E. P. McLANE.

Machine for Making Nuts.

No. 219,363. Patented Sept. 9, 1879.

Fig 1.

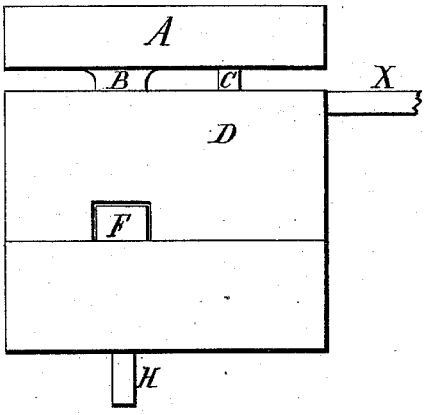


Fig 2.

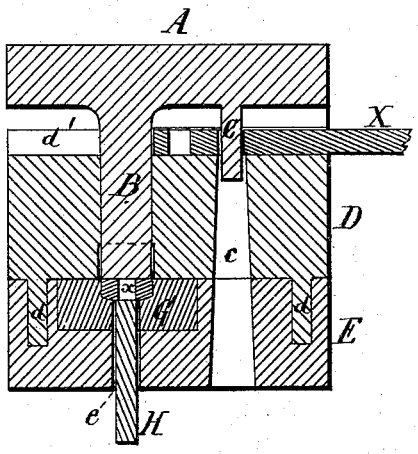


Fig 3.

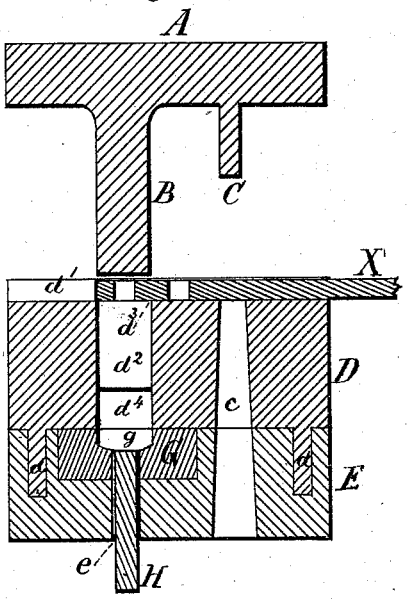
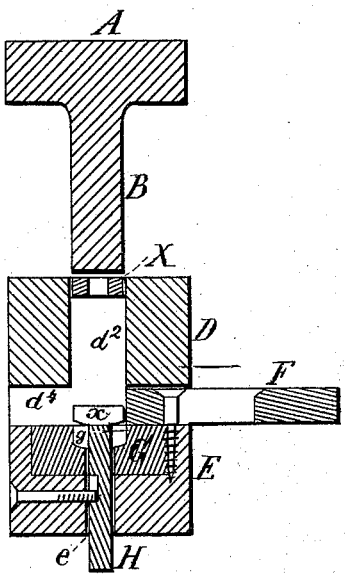


Fig 4.



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UNITED STATES PATENT OFFICE.

EDWIN P. McLANE, OF HARNDEN, ASSIGNOR OF ONE-HALF HIS RIGHT TO J. T. KENNEDY, OF MOUNT CARMEL, CONNECTICUT.

IMPROVEMENT IN MACHINES FOR MAKING NUTS.

Specification forming part of Letters Patent No. **219,363**, dated September 9, 1879; application filed May 3, 1879.

To all whom it may concern:

Be it known that I, EDWIN P. McLANE, of Harnden, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in Machines for Making Nuts, which improvement is fully described in the following specification and accompanying drawings, in which latter—

Figure 1 is a side elevation of my improved machine for punching, cutting off, and shaping nuts as it appears in the act of shaping a nut, the mechanism for moving the parts not being shown. Fig. 2 is a vertical central longitudinal section of the same. Fig. 3 is a similar section, showing the punches at their highest elevation. Fig. 4 is a transverse vertical section through the shearing and shaping punch, and showing the punch in its highest elevation and a nut being pushed out of the machine.

The nature of my invention consists in a stationary bed-die having a cavity with walls for supporting the vertical sides of the nut, and for forming the crown upon the nut, fitted between two dies having a transverse discharging-passage between them, in combination with a tool which both shears and presses, a punch, a rod which lifts the nut out of the die on a line with the said discharging-passage, and a discharging-slide, all as will be hereinafter described.

In the annexed drawings, A represents a suitable reciprocating punch-plate, which in practice will be fastened to a punching-machine in the ordinary manner. To this plate two vertical punches, B and C, are attached, the one, B, being square, to correspond with the size and shape of the nuts desired, and the other, C, round, and of the size of the hole which is to be punched in the nut. The punch C is shorter than the punch B, and is in line with, but in front of, the punch B. Below the plate A a die, D, is placed upon another die, E, which dies are suitably fastened to the lower stationary portion of the punching-machine, and are secured to each other by means of steady-pins *d*. The upper die, D, is provided with a horizontal groove, d^1, and a square hole, d^2, at right angles to the groove, both the groove and the hole being below the punch B.

The groove d^1 is made to easily receive a metal rod, X, from which the nuts are to be formed, and the hole d^2 is of the size of the nuts which are to be sheared from this rod of metal, so that the punch B can readily push the nuts down through it. The forward edge, d^3, of one of the walls of the hole d^2 is made hard and sharp, for the purpose of shearing off the end of the metal rod X when the punch B makes its downstroke.

Below the punch C a hole, *c*, is suitably provided in the dies D E. This hole serves to receive the punch C and the center waste pieces punched from the middle part of the nut, and the upper hardened edge around this hole aids the punch C in its operation.

In order to facilitate the descent of the punched-out pieces, the diameter of the hole *c* is increased downwardly.

The lower end of the hole d^2 is intersected by an oblong horizontal slot, d^4, above the die E, in which slot a slide, F, is moved to and fro by suitable mechanism, its forward stroke extending beyond the hole d^2, and its back stroke beginning at the front side wall of said hole. In line with the hole d^2 a form-block, G, of hardened steel, is inserted into the die E, which block has a central cavity, *g*, with rounded or beveled corners at the bottom, as shown, in order to properly shape the top of the nut. At the center of the cavity *g* a hole, *e*, is provided, which extends through the block G and die F, and of a diameter somewhat greater than that of the hole punched through the nut. This hole *e* serves as a guide-bearing for a vertical thrust-pin, H, fitted loosely therein, and caused to move up and down by suitable mechanism for the purpose of pushing the pressed nut upward in line with the slot d^4 and discharge-slide F.

The distance between the punches B C must be such that the metal rod X, after the first hole is punched through it, can be held against the punch B while the succeeding hole is being punched, and thus insure the punching of the hole in the center of the blank for each nut.

Operation: The operator places the end of the metal bar X in the groove d^1, and as soon as the punch B is at its highest elevation moves the bar forward over the hole d^2 until the fin formed at the entering end of the bar by shearing it off comes in contact with the opposite wall of the hole d^2. The descending punch B shears off the part of the bar X over the hole d^2, and pushes it down into the same. When the punch B is about midway down the punch C comes in contact with the metal rod X and punches a round hole through it. During this operation the blank nut cut from the rod X is pushed farther down until it becomes seated in the cavity g, and is firmly pressed into it until it assumes the shape of the bottom of the cavity. The punches B and C now begin their ascent, and as soon as the punch B is above the slot d^4 the pin H rises and pushes the shaped nut up out of the cavity g and level with the top of the die E, whereupon the slide F pushes it into the slot d^4 out of the range of the punch B, and then the parts H F return to their former positions before the punches B C have finished their upstroke.

The mechanism for giving movement to the several parts described, being such as are commonly used for producing reciprocating motion, need not be here described.

I claim—

The improved nut-making device consisting of the dies D and E, punches B and C, thrust-pin H, and discharge-slide F, constructed and arranged substantially as described.

EDWIN P. McLANE. [L. S.]

In presence of—

W. A. ALLING,

E. B. COOPER.