No. 872,233. PATENTED NOV. 26, 1907.

J. HARTNESS.

ENGINE LATHE.

APPLICATION FILED DEC. 19, 1905.

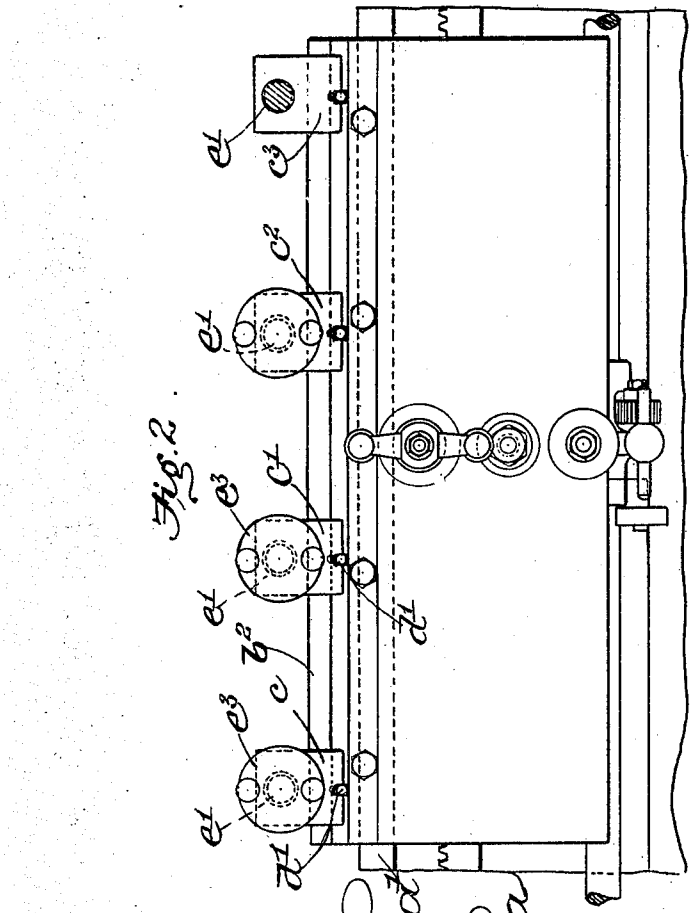


Fig. 2.

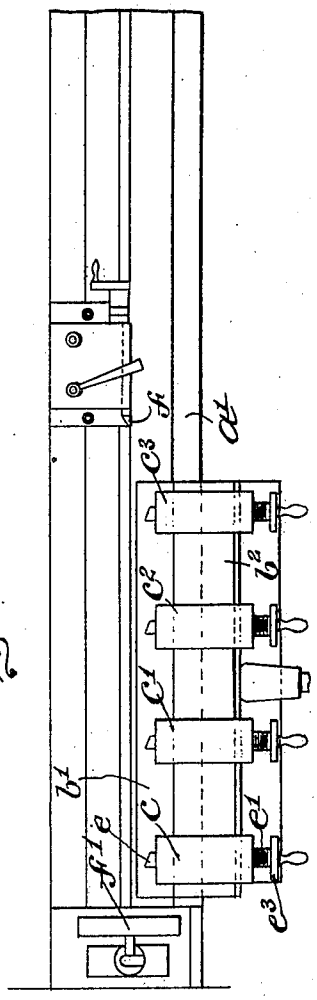


Fig. 3.

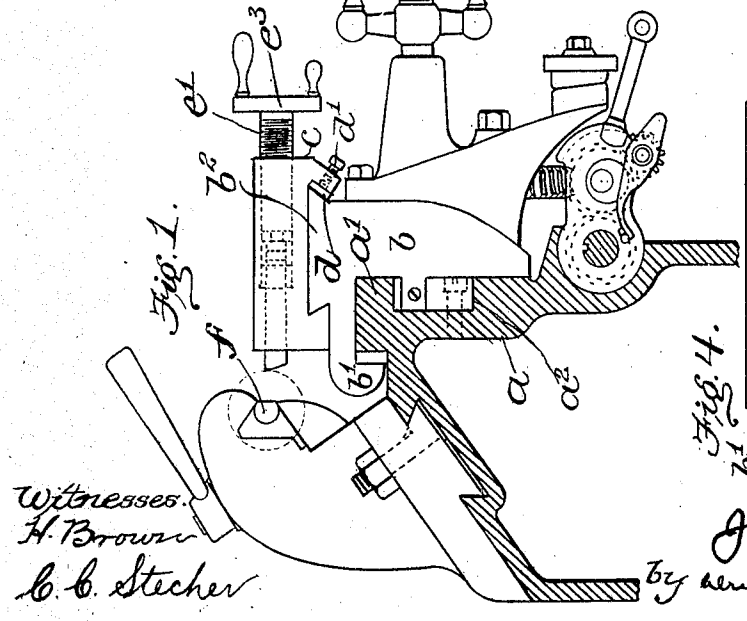


Fig. 1.

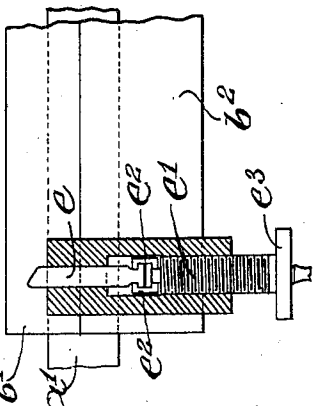


Fig. 4.

Witnesses:
H. Brown
C. C. Stecher

Inventor
James Hartness
By Geo. P. Brown Dunlap & May
his Atty's

THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JAMES HARTNESS, OF SPRINGFIELD, VERMONT.

ENGINE-LATHE.

No. 872,233. Specification of Letters Patent. Patented Nov. 26, 1907.

Application filed December 19, 1905. Serial No. 292,436.

To all whom it may concern:

Be it known that I, JAMES HARTNESS, of Springfield, in the county of Windsor and State of Vermont, have invented certain new and useful Improvements in Engine-Lathes, of which the following is a specification.

This invention has relation to metal working machinery, and more particularly to engine lathes in which work of small diameters is held in centers. It has been my aim in designing machines of this general character, to prevent the possibility of error in the work by eliminating bridge constructions, or those in which a tool or cutter surmounts a pile of slides or supports. It is well recognized that for ideal results, the periphery of the work and the support for the cutter should be in such proximity, and the support should be so located with respect to the point or edge of the cutter, that there will be no springing or yielding of the parts.

The present invention therefore has for its object to secure as nearly as possible a construction and arrangement of the tool slide and the cutter in which the cutter is adjustably supported solidly on a slide, that is, in turn supported solidly by the bed, without the intervention of bridge construction or cross slides.

A further object of the invention is to provide a single tool slide of the character referred to, with a plurality of cutters all adjustable towards and from each other, and adapted to be thrown into and out of action as desired.

In attaining these objects, I propose to employ a main slide or carriage which is mounted upon and rigidly supported upon a bed. Preferably the bed and carriage are of the construction illustrated and described in my co-pending application, Serial No. 269,477, filed July 13, 1905,—that is, the carriage is supported upon a guide rail which extends along the front of the bed, the rail and carriage being in close proximity to the line of the lathe centers, so that the lathe has a small or low swing. The carriage is adapted for the reception of cutter holders which may be adjusted towards and from each other, and which may be rigidly clamped or otherwise directly and rigidly secured to the carriage so as to become, for all practical purposes, a component or integral part thereof. These cutter holders are constructed to receive and directly support the cutters, which are bodily adjustable towards and from the work, independently of each other, by suitable means, but the holders in which they are mounted are immovable except towards and from each other.

Referring to the accompanying drawings,—Figure 1 represents in transverse vertical section an engine lathe embodying my invention. Fig. 2 represents in front elevation a portion of the same. Fig. 3 represents a plan view, on a smaller scale, of a portion of the lathe. Fig. 4 represents a horizontal section through one of the cutters and its holder.

On the drawings,—I have illustrated a portion of an engine lathe, in which the bed is indicated as a whole at a, the carriage at b, and the work centers at $f f'$. The top of the bed is formed at the front portion thereof, with a guide rail or way a' which is substantially oblong in cross section, with its rear wall or face below, and a short distance in front of, a line connecting the lathe centers. The under wall or face of the rail is formed by grooving the front face of the bed as shown at a^2 in Fig. 1.

The main carriage or tool slide b consists of a casting which is relatively long, and which is angular in cross section so as to bear against the top of the rail and against the front faces of the rail and bed. The slide has a rib b' which extends downwardly in the rear of the rail. Between the rib b' and the rear face of the rail, and between the under face of the rail and that part of the carriage which projects into the groove a^2 are gibs of suitable form which permit the carriage to slide along the rail without lost motion between the contacting faces.

Any suitable mechanism may be utilized for effecting the travel of the carriage, and as the feeding mechanism forms no part of the present invention I shall not describe it in detail. In my co-pending application, hereinbefore referred to, I have illustrated and described in detail a form of feeding mechanism which may be employed. The top of the carriage is substantially flat and may be formed with a dovetail tongue b^2, on which may be clamped a series of cutter-holders c c' c^2 c^3. It is immaterial, of course, so far as the broad features of the invention are concerned, what particular means are employed for securing the holders to the carriage, so long as the holders are firmly supported and are held from yielding under strains. In the present case, however, the bases of the holders are shown as formed

with dovetail grooves to receive the tongue on the carriage, and there are clamping gibs d and screws d' by which each holder may be rigidly clamped or attached to the carriage, after it has been adjusted to proper position. The inner ends of the holders rest solidly upon the top of the carriage, as shown in Fig. 1.

Each holder consists of an oblong block with an aperture extending therethrough from front to rear. In the aperture in each holder is placed a cutter e and a screw e'. The operative end of each cutter projects a short distance beyond the inner end of its holder, and from Fig. 1 it will be observed that the holders and the slide are so proportioned that the points or edges of the cutters are in proper position to be engaged with the work, which is there shown in dotted position. The cutter itself is in each case adjustable with reference to its holder, and each holder is so constructed, as described, as to be immovable towards or from the work axis. The adjustment of each cutter is effected by its screw e' which is arranged in alinement therewith. The abutting ends of the cutter and screw in each holder are formed with knobs or under cut heads, and yokes e^2 or other detachable connections engaging said heads, serve to detachably connect the screw and cutter together. The projecting end of each screw will preferably be equipped with a handle e^3 of suitable construction to facilitate its rotation by the operator and enable him to adjust the cutter with accuracy toward and from the work.

From the foregoing description it will be seen that after the cutter holders have been adjusted to proper relative position, and have been secured rigidly in place, the carriage may be fed, to cause all (or as many as may be desired) of the cutters to operate simultaneously on the work, and that hence the labor and time required to turn a piece of work may be reduced to a minimum.

Having thus explained the nature of the invention and described one form of its construction and one mode of its use without attempting to set forth all the forms in which it may be made or all the modes of its use, what I claim is:

1. In an engine lathe, a bed, a carriage longitudinally slidable thereon, a plurality of independent cutter holders supported directly on said carriage and immovable towards and from the work but adjustable towards and from each other, means for rigidly attaching said tool holders to said carriage after adjustment, a cutter slidably mounted in each of said holders, and means on each holder for positively moving the cutter thereon towards and from the work.

2. In an engine lathe, a bed, a carriage longitudinally slidable thereon, a cutter holder adjustable on said carriage longitudinally of its lines of travel but secured directly to said carriage so that it is immovable towards and from the work, said cutter holder having a socket transversely of its lines of movement, means for rigidly securing said holder to said carriage to travel therewith, a cutter slidable in the socket in said holder, and a screw on said holder connected to said cutter to move it back and forth in its socket.

3. In an engine lathe, a bed, a reciprocatory carriage, a plurality of cutter holders seated directly against said carriage but adjustable towards and from each other, means for rigidly securing said cutter holders after adjustment to said carriage, an unclamped cutter bar slidingly seated in and directly supported by each of said holders and means for adjusting each cutter bar in its holder towards and from the work.

In testimony whereof I have affixed my signature, in presence of two witnesses.

JAMES HARTNESS.

Witnesses:
F. B. GILL,
W. D. WOOLSON.