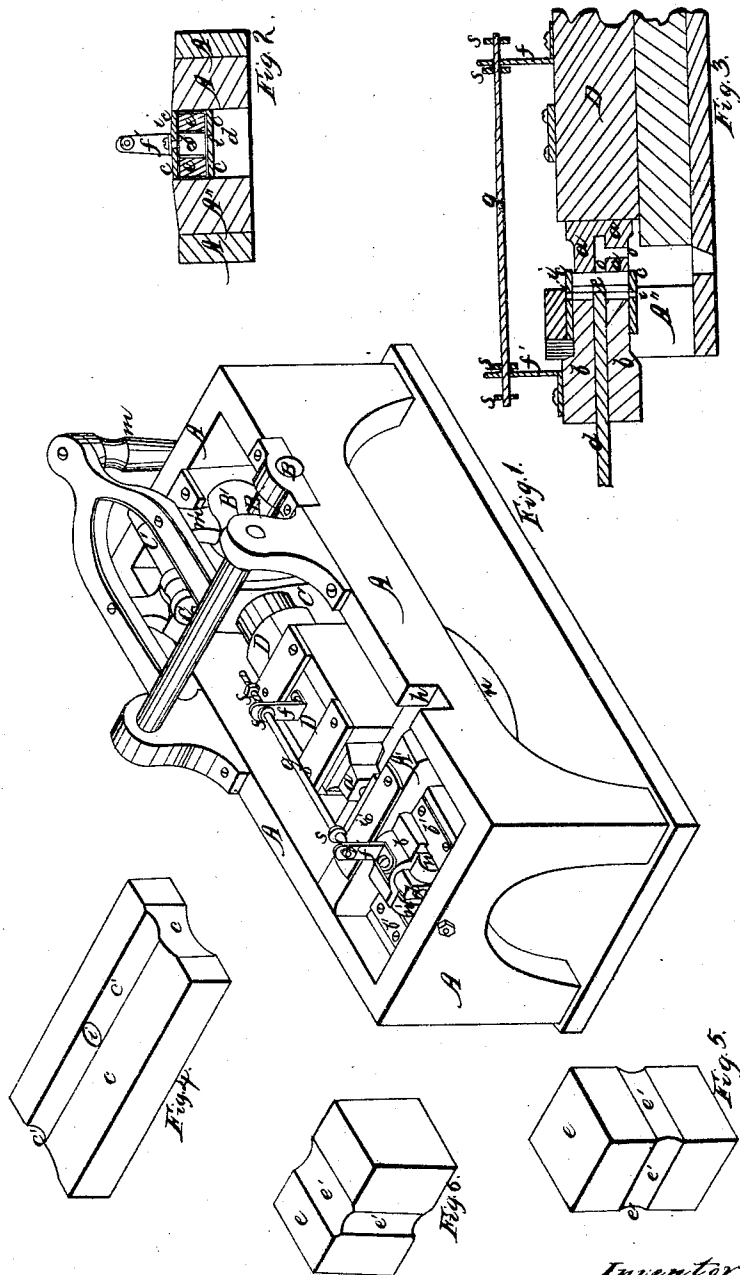


E. Kaylor.

Nut Machine.

N^o 84,494.

Patented Dec. 1, 1868.



Inventor
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United States Patent Office.

EDWARD KAYLOR, OF PERRYSVILLE, PENNSYLVANIA.

Letters Patent No. 84,494, dated December 1, 1868.

IMPROVED MACHINE FOR MAKING NUTS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, EDWARD KAYLOR, of Perrysville, in the county of Allegheny, and State of Pennsylvania, have invented a new and useful Improvement in Nut-Machines; and I do hereby declare the following to be a full, clear, and exact description thereof.

In nut-machines in which the nut or nut-blank during any part of the operation is enclosed between side dies or in a die-box, the nut or nut-blank, if heated, speedily heats the dies or die-box, as well as the punch, so that after a few hours' use they are more or less injured, and the punch in particular has to be renewed.

My invention is designed to obviate this difficulty; and

The nature of it consists in making the die-box, whether in separate pieces or solid, with aperture and grooves in its inner face for the admission of water.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and mode of operation, reference being had to the accompanying drawing, making a part of this specification, in which—

Figure 1 is a perspective view of a nut-machine fitted with my improvements, and illustrative of the operation thereof;

Figure 2 is a vertical cross-section through the dies in the plane of the grooves;

Figure 3 is a vertical longitudinal section through the dies in the axis of the punch; and

Figures 4, 5, and 6 are enlarged views in perspective of the grooved reversible dies.

Like letters of reference indicate like parts in each.

A A' represent the frame-work of the machine, made of any suitable form.

B is a cam or eccentric-shaft, carrying the cams or eccentrics required in producing the movements desired. One cam, not shown in the drawing, operates in a cam-yoke, C. To this is attached a ram, D, on the end of which is the front or face-die *a*.

The rear die *b* operates back and forth on slides, *b'*, and in the same line as the die *a*.

The sides of the die-box are made solid in a single box, or of separate dies, *c c* being the top and bottom, and *e e*, the side dies. These are set and adjusted carefully in the cross-part A' of the frame, and so that the front and rear dies *a b* will work accurately into the cavity or box which they form.

These dies are grooved along about the middle of their working-faces, as at *c' e'*, the grooves running around the box in the line of a vertical plane.

The upper and lower dies are also perforated, as at *i*, for the admission and outflow of water, which passes in through a hole, *i*, in the upper part of the cross-frame A'; but, if a solid die-box be preferred, the grooves *c' e'* may run around its inner face in the manner shown, the perforations *i* being made in like manner.

d is a stationary adjustable punch, working through the rear die *b*, and which forms the eye of the nut.

On the upper faces of the ram D and rear die *b* are two posts, *f f'*, connected together by a rod, *g*, which runs through both, and is adjustable therein by nut *s*, so that with the forward and backward motion of the ram D, its post *f* may communicate so much motion, and only so much motion as is necessary to bring the rear die *b* forward and discharge the nut from the punch *d*, and carry it back when another nut-blank is being cut off and driven into the die-box by the front die *a*. This die has a hole, *o*, in its axis, for the punchings, and another, *o'*, in its lower face, through which the punchings drop out.

A bar of iron is then fed into the machine at the notch *h* of the frame A, into the path of the front die *a*, the further side die projecting as a stop; or other known form of stop being used.

The die *a* being driven forward, cuts off a nut-blank, drives it back on to the punch *d*, and into the die-box formed by the side and top and bottom dies *c e* and rear die *b*.

The metal of the nut-blanks being hot, tends to heat rapidly the punch *d* and all the dies.

To counteract this, I introduce a stream or flow of water through the aperture *i* of the upper die *c*. This flows on to the punch till the nut-blank enters the die-box, and then it flows through the grooves *c' e'*, around the inner face of the die-box, keeping them cool, while the imperfections of the nut-blank are being welded up, as presently to be described, and till the nut is discharged.

This last is accomplished by the backward stroke of the ram D, which, by the rod *g*, brings the rear die forward and slips the nut off the punch.

To weld up any imperfections caused in the nut by the punch passing through it, or otherwise, I subject it to a heavy swaging blow, which I communicate from a drop-weight.

The weight *m* is raised by cams; B', on the shaft B, operating against posts *m'*.

The cams are so made that their working-faces, when the weight *m* is raised, suddenly pass from under the posts *m'*, and the weight *m* falls heavily on to the longer arm of a bent lever, *n*, the shorter arm of which is so connected with a shorter bifurcated lever, *n'*, as to force the bearing-ends of such lever, as shown in fig. 1, against the rear end of the rear die *b*. The force of the blow is thus communicated to the nut, which, at that instant, is in the die-box, enclosed on all sides. The violence of the blow, or its effect on the nut, is so regulated as to secure the object desired, which may be simply to swage up any imperfections in the nut, or also to form a washer on its face, in which case the face of the die *b* should be hollowed out for or adapted in shape to such purpose, as shown in fig. 3.

When I make the die-box in separate pieces, I usually make such pieces reversible, that is to say, I made working-faces on two or more sides or faces of each die, *c* or *e*.

These dies are usually made of metal of a consider-

able degree of hardness. Then, when one face is worn out, I merely turn the die, so as to bring another face on the inside of the die-box.

In this way I effect a considerable saving in the cost of dies; but the greatest saving effected is by making the grooves and apertures in the dies, and passing through them a stream of water. The temper of both punch and dies is thus preserved, and time and expense saved.

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

In a machine for making nuts from hot bars of iron,

a die-box, either solid or made in separate pieces, with apertures and grooves for the admission and flow of water along the inner or working-face of the die-box, or of the separate dies of which it may be composed, substantially as hereinbefore set forth.

In testimony whereof, I, the said EDWARD KAYLOR, have hereunto set my hand.

EDWARD KAYLOR.

Witnesses:

ELL TORRANCE,
G. H. CHRISTY.