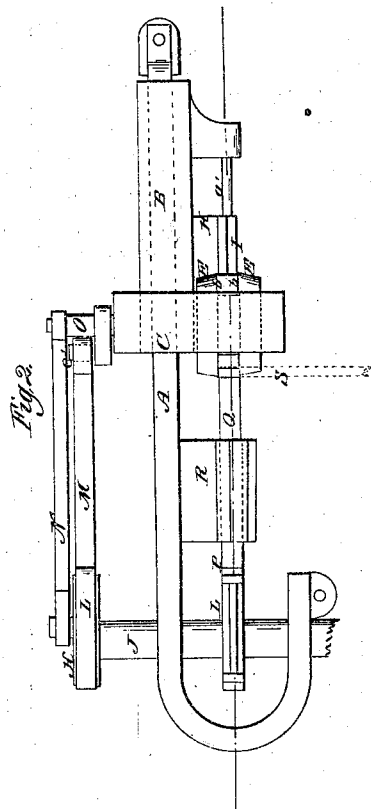
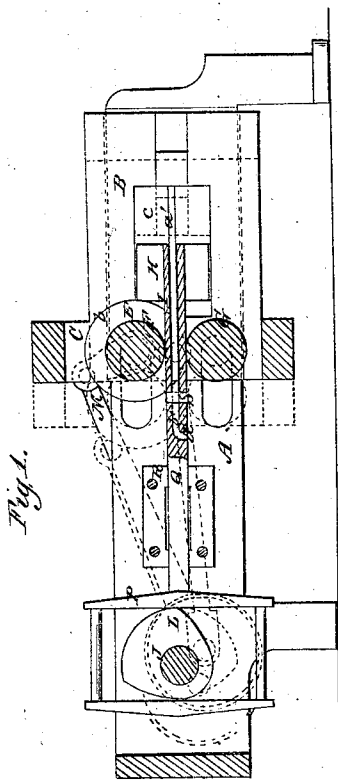
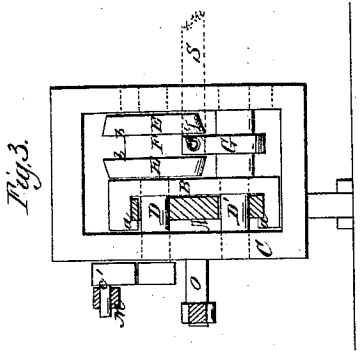


*S. H. Whitaker*

*Making Nuts.*

*N<sup>o</sup> 16,507.*

*Patented Jan. 27, 1857.*



# UNITED STATES PATENT OFFICE.

S. H. WHITAKER, OF CINCINNATI, OHIO.

## NUT-MACHINE.

Specification of Letters Patent No. 16,507, dated January 27, 1857.

*To all whom it may concern:*

Be it known that I, S. H. WHITAKER, of Cincinnati, in the county of Hamilton and State of Ohio, have invented a new and Improved Machine for Making Nuts; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1, is a longitudinal vertical section of my improvement, (x) (x) Fig. 2 showing the plane of section. Fig. 2 is a plan or top view of the same. Fig. 3 is a detached front view of the circular shears, dies and fixed mandrel.

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

This invention relates to a new and improved machine for making nuts in which circular shears, and dies having a reciprocating rotating motion are employed in connection with a fixed mandrel and punch and reciprocating pressure bar, the above parts so operating, that the nuts are made perfectly uniform and smooth, and with much greater facility than by the usual machines in which stationary dies are employed.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe its construction and operation.

A, represents a bed-piece or plate on which a sliding head B is fitted, the head being provided with lips (a) (a), one at its upper and the other at its lower end, the lips fitting over the top and bottom edges of the bed piece or plate A, as shown clearly in Fig. 3. To the inner end of the head B, a rectangular frame C is attached, and two horizontal and parallel shafts D, D', are fitted in said frame. On the upper shaft D, two circular shears E, E, are placed with a roller F, between them, the roller being smaller in diameter than the shears. The periphery of the roller F is parallel with its shaft D, but the peripheries of the shears E, are inclined or beveled downward from their inner to their outer edges, so as to form cutting edges (b) at the inner sides of their peripheries. On the lower shaft D' a roller G, is placed, said roller being in line with, or in the same plane as the roller F as shown clearly in Fig. 3.

To the bed piece or plate A, a projection H is attached, and a rectangular bar or

mandrel I is permanently secured to this projection. The head B, has an oblong slot (c) made through it, through which the projection H passes, the slot (c) allowing the head B, to slide back and forth on the bed plate without being obstructed by the projection. The inner end of the mandrel I is fitted between the two rollers F, G, which may be made to bear against it with a requisite degree of pressure by adjusting the bearings of the shafts D, D', by set screws, the bearings being fitted in slots in the sides of the frame C. The bar or mandrel I is hollow, and a rod (a'), one end of which is attached to the outer end of the sliding head B, is fitted or works within the bar or mandrel as shown clearly in Figs. 1 and 3.

J represents the driving shaft which passes through one end of the bed piece or plate A. One end of this shaft has an eccentric K, upon it and a strap L, is fitted upon the eccentric, the strap being connected by a rod M, with a crank (a') at one end of the shaft D, in the frame C. A rod N, is attached at one end to the outer side of the eccentric K, the point of attachment being at one side of the center of the shaft J, as shown clearly in Fig. 2. The opposite end of the rod N, is attached to an arm O, on the side of the frame C.

On the shaft J, a cam L, is placed, said cam being fitted within a yoke P, to which a horizontal bar Q, is attached. The bar Q, works through a guide block R, attached to the bed plate A. The mandrel I, and bar Q, are in line with each other, and the edges of the shears E, E, extend downward to the lower edge of the mandrel I, as shown clearly in Fig. 3.

The bar Q, at its end is made hollow a short distance, the inner end of the hollow or aperture curving downward and having its orifice in the under side of the bar as shown at (d) in Fig. 1.

The bar S, from which the blanks are cut, shown in red, is of the proper width and thickness, the width being rather less than that intended for the nuts in order to allow for the expansion of the bar when compressed. The bar S, is properly heated and its end placed against the end of the mandrel I, motion being given the shaft J, the bar Q, is first moved toward the end of the mandrel I, by the cam L, and its end pressed firmly against the end of the bar S, which is consequently clamped and some-

what compressed between the ends of the bar Q, and mandrel I. The frame C is then moved in a direction toward the driving shaft J, by the rod N, and at the same time the shears E, E, and roller F are partially rotated by the eccentric K, and rod M. The shears E, E, cut off the blank from the bar and the inner sides of the shears smooth its sides, while the rollers F, G, smooth the upper and lower edges of the nut. The rod (a') moves with the frame C, and punches the hole through the center of the nut, the punch or rod forcing the scraps or cores (b') through the hollow (d') in the bar Q. As the bar Q, moves back from the mandrel I, the nut falls by its own gravity from between them, and the shears and rollers also move back to their original position to be again moved forward for the succeeding operation.

I will remark that the shears C, G, and roller F may be made separate and secured to the shaft D by any proper means, so that the roller F may be removed and others of different sizes adjusted in its place for the purpose of making nuts of various sizes.

The above machine requires but little power to drive it, owing to the rotating

movement of the shears and dies or rollers; it may be worked rapidly; the nuts being all made of equal or uniform size perfectly smooth and with greater facility than by the fixed or stationary die boxes or female dies which are usually employed, for considerable power is required to force the metal into the angles or corners of the dies and many imperfect nuts are formed.

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

1. The circular shears E, E, and rollers or dies F, G, for cutting off the blanks and smoothing their edges, the bar S, being grasped or held by the mandrel I and bar Q, or any proper device.

2. I also claim the circular shears E, E, and rollers or dies F, G, in combination with the fixed mandrel I, punch or rod (a') and reciprocating bar Q, the above parts being arranged and operating as shown for the purpose set forth.

S. H. WHITAKER.

Witnesses:

T. R. BULDRIDGE,  
J. B. GREEN.