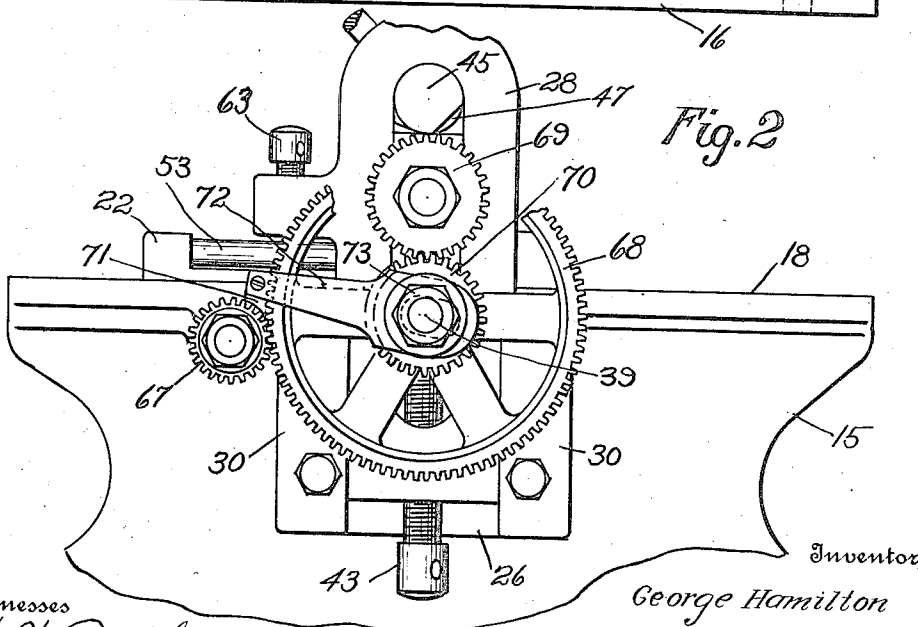
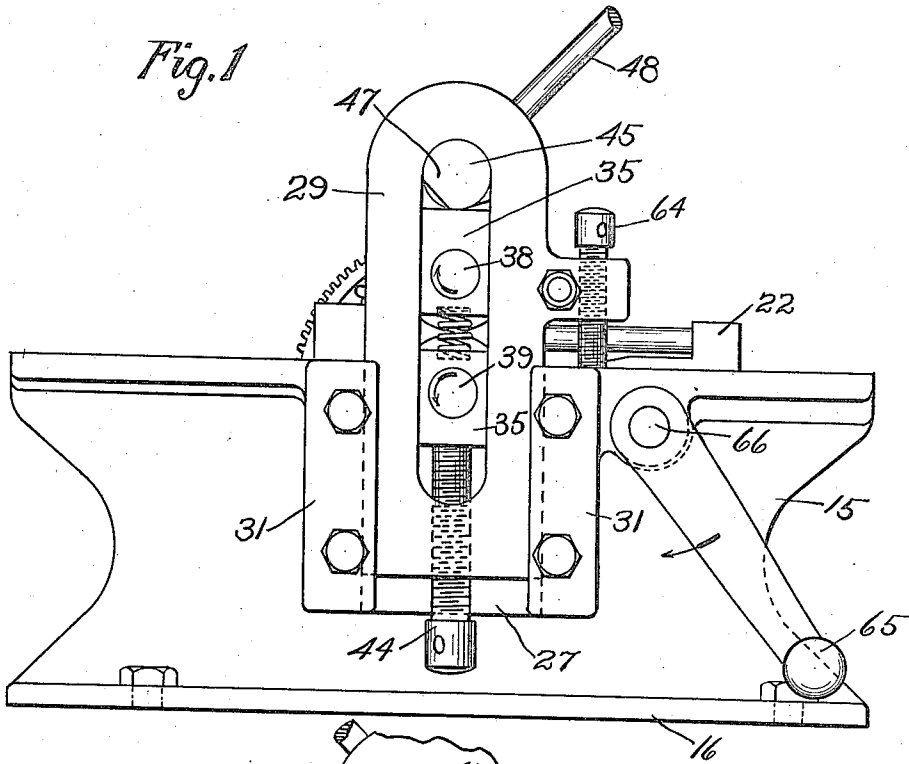


G. HAMILTON.
ENGRAVING MACHINE.
APPLICATION FILED OCT. 10, 1914.

1,153,550.

Patented Sept. 14, 1915.

3 SHEETS—SHEET 1.



Witnesses

W. H. Bardsley.
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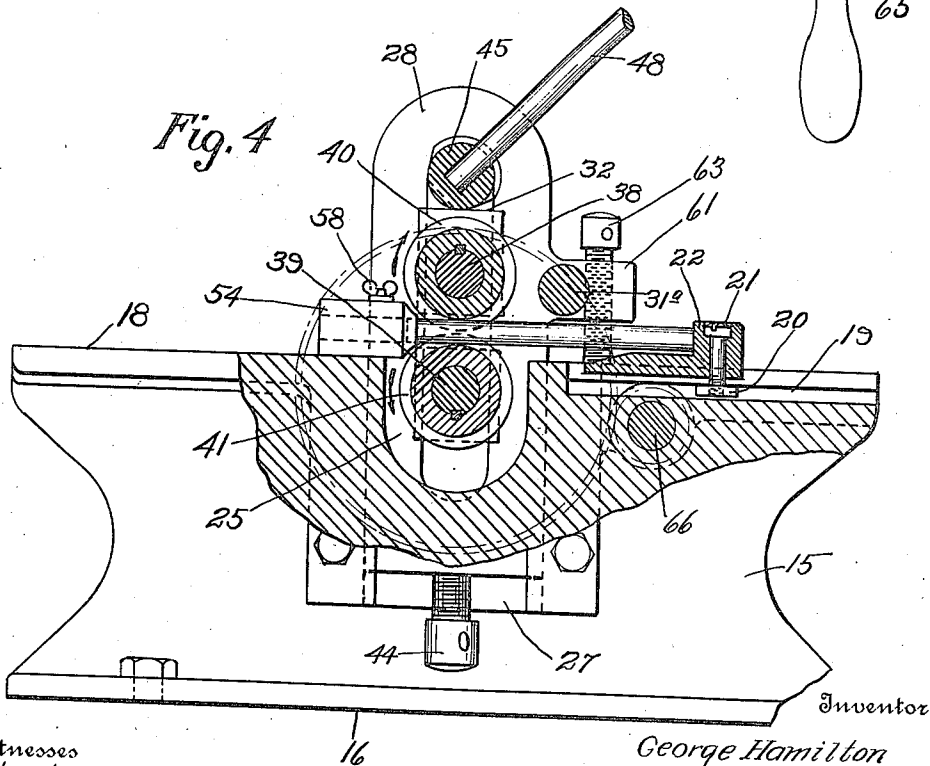
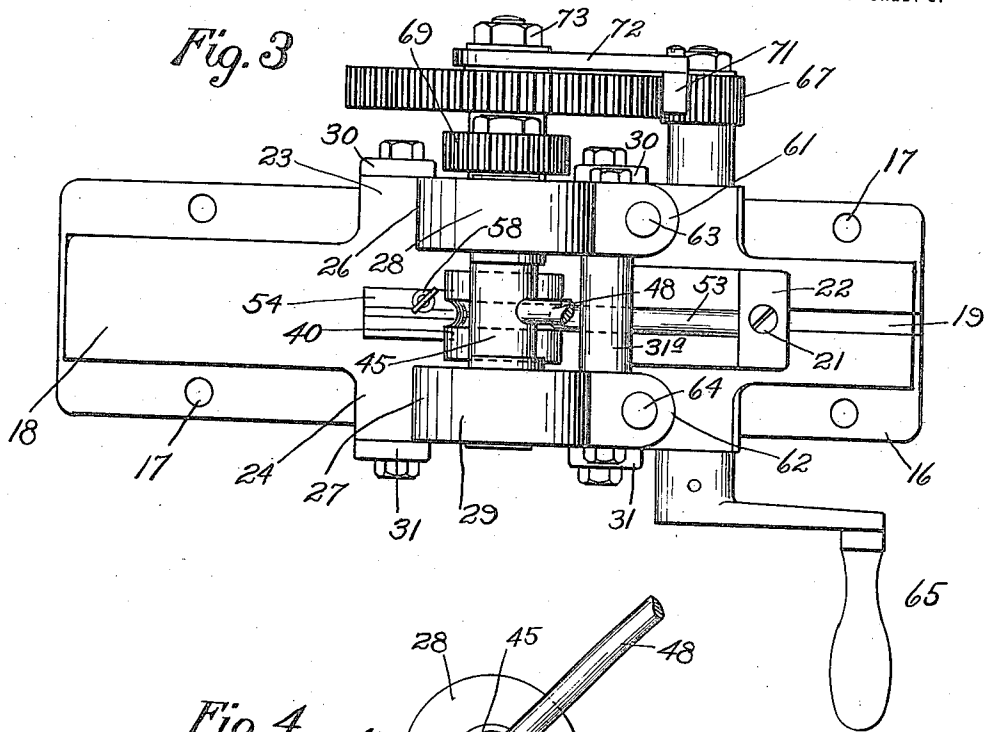
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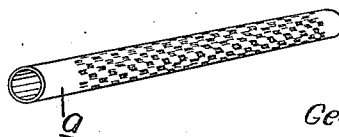
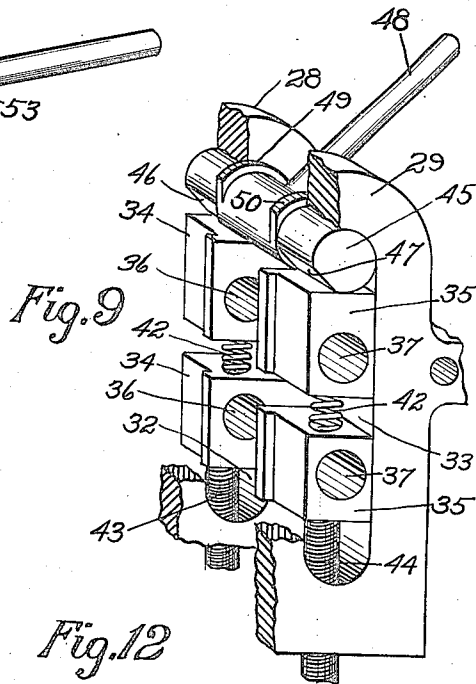
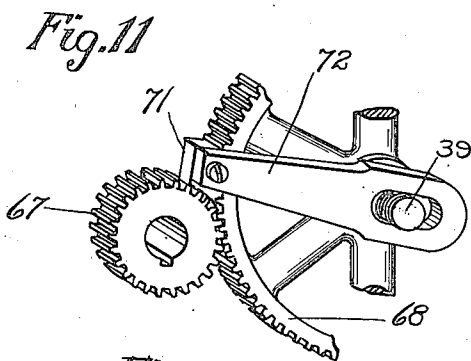
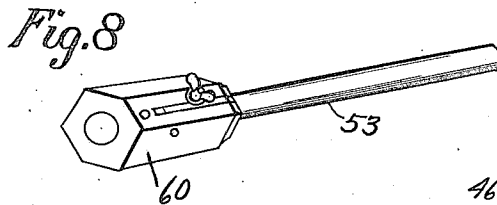
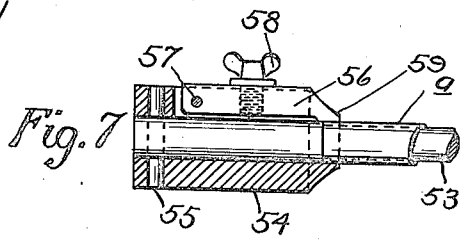
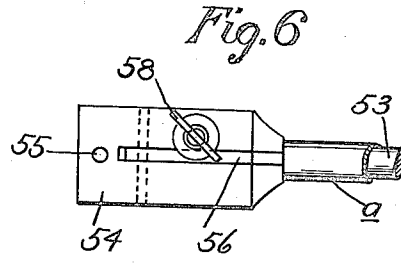
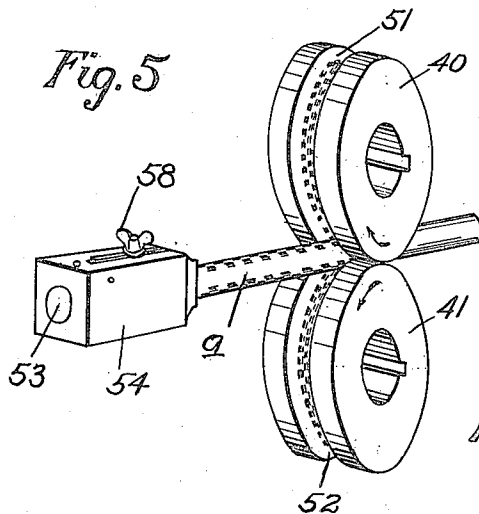
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3 SHEETS—SHEET 3.



Witnesses

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UNITED STATES PATENT OFFICE.

GEORGE HAMILTON, OF PROVIDENCE, RHODE ISLAND.

ENGRAVING-MACHINE.

1,153,550.

Specification of Letters Patent. Patented Sept. 14, 1915.

Application filed October 10, 1914. Serial No. 866,173.

To all whom it may concern:

Be it known that I, GEORGE HAMILTON, a citizen of the United States, and resident of the city of Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Engraving-Machines, of which the following is a specification.

This invention relates to engraving machines of that class adapted to form or cut a figure into the surface of the work by a rolling operation, and the invention has for its object to provide an engraving machine of this character having the work engaging faces of one or both of its rolls figured, whereby when the work is passed between these rolls the figure on the roll is cut into this surface of the work.

A further object of the invention is to provide means for supporting that surface of the work being engraved by the rolls.

The invention further consists in the grooving of the engraving rolls to receive work of a tubular form and to provide an arbor onto which the tube is placed to support the work while being passed between said rolls.

A still further object of the invention is the provision of guiding means for preventing the axial rotation of the tube while being operated upon by the engraving rolls, said guiding means being also adapted to serve as a gage by which the work may be rotated and re-positioned preparatory for the next operation.

With these and other objects in view, the invention consists of certain novel features of construction, as will be more fully described, and particularly pointed out in the appended claims.

In the accompanying drawings: Figure 1 is an elevation on the right side of the machine showing the general outline and also showing the adjustments by which the engraving rolls are set to properly receive the work. Fig. 2 is a view showing the driving gears on the left side of the machine. Fig. 3 is a plan view of the machine. Fig. 4 is an elevation from the right of the machine showing the middle portion partly in section. Fig. 5 is a perspective view of the engraving rolls in detail acting upon the work which is held on its guiding arbor. Fig. 6 is a top view showing a portion of the guiding arbor with the tube in position thereon also partly broken away. Fig. 7

shows the arbor guiding block in section and a small portion of the tube mounted on the arbor, also showing the clamping means for binding the tube on the arbor. Fig. 8 shows an arbor with a guiding block of hexagonal shape. Fig. 9 is a perspective view partly in section showing the frame and the engraving roll bearings mounted therein and also showing the cam at the top for moving and locking the rollers in operating position. Fig. 10 is a perspective view showing the driving pinion, and a portion of the main driving gear to which is connected the limit block for controlling the extent of the operating movement of the engraving rolls. Fig. 11 is a detail in perspective of the limit block. Fig. 12 is a perspective view showing a piece of the tubular work with one form of engraving indicated on its surface.

Referring to the drawings 15 designates the bed portion of my improved engraving machine. This bed has a flanged base 16 adapted to be bolted through holes 17 or otherwise secured to any suitable support. The upper face 18 of this bed is finished at one end for supporting the block shaped head of the engraving arbor and at its opposite end is grooved at 19 to receive the head or nut end 20 of the binding screw 21, whereby the gage 22 may be adjusted end-wise on its surface to control the end-wise positioning of the work in the machine. This bed is built out somewhat on either side of the upper face thereof as at 23 and 24 and the middle portion is cut away or recessed at 25 for the reception of the lower engraving roll presently described. These extensions 23 and 24 are grooved vertically at 26 and 27, in which grooves the duplicate frames 28 and 29 are mounted to be adjusted end-wise and are retained in said grooves by the two pairs of plates 30 and 31 and the tie bar 31^a. Each of these yoke frames is provided with an elongated vertical slot 32 and 33 in which are slidably mounted the flanged bearing blocks 34 and 35. These blocks are provided with holes 36 and 37 through which the shafts 38 and 39 extend for the support of the engraving tools 40 and 41, respectively. The upper and lower blocks of each pair are normally pressed apart by the spring 42 and the required distance between centers is obtained by adjusting the screws 43 and 44 which are threaded through the bottom ends of these

frames. It is found in practice necessary to provide means for quickly moving the rolls and to as quickly force them together again to release and engage the work. To accomplish this I have provided a cam shaft 45 which extends across and into the upper portion of these frames. A portion of each end of this shaft is flattened as at 46 and 47, whereby when the shaft is placed in one position the flattened surface permits the upper bearing blocks to raise and separate the rollers and when moved by the bar 48 from this flattened portion the upper roll is quickly forced downward by a cam action into operating relation to the lower roll. This shaft is provided with collars 49 and 50 to prevent end-wise movement.

My improved machine is more particularly adapted to operate upon and engrave the outer surfaces of tubular shaped members, as for instance those used for the handles of stenographic pens, pencils, and other tubular members. In order to operate upon tubes of this character I preferably form each engraving roll with a grooved surface as at 51 and 52 which grooves conform to the contour of the surface of the work to be engraved and in this particular case the bottom of the groove is provided with the figure to be cut into the surface of the work.

It is found in practice that the tube to be cut must be supported while being operated upon; and to accomplish this I have provided an arbor 53 having one end mounted in the block-shaped head 54 and secured therein by the pin 55, and in this block is mounted a dog 56 pivoted at 57, and a thumb-screw 58 is threaded into the block to one side of the dog with its collar overlapping the same, whereby when the work *a* is positioned on the arbor its inner end is engaged by the nose 59 of this dog and when the set-screw is set up this tube is gripped and firmly held in position on its arbor.

In some cases where it is desired to operate upon two opposite sides of the work at once, both of the rolls are provided with an engraving surface but where it is desired to operate upon one surface at a time one of the rolls may be figured and the other left plain.

In some cases it is desired to operate upon surfaces of the work at right angles to each other. To accomplish this I have formed the guiding block 54 square so that one of these surfaces will slide along the table while the work is being operated upon by the rollers and prevent the work from axial rotation after the first operation, and before the next a quarter turn will be made by the block which will present new faces to the work on the roll to be operated upon.

Fig. 8 illustrates a hexagonal block 60 which can receive a 60° turn instead of a

turn of 90°. Blocks of any other shape may be employed by the use of which different effects may be produced upon the work and tubes of different shapes may be operated upon. In some cases where larger engraving rolls are required it is found necessary to raise the two frames 28 and 29 bodily so as to bring the engaging surfaces of these rolls to the proper height relative to the surface 18 of the bed. To accomplish this I have provided ears 61 and 62 on the opposite frames through which I have threaded set-screws 63 and 64, and by their rotation the frames may be adjusted vertically. The driving of these engraving rolls may be accomplished by any suitable means either mechanically or by hand. I have herein shown a handle 65 attached to one end of the shaft 66 which passes through the machine and has a pinion 67 fixed to its opposite end. This pinion engages the large gear 68 which is mounted on the shaft 39 of the lower engraving roll and the two rolls are geared together by small gears 69 and 70 whereby when the hand of the operator rotates this handle the two engraving rolls are caused to rotate. In some instances it is found desirable to limit the degree of rotation of these engraving rolls. To accomplish this I have provided a block 61, see Figs. 10 and 11, mounted on the arm 72 which arm extends inward and is slotted to engage the shaft 39 and to which it is bound in position by the nut 73, see Fig. 2. By this construction the limit block 71 may be moved into the desired position around the circumference of the large gear and secured in that position so that when the gear is rotated this block will bring up against the pinion 67 and provide a stop to bring the engraving figure on the roll into proper position to start its operation upon the work.

The operation of my improved engraving machine may be more fully described as follows:—The operating handle 65 is rotated until the stop block 71 is brought into contact with the pinion 67. The rolls are then caused to separate by the cam shaft which is positioned by a forward movement of the bar 48. The tube *a* to be operated upon is placed upon the arbor 53 and is clamped thereon by setting up the thumb screw 58. One of the surfaces of the block end of the arbor is placed against the face of the bed and the work is then passed through between these separated rolls and its end brings up against the stop 22, fixed to the rear of the bed. The cam shaft 45 is now rotated backward to force the engraving rolls together, so that the engraving surfaces will operate upon and leave their impression upon the surface of the tube. The operating handle 65 is next operated to rotate the engraving rolls to feed the work backward a predetermined distance, or when

it is desired to operate upon the full length of the work the rolls are rotated until the work is fed completely outward from the rolls.

5 It will be seen with rolls of the form shown that a portion of the two opposite faces of the tube has been engraved by the first operation, and it only remains to turn the work one quarter of a revolution on its axis
10 so that the next side of the block will rest upon the table and repeat the operation; and at the completion of this last operation the tube will be engraved all the way around or such portion of it as may have been de-
15 signed to have been engraved by the shaping of the engraved surface of the rolls.

I claim:

1. An engraving machine comprising a pair of engraving rolls, a support independent of both rolls for that surface of the work being acted upon by the engraving portion of said rolls, means including the rolls for passing the work and support between said rolls, and means for controlling the position
25 of the support.

2. An engraving machine comprising a pair of rolls having their working faces adapted to receive and act upon the work to be engraved, a supporting arbor for the
30 work, means whereby said rolls may be operated to pass the work and arbor between them, and means for supporting the arbor.

3. In a machine for engraving tubes, a pair of engraving rolls having a working
35 face adapted to receive the work to be engraved, a supporting arbor on which the tubular work may be positioned, and means whereby said rolls may be operated to pass the tube and arbor between them.

40 4. In an engraving machine, a pair of grooved rolls, one of said rolls being provided with an engraving surface, an arbor for supporting the work while being oper-

ated upon, means whereby said rolls may be operated to pass the work and support be- 45 tween them, and means for controlling the axial rotation of the work while being passed between said rolls.

5. In an engraving machine, a pair of grooved rolls, one of which is provided with 50 an engraving surface, an arbor for supporting the work while being operated upon, means whereby said rolls may be operated to pass the work and support between them, means for securing the work to the arbor, 55 and means on the arbor for guiding the work through the rolls.

6. In a machine for engraving tubes, a pair of engraving rolls one of which is figured, a supporting arbor onto which the tube 60 is adapted to be fitted, means whereby said rolls may be operated to pass the tube and arbor between them, and means for controlling the extent of rotation of said rolls.

7. In a machine for engraving tubes, a pair of engraving rolls, figured, a support- 65 ing arbor onto which the tube is adapted to be fitted, means whereby said rolls may be rotated to pass the tube and arbor between them, and means for controlling the posi- 70 tioning of the work in the machine.

8. In a machine for engraving tubes, a pair of engraving rolls, a supporting arbor on which the tube is positioned, means whereby said rolls may be operated to pass 75 the tube and arbor between them, and means whereby said rolls may be quickly moved from operative to inoperative position and vice-versa.

In testimony whereof I affix my signature 80 in presence of two witnesses.

GEORGE HAMILTON.

Witnesses:

HOWARD E. BARLOW,
A. F. MACREADY.