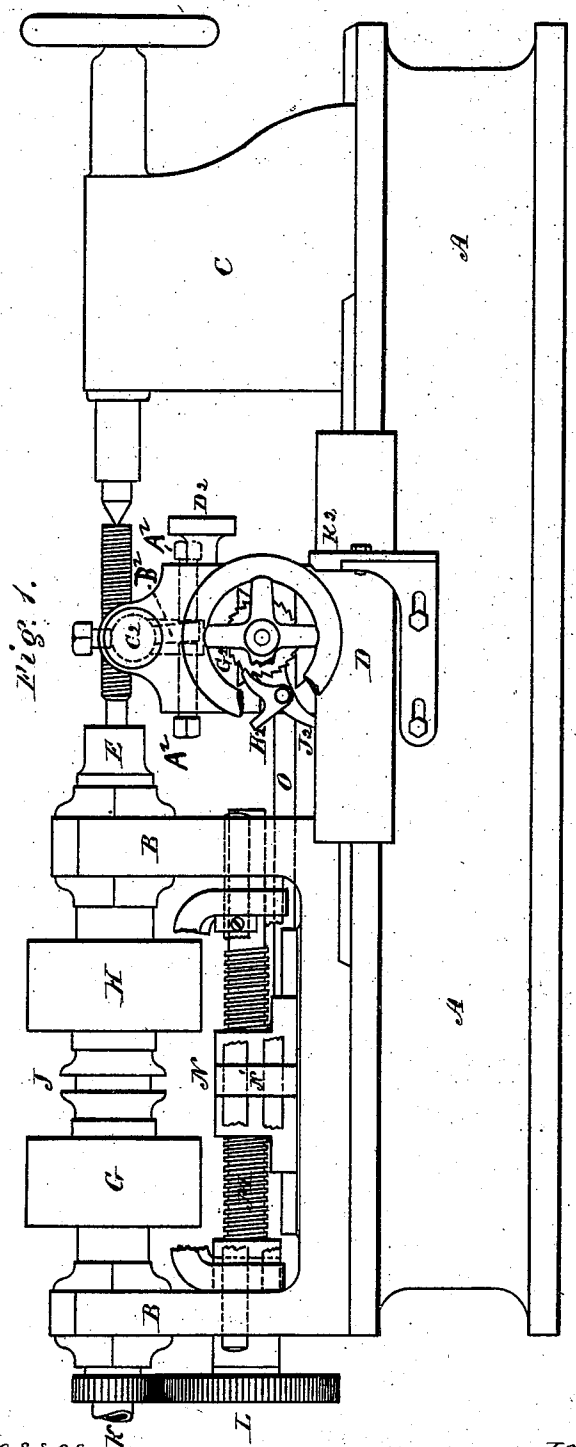
5 Sheets—Sheet 1.

J. J. GRANT.

Machine for Making Screw Taps.

No. 230,629. Patented Aug. 3, 1880.



Witnesses.
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5 Sheets—Sheet 2.

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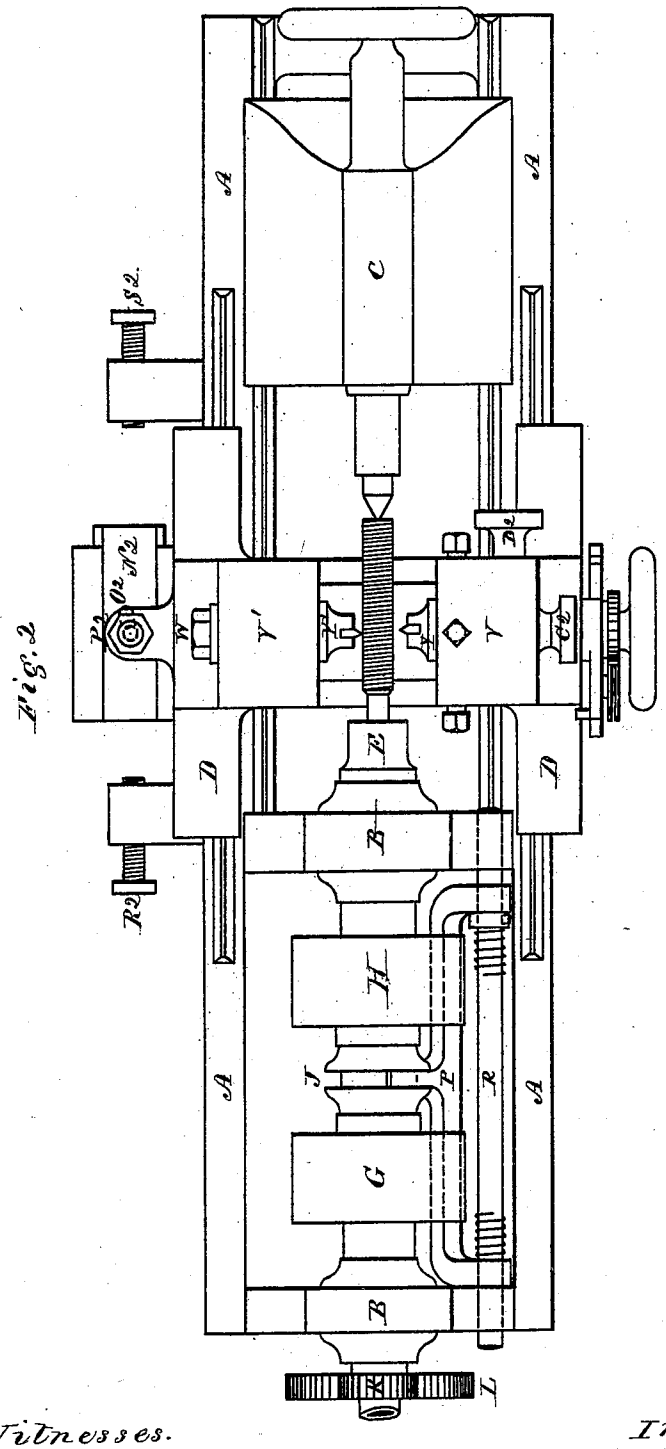


Fig. 2.

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5 Sheets—Sheet 3.

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Fig. 4.

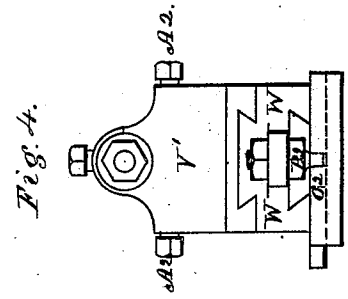
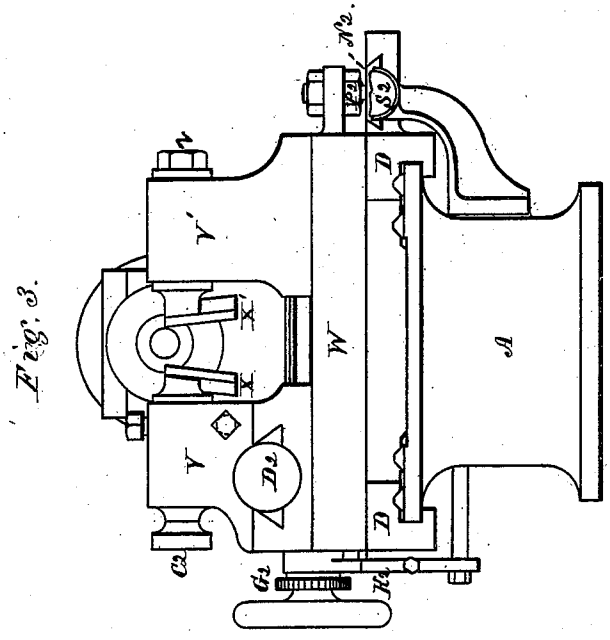


Fig. 3.



Witnesses.

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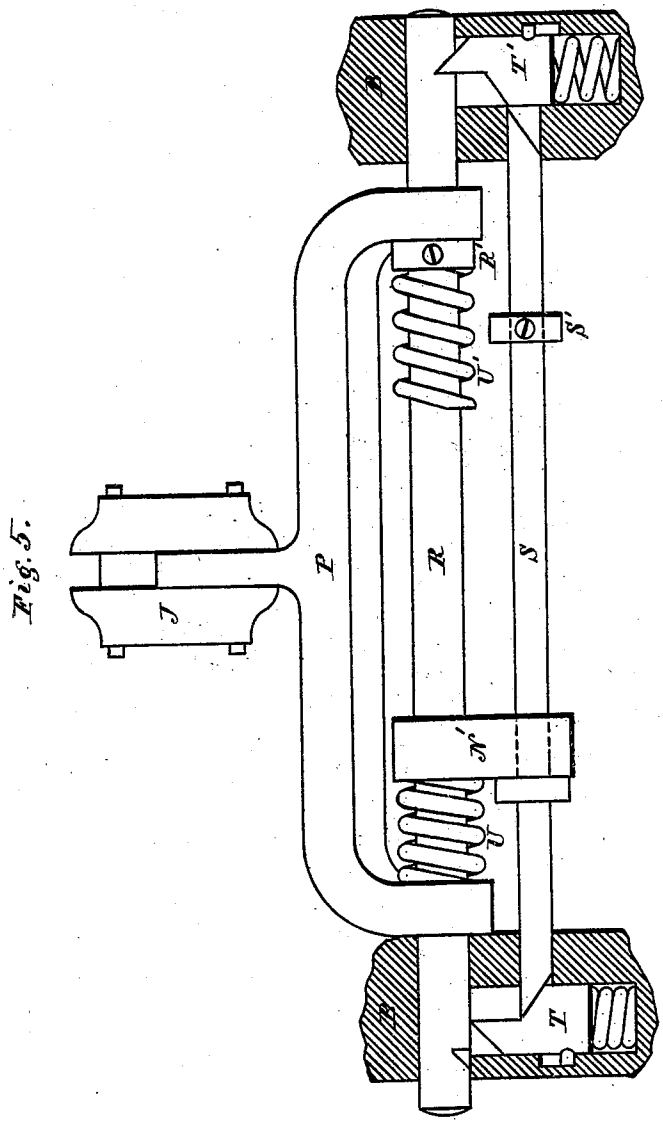


Fig. 5.

Witnesses.

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5 Sheets—Sheet 5.

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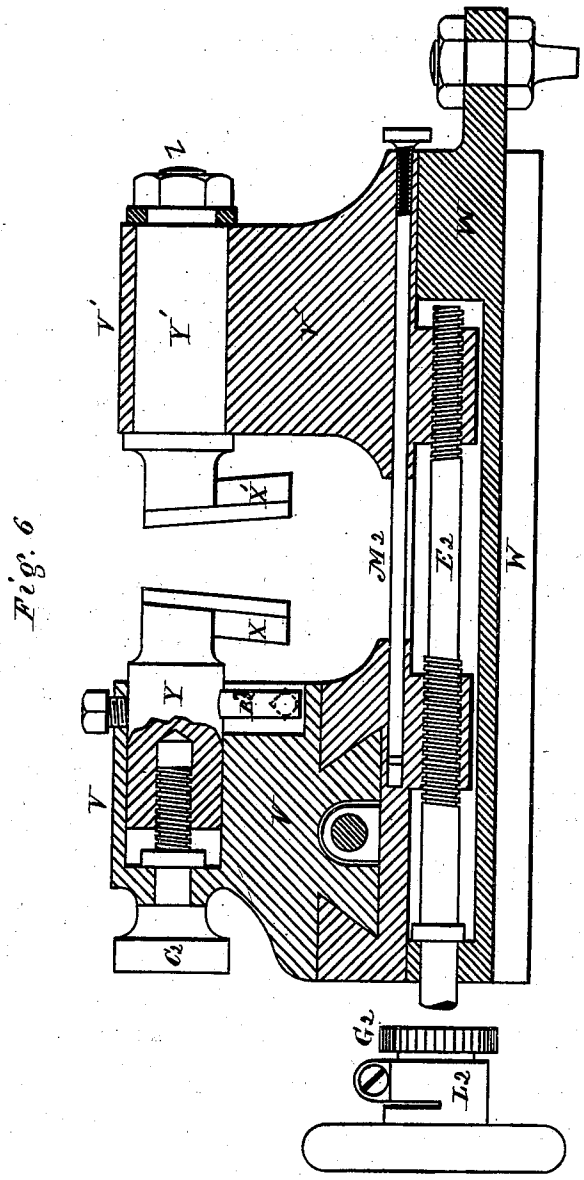


Fig. 6

Witnesses.

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UNITED STATES PATENT OFFICE.

JOHN J. GRANT, OF HARTFORD, CONNECTICUT.

MACHINE FOR MAKING SCREW-TAPS.

SPECIFICATION forming part of Letters Patent No. 230,629, dated August 3, 1880.

Application filed May 18, 1878.

To all whom it may concern:

Be it known that I, JOHN J. GRANT, of Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Machines for Making Screw-Taps; and I do hereby declare that the following is a full, clear, and exact description thereof, whereby a person skilled in the art can make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

Like letters in the figures indicate the same parts.

My improvement relates to machines designed for cutting screw-threads upon blanks, and especially for threading screw-taps.

My invention consists in the construction and arrangement of the several parts of the machine, and in the combination and arrangement of the several devices by which the proper motions are given to the cutting-tools, as will be hereinafter described.

In the accompanying drawings, on five sheets, Figure 1 is a view of the machine from the front side. Fig. 2 is a top view. Fig. 3 is an end view with the tail-block removed, so as to show the sliding tool-carrier. Fig. 4 is a view of the tool-carrier from the opposite side to that shown in Fig. 1. Fig. 5 is an enlarged view of the mechanism for shifting or reversing the motion of the machine. Fig. 6 is a vertical section through the tool-carrier upon an enlarged scale.

My improved machine has the general form and construction of a lathe.

A is the bed or frame for sustaining the several parts of the machine. B is the head-block. C is the sliding tail-block. D is the sliding tool-carrier. E is a horizontal shaft or spindle turning in bearings in the head-block, in the usual manner in lathes. G and H are loose pulleys upon the shaft E, between which is a sliding clutch, J, which locks into either pulley G or H to connect it with the shaft. The clutch J is splined to the shaft E and turns with it. The pulleys G and H receive their motion from belts connected with the main shaft, and are run continuously while the machine is in operation, turning in opposite directions. K and L are geared wheels, which communicate motion from the shaft E to the screw-shaft M. Upon this screw is a traveling nut, N, which operates the clutch J, as will be hereinafter described, and which is connected by the rod O to the tool-carrier to give it its longitudinal motion upon its guides or ways. P is a fork running in a groove in the clutch J, for operating it. This fork P is firmly connected to the shipping-rod R, which gives motion to it and operates the clutch.

The traveling nut N is provided with an arm or bracket, N′, which embraces the shipping-rod R, and also the rod S, which serves to unlock the dogs T and T′ at the ends of the shipping-rod.

U and U′ are springs upon the shipping-rod for the purpose of throwing it when pressed by the bracket N′. R′ and S′ are stops upon the rods R and S, to adjust the time of operating the clutch to any desired amount of motion of the bracket N′.

In Fig. 5 the position of the several parts is that when the clutch has just been thrown to the left. The bracket N′ then travels to the right, compresses the spring U′, comes in contact with the stop S′, and moves the rod S so that its inclined end draws down and releases the dog T′. The pressure of the spring U′ then instantly shifts the clutch and reverses the motion of the machine. At the same time the dog T, at the other end of the shipping-rod, locks into its notch, being pressed upward by a spring, as shown in the drawings.

When the clutch J is shifted, as above described, the motion of the shaft E is reversed, which also reverses the motion of the screw M, thereby causing the nut N to move in the opposite direction, and with it the tool-carrier D, to which it is connected by the rod O.

V and V′ are two movable tool-posts, which slide out and in upon the bed-plate W. This plate also slides laterally across the machine upon the carrier D, which runs upon the ways of the bed or frame A. X and X′ are cutting-tools, of which two are used, one on each side of the work. One tool cuts when the carrier is moving in one direction, and the other when the motion is reversed, and each tool cuts upon one side only, this doing much better work than when both sides of the tool are used. Y and Y′ are cylindrical tool-holders fitting into

sockets in the tool-posts V and V′, so that they can be turned and adjusted upon their axes to set the tools at the proper angle for cutting the thread.

The tool-holder Y′, when placed in its proper position, is firmly clamped in the tool-post by means of the nut Z.

The tool-holder Y is made adjustable in a rotary direction upon its axis by means of the tangent-screws A^2 A^2 acting upon the arm B^2. C^2 is a screw for adjusting the tool to and from the work.

The top part of the tool-post V is made laterally adjustable by means of the screw D^2, for giving the two tools their proper relative positions. The two tool-posts move upon suitable slides to and from the work upon the plate W, and are furnished with nuts working upon right and left screw-threads on the feed-rod E^2. This feed-rod is driven by a ratchet, G^2, and a double pawl, H^2, the two arms of which differ in length by half a tooth, so as to give a finer motion. These pawls are moved by the arm J^2, to which they are attached, passing over the cam K^2 upon the frame of the machine. When not passing over K^2 the end of J^2 runs upon a horizontal slide.

The ratchet G^2 is attached to the feed-rod by means of a friction-band, (shown at L^2 in Fig. 6, so that when the tool-posts have approached each other to the proper point and are stopped by the device that will be hereinafter described the ratchet will slip on the rod and the feed will be stopped.

M^2 is a rod for adjusting the limit of approach of the tool-posts toward each other. It passes through the post V′ by means of a screw-thread, and enters into a hole, in which it fits so as to exclude oil or chips, in the post V. When it touches the bottom of this hole the tool-posts cannot approach each other any farther. This adjustment exactly determines the depth to which the tool cuts, and makes the work done of an exact gage.

The plate W slides upon the carrier D, and is moved back and forth a certain distance at each reverse movement of the carrier, so as to bring the two tools successively into position as the carrier moves in opposite directions. This throw is given to the plate W by means of the pin P^2, which fits in a cam-slot in the sliding plate N^2. (Shown at O^2 in Fig. 2.) The plate N^2 is moved at the end of each movement of the carrier D by striking against the adjustable screws R^2 and S^2, attached to the frame of the machine. This movement of the sliding plate W always brings the tools to the same position plus the amount of feed given by the feed-screw E^2.

What I claim as my invention is—

1. The combination of the shipping-rod R, the springs U U′, the dogs T T′, and the sliding unlocking-rod S, the said rods being furnished with stops R′ and S′, as an automatic device for instantly moving the clutch J at the end of the throw of the nut N, substantially as herein described.

2. The combination of the frictional ratchet-wheel G^2, the feed-rod E^2, and the stopping device M^2 with the tool posts V and V′, substantially as herein described.

3. The screws A^2 and arm B^2, in combination with a horizontally-rotating cylindrical tool-holder, Y, substantially as herein described.

JOHN J. GRANT.

Witnesses:
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WALTER L. CHENEY.