C. Nerrhall,

Tool Rest for Engine Lathe,

No. 79,381, Patented June 30, 1868.

Fig. 2.

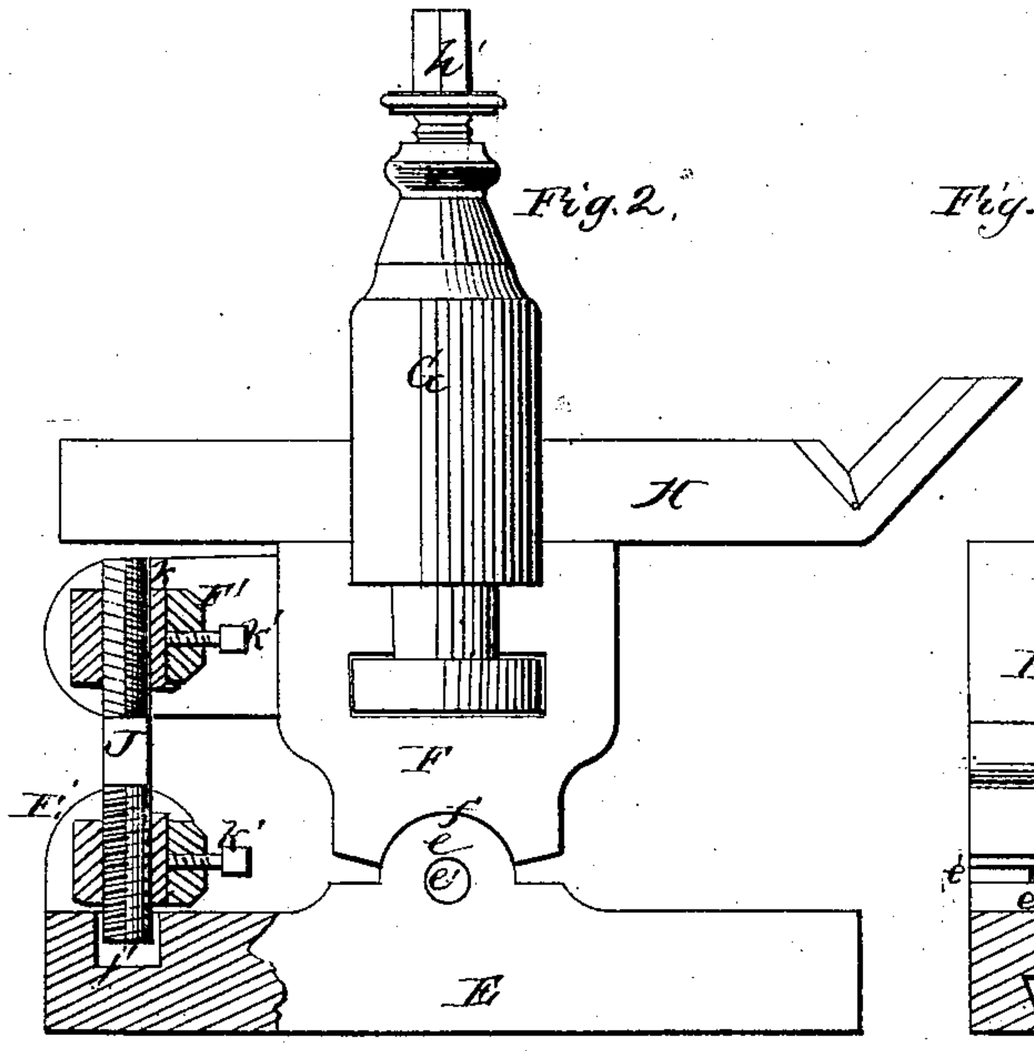


Fig. 3.

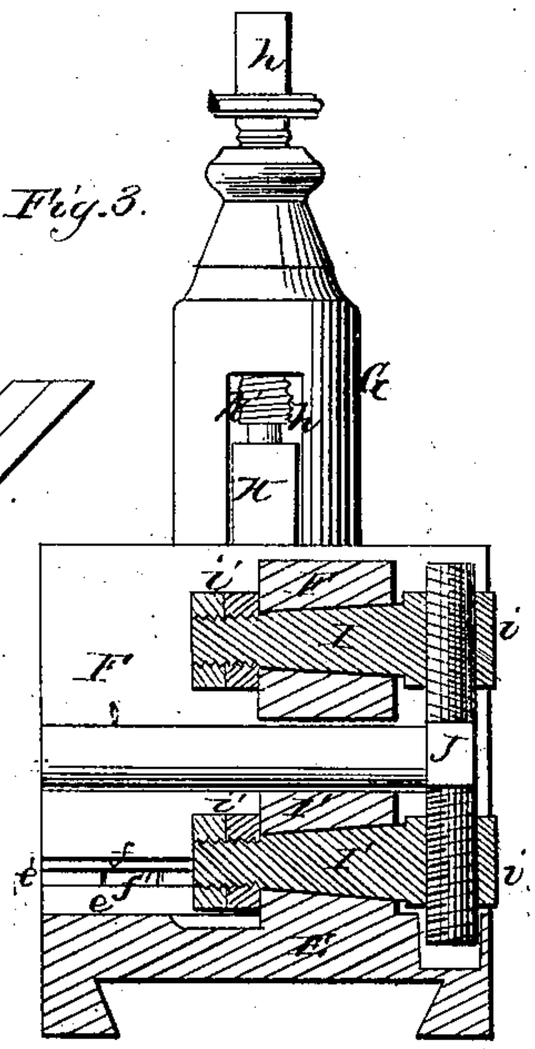


Fig. 1.

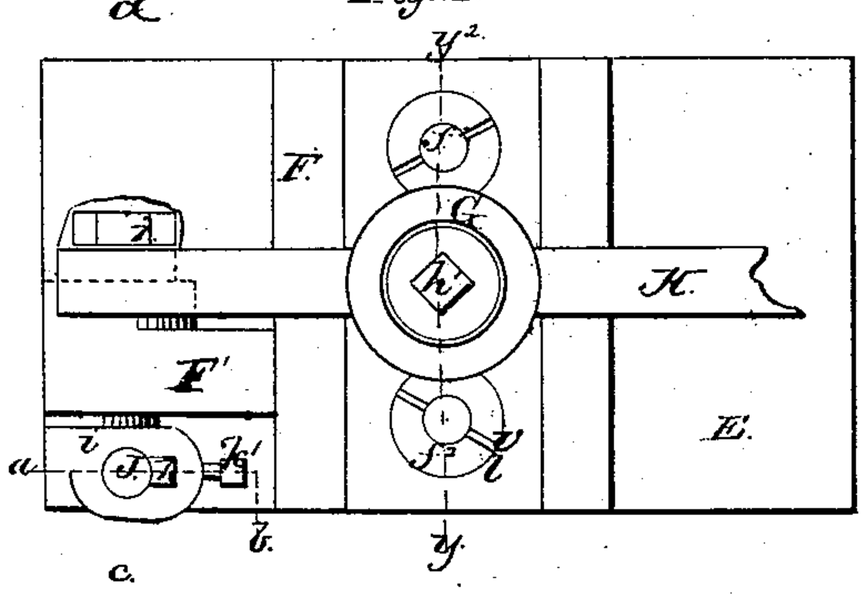
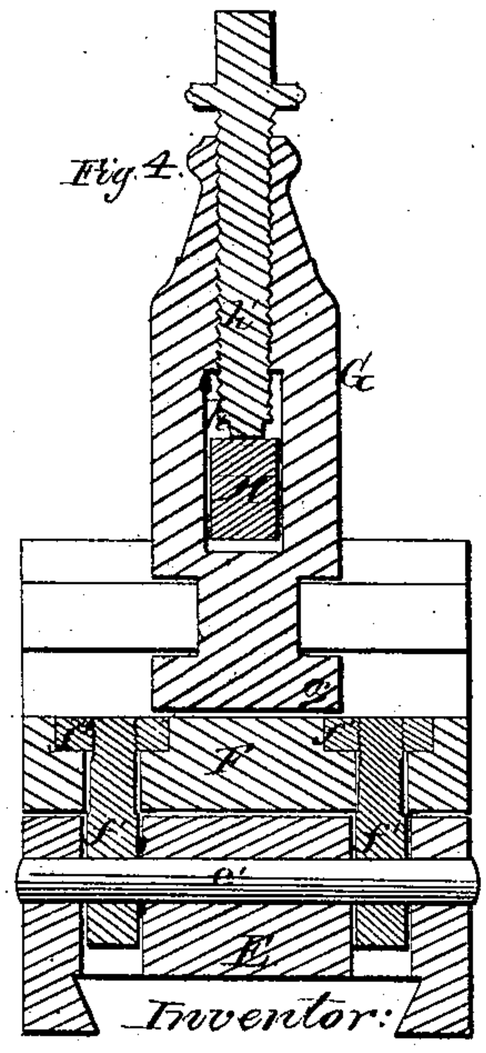


Fig. 4.



Witnesses:
Jos. D. Peyton
Ellis Dodsworth

Inventor:
Cyrus C. Nerrhall
by his Attys
Baldwin & Son

United States Patent Office.

CYRUS NEWHALL, OF HINSDALE, NEW HAMPSHIRE.

Letters Patent No. 79,381, *dated June* 30, 1868.

IMPROVEMENT IN TOOL-REST FOR ENGINE-LATHES.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, CYRUS NEWHALL, of Hinsdale, in the county of Cheshire, and State of New Hampshire, have invented certain new and useful Improvements in Tool-Rests for Engine-Lathes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which make part of this specification, and in which—

Figure 1 represents a plan or top view of my improved tool-rest.

Figure 2 represents a view in elevation of one side of the same, partly in section, at the line *a b* of fig. 1.

Figure 3 represents a similar view of the same, as seen from the rear, partly in section at the line *c d* of fig. 1; and

Figure 4 represents a vertical section through the same at the line *y y* of fig. 1.

The objects of my improvement are to easily adjust the cutting-tool of an engine-lathe to the work to be done, and also to compensate for the wear of the working parts of the tool-rest; to which ends the improvements herein claimed consist—

First, in a novel method of mounting the cutting-tool of an engine-lathe in a tool-post supported in a rocking-block hinged to the slide-plate by a pivot arranged centrally beneath the block, parallel to the axis of the lathe, and directly beneath the tool-post, substantially as hereinafter set forth.

Second, in a novel method of combining, with a tool-support, rocking on a hinge parallel with the axis of rotation of the lathe, and in the same vertical plane as the tool-post, a device for adjusting and holding the point of the tool in any position desired.

Third, in a novel method of combining, with a rocking-tool support, a device for tightening the joints of the hinge on which the tool-post rocks, to compensate for its wear.

Fourth, in a novel method of compensating for the wear of the joints of the device by which the cutting-tool is adjusted and held in position.

Fifth, in a novel method of constructing the sockets of the adjusting-screw.

In turning iron and other metals in an engine-lathe, the working joints are necessarily subjected to a heavy strain, which causes them to wear unequally. In my efforts to compensate for this wear, I found it necessary to remodel the tool-rest usually employed.

To carry out the objects of my invention, I construct the tool-rest in three pieces: First, a sliding plate, having the usual motions on the lathe-bed; second, a block, rocking on a long hinge or bearing parallel to the axis of the lathe; and third, a tool-post, sliding and turning freely in the usual way in a slot in the rocking-block.

The wear of the hinge of the rocking-block is compensated by tightening the eye-bolts which connect the block with its pivot.

The angle of the tool-post is adjusted by a right-and-left screw, one end of which enters a socket on the slide-plate, and the other a corresponding socket on the rocking-block. The wear of this screw in its sockets is taken up by wedges, forming a part of the sockets in which the screws work, which wedges are tightened by pinch-screws in the sockets. These sockets are mounted on the ends of tapering spindles, passing through tapering holes in brackets on the slide-plate and rocking-block, and the wear on these spindles is compensated by nuts, screwing on their ends. By this means the tool is held rigidly up to its work, and that wabbling of the tool, so fatal to accurate work, prevented.

In the accompanying drawings, which show one practical way of carrying out the objects of my invention, E represents the slide-plate of an engine-lathe, having the usual longitudinal and transverse movements on the bed-plate relatively to the axis of rotation of the article to be turned.

A semi-cylindrical bearing, *e*, is formed on this slide-plate, parallel to the axis of the lathe, to form a firm support for a rocking-block, F, having a concave bearing, *f*, on its under side to fit the other bearing *e*; the

bottom of the block being bevelled off sufficiently to allow it to rock through an arc sufficient to give the required range of movement to the cutting-point of the tool.

Two eye-bolts, f^1, enter sockets in the slide-plate E, and are secured by a pin, e', passing through them and through the slide-plate. The spindles of these eye-bolts pass up through the rocking-block, and have screws on them to receive the jam-nuts f^2, which can be screwed up tighter as the bearings $e\,f$ wear away by use.

A tool-post, G, is mounted in the usual way, to traverse longitudinally in a slot, g, in the rocking-block, and also to turn on its own axis. The slot g is parallel with and directly over the pivot e' of the rocking-block.

By arranging the pivot of the rocking-block directly below the tool-post, as above described, the tool, in cutting, acts with a compressing force on the rocking-block, thus causing it to rest firmly in its bearings on the bed-plate without straining its hinge, which would not be the case were the joint back of and on the same level, or nearly so, as the cutting-tool.

Moreover, as the cutting-tool is on one side of the central pivot, and the device for adjusting and holding the block on the other, the adjustments desired can be effected with a smaller range of movement of the adjusting-devices than could be effected were the hinge at the back of the block, and both the cutting-tool and adjusting-devices on the same side of the block.

A cutting-tool, H, of any well-known proper form, is inserted in a slot, h, in the tool-post, and both the tool and post, when adjusted for work, are clamped in position by a set-screw, h', as usual.

The cutting-point of the tool is raised or lowered by means of a right-and-left screwed spindle, J, the upper end of which works in a socket, i, on one end of a tapering spindle, I, which passes through a hole of corresponding shape in a bracket, F′, projecting from the rocking-block F. As this spindle wears loose in its socket, it is tightened up by means of jam-nuts, i', on the small end of the spindle. The lower end of the spindle J works in a socket in a spindle, I′, passing through a bracket, E′, on the slide-rest, the connection and adjustment being the same as that above described, except that there is a recess, j', in the slide-plate, into which the bottom of the screw J may enter when required. To compensate for the wear of the screw J in the sockets, wedge-blocks, k, are inserted in the sockets, and have screw-threads cut on them, so that they form part of the female screws in which the spindle J works. These blocks have lips or flanges on them to overlap the top and bottom of their sockets, and thus lock them in place, and are tightened on the spindle by pinch-screws, k'.

It will thus be seen, that by my improvements the tool is capable of all the usual adjustments, can be held firmly in any desired position, and that any wear on the working joints can readily be compensated; thus preventing any tremor in the cutting-tool.

The operation of the device will be obvious from the above description.

I am aware that it is not new to vary the inclination of a cutting-tool by rocking the tool-post, and do not, therefore, broadly claim such operation.

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

1. The combination, substantially as set forth, of the slide-plate E with the rocking-block F, rocking on a central hinge directly underneath and parallel with the slot in which the tool-post traverses, for the purposes specified.

2. The combination, substantially as set forth, of the slide-plate E and rocking-block, with the adjusting-screw J and its pivoted sockets $i\,i'$.

3. The combination, as set forth, of the slide-plate E, the rocking-block, the bearing e, the hinge e', the eye-bolts, and the jam-nuts, whereby the wear of the joints is compensated.

4. The combination, with the brackets F′ E′, of the tapering spindles I I′, constructed, arranged, and operating as described.

5. The combination of the adjusting-screw J with the swivelling-spindles I I′, wedge-blocks k, and pinch-screws k', all constructed and arranged for joint operation, as described.

In testimony whereof, I have hereunto subscribed my name.

CYRUS NEWHALL.

Witnesses:
E. M. FORBES,
W. N. WOODWARD.