

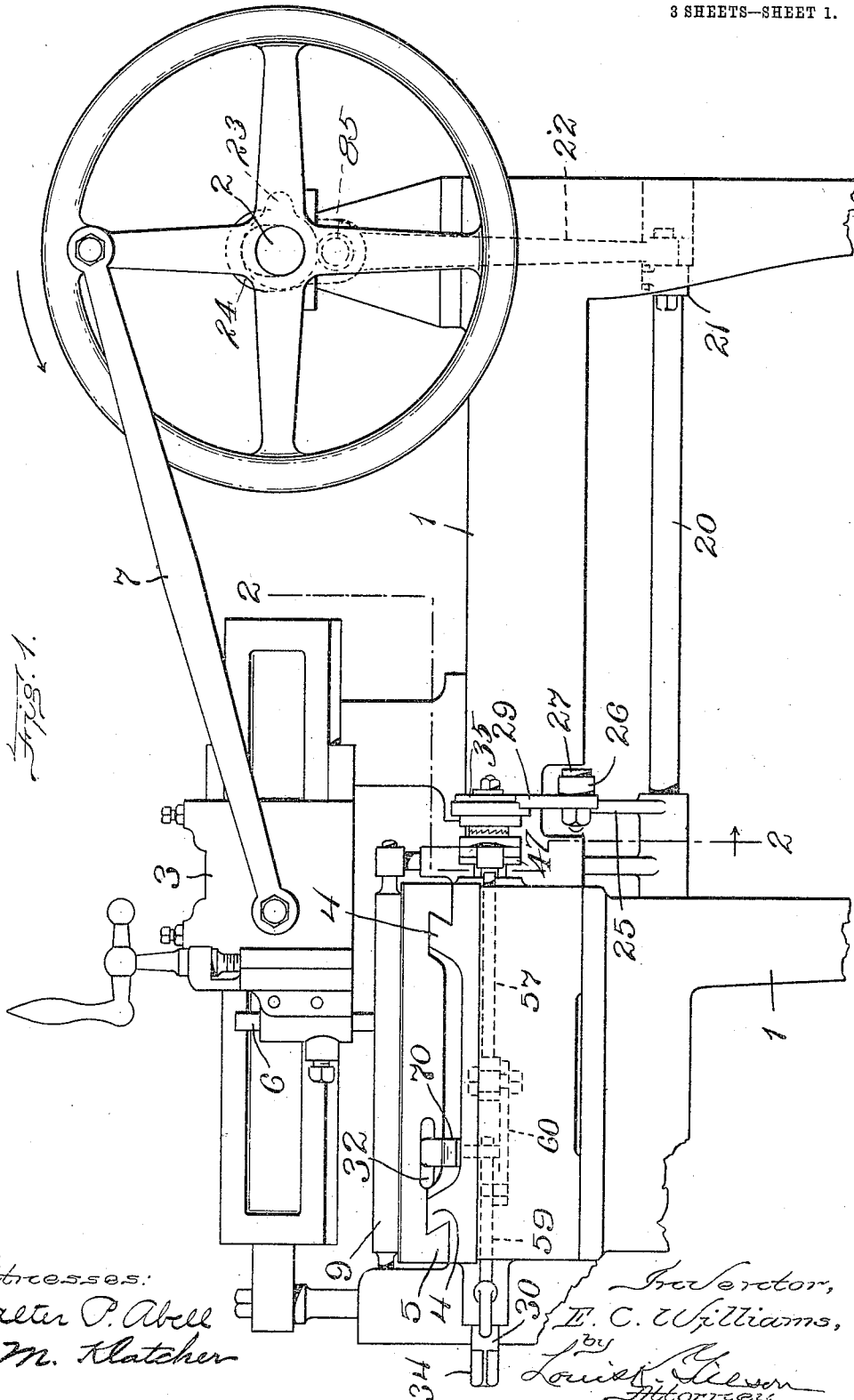
E. C. WILLIAMS.
ROUGHING MACHINE.

APPLICATION FILED AUG. 24, 1907.

945,833.

Patented Jan. 11, 1910.

3 SHEETS—SHEET 1.

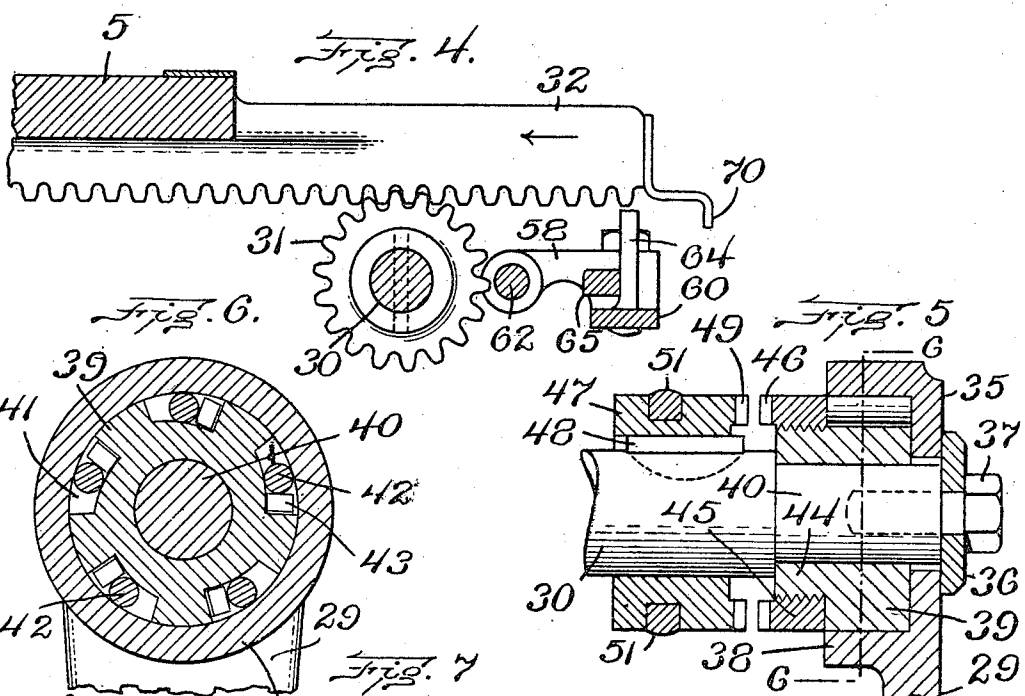


Witnesses:
Walter P. Abell
E. M. Klatcher

Inventor,
E. C. Williams,
by
Louis G. Benson
Attorney

945,833.

3 SHEETS—SHEET 2.



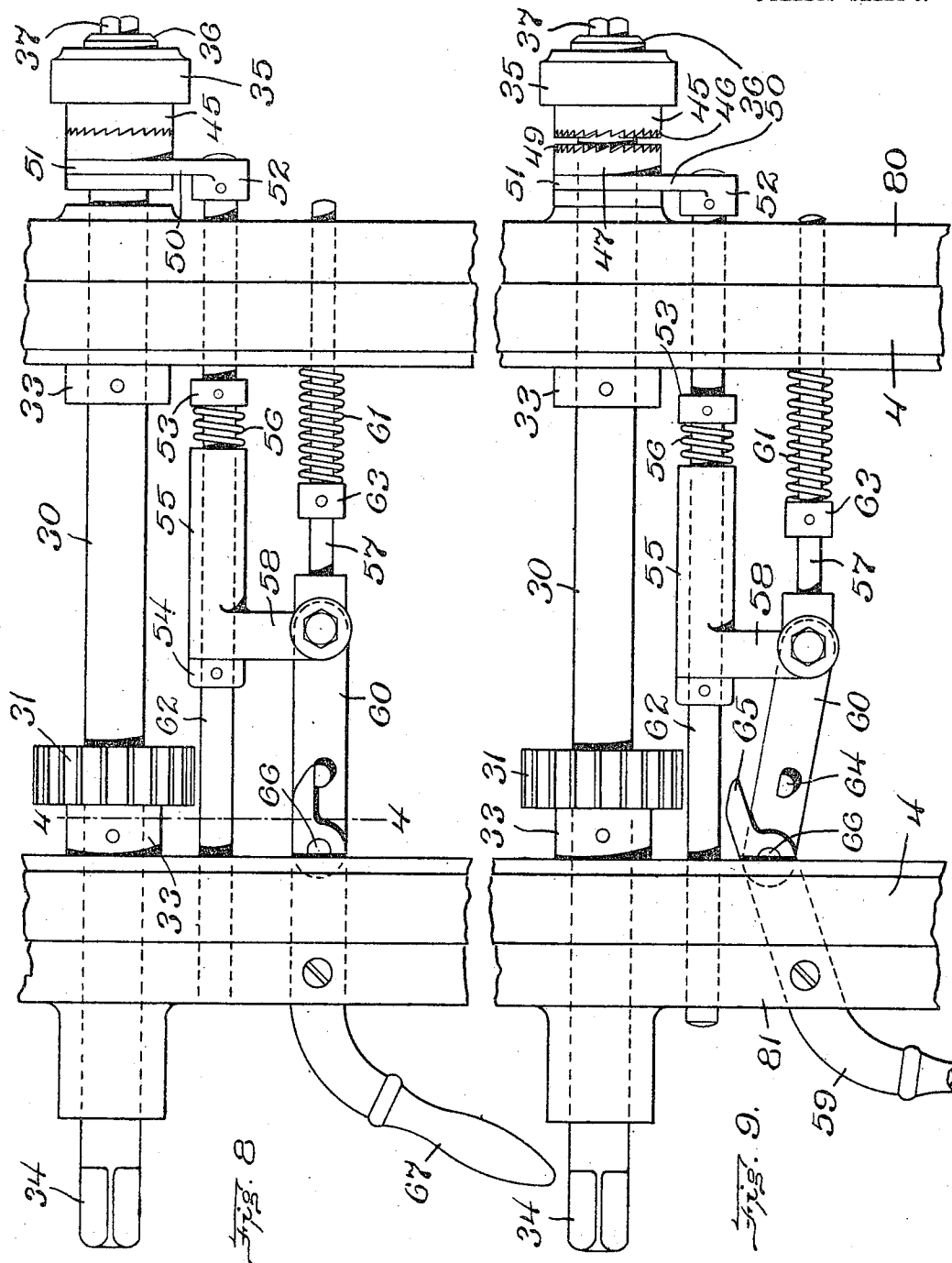
For Sector,
B. G. Williams,
by Louis A. Nelson
Attorney

E. C. WILLIAMS.
ROUGHING MACHINE.
APPLICATION FILED AUG. 24, 1907.

945,833.

Patented Jan. 11, 1910.

3 SHEETS—SHEET 3.



Witnesses:
Walter P. Abell
E. M. Klatcher

Inventor,
E. C. Williams.
by Louis H. Nelson
Attorney

UNITED STATES PATENT OFFICE.

EDWARD C. WILLIAMS, OF CHICAGO, ILLINOIS.

ROUGHING-MACHINE.

945,833.

Specification of Letters Patent.

Patented Jan. 11, 1910.

Application filed August 24, 1907. Serial No. 389,999.

To all whom it may concern:

Be it known that I, EDWARD C. WILLIAMS, a citizen of the United States, and resident of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Roughing-Machines, of which the following is a specification, and which are illustrated in the accompanying drawings, forming a part thereof.

This invention relates to a new and improved roughing machine for stereotype plates, and consists in the improved means for operating and controlling the bed of the machine.

Figure 1 in side elevation shows a machine constructed in accordance with my invention, the carrier and its knife appearing above the bed of the machine that supports the plate, the ways of the carrier and bed being shown at right angles to each other; Fig. 2 is a cross-sectional view, taken on line 2—2 of Fig. 1, looking in the direction of the arrow, showing in section the countershaft, the gear shaft, connections between said shafts and between the countershaft and main shaft; Fig. 3 is a detail view of the pitman that connects the power shaft with the crank-arm of the countershaft; Fig. 4 is a detail view, showing a portion of the bed of the machine and its rack, bed, gear shaft, gear, shipper-rod and trip, the gear shaft and shipper rod and trip being shown in section, the parts appearing as if the whole view were taken on the line 4—4 of Fig. 8; and assuming that the bed of the machine is in place; Fig. 5 is a detail view, showing one end of the gear shaft with the clutch members mounted thereon, the latter appearing in section to show the construction and arrangement of the clutch members with respect to each other and the gear shaft; Fig. 6 is a cross-sectional view, taken on line 6—6 of Fig. 5, looking toward the right in said figure and showing the arrangement of the parts of the roller clutch; Fig. 7 is a detail view of the form of spring used back of the rolls of the clutch; Fig. 8 is a detail top plan view of the ways for supporting the bed, showing the gear shaft, the tripper rod, the trip and clutch carried by the girts that support said ways, the clutch being shown closed; Fig. 9 is a like view, the clutch being shown open.

The same numerals of reference indicate the same parts in all of the figures.

The framework 1, the driving shaft 2, the carrier 3, its cutting tool 6, the ways 4 for the bed 5, the pitman 7 for operating the carrier 3, the rolls 9, the girts 80, 81, that support the ways 4, 4 (see Figs. 8 and 9), and the girts 82, joining the girts 80, 81, may be of any preferred construction, said parts as here shown being substantially the same that are shown in United States Letters Patent to Lloyd, No. 333,018, except that the cutter holder need not be pivoted. The general operation of these parts is as stated in said patent and requires no detailed description.

In practice the class of machines designated have been unsatisfactory in their operation, due to defects in the work caused by the feed of the work being continuous at an angle to the path of the cutting tool, causing an imperfect cutting stroke of the cutting tool and a drag of the cutting tool on its return stroke. My invention overcomes this difficulty by giving the bed a step by step intermittent feed, while the cutting tool is at its initial position clear of the work, the latter remaining stationary during the cutting and return stroke of the tool 6.

20 (Figs. 1 and 2) represents a countershaft mounted in the frame of the machine at right angles to and below the main shaft 2. A horizontal crank 21 is mounted on the shaft 20 and connected to a pitman 22, which is provided at its upper end with an oblong loop 24, which encircles the shaft 2, and with a lateral stud 84, carrying a roller 85, which engages a cam 23 mounted on the shaft. A spring 83 holds the roller 85 to the face of the cam 23, acting between a member of the frame 1 and a vertical crank-arm 25 which is secured on the shaft 20 (Fig. 2) near the girt 80. A link 26 is connected at one end to the crank 25, its opposite end carrying a bolt 27, designed to be adjustably secured in a slot 28 of a depending crank-arm 29 on a shaft 30, which is mounted in the girts 80, 81, and carries a spur-gear 31 (Figs. 4 and 8) that meshes with the rack 32 on the under side of the bed 5. The gear shaft 30 is maintained against endwise movement by means of collars 33, 33, positioned against the inner walls of the girts 80, 81 (see Figs. 8 and 9),

and its outer end 34 is squared to receive a handle or crank to rotate the shaft manually to return the bed 5 to its initial position. The upper end of the crank 29 is formed as a hub 35 (Fig. 5), loosely mounted on the reduced inner end 40 of the gear shaft 30 and maintained in place by a washer 36 and bolt 37. The hub 35 is formed with an annular flange 38 that is arranged over and in close contact with a sleeve 39, loosely mounted on the reduced end 40 of the shaft 30. The sleeve 39 is formed with cam pockets 41 in its periphery (Fig. 6), in each of which is arranged a roller 42 of slightly greater diameter than the minor depth of the pocket, each roller being backed by a spring 43 of the form shown in Fig. 7. The form of spring as shown consists of a piece of spring steel bent back upon itself in the general shape of the letter S. The inner end of the sleeve 39 is formed with a screw-threaded extension 44 of reduced diameter, that extends beyond the flange 38 of the hub (Fig. 5). A screw-threaded ring 45 is mounted on the extension 44, and is formed with ratchet teeth 46, on its disk face. The vibration of the crank 29 gives to the ratchet ring 45 an intermittent forward movement in the direction of the arrow in Fig. 2, or opposite the direction of the motion of the hands of a watch, looking in the direction of the arrow in Fig. 1.

A sleeve 47 is slidingly mounted upon the shaft 30, and engages the spline key 48 (Fig. 5) fixed thereon. This sleeve is formed with ratchet teeth 49, arranged to engage the teeth 46 of the sleeve 45. The shipper fork 50 (Fig. 8) has its two arms 51, 51, arranged in a complementary groove in the sleeve 47 (Fig. 5). The fork 50 is formed with a hub 52 (Fig. 8) secured to the inner end of a shipper rod 62, that is slidingly arranged in the girts 80, 81, parallel to the shaft 30. Upon the rod 62 and between the girts 80, 81, are secured two collars 53, 54. A loose sleeve 55 is arranged upon the rod 62 between the collars 53, 54. A coiled spring 56 is arranged upon the rod 62 between the collar 53 and the right-hand end of the sleeve 55. A trip rod 57 has one end slidingly arranged in a bearing of the girt 80, said rod having a motion parallel to the rod 62. The opposite end of the rod 57 is secured to a lug 58 on the sleeve 55. A lever 59 of the first class is pivoted to the girt 81. The inner end of the lever 59 is pivoted at 66 to one end of the link 60, the opposite end of said link being pivoted to the lug 58, the link 60 and lever 59 constituting a toggle. A coiled spring 61 is arranged on the rod 57 between the collar 63 on said rod and the girt 80. A pin 64 on the link 60 is arranged to be engaged by a finger or extension 65 of the lever 59, to prevent the pivot 66 of the toggle passing far enough to the front in Fig. 8 to release the

pressure or hold of the toggle. The lever 59 is provided with a handle 67 for the manual operation of the toggle. A dependent finger 70 on the rear end of the rack 32 is arranged to engage the pin 64 at the end of its forward stroke and move said pin from the position shown in Fig. 8 to the position shown in Fig. 9, or, in other words, move said pin to break the toggle and disengage the clutch.

The operation of the clutch, shipper rod and trip is as follows: Assuming the bed of the machine to be at the front in Fig. 1, or in its initial position, with the clutch unlocked as in Fig. 9, the machine is started. The operator, by means of the handle 67, closes the toggle, moves the shipper rod 62, forcing the teeth 49 and 46 of the clutch rings into engagement. Thereafter, the oscillation of the arm 29 through the shaft 30, the gear 31, and through the gear 31, the rack 32 gives to the bed 5 a forward intermittent motion, the cam 23 being set to advance the bed a step at the end of the return stroke and beginning of the next advance stroke of the cutter and while it is practically at rest. In practice the work will be so located on the bed that the cutting tool will recede a sufficient distance beyond it to permit the advance step of the bed while the cutter is wholly off from the work. The recession of the movable member of the clutch is accomplished by the action of the spring 83, the hub 35 moving back freely on the sleeve 39 because of the disengagement of the rollers 42 from the contracted ends of the pockets 41. This feed operation continues until by movement of the handle 67, or the finger 70 on the rack 32 by engagement with the pin 64, the toggle members are moved from the position shown in Fig. 8 to the position shown in Fig. 9, thereby unlocking the clutch and stopping the feed of the bed. The latter is now returned to its initial position by means of a crank or handle (not shown) applied to the squared end 34 of the shaft 30, as heretofore stated.

By means of my invention the plates can be properly treated without injury to them or the blade of the cutting tool, due to the feed of the plate during the motion of the tool, and it is unnecessary, as heretofore, to pivotally mount the tool holder. Heretofore it has been necessary to subject the plates to a finishing operation after its treatment by the roughing machine, for the reason that the cutting tool was quickly injured by its dragging contact with the plate on the return stroke. This abrasive action so changed the edge of the tool, even before it became dulled to such an extent as to render it unserviceable, that the depth of the cut was reduced and hence the thickness of the plate varied. The machine forming the subject of this specification entirely over-

comes this difficulty, there being no abrasion whatever of the cutting tool on the return stroke.

I claim as my invention—

5 In a roughing machine, in combination, a reciprocating tool, a plate-support arranged to move at an angle to the movement of said tool, means for giving said support an intermittent motion and comprising a pair of co-

acting clutch members, one thereof being 10 spring-retracted, and a toggle lever for advancing such member; and means for automatically breaking the joint of the toggle lever.

EDWARD C. WILLIAMS.

Witnesses:

LOUIS K. GILLSON,
E. M. KLATCHER.