4 Sheets—Sheet 1.

C. WHIPPLE.

Making Screws.

No. 9,191. Patented Aug. 10, 1852.

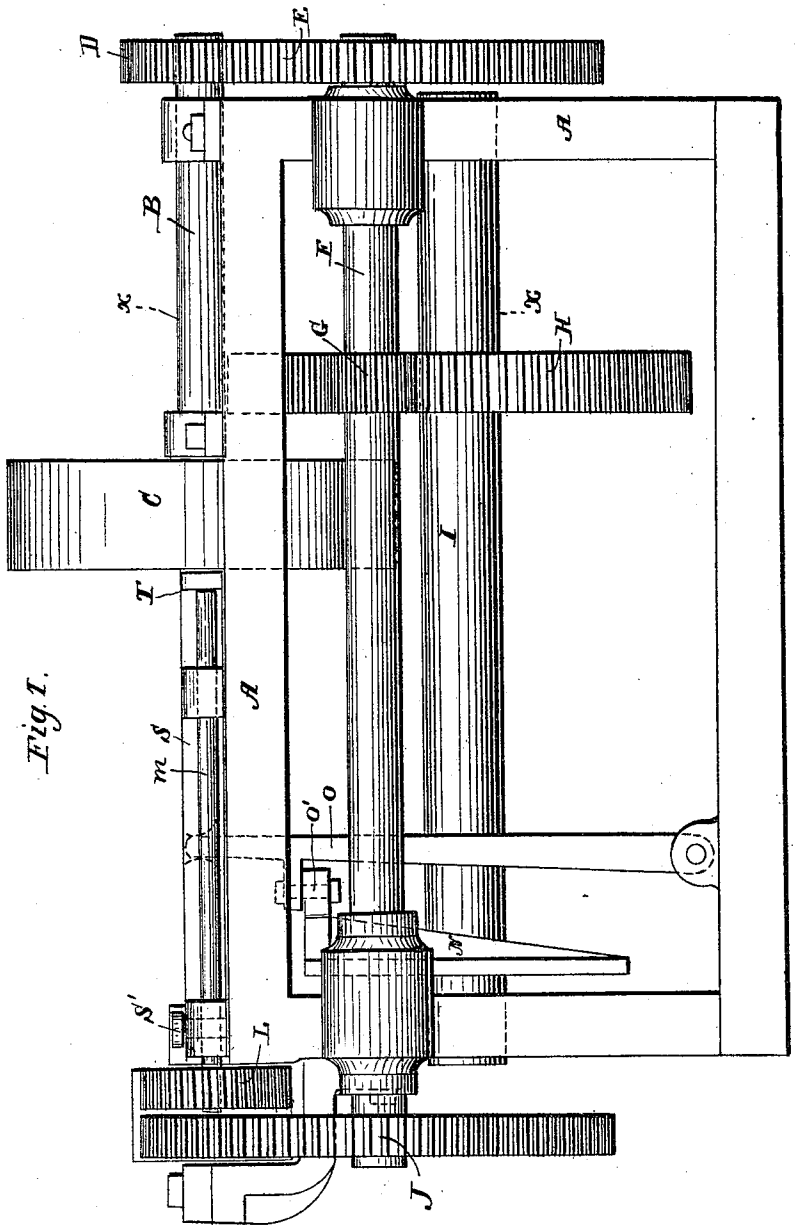

Fig. 1.

4 Sheets—Sheet 2.

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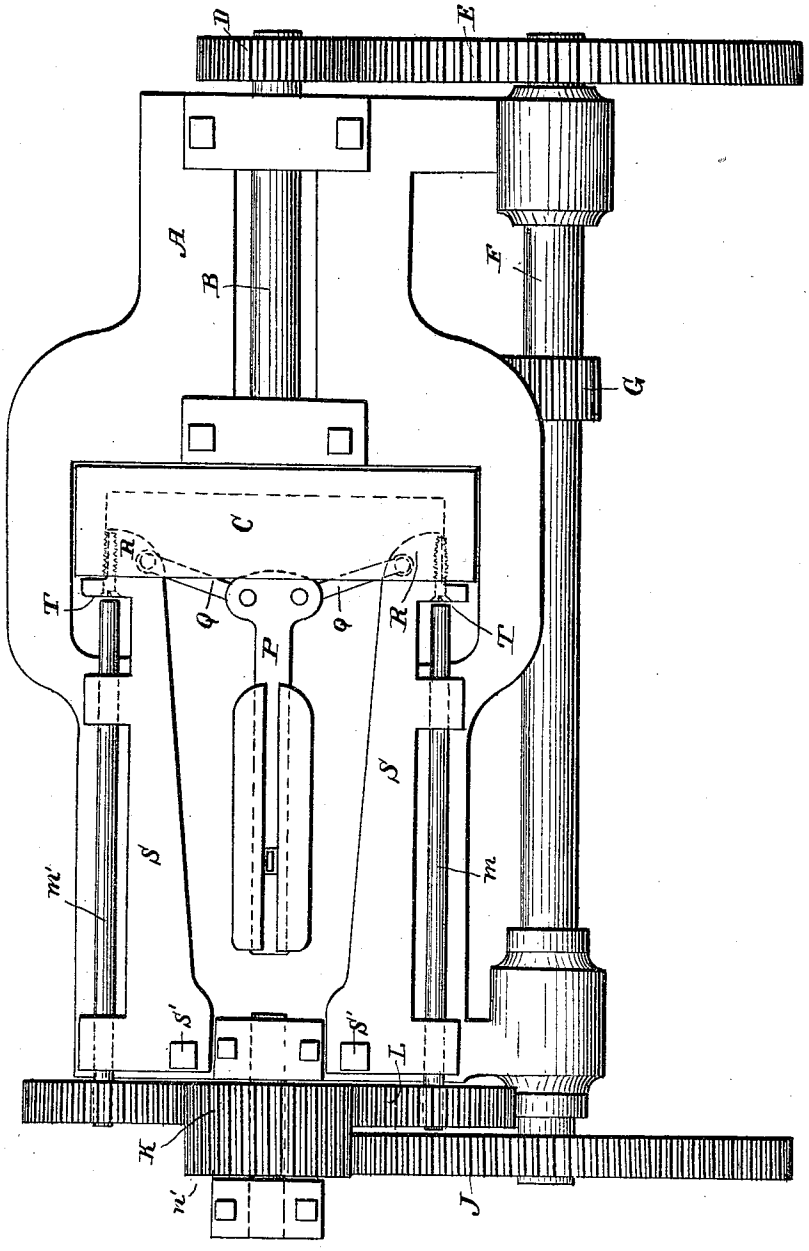
Making Screws.

No. 9,191. Patented Aug. 10, 1852.

Fig. 2.



4 Sheets—Sheet 3.

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Fig. 3.

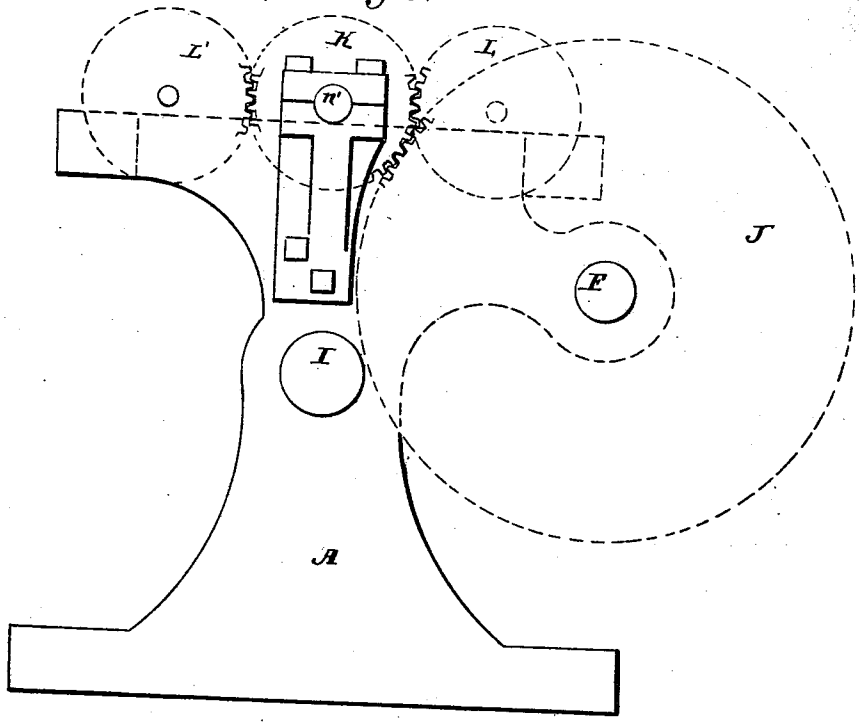
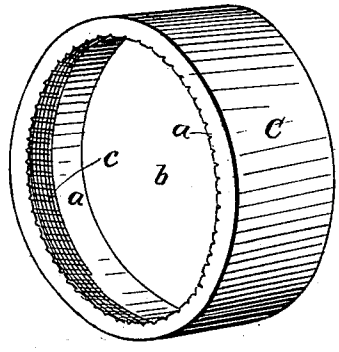


Fig. 5.



4 Sheets—Sheet 4.

C. WHIPPLE.

Making Screws.

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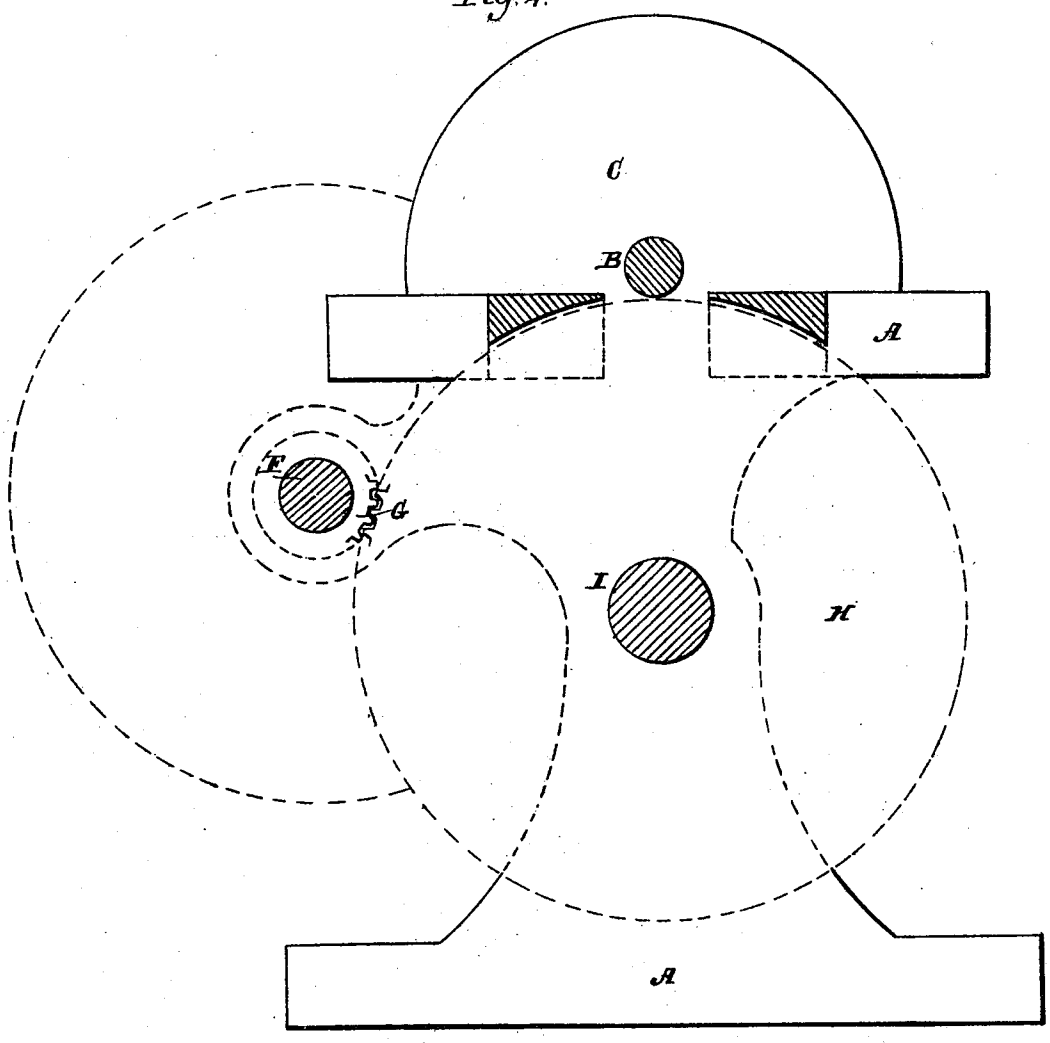
Fig. 4.



UNITED STATES PATENT OFFICE.

CULLEN WHIPPLE, OF PROVIDENCE, RHODE ISLAND.

MACHINERY FOR THREADING WOOD-SCREWS.

Specification forming part of Letters Patent No. 9,191, dated August 10, 1852.

To all whom it may concern:

Be it known that I, CULLEN WHIPPLE, of the city and county of Providence, in the State of Rhode Island, have invented certain new and useful Improvements in Machinery for Manufacturing Wood-Screws, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which make part of this specification, in which—

Figure 1 is a side elevation of a machine for threading screws having my improvements applied thereto. Fig. 2 is a top view of the same. Fig. 3 is an elevation of that end of the machine which is at the right hand in Fig. 1. Fig. 4 is a transverse vertical section at the line *x x* of Fig. 1, and Fig. 5 is a view in perspective of the concave burr-cutter.

My invention and improvement consist of a rotating concave annular burr-cutter for threading screw-blanks, and of a combination of the foregoing with suitable rests and turn-screws for presenting the blank to the cutter and rotating it while being threaded; likewise of a combination of a vibrating rest to support the screw-blank, and a rotating turn-screw vibrating with the rest to turn the blank.

The accompanying drawings represent one of the many arrangements of machinery by means of which my invention may be carried practically into effect.

I propose to give a full and detailed description of such portions of the machine as I claim and only to refer briefly to the rest.

The drawings represent a strong iron frame A for the support of the working mechanism. A shaft B is mounted on the top of this frame in suitable bearings and carries the cutter C on its inner extremity and a pinion D on its outer extremity. The pinion D gears into a wheel E, which is mounted upon and drives a shaft F, which is supported in suitable bearings in brackets at the side of the frame. This shaft carries a pinion G near its middle, which gears into a wheel H, mounted on a cam-shaft I, which it turns. On the left extremity of the shaft F, as seen in Fig. 1, a wheel J is mounted, which gears into and rotates a pinion K, mounted on a pivot *n*, projecting from the adjacent end of the frame. This pinion gears into the pinions L and L′ on the mandrels M and M′ of the turn-screw, by means of which the blanks are rotated while under the action of the cutter.

The cam N on the shaft I beneath the cutter is for the purpose of pressing the blank against the cutter to thread it and again withdrawing it from the cutter after being threaded, in order that it may be discharged to make way for another to be submitted to the same operation. The cam in performing this duty works in connection with a system of levers and other devices. The levers are pressed directly by the cam to force the blank against the cutter to sink the thread upon it, and are moved by a spring in the opposite direction. When the cam has ceased to act to withdraw the blank, a friction-roller wiper O′ for the cam to act against is attached to the side of the lever O, which is vibrated by the reciprocal action of the cam and spring. The lever thus vibrated engages at its upper extremity with a sliding bar P, giving to the latter a corresponding vibratory motion. When the bar P is moved toward the cutter *c*, it extends a pair of toggle-joint levers Q, which are linked at their inner ends to the head of the bar P, and at their outer extremities to the rests R, which support the blanks. When the bar P is moved from the cutter, it flexes the levers Q and draws the rests R toward each other and from the concave surface of the cutter, which permits the discharge of the blank by mechanism not here shown, but which, as well as mechanism for feeding blanks into the rest, may be conveniently constructed upon the same plan as the discharging and feeding apparatus of my fusee-cutter screw-machine, for which I applied for a patent some time ago. The turn-screws T vibrate with the rests R, as both are mounted upon the radius-bars S, which turn on pivots S′, projecting upward from the end bar of the frame.

It will be seen that the rotation of the cutter and the rotation of the blanks, as well as the movements of the rests and feeding and discharging apparatus, are all effected simultaneously and with the proper relative velocities by means of a single train of wheels, the cutter and blanks, turning with their adjacent moving surfaces, going in opposite directions, but with equal angular velocity, and as the two blanks are threaded simultaneously by being pressed radially against opposite sides

of the cutter, the pressure of one blank against the cutter in one direction is counterbalanced by that of the other in the opposite direction, which prevents the axis of the cutter from being strained by lateral pressure, and causes the machine to operate smoothly and steadily.

The cutter is composed of a cylindrical ring or annulus *a*, closed at one end by a disk *b*, which is secured upon the end of the shaft B. The ring should be made of cast-steel, well tempered, and have on its inner or concave surface a serrated helical thread *c*, formed the counterpart, or thereabout of the thread to be cut upon the blank and of the same pitch, the outline of a section of the cutter in a plane passing through its axis corresponding in shape with the outline of the longitudinal axial section of the finished screw which this cutter is designed to form. Instead of threading one pair of blanks only, two, three, or more pairs may be threaded at a time, if it is deemed expedient, by simply increasing the number of turn-screws and rests and of the feeding and discharging apparatus and without adding to the number of cams.

As the numerous modifications of construction and arrangement of mechanism by means of which my invention may be carried into effect will be quite obvious to the skillful mechanician, I deem it unnecessary to give a detailed description thereof.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. An annular concave burr-cutter for threading screws having a helical or conical serrated thread, substantially as described.

2. The combination of two moving rests on opposite sides of a revolving screw-cutter with the mechanism herein described, or the equivalent thereof, for operating the same in such manner as to move them simultaneously toward and from the cutter to press the blanks against the latter to be threaded, and so that the pressure of one blank in one direction may be counteracted by the pressure of another blank in the opposite direction, as set forth.

3. The combination of the vibrating rests with the vibrating rotating turn-screws, substantially in the manner herein described, so that the blank may be rotated steadily and with regularity while the rest is carrying it toward the cutter to sink a screw-thread on it.

In testimony whereof I have hereunto subscribed my name.

CULLEN WHIPPLE.

Witnesses:

F. G. FONTAINE,

P. H. WATSON.