

J. LOOSE.
MACHINE TOOL.
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1,348,502.

Patented Aug. 3, 1920.

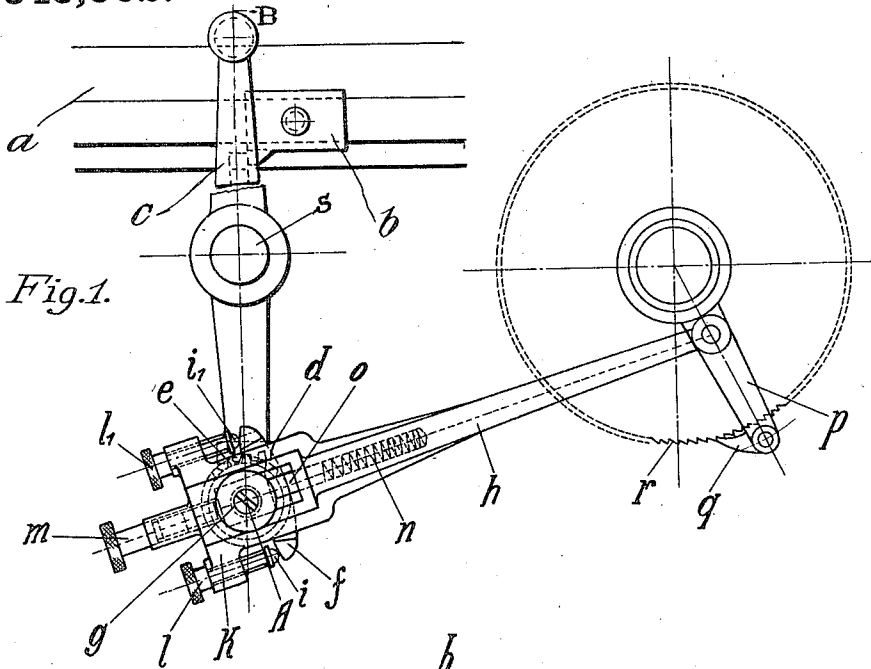


Fig. 1.

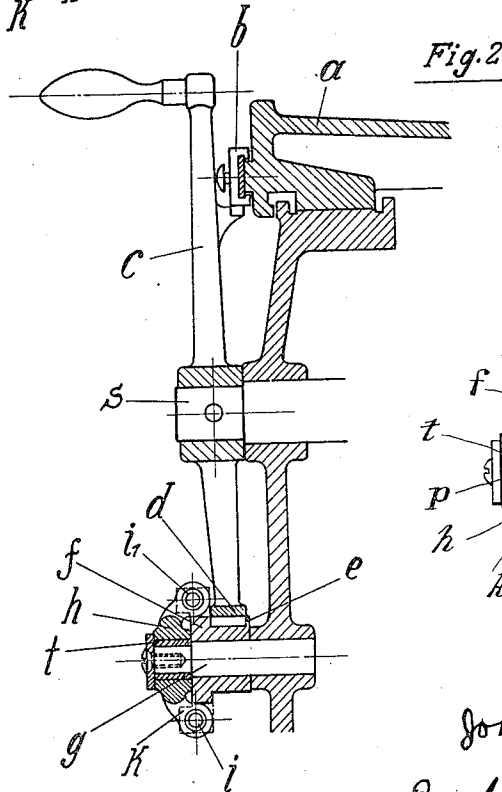
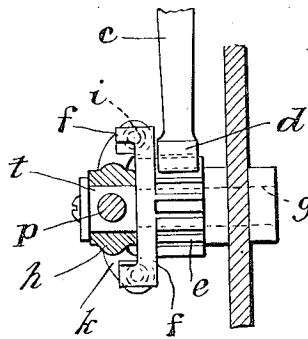


Fig. 2.

Fig. 3.



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MACHINE-TOOL.

1,348,502.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHANNES LOOSE, of 31 Karlstrasse, Cannstatt-Stuttgart, in the Kingdom of Wurttemberg, German Empire, civil engineer, have invented certain new and useful Improvements in Machine-Tools, of which the following is a specification.

My invention relates to machine tools and more especially to the means for controlling the feed of the tool into and out of operative position, and its particular object is a mechanism of this kind which allows of throwing the tool, such as for instance the grinding wheel of a grinding machine provided with a reciprocating table, into operative position a short time before the table movement is being reversed, the movement of the feed gear being the same for each end position of the table, and therefore for the tool being fed also the same distance.

A further object of my invention is the means for varying the tool feed at both end positions of the table either by an equal amount or by different amounts, there being also a chance left of stopping the tool feed in one end position.

In the drawings affixed to this specification and forming part thereof the preferred form of my invention is shown as applied to a grinding machine provided with a reciprocating table, Figure 1 being a front elevation and Fig. 2 a vertical section, on the line A—B, of the tool feed controlling mechanism. Fig. 3 is a detail view of the reversing lever and pinion.

a is the reciprocating machine table, *b* is one of two adjustable stops arranged on said table and designed, on being carried against the reversing lever *c*, to effect the reversal of the table movement. Double-armed lever *c* is pivoted to the machine bed at *s* and its lower arm is provided at its free end with a toothed segment *d* in gear with a toothed wheel *e* rotatably located on a pin *g* and carrying a double-armed lever *f*. A connecting rod *h* embracing the pin *g* carries a cross-arm *k*. Setting screws *i*, *i*₁ provided with heads *l*, *l*₁ and passing through the ends of cross-arm *k* rest against the arms of lever *f*. The opposite end of connecting rod *h* is pivoted to the one-armed feeding lever *p* pivoted to the axle of ratchet wheel *r* and carrying the pawl *q*. Between the forked end of connecting rod *h* and pin

g a block *t* is inserted. A spiral spring *n* inserted in the connecting rod *h* and resting against a bolt *o* tends to press said bolt against the block *t*. A setting screw *m* passing through the free end of rod *h* rests against the opposite end of the block *t*.

The operation of this device is the following: Stop *b* fastened to the reciprocating table in meeting lever *c* causes it to move to the left, the toothed segment *d* and toothed wheel *e* at the same time turning lever *f* to the right. Lever *f* in pressing its lower arm against screw *i* pulls rod *h* toward the left, thereby causing lever *p* to be turned to the left also and ratchet wheel *r* to be rotated about a certain angle so as to feed the grinding wheel. The grinding wheel and the connection of feed wheel *r* thereto are not shown, but are well known and any approved form may be used, for example, that shown in the U. S. Patent of Wilcox, *et al.*, No. 1,197,700. As soon as the reversing lever *c* has returned to its initial position, spring *n* forces rod *h* and lever *p* back into their original positions. Now the other stop *b* (not shown) in meeting lever *c* will move it the other way, thus causing lever *f* to be pressed against screw *i*₁ and thereby to exert another pull on rod *h* and lever *p* whereby another feed movement is imparted to ratchet wheel *r* and to the tool.

By unscrewing either one or the other screw *i*, *i*₁ the lever *f* is free to move in the direction of the screw in question and in consequence thereof the tool will be fed only at each second reversal of the table. By screwing screw *m* farther toward block *t* rod *h* can be prevented from returning to its original position; the farther screw *m* is screwed in, the shorter is the distance through which rod *h* is free to move, and the movement of lever *p* as well as the feed distance of the tool is diminished accordingly. At the same time the arms of lever *f* will meet screws *i* and *i*₁ respectively at a later moment, and in consequence thereof the tool feed will be retarded correspondingly, the moment of starting the tool feed more and more approaching the moment when the table movement is reversed, provided that the feed distance be diminished by screwing screw *m* farther toward the block *t*.

Having thus described the preferred form

of a device embodying my invention, I wish it to be understood that I do not limit myself to the exact means shown, all equivalents of the single parts and their combinations being included.

I claim:

1. In a machine tool in combination, a reciprocating table, two stops on said table, a tool feed ratchet gear and a connecting rod connected to it and having a substantially rectilinear motion, two stops on said connecting rod, a double-armed lever adapted to cooperate with either one or the other of said stops to give rectilinear motion to said rod and means influenced by the stops on said table for reversing said lever.

2. In a machine tool in combination, a reciprocating table, two stops on said table, a tool feed ratchet gear and a connecting rod of variable length connected to it, two stops on said connecting rod, a double-armed lever adapted to cooperate with either one or the other of said stops and means influenced by the stops on said table for reversing said lever.

3. In a machine tool in combination, a re-

ciprocating table, two stops on said table, a tool feed ratchet gear and a connecting rod connected to it, elastic means for varying the length of said connecting rod, two stops on said connecting rod, a double-armed lever adapted to cooperate with either one or the other of said stops and means influenced by the stops on said table for reversing said lever.

4. In a machine tool in combination, a reciprocating table, two stops on said table, a tool feed ratchet gear and a connecting rod connected to it having a substantially rectilinear motion and having a bifurcated end, two stops on said connecting rod, a double-armed lever adapted to cooperate with either one or the other of said stops having its pivotal axis embraced by the bifurcated end of the connecting rod, a reversing lever adapted to be influenced by the stops on said table, a toothed segment on said reversing lever and a toothed wheel connected to said double-armed lever and in gear with said toothed segment.

In testimony whereof I affix my signature.

JOHANNES LOOSE.