

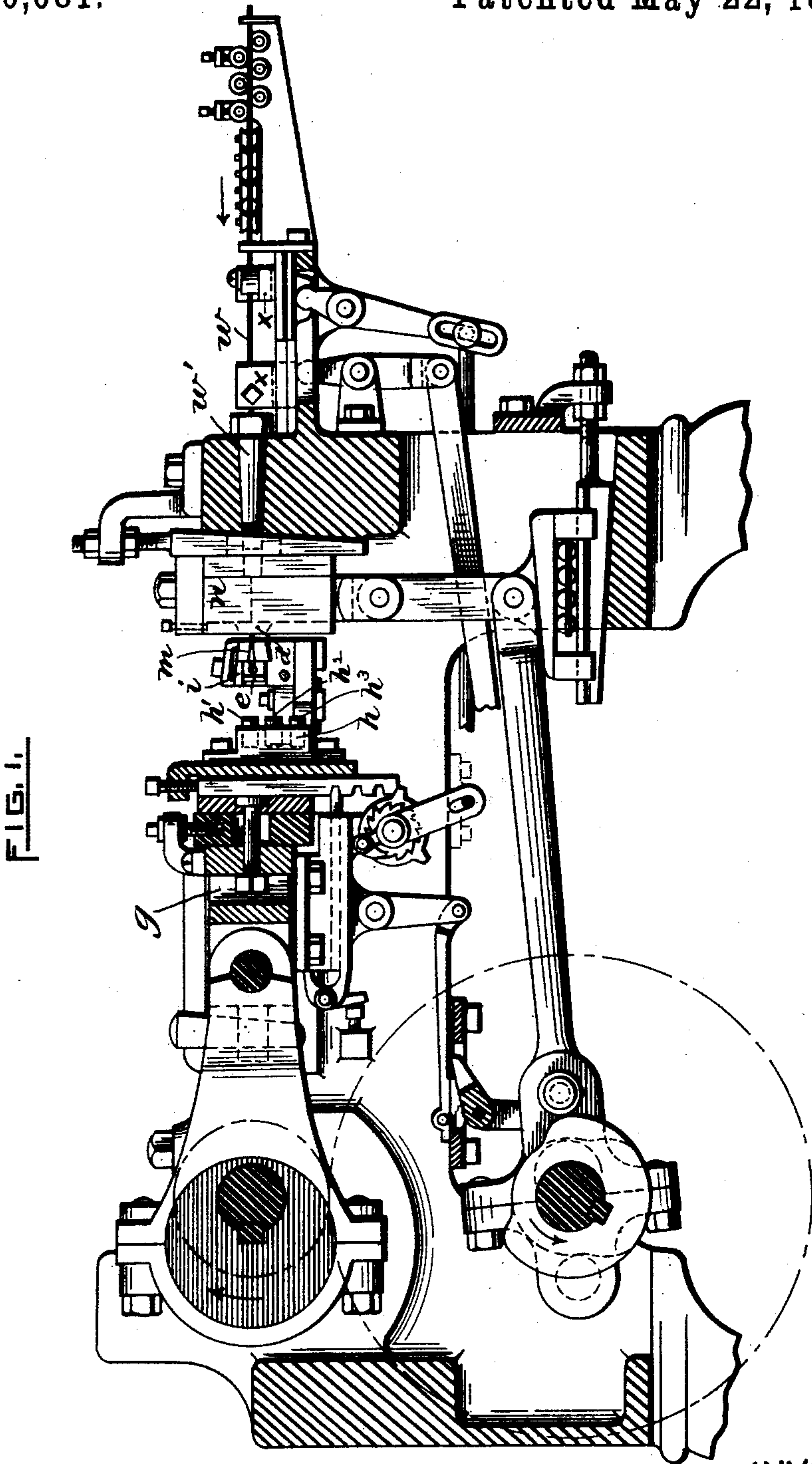
(No Model.)

2 Sheets—Sheet 1.

C. D. ROGERS.  
MACHINE FOR MAKING SCREW BLANKS.

No. 520,081.

Patented May 22, 1894.



WITNESSES.

Charles Harrigan.  
Ida M. Warren.

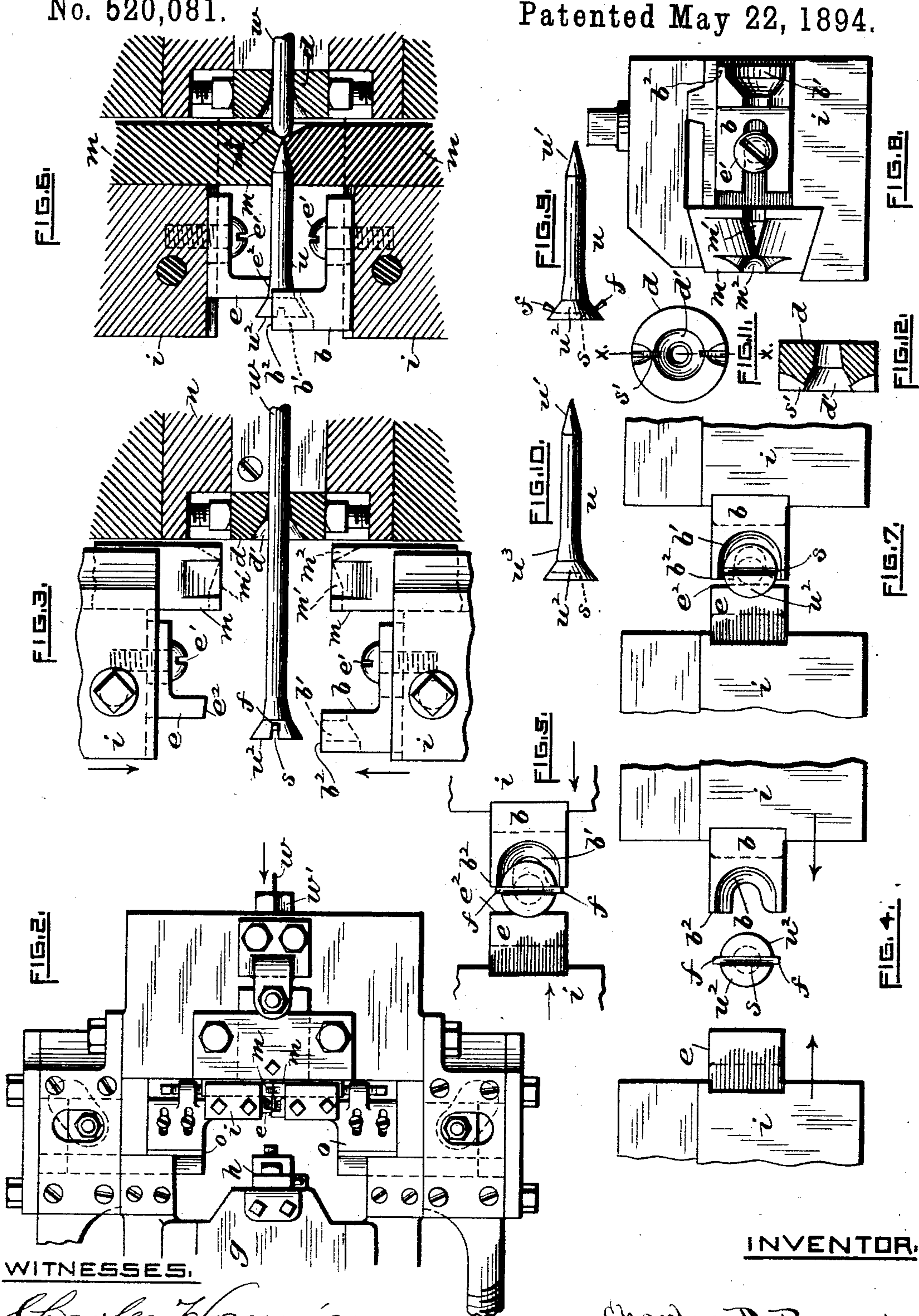
INVENTOR.

Charles D. Rogers.  
By Remington & Henthorn  
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*Atty.*



# UNITED STATES PATENT OFFICE.

CHARLES D. ROGERS, OF PROVIDENCE, RHODE ISLAND.

## MACHINE FOR MAKING SCREW-BLANKS.

SPECIFICATION forming part of Letters Patent No. 520,081, dated May 22, 1894.

Application filed February 15, 1892. Serial No. 421,575. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES D. ROGERS, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Machines for Making Screw-Blanks; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The invention forming the subject of my present application for patent relates to machines for making wood-screw blanks, but more especially to such machines as are adapted to automatically produce at one operation from a continuous piece of wire cold-forged or swaged screw-blanks; the blanks thus produced having suitable points and heads, the latter having swaged slots or nicks formed therein to receive a driver-blade.

In United States Patent No. 386,091, granted to me July 10, 1888, I have shown and described a machine of the class just referred to; and in a later patent, No. 393,519, I have shown and described a novel die arranged to simultaneously sever a headed blank from the standing wire and form a point thereon. In these patents the swaged screw-driver slots as drawn are closed, that is they do not extend entirely across the heads; it is obvious, however, that by substituting suitably constructed dies and hammers blanks may be produced having open nicks.

In making swaged wood-screw blanks having open slots forged therein there is frequently produced at the slot-ends a slight waste of metal, and if the die and hammer work imperfectly such waste sometimes takes the form of adhering burrs or fins which must be removed by a subsequent operation.

The object I seek to attain is to provide machines for making swaged screw-blanks with a device arranged to remove adhering slot-burrs or fins from the blanks before the latter are dropped from the machine; that is to say, such removal of the fins is effected simultaneously with the operation of forming the blanks.

To that end my invention consists, essentially, in the combination with suitably operating heading and cutting-off dies, of an intermittingly movable clearer arranged to detach said fins after the slotted head has been forced from the die-cavity, as will be hereinafter more fully set forth and claimed.

In the accompanying two sheets of drawings, Figure 1, Sheet 1, is a longitudinal sectional view of a machine for making swaged screw-blanks provided with my improvements. Figure 2, Sheet 2, is a partial plan view of the machine. Figure 3 is an enlarged horizontal sectional plan view of that portion of the machine employing the improvement, showing a headed piece of wire preparatory to being pointed and severed. Figure 4 is a corresponding end view of the parts. Figure 5 is an end view, showing the clearer in the act of removing the slot-burr from the blank. Figure 6 is a similar sectional view to Figure 3, showing the cutting-off dies and clearer at the instant of completing their work. Figure 7 is a corresponding end view. Figure 8 is a side elevation of the clearer and the corresponding half of the cutting-off die, mounted in a holder. Figure 9 is a side elevation of a swaged screw-blank, showing adhering slot-burrs or fins. Figure 10 is a similar view, with the burrs removed. Figure 11 is an end view of the heading-die; and Figure 12 is a transverse sectional view of it, taken on line  $x x$  of Figure 11.

In the drawings I have indicated one form of swaging machine well adapted to automatically produce wood screw-blanks from a coil or continuous piece of wire  $w$  by cold swaging. The free end of the wire or stock is advanced at intervals by any suitable feeding device through a guide-tube  $w'$  and through the heading-die  $d$ ; a sufficient amount of wire, at the end of the feeding operation, then projecting beyond the die to completely fill the die-cavity  $d'$  after the metal is upset therein. The heading is effected by an intermittingly operated holder  $h$  (mounted in a reciprocating cross-head  $g$ ) carrying say three hammers  $h^1, h^2, h^3$ ; the face of the latter having a slot-forming tongue arranged to engage a groove  $s'$  formed in the face of the die and communicating with the die-cavity. The hammers work successively upon the metal, thereby producing a screw-blank hav-



ing a head  $u^2$ , an enlarged shank portion  $u^3$  at the base of the head, and a swaged neck  $s$ , as in Fig. 10. Immediately succeeding the formation of the head the feeding mechanism  
 5 acts to force the headed wire from the die and advances it the distance required, after which oppositely located die-carriers  $o$  (Fig. 2) arranged to work transversely of the machine, operate simultaneously to sever the  
 10 blank from the wire. It will be seen that a holder  $i$  is secured to each carrier, the former being arranged to firmly retain the combined pointing and cutting-off die  $m$ . The adjacent ends or working faces of these dies (see  
 15 Figs. 3, 8, &c.) are sharpened and provided with a recess  $m'$  having inclined sides which act to sever the blank from the wire and at the same time form a point  $u'$  thereon; the die may also have a rounded groove  $m^2$   
 20 formed at the end of the recess  $m'$  for the purpose of rounding off the end of the standing wire simultaneously with the blank-cutting operation, see Fig. 6. As the dies return to their normal position the heading-  
 25 hammers next operate to upset the end of the wire to produce another blank, as before described.

Now, it is known that sometimes the action of the slot-swaging mechanism produces outer  
 30 fins or burrs  $f$  at the ends of the slots, see Fig. 9, and in order to remove such waste metal I provide the inner adjacent ends of the holder  $i$  with clearer pieces  $b, e$ , adjustably secured thereto by screws  $e'$ . As drawn these  
 35 pieces have the form of knees and are let into the holders. The face  $e^2$  of the piece  $e$  is adapted to engage the enlarged portion  $u^3$  of the blank and serve as a support or rest therefor. The corresponding face,  $b^2$ , of the other  
 40 piece or clearer  $b$  is cut away or recessed at  $b'$  to freely receive the head portion  $u^2$  of the blank. When thus constructed it will be seen that the recess forms a U-shape in the face of the clearer. The said face is set some-  
 45 what in advance of the face of the corresponding die (see Fig. 3), so that in use it will engage and detach the burrs  $f$  before the blank is fully severed. Fig. 5 shows the clearer pieces moving toward each other to engage  
 50 the blank, the recessed piece  $b$  being in the act of removing the burrs, and Figs. 6 and 7 show the relation of the several parts at the end of the operation; the burrs having been forcibly removed and the blank severed from  
 55 the wire  $w$ . Upon separating the dies  $m$  the

blank  $u$  drops from them completed, as indicated in Fig. 10, ready to be subjected to the action of thread-forming dies.

The mechanism may be so adjusted and  
 60 timed that the clearer will engage the side of the burrs and remove them in a lateral direction while the head of the blank is passing through the clearer, the latter at the same time moving transversely of the blank and  
 65 being nearly at the end of its stroke.

I claim—

1. In a machine for making screw-blanks and swaging driver-slots therein, the combination, with feeding, swaging and cutting-off mechanisms, of an intermittingly operating  
 70 clearer arranged and adapted to remove projecting slot-fins or burrs from the screw-blank before the latter is dropped from the machine, substantially as described.

2. In a machine for making screw-blanks  
 75 and swaging driver-slots therein, the combination, with feeding, swaging and cutting-off mechanisms, of a suitably mounted clearer, or fin-remover, having its working face arranged and adapted to engage and detach  
 80 projecting slot-fins or burrs from said blanks by the movement of the clearer alone or by the joint action of both the blank and clearer and means for intermittingly operating the  
 85 clearer, substantially as described.

3. In a machine for swaging screw-blanks, a heading die and hammers constructed to upset the metal to form a driver-slotted head, oppositely arranged cutting-off dies, inter-  
 90 mittingly operating feeding mechanism, and a clearer moving in unison with the cutting-off dies arranged to remove slot-burrs from the blank while the latter is being severed from the wire or stock, substantially as described.

4. In a machine for swaging screw-blanks,  
 95 the combination, with feeding, swaging and cutting-off mechanisms, of two intermittingly operating clearer pieces, one of which bears against and supports the projecting portion of the headed wire, and the other of which  
 100 has its working face arranged to engage with and detach projecting burrs or fins formed on the said headed portion of the wire, substantially as described.

In testimony whereof I have affixed my sig-  
 105 nature in presence of two witnesses.

CHARLES D. ROGERS.

Witnesses:

GEO. H. REMINGTON,  
 CHARLES HANNIGAN.