G. R. STETSON.

LATHES FOR CUTTING SCREW-TAPS.

No. 191,894. Patented June 12, 1877.

Fig: 2.

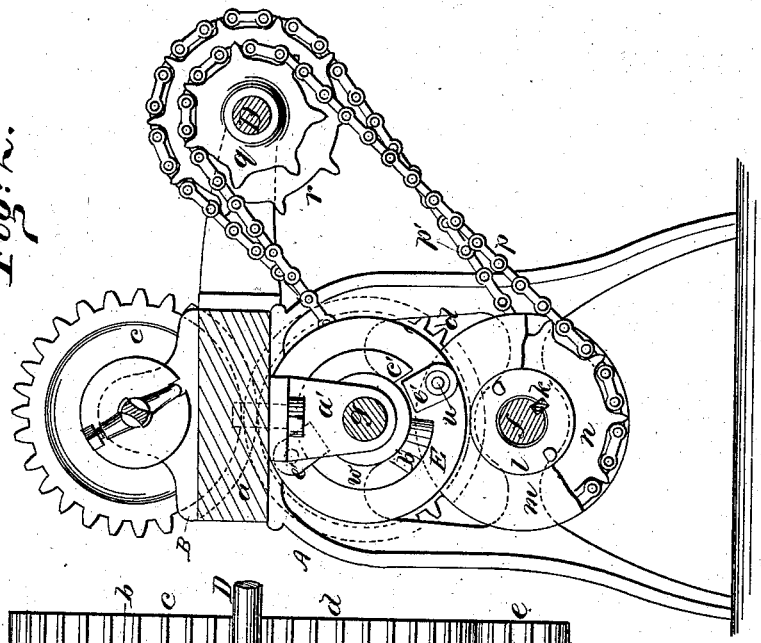
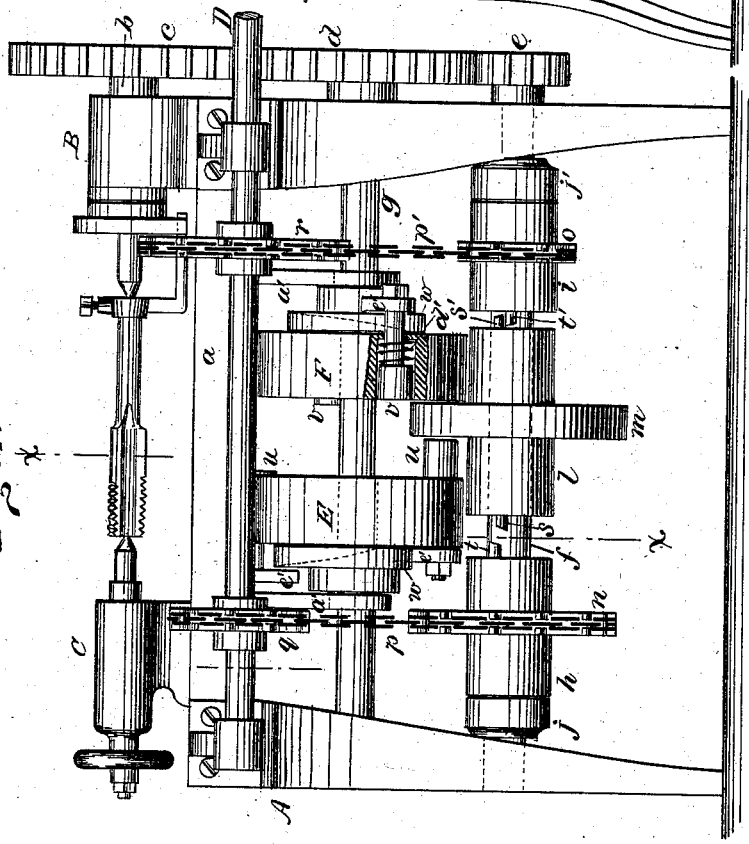


Fig: 1.



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GEORGE R. STETSON, OF NEW BEDFORD, MASSACHUSETTS, ASSIGNOR TO HIMSELF AND MORSE TWIST DRILL COMPANY, OF SAME PLACE.

IMPROVEMENT IN LATHES FOR CUTTING SCREW-TAPS.

Specification forming part of Letters Patent No. 191,894, dated June 12, 1877; application filed March 12, 1877.

To all whom it may concern:

Be it known that I, GEORGE R. STETSON, of New Bedford, in the county of Bristol and State of Massachusetts, have invented a new and useful Improvement in Machines for Milling the Threads of Taps, of which the following is a specification:

Figure 1 is a side elevation. Fig. 2 is a transverse section on line *x x* in Fig. 1.

Similar letters of reference indicate corresponding parts.

My invention relates to certain improvements in machines for cutting taps or other forms, where a longitudinal slot or depression relieves the tool from work during a portion of the time of its revolution, so that when the cutting-tool passes over the longitudinal slot or depression the motion of the blank being cut is more rapid than during the time the tool or cutter is at work.

In the drawing, A is the frame of the machine, having the shears or bed *a*, which is similar to the bed of an engine-lathe. B is a head, in which the mandrel *b* is journaled, and which is secured to the end of the bed *a*. A tail-stock, C, is placed upon the bed *a*, and is provided with a longitudinal projection, which fits a groove in the bed and guides the tail-stock, so that its center always coincides with the axial line of the mandrel *b*. The tail-stock is provided with the usual sliding spindle and with a clamping device, by which it may be fixed at any point on the bed.

Upon the mandrel *b* a spur-wheel, *c*, is placed, which takes motion from a wheel, *d*, of the same size, which is driven by the pinion *e*. The pinion *e* and spur-wheel *d* are placed, respectively, on the shafts *f g*, which are journaled in the frame A. Upon the shaft *f* two sleeves, *h i*, are placed, which are capable of turning upon the said shaft, and are prevented from endwise movement by collars *j j'*, and by a feather, *k*, that projects from the central portion of the shaft.

Upon the central portion of the shaft *f*, and between the sleeves *h i*, a sleeve, *l*, is placed, which is shorter than the space between the sleeves *h i*, is slotted to receive the feather *k*, and is capable of moving longitudinally upon the shaft. A collar, *m*, projects from the center of the sleeve *l*, and upon the sleeves *h i* chain-wheels *n o* are formed, which are driven by chains *p p'* from wheels *q r* on a shaft, D, that is supported by brackets projecting from the bed *a*. The wheel *n* is larger than the wheel *o*, and the wheel *q* is smaller than the wheel *r*, so that when the shaft D is turned the sleeve *h* rotates slower than the sleeve *i*. Lugs *s s'* project from the ends of the sleeve *l*, which are alternately engaged by lugs *t t'* that project from the sleeves *h i*. Cylinders E F, carrying spring-followers *u v*, are secured to the shaft *g*, one on each side of the disk *m*. Cams *w* are placed on the shaft *g* at the outer side of the cylinders E F, and are secured to posts *a'* that project downward from the bed *a*, and prevent them from turning. These cams consist of a disk which is cut away, so as to form the inclined surface *b'* and the square ledge *c'*. Each of the spring-followers *u v* is shouldered to receive the spring *d'*, which throws it out of the cylinder, and is provided with a finger, *e'*, that engages with the cam *w*.

The operation of the machine is as follows: The fluted tap-blank being placed between the centers of the head B and tail-stock C, and motion being imparted to the shaft D in any convenient manner, the sleeves *h i* are rotated by the chains *p p'*, the sleeve *h* revolving slower than the sleeve *i'*. Now, supposing the lugs *s'* of the sleeve *l* to be in contact with the lugs *t'* of the sleeve *i*, the motion of the sleeve *i* is imparted to the sleeve *l*, which, by turning, carries with it the shaft *f*, upon which the pinion *e* is placed. This pinion engages the wheel *d*, which carries the shaft *g*, and, meshing with the wheel *c*, revolves the mandrel *b*.

As the shaft *g* rotates the spring-follower *u* is drawn into the cylinder E by the engagement of the finger *e'* with the inclined surface of the cam *w*. When the finger *e'* of the spring-follower *v*, in the cylinder F, reaches the square portion *c'* of the cam *w*, the spring *d'* throws the spring-follower forward against the collar *m*, and moves the sleeve *l* longitudinally on the shaft toward the sleeve *h* until the lugs *s* are engaged by the lugs *t*, which rotate the sleeve *l* and shaft *f* in the same di-

rection as before, but with a slower motion. The sleeve *l*, in the present case, is shifted back and forth four times to every revolution of the mandrel *b*; but the number of changes may be increased by increasing the number of spring-followers.

It is obvious that, by increasing the speed of the rotation of the fluted tap-blank, when the milling-tool traverses the flute and does not cut, and decreasing the speed when the tool is cutting the threads of the tap, two important advantages are gained, viz., a considerable saving in time, and a saving in tools.

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

1. The shafts D *f*, having the unequal pulleys *w o q r*, connected by chains *p p'*, the shaft *f* being provided with fast pulley-sleeves *h i*, and sliding clutch L, in combination with the wheels *e d c* and mandrel *b*, as and for the purpose described.

2. The combination of the cylinders E F, spring-followers *u v*, having fingers *e'*, and the stationary cams *w*, for moving the sleeve *l* longitudinally on its shaft, substantially as herein shown and described.

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Witnesses:
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