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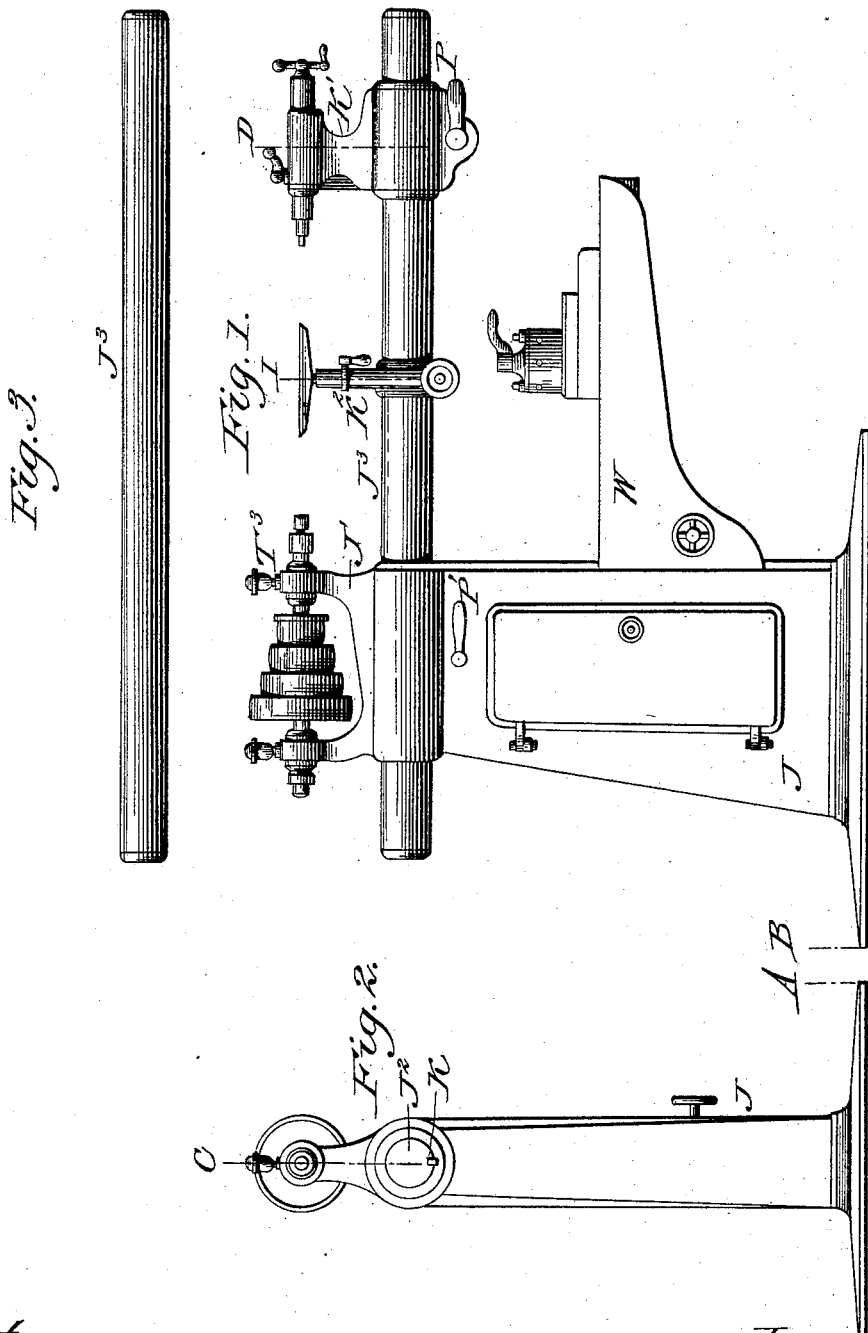
2 Sheets—Sheet 1.

S. W. GOODWIN.

TURNING LATHE.

No. 353,302.

Patented Nov. 30, 1886.



Witnesses:  
 L. H. Colburn  
 A. Friedlander

Inventor:  
 Seth W. Goodwin

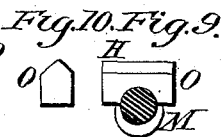
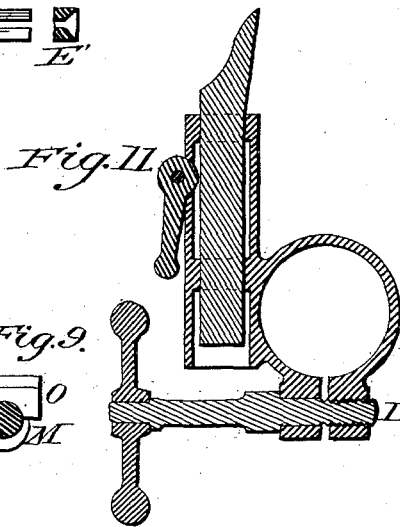
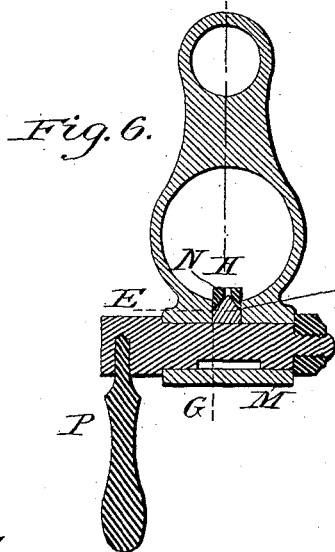
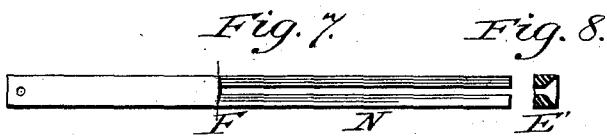
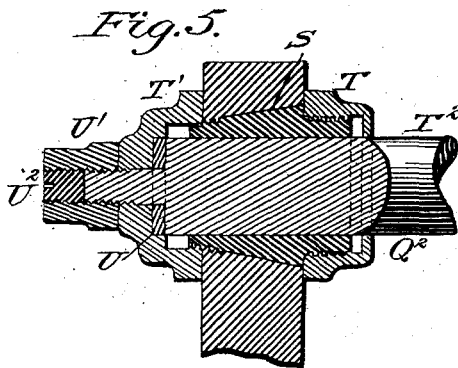
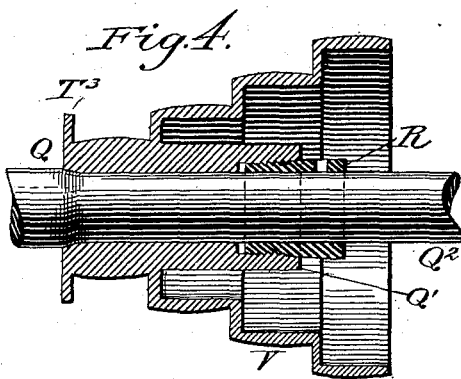
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2 Sheets—Sheet 2.

S. W. GOODWIN.  
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*Witnesses:*  
*L. H. Colburn,*  
*A. Friedlander*

*Inventor:*  
*Seth W. Goodwin*

# UNITED STATES PATENT OFFICE.

SETH W. GOODWIN, OF TOLEDO, OHIO.

## TURNING-LATHE.

SPECIFICATION forming part of Letters Patent No. 353,302, dated November 30, 1886.

Application filed July 1, 1886. Serial No. 206,890. (No model.)

*To all whom it may concern:*

Be it known that I, SETH W. GOODWIN, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented a new and useful Turning-Lathe, of which the following is a specification.

My invention relates to improvements in turning-lathes; and the objects of my improvements are, first, to provide, in combination with a pedestal-support, an improved turning-lathe mechanism which shall embody means for removing the tail-stock, tool-rest, and their supporting attachments, for the purpose of extending the range of the said lathe and adapting it to uses which the presence of the said parts precludes; second, to provide such a lathe with a removable and adjustable supporting-bar, and, in combination with said bar, to supply means for quickly, firmly, and accurately securing the said bar to the pedestal and the tail-stock and tool-rest to the bar; third, to provide, in combination with said pedestal and removable-bar turning-lathe, a vertically-adjusting tool-holding bracket, for the purpose of further extending the range and capabilities of the said lathe; fourth, to provide improved means for balancing and securing the driving-pulley to the head-spindle; fifth, to provide improved means for taking up the wear of the head-spindle journal-boxes and protecting them from dirt, and affording a better finish to those parts; sixth, to provide improved means for taking up the longitudinal wear of the head-spindle in connection with its rear-end journal-box. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a vertical side elevation as viewed from the position of line A, Fig. 2. Fig. 2 is an end elevation as viewed from the position of line B, Fig. 1. Fig. 3 is a side view of the removable bar as viewed from the same point as Fig. 1. Fig. 4 is an enlarged section of the driving-pulley and its spindle-securing attachments on line C, Fig. 2. Fig. 5 is an enlarged section of the rear journal-box on line C, Fig. 2. Fig. 6 is an enlarged section of the tail-stock on line D, Fig. 1. Fig. 7 is a plan of the expanding key on line E, Fig. 6, and line E', Fig. 8. Fig. 8 is a section of the expanding key on line F, Fig. 7. Fig. 9 is a side view of the key-expansion block and a section of

the eccentric-shaft which operates the said block, on line G, Fig. 6. Fig. 10 is an end view of the key-expansion block on line H, Fig. 9. Fig. 11 is an enlarged section of the tool-rest and its attachments on line I, Fig. 1.

Similar letters refer to similar parts throughout the several views.

The pedestal J is preferably made of cast-iron, and is hollow in form, and has the head-stock J' preferably cast in one piece with the pedestal J. At J<sup>2</sup> the pedestal J is bored to receive the removable bar J<sup>3</sup>, which bar is key-seated or grooved and keyed to said pedestal to prevent said bar J<sup>3</sup> from revolving therein, but remaining free to be moved endwise, as shown at K, Fig. 2.

To and sliding upon the removable bar J<sup>3</sup> the tail-stock K' and the tool-rest K<sup>2</sup> are attached—the tail-stock by means shown in Figs. 6 to 10, inclusive, and the tool-rest by means of a clamping ring and screw, (shown in Fig. 11 at L.) This tool-rest is not keyed upon the removable bar J<sup>3</sup>, but is left free to be rolled or turned in the direction of the circumference of the removable bar J<sup>3</sup>. This and the longitudinal movement of the said tool-rest admit of all desired adjustments on an ordinary-sized lathe.

In Fig. 7 is shown an expanding key. This key is bifurcated at one end, as shown in section in Fig. 8, and the said bifurcation is for the purpose of admitting the expanding block shown in Figs. 9 and 10.

The expanding block is operated by means of the eccentric shown in Figs. 6 and 9 at M, and its operation is as follows: The expanding key N having been placed in the key-seat H, Fig. 6, and the expansion-block O and the eccentric M being in their proper positions, the tail-stock is fastened by rotating the eccentric by means of the handle P. This operation expands the bifurcated key, causing it to impinge against the sides of the key-slot in the bar J<sup>3</sup>, thus centering and firmly securing the parts in position in an obvious manner. In like manner the removable bar J<sup>3</sup> is secured to the pedestal by means of the handle P' and the parts N, M, and O, as shown in Fig. 6.

In Fig. 4 is shown the means for securing the driving-pulley to the head-stock spindle, and in this case the pulley is of the form termed a "cone-pulley." At Q the spindle has a ta-

pered shoulder, against which the pulley is pressed for the purpose of centering and securing the same, by means hereinafter described. At Q' the hub of the pulley has its bore enlarged above the size of the spindle Q<sup>2</sup>, and a part of this enlargement is threaded and corresponds in form with the tapered sleeve R. This sleeve R is split by being sawed, or in any other suitable manner, for the purpose of removing a portion of its substance to admit of the said sleeve being compressed upon the spindle Q<sup>2</sup> by means of the screw-threads in an obvious manner. This action also holds the pulley against the tapered shoulder at Q. It is also obvious that this tapered-sleeve construction might be substituted for the tapered shoulder at Q without changing the nature of my invention.

In Fig. 5 is represented the rear journal-box. This box S is tapered on its exterior surface, and has a slot through one side to admit of its being compressed for the purpose of tightening upon the spindle, and it is adjusted by means of the threaded nuts T and T' upon its ends in the ordinary manner. My improvement in this box consists, first, in the construction of the nut T, whereby the said nut is formed to extend beyond and over the end of the box S, as shown in Fig. 5, and bored out to fit the size of the spindle T<sup>2</sup>. This construction, besides better holding the lubricating-oil, affords a permanent closing over the end of the box S and a better finish than before obtained. At T' is the rear tightening and adjusting nut, which is threaded to screw upon the rear end of the box S in the same manner as the nut T. At U is a permanent step-washer, of any suitable material, against which the spindle Q<sup>2</sup> presses in its backward thrust. A portion of the spindle Q<sup>2</sup> is reduced in size and passes through the nut T' a sufficient distance to receive the threaded nut U', and leaving a portion of the said nut U' extending beyond the end of the spindle Q<sup>2</sup>, for the purpose of receiving the check-screw U<sup>2</sup>. By these means the end play and the end wear of the spindle Q<sup>2</sup> are taken up and its endwise motion in both directions arrested. The forward journal-box, T<sup>3</sup>, Fig. 1, is constructed the same as the rear box before described, with the exception that the construction of the adjusting-nuts at both ends is the same, and like the nut T shown in Fig. 5.

At W in Fig. 1 is represented a bracket having vertical adjustment in or on suitable ways. Upon this bracket may be secured a turret-head, sliding rest, or other desired tool. When this bracket is in use, the removable bar J<sup>3</sup> is either entirely removed from the pedestal or

slid toward the left (or toward the right, according with the position of the pedestal, which may be on the right or left of the operator) a sufficient distance to be out of the way.

I do not claim, broadly, a pedestal-lathe, nor a lathe having a cylindrical bed or supporting-bar, nor, broadly, securing the head and tail stock and tool-rests to such a bed or bar by means of screws and clamping-jaws; but

What I claim as new, and desire to secure by Letters Patent, is—

1. In a turning-lathe having the pedestal J, the horizontal removable or movable bar J<sup>3</sup>, when the said bar J<sup>3</sup> is removable or movable horizontally for the purpose of increasing the capacity of the lathe, in combination with the vertically-adjusting bracket W, substantially as shown and described.

2. In a turning-lathe, the means herein described for securing the pulley V to the head-spindle, consisting of the centering-taper Q, in combination with the tapered compressible sleeve R and the internally-tapered hub Q', substantially as shown and described.

3. In a turning-lathe, the means herein described for securing the pulley V to the head-spindle, consisting of the compressible sleeve R and the internally-tapered hub Q', substantially as shown and described.

4. In a turning-lathe, the combination, with its head-stock journal-box and the nuts T and T', when the said nuts close over the end or ends, of a longitudinally-adjusting box, S, substantially as shown and described.

5. In a turning-lathe, the head-stock spindle Q<sup>2</sup>, when said spindle is reduced in diameter at or near its rear end, and forming a thrusting-shoulder, in combination with nuts T' and U', substantially as shown and described.

6. In a turning-lathe having the head-stock spindle Q<sup>2</sup>, threaded at or near its rear end, in combination with the nut U' and check-screw U<sup>2</sup>, when the said nut U' and screw U<sup>2</sup> are attached to and revolve with the spindle Q<sup>2</sup>, substantially as shown and described.

7. In a turning-lathe, the herein-described method of adjustably securing the tail-stock to the supporting-bar J<sup>3</sup>, and the supporting-bar to the pedestal J, or either of them, consisting of the expanding key N, the expansion-block O, and the eccentric M, when the said parts are constructed and operate substantially as shown and described.

SETH W. GOODWIN.

Witnesses:

H. J. COLBURN,  
L. H. COLBURN.