

R. H. Cole,  
Imp<sup>d</sup> Nut Machine,  
No. 20145, Patented May 4, 1858.

Fig. 4.

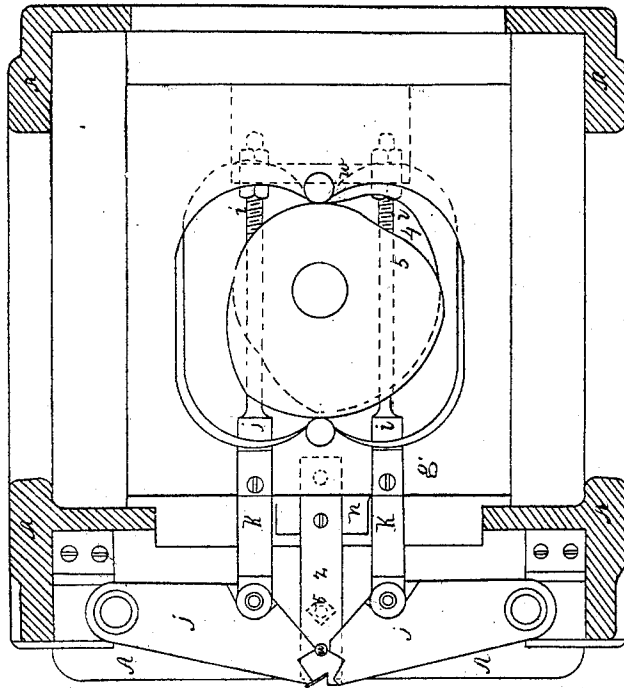
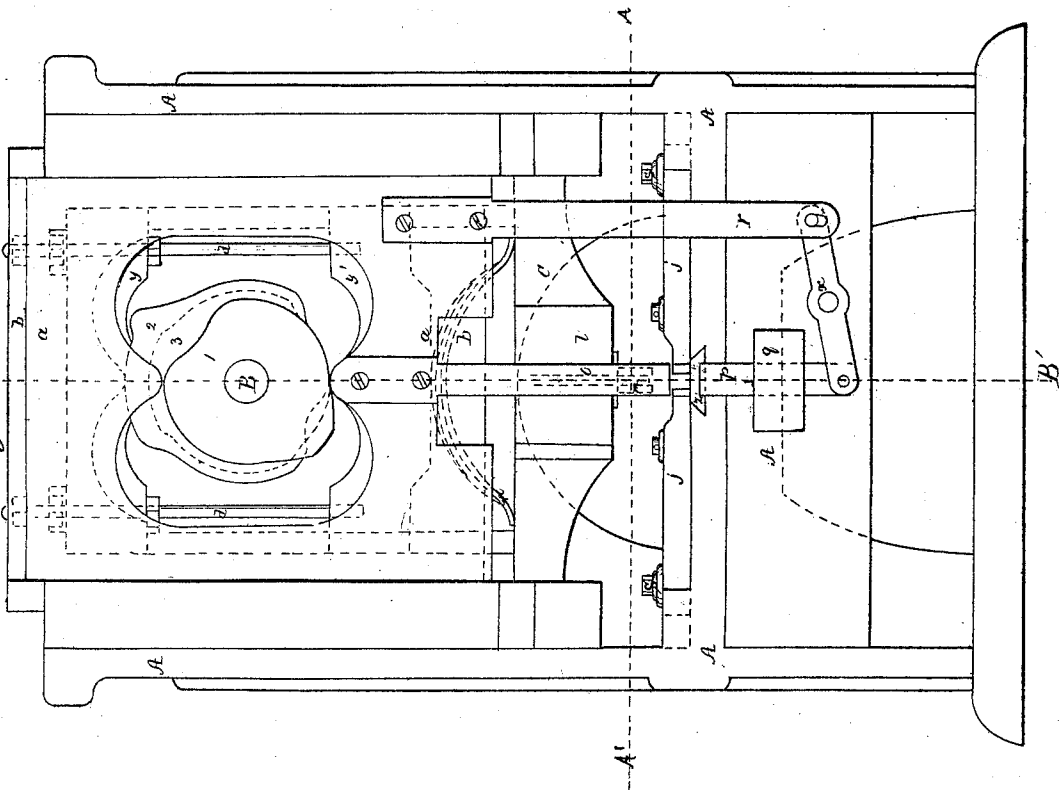
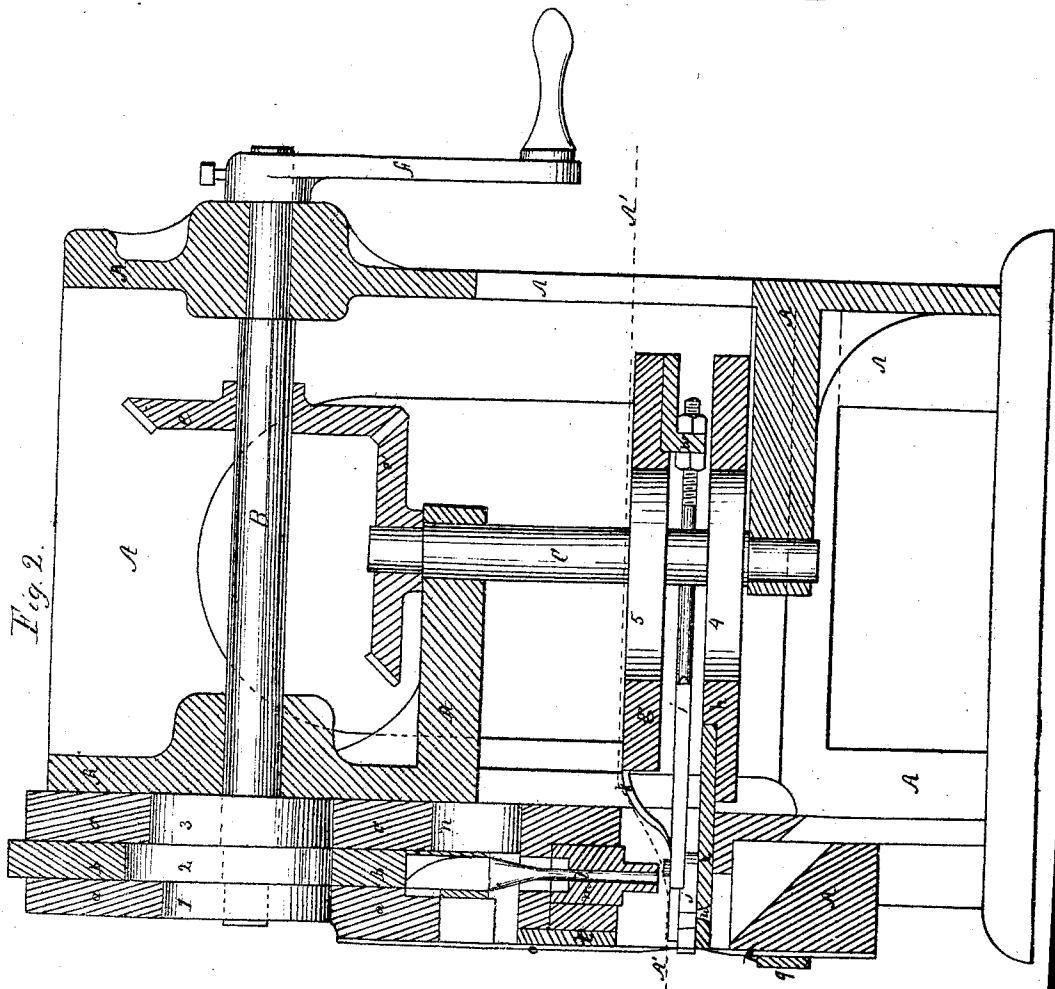
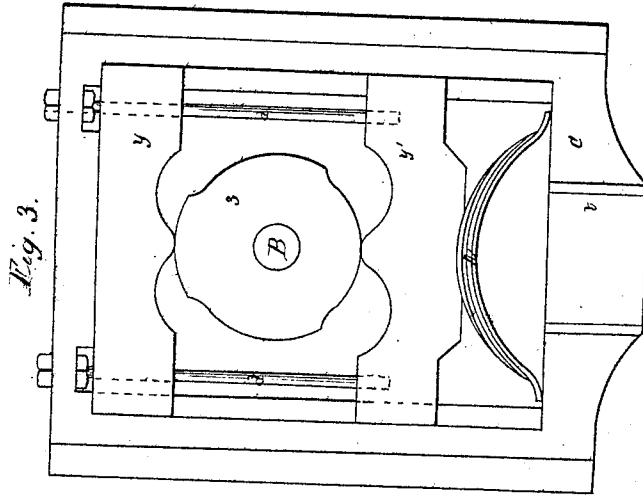


Fig. 1



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# UNITED STATES PATENT OFFICE.

R. H. COLE, OF ST. LOUIS, MISSOURI.

## NUT-MACHINE.

Specification of Letters Patent No. 20,145, dated May 4, 1858.

To all whom it may concern:

Be it known that I, RICHARD H. COLE, of the city of St. Louis and State of Missouri, have invented a new and useful Improvement in Nut-Machines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawing, making part of this specification, in which—

Figure 1 is a front elevation; Fig. 2, a vertical section through B' B'; Fig. 4, a horizontal section through A' A'. Fig. 3 is a part of the machine to be hereinafter explained.

The object of my invention is to make a metallic nut—that is, finish it complete—by pressing the center of the nut blank into the sides of the nut with one punch, instead of two, as in now done by the machines already patented to me for a similar purpose. And this object, I propose to accomplish by first confining the sides of the nut blank on a blank surface, and by then driving the said punch through the said nut blank to within about one-sixteenth of an inch, and by then causing the said punch to rest, until the said blank surface has been withdrawn and its place supplied by a die, having a hole in it, and by then causing the said punch again to advance through the said die and thus finish the hole.

To enable others to make and use my invention I will proceed to describe its construction and operation.

Similar letters of reference represent corresponding parts of the different figures in the accompanying drawing.

A A, &c., is the frame of the machine.

B is the driving shaft, and on it the cams 1, 2, 3, are fixed.

*a b c* are slides which are operated by the cams aforesaid. The cam 1 operates the slide *a* and the cam 2, the slide *b*, and the cam 3 the slide *c*. The slide *a* is designed to work the two knives *o* and *p*, the knife *o* being fixed on the said slide is worked directly by it. But the knife *p* is worked by means of the rod *r* which is secured to the slide *a* and connected to the lever H, which is connected to the knife, whereby it is operated. In the slide *b* the punch *l* is fixed, and in the slide *c* the pressing swage *m* is secured through which the punch *l* is made to work, as shown, Fig. 2.

C is a vertical shaft which receives its motion through the agency of the two cog

wheels *e e'*. On the lower end of this shaft two cams are placed, marked 4 and 5. Each of these cams operates a horizontal slide. The cam 4 acts on the slide *h* and the cam 5 on the slide *g*. To the slide *g* the two vibrating jaws *j j* are connected through the medium of the connecting rods *i i*. And by the operation of the cam 5 these jaws are made to open and shut, so as to receive the nut blank when cut off from the bar; and to discharge the nut, when finished. The connecting rods are connected to the slide by means of the lug *w* as shown.

*h h* are springs fixed on the slide *g* so as to bear on the connecting rods *i i* for the purpose of keeping the jaws down on the bed plate upon which they are designed to work.

To the slide *h* the die *z* is fixed. This die consists of a long parallel piece of steel, which works in a dovetail groove, cut into the bed plate upon which the jaws *j j* work and is so fitted as to bring the top of the said die flush with the top of the bed plate, as shown at *z*, Fig. 1. This die has a hole in one end and it is worked back and forth by the cam 4 so that at one time the hole *u* is directly under the punch *l* and at another time the blank part of the said die is under the said punch, as will be more fully explained herein.

The slide *c* is made as shown at Fig. 3; that is, with adjusting pieces fixed in it as shown at *y y'*. These adjusting pieces are regulated by the screw nuts fixed on the two rods *d d*. It will be remembered that the swage *m* is fixed in the slide *c* and it will be seen that the cross piece *y'* takes its bearing against the spring *n* so that the slide is pressed forward by the action of the cam against this spring—as the cross piece *y'* is not secured to the rods *d d* the said rods being merely let into the said cross-piece to keep them in their places. The object then, of this adjusting arrangement in the slide *c* is to “load” the spring *n* so as to make it more or less yielding as the case may require, which may be done by screwing the nuts up or down on the rods *d d*. The swage *m* therefore is pressed forward by a yielding force, so that the nut can increase in thickness, while the pressure of the swage is upon it, which is necessary, because as the sides of the nut blank are confined between the jaws *j j* while the punch *l* drives the center into the sides of the nut it is evident that,

as the nut cannot increase in diameter it must increase in thickness, which it does, but which it could not do if the swage *m* was pressed forward by an unyielding force.

5 Suppose the machine to be in operation and in the position shown in the drawing, and suppose the end of a bar of iron to be introduced between the jaws *j j*. The slide  
10 *a* in advancing will cause the knives *o* and *p* to advance the one from each side at the same time and sever the nut blank from the end of the bar. This being done the slide *g*  
15 will commence to recede by the action of the cam *5* which will close the jaws, and carry the nut blank directly under the punch in the position shown in red at *v* Fig. 4. This  
20 being done the slide *c* commences to advance and press the swage *m* hard on the nut blank. And as soon as this action is complete the punch *l* commences to advance and  
25 drives the center of the nut blank into the sides of the nut as before described. The operation thus far has been performed on the nut blank, while it lies on a blank surface, that is, on the blank part of the die *z*,  
30 so that the punch *l* could not pass entirely through the blank. The cam *2* therefore is so constructed as to first drive the punch through the blank; all but about one sixteenth of an inch when the motion of the punch stops, until the cam *4* has drawn the die *z* back, so as to bring the hole *u* in the die directly under the center of the punch,

which is now made to advance again, by the further action of the cam, which finishes the  
35 hole into the nut by displacing the remaining wad which will be about one sixteenth of an inch thick, and in diameter equal to the size of the hole. After the hole has thus  
40 been made into the blank there will be a bur on the under side of it which will be removed by the edges of the die when the jaws carry the nut forward to discharge it.

Patents have before been issued to me for a machine for making nuts, by pressing the  
45 center of the blank into the sides of the nut, but this machine has four punches, or rather two punches and two swages, and is very expensive. The object therefore of my present  
50 invention, as has been before stated, is to make the nut as described with one punch and this object is accomplished by the use of the traversing die *z*, which thus becomes the essential element in this invention.

What I claim therefore and desire to secure by Letters Patent is— 55

The use of a traversing die whereby the nut blank is first pressed and prepared on the blank surface of the said die, and afterward punched and finished over a hole in  
60 the said die substantially in the manner described.

R. H. COLE.

Witnesses:

AMOS BROADNAX,  
CHAS. M. O'HARA.