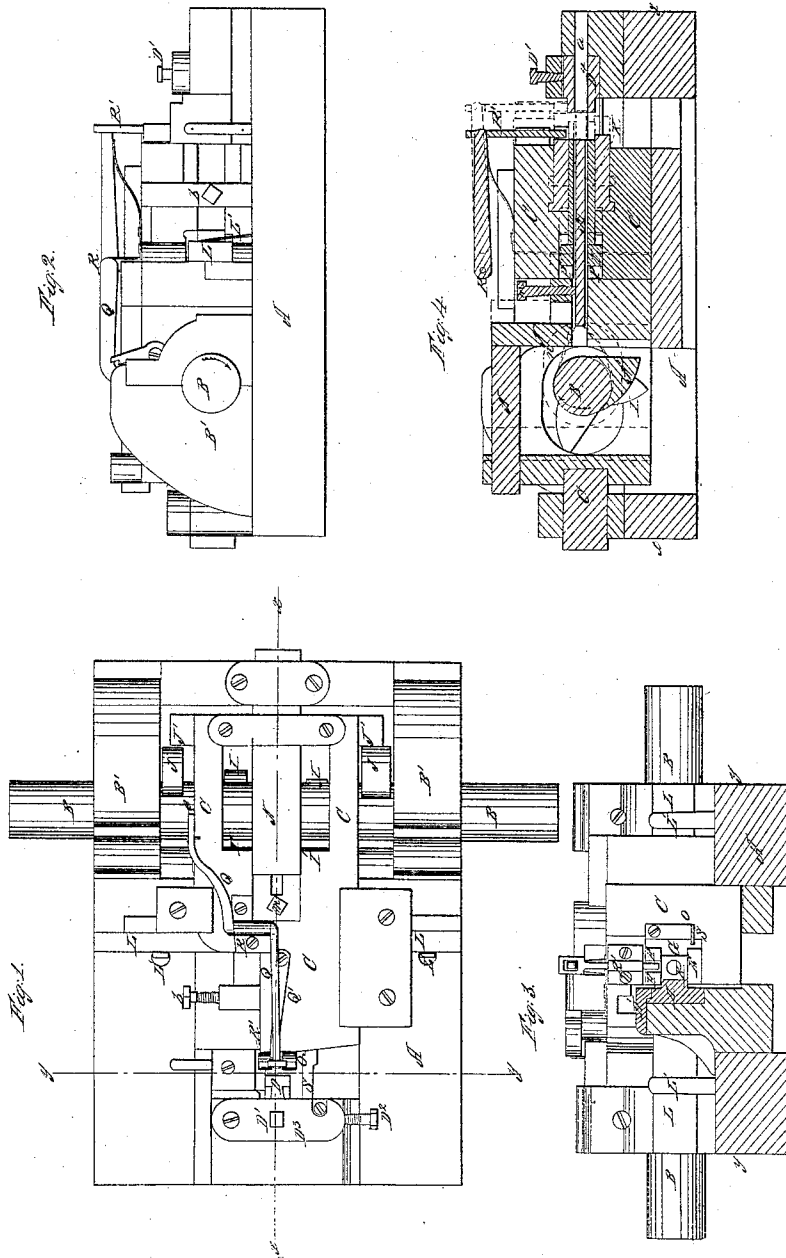


J. Paton

Nut Machine,

N<sup>o</sup> 45,268.

Patented Nov. 29, 1864.



# UNITED STATES PATENT OFFICE.

JAMES PATON, OF NEWBURG, OHIO.

## MACHINE FOR MAKING NUTS.

Specification forming part of Letters Patent No. 45,268, dated November 29, 1864.

*To all whom it may concern:*

Be it known that I, JAMES PATON, of Newburg, in the county of Cuyahoga and State of Ohio, have invented new and useful Improvements in Nut-Machines; and I do hereby declare that the following is a full and complete description of the construction and operation of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a top view. Fig. 2 is a side view. Fig. 3 is a transverse vertical section in the direction of the line *yy* in Fig. 1, and Fig. 4 is a longitudinal vertical section in the direction of the line *xx* in Fig. 1.

Like letters refer to like parts in the several views.

A represents a strong base-plate made of cast-iron, and to which the movements are attached.

B represents the driving-shaft, which rests in suitable boxes rising from each side of the base-plate, and shown at B'.

C C C represent a sliding frame made of iron and moving in ways upon the bed-plate A. This sliding frame contains the moving dies and matrix in which the nut is formed, and also the movable section of the cutting apparatus for cutting the blank from the heated bar.

D represents the stationary die. This is fixed and stationary at the end of the bed-plate, as shown in Fig. 4, and is held in place by the set-screws D' and D<sup>2</sup>. This die can be removed or replaced by loosening the set-screws D' and D<sup>2</sup> and removing the cap D<sup>3</sup>. The stationary die D has a hole through its center longitudinally to receive the bar from the nut, and this hole is continued through the elevated portion of the bed-plate against which the die D rests, as shown at *a* in Fig. 4.

The matrix is composed of four pieces, E F G H, the first three named being attached to the sliding frame C. The piece shown at H is stationary, and is held in place by the grip H', and can be removed and replaced at pleasure. Those sections shown at E F G can be removed by loosening the binding-screw *b*. (Shown in Fig. 1.) The upper and lower sections of the matrix E F extend forward of the section G, for the purpose of supporting the two edges of the bar from which the blank is cut, to prevent the bar from widening. The section G

of the matrix is situated upon the front side of the machine, and is shorter than the upper and lower sections, and the inner edge is made with a sharp angle, for the purpose of cutting off the blank as the heated bar is pressed against the face of the stationary die D.

The sliding frame C is moved forward by the cams I upon the shaft B, pressing against the faces I', and the sliding frame C is moved backward by the cams J, acting against the faces J'. The moving die is shown at K. This is situated in the center of the sliding frame C, the back end of which rests against the cross-bar L. The punch M passes through the center of the die K, its back end being firmly secured to a supplementary sliding frame, N, situated within the sliding frame C. The punch M is held in place by the set-screw *m*, and works freely but snugly through the movable die K. The supplementary sliding frame N is moved forward by the cam N' by contact with the face *n*. At P P, Fig. 4, is shown a shoulder on the inner sliding frame, N. In the operation of the machine the shoulder P is brought in contact with the cross-bar L, in order to act upon the movable die at the proper moment, as hereinafter stated.

The bar L and movable die K are coupled together, so that when the bar L is forced back by the springs L' L' the movable die K is carried back with it. Upon the shaft B is a short cam, *e*, and in connection therewith is a bent lever, Q, which has its fulcrum at R on the sliding frame C, and consequently travels with it. At the forward end I attach a vertical arm, R', which reaches to the position of the newly-formed nut. It is the function of this arm and lever to start the nut loose in case it should adhere to either of the dies or to the stationary face of the matrix. The action of the cam *e* throws the forward end of the lever with the arm R' downward with a sudden stroke, for the purpose above described, at the moment the moving die begins to recede. The arm R' and lever Q are raised by the spring Q'.

S represents a guide for feeding the heated bar into the machine. The face of the die D can be made separate from the body D<sup>1</sup> and changed or removed for repairs at pleasure.

The operation of this machine is as follows: Power being applied to the shaft B, it is rotated in the direction of the arrow. A bar of iron of proper size, and heated to a suit-

able degree for working, is introduced at O upon the guide S. The cutting-edge of the section G of the matrix cuts off the blank for the nut by pressing the bar against the stationary die D. This operation incloses the blank completely within the matrix and between the stationary and movable dies, and while held firmly in this position the punch M is caused to advance by the action of the cam N upon the face n, and the blank nut is punched while the sliding frame N is passing through the space shown at P, the sliding frame C being in the meantime stationary. The shoulder P of the sliding frame N now forms contact with the sliding bar L, carrying forward the movable die K, thus giving the requisite pressure to the nut while it is upon the punch. The sliding frame C is now caused to recede by the action of the cams J upon the faces J', and the sliding frame N with the punch M and moving die K are moved back to their former position.

The object of punching the nut while the blank is closely confined within the walls of

the matrix, and before the final pressure is given, is to fill out all the corners and angles by the expansion of the metal, and at the same time, by having the blank thus firmly supported upon all sides, it is prevented from splitting during the process of punching.

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

1. The above-described machine, when constructed, arranged, and operated substantially as set forth.

2. The cross-bar L and springs L', in combination with the die K, substantially in the manner and for the purposes specified.

3. The lever Q, sliding frame C, arm R', and cam e, in combination with the punch M, dies K and D', and matrix, when arranged and operating conjointly, substantially as and for the purpose set forth.

JAMES PATON.

Witnesses:

W. H. BURRIDGE,

A. W. McCLELLAND.