as may be desired.

In operation, whatever be the adjustment of the cutter head and cutter carried thereby, away from or toward the edge of the plate being operated upon, the pin 40 will be carried bodily thereby and because of the 45° angle of the face 34 of the stop 33, the end of the pin 40 will meet the oblique face 34 at a point earlier or later to stop the cutting action at just that point where the line at the adjacent edge of the plate should meet it and this stopping of the cutter at the proper point will be automatically taken care of after the tool is once adjusted whatever be the adjustment of the cutter head to make the initial line nearer to or farther away from the edge.

A clamp for receiving the edge of the plate consists, preferably of three parts, viz; a base 47 an intermediate part 48 and a top part 49. The base 47 is a thin plate of metal or other suitable material, the intermediate part 48 is a thin piece of spring metal or other suitable material capable of yielding under pressure and is wider than the base 47 while the top part 49 is a strip of less width than the intermediate part 48 in order to leave the latter free to spring upwardly and is used to bind the intermediate part 48 to the base 47. A number of screws 50 pass through the three parts and into the table to hold the clamp in position.

In operation, the edge of the plate is

pushed underneath the intermediate part 48 of the clamp causing the latter to spring upwardly and finally engage the shoulder at the top of the bevel part of the plate.

5 It is intended that the overhang portion or jaw of the intermediate part 48 with respect to the base 47 shall be greater than the normal width of the bevel portion of the plate and sufficient to permit any plate with  
10 wider or narrower shoulder to be slipped beneath the intermediate part until the shoulder engages the edge of the said part, which position insures the correct position of the plate for operation.

15 To hold the plate against movement in the direction in which the cutter operates, I provide a simple dog 50 with a narrow mouth 52 formed in its head, the said dog being cylindrical in shape and dropped into  
20 a socket 53 formed in the table. Its shape is such that the dog is free to rock to adjust the mouth 52 squarely to the edge of the plate.

What I claim is:—

25 1. The combination with the tool holder, its support along which it moves and on which it rocks and means for supporting the plate in position to be operated upon, of a stop for arresting the advance movement of  
30 the tool holder at the proper distance from the edge of the plate.

2. The combination with the tool holder, its support along which it moves and on which it rocks and means for supporting the plate  
35 in position to be operated upon, of an adjustable stop for arresting the advance movement of the tool holder at the proper distance from the edge of the plate.

3. The combination with the tool holder,  
40 the support along which it moves and on which it rocks and means for supporting a plate in position to be operated upon, of a stop for arresting the advance movement of the tool holder and an adjustable tapered  
45 pin connected with the tool holder for co-acting with the stop.

4. The combination with a tool holder, a support along which it moves and on which it rocks and means for supporting a plate  
50 to be operated upon, of means for adjusting the tool holder horizontally toward and away from the edge of the plate.

5. The combination with a tool holder support, a bar along which it travels during the action of the tool, and means for holding the work in position to be operated upon,  
55 of a tool holder comprising a disk provided with a seat for the tool and a stem projecting laterally from the side of the disk, the said stem having a sliding engagement with the tool holder support and means for securing the stem to the tool holder support in different adjustments.

6. The combination with a tool holder  
65 support, a tool holder mounted to slide along

and rock on the support, means for supporting a plate to be operated upon beneath the end of the tool holder and means for adjusting the tool holder horizontally toward and away from the edge of the plate along which  
70 it moves, of a pin fixed to move with the tool holder and an inclined face stop for engaging the pin whatever be the horizontal adjustment of the tool holder to arrest the tool holder at the proper distance from the edge  
75 of the plate toward which the tool is traveling.

7. The combination with a support for the plate to be operated upon and a bar located along the said support, of a tool holder support  
80 comprising a sleeve arranged to slide along the bar and a transverse sleeve, a tool holder having its shank seated in the transverse sleeve and means for adjusting the tool holder in said sleeve to carry the tool  
85 horizontally toward and away from the edge of the plate, a slot in said transverse sleeve, a pin connected with the tool holder shank through said slot and a stop for engaging the pin at the limit of the advance  
90 movement of the tool holder.

8. The combination with the tool holder and the sleeve in which it is mounted, of a screw engaged with the tool holder for adjusting it with respect to the sleeve and a  
95 second screw engaged with the sleeve and with the aforesaid screw, the said screws being arranged to operate the tool holder in opposite directions when turned in the same direction and having threads of different  
100 pitch.

9. The combination with the tool holder and the sleeve within which it is mounted, of a screw engaged with the tool holder and provided with a sliding head, an interiorly  
105 screw threaded sleeve having its hub engaged with the screw and its screw thread engaged with an exterior thread on the first sleeve and a nut engaged with the screw for locking the said second sleeve to the screw  
110 and releasing it therefrom whereby the sleeve and screw may be caused to rotate together or independently at pleasure.

10. The combination with the cutter holder having a head provided with a recess  
115 in its face and a cutter seated in the recess, of a segment for holding the cutter in place and a screw tapped into the cutter holder and forming a support for the segment for clamping the segment to the head.  
120

11. The combination with a cutter holder provided with a slot therein and means for holding the cutter thereon, of a shoe for receiving the end of the cutter to determine the depth of cut, the said shoe being mounted  
125 in vertical adjustment in the cutter holder and provided with a threaded stem and a nut seated in the slot in the cutter holder and engaged with the stem of the shoe for vertically adjusting the shoe.  
130

12. The combination with the plate supporting table and means for supporting a cutter in position to operate on the plate, of a plate clamp, the said clamp including  
5 a strip of resilient material, and means for securing one edge of the said resilient strip to the table, while the opposite edge of the said strip is free to spring upwardly into position to engage a shoulder at the top of  
10 the beveled edge of a plate.

13. The combination with the plate support and means for supporting a cutter in position to operate thereon, of a table a plate clamp including a thin strip of material in immediate contact with the table  
15 and a strip of resilient material of greater width than the aforesaid strip superposed on the aforesaid strip in position to engage the shoulder at the top of the beveled edge  
20 of the plate.

14. The combination with a support for the plate and means for supporting a cutter in position to operate on the plate, of a plate clamp comprising a lower member, an  
25 upper member and an intermediate member, the said intermediate member being of

greater width than the upper and lower members and of resilient material and screws for binding the several members to the support.

15. The combination with a plate supporting table and means for supporting a cutter in position to operate on the plate, of a plate clamp secured to the table and adapted to engage the beveled edge of the  
35 plate, the said clamp being provided with an overhanging jaw, the edge of which is in position to engage the shoulder at the top of the bevel at the edge of the plate, the said engaging edge of the jaw being located farther from the body of the clamp than the  
40 normal width of the bevel portion of the plate.

In testimony, that I claim the foregoing as my invention, I have signed my name in  
45 presence of two witnesses, this 20th day of July, 1905.

VERNON ROYLE.

Witnesses:

JOHN ROYLE,  
GEO. REVOLD.