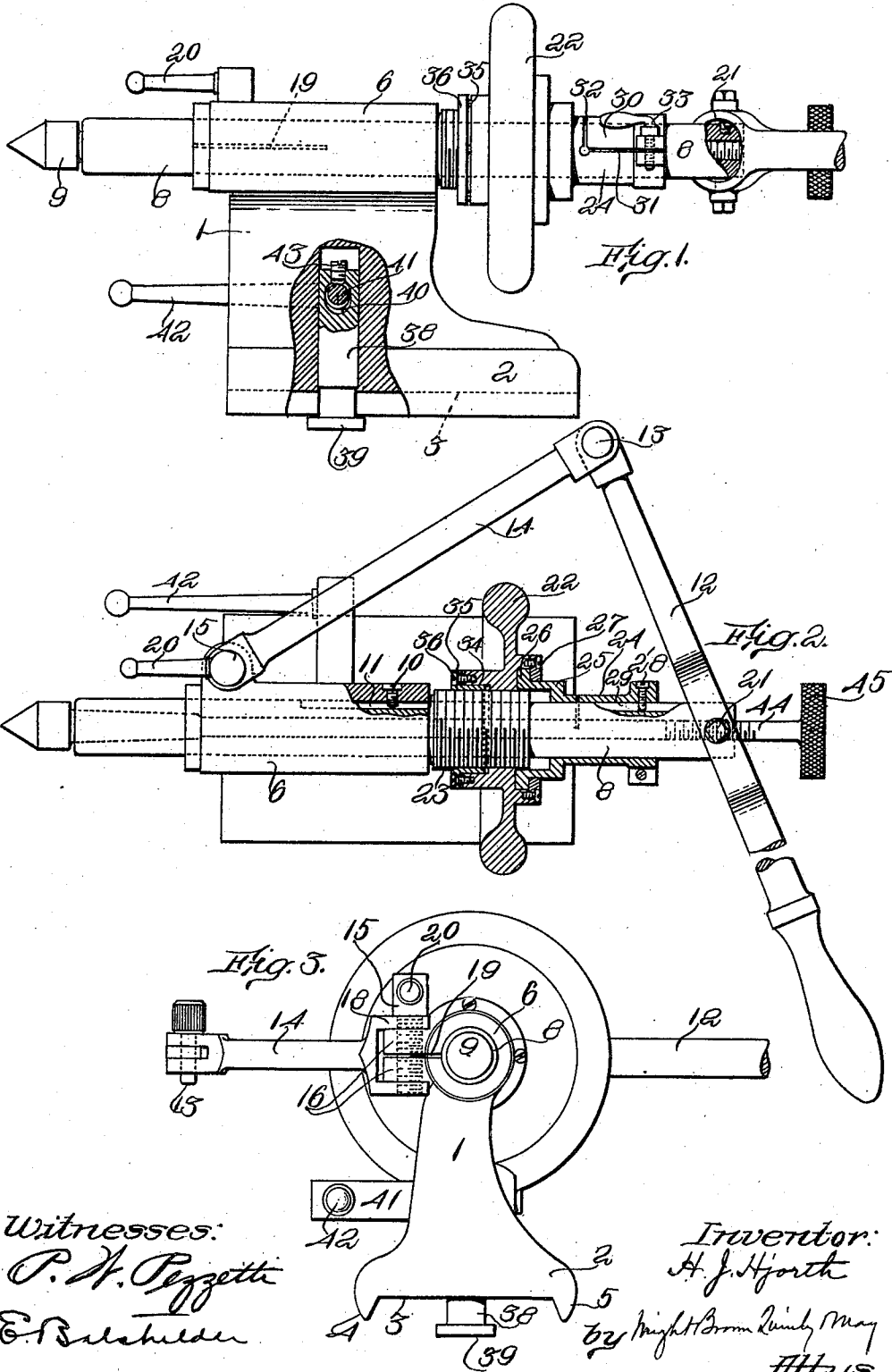


H. J. HJORTH.
TAIL STOCK.

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981,426.

Patented Jan. 10, 1911.



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HENRY J. HJORTH, OF CAMBRIDGE, MASSACHUSETTS.

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To all whom it may concern:

Be it known that I, HENRY J. HJORTH, of Cambridge, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Tail-Stocks, of which the following is a specification.

This invention relates to tail-stocks for lathes, more particularly small bench lathes, and has for its primary object to enable the dead center to be moved quickly when being engaged with or disengaged from the work, without requiring the tail-stock as a whole to be moved, and also to enable the same center to be adjusted accurately after being once engaged with the work.

A second object is to provide an improved adjustable clamping device for holding the tail-stock in place on the ways of the lathe.

Of the accompanying drawings,—Figure 1 represents an elevation of a tail-stock embodying my invention, parts thereof being broken away. Fig. 2 represents a plan view of the same partly in section. Fig. 3 represents a front elevation of the same.

The same reference characters indicate the same parts in all the figures.

Referring to the drawings, 1 represents the body or bracket of the tail-stock, which is provided with a base 2 having a longitudinal channel 3 inclosed between lips 4 and 5 by which it is guided on the ways of a lathe. At the top of the bracket 1 is a sleeve 6 centrally bored to provide a bearing for the longitudinally movable bar 8 which carries the dead center 9. A screw stud 10 is set into the side of the bearing sleeve 6 and enters a key-way 11 in the bar 8, to prevent rotation thereof. The bar and center are moved endwise with a rapid motion, by means of a lever 12 which has a shifting fulcrum at 13 on a link 14 so as to give right line motion to the bar 8. The link is pivoted to a pin 15 which passes through lugs 16 on the side of the bearing sleeve, the link having arms 18 which embrace these lugs. The lugs project from opposite sides of a longitudinal slot 19 in the sleeve, and the pin 15 is screwed into these lugs, being provided with an arm 20 by which it may be turned. The pin thus serves not only as a pivot, but also as a clamp for causing the bearing sleeve 6 to bind and frictionally hold the bar 8. The connection which the

lever makes with the bar is through studs 21 entering opposite sides of the bar through an enlarged annular part of the lever which surrounds the bar. It will be seen that movement of the lever imparts a movement to the bar and center in the same direction, which movement is a large fraction of the motion of the handle end of the lever and is therefore rapid.

Means for imparting a slow and accurate adjustment to the center is provided in a hand-wheel 22 which screws upon an externally threaded extension 23 of the bearing sleeve 6. This hand-wheel has a detachable connection with the bar through the sleeve 24 surrounding the latter. A portion of the sleeve is enlarged at 25 to pass over the threaded extension 23, and on its end has a flange 26 contained in a recess in the side of the hand-wheel, to the rim of which recess is fastened a ring 27 overlying the flange 26 and serving to communicate the travel of the hand-wheel to the sleeve without necessarily rotating the latter. Means for preventing rotation of the sleeve may be provided in the form of a pin 28 entering a key-way 29 in the bar. As seen in Fig. 1, a part 30 of the sleeve 24 is formed into a clamping jaw by means of intersecting slots 31 and 32, and a clamp screw 33 is provided for causing the sleeve to grip the bar. When the bar and center are given their quick movement, the clamp is released and the bar allowed to slide through the sleeve, but when the fine adjustment is given by the hand-wheel, the clamp is caused to grip the bar, whereupon the travel of the wheel on the threaded extension 23 will be communicated to the bar and center. The quick motion is given to the center in putting work in and taking it from the lathe, and the fine adjustment is given to make the dead center bear on the work without looseness or excessive friction.

The hand-wheel is provided with a longitudinally adjustable portion for taking up looseness on the threads of the extension 23. This portion is formed as a sleeve 34 and contained within the hub of the hand-wheel and also screwed upon the extension 23. This sleeve is provided with a flange 35 beside the end of the wheel hub, and united thereto by adjusting screws 36. By means of the screws, the sleeve may be moved in or

out and caused to bear against the threads of the extension, to take up looseness or cause the hand-wheel to be locked.

Another part of my invention is the adjustable clamp for holding the tail-stock in position on the ways of the lathe. This is a pin 38 having a head 39 at its lower end adapted to lie in a longitudinal undercut groove in the ways. In the upper part of the pin is a transverse aperture 40 through which passes an actuating shaft or rod 41 which has its bearings in the sides of the tail-stock bracket and has an operating arm 42 on its end. The portion of the shaft which passes through the aperture 40 is eccentric or cam-shaped and causes the pin to be moved endwise so as to grip or release the ways. The portion of the pin on which the eccentric directly bears is an abutment 43 screwed into the upper end of the pin and entering the aperture 40. This screw enables the clamping pressure to be made more or less, and also enables wear to be compensated for.

The bar 8 is provided with a longitudinal passage or bore through which extends a rod 44, having a portion in threaded engagement with the interior of the bar and having on its outer end a head 45 by which it may be turned. The function of this rod is to eject the center from the bar, and it is made in permanent association with the bar so that the center may be immediately removed whenever necessary. It is for the purpose of permitting this rod to be used and to remain in connection with the bar that the lever 12 is enlarged and perforated so as to surround the bar.

I claim:

1. A tail-stock comprising a standard having a channel, a bar contained and longitudinally movable in said channel, a center carried by said bar, means in permanent connection with said standard and bar for giving a quick movement thereto, and means in normally permanent connection with said standard and detachably connectible with said bar for giving the bar a finely adjusted movement.

2. A tail-stock comprising a standard having a channel, a bar contained and longitudinally movable in said channel, a center carried by said bar, means in permanent connection with said standard and bar for giving a quick movement thereto, a nut in threaded engagement with a part of said standard, and means for detachably connecting said nut with the bar, whereby a finely adjusted movement thereof by manipulation of the nut is permitted.

3. A tail-stock comprising a standard having a channel, a bar contained and longitudinally movable in said channel, a center carried by said bar, means in permanent connection with said standard and bar for

giving a quick movement thereto, a nut surrounding said bar and in threaded engagement with said standard, and means detachably clamping said nut to the bar in such manner as to transmit its longitudinal movement thereto.

4. A tail-stock comprising a standard having a passage through it, a bar movable longitudinally in said passage, a center held in said bar, a lever having its fulcrum on the tail-stock standard and engaged with said bar to impart rapid movements thereto, a nut threaded upon said standard, a sleeve engaged with said nut, and a clamp for securing said sleeve to the bar, whereby the travel of the nut may be imparted to the bar and center.

5. A tail-stock comprising a standard having a passage through it, a bar movable longitudinally in said passage, a center held in said bar, a lever having its fulcrum on the tail-stock standard and engaged with said bar to impart rapid movements thereto, a nut threaded upon said standard, and a detachable connection between said nut and bar by which the travel of the former may be imparted to the latter.

6. In a tail-stock having a bearing sleeve, a bar contained in said sleeve and provided with a longitudinal passage, a center held in said bar, and a rod threaded into and carried by said bar and extending through the passage thereof, said rod having a length sufficient to enable it to engage and eject the center.

7. A tail stock comprising a standard having a passage, a bar contained and movable longitudinally in said passage, a center held in one end of said bar, means for moving said bar, and therewith the center, and a rod threaded into and extending through the bar, carried and moved therewith, but having an additional movement relatively thereto, whereby it is enabled to eject the center therefrom.

8. A tail-stock comprising a base having a longitudinal bearing, a bar contained and movable endwise in said bearing, having a pin and slot connection therewith to prevent rotation, a center carried by said bar, a hand-wheel surrounding said bar and in threaded engagement with said bearing, a sleeve through which said bar is movable, said sleeve having a rotation-permitting connection with said hand-wheel, and means for clamping said sleeve upon the bar.

9. A tail-stock comprising a base having a longitudinal bearing, a bar contained and movable endwise in said bearing, having a pin and slot connection therewith to prevent rotation, a center carried by said bar, a hand-wheel surrounding said bar and in threaded engagement with said bearing, a sleeve through which said bar is movable, a rotation-permitting connection between said

sleeve and hand-wheel, consisting of a flange on said sleeve lying beside said hand-wheel, a lip on the wheel overlying said flange, and a clamp for detachably securing said sleeve to the bar.

5 10. In a tail-stock, a bearing, a bar movable endwise through said bearing and having a pin-and-slot connection therein to prevent rotation, a center carried by said bar, 10 a hand-wheel in threaded engagement with the bearing, and connected with the bar for adjusting the latter, a sleeve also threaded to the bearing and connected to said wheel with provision for axial movement relatively 15 thereto, and positive means arranged for so moving said sleeve and at the same time preventing its rotation relatively to the wheel, whereby the wheel may be clamped.

20 11. A tail-stock comprising a bracket having a bearing sleeve, a tubular bar having an external longitudinal slot, a pin in said bearing sleeve engaged in said slot, whereby said

bar may be moved endwise and is prevented from rotating, a center carried by said bar, 25 a rod held in the bore of the bar and movable therein for ejecting said center, a link pivoted to said bracket, a lever pivoted to said link and having an engagement with the bar for moving the same and the center rapidly, 30 a hand-wheel threaded to the bearing for giving a fine adjustment to the center, a split sleeve surrounding the bar, through which the latter is movable endwise, a clamp by which said split sleeve may be caused to grip 35 the bar, and a connection between the split sleeve and hand-wheel constructed to permit relative rotation of the latter and transmit the travel thereof to the bar.

In testimony whereof I have affixed my signature, in presence of two witnesses.

HENRY J. HJORTH.

Witnesses:

ELIZABETH M. BERTSCH,
CHARLES F. REMINGTON.