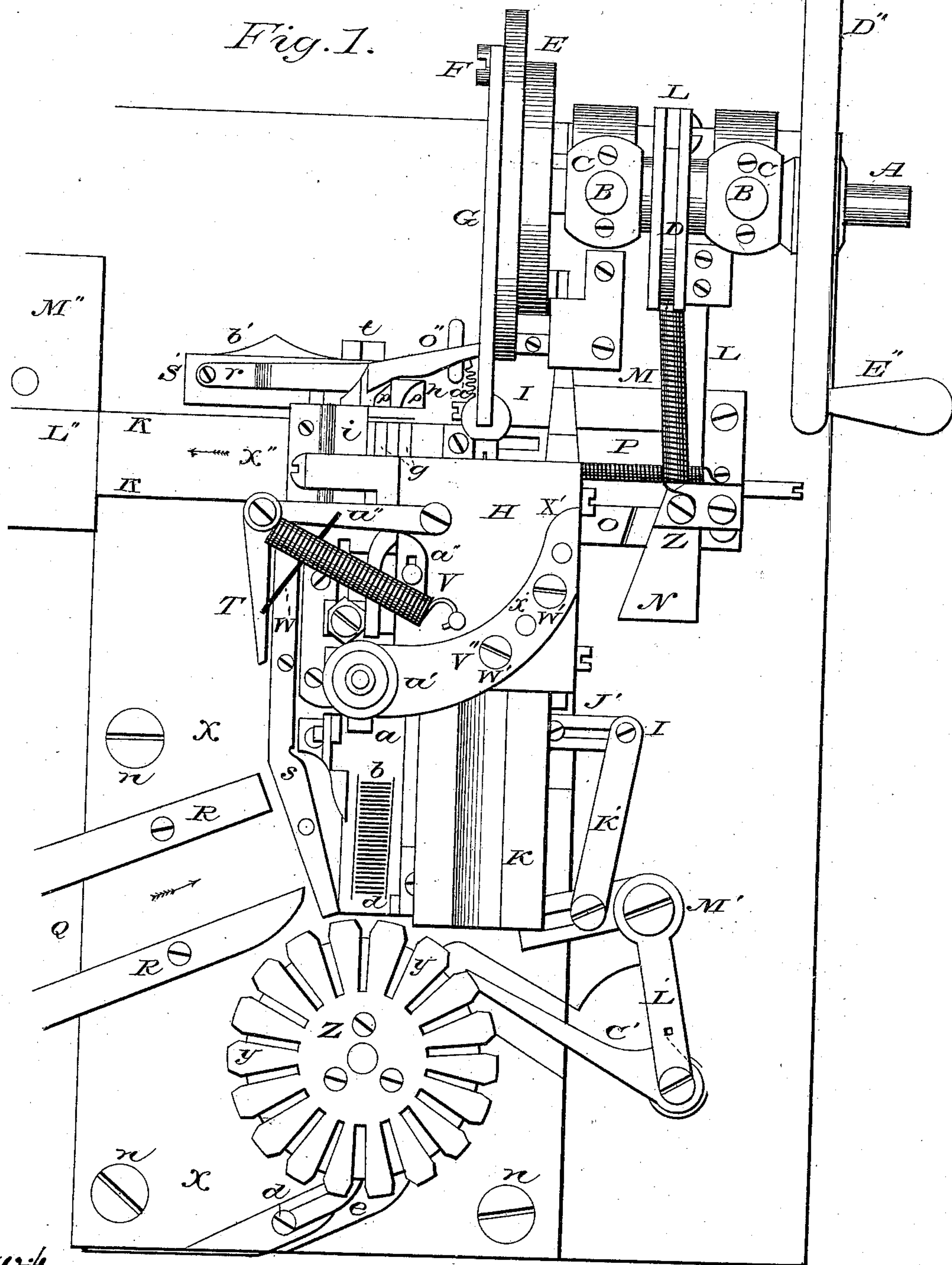


C. C. WEBSTER.  
Type-Rubbing Machine.

Patented April 6 1880.

Fig. 1.



Witnesses:

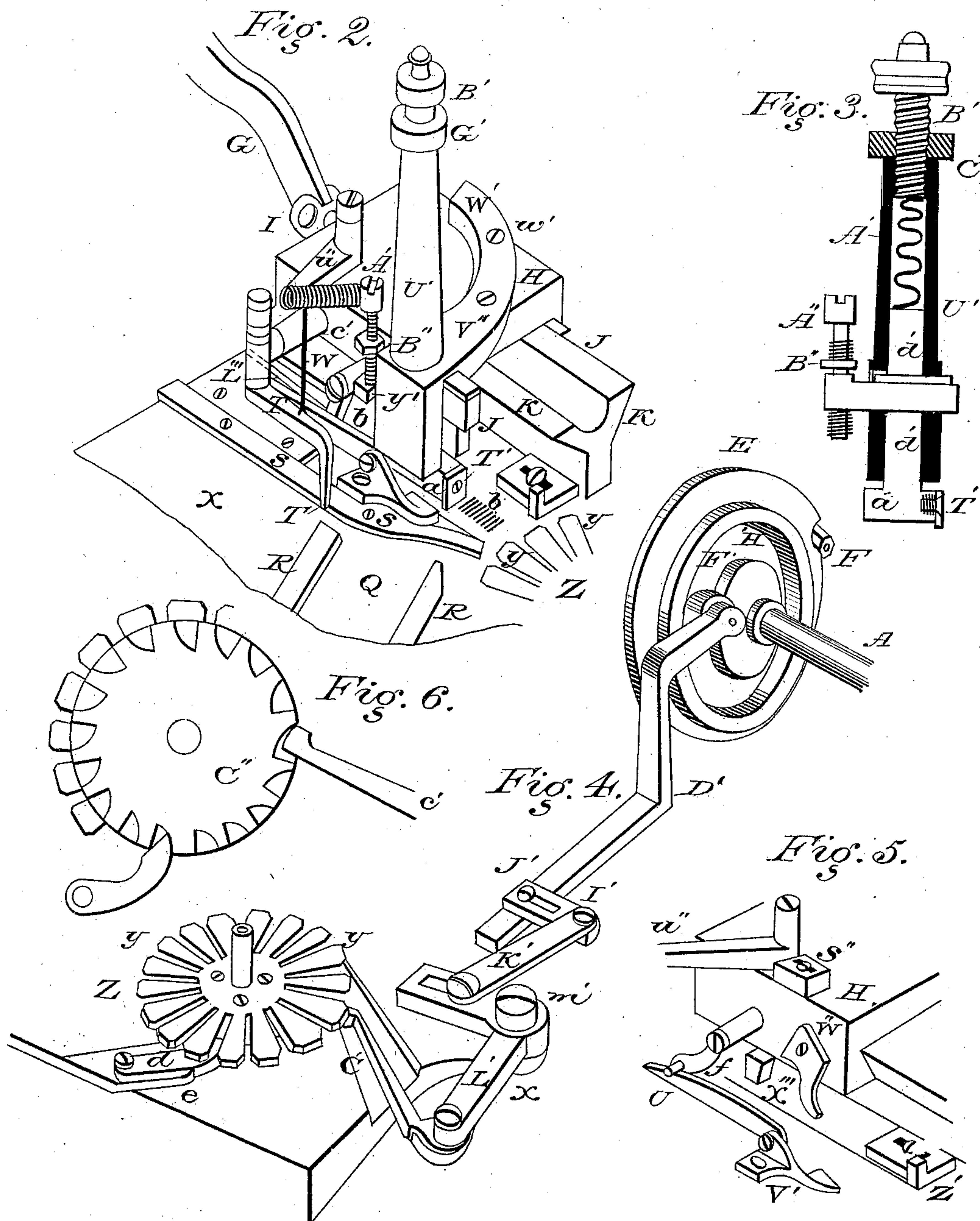
J. V. Knight.  
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C. C. WEBSTER.  
Type-Rubbing Machine.  
No. 226,377. Patented

**Patented April 6, 1880.**



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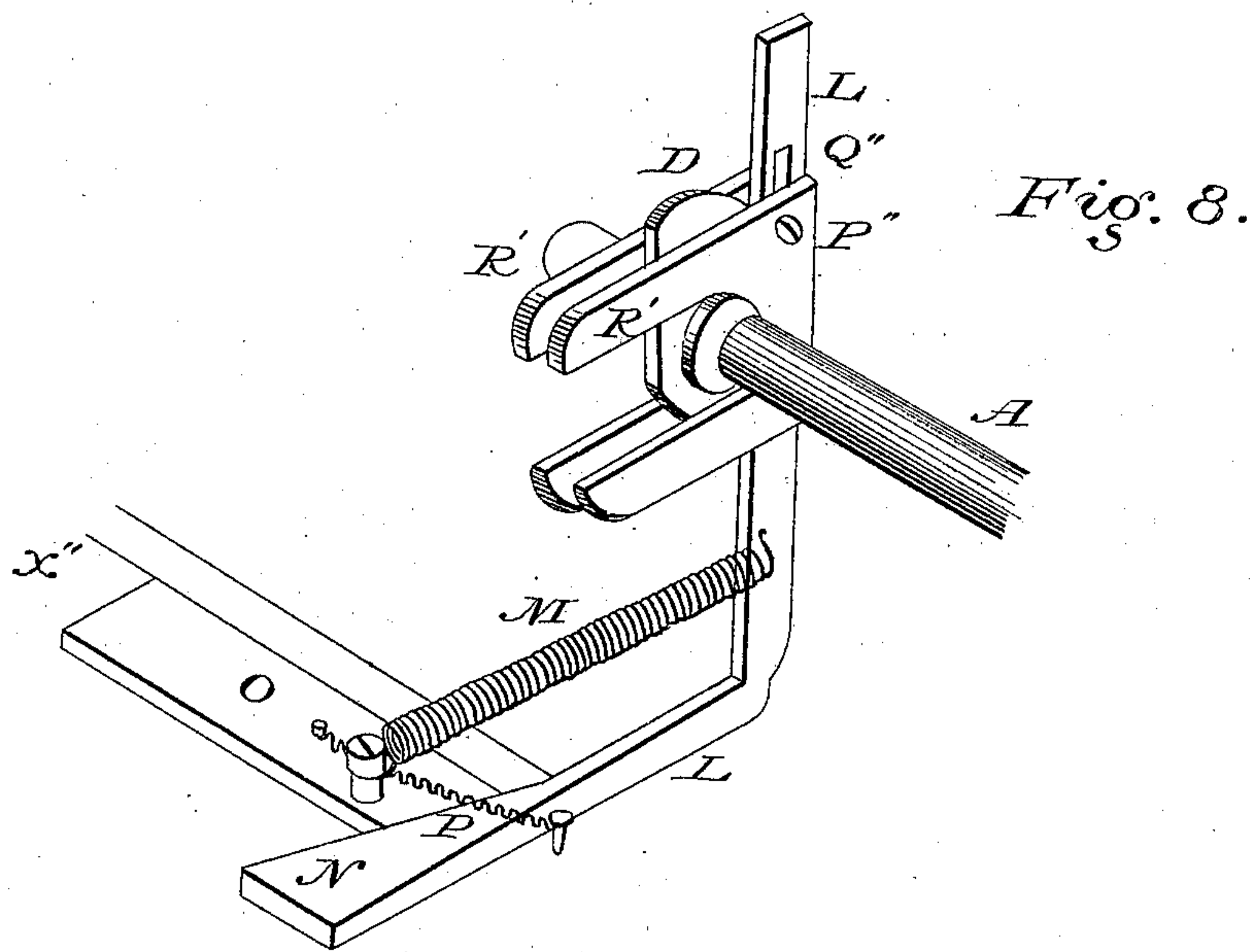
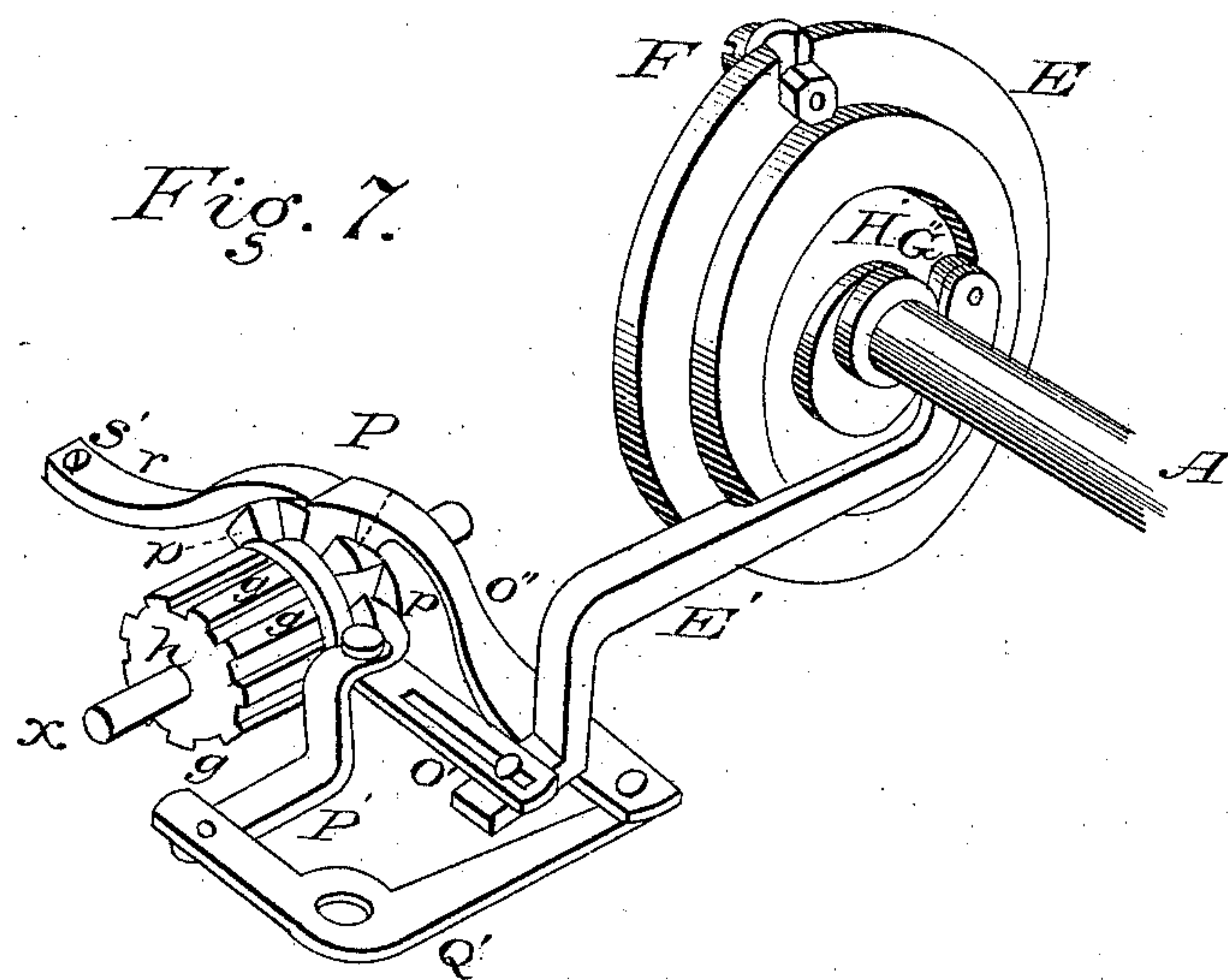
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Witnesses:

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Inventor:

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# UNITED STATES PATENT OFFICE.

CYRUS C. WEBSTER, OF MILWAUKEE, WISCONSIN.

## TYPE-RUBBING MACHINE.

SPECIFICATION forming part of Letters Patent No. 226,377, dated April 6, 1880.

Application filed August 29, 1878.

*To all whom it may concern :*

Be it known that I, CYRUS C. WEBSTER, of the city of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Machines for Rubbing Type; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Figure 1 of the accompanying drawings represents a top view of my invention. Fig. 2 represents a perspective elevation of a section of the same. Fig. 3 is a sectional view of the stud, presser-foot, and tension device. Fig. 4 is a perspective elevation of the cam-wheel, type-wheel, and the connecting arms and levers by which motion is communicated from the former to the latter. Fig. 5 is a sectional perspective elevation of the reciprocating table, showing the manner of connection with the table X, the eccentric device for raising the presser-foot, and the device for crowding forward the type, &c. Fig. 6 represents a top view of the ratchet-wheel by which the type-wheel is drawn and held. Fig. 7 represents a perspective elevation of the cam-wheel, the grooved cylinder, and the connecting arms and levers by which motion is communicated from the former to the latter. Fig. 8 represents a perspective elevation of the drive-shaft, eccentric, and arm by which motion is communicated therefrom to the slide.

The object of my invention is to provide a machine for rubbing type, or, in other words, for truing and smoothing their surfaces and reducing all the type of a single class to a uniform thickness, and depositing them with regularity upon a "stick," prepared for the purpose, automatically. The type are fed to the machine by the operator when the rest of the process is performed by the machine, which is operated by either manual or other power, all of which is further explained by reference to the accompanying drawings.

Similar reference-letters indicate corresponding parts.

A is the driving-shaft, to which power is

applied for driving the machine. B B are substantial posts for supporting the driving-shaft. They are provided with boxes C C, in which the shaft A revolves.

D is an eccentric, which is attached to and revolves with the shaft A. E is a cam-wheel. F is a wrist-pin, by which the crank G is secured to the wheel E. The crank G communicates a reciprocating motion to the sliding table H, to which it is attached by the bolt I. The table H is provided with heavy flanges J J upon its lower side, which flanges incline inward beneath the dovetailed bed-piece K, thus securing the table to the bed-piece, upon which it slides with a reciprocating motion with each revolution of the wheel E.

The eccentric D, co-operating with the spiral spring M, communicates a reciprocating motion to the arm L, the eccentric pushing the arm forward and the spring drawing it back again with each revolution of the shaft A. The arm L is provided with a wedge-shaped device, N, which, as it moves forward with the arm L, crowds the slide O toward the left at right angles to the arm L, and when the device N moves back the slide O is drawn back again by the spiral spring P. Thus the reciprocating motion of the device N, co-operating with the spring P, communicates a reciprocating motion to the slide O.

The type are fed to the machine by the operator, who places them in a horizontal position upon the plate Q, with their ends against the guiding-flanges R R, and presses them forward against the flange S. There is sufficient space between the ends of the flanges R R and the flange S for a single type only to pass endwise.

T is a reciprocating arm, which is connected with the reciprocating table H, with which it moves, by means of the arm *w''*, to which it is attached with a flexible joint. The arm *w''* is inclined backward, and thus held by the spiral spring V. The arm T is drawn inward against the flange S by the spring W. The small end of the arm T is bent downward against the table X, upon which the type rest, and as the table H is moved backward the arm T moves along upon the table X and against the edge of the flange S, striking against the end of the first type, thus crowding it backward into the



grooves *y* of the type-wheel Z, which arms *y* carry it around as the wheel Z revolves to a point opposite the foot *a*, when it is caught by said foot and carried forward over and at the same time pressed firmly and evenly down upon the file *b*, which movement across the file trues down and smooths the lower surface of the type.

The wheel Z remains stationary while the type is being pressed into it by the arm T, while at the same instant the foot *a* draws a type from the wheel across the file. As the arm T is drawn back preparatory to inserting another type, the wheel Z is thrown forward far enough for the reception of the next type by the movement of the pawl C', which pawl acts upon a ratchet provided for it upon the lower side of the wheel Z.

*d* is a pawl to prevent the wheel Z from turning backward, and it is held in place against the ratchet by a spring, *e*. When the type are thus filed they are caught by the arm *f*, by which they are carried still farther forward and deposited, one after another, in the grooves *g* of the revolving cylinder *h*, by which they are carried downward beneath the cylindrical cap *i*, (shown in Fig. 1,) which cap prevents the type from falling from the grooves until they are deposited, the other side up, upon the table X'' between the flanges K K, one after another in regular order, when, as fast as they are thus dropped, they are pressed toward the left, in the direction indicated by the arrow, by the action of the slide O, hereinbefore described. Thus the type, one after another, are crowded upon the plate L'' until it is filled, when the sliding plate M'', which is nicely adjusted to move evenly over the surface of the plate L'', is pressed backward against the ends of the type, whereby they are all at once deposited upon a type-stick arranged for them, by which they are conveyed away, and the process is complete.

When the type are first passed through the machine in the manner described and left inverted upon the plate X'', they are then conveyed in that position to the plate Q, when they are again fed through the machine, as before, when their other side is filed and smoothed, as by the first process described, and the operation is completed.

*n* are screw-bolts by which the table X, with its attachments, is secured to the supporting-posts.

O'' is a reciprocating pawl by which the cylinder *h* is revolved. It has a horizontal movement as it snaps past the ratchet-teeth P of the cylinder in its backward movement. In its forward movement it strikes against the teeth of the cylinder and revolves it forward.

*r* is a pawl, which also engages with the ratchet-teeth P and prevents the cylinder from turning backward. The pawl O'' is provided with spiral spring *a'*, and the pawl *r* with flat spring *b'*, which hold them respectively against the ratchet.

The pawl *r* is attached to the table by a screw-bolt, S', upon which it turns slightly as the pawl snaps past the teeth of the ratchet.

*t* is a bolt upon which the cylinder revolves. U' is a hollow stud, provided with arm V'', by which it is secured to the table H in a substantial manner by screws W' W' and pins X' X'. The office of the hollow stud is to furnish strong bearings for the shank *d'* of the presser-foot *a*, that the presser-foot be held rigidly upon the type. There is also a spiral spring, A', within the stud U', which presses down upon the presser-foot *a*, thus holding it firmly against the type.

B' is a tension-screw, by which the pressure of the spring A' is increased or diminished according to the required pressure upon the type.

C' is a lock-nut, which prevents the screw B' from coming loose when once adjusted. The cam-wheel E operates both the arm D' and E'. (Shown respectively on Sheets 2 and 3.)

Both the arms D' and E' are provided with friction-rollers F' and G'', which operate in the cam H'. The arm D' is rigidly attached to the bar I' with a bolt, J'. The bar I' is attached to the bar K' by a bolt, forming a flexible joint. The bar K' operates the elbow-crank L', which is secured to the table X by bolt *m'*. The elbow-crank thus changes the direction of the motion and operates the pawl C' against the ratchet C'', thus driving forward the wheel Z.

One arm of the elbow-crank L' and the bar I' are provided with slots, by which their connection may be adjusted to regulate their length of stroke and provide against wear, &c.

The bar E' is rigidly attached to the bar O'. The bar O' is made adjustable, and is connected to the bar P' with a flexible joint. The bar P' operates the elbow-crank Q', by which the motion is changed. The crank Q' operates the pawl O'', the office of the pawl O'' being to drive the cylinder *h*, as before described. Thus as the cam-wheel E revolves the type-wheel Z and cylinder *h* each alternately revolve and stand at rest with each stroke of the respective arms D' and E'.

The arm L is provided with two U-shaped plates, R' R', one on each side of the eccentric D, their office being to steady and support the arm L in a vertical position against the eccentric D as it is moved backward and forward, as before described.

S'' is an adjustable gage, which limits and checks the backward movement of the arm U''. The presser-foot *a* is provided with a block, T', which is temporarily attached to it by a screw, the lower edge of the block T' projecting slightly below the under surface of the foot *a* far enough to engage against the end of the type as the foot presses upon it, thus crowding the type forward in front of it across the file.

The bar U serves as an inclined plane to raise the arm *f* in its backward movement over the type. When the arm *f* reaches the highest end of the bar U, it drops of its own



gravity upon the projecting flange of the bracket V'. When in its forward movement it passes beneath the bar U, crowding the type over which it previously passed in front of it and depositing it in the grooved cylinder h, as before described. The bar U, having a flexible-joint attachment to the bracket V', is raised by the arm f when it passes under it, and drops of its own gravity as soon as the arm f is withdrawn.

W'' is an eccentric lever attached to the side of the table H with a screw-bolt. When the table H moves forward the lower end of the eccentric strikes against the knob X''', which throws the eccentric in a vertical position beneath the arm y' of the arm c', (shown in Fig. 2,) in which position it remains until by its backward movement the eccentric strikes against the block Z', when it is again thrown out of its vertical position.

By the first-described movement of the eccentric it raises up the arm y' of the arm c', which strikes against the adjusting-screw A'', whereby the presser-foot a is raised above the file and type hereinbefore mentioned until it is carried back above the next type, when, by the contact of the eccentric with the block Z', the presser-foot a drops instantaneously upon the type. Thus the presser-foot is caused to rise and fall with each backward and forward movement of the table H. The height required for the foot a may be regulated by the adjusting-screw A''. By turning it down toward the arm y' it will raise the foot higher; by a reverse movement, not so high. When the screw A'' is properly adjusted it may be secured in that position by turning down the lock-nut B'' firmly against the arm y'.

C'' represents the ratchet-wheel upon the under side of the wheel Z, in which the pawls C' and d operate. D'' is a balance-wheel, to which a handle, E'', is attached for operating the machine, but which parts may be substituted by any suitable propelling device.

The arm L is raised and lowered and adjusted to different sizes of type by means of the adjusting-screw P'', which passes from one plate, R', to the other through the slot Q'', and secures the arm between the plates at any point adjusted by simply tightening the screw P''. When the arm L is thus adjusted to the type a plate, X'', of corresponding thickness, is selected to be used therewith, several plates of various thicknesses being required for the several different-sized type. When the arm L and plate X'' have thus been changed it becomes necessary to readjust the table L'' and slide M'' higher or lower, as the case may be, to correspond with the plate X'' used. The supports of the table L'' are so constructed that they may be lengthened or shortened and adjusted at the point desired by a set-screw in the ordinary manner.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the hollow stud U', provided with presser-foot a, adjusting-screw A'', spiral spring A', tension-screw B', and arm V'' with the table H, all substantially as and for the purpose specified.

2. The combination of the hollow stud U', provided with presser-foot a, adjusting-screw A'', spiral spring A', tension-screw B', arm V'', and table H, with the arm c', for the purposes set forth.

3. The combination of the sliding table H, having the reciprocating presser-foot a, with the arm U'' and arm T, arranged to operate against the outer edge of the flange S, substantially as described.

4. The sliding table H and arm U'', having spring V, in combination with arm T, having spring W, arranged to operate against the outer edge of flange S, for the purpose set forth.

5. The sliding table H, in combination with the arm U'', having spring V, arm T, having spring W, and check-block S'', for the purposes set forth.

6. The type-carrying wheel Z, having a series of radial grooves, y, for the reception of type, in combination with arm T and sliding table H, substantially as described.

7. The type-carrying wheel Z, having a series of radial grooves, y, for the reception of type, in combination with ratchet-wheel C'', arm T, and sliding table H, substantially as described.

8. The type-carrying wheel Z, having a series of radial grooves, y, for the reception of type, in combination with ratchet-wheel C'', pawls C' and d, arm T, and sliding table H, substantially as described.

9. The sliding table H, having arm T, traversing the outer edge of flange S, in combination with the type-carrying wheel Z, for the purposes set forth.

10. The table H, having the reciprocating presser-foot a and spring-arm T, arranged to operate against the outer edge of flange S, in combination with the feed-table Q, having flanges R, substantially as described.

11. The arm T, arranged to operate against the outer edge of flange S, in combination with the feed-table Q, having flanges R, and type-carrying wheel Z, for the purposes set forth.

12. The combination of the arm E', having anti-friction bearings moving in a horizontal plane, and actuated by the cam-wheel E, with the adjustable arm O', arm P', elbow-lever Q', and pawl O'', substantially as shown and described.

13. The combination of the arm E', moving in a horizontal plane and operated by the cam-wheel E, with the adjustable arm O', arm P', elbow-lever Q', pawl O'', having spring a', and ratchet-wheel P, of grooved cylinder h, substantially as shown and described.

14. The combination of the grooved cylinder h, for the inversion and conveyance of type to a lower type-plate, with the type-guideway L''',



arranged in a horizontal plane above the cylinder *h*, and the type-plate *X''*, arranged below and under the periphery of the cylinder, substantially as specified.

- 5 15. The cylinder *h*, provided with grooves *g* and ratchet *P*, in combination with the concavo-convex cap *i*, pawl *r*, pawl *O''*, and type-plate *X''*, all substantially as and for the purpose specified.
- 10 16. The cylinder *h*, provided with grooves *g*, in combination with the concavo-convex cap *i* and type-plate *X''*, for the purposes set forth.
- 15 17. The cylinder *h*, provided with grooves *g*, concavo-convex cap *i*, type-plate *X''*, in combination with the table *L''*, having sliding plate *M''*, for the purposes set forth.
- 20 18. The cylinder *h*, having grooves *g*, in combination with the concavo-convex cap *i*, beveled slide *O*, wedge-shaped arm *L*, and eccentric *D*, for the purposes set forth.
- 25 19. The adjustable U-shaped side plates, *R'*, and eccentric *D*, in combination with the wedge-shaped arm *L*, having an upright post, beveled slide *O*, and springs *M* and *P*, for the purposes set forth.
- 30 20. The reciprocating presser-foot *a*, in combination with the type-wheel *Z*, substantially as and for the purposes specified.
- 35 21. The eccentric *W''*, arm *c'*, carrying arm *y'*, screw *A''*, bearing on arm *y'*, and the presser-foot *a*, all as combined and arranged to co-operate in raising and dropping the foot *a* with each horizontal vibration of the table *H*, substantially as shown and described.
- 40 22. The sliding table *H*, having the arm *f*, in combination with the arm *U*, for the purposes set forth.
- 45 23. The sliding table *H*, having the arm *f*, in combination with the arm *U* and type-guideway *L'''*, for the purposes set forth.
24. The sliding table *H*, having the arm *f*, in combination with the arm *U*, type-guideway *L''*, and grooved cylinder *h*, for the purposes set forth.
25. The file *b*, in combination with the reciprocating presser-foot *a* and type-carrying

wheel *Z*, having radial grooves *y*, for the purposes set forth.

26. The table *H*, provided with presser-foot *a*, operating as described, and arm *c'*, in combination with file *b* and type-wheel *Z*, automatically moved, for the purposes set forth.

27. The sliding table *H*, having the arm *f*, in combination with the arm *U* and presser-foot *a*, for the purposes set forth.

28. The sliding table *H*, having the arm *f*, in combination with the arm *U*, presser-foot *a*, and file *b*, for the purposes set forth.

29. The combination of sliding table *H*, having arm *T* and presser-foot *a*, with the type-wheel *Z* and file *b*, substantially as described.

30. The combination of the sliding table *H*, having the arm *f* and presser-foot *a*, with the arm *U*, file *b*, and type-wheel *Z*, for the purposes set forth.

31. The sliding table *H*, having arm *c'*, eccentric *W''*, arm *T*, arm *f*, and presser-foot *a*, in combination with the arm *U*, file *b*, and type-wheel *Z*, for the purposes set forth.

32. The sliding table *H*, having arm *c'*, eccentric *W''*, with its operating mechanism, and arm *f*, in combination with the arm *U*, file *b*, and presser-foot *a*, for the purposes set forth.

33. The sliding table *H*, having arm *T*, arranged to operate against the outer edge of flange *S*, and having arm *f*, arm *c'*, and presser-foot *a*, in combination with the galley *Q*, type-wheel *Z*, file *b*, arm *U*, type-guideway *L'''*, and cylinder *h*, all for the purposes set forth.

34. In a type-rubbing machine, a presser-foot, *a*, provided with a hook, *T'*, having an up-and-down and back-and-forth endwise motion, in combination with an automatic type-feeding device, substantially as set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

CYRUS C. WEBSTER.

Witnesses:

K. SHAWVAN,  
WILLIAM LAWRIE.