No. 745,576. PATENTED DEC. 1, 1903.

H. M. DARLING.

TOOL REST FOR LATHES.

APPLICATION FILED JUNE 6, 1902.

NO MODEL.

Fig. 2.

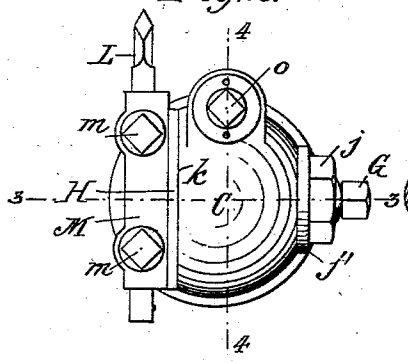


Fig. 1.

Fig. 3.

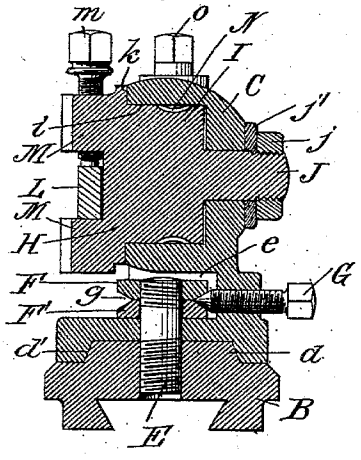
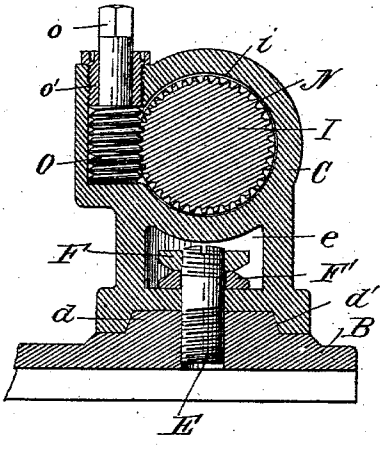


Fig. 4.



Witnesses,

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No. 745,576. Patented December 1, 1903.

UNITED STATES PATENT OFFICE.

HENRY M. DARLING, OF SENECA FALLS, NEW YORK, ASSIGNOR TO THE SENECA FALLS MANUFACTURING COMPANY, OF SENECA FALLS, NEW YORK.

TOOL-REST FOR LATHES.

SPECIFICATION forming part of Letters Patent No. 745,576, dated December 1, 1903.

Application filed June 6, 1902. Serial No. 110,442. (No model.)

To all whom it may concern:

Be it known that I, HENRY M. DARLING, a citizen of the United States, residing at Seneca Falls, in the county of Seneca and State of New York, have invented new and useful Improvements in Tool-Rests for Lathes, &c., of which the following is a specification.

This invention relates to a tool-rest for lathes and analogous machine-tools in which the tool-holder is rotatably mounted, so that it can be turned about a horizontal axis to elevate or depress the cutting-point of the tool to bring it into the proper operative relation with the work.

The object of the invention is to provide a tool-rest of simple and compact construction which will enable a quick and accurate adjustment of the tool without loosening same and will firmly hold the tool when adjusted.

In the accompanying drawings, Figure 1 is an end elevation of a lathe-tool carriage provided with a tool-rest embodying the invention and showing a portion of the lathe-bed in section. Fig. 2 is a plan view of the tool-rest. Fig. 3 is a transverse vertical section through the tool-rest in line 3 3, Fig. 2. Fig. 4 is a longitudinal vertical section through the tool-rest in line 4 4, Fig. 2.

Like letters of reference refer to like parts in the several figures.

A represents the tool-carriage of a lathe or analogous machine, which, as usual, is mounted to slide on ways or tracks on the lathe-bed, and B represents the usual slide-rest, which is mounted to slide on the carriage toward and from the work or in a direction transverse to the direction of movement of the carriage. The construction and arrangement of the carriage and slide-rest form no part of the present invention, and these parts may be constructed and arranged in any known or preferred manner.

C represents the tool-post or support for the tool-holder, which is preferably, as usual, mounted on the slide-rest, so that it can be rotated about a vertical axis. In the construction shown in the drawings the top of the slide-rest is provided with a frusto-conical boss or projection d, which projects into a correspondingly-shaped socket d' in the bottom of the tool-post and about which the post is rotatable.

E represents a bolt or screw which is screwed into a central threaded opening in the boss d and projects upwardly through a central hole in the bottom of the tool-post into a nut-chamber or recess e, formed in one side of the post.

F represents a nut located in the nut-chamber and screwed on the upper threaded end of the bolt E, and F′ represents a washer which surrounds the bolt between the nut F and the flat bottom of the nut-chamber. The periphery of the nut F is preferably milled, so that the latter can be grasped and turned by hand, and in order to give room for the fingers of the operator the sides of the nut-chamber in the post are enlarged, as shown at f in Fig. 1. The adjacent portions of the peripheries of the nut and washer are oppositely beveled, so as to form a V-shaped annular groove g between the outer edges of the nut and washer. Into this V-shaped groove projects the inner conical end of a set-screw G, which projects through a horizontal screw-threaded opening in the tool-post and is fashioned at its outer end to receive a wrench or other tool for turning the screw. After the tool-post has been turned or adjusted on the slide-rest the nut F is turned to clamp the post in position. Then by turning the set-screw G so that its conical end bears firmly on the oppositely-beveled faces of the nut and the washer the latter are wedged apart sufficiently to lock the nut rigidly in the position to which it is set, and thus prevent any possibility of the nut's working loose. The tool-post may be otherwise secured to the slide-rest to enable an adjustment about a vertical axis.

H represents the tool-holder. The tool-holder is provided with a cylindrical central or body portion I, which is journaled snugly in a cylindrical bearing socket or seat formed at one side in the upper portion of the tool-post. The tool-holder is provided at one end

with a central horizontal stem J, which projects through a hole in the side of the tool-post and is screw-threaded at its outer end. *j* represents a jam-nut which is screwed on the outer screw-threaded end of the stem and is adapted to bind against a vertical flat face on the side of the tool-post or a suitable washer *j'*, interposed between the nut and the tool-post. By properly adjusting the nut the tool-holder is held snugly in its bearing-socket against any endwise or horizontal play. At its other end or on the opposite side of the cylindrical body portion the tool-holder is provided with an annular vertical face or shoulder *k*, which bears against a corresponding annular face on the adjacent side of the tool-post. This construction of the tool-holder and its bearing-socket in the tool-post gives an extended bearing for the tool-holder and prevents the possibility of any movement of the holder in the tool-post except a pivotal movement for adjusting the tool. The tool-holder is provided at its end opposite to that from which the stem projects with suitable clamps or holding means for the tool, which is indicated at L. In the construction shown in the drawings the tool-holder is formed with horizontal separated ledges or flanges M, between which the tool is placed, so as to rest upon the lower ledge, as shown in Figs. 1 and 3. The tool is clamped in place by one or more set-screws *m*, which extend downwardly through screw-threaded holes in the upper ledge and abut at their lower ends against the upper face of the tool, the upper ends of the set-screws being properly shaped for the engagement of an operating wrench or tool.

The tool-holder is rotated in its bearing-socket in the tool-post and held in adjusted position to adjust the cutting-point of the tool by the following means: The periphery of the cylindrical body portion of the tool-holder is provided between the ends thereof with worm-gear teeth N, with which meshes a worm O, located in a cavity on the tool-post, at one side of the bearing-socket for the tool-holder, and carried by or formed on the lower end of a shaft *o*, which extends vertically through a bearing sleeve or bushing *o'*, which is screwed into the upper threaded end of the worm-cavity. The upper end of the shaft is shaped to receive an operating wrench or tool. The worm abuts at its lower end against the bottom of the worm-cavity and at its upper end against the inner end of the sleeve or bushing and is thus held from longitudinal movement. The worm is seated into the cavity through the opening for the bearing sleeve or bushing, which opening is large enough to permit the passage of the worm. By turning the worm-shaft the tool-holder is rotated in its bearing-socket in the tool-post, so as to elevate or depress the cutting-point of the tool to any desired extent, and is held firmly in the adjusted position by the worm in a well-known manner.

The above-described construction of the tool-holder and tool-post affords an extended bearing for the tool-holder and prevents any undesirable play or looseness of the latter. The rest is compact and neat in appearance, and the bearing-faces for the tool-holder and also the operating-worm and worm-teeth on the holder are all inclosed, so that no dust or chips can find their way to these parts. If it is desired or necessary to lock the tool-holder rigidly in its adjusted position, this can be quickly and easily accomplished by tightening the jam-nut *j* on the end of the stem on the tool-holder.

Tool-rests in which the tool-post is mounted on a vertically-rocking block provided with an operating worm-gearing are known, but the constructions of which I am aware are objectionable in that the rest is not compact, the tool-holders not journaled in the tool-post, and the rocking block has not the extended inclosed bearing which is herein shown and described. Furthermore, in such devices of which I am aware it is necessary to clamp the rocking block in position by a plurality of screws or bolts after it has been adjusted by the worm-gearing to prevent movement of the rocking block in its bearings, whereas in the construction herein described and claimed if it is at any time necessary to clamp the tool-holder in position this is accomplished by the single jam-nut.

I claim as my invention—

1. The combination of a support provided with a circular bearing-socket, a tool-holder having a circular bearing portion rotatably mounted in said bearing-socket and provided with means for clamping a tool, a worm-wheel secured to said circular bearing portion and inclosed and protected by said bearing-socket, and a worm journaled in a cavity in said support and meshing with said worm-wheel for turning and holding said tool-holder, substantially as set forth.

2. The combination of a tool-post provided in one side with a circular bearing-socket, a tool-holder provided with a tool-clamp and having a circular bearing portion at one side mounted to rotate about a horizontal axis in said bearing-socket, a worm-wheel secured to said circular bearing portion and inclosed and protected by said bearing-socket, a worm journaled in a cavity in said tool-holder and operatively engaging said worm-wheel for turning and holding said tool-holder, substantially as set forth.

3. The combination of a tool-post mounted to turn about a vertical axis and provided in one side with a cylindrical bearing-socket, a tool-holder having a cylindrical bearing por-

tion mounted to rotate about a horizontal axis in said bearing-socket, and provided at one side of said bearing portion with a tool-clamp and centrally at the opposite side of said bearing portion with a screw-threaded stem projecting through a hole in the tool-post, worm-wheel teeth on the cylindrical face of said bearing portion, a nut on said screw-threaded stem, and a worm journaled in a cavity in said tool-post and meshing with said worm-wheel teeth for turning and holding said tool-holder, substantially as set forth.

Witness my hand this 28th day of May, 1902.

HENRY M. DARLING.

Witnesses:
CHARLES F. HAMMOND,
ADELBERT S. DAVIS.