(No Model.)

A. F. PRENTICE.

ENGINE LATHE.

No. 593,607. Patented Nov. 16, 1897.

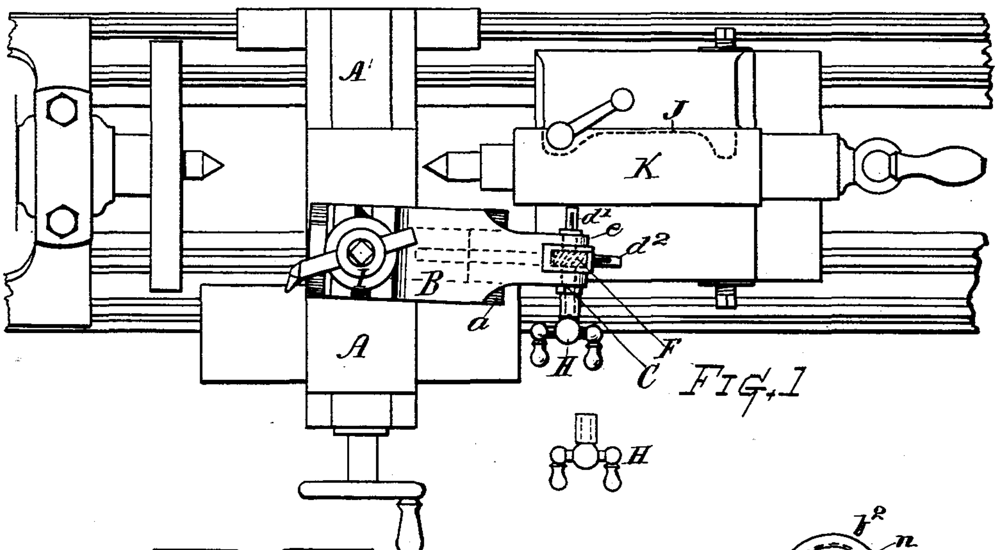

FIG. 1

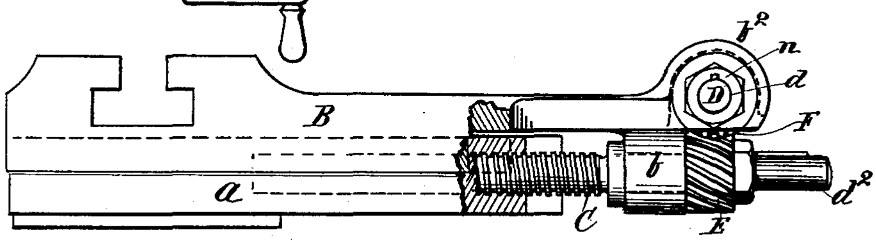

FIG. 2

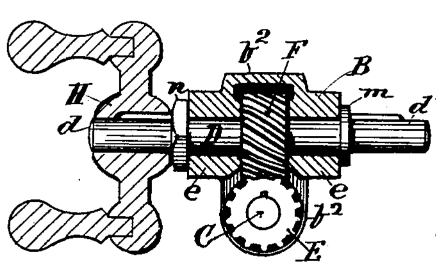

FIG. 3

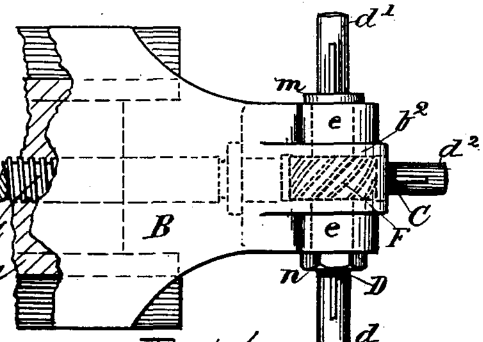

FIG. 4

Witnesses
Charles S. Bacon
Simeon E. King

Inventor
Albert F. Prentice
By Chas. H. Burleigh
Attorney

UNITED STATES PATENT OFFICE.

ALBERT F. PRENTICE, OF WORCESTER, MASSACHUSETTS.

ENGINE-LATHE.

SPECIFICATION forming part of Letters Patent No. 593,607, dated November 16, 1897.

Application filed May 12, 1897. Serial No. 636,161. (No model.)

To all whom it may concern:

Be it known that I, ALBERT F. PRENTICE, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Engine-Lathes, of which the following, together with the accompanying drawings, is a specification sufficiently full, clear, and exact to enable persons skilled in the art to which this invention appertains to make and use the same.

My present invention relates to an improvement in the hand feed appliances for compound tool-rests for engine-lathes, and more especially applicable to lathes in which a tail-stock having a rearwardly-offset standard is employed, the object of my invention being to render the feed conveniently operative when the top shoe and guide of the compound tool-rest is set at extreme positions of angularity, right or left, as for feeding the tool in a plane or direction more or less nearly parallel with the axial line of the lathe-spindle, in which position the end of the tool-rest slide, with its feed-screw, occupy a position close to or under the tail-stock or against the head of the lathe.

To this end my invention consists in combining with the slide or shoe which carries the tool-post and the feed-screw spindle whereby said slide is operated a transversely-disposed arbor having ends fitted for receiving the removable wrench or handle-piece and a pair of spiral toothed gears connecting said arbor and feed-screw for operation, as hereinafter explained; also, in the combination, in an engine-lathe, with a compound tool-rest and a tail-stock having its standard rearwardly offset, of a lateral screw-operating device whereby the feed-screw for the tool-post slide or top shoe of said compound tool-rest can be conveniently operated by hand when the end of said slide is closely adjacent to the offset standard or when swung to a position over the tail-stock, as more fully hereinafter explained.

In the drawings, Figure 1 is a plan view of a portion of an engine-lathe with compound tool-rest, illustrating my invention. Fig. 2 is a side view of the top shoe, its guide, and feed-screw-operating mechanism. Fig. 3 is an end sectional view, and Fig. 4 a plan view showing my improvement.

In the drawings, A denotes the carriage, A′ the lower or cross slide, and *a* the upper guide or swing plate of the well-known compound tool-rest.

B indicates the top shoe or slide-plate, on which the tool-post I is supported, and C indicates the feed or adjusting screw for moving the slide-plate B and tool-post along the guideway of the swing-plate *a* for feeding or moving the tool to its work. The neck of said screw turns in a bearing *b*, fixed to the slide B, and its thread engages with threads in the plate *a*.

In my invention I provide a short shaft or arbor D, which I arrange above and transverse to the feed-screw C and mounted to turn in bearings *e*, attached to the outer end of the shoe or slide-plate. In the present instance and preferably the bearings are integrally attached, but may, if desired, be attached by screws or otherwise fixed to the plate. Upon the center of said arbor between the bearings *e* there is keyed a spiral toothed gear F, that engages or meshes with a similar intermatching spiral toothed gear E, fixed on the screw-spindle C, as shown. The arbor D is confined from endwise movement in its bearing by the collar *m* and nut *n*, that fit against the respective ends of the bearings, while the ends *d* and *d′* of the arbor (one or both) project laterally from the plate and are formed similar to the end d^2 of the screw C for receiving the removable turn-key, wrench, or handpiece H, by which the arbor or the screw can be rotated for moving the tool support and slide on its guide-plate. The ends *d*, *d′*, and d^2 are preferably provided with splines, as shown, for engaging a suitable groove in the interior of the handpiece-socket.

The top of the plate B between the bearings *e* is best made as a hollow shell-casting, as at b^2, to form a protecting-housing for the spiral-toothed gear F and a neat finish for the exterior.

Fig. 1 shows my improvement as employed on a lathe in combination with a tail-stock K, having a rearwardly-offset supporting-standard or of the character described in Letters

Patent No. 553,594, in which the tail-stock standard rises from its base wholly in rear of the dotted line J, thereby allowing the end of the shoe B to swing under the head or spindle-bearing of the tail-stock. In this connection it will be seen that the operator can place the handpiece on the laterally-projecting end *d* of the arbor and by the aid of said arbor and the spiral-toothed gears conveniently rotate the feed-screw from a front position in relation to the lathe. For use with this offset tail-stock my invention is of great practical advantage and utility, as well as for compound tool-rests employed upon other engine-lathes.

The handle-piece can be used interchangeably either upon the screw or upon either end *d* or *d'* of the arbor D at the convenience of the operator, and renders the feed conveniently operative when the rest is central or when swung to the extreme right or left to such an extent as brings it closely adjacent to the head of the lathe or over the base of the tail-stock, as illustrated in Fig. 1.

I claim as of my invention and desire to secure by Letters Patent—

1. In an engine-lathe embodying a tail-stock having a rearwardly-offset standard, and a compound tool-rest provided with a pivotally-adjustable swing-plate and top shoe carrying the tool-rest; the combination, with the feed-screw for said shoe, of a lateral screw-operating arbor carried upon said spring-plate, and having its end fitted for receiving the removable handle-piece that fits the feed-screw end, and spiral connecting-gears arranged on said arbor and feed-screw, substantially as set forth.

2. The combination, of the tool-post-supporting slide having the narrowed rear end, and provided with the under bearing *b* and lateral top bearings *e e*, the swinging guide-plate, the feed-screw threaded longitudinally in said guide-plate and arranged through the bearing *b*, the transverse arbor mounted in the bearings *e* on said slide-plate, and having oppositely-projecting ends adapted for receiving a removable handle-piece, the collars *m* and *n* arranged on said arbor at the ends of the bearings, and the pair of similar spiral-toothed gears respectively fixed on said arbor and on the neck of said feed-screw, for the purposes set forth.

3. In a compound tool-rest for engine-lathes, the combination of the top shoe provided at its outer end with lateral bearings and a housing-shell thereon, a transversely-disposed arbor mounted in said bearings, the feed-screw journaled in a bearing at the under side of said top shoe, the pair of gears connecting said arbor and feed-screw, the ends of said arbor and feed-screw respectively projecting and similarly formed with splines, and the handpiece provided with a socket adapted for interchangeably fitting said screw and arbor ends, for the purpose set forth.

Witness my hand this 10th day of May, 1897.

ALBERT F. PRENTICE.

Witnesses:
CHAS. H. BURLEIGH,
CHARLES S. BACON.