

L. P. SHERMAN.
Feed-Adjusting Devices for Slide-Rests of Metal-
Lathes.

No. 147,024.

Patented Feb. 3, 1874.

Fig. 1.

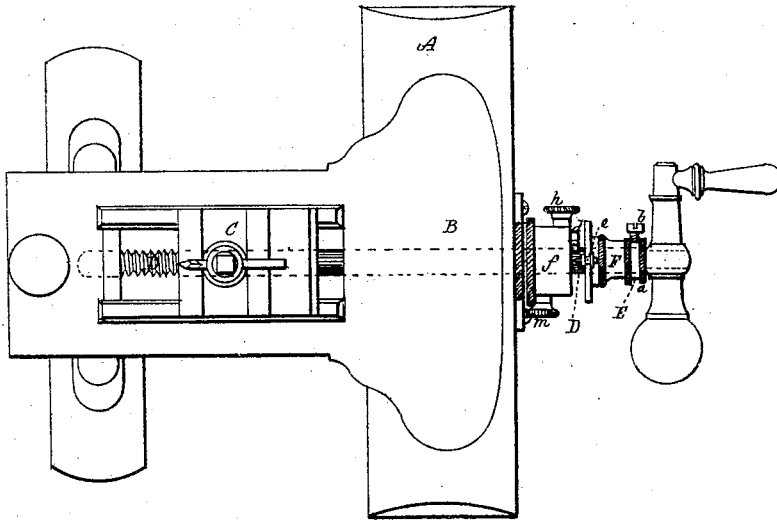


Fig. 2.

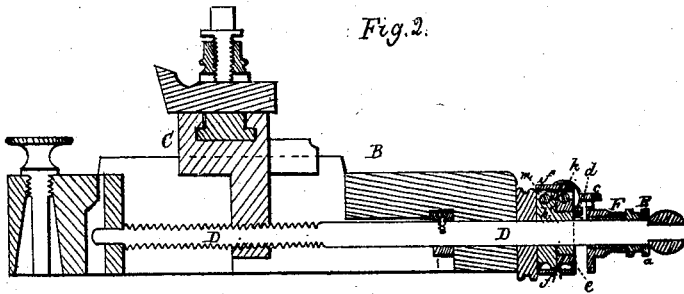


Fig. 3.
Enlarged.

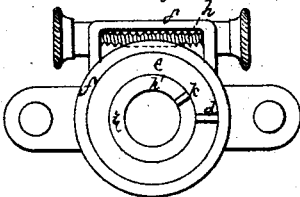


Fig. 4.
Enlarged.

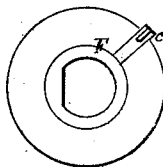
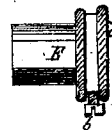


Fig. 5.
Enlarged.



Witnesses,
 Francis E. Taylor.
 W. C. Boardman.

L. P. Sherman.
 J. Curtis, Atty.

UNITED STATES PATENT OFFICE.

LEWIS P. SHERMAN, OF BIDDEFORD, MAINE, ASSIGNOR TO HIMSELF AND WILLIAM S. WHITNEY, OF BEVERLY, MASSACHUSETTS.

IMPROVEMENT IN FEED-ADJUSTING DEVICES FOR SLIDE-RESTS OF METAL-LATHES.

Specification forming part of Letters Patent No. **147,024**, dated February 3, 1874; application filed December 11, 1873.

To all whom it may concern:

Be it known that I, LEWIS P. SHERMAN, of Biddeford, in the county of York and State of Maine, have invented certain Improvements in Cross-Feed Attachment to Slide-Rests of Engine-Lathes, of which the following is a specification:

This invention relates to means for governing the movements of the cross feed-screw of slide-rests of turning-lathes, whereby all backlash upon such screw is avoided, and objects are turned to a given diameter with mathematical exactness, the device being capable of adjusting the screw and tool with such nicety that a mechanic can work to the small fractions of an inch with little care on his part.

The device is mainly intended for use in sewing-machine manufactories, and similar establishments where many hundred pins or other small pieces of work are to be turned to a uniform diameter, and is available both where it is desired to turn several different sizes on one piece of metal without removing it from the lathe, or where several tools are to be used in succession, and each is to be adjusted.

Heretofore in engine-lathes the stop or gage for determining the position of the tool, when a gage is desired to which to turn a number of pieces to a given size, has been affixed to the carriage which bears the sliding tool-holder, and such tool-holder brings up against this stop as a gage.

In my improvements I have dispensed with this stop, and brought an equivalent device to act upon the cross feed-screw, and stop the motions of the latter rather than of the tool-holder, by which means I avoid all backlash upon such screw.

This invention consists, first, in the employment of a tubular knob or head provided with an inwardly-projecting spur, and sliding upon an adjustable sleeve encompassing the outer end of the cross feed-screw of the rest, and to and fro of such sleeve with respect to a stop or abutment applied in a suitable manner to the outer part of the carriage which bears the tool-holder, the purpose of the tubular head or knob being, by bringing up against the said stop, to determine the distance to which the

screw shall feed the tool, and the purpose of the sleeve being to adjust the position of the head upon the screw, in order that it shall abut against the stop at the proper time, the sleeve being applied to the screw by a clamp-screw, or other means, by which its position thereon may be changed at pleasure, the head being allowed to slide upon the sleeve, but not to revolve upon it; therefore, the head revolves with the screw until its spur brings up against the stop affixed to the carriage, and the rotation of the screw is thereby arrested. And, this invention consists, secondly, in affixing the gage or stop before named upon a tubular disk or thimble, which is mounted within a box or case affixed to the front side of the carriage of the rest, said disk having a worm-gear cut upon its periphery, into which a screw meshes, such screw being mounted within the upper part of the case, and serving to effect nice adjustments of the disk, and of the gage-stop carried by it. This disk and stop adapt the rest to turning one series of uniform diameter, and if it is desired to turn a piece of work to two diameters without removing it from the lathe, a second stop must be employed to act in conjunction with the spur upon the sliding knob. I have in the present instance shown, as a third feature in which my invention consists, a second stop or gage affixed to a second or auxiliary tubular disk which is disposed within the case before named, and immediately encompasses the feed-screw, and is inclosed, in part, within the bore of the first-named disk, this second or inner disk also having a worm-gear upon its periphery, into which a second screw meshes in manner similar to the first. The position of the second stop or gage is not adjusted by means of the head or knob upon the screw, but must be adjusted by its own screw, and a second, or third, or more of these disks and screws may be added according to the number of different sizes to be turned, as I am not restricted in this respect.

The drawings accompanying this specification represent in Figure 1 a plan; in Fig. 2 a section of the bed or base of the slide-rest of a turning-lathe containing my improvements; in Fig. 3 a front view of the adjustable stops,

to be hereinafter explained. Fig. 4 is an end view of the adjustable head; and Fig. 5 a side view of the adjustable sleeve, both of which will be duly explained.

In these drawings, A represents the bed or base of the slide-rest of an engine-lathe, which slides upon the ways of such lathe, and is operated by the feed-screw in the usual manner. The carriage of the rest, which supports holder or chuck, is shown at B as mounted transversely upon and pivoted to the base, and adjusted as to height, in the usual manner of slide-rests, the tool-holder, which is shown at C, being in turn mounted upon or within the carriage, and fed by a cross feed-screw, D, also in the manner common to lathes in use, the stop heretofore in use, however, as a gage to determine the advance of the tool-holder, being omitted, and its place supplied as hereinafter stated. In carrying out my improvements, I dispose upon the outer end of the cross feed-screw D a sleeve, E, formed upon its outer end with an annular concentric rib or collar, *a*, and provided with a set-screw, *b*, or other means for confining it securely to the screw. Encompassing and sliding upon the sleeve E, but not turning upon it or the screw D, is a tubular knob or head, F, the inner end of which is formed or provided with an inwardly-projecting spur or fin, *c*, which spur coincides with and abuts at times against an adjustable stop, *d*, of like character, affixed to the outer end of a tubular disk, *e*, which surrounds the feed-screw D, but not immediately in contact with it, this disk being disposed and supported within a frame or case, *f*, attached to the front end of the bed A, a worm-gear being cut upon the periphery of this disk, into which a screw, *h*, meshes, this screw being supported, in a suitable manner, within the upper part of the frame or case *f*, as shown in the drawings.

The operation of the device as above explained is as follows: A rod or other object to be turned to a given size is placed in the lathe, and the tool advanced by the screw D, and the object turned to the desired diameter without any regard to my invention, it being a necessary condition at this stage of procedure that the head F and its spur, with the sleeve E, is removed from the immediate vicinity of the stop *d* upon the disk *e*. The object, whether a pin, screw, or otherwise, being turned to the desired diameter, and a pattern thus obtained, to which a number of others are to be turned, and the tool remaining in the position in which it took its last chip, the head F is pushed inward upon the sleeve E until its spur *c* arrives closely up to the annular disk *e*, when the sleeve E is loosened and turned about upon the screw until the spur *c* of the head F brings up against the stop *d*, the latter thus constituting a dead stop to the rotation of the cross feed-screw, and consequently of the advance of the turning-tool, and enabling me to turn many objects to a

given diameter with unerring accuracy, and without the use of calipers, as well as without the usual loss of time, as I have only to turn the feed-screw until the spur *c* abuts against the stop *d*, when the desired diameter is obtained.

The micrometer-screw *h* enables me to obtain nice adjustments of the feed-screw D, and work to small fractions of an inch with perfect ease and certainty. In this manner I am enabled to turn many objects from one piece of wire without removing the work from the lathe, as I can reverse the feed-screw to the extent of one turn without interfering with the gage to which I am working.

The tubular sleeve is employed to prevent rotation of the head F upon the screw D, and to permit it to slide freely to and fro of such screw with respect to the annular disk F and its stop *c*, but this result may be effected in a variety of ways without affecting the character of my invention. I thus provide a very convenient means of adjusting the feed of the tool, and, what is of great consequence in accurate work, entirely obviate the backlash upon the feed-screw heretofore existing.

In order to adapt the tool to cutting a second size without removing the work from the lathe, I dispose upon the screw D, and within the case *f*, a second tubular auxiliary disk or thimble, *h'*, which is formed with a tubular neck, *i*, to enter the bore of the disk *e*, the outer end of this neck having a stop or tooth, *k*, similar to the stop *d* before mentioned, while the periphery of this second disk is formed also with a worm-gear, into which a second screw, *m*, meshes, this latter screw being mounted within the upper part of the case *f*, and alongside of the screw *h*, and operating in all respects like it to admit the position of the auxiliary-disk *h'* and its stop.

I claim—

1. The combination, with the cross feed-screw and the base or bed of an engine-lathe, of the sliding head F, provided with stop *c*, and the adjustable disk *e*, provided with stop *d*, substantially as and for the purposes shown and set forth.

2. The sleeve E, head F, and spur *c*, or their equivalents, when combined with the cross feed-screw D, as a means of adjusting the advance of the screw and of the tool-holder, substantially as and for purposes stated.

3. The employment of the second or auxiliary disk *h'*, or two or more of such auxiliary disks, substantially as and for purposes stated.

4. The employment of two or more stops connected to the bed of the rest, and operated, by screws or other equivalent means, to turn different diameters without removing the piece of work from the lathe, substantially as and for purposes stated.

LEWIS P. SHERMAN.

Witnesses:

CYRUS P. BERRY,
W. L. WHITNEY.