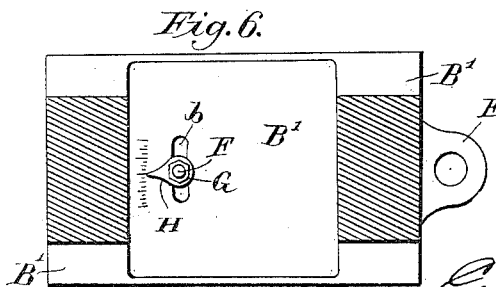
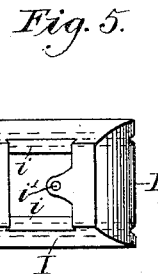
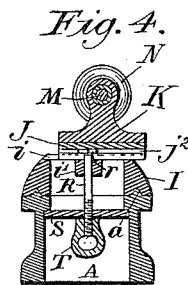
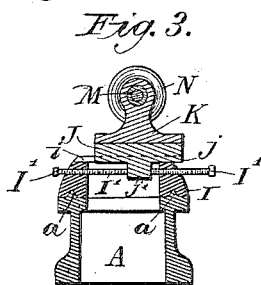
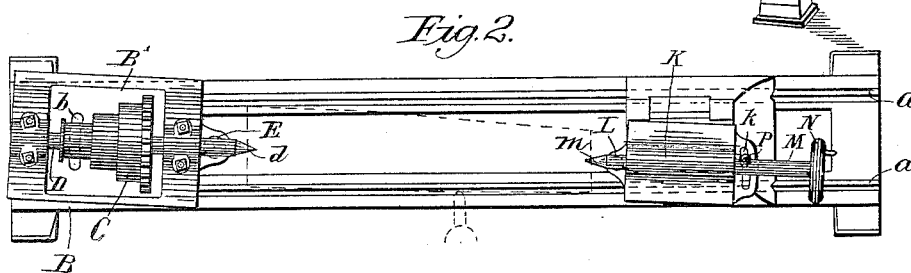
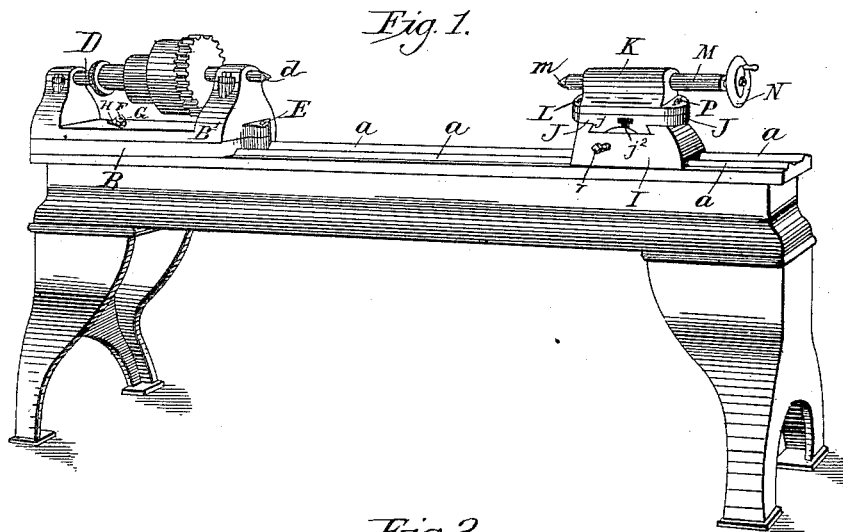


C. W. McDANIEL.
TURNING LATHE.

Patented Jan. 7, 1890.



Witnesses:
C. E. Shurbeane
J. P. Adams

Inventors:
C. W. M. Daniel
By his attorney
J. B. Thurston

UNITED STATES PATENT OFFICE.

CHARLES W. McDANIEL, OF LAKE VILLAGE, NEW HAMPSHIRE, ASSIGNOR OF
ONE-HALF TO ARA L. SARGENT, OF SAME PLACE.

TURNING-LATHE.

SPECIFICATION forming part of Letters Patent No. 419,155, dated January 7, 1890.

Application filed October 3, 1889. Serial No. 325,922. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. McDANIEL, a citizen of the United States, residing at Lake Village, in the county of Belknap and State of New Hampshire, have invented certain new and useful Improvements in Turning-Lathes, of which the following is a specification.

This invention relates to various turning-lathes; and the object of the invention is to provide means for holding the work, whereby cylindrical bodies may be turned just as perfectly tapering as if straight.

The invention consists in the novel construction of the head and tail stocks so fully set forth in the following specification and claims, and clearly illustrated in the accompanying drawings, forming an inseparable part of the same, of which—

Figure 1 is a perspective view of a lathe embodying my improvements. Fig. 2 is a general plan view of the same. Fig. 3 is a vertical section taken through the tail-stock near its center. Fig. 4 is a similar view taken at a point forward of the center, or at that side nearest the head-stock. Fig. 5 is a plan of a portion of my improved tail-stock, and Fig. 6 is an enlarged sectional plan view of the head-stock.

Similar reference-letters indicate corresponding parts throughout the various views.

All such parts of a lathe as the tool-rest, screw-cutting attachment, and their operating gearing have been omitted from the drawings, as they have no connection with my invention.

In referring to the various parts by their letters, A represents the lathe-bed, which is provided with the ordinary planed ways *a a*, upon which are mounted the head and tail stocks, the bases of which are provided with grooves fitting said planed ways, as shown.

The head-stock is composed of two parts—viz., the base B and the swiveled part B'—in which is mounted an ordinary cone-pulley C and its mandrel or center spindle D. The pivot-connection for the two parts B B' may be placed at various points as desired; but in the drawings it is shown at E directly under the center point *d* of the spindle D, and a clamping-bolt or threaded stud F may pass

upward from the part B through a curvilinear slot *b*, formed for this purpose in the part B', and a nut G, threaded to fit the said stud F, may be set down upon said part B, and thus set or fix the one part at a desired angle with the other.

In order to readily determine the angle at which the part B' is to be placed upon the part B, the former may be graduated, as seen in the drawings, and a suitable arm or pointer H placed upon said stud F in any convenient manner.

The tail-stock is composed of three parts—viz., the base I, which is capable of longitudinal movement upon the lathe-bed, an intermediate plate-piece J, capable of lateral motion upon said base I, and the swivel-piece K, which in the drawings is shown to be swiveled at L directly under the center point *m* of the spindle M, which may be moved longitudinally within its bearings toward or away from the head-stock by means of a suitable hand-wheel N in the ordinary manner. After having placed the swivel-piece K at any desired angle relative to the plate J a cap-screw P, or its equivalent, passing through a curvilinear slot *k*, formed in said swivel-piece K and entering a threaded opening in said plate J, may be made to hold the two parts firmly in the desired position.

Various means may be devised for securing the base I and interposing piece J to the lathe-bed, and also for conveniently adjusting the latter upon the former to any required position. Upon the under side of the plate J are provided tongues *j*, and these are fitted to planed ways *i*, formed upon the upper side of the base I, thus permitting the former to move laterally upon the latter. To adjust the one either centrally or to either side of the longitudinal center of the other, I form a projection *j'* upon the under side of the plate J, and when the said plate is placed in the desired position screws I', which are threaded to horizontal openings formed in either side of the base I, may be turned in, so as to bear upon the sides of said projection *j'*; or, if preferred, a shaft may be mounted in the said base, instead of said screws I', having its inner end threaded to fit a threaded opening in said projection *j'*, and by means

of a wrench or its equivalent said shaft may be rotated, so as to produce the desired adjustment of the plate J. Both parts I J may be conveniently clamped down to the bed A by means of a vertical rod R, provided with a suitable head *r*, fitting a T-groove *j*², formed transversely in the under side of said plate J, said rod having bearings in the part *r*' of the base I, and a sliding block S, fitted within the said bed, and a hand-clamp may be attached to the lower end of said rod, comprising a cam motion; or said lower end may be threaded and a suitable hand-screw T fitted thereon underneath the sliding block S, as shown in Fig. 4.

In Fig. 2 a piece of work is shown in dotted lines and the point of a tool as it would appear when turning a tapering shaft or cylinder; the tool stock or carriage for which will be moved in the ordinary manner parallel with the lathe-bed.

Both head and tail stock may be provided with suitable graduations, by which the live and dead spindles, respectively, D and M, shall maintain a perfect alignment when set on an angle or out of line with the lathe-bed A, and thus tapering work may be performed as perfectly as straight work.

Having described my improvements, what I claim, and desire to secure by Letters Patent, is—

1. In a turning-lathe, the herein-described means for maintaining proper alignment of the live and dead spindles while out of line with the lathe-bed, comprising a swiveled head-stock, a swiveled tail-stock, and their fastening devices.

2. The herein-described means for turning tapering shafts and the like, consisting of a swiveled head-stock and a swiveled and laterally-adjustable tail-stock.

3. In a turning-lathe, a head-stock composed of two parts—viz., a base secured to the bed of the lathe and a swivel part pivotally attached to said base and mounting the live spindle for carrying the cone or drive pulley—and a tail-stock composed of three parts—viz., a base capable of longitudinal adjustment upon the lathe-bed, an intermediate plate mounted and capable of transverse adjustment thereon, and a swivel-piece pivoted to said intermediate plate mounting the dead-spindle, all substantially for the purpose set forth.

4. In a turning-lathe, a head-stock composed of two parts, the one pivoted to the other, a tail-stock composed of three parts, whereby said tail-stock is adjustable longitudinally upon the lathe-bed and transversely and at an angle therewith, and means, comprising graduations upon the said head and tail stocks, for maintaining proper alignment of the live and dead spindles while the same are at an angle or out of line with the lathe-bed.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES W. McDANIEL.

Witnesses:

ARA L. SARGENT,
GEO. G. ROLLINS.