

(No Model.)

J. W. WATSON & W. L. GELSTON.

MACHINE FOR CUTTING RIGHT AND LEFT SCREW THREADS.

No. 419,981.

Patented Jan. 21, 1890.

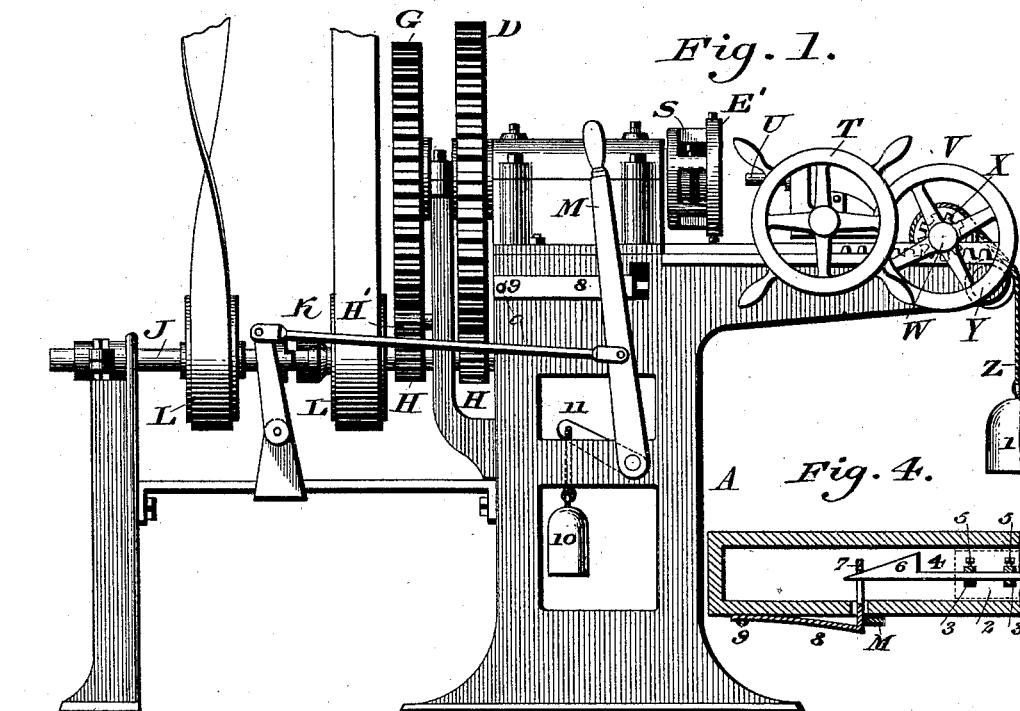
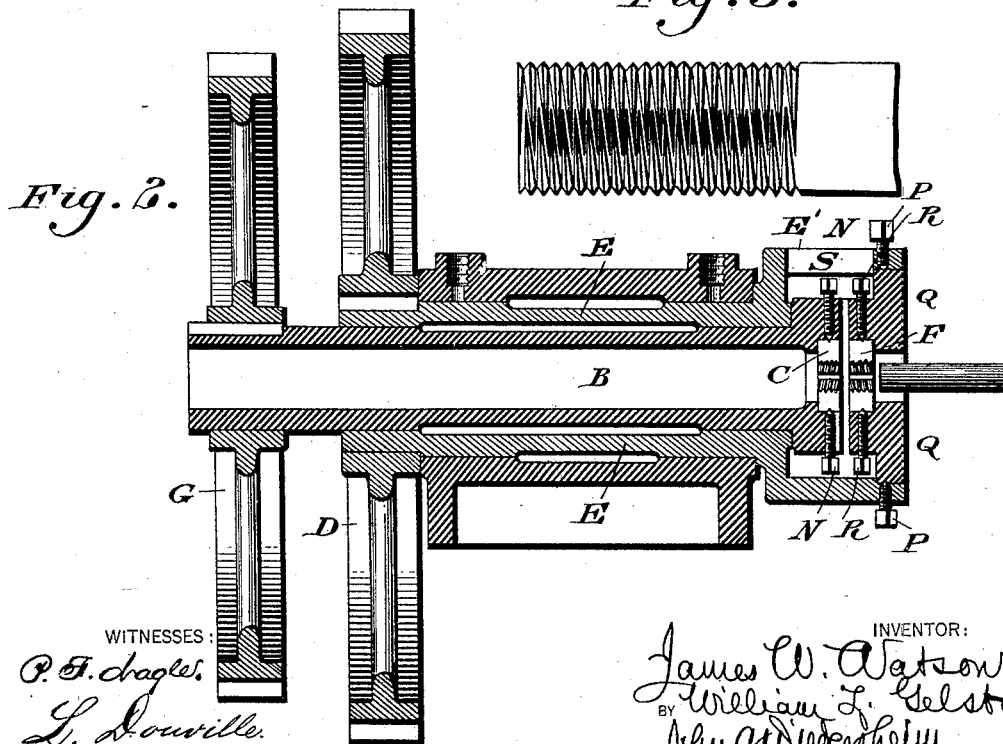


Fig. 3.



WITNESSES:  
P. F. Chagles.  
L. Douville.

INVENTOR:  
James W. Watson.  
BY William L. Gelston.  
John Adolphus  
ATTORNEY.

# UNITED STATES PATENT OFFICE.

JAMES WESLEY WATSON AND WILLIAM L. GELSTON, OF CHESTER, PENNSYLVANIA, ASSIGNORS OF ONE-THIRD TO CHARLES A. WEED, OF SAME PLACE.

## MACHINE FOR CUTTING RIGHT AND LEFT SCREW-THREADS.

SPECIFICATION forming part of Letters Patent No. 419,981, dated January 21, 1890.

Application filed June 27, 1889. Serial No. 315,699. (No model.)

*To all whom it may concern:*

Be it known that we, JAMES WESLEY WATSON and WILLIAM L. GELSTON, citizens of the United States, residing at Chester, in the county of Delaware and State of Pennsylvania, have invented a new and useful Improvement in Machines for Cutting Right and Left Screw-Threads, which improvement is fully set forth in the following specification and accompanying drawings.

Our invention consists of a machine for cutting right and left screw threads or bolts, rods, &c., the same embodying cutting-dies—one having a right-hand thread and the other a left-hand thread—the two dies being arranged in the same plane, so that the bolts, rods, &c., may be successively subjected to the action of the two dies. Each die is connected with a shaft, arbor, or mandrel—one being inclosed by the other—and provided with means for rotating the same, the machine possessing other features, as will be hereinafter set forth.

Figure 1 represents a side elevation of a machine for cutting right and left screw-threads embodying our invention. Fig. 2 represents a longitudinal section thereof on an enlarged scale. Fig. 3 represents a side elevation of a bolt or rod having right and left screw-threads, illustrative of the operation of the machine. Fig. 4 represents a horizontal section of a portion on line *xx*, Fig. 1, on a reduced scale.

Similar letters and numerals of reference indicate corresponding parts in the several figures.

Referring to the drawings, A designates the frame of the machine, on which is mounted a hollow shaft or mandrel B, one end of which carries a screw-cutting die C and the other end carries a gear-wheel D. Encircling the shaft B is a hollow shaft or mandrel E, one end of which carries a screw-cutting die F and the other end carries a gear-wheel G. The gear-wheels D and G mesh with pinions H, whose shaft J is provided with a clutch K and pulleys L. Meshing with the wheel D and its pinion H is an idler H'. The clutch K is operated by a lever M, mounted on the frame A,

whereby the motions of the gear-wheels D G and of the dies C F may be reversed.

The die C is held in position on the shaft B by means of bolts or screws N, and the portion of the shaft E which encircles said die is enlarged, forming a head E', which carries bolts or screws P, which secure the holder Q of the die F in the end of the said shaft E, said holder having screws R for retaining said die F in position.

The periphery of the head E' is recessed, as at S, whereby access may be had to the bolts N R for disconnecting the dies from their holders or carriers, and the holder Q may be removed to prevent the withdrawal of the dies and subsequent restoration of the same.

On the frame A is supported the holder T for the bolt, rod, &c., to be threaded; said bolt, &c., being shown at U, Figs. 1 and 2, it being noticed that the dies C F are in the same plane or their cutting-faces are in a line with each other, so that the bolt, &c., introduced into one die may enter the other, as will be seen in Fig. 2.

The operation is as follows: Power is applied to the pulleys L by means of a belt and cross-belt, and the clutch K is so set that proper motion is imparted to the gearing H D G, whereby the shafts B E, and consequently the dies C F, are rotated. The bolt, &c., is now advanced to the dies, and it first enters the die F, whereby a thread is cut thereon, after which it enters the die C and has a thread cut thereon over the first-named threads, but in reverse direction, both as illustrated in Fig. 3. When the threading is accomplished, the lever M is moved, whereby the clutch is operated to cause the reversal of the direction of rotation of the gearing, and consequently of the shafts B E and dies C F, so that the bolt, rod, &c., may be withdrawn, after which the lever is returned to its first position, so that the dies may be again rotated in the direction necessary for continuing the screw-cutting operation. The cuttings may be removed through the recess or opening of the head of the shaft E and through the hollow portion of the shaft B. The re-

versal of the motion of the dies after the screw-cutting is performed is accomplished by means of the mechanism shown in Fig. 4.

The holder T of the bolt U, &c., is connected 5 with a carriage V, (shown in Fig. 1,) whose supporting-shaft W has connected with it a pinion X, which meshes with a rack-bar Y on the frame A of the machine. A drum or pulley is also secured to said shaft W. Around 10 the same is wound a cord Z, whose end carries a weight 1, so that said carriage V may be returned to its normal position after the screw-cutting operation. To the carriage is secured a bed 2, (see Fig. 4,) from which rises 15 the lugs 3, between which is fitted an arm 4, said lugs being provided with set screws or bolts 5, whereby the arm may be firmly held and adjusted in the direction of its length. The end of the arm toward the dies carries 20 a wedge-shaped head 6, which enters the slotted limb 7 of a spring-catch 8, the latter being secured to the frame, as at 9, it being noticed that the limb 7 is within said frame, and the angle of the catch has the lever M in engaging contact therewith in Fig. 4. 25 A weight 10 is attached to an arm 11 on the axial end of the lever M, for moving said lever in the present case to the left when released of the catch 8. When the machine is 30 to be started, the lever is moved in the present case to the right, and it rides over and presses back the catch until it reaches the angle or shoulder thereof, the catch then springing out and holding the lever. The 35 carriage T is now advanced and the bolt, &c., engaged with the dies, the latter then drawing in the bolt, &c., as held by the carriage. The wedge enters the limb 7 and bears against the wall of the slot therein, thus 40 gradually moving the shoulder or angle of the catch from the lever M. When the cutting is accomplished, the catch is fully clear of the lever, and the latter is no longer controlled by the same, and now becomes controlled by the weight 10, so that it returns to

its first position, thus operating the clutch K and reversing the gearing, thus reversing the dies. The bolt, &c., is now subjected to the action of the weighted cords Z, and thus 50 withdrawn from the dies, the carriage returning to its first position and with it the connected parts.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. Screw-cutting dies with reversed threads, 55 connected with operating-shafts and occupying the same plane, substantially as described.
2. Screw-cutting dies with reversed threads, 60 occupying the same plane and connected with operating-shafts, one of which is inclosed within the other, substantially as described.
3. A screw-cutting machine having dies, arranged substantially as described, and provided with reversed threads, whereby a bolt, 65 &c., may have right and left threads cut successively thereon, substantially as described.
4. Two shafts, each carrying a die and one inclosed within the other, the dies having 70 threads in reversed directions, in combination with screws or bolts for connecting the dies with their shafts, one of the shafts having a recessed head which encircles said bolts, substantially as described.
5. The dies C F, shafts B E, and bolts N R, 75 in combination with the removable holder Q of the die F, said holder being removably fitted in the end of the shaft E, substantially as described.
6. The wedge 6, in combination with the 80 carriage, a catch, and the lever M, substantially as described.
7. The wedge 6 and the carriage having lugs 3 with set-screws 5, as stated.

JAMES WESLEY WATSON.  
WILLIAM L. GELSTON.

Witnesses:

DAVID J. LEWIS,  
HOWARD GRAY.