H. C. GRAHAM.

APPARATUS FOR MAKING NUT BLANKS.

APPLICATION FILED NOV. 30, 1903.

912,669.

Patented Feb. 16, 1909.

2 SHEETS—SHEET 1.

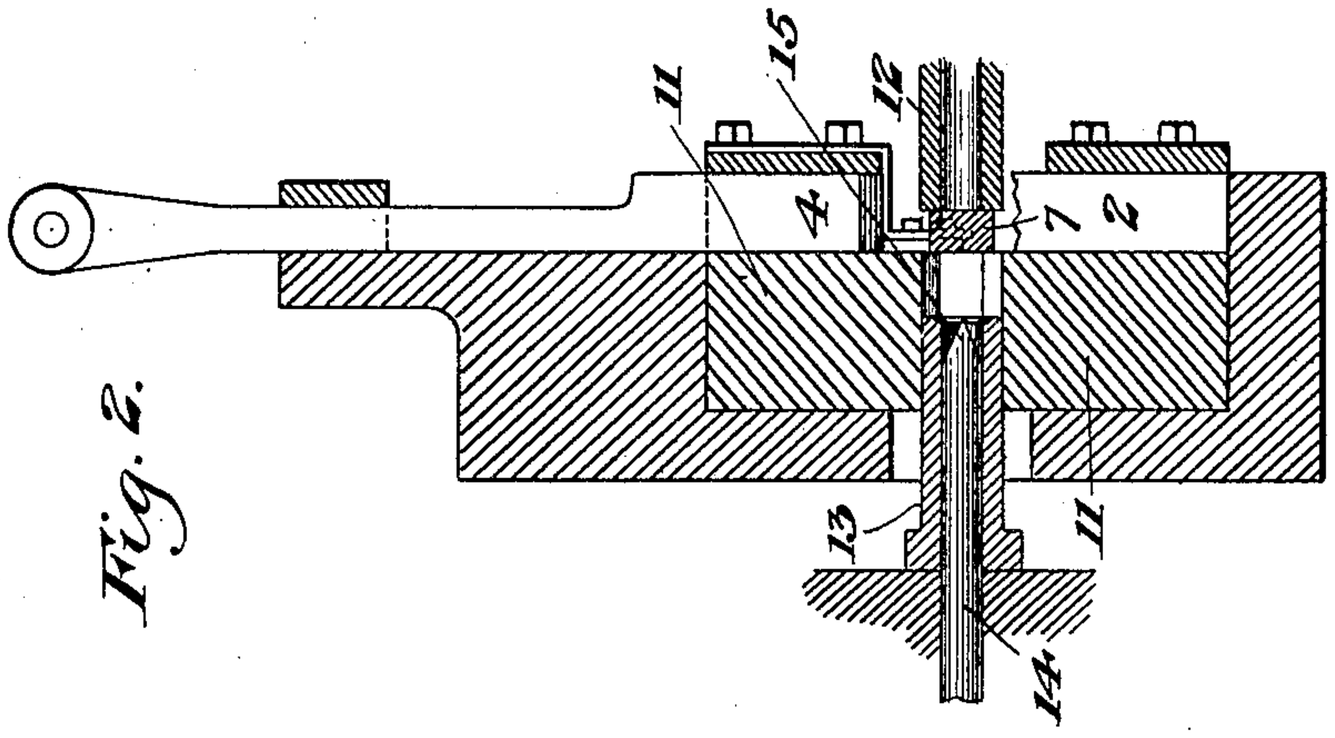

Fig. 2.

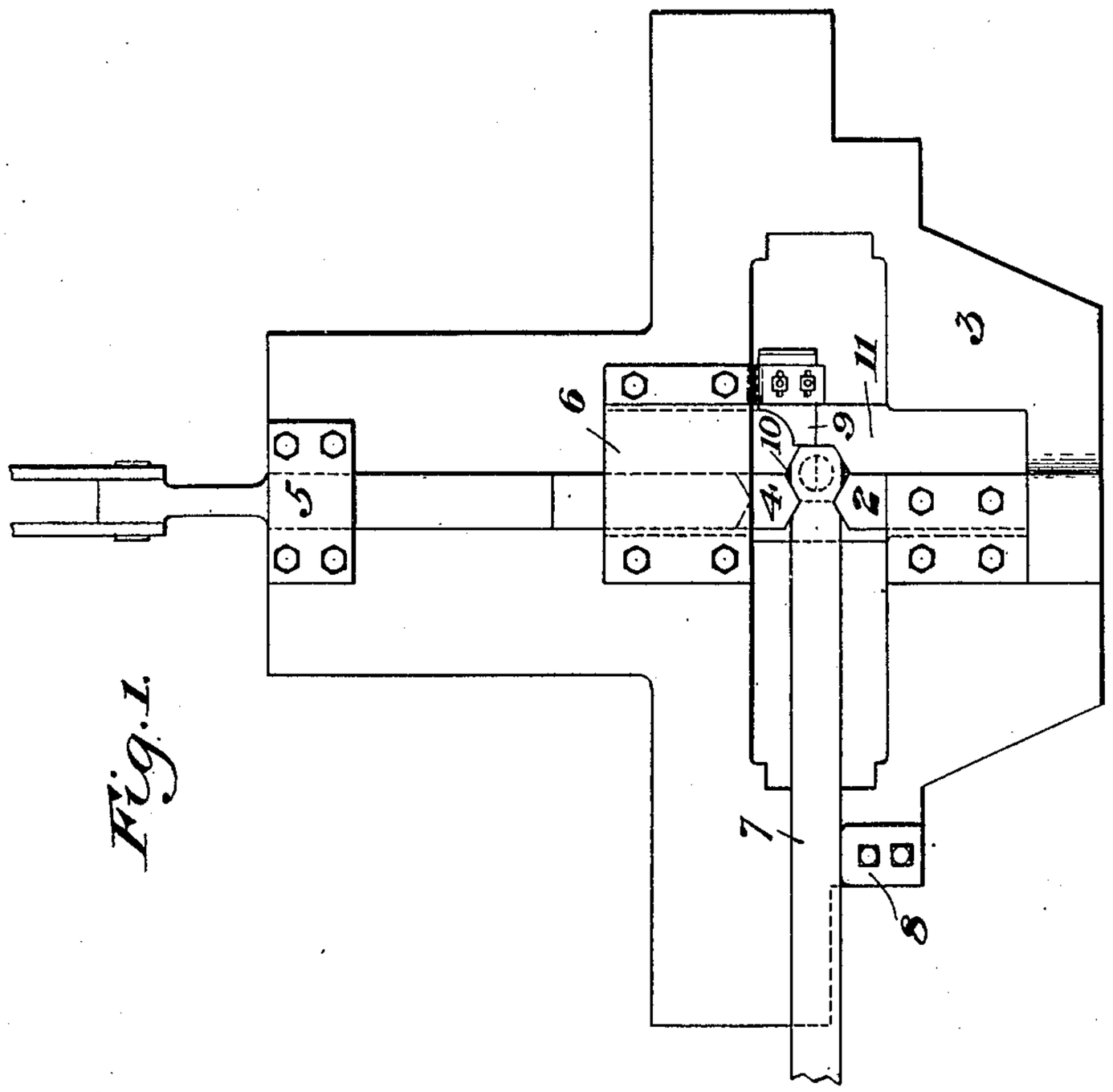

Fig. 1.

WITNESSES

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2 SHEETS—SHEET 2.

Fig. 4.

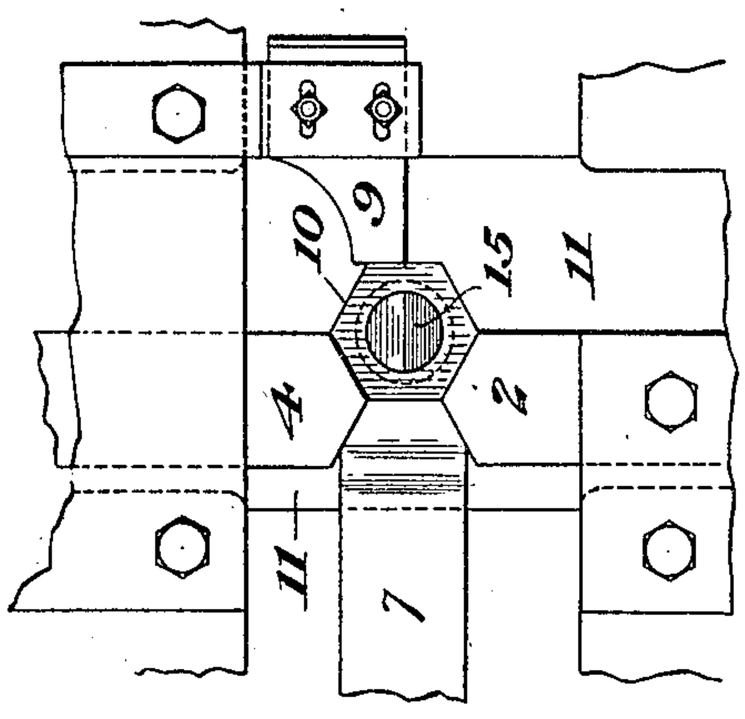
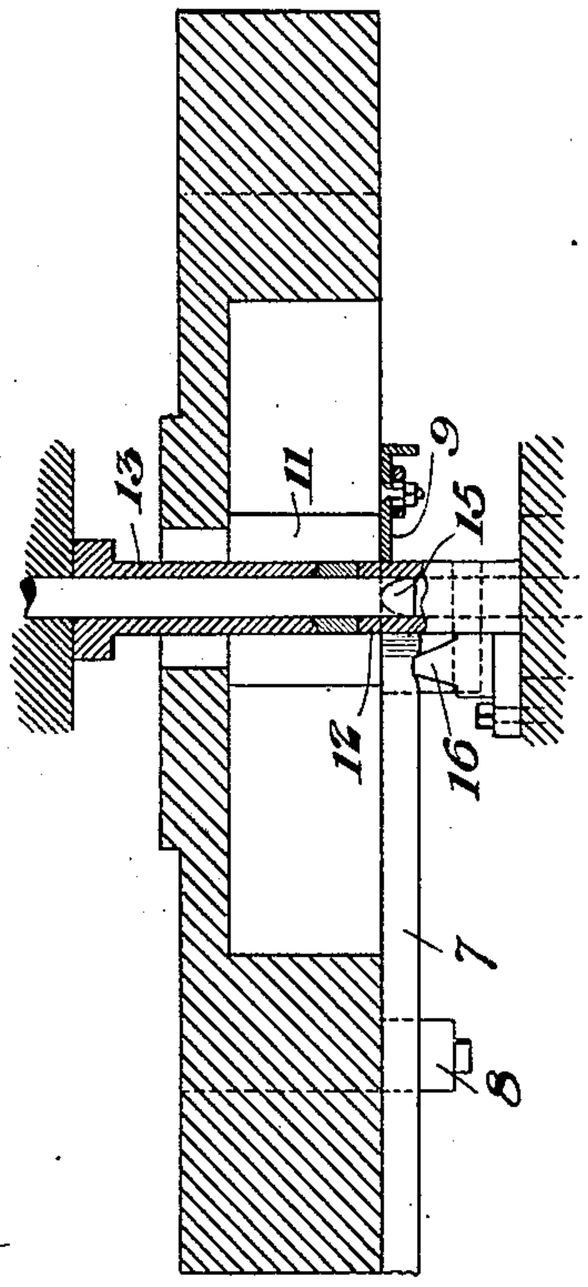


Fig. 3.



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UNITED STATES PATENT OFFICE.

HARRY C. GRAHAM, OF CRAFTON, PENNSYLVANIA.

APPARATUS FOR MAKING NUT-BLANKS.

No. 912,669. Specification of Letters Patent. Patented Feb. 16, 1909.

Application filed November 30, 1903. Serial No. 183,096.

To all whom it may concern:

Be it known that I, HARRY C. GRAHAM, of Crafton, Allegheny county, Pennsylvania, have invented a new and useful Improvement in Apparatus for Making Nut-Blanks, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a front elevation showing the box portion of a nut machine constructed in accordance with my invention; Fig. 2 is a central vertical section of the same; Fig. 3 is a central horizontal section and Fig. 4 is an enlarged front elevation showing the die portion of the apparatus.

My invention relates to the forming of nut blanks and is designed to provide a rapid and effective system for producing such blanks which shall reduce the amount of scrap and give a large output.

In the drawings, 2 represents a lower stationary nicking or cutting blade having an angular upper end. This stationary cutter is secured to the general frame 3 of the machine and coacts with an upper reciprocating nicking or cutting blade 4 which moves within the guides 5 and 6.

7 represents the blank bar from which the blanks are cut, this bar resting upon a support 8 and being fed forward against an adjustable gage 9 at the back side of the nicking blades.

In starting the operation, the blank bar is fed forwardly against the stop 9 and the upper nicking blade is depressed until the parts assume the position shown in Fig. 1. It will be noted that in the form shown the line of movement of the reciprocating blade 4 is parallel with the outer flat face of the hexagonal nut and after the nicking operation the blank is still connected with the blank bar along the dotted line of Fig. 1. At this stage in the operation the other five sides of the nut have been formed roughly to their final shape and the blank is in front of the die cavity 10 of a die 11 arranged in the rear of the knives. The reciprocating hollow cutting plunger 12 is now forced forwardly, and as it moves across the blank bar it severs the blank therefrom along the dotted line and forces the severed blank into the die cavity. The rear wall of this cavity is formed by the front end of a reciprocating ejector 13 which is hollow and contains the punch 14. The front end 15 of this punch is oppositely cut to form a projecting central knife edge which will act to expand the metal of the blank sidewise as the blank is forced into the die. The plunger 12 upsets the blank in the die and shapes it to correspond with the cavity, and the punch 14 is then moved forwardly to cut out the center and force the cut plug portion therefrom into the hollow plunger 12; and the ejector 13 is then actuated to force the blank forwardly from the die cavity.

The blank bar is preferably narrower than the final blank, and to prevent excessive thickening of the bar during the nicking operation I may thin the bar at the end portion by means of a swaging die 16 secured to the carrier for the hollow plunger 12. As the hollow plunger moves forwardly and cuts off the end blank, the next portion of the bar is swaged down and thinned slightly by the die 16. This will counteract any thickening of the blank bar during the nicking operation and may or may not be necessary according to the particular arrangement of the nicking dies.

I have shown my invention as applied to a machine of the general type disclosed in Patent No. 155,638, granted to Charles and McKain, on October 6, 1874.

The advantages of my invention result from the preliminary nicking operation by means of a stationary and movable die, this nicking operation leaving the blank still attached to the blank bar, from which it is severed at the next step. It further results from the nicking or partial severing of one blank at a time, this allowing the metal to flow in the proper manner whereas if it is attempted to nick several blanks at the same time, the operation cannot be carried out since the metal will not flow in the proper manner. The use of a stationary and a movable die has also been found desirable for the proper flow of the metal.

The apparatus is simple, may be rapidly driven to give a large output, and will give blanks of uniform shape and quality.

Many variations may be made in the form and arrangement of the parts without departing from my invention.

I claim:—

An apparatus for forming nut blanks having opposed nicking dies, a gage stop disposed for engagement by the free end of the stock, a carrier working transverse to the path of the nicking dies, blank-severing means mounted upon the carrier, and a swage mounted upon the carrier and disposed for engagement with the stock in rear of the blank to reduce the thickness of the stock preparatory to a nicking operation.

In testimony whereof I have hereunto set my hand.

HARRY C. GRAHAM.

Witnesses:

JOHN MILLER,

H. M. CORWIN.