

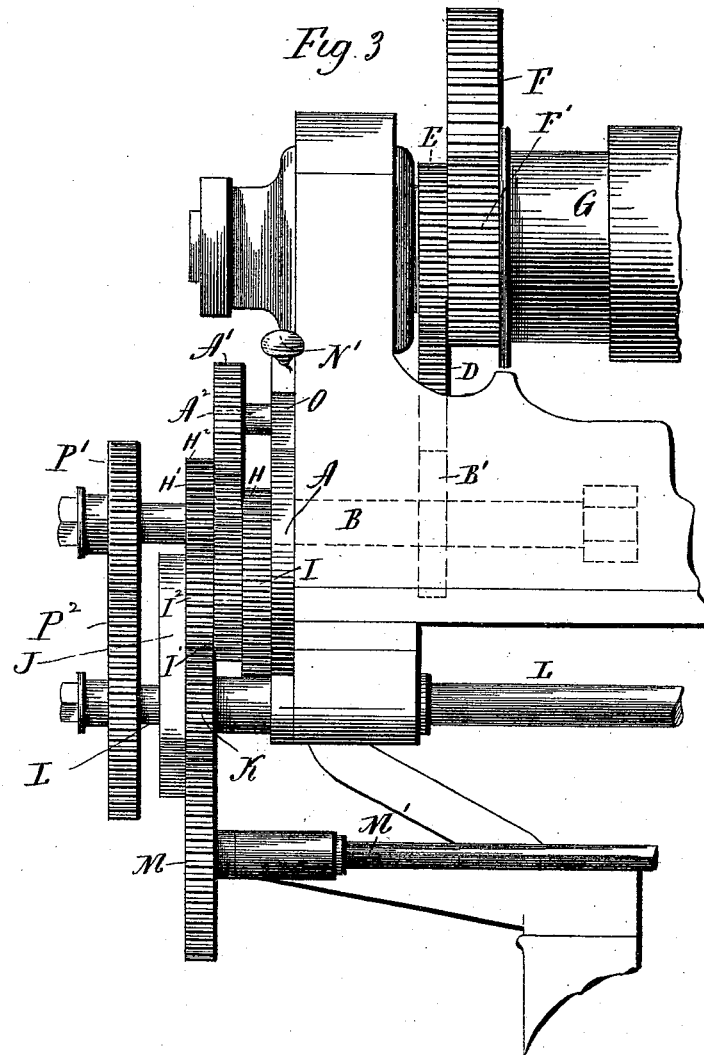
(No Model.)

2 Sheets—Sheet 2.

O. E. PERRIGO.
ENGINE LATHE.

No. 494,383.

Patented Mar. 28, 1893.



Witnesses
J. H. Shumway
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OSCAR E. PERRIGO, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO THE
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ENGINE-LATHE.

SPECIFICATION forming part of Letters Patent No. 494,383, dated March 28, 1893.

Application filed September 19, 1892. Serial No. 446,254. (No model.)

To all whom it may concern:

Be it known that I, OSCAR E. PERRIGO, of New Haven, in the county of New Haven and State of Connecticut, have invented a new Improvement in Engine-Lathes, (A;) and I do hereby declare the following, when taken in connection with accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a broken view in end elevation of a lathe constructed in accordance with my invention; Fig. 2, a plan view of the gears spread out so as to show all of them, but preserving their relative functional arrangement; Fig. 3, a view in side elevation showing the same end of the lathe.

My invention relates to an improvement in engine-lathes, the object being to produce variable speed gear therefor which may be operated to vary the speed of the feed-rod, without removing and replacing any gears, as is now commonly done.

With these ends in view, my invention consists in an engine-lathe having certain details of construction and combinations of parts as will be hereinafter described and pointed out in the claims.

In carrying out my invention, I swivel a circular head A, upon the outer end of the arbor or shaft B, which is commonly called in lathes of this character, the "stud" the said head bearing against the outer face of the end C, of the lathe. A gear B', fixed to the inner end of the said "stud," receives the power by which the same is rotated. As herein shown, it is meshed into by a gear D, which in turn meshes into the spindle feed-gear E, which is of usual construction, as are also the back-gears F and F', and the cone G. The gear D, is one of two gears of a reversing mechanism which is employed to reverse the direction in which the "stud" B, is rotated. I have considered it sufficient to indicate such mechanism by the gear D, as mechanisms for this purpose are well known in the art, and have no direct bearing upon my present invention. The said head A, is provided with three

gears A', all corresponding to each other in size, and in the number of their teeth, but differentiated in their radial distance from the center of the head, and also in the distance of their offset or projection from the face thereof, the "studs" A², upon which they are mounted thereto varying in length. By differentiating the gears A' radially and laterally, as described, they are arranged to be meshed into the respective steps of a cone of gears H, H' and H², fixed to the "stud" B, as clearly shown by Fig. 2 of the drawings, the smallest gear of the cone being located adjacent to the outer face of the swiveled head A, the next largest gear being next to it, and the next largest being next to that. It will thus be seen that the idle gears A', though of the same size, will be driven at different rates of rotation by means of the gears H, H' and H², which are differentiated in size, and which constitute the cone of gears fixed to the "stud." The said gears A', are brought by the right rotation of the head A, into mesh respectively, with the three gears I, I' and I² of a loose cone of gears which is mounted on a "stud" I³, carried by the upwardly projecting arm J, of the stud-plate J', which is of ordinary construction. The said gears I, I', I² are larger than the gears H, H' and H², and relative thereto are reversely arranged, as clearly shown by Fig. 2 of the drawings, the gears of these respective sets of gears or cones, being rightly calculated so that there will be a regular increase or decrease in the rate of rotation imparted to the loose cone, according to the gear of the fixed cone from which power is taken for driving the loose cone. A small idle gear K, loosely mounted on the projecting outer end of the feed-screw L, transmits the motion of the loose cone to a gear M, larger in size, and fixed to the extreme outer end of the feed-rod M', which is thereby actuated. It will thus be seen that by rotating the head A, with its three idle gears, the differentiated gears of the two cones may be brought into action as desired for increasing or decreasing the speed of the feed-rod without removing or replacing any gears, whereas in variable speed gears as heretofore

constructed, the lathe must be stopped and gears interchanged in order to accomplish the same result, and I have found that I may rotate the head and vary the speed of the feed rod without even stopping the lathe.

As herein shown I have provided the swiveled head with three idle gears, and have constructed each of the cones with three gears, but these numbers may be varied if desired.

For locking the head in any of its adjustments, I have provided, as herein shown, a spring actuated pin N, having its outer end constructed with a knob or button N', and its inner end with a taper N², to adapt it to enter suitable pockets *a*, formed at equal distances apart in the periphery of the head A, the pin and its actuating spring being mounted in a box O, adapted to be screwed to the end C of the lathe. This locking device, however, may be replaced by any other device suitable to the purpose. As herein shown, also, I have represented my invention in connection with an ordinary stud-plate J', which is fulcrumed upon the projecting outer end of the feed-screw L, and provided at its opposite end with the usual handle J², and segmentally slotted arm J³. This plate carries an adjustable screw-cutting gear P, which meshes into a screw-cutting gear P', mounted upon the extreme outer end of the "stud" B, and into a screw-cutting gear P², mounted upon the extreme outer end of the feed-screw L. It will be understood, however, that the train of gears P, P' and P² which drive the feed-screw L, are not affected in their action by my improved variable gear for the feed-rod, nor are they in use at the same time therewith. Thus when the parts are in the adjustment as shown by Fig. 1 of the drawings, the screw-cutting gears are cut out of action, so to speak, by the disengagement of the gear P, from the gear P', but when it is desired to put these gears into action, the stud-plate is lifted whereby the gear P, is intermeshed with the screw P', and the loose cone of gears comprising the gears I, I' and I² are cut out of action by being swung out of the range of the idle gears A', carried by the swiveled head A. I may thus, if I choose, and it is the construction I prefer to employ, combine my improved variable gear for the feed-rod with a train of gears for the feed-screw, so that I may readily, and without the removal of any gears, convert the lathe for using the feed-screw of the feed-rod.

I would have it understood that I do not limit myself to the exact construction herein shown and described, but hold myself at liberty to make such changes and alterations as

fairly fall within the limits and scope of my invention.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In the feed-rod gear of an engine lathe, the combination with the "stud" and the feed-rod thereof, of means for driving the said "stud," a cone of gears fixed on the "stud," a rotatable head swiveled on the "stud" and carrying gears differentiated in their radial distance from the "stud" and in their offset from the face of the head, and corresponding in number to the steps of the said cone with which they are respectively meshed; a loose cone of gears corresponding in number to the gears carried by the said head which is rotated to bring its gears into mesh with the steps of the said loose cone; means for locking the said head in any of its adjustments, and connection between the said loose cone and the feed-rod, substantially as described, and whereby by rotating the head the speed of the rod may be varied within the limits of the gears and carried by the said rotatable head, and comprised in the fixed and loose cones.

2. In the feed-rod gear of an engine lathe, the combination with the "stud" and the feed-rod and the feed-screw thereof, of means for driving the stud, a cone of gears and a screw-cutting gear fixed to the said "stud," a rotatable head swiveled on the said "stud" and carrying idle gears arranged to mesh into the cone of gears, a stud-plate swung on the feed-screw, a loose cone of gears mounted on an arm of the said plate and meshed into by the gears of the rotatable head according to the adjustment of the same, means for locking the said head in any of its adjustments, a rod-gear mounted on the feed-rod, an idle gear mounted on the feed-screw and connecting the said loose cone of gears with the rod-gear, a screw-cutting gear mounted on the feed-screw, and a gear carried by the stud-plate and connecting the screw-cutting gear on the "stud" with that on the feed-screw, substantially as described, and whereby by rotating the said head the speed of the rod may be raised, and by shifting the stud-plate the feed-rod gear may be cut out of, and the feed-screw gear cut into, action.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

OSCAR E. PERRIGO.

Witnesses:

ROBERT A. BROWN,
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