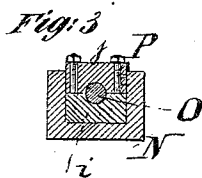
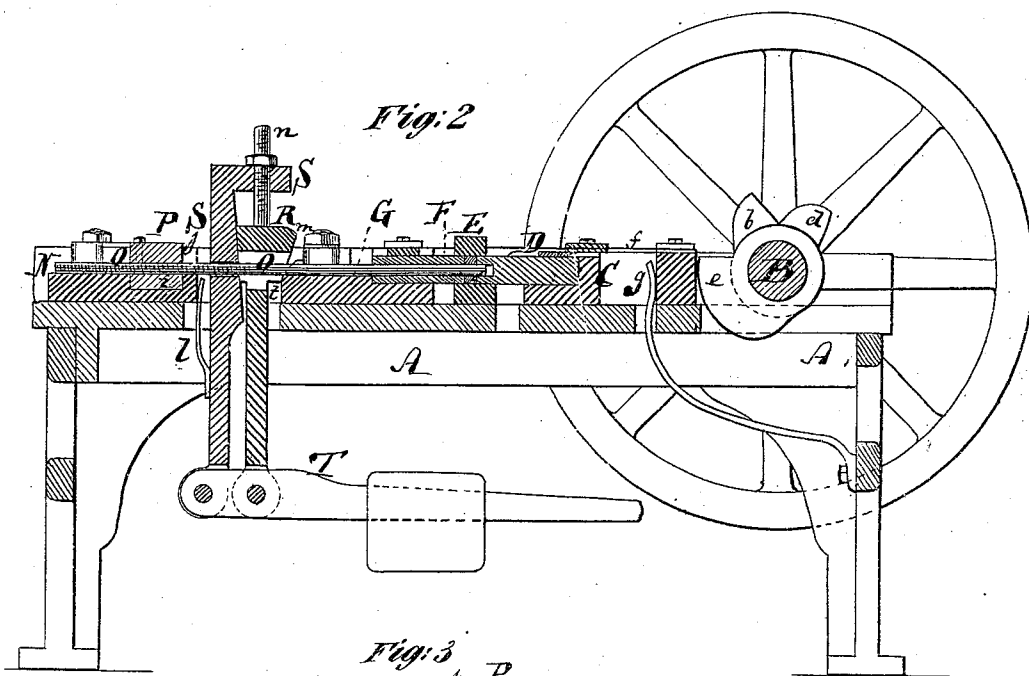
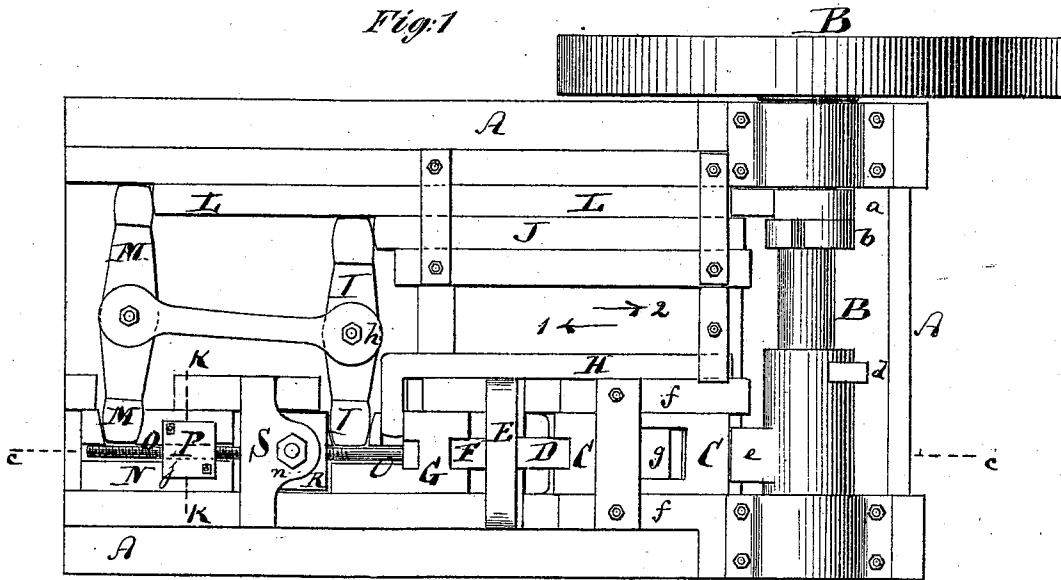


P. ELEY.
Nut-Machines.

No. 148,195.

Patented March 3, 1874.



Witnesses:
Michael Ryan
Fred Haynes

Philip Eley
by his Attorneys
Brown & Allen

UNITED STATES PATENT OFFICE.

PHILIP ELEY, OF NEW YORK, ASSIGNOR OF ONE-HALF HIS RIGHT TO
FRALEY J. CARPENTER, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN NUT-MACHINES.

Specification forming part of Letters Patent No. **148,195**, dated March 3, 1874; application filed
November 22, 1873.

To all whom it may concern:

Be it known that I, PHILIP ELEY, of the city, county, and State of New York, have invented an Improved Machine for Making Nuts, of which the following is a specification:

Figure 1 is a top view of my improved nut-machine. Fig. 2 is a vertical longitudinal section of the same on the plane of the line *c c*, Fig. 1; and Fig. 3 is a detail transverse section on the line *k k*, Fig. 1.

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

This invention has for its object to produce a machine on which nuts can be cut from bars, crowned and perforated rapidly, and by simple mechanism. In my improved machine all the various operating parts are worked from one shaft, all motions are positive and reliable, and still the machine is freely adjustable to make nuts of various size and thickness. My invention consists in several new features of mechanical applications and combination of parts, as hereinafter more fully described.

Letter A, in the accompanying drawing, represents the supporting frame-work of my improved nut-machine, which is made of suitable material, and of such size and shape as to firmly support the other parts of the machine. Above one end of the frame A is hung transversely a horizontal shaft, B, to which rotary motion is imparted, with proper velocity, by suitable mechanism. This shaft carries four cams, *a b d e*, by means of which the several parts of the machinery are set in motion, and which cams constitute all the power-conveying apparatus used in the machine. Between suitable guides *f f* is fitted, on top of the machine, the carrier C of the male die D. The cam *e* is arranged directly behind the carrier C, and serves to move the same with its die D toward and into the female die E, which is stationary on the machine. A spring, *g*, draws the carrier C and male die D back toward the shaft B, as soon as the cam *e* is out of contact with C. F is the crowning or heading tool. The same is firmly secured in a slide, G, and is exactly in line with the male die D, but on the opposite side to the female die E, as shown in Figs. 1 and 2. The carrier G is moved toward the die E—that is to say, in the direc-

tion of the arrow 2, shown in Fig. 1—by means of a lever, I, which is pivoted to the frame A at *h*, and which, with one end, bears against a slide, J, that is actuated by the cam *b* on the shaft B. In the opposite direction—that is to say, in the direction of the arrow 1—the carrier G and crowner are moved by a bent slide, H, that is actuated by the cam *d* of the shaft B. The last remaining cam *a* on the shaft B operates a slide, L, which bears against one end of a lever, M, said lever, with its other end, entering a sliding block or carriage, N, in which a punch, O, is secured. This punch is made in the shape of a cylindrical rod of proper length, and will, when pushed in the direction of the arrow 2, pass through the crowner and female die into a cavity formed in the end of the male die, as shown in Fig. 2. The punch O I prefer to secure in its carriage N by means of a divided nut or block, P, which is more clearly shown in Fig. 3, said block P being composed of two pieces, *i* and *j*, that are connected by bolts, and have between them a threaded cavity into which the rod O is screwed. This double block is held in the recess formed in the carrier N. By turning the rod O it can be set more or less forward or backward, to suit the thickness of the nut, length of male die, &c. By the cam *a* working against the parts L M, the punch is moved in the direction of the arrow 2. A spring, *l*, bearing against the front end of the carrier N, as indicated in Fig. 2, throws the said carrier and punch back again in the direction of the arrow 1 as soon as the cam *a* has left contact with the slide L. R is a vertical wedge arranged directly behind the carrier G, and provided with a beveled face, against which, or under which, the beveled back or end of the carrier G enters during the motion of the latter in the direction of the arrow 1. The slide R is, by a screw-rod, *n*, suspended adjustably from a stationary support, S, and is, at its lower end, connected with a weighted lever, T, or otherwise weighted or held down by springs, as may be found most convenient. When, by the introduction of a thicker part of a bar than the one for which the machine is set, the crowner-tool F is moved farther back than was originally calculated for

its motion, the carrier G enters beneath and slightly raises the wedge or block R, thereby obtaining a large degree of motion, and adapting itself to the increased thickness of the iron that is introduced between the ends of the dies D and F. When at times two nuts are introduced or left by accident within the female die, the carrier G will be still farther crowded back, or else the parts of the machine would be injured, and to permit such additional backward motion of the carrier G a recess, *t*, is cut into the lower part of the wedge R, so that when the carrier G, during its backward motion, will have raised the wedge R to the full extent allowed by the oblique face thereof, the slide G will enter under the shoulder *t*, and thereby obtain the additional room required for admitting the second nut. With its back the wedge or slide R bears against the stationary support or bracket S, which makes, under ordinary circumstances, a support or back-stay for the wedges, to allow the proper crowning of the nut.

The operation of the machine is as follows; When a bar of iron is placed against the face of the female die, the male die D comes forward, cuts off a blank, forces it into the female die E and against the crowner F, shaping its sides and crowning and compressing it. Just as the male die D has completed its stroke, and while it is holding the blank against the crown-

er, the punch moves forward and punches the hole. After the punching the male die recedes, the crowner advances, forces the nut out of the die E, while the punch O retires, and, finally, the cam *d*, acting on the slide H, forces back the slide G and crowner F to the position for a new operation.

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

1. The combination of the cams *b d*, slides J H, and lever I, with each other and with the carrier G and crowner F, for operating the latter, substantially as herein shown and described.

2. The combination, within the carrier N, of the divided nut *i j*, for holding the punch O, and allowing the adjustment thereof, in the manner described.

3. The back support S, in combination with the vertical weighted wedge R and adjusting-screw *n*, substantially as and for the purpose described.

4. The combination in one machine, as described, of the dies D E, crowner F, punch O, carriages G N, levers I M, slides H J L, and single shaft B, all arranged to operate substantially as described.

PHILIP ELEY.

Witnesses:

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