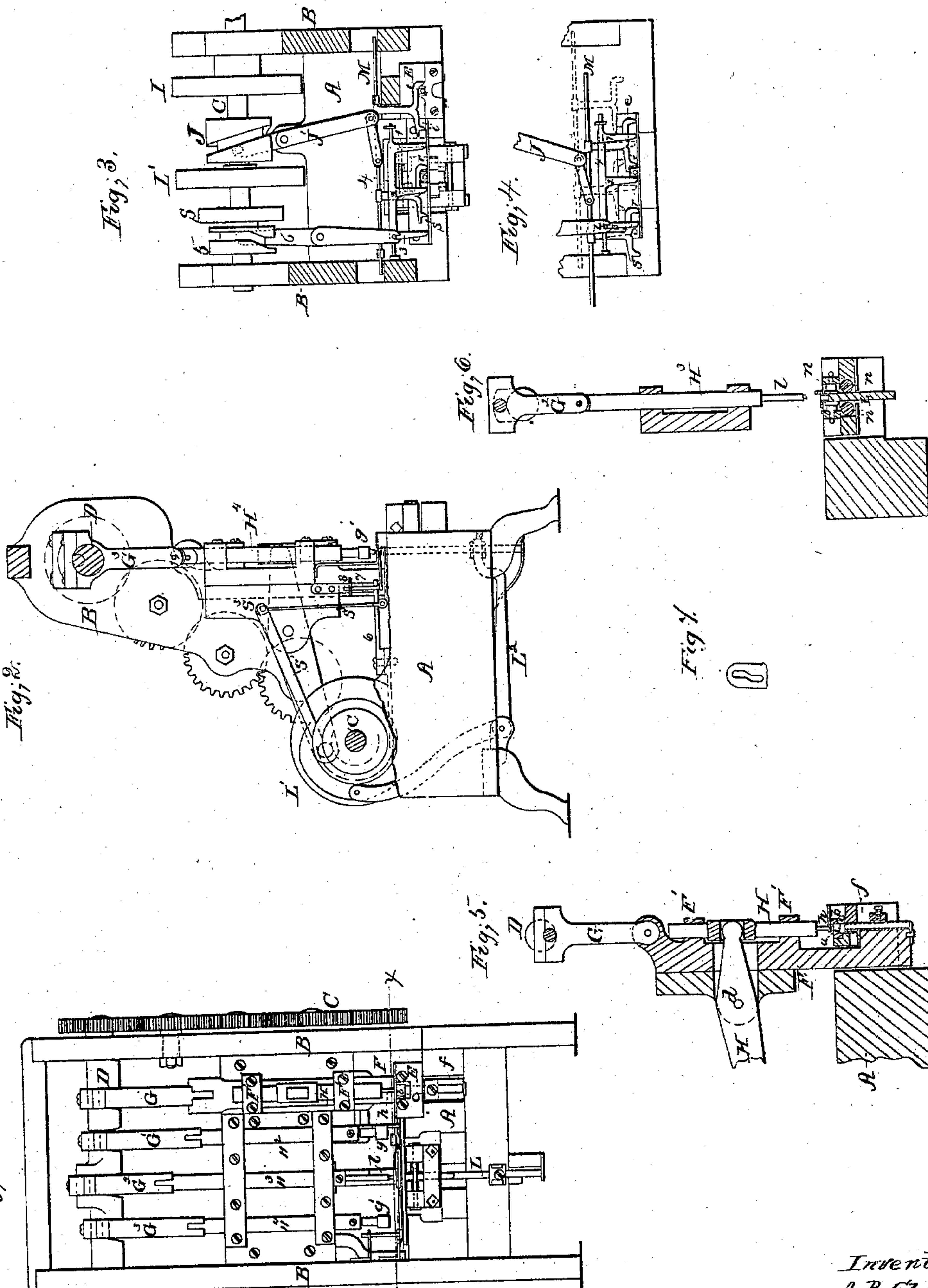


A. B. Glover. Nut Machine.

N^o 79,749.

Patented Jul. 7, 1868.



Witnesses;
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UNITED STATES PATENT OFFICE.

A. B. GLOVER, OF BIRMINGHAM, CONNECTICUT.

IMPROVED NUT-MACHINE.

Specification forming part of Letters Patent No. 79,749, dated July 7, 1868.

To all whom it may concern:

Be it known that I, A. B. GLOVER, of Birmingham, in the county of New Haven and State of Connecticut, have invented a new Improvement in Nut-Machines; and I do hereby declare the following, when taken in connection with the accompanying drawings, and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a front view.

Figure 2, a side view, a portion of the frame broken away to exhibit the working parts.

Figure 3, a sectional view, on line *xx*, looking down.

Figure 4, the same in different positions.

Figure 5, a section through the punching-die; and in

Figure 6 a section through the rolling-dies.

This invention relates to an improvement in that class of machines employed in the manufacture of hot-pressed metal nuts, the object being to more perfectly finish the edges of the nut than can be done in machines of common construction; and the invention consists in the arrangement of a forming and punching-die combined, which cuts the blank from the bar, punches and partially forms the same, and this combined with a crowner, operating independently of the punching-dies, automatic fingers being employed to transfer the partially-formed nut to the crowner, thence transferred to combined rollers, which, as the nut is passed between, rolls all the edges, thence transferred by similar fingers to another crowner, which completes the nut, and after which successive operations it is discharged from the machine.

To enable others to construct and use my improvement, I will proceed to describe the same as illustrated in the accompanying drawings.

A is the bed-plate, from which extend up-rights B, supporting, in proper bearings, a driving-shaft, D, to which the several instruments are attached for operation, and from the said shaft D power is connected to another shaft, C, through a train of wheels, as seen in figs. 1 and 2, so as to impart the same velocity to each of the two shafts C and D. E is the punching-die holder, *a* being the die, (see fig. 5.) *b*, a

bar, across the opening *c*, the said die-holder E being fixed firmly upon the bed A, and through the said die a hollow punch, *f*, passes, and is fixed to a carriage, F, to which power is imparted from the driving-shaft D through the connection G, as seen in Figs. 1 and 5; so that the punch *f*, by the revolution of the shaft, passes up and down through the die, and across the opening *c*, so that the heated bar passes through the opening *c* until it strikes the opposite side of the die above the punch *f*. The upward movement of the punch *f* will cut from the said bar sufficient metal to form the nut. The punch *f* is hollow, having a central opening longitudinally, the size of the hole to be punched through the nut.

In the same carriage F, supported in bearings F', is arranged a mandrel, H, operated by a cam, I, through a lever, H', having its fulcrum on the frame at *d*, the said mandrel H carrying, in its lower end, a punch, *h*, corresponding to the hole through the punch *f*, and operating so that when the punch *f* has cut the blank from the bar, and carried it up into the die *a*, the mandrel H descends, and, by means of the punch *h*, perforates the nut, the punching passing down through the hollow punch *f*, and when so punched the mandrel H rises; the punch *f* also rises sufficiently high to carry the punched blank above the die *a*; then a finger, *e*, (see fig. 3,) by the operation of the cam J, through the lever J', carries the blank to the next position, which is beneath the crowner *g* in the mandrel H², it being from the position in fig. 3 to that in fig. 4. In that position the mandrel H² is actuated by the driving shaft D, through the connection G¹, and forces the crowner *g* down upon the nut, so as to crown its upper surface. While this is being done, the finger *e* is returned, in its return being drawn back, as in red, fig. 4, so that the finger *e* will pass back of the second nut formed. At the same time the finger *i* will drop into the position in fig. 3 back of the nut, which has just been crowned, and in the next movement of the fingers, the second nut will be transferred from the crowner, as seen in fig. 4, and beneath the mandrel H³. At the same time the second nut formed is transferred to the crowner, as before described. The mandrel H³ is operated from the driving-shaft through the connection G²,

and carries in its lower end a guide-pin, *l*, as seen in fig. 6, the point of the said pin corresponding to the perforation through the nut.

Beneath the said mandrel H^3 are arranged rolls in pairs *m* and *n*, each pair corresponding to opposite sides of the nut, and between the said rolls passes a follower, *L*, operated by the cam L^1 on the shaft *C*, through a lever, L^2 , (see fig. 2,) upon the top of which the nut is placed by the finger *i*, as before described; then the mandrel H^3 is forced down to grasp the blank nut between the guide-pin *l*, and the follower *L* then forces the nut so held down between the several pairs of rolls, and returns, so that each edge of the nut is rolled perfectly smooth; or a single pair of rolls may be employed, being grooved so as to take in half the nut. If for a square or hexagon nut, or in a hexagon nut, a pair of grooved rolls, for four of the sides, may be employed, combined with another pair, set at right angles to the grooved rolls, for the other two sides. The nut, being raised up to the top of the table, is caught by a finger, *r*, and transferred from the position beneath the mandrel H^3 to a position beneath the second crowner g' , in the mandrel H^4 , that is, from the position in fig. 3 to that in fig. 4. At the same time the succeeding nuts, which have been partially formed, are, in their turn, advanced. The second crowner, g' , actuated through the driving-shaft *D*, by means of the connection G^3 , presses down upon and completes the nut, thence, by a finger, *s*, moving from the position in fig. 3 to that in fig. 4, the nut is discharged from the machine.

The several fingers are fixed upon a rod, *M*, so as to be operated together by the cam *J*, as before described, the backward movement to the position in red being given by the cam *S* through a lever, S^1 , (see fig. 2,) having its fulcrum at S^3 , and from the said lever S^1 a connecting-rod, S^2 , extends down to and so as to grasp the rod *M*, so that by the operation of the cam *S* the rod *M*, with the fingers attached,

is drawn back and forth, as before described, so as to reset from one transfer to the next.

In order to insure the positive holding of the nut in the proper position at the several transfers, other fingers, 1, 2, and 3, are arranged upon a slide, 4, actuated by a cam, 5, through a lever, 6, so as to present themselves at the proper time to catch the nut between the corresponding finger on the rod *M*, and thus, by the combination of two fingers, the nut is held in its proper position, the action of the cam 5 being to move the said fingers 1, 2, and 3, so as to raise them and permit the blank, which has been acted upon, to pass under them, and this is accomplished by a rod, 7, (see fig. 2,) attached to the slide 4, which extends up into a guide, 8, the said guide 8 being grooved, as seen in Figure 7, the end of the rod 7 resting in the said groove, so that as the fingers 1, 2, and 3, move to the position denoted in red, fig. 4, they will be tipped up so as to permit the nuts to pass under the said fingers for the next operation.

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

1. In combination with the hollow punch *f*, punch *h*, and die *a*, the crowner *g* and the transfer-finger *e*, all arranged and operating in the manner described.
2. In combination with the above, two or more rolls, *m* and *n*, with the follower *L* and guide-pin *l*, arranged with the transfer-finger *i*, so as to operate in the manner described.
3. In combination with the above, the crowner g' , arranged with the transfer-finger *r*, so as to operate substantially as described.
4. In combination with the transfer-fingers *e* *i* *r*, the holding-fingers 1 2 3, when constructed and arranged so as to transfer and hold the blanks, substantially as herein set forth.

A. B. GLOVER.

Witnesses:

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