

UNITED STATES PATENT OFFICE.

MATHIAS WALTY, OF BUFFALO, NEW YORK.

IMPROVEMENT IN DEVICES FOR BORING AND TURNING GAS-FITTINGS.

Specification forming part of Letters Patent No. **138,456**, dated April 29, 1873; application filed February 26, 1873.

To all whom it may concern:

Be it known that I, MATHIAS WALTY, of the city of Buffalo, in the county of Erie and State of New York, have invented certain Improvements in Lathes, of which the following is a specification:

My invention relates more particularly to the tool-stocks of a certain class of boring-lathes, which are mainly employed for finishing cast connections for gas, steam, and water pipes, cocks, valves, &c., the principal operations required for this purpose being the boring out of the hollow portions, the cutting of internal screw-threads, and the facing and turning off of the ends and flanges. The invention consists, first, in the combination with the longitudinally-movable bottom rest and transversely-movable top rest of the tool-stock, of a tool-holder capable of sliding longitudinally on the top rest, and provided with a cylindrical socket for the reception of a boring-tool and a rectangular socket for a turning-tool, both arranged side by side, so that the tool-stock can be readily adapted to boring or turning, as may be required; second, in the combination with the feed-shaft arranged under the bed-piece of the lathe and the screw moving the tool-holder, of two sets of connecting gear-wheels of different size receiving motion from a pinion on the feed-shaft and mounted on a pivoted arm or frame, so that either set of gear-wheels may be made to engage with a wheel mounted on said screw, and thereby operate it with greater or less speed, or by placing said arm in a central position keep both wheels out of engagement with the wheel on the tool-holder screw, and thus leave the latter free to be operated by hand; third, in the combination, with the transversely-movable top rest of the tool-stock and the pivoted arm carrying the two sets of gear-wheels, of a slotted segment curved from the fulcrum of said arm as a center, and secured to the bottom rest of the tool-stock and a set-screw tapping into the pivoted arm and sliding in the segment, whereby said arm is enabled to follow the transverse movement of the top rest to a certain extent without causing disengagement of the gear-wheels, while it is also readily secured in any desired position.

In the accompanying drawing, Figure 1 is

a side elevation of the tool-stock and connecting parts. Fig. 2 is a rear elevation thereof, showing the pivoted arm in a central position. Fig. 3 is a similar view with the pivoted arm shifted so as to engage one of the sets of gear-wheels with the wheel on the tool-holder screw. Fig. 4 is a front elevation of the tool-stock.

Like letters designate like parts in each of the figures.

A is the bed-piece of the lathe, and *a* the feed-shaft supported therein and driven from the head-gear in the usual manner. B is the bottom rest of ordinary construction, and capable of longitudinal movement on the V-shaped ways *b* of the bed A by means of a pinion, *c*, turned by a hand-crank, *c'*, and engaging with a gear-rack, *c''*, attached to the bed A. D is the top rest, capable of transverse movement on the bottom rest B by means of a dovetail way, *d*. It is operated by a screw and hand-crank, *d'*, in a common manner. This transverse movement is limited by a stop, *d''*, coming in contact with the face of the bottom rest B. E is a tool-holder sliding longitudinally on the top rest D in a dovetail way, *e*. It is provided with a longitudinal cylindrical or tapering socket, *f*, in which the boring-tool is secured by keys or set-screws and a rectangular recess, *g*, in which a turning-tool can be clamped by set-screws *g'*. The sockets *f* and *g* are arranged side by side so that either tool can be readily moved up to the piece to be operated upon by a slight transverse movement of the top rest D. *h* is the screw shaft or spindle, by which the tool-holder E is moved longitudinally. It is provided with a gear-wheel, *i*, and a hand-crank, *h'*, tightly secured thereto. *k* is a pinion turning with the feed-shaft *a* by means of a key fitting in a long groove in said shaft. It is capable of longitudinal adjustment on the latter, so as to follow the movement of the tool-stock on the bed-piece, and is held in the desired position by two collars, *k'*, secured by set-screws. *l* is a counter-wheel or idler pivoted to a bracket, *l'*, attached to the bottom rest B and engaging with the pinion *k*. *m* and *n* are two gear-wheels of different diameters arranged concentrically and secured together by rivets or otherwise, so that both revolve together. They turn on a pivot, *n'*, secured to the swinging arm or frame

M turning on the pivot of the counter-wheel *l*. *o* and *p* are two pinions mounted on the arm M on opposite sides of its vertical center line and engaging with the wheels *m* and *n*, respectively. The arm M extends horizontally from the fulcrum of the pinion *o*, and is provided with a handle so as to be conveniently operated. P is the slotted segment forming a circular arc, described from the fulcrum of the arm M as a center, and firmly secured to the bottom rest B, as shown at *q*. *r* is a set-screw tapped into a hole in the arm M, and passing through the slot of the segment P, so that the former can be secured in any desired position by tightening the set-screw *r*.

Operation.

When the lathe is to be used for boring an ordinary cylindrical boring-tool is inserted in the socket *f* of the tool-holder, and the top rest D arranged in its central position, as shown in Fig. 2. Upon shifting the arm M so as to engage the pinion *p* with the wheel *i*, as shown in Fig. 3, the screw-shaft *h* will be revolved from the feed-shaft *a* with the proper speed for imparting the required forward motion to the tool-holder E. When a faster motion of the tool-holder is required—as for instance, for cutting internal screw-threads—the arm P is shifted in the opposite direction, so that the pinion *o* meshes with the wheel *i*.

It is evident that the feeding motion of the tool-holder can be varied so as to conform to any required kind of work by changing the proportions of the gear-wheels. For facing the ends and similar work an ordinary tool is arranged and clamped in the recess *g* and the arm M secured in its central position, as shown in Fig. 2, when the top rest D and tool-holder E are moved transversely forward and backward by the hand-crank *d*¹ in the ordinary

manner. For turning off the circumference of flanges a suitably-bent tool is secured in the recess *g*, and the top rest D, and tool-holder E adjusted laterally to the required position by means of the hand-crank *d*¹, when the arm P is swung on its fulcrum so as to bring the pinion *p* in engagement with the wheel *i*, and secured in this position by the set-screw *r*. The length of the segment P enables the top rest and tool-holder to assume a position sufficiently distant from the vertical center line of the lathe for turning off articles of ordinary size without breaking the contact between the pinions *o* and *p* and the wheel *i*.

My improved tool-stock is very simple, durable, and efficient, and can be readily applied to all boring-lathes now in common use.

I claim as my invention—

1. The combination, with the bottom rest B and transversely-adjustable top rest D, of the longitudinally-movable tool-holder E, when provided with the cylindrical socket *f* and rectangular recess *g*, for adapting the tool-holder to boring and turning, substantially as hereinbefore set forth.

2. The combination, with the feed-shaft *a* and pinion *k* and the screw-shaft *h* of the tool-holder provided with gear-wheel *i*, of the pivoted arm M and wheels and pinions *m n o p* mounted thereon and driven from the feed-shaft, substantially as and for the purpose hereinbefore set forth.

3. The combination of the slotted segment P and set-screw *r* with the pivoted arm M, carrying the pinions *m n o p*, and slide E located upon a transversely-moving slide D, substantially as and for the purposes set forth.

M. WALTY.

Witnesses:

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EDWARD WILHELM.