No. 762,062. PATENTED JUNE 7, 1904.

J. JUDD.

SPEED CHANGING MECHANISM FOR ENGINE LATHES.

APPLICATION FILED OCT. 23, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 4

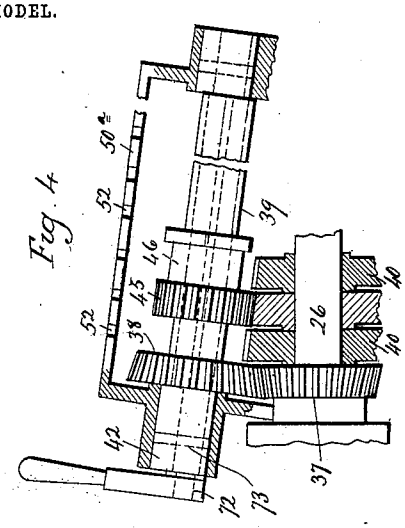
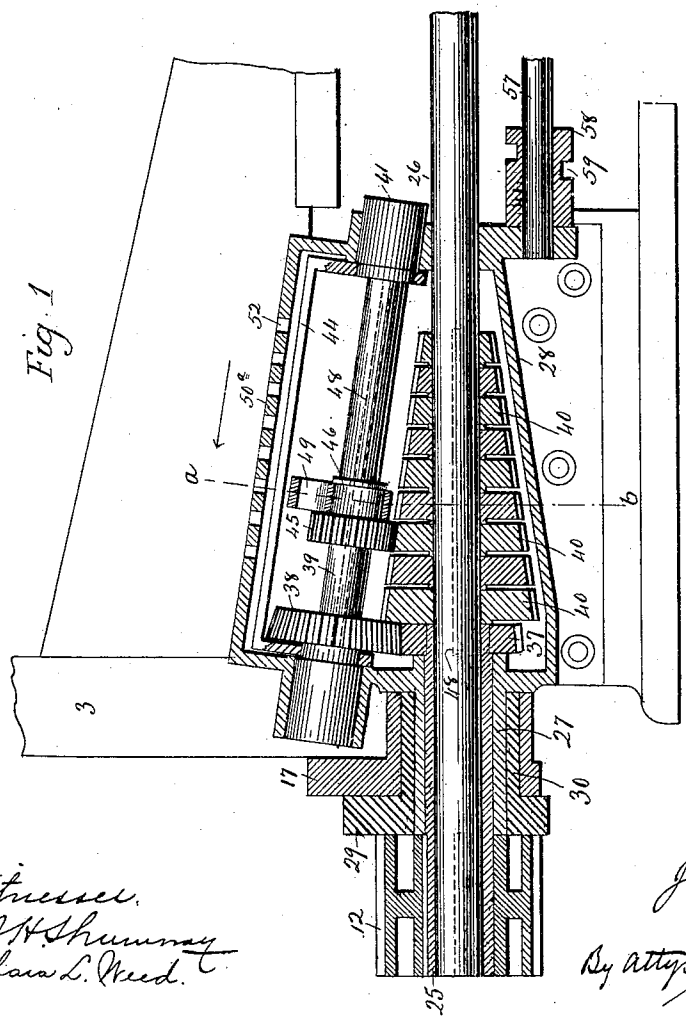


Fig. 1



Witnesses.
J. H. Shumway
Clara L. Reed.

Josiah Judd.
Inventor.
By attys. Seymour & Earle

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 762,062. PATENTED JUNE 7, 1904.

J. JUDD.

SPEED CHANGING MECHANISM FOR ENGINE LATHES.

APPLICATION FILED OCT. 23, 1903.

NO MODEL. 2 SHEETS—SHEET 2.

Fig. 3

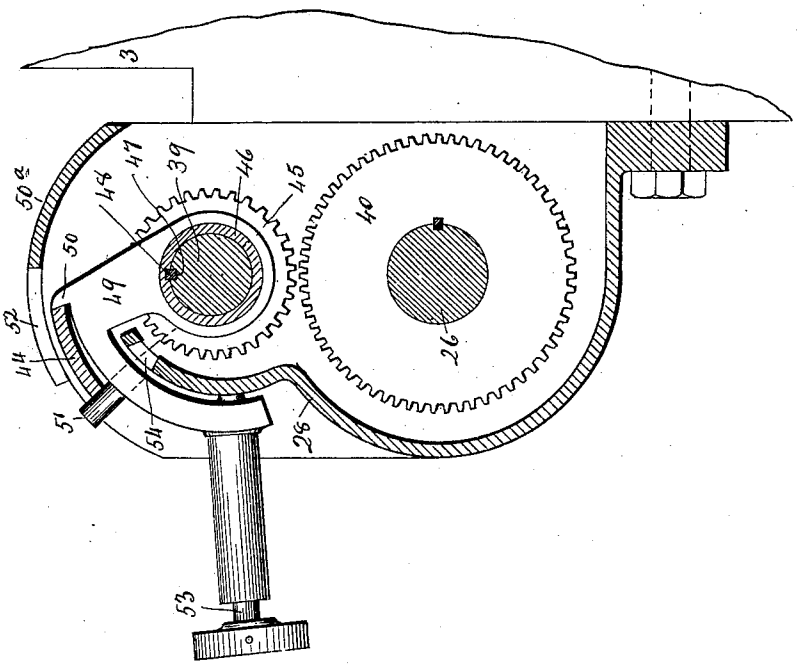
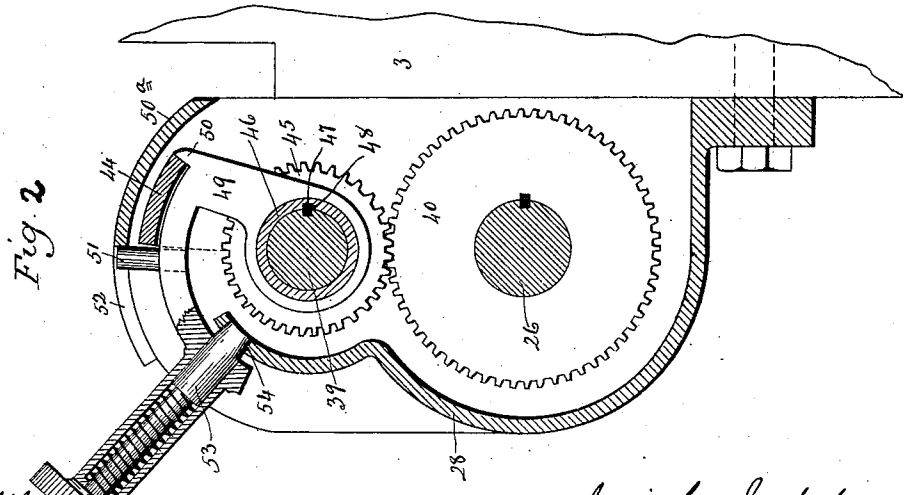


Fig. 2



Witnesses.
J. H. Shumway
Clara L. Reed.

Josiah Judd
Inventor
By atty Seymour Earle

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 762,062. Patented June 7, 1904.

UNITED STATES PATENT OFFICE.

JOSIAH JUDD, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO THE NEW HAVEN MFG. CO., OF NEW HAVEN, CONNECTICUT, A CORPORATION.

SPEED-CHANGING MECHANISM FOR ENGINE-LATHES.

SPECIFICATION forming part of Letters Patent No. 762,062, dated June 7, 1904.

Application filed October 23, 1903. Serial No. 178,190. (No model.)

To all whom it may concern:

Be it known that I, JOSIAH JUDD, a subject of the King of Great Britain, and a resident of New Haven, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in Speed-Changing Mechanism for Engine-Lathes; and I do hereby declare the following, when taken in connection with the accompanying drawings and the numerals 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 longitudinal sectional view of the gear-box and the parts adjacent thereto; Fig. 2, a sectional view on the line *a b* of Fig. 1 with the pinion on the pinion-shaft in mesh with one of the change-gears; Fig. 3, a similar view with the lever turned and the pinion on the pinion-shaft out of engagement with the change-gear; Fig. 4, a broken sectional view illustrating the modification in the manner of turning the eccentric hubs for the pinion-shaft.

This invention relates to an improvement in speed-changing mechanism for engine-lathes, the object of the invention being a simple and convenient means for changing the feed mechanisms for the engine-lathes, whereby the variations in speed for the feed or screw-cutting may be obtained; and the invention consists in certain details of construction and combinations of parts, as will be hereinafter described, and particularly recited in the claims.

Upon a shaft 26 a series of graduated change-gears 40 are mounted, and adjacent to the main shaft is a pinion-shaft 39, which is arranged at an angle to the main shaft or, in other words, parallel with the peripheries of the change-gears 40. This pinion-shaft is mounted in eccentric bearings 41 and 42, supported in the ends of a gear-box 28, which also incloses the change-gears 40. These eccentric bearings are connected by a yoke 44. Upon the pinion-shaft 39 is a pinion 45, having a sleeve 46, with an internal groove 47 to ride over a feather 48, extending throughout the length of the said shaft, whereby the pinion is made to rotate with the shaft, but left free to be slid from end to end thereof. Mounted upon the sleeve 46 is a lever 49, by means of which the pinion 45 is moved into position for engagement with any one of the change-gears 40. This lever 49 is formed with a lug 50, adapted to engage with the rear edge of the yoke 44, and the lever also carries a pin 51, which engages with the forward edge of the yoke 44 and which is adapted to enter either one of a series of notches 52, formed in the upper cover 50 of the gear-box 28. In the outer end of the lever 49 is a spring-pin 53, adapted to enter either one of a series of holes 54, arranged in a straight line in one edge of the said gear-box 28. The notches 52 are so arranged that when the pin 51 enters either one of them the pinion 45 will be brought into mesh with one predetermined change-gear 40, and the engagement of the spring-pin 53 with the gear-box locks the pinion into such engagement. By withdrawing the pin 53 the lever 49 may be turned and the yoke 44 rocked, turning the eccentrics 41 and 42 and throwing the pinion 45 out of mesh with one of the change-gears 40 and permitting it to be moved upon the pinion-shaft until it stands in position to engage with another one of the change-gears 40, when by the return movement of the lever 49 the pinion will be moved into engagement with the desired gear. It will thus be seen that the main shaft 26 may be given any desired number of turns, accordingly as the pinion 45 engages with the desired gear 40.

Instead of turning the yoke 44, which throws the pinion-shaft and the pinion 45, carried thereby, away from the change-gears 40 through the lever 49, a handle may be applied to a rod 72, extending through the shaft 39, which will be hollow for that purpose, and this rod will be pinned to the eccentrics 41 and 42 by a pin 73, as shown in Fig. 4, whereby the eccentrics may be readily turned to throw the pinion 45 into and out of mesh with the change-gears 40. When thrown out of mesh, the pinion 45 may be conveniently moved by the lever 49. I therefore do not wish to be understood as limiting the inven-

tion to the exact means shown for moving the pinion-shaft.

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

1. The herein-described speed-changing mechanism for engine-lathes comprising a main shaft, a series of graduated change-gears fixed thereon, a pinion-shaft arranged adjacent to said change-gears and parallel with the peripheries thereof, means for driving the said pinion-shaft, a pinion carried by said pinion-shaft and free for longitudinal movement thereon and adapted to engage with either one of the change-gears, said pinion-shaft adapted to be turned away from said gears in a path parallel with the peripheries thereof, substantially as described.

2. A speed-changing mechanism for engine-lathes comprising a shaft with differential change-gears thereon, a pinion-shaft arranged adjacent to said gears and at an angle to said shaft, said pinion-shaft mounted in eccentric bearings, means for driving said pinion-shaft, and a pinion mounted on said pinion-shaft and adapted to be moved longitudinally thereon and to engage with or be disengaged from the said change-gears, substantially as described.

3. A speed-changing mechanism for engine-lathes comprising a shaft, change-gears connected therewith, a pinion-shaft arranged adjacent to said change-gears and at an angle to the said shaft the opposite ends of said pinion-shaft mounted in eccentric bearings, a yoke connecting said bearings, a pinion coupled with said pinion-shaft but free for longitudinal movement thereon, a lever coupled with said pinion and adapted to engage with said yoke whereby the movement of the lever turns the yoke and the eccentrics so as to move the pinion into and out of mesh with the change-gears, substantially as described.

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

JOSIAH JUDD.

Witnesses:
FREDERIC C. EARLE,
CLARA L. WEED.