2 Sheets—Sheet 1.

S. W. WOOD.

Making Metal Nuts.

No. 20,118. Patented April 27, 1858.

Fig. 2

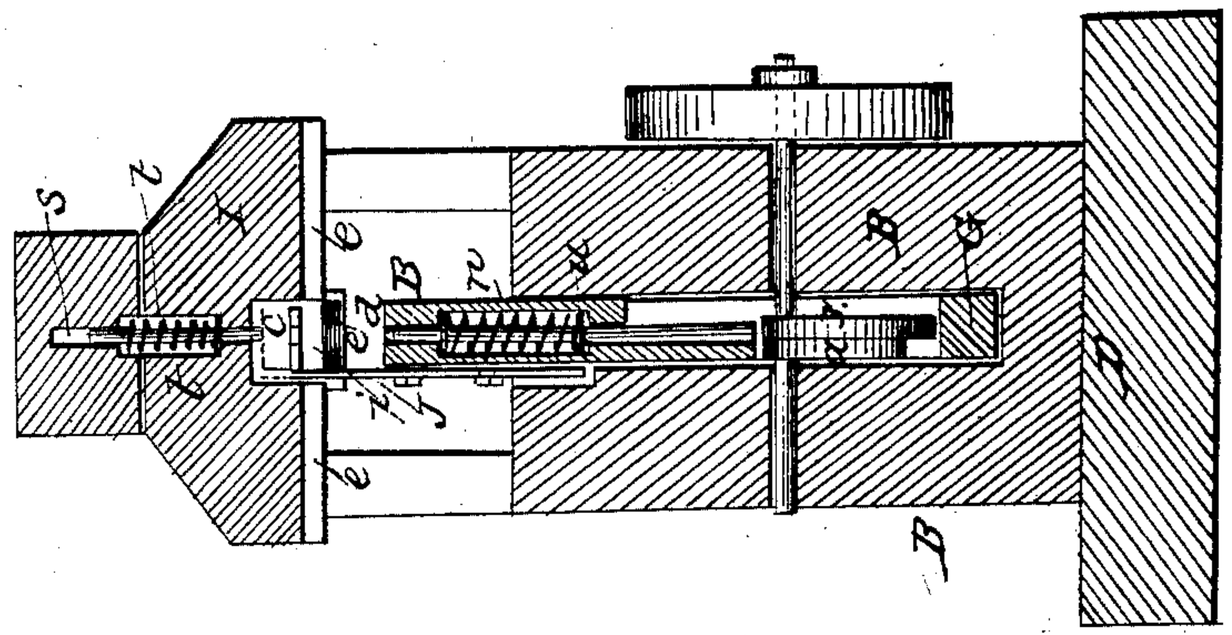

Fig. 1

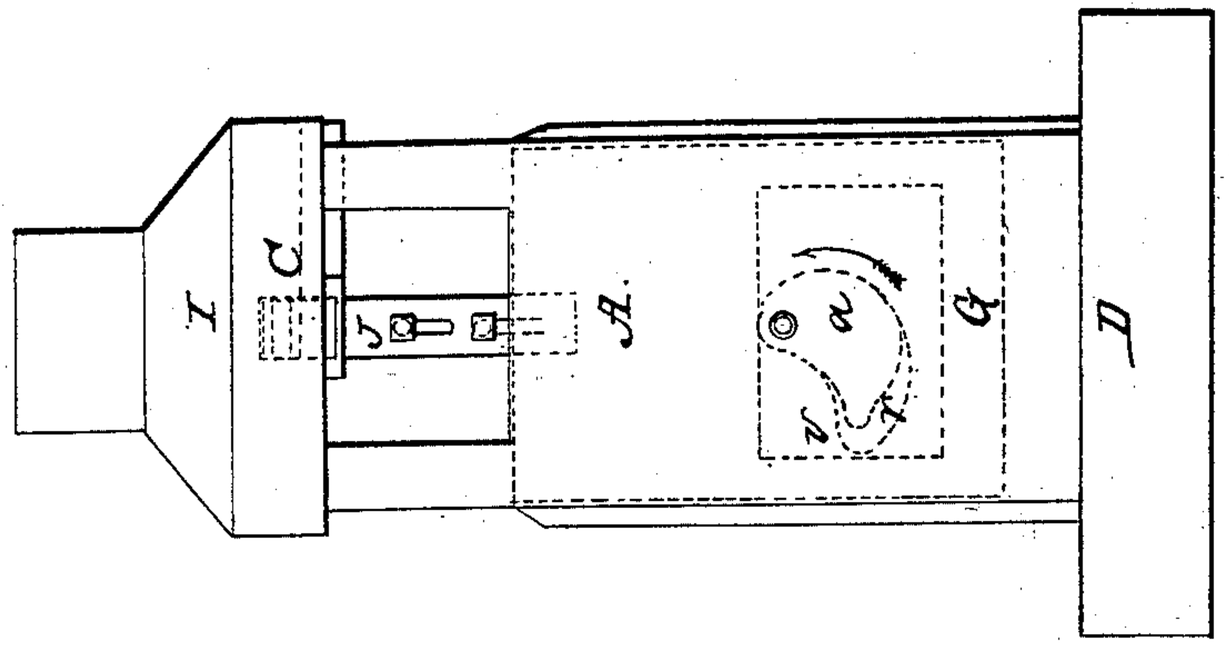

Fig. 5

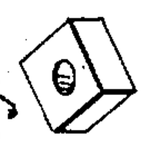

Fig. 3

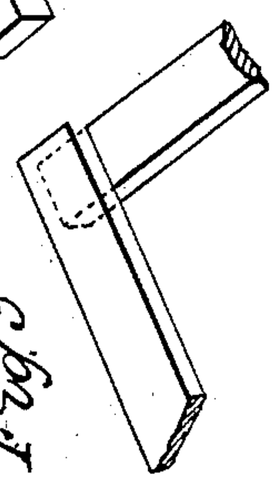

Fig. 6

Fig. 4

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Fig. 6.

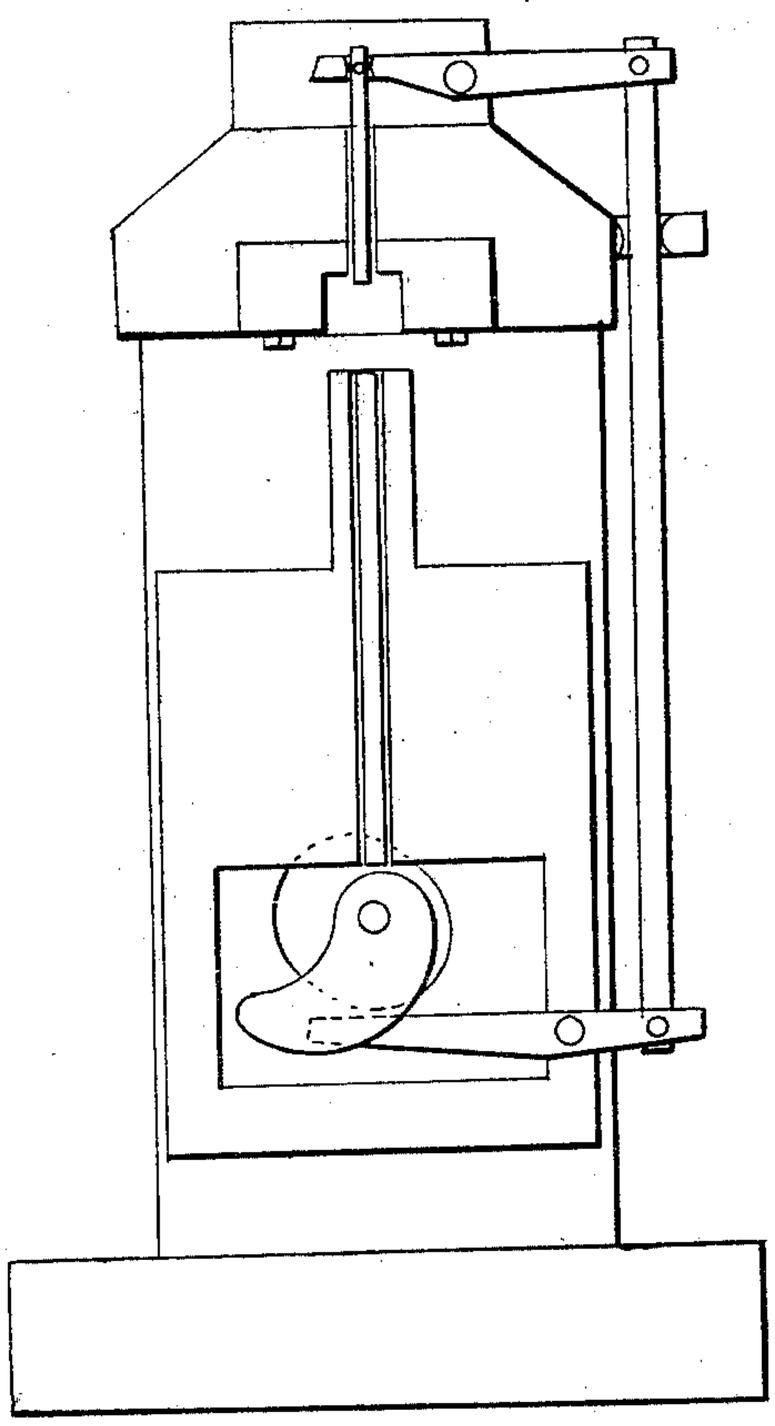
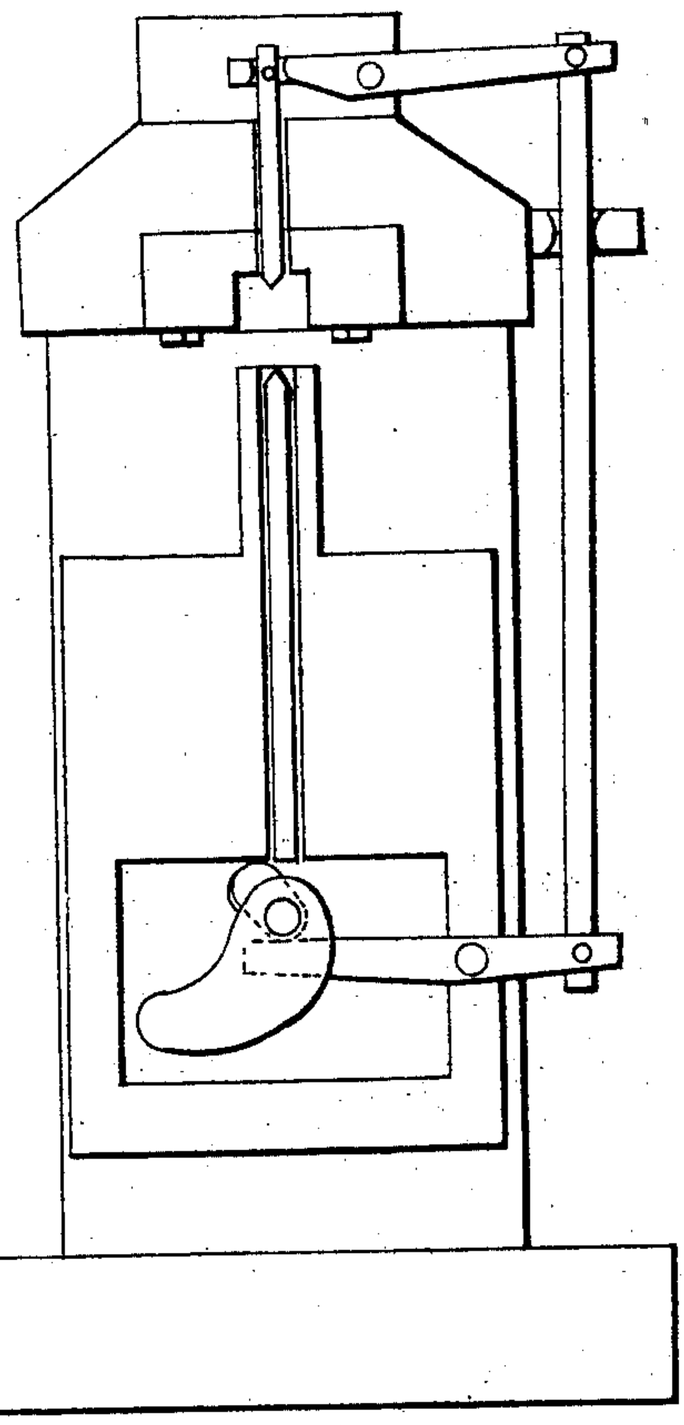


Fig. 7.



UNITED STATES PATENT OFFICE.

S. W. WOOD, OF WASHINGTON, DISTRICT OF COLUMBIA.

MAKING METALLIC NUTS.

Specification of Letters Patent No. 20,118, dated April 27, 1858.

To all whom it may concern:

Be it known that I, S. W. Wood, of the city of Washington and District of Columbia, have invented certain new and useful Improvements in Mechanism for Making Wrought Nuts, of which the following is a full, clear, and exact description, reference being had to the annexed drawings, making part of this specification.

The nature of my invention consists first of a solid female die in which the nuts are formed, with a sliding hook or its equivalent for discharging the finished nut from said die. Secondly, a receding punch which forms (while its opposite or corresponding punch is perforating, in part, the orifice in the metal) part of the seat of the solid, female die, which recedes on approach of the corresponding punch, allowing said advancing punch to pass entirely through the metal to complete the orifice with but slight loss of material.

To enable others skilled in the art to make and use my improved mechanism for making wrought nuts, I will proceed to a description of the same in detail.

Figure 1— represents a side elevation of a machine complete, the dotted lines in black representing the cams for drawing the male die and punch; the dotted lines in red represent the hooked end of the slide for discharging the finished nut from the female die. Fig. 2— is a vertical cross section of the same. Fig. 3— represents two bars of metal with their ends crossed at right angles, the manner in which they are introduced to the die box to form a square nut, which is usually denominated "stub and twist." Fig. 4— represents three bars crossed so as to form a hexagonal nut. Fig. 5— is a finished nut from the bars Fig. 3. Fig. 6— is a finished nut from the bars Fig. 4. Figs. 7 and 8— are modified forms of mechanism for operating one of the punches hereinafter referred to.

A, in the accompanying drawings represents the frame or body of the machine, resting upon and secured to a bed (D). Upon the columns (*b*) of this frame and attached thereto is a cap (I) to the lower side of which, and directly over the die (B) is arranged the solid female die (*c*). This female die or die-box may be inserted into and secured to the lower face of the cap (I) by nuts and bolts, or be formed in the cap (I) as represented in model and drawings.

Directly beneath the female die (*c*), and supported in the frame (A) is placed the male die (B) for severing the metal from the bar and forming the nut; this male die (B) is fitted to the female die (*c*) and is operated by a cam (*a*) and yoke (B′) or in any other convenient manner. To withdraw the punch (*d*) from the nut and return said punch in position in the male die (B), as seen in Fig. 2— a spiral spring (*n*) may be employed and which is retained in place by a collar (*u*) secured to said punch (*d*). The receding punch (*s*) may also be provided with a spiral spring (*t*) which returns it in place after the nut is completed.

The lower side of the punch (*s*) extends downward, through the hook (J) and flush with its lower face. See Fig. 2. This punch (*s*) retains its position during the time the nut is cut, and being pierced by the punch (*d*), and recedes on the approach of said punch (*d*) either by its force, the point of punch (*d*) coming in contact with its lower end, or may be operated by a positive motion as shown in the modification. Figs. 7–8. If preferred, this punch (*s*) may advance part way through the nut, and recede on the approach of the lower punch (*d*) which may pass through the nut completing the orifice, or the upper punch (*s*) may pass through the nut and the lower punch (*d*) recede into its die.

The bars of heated metal are introduced to the dies (*c* and B) through ways or guides (*e*) and the piece or pieces for the nut severed by the male die (B) in the usual manner, the edge of the female die (*c*) serving as one edge of the shear.

To withdraw the nut from the female die (*c*), a slotted, sliding hook (J) is arranged, in this instance, to one side of the male die (B), which, when the said die (B) advances, raises the hook (J) to its highest position, as shown in red lines Fig. 2; the hooked part, through which the upper punch (*s*) passes, forming the seat of the female die (*c*), and the shank forming one of its sides. After the nut has been pierced and formed, the male die (B) recedes drawing the hooked slide (J) to the face of the female die (*c*)

which discharges the finished nut and remains in position for a repetition of its offices.

The shank of the hook (J) which forms one side of the female die (*c*), may be dispensed with and the seat of said die be arranged so as to rise and fall, to discharge the finished nut. As this would be but a modification of my present arrangement, I do not deem a detailed description and representation necessary here.

Having thus fully described my improved mechanism for making wrought nuts, what I claim therein as new and desire to secure by Letters Patent is—

A solid female die with a sliding hook for discharging the finished nuts—substantially as herein set forth.

S. W. WOOD.

Witnesses:

HYATT SINCLAIR,

STONER C. S. SINCLAIR.