(No Model.) 4 Sheets—Sheet 1.

A. T. BROWN.

MATTING MACHINE.

No. 440,909. Patented Nov. 18, 1890.

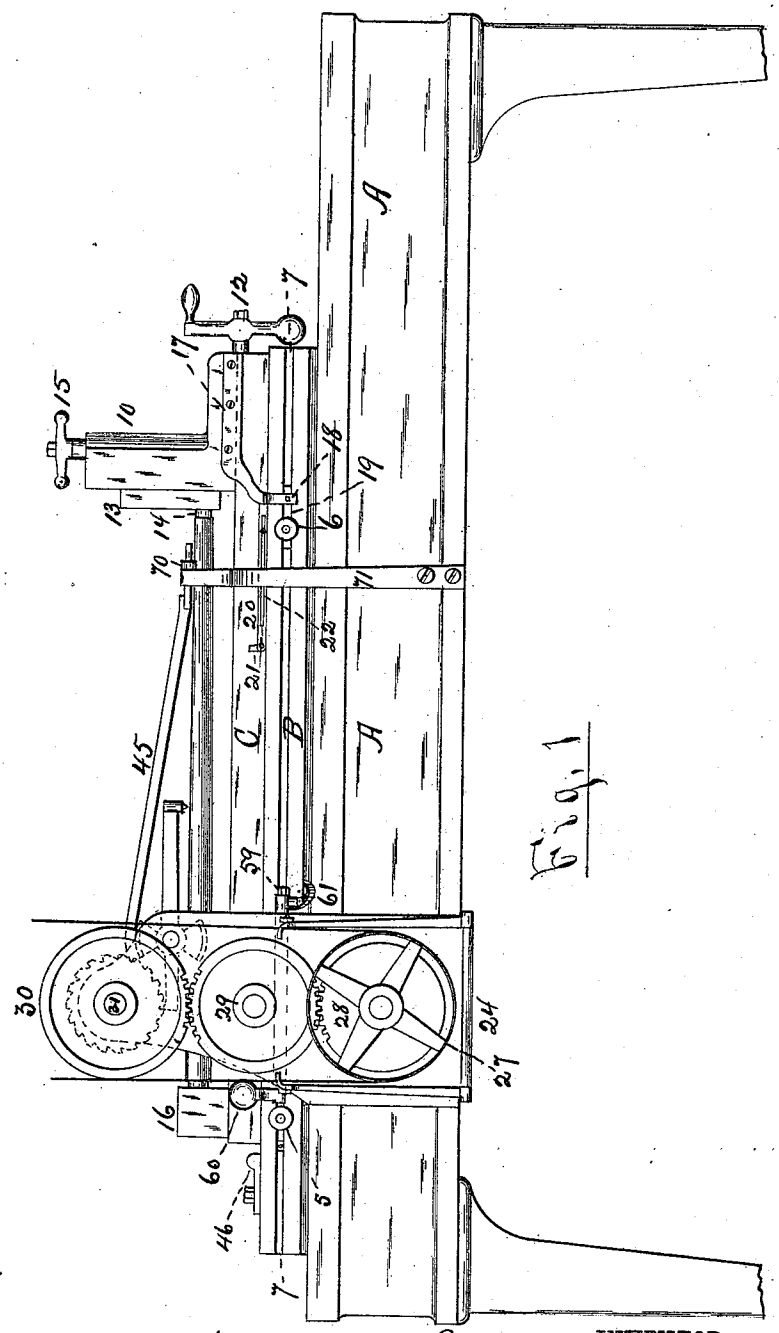


Fig. 1.

WITNESSES:

F. P. Denison.

Alexander T. Brown INVENTOR

BY

Smith & Denison

ATTORNEYS

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 4 Sheets—Sheet 2.

A. T. BROWN.

MATTING MACHINE.

No. 440,909. Patented Nov. 18, 1890.

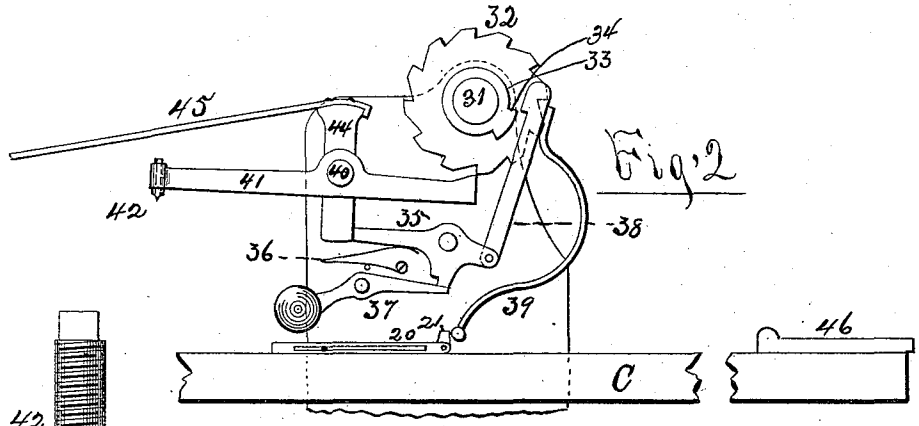


Fig. 2

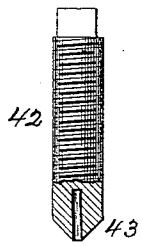


Fig. 4

Fig. 5

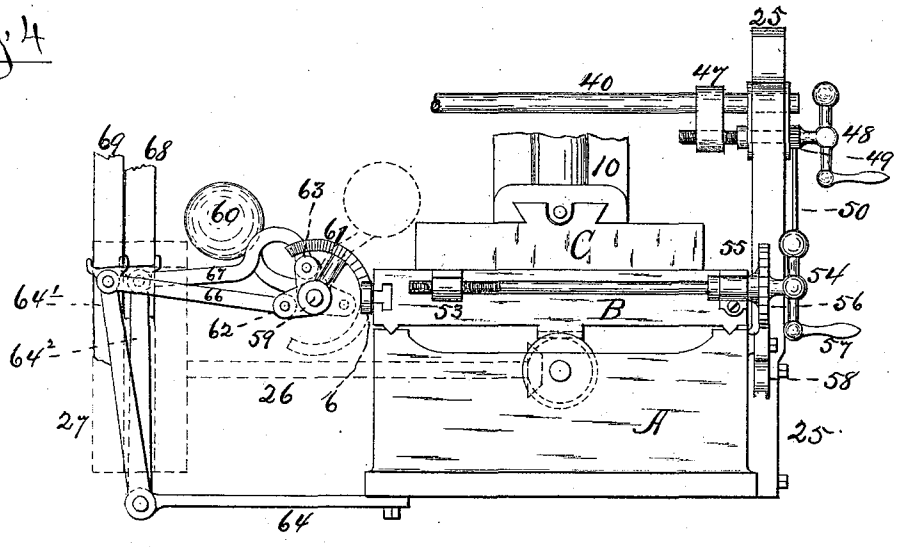


Fig. 3

WITNESSES:

C. A. Smith

F. T. Dennison

Alexander T. Brown INVENTOR

BY

Smith & Davison

ATTORNEYS.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 4 Sheets—Sheet 3.

A. T. BROWN.

MATTING MACHINE.

No. 440,909. Patented Nov. 18, 1890.

Fig. 6

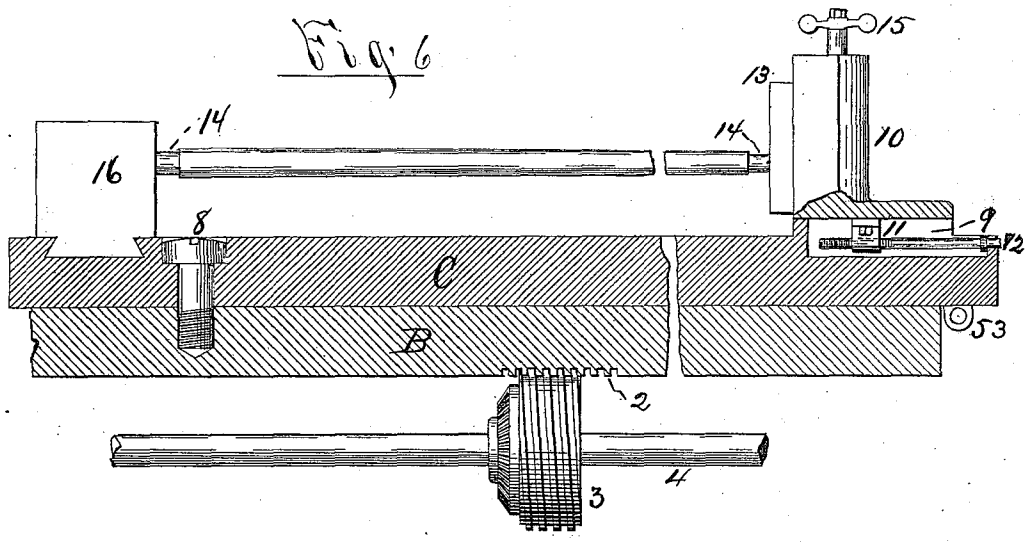
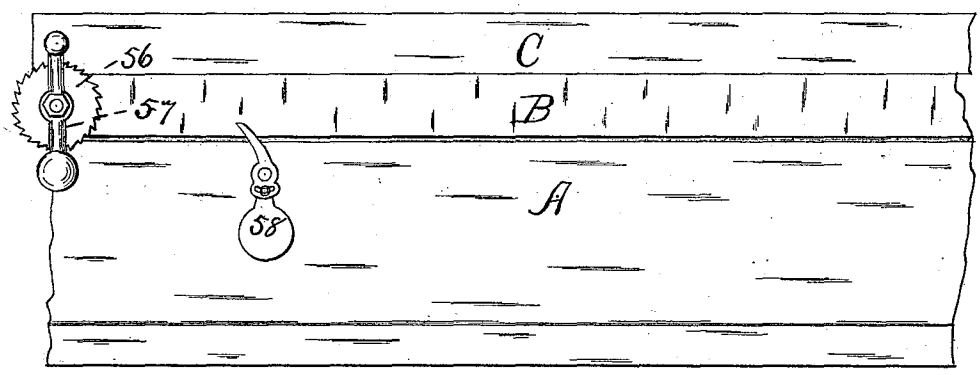


Fig. 7



WITNESSES:

C. A. Smith

T. P. Denison

Alexander T. Brown INVENTOR

BY his

Smith & Denison

ATTORNEYS

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.)

4 Sheets—Sheet 4.

A. T. BROWN.

MATTING MACHINE.

No. 440,909. Patented Nov. 18, 1890.

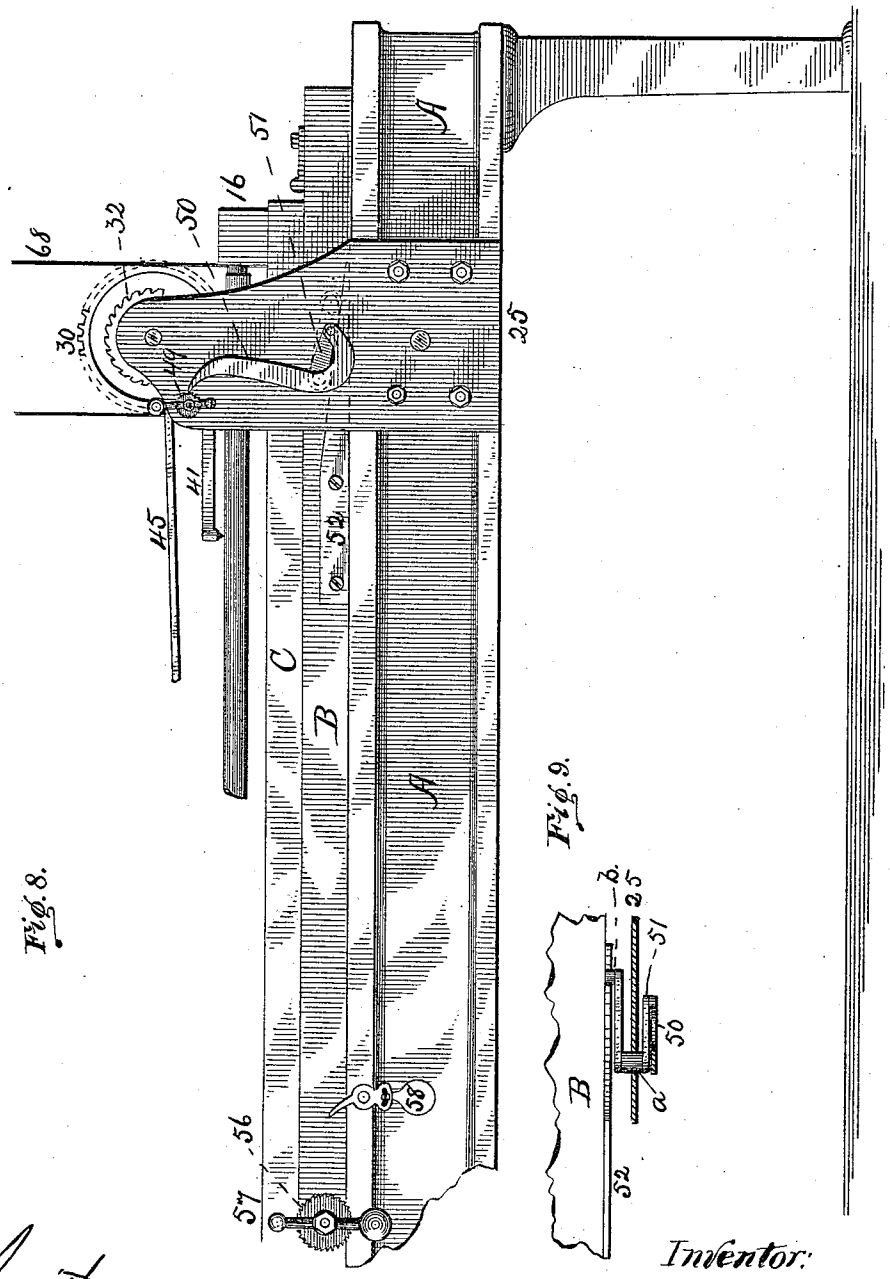


Fig. 8.

Fig. 9.

Attest:
L. A. Smith
F. T. Denison

Inventor:
Alexander T. Brown
By Smith & Denison Attorneys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ALEXANDER T. BROWN, OF SYRACUSE, NEW YORK.

MATTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 440,909, dated November 18, 1890.

Application filed May 27, 1889. Serial No. 312,210. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER T. BROWN, of Syracuse, county of Onondaga, in the State of New York, a citizen of the United States, have invented certain new and useful Improvements in Matting-Machines, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation. Fig. 2 is a side elevation of the striking and locking mechanism. Fig. 3 is an elevation of the front end of the machine. Figs. 4 and 5 are details of the striking-point. Fig. 6 is a sectional elevation of a part of the machine, showing the pivot-screw of the upper table, the longitudinal feed mechanism, and the puppet-screw. Fig. 7 is a side elevation of a part of the frame and beds, showing the transverse feed pawl and ratchet. Fig. 8 is a side elevation of a part of the machine on opposite side from Fig. 1. Fig. 9 is a detail of the transverse feed-pawl and for feeding transversely the striker.

My invention relates to that class of machines designed to produce upon the surface of a piece of metal a roughening like unto the hand-engraving called "matting," designed to deaden the surface, so that there can be no glistening, glare, or shimmer from it; and the more especial object of this invention is to so deaden the top of the upper rib between the barrels of a fire-arm that there can be no backward refraction of light or glare from it into the eyes of the gunner.

It consists in the several novel features of construction and operation hereinafter described, and which are specifically set forth in the claims annexed.

It is constructed as follows:

A is the bed or frame, provided with parallel longitudinal grooves like those upon the the bed of a metal-planer.

B is the traveling table, provided with parallel longitudinal ribs 1, fitting in the bed-grooves, and the lower face of this table is also provided with the transverse gear-cogs 2, meshing with the worm-gear 3 on the shaft 4 and driving the table. The shifter-wheel 5 is mounted adjacent to the edges of this table, upon a stud projecting from a T-block, the head of which is inserted into the T-groove 7 in the edge of the table, and the shifter-wheel 6 is mounted in like manner upon a like block, and this block is adjustable back and forth, according to the length of the stroke of the table, and this adjustment is automatic.

C is the swinging table lying upon the traveling table and connected to it by the pivotal screw 8, as shown in Fig. 6, inserted through it adjacent to its back end, so that this table can swing horizontally upon the table B. On the upper side of this table C, in the back end, I make a box-recess 9, and upon the sides thereof I place the longitudinally-sliding puppet 10, provided with a threaded lug 11 upon the bottom, and the hand-screw 12 passing through this lug operates the puppet. The front of this puppet is recessed vertically and adapted to receive the sliding block 13, which is provided with the projecting tapering points 14 and is adjusted vertically by the hand-screw 15. Upon the top of the front end I place another puppet 16, which is also provided with points like the points 14. These points are shown as illustrating a method of mounting and holding a pair of gun-barrels between the puppets; but it is evident that any other devices for holding other classes of work can be used instead to adapt the puppets to such other work. Upon the edge of the puppet 10, I secure the arm 17, which extends down close to the edge of the swinging table and down to the top of the table B, where it bends outward and downward over the edge of that table, and in its lower end I provide it with an eye to receive a stud 18 upon the T-block 19, which carries the shifter-wheel 6, so that whenever the puppet is moved forward or back the shifter 6 is automatically set by such movements of the puppet.

The tappet 20 consists of a slotted bar of metal having a head 21 and slot 22 to receive a guide pin or screw inserted through it into the edge of the table C, the tappet lying loosely upon the top of the table B, its rear end abutting against the front edge of the arm 17, and thus whenever the poppet 10 moves forward the arm 17 carries the tappet 20 forward with it and adjusts it in proper position, and whenever the arm moves back it leaves the tappet, and then the next movement of the table B will throw the tappet

back against the arm 17, and thereafter so long as this puppet 10 remains stationary the tappet will also. This tappet can be coupled or otherwise connected to the arm 17 when desired, so as to travel with it.

Adjacent to the front end I secure to the frame the standard 24 and 25, and upon the shaft 26 (in dotted lines in Fig. 3) I mount on one end the triple pulleys 27, constructed like the triple pulleys of a planer for two belts, and upon its other end I mount a bevel-gear meshing with a like gear upon the end of the worm 3, and thus drive the worm-gear and effect the travel of the table. Upon this same shaft, inside the triple pulleys, I mount a gear 28, meshing with the idler-gear 29, mounted loosely on a stud projecting from the standard 24, and this gear meshes with the gear 30, which is secured to the shaft 31, which shaft extends across and is journaled in both standards 24 and 25. Upon the shaft 31, centrally between the standards, I secure the striker 32, consisting of a metallic disk provided with cogs or teeth of substantially the form shown in the drawings, and alongside of this striker and upon the same shaft I secure the stop 33, consisting of a collar-body and quadrant stud or studs 34.

Upon a stud on the inner side of the standard 24, I mount the tumbler 35, mainspring 36, and trigger 37. The tumbler 35 is constructed with a front arm, a rear arm, and a downward extension provided with notches, substantially as shown in the drawings.

The trigger has a rear arm engaging with the notches in the tumblers and a front arm provided with a ball or downward arm, substantially as shown. To the front of the tumbler I connect the hook-bar 38, and to the front face thereof I secure one end of the sear-spring 39, the free end of which is provided with a head, substantially as shown. Upon the transverse rock-shaft 40, I secure the helve 41, the front arm of which extends to and engages with the cogs on the striker 32, and in the rear end I mount the adjustable screw-threaded stylus 42, consisting of a threaded rod provided with a conical and hollow point 43, or the point may be simply conical. Upon the same shaft 40, I also secure the bar 44, which may be integral with the helve 41, to the upper end of which I connect the spring 45, while the lower end engages with the rear arm of the tumbler 35 when the table is reversing.

Upon the top of the table adjacent to the side I mount the trigger-pull 46, consisting of a metallic bar having a rounded head and adapted to receive a screw to secure it in place, substantially as shown; also, upon the shaft 40, adjacent to the standard 25, I secure the arm 47, the lower end of which is adapted to receive the hand-screw 48, which is inserted through this standard. This hand-screw is also provided with a ratchet-pinion 49 outside of the standard, and 50 is the pawl, the point of which engages with the ratchet. The lower end of this pawl is curved substantially as shown, and is loosely connected to the bar 51, which bar is rigidly connected to a short shaft *a*, passing through the standard, and to the inner end of this shaft I secure another bar carrying a side roller *b*, as shown in dotted lines in Fig. 8 and in Fig. 9, and 52 is an inclined trackway upon the edges of the table upon which the roller travels, and as it rises thereon it lifts the pawl and turns the ratchet one or more cogs, thereby rotating the hand-screw 48, which slides the shaft 40 sidewise, and thus changing the position of the helve and point and giving it a uniform and automatic side feed, the article in the puppets remaining stationary. Inasmuch as the rib of a double-barreled gun is tapering or narrower at the muzzle than at the breech, I am compelled to have a taper feed, which I accomplish by swinging the table C sidewise—that is, as to the back end, the front end of the table not moving sidewise. Under the back end of the table C, I place a threaded boss 53, (shown in Fig. 3,) receiving the transverse hand-screw 54, which has its other bearing in the lug 55 upon the back end of the table B, and 56 is a ratchet mounted upon the hand-screw, and 57 is a handle. Upon the edge of the frame I pivotally mount the swinging pawl 58, the swing of which can be controlled by the quadrant slotway and pin, substantially as shown. Then as the table B, carrying with it the table C, moves forward, and just before it reaches the limit of this motion, the ratchet encounters the pawl, which engages with a tooth, and the remainder of the movement of the table is sufficient to turn the ratchet the distance of one tooth, rotating the hand-screw and swinging the table.

A shaft 59, lying parallel with the table, is mounted in or upon the standard 24 horizontally, and upon its front projecting end I secure an arm and ball-weight 60, while upon the other end I secure the scroll-wheel 61. Upon the same shaft adjacent to the scroll-wheel I secure the arms 62 63, standing at substantially a right angle to each other. Upon an arm 64, secured at one end to the frame, I pivotally mount the belt-shifters 64′ and 64^2, the one 64′ being connected to the arm 62 by the rod 66, and the other 64^2 to the arm 63 by the curved rod 67, substantially as shown.

When shifter-wheel 5 or 6 is carried by the travel of the table against the scroll-wheel, the table movement will rotate the scroll and operate the belt-shifters and reverse the table movement. When reversed from the position shown in Fig. 3, the arm 62 will rise and assume substantially the position shown as occupied by the arm 63 in the drawings, while the arm 63 will assume the position shown in dotted lines, and the curve of the rod 67 will hook over the shaft and the ball-arm will be as shown by the dotted lines; and from this construction it is a fact that, taking the position shown in Fig. 3, the belt 68 will start first

and be partly over onto the inner pulley before the belt 69 will start at all, and when the belts are running upon the two inner pulleys the shifting mechanism will then start the belt 69 before the belt 68, for the reason that the arm which is nearly vertical starts to move its shifter first, while the other arm does not affect its shifter until it rises to and passes a horizontal.

The operation of this striking mechanism is as follows: In the position shown in Fig. 2 all of the parts are locked, so that the striker cannot rotate to engage with the rear end of the helve; but when unlocked, as hereinafter described, then the helve is free to vibrate with the rotation of the striker and as this rotates the helve end snaps from the one tooth to another through the tension of the spring 45, which is connected at one end to the arm 44 and at the other end to a tension-adjusting screw 70, which is mounted in an arm 71, secured to the frame. Each time the helve so snaps from one striker-tooth to another this spring throws the point end of the helve down, the point 42 striking the gun-rib and making an indentation therein, the force of the blow and depth of the indentation being regulated by the tension upon the spring. Then as the rear end of the helve passes from the bottom of the striker-tooth out toward the point the point end of the helve is elevated for the next blow, so that when the striker is quickly rotated the vibration of the helve and the blows occur with great rapidity. When the striking-point reaches the end of the row at the breech end of the gun-rib, the striking mechanism is automatically stopped and locked in the following manner: The bed travel brings the tappet 20 forward until it encounters the free end of the spring 39, (shown in Fig. 2,) when the slight forward movement of the bed and tappet compresses the spring and throws the hook 38 over into engagement with the quadrant 34, and the partial rotation of the shaft pulls the hook-bar upward, which raises the front arm of the tumbler 35, throwing down its rear arm and compressing the mainspring 36, and also swings the downward extension of the tumbler, and the point of the trigger 37 passes into the notch in the tumbler and the striking mechanism is locked against striking. This occurs simultaneously with the reversal of the bed travel to carry it back to its starting-point, and when the back travel reaches its limit, and just as it reverses to travel forward, then the ball on the trigger 37 encounters the trigger-pull 46, and this throws the point of the trigger out of the notch in the tumbler, and the mainspring 36 throws the tumbler on its pivot, so that the point of trigger simply lies against the bottom of the tumbler, and the helve is free to vibrate with the rotation of the striker, as before.

What I claim is—

1. A vertically-vibrating helve mounted upon a rock-shaft and an engraving-point secured in the rear end of the helve, in combination with a toothed rotating striker engaging with the front end of the helve, as set forth.

2. A vibrating helve provided with a point on its rear end and mounted upon a rock-shaft, and a toothed rotating striker engaging with the front end of the helve, and an adjustable blow-regulating spring connected to the helve above the rock-shaft, in combination, substantially as described.

3. The combination, with the striker-shaft and means for rotating it, the toothed striker secured thereon, and the stop secured upon the shaft adjacent to the striker, of the vibrating helve mounted upon a rock-shaft, the blow-regulating spring secured as to one end to an arm upon the rock-shaft and as to the other to the main frame, the pivotally-mounted tumbler, the hook pivoted to the tumbler and adapted to engage with the stop, the trigger pivoted beneath and engaging with the tumbler and having a mainspring between them, the sear connected to the hook, and the tappet adjustably secured upon the sliding table, as set forth.

4. The combination, with the striker-shaft and means for rotating it, the toothed striker secured thereon, and the stop secured upon the shaft adjacent to the striker, of the vibrating helve mounted upon a rock-shaft, the blow-regulating spring secured as to one end to an arm upon the rock-shaft and as to the other to the main frame, the pivotally-mounted tumbler, the hook pivoted to the tumbler and adapted to engage with the stop, the trigger pivoted beneath and engaging with the tumbler and having a mainspring between them, the sear connected to the hook, and a trigger-pull mounted upon the sliding table and engaging with the free end of the trigger, as set forth.

5. The combination, with the traversing sliding table carrying the work, of a vibrating helve mounted upon a rock-shaft, a graver secured to the helve, a rotating toothed striker engaging with the front arm of the helve, and an adjustable blow-regulating spring connected to a vertical arm upon the helve-shaft, as set forth.

6. The combination, with a reversing table, of a vibrating helve, a rotating toothed striker and means for rotating the same, a blow-regulating spring connected to the helve, and means to lock the striker or unlock it when the table reverses, substantially as described.

7. The combination, with the reversing-table, of the shifter-wheels 5 and 6, adjustably mounted thereon, the scroll 61, mounted upon a shaft parallel with the table and supported independently thereof, arms 62 and 63 upon the shaft and bars 66 and 67, connecting them to the belt-shifters, and the belt-shifters, substantially as described.

8. The combination, with the vibrating helve, its striker and means to rotate the striker, and the sliding table, of a swinging table pivoted upon the sliding table, the pup-

pets upon the swinging table, and means to feed the swinging table sidewise with the reversal of the sliding table.

9. The combination, with the bed A and sliding table B, of the swinging table carrying the puppets, pivotally mounted upon the sliding table and means for swinging it automatically by the traverse of the sliding table, substantially as described.

10. The combination, with the bed and the sliding table mounted thereon, of the swinging table pivotally mounted upon the sliding table, means for swinging the table upon its pivot, comprising a threaded boss under the table, a transverse screw through the boss and a lug on the sliding table, a ratchet upon the outer end of the screw, and a swinging pawl pivoted upon the bed and adapted to engage with the ratchet with the traverse of the table, and means for simultaneously feeding the stylus sidewise, comprising an arm upon the rock-shaft carrying the helve, a screw through the standard engaging with the arm, a ratchet on the outer end of the screw, an arm pivoted upon the outer face of the standard, a gravity-pawl pivoted upon the arm and engaging with the ratchet, an inclined trackway upon the table, and a roller upon said arm engaging with the trackway with the traverse of the table, as set forth.

In witness whereof I have hereunto set my hand this 28th day of March, 1889.

ALEXANDER T. BROWN.

In presence of—

HOWARD P. DENISON,

MORGAN B. SMITH.