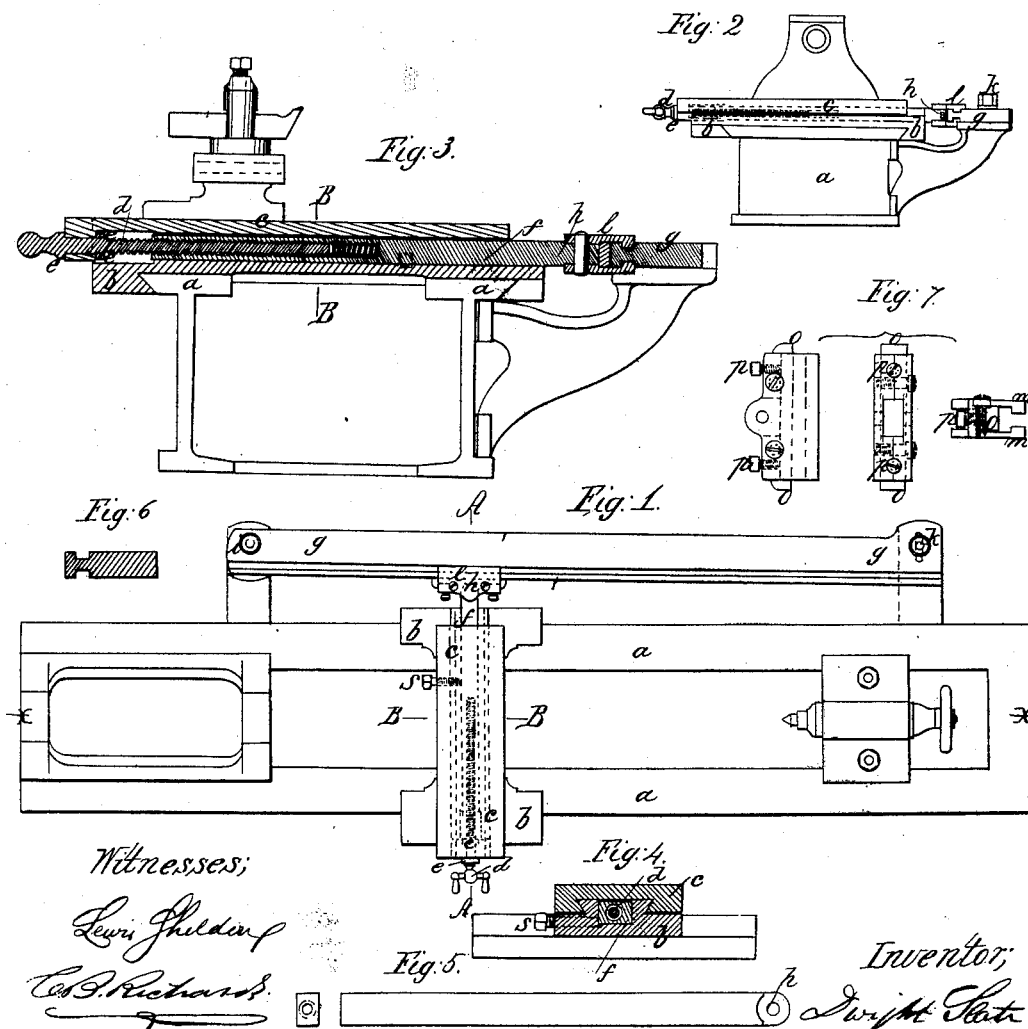


D. SLATE.  
TURNING LATHE.

No. 46,152.

Patented Jan. 31, 1865.



Witnesses;  
Lewis G. Alden  
Geo. B. Richardson

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# UNITED STATES PATENT OFFICE.

DWIGHT SLATE, OF HARTFORD, CONNECTICUT.

## IMPROVEMENT IN TURNING-LATHES.

Specification forming part of Letters Patent No. **46,152**, dated January 31, 1865.

### *To all whom it may concern:*

Be it known that I, DWIGHT SLATE, of Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Turning-Lathes; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention relates to that kind of turning-lathe in which the arrangement for turning tapering and curved forms consists in giving to the cutting-tool a motion in and out to and from the axis of the lathe-spindle, in combination with the longitudinal motion of the feed-carriage.

I am aware that several devices have been invented and patented for producing the above-described movements of the tool, among which I may mention those of James S. Brown and E. K. Root; but these have in practice proved somewhat objectionable, either by being inconvenient in working and adjusting, inaccurate in action, or of expensive adaptation.

It is the object of my invention to produce an arrangement of parts for giving to the tool its proper movements for turning tapering forms, which shall do away with the objectionable features above alluded to, and which may be readily applied to most of the forms of lathes now in use with but slight alteration of the lathe for its adaptation.

It is further the object of my invention to dispense with the third or intermediate carriage which, in the above-mentioned patented inventions, intervenes between the upper or tool carriage and the lower or feed carriage, whereby I insure greater solidity and more precise action of the tool.

To these ends my said invention consists in the employment, in connection with the feed and tool carriages, and with a guide-bar located at the back of the lathe, of a connecting-bar, formed and arranged substantially as hereinafter described, which connects the tool-carriage with the guide-bar through the adjusting-screw of the said carriage in a manner which will be clearly explained; and my said invention also consists in attaching the connecting-bar which controls the tool-carriage to the guide-bar by means of a slide jointed to the connecting-bar, and so formed, substan-

tially as described, as to lock onto the guide-bar, and thus give to the tool-carriage positive movements both in and out.

To enable others skilled in the arts to make and use my invention, I will proceed to a description thereof, referring to the accompanying drawings, making part of this specification, in which—

Figure 1 is a plan of parts of a lathe with my invention applied thereto. Fig. 2 is an end view of the same with the tail-block removed. Fig. 3 is a vertical section at line A A, Fig. 1, drawn on a large scale. Fig. 4 is a vertical section at line B B, Fig. 3. Fig. 5 shows the connecting-bar *f* in detail. Fig. 6 is a cross section of the guide bar *g*, and Fig. 7 shows the slide *l* in detail.

Similar marks of reference denote the same parts in the several figures.

*a* is the bed of the lathe; *b*, the lower or feed carriage, which slides in the usual way on guides made on the top of the bed parallel with the axis X X of the lathe-spindle, and *c* is the upper or tool carriage, which slides on guides formed on the feed-carriage at a right angle with the axis X X. These parts may have the general form and arrangement of corresponding parts in the lathes in most general use, and the lower or feed carriage may receive its longitudinal movement by any of the usual feed apparatus. The upper or tool carriage, *c*, is adjusted to the work by the usual screw, *d*, which is confined to said carriage by collars *e e*, Fig. 3. The nut for the adjusting-screw *d*, instead of being secured to the feed-carriage *b*, as is the case in lathes of ordinary construction, forms part of a bar, *f*, which lies loosely in a groove in the top of the lower carriage, *b*. This bar *f* projects beyond the carriage at the rear of the lathe, and its end is there jointed at *h* to a slide, which is locked onto a long guide-bar, *g*, which extends nearly from end to end of the lathe, and is so attached to the bed by a joint-pin, *i*, and bolt *k* that it may be inclined to the axis X X of the spindle. The guide-bar *g* is grooved near its edge through nearly its entire length, (see cross section, Fig. 6,) and the slide *l* is locked onto the bar *g* by means of lips *m m*, Fig. 7, which enter the grooves in the guide-bar, and a gib or shoe, *o*, which is caused to press against the edge of the guide-bar by set-screws *p p*.

*s* is a set-screw, by means of which the con-

necting-bar *f* may be clamped to the lower carriage and secured thereto in case it may be desirable to detach the bar *f* from the slide *l*, when the lathe may be used in the customary way for straight turning without the use of the guide-bar.

The operation of my invention will be obvious by considering the drawings and the above description.

To make use of the apparatus it is necessary, first, to set the guide-bar *g* at the proper angle, then to adjust the tool to the work in the usual way by the screw *d*, and proceed as with the ordinary lathe. To adapt my invention to almost any of the usual forms of lathes it will only be necessary to furnish supports for the guide-bar to place a groove in the top of the lower carriage for the reception of the connecting-bar *f*, and to fit the nut in the connecting-bar to the adjusting-screw *d* of the tool-carriage. To turn forms having a curved profile, the guide-bar may be formed to the arc of a circle and the form of the slide *l* be adapted thereto; but if it be desired to turn forms having irregular profile, which will require the employment of a guide-bar having its edge of corresponding form or profile, the slide *l* must be dispensed with and the end of the connecting-bar be armed with a properly-shaped shoe, which may be caused to press against and follow the irregularities of the edge of the guide-bar by means of a strong

spring or by a weight acting on the tool carriage in a similar way to the weight which is used for a somewhat analogous purpose, described in the patent of J. S. Brown, before alluded to.

It is obvious that a modification of my invention may be made by attaching the adjusting-screw of the tool-carriage to the connecting-bar *f* and the nut to the carriage without departing from the spirit of the invention.

Having thus described my invention and set forth its use, I disclaim the novelty of the guide-bar *g*; but

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

1. The employment, in combination with the guide-bar *g* and with the adjusting-screw *d*, or its equivalent, of the tool-carriage, of the connecting-bar *f*, arranged substantially as hereinbefore set forth.

2. The employment, in combination with the guide-bar and connecting-bar aforesaid, of the slide *l*, jointed to the connecting-bar and locked to the guide-bar, substantially as and for the purpose hereinbefore specified.

In testimony whereof I have hereunto set my hand this 10th day of September, 1864.

DWIGHT SLATE.

Witnesses:

LEWIS SHELDON,  
C. B. RICHARDS.