(No Model.)

H. K. JONES.

DIE FOR HEADING SCREW BLANKS.

No. 590,577. Patented Sept. 28, 1897.

Fig. 1

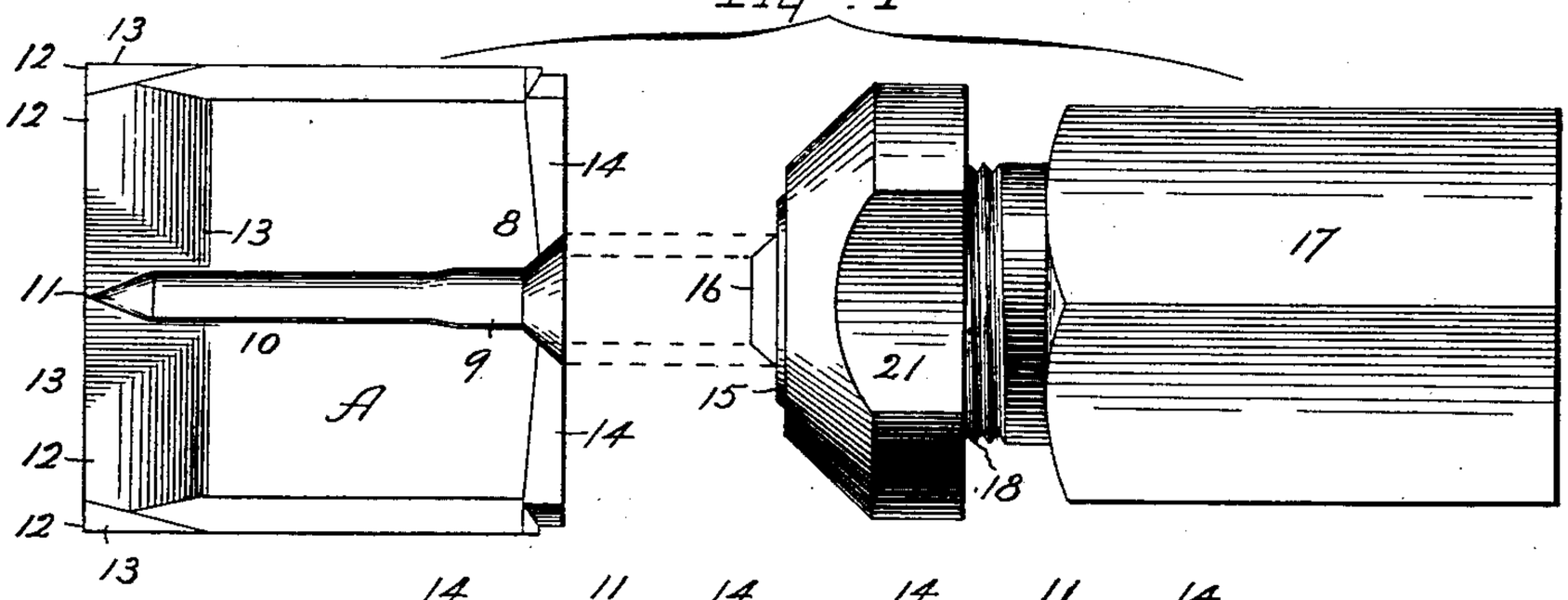


Fig. 2

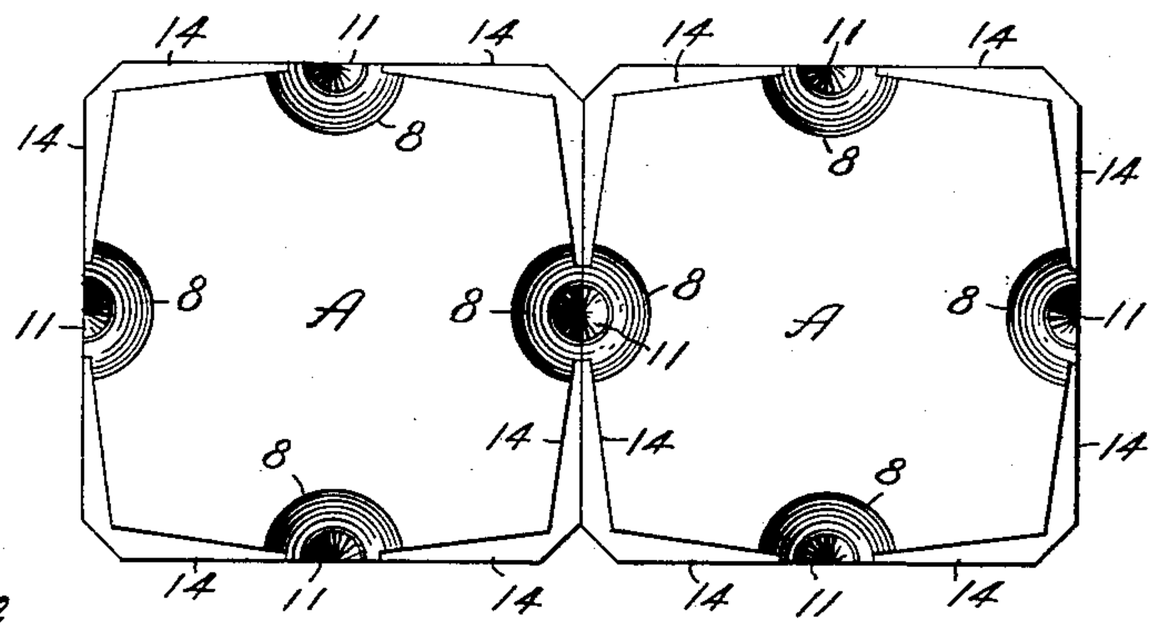


Fig. 3

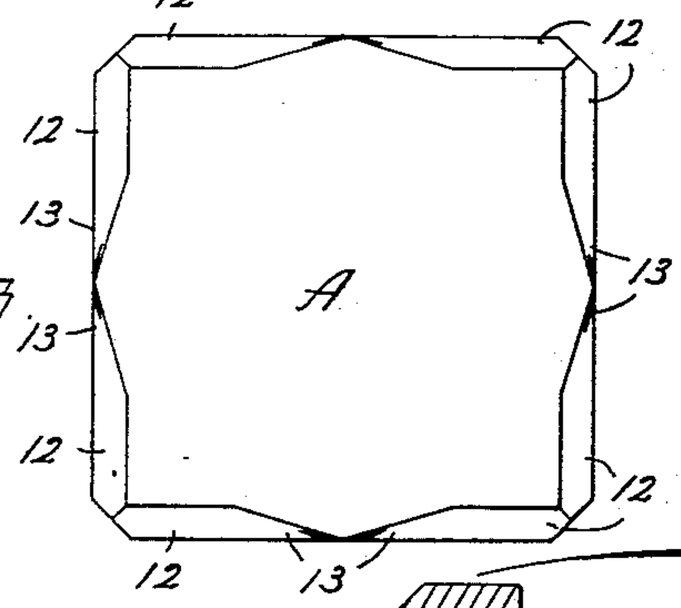


Fig. 4

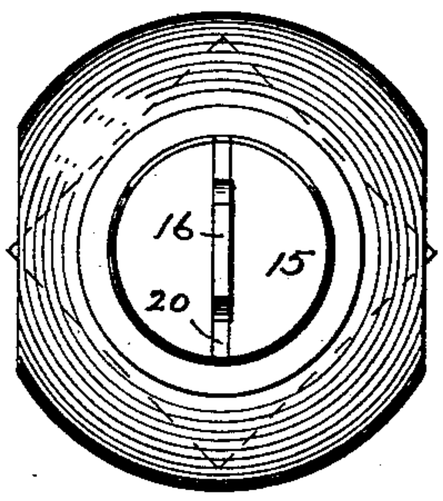


Fig. 5.

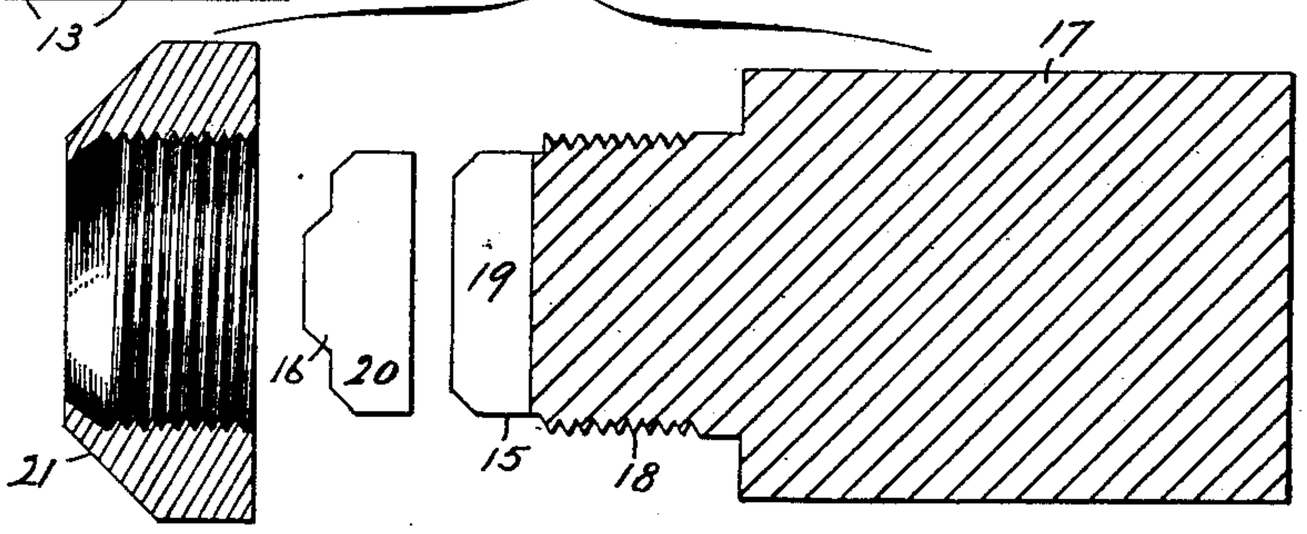


Fig. 6.

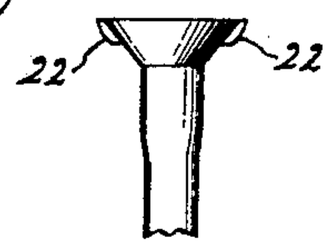
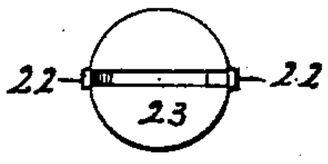


Fig 7



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UNITED STATES PATENT OFFICE.

HORACE K. JONES, OF HARTFORD, CONNECTICUT, ASSIGNOR TO THE RUSSELL & ERWIN MANUFACTURING COMPANY, OF NEW BRITAIN, CONNECTICUT.

DIE FOR HEADING SCREW-BLANKS.

SPECIFICATION forming part of Letters Patent No. 590,577, dated September 23, 1897.

Application filed January 10, 1896. Serial No. 574,973. (No model.)

To all whom it may concern:

Be it known that I, HORACE K. JONES, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Dies for Heading Screw-Blanks, of which the following is a specification.

My invention relates to improvements in dies for heading screw-blanks; and the objects of my improvement are to both cut off the wire, swage the point, and form the head at a single grip of the heading-dies, to facilitate the swaging of the slot in the head, and to cheaply construct and hold the slot-swaging blade.

In the accompanying drawings, Figure 1 is a side elevation of one die-block of the heading-die, together with the heading-punch belonging thereto. Fig. 2 is a front end view of two die-blocks properly placed together to form the heading-die. Fig. 3 is a rear end view of one of said blocks. Fig. 4 is an end view of the heading-punch having the slot-forming blade. Fig. 5 is a sectional view of the same, the parts being separated from each other and the slot-forming blade being shown in side elevation. Fig. 6 is a side elevation of a part of a headed and slotted blank as formed in my heading-die, and Fig. 7 is a plan view of the same.

A A designate the die-blocks, which for convenience are formed with four equal sides having a proper die-cavity in each, the same in this respect as ordinary dies. In my die-blocks, 8 designates the head-forming cavity; 9, the shank-forming cavity; 10, the body-forming cavity, and 11 the point-forming cavity. The shank-forming cavity, as shown, is of slightly-greater diameter than the body-forming cavity, but they may be both of the same size if desired. That end of the die-block having the point-forming cavity 11 is straight, with a shear-like edge, and the extreme point of the point-forming cavity terminates in the plane of said end. The sides of the die-blocks on the end having the point-forming cavity are cut away, as at 12, and gradually slanted up to the point-forming cavity, as at 13, to form a chisel-like or cutting edge for the whole length of said point-forming cavity and for a little distance on the adjacent portion of the body-forming cavity, whereby this end of the die is formed into a cutting-off and point-swaging die. This cutting-off and point-swaging die is integral or rigid with the heading-die and forms a part of the same, whereby when two die-blocks are forced together by any suitable mechanism they cut off and swage the point and retain their hold on the blank until after the heading punch or punches have acted to form the head, so that only one grip of the die is necessary in order to cut off the wire, swage the point, and form the head. My dies thus far described may be used with the usual head-forming cavity having a solid wall on all sides, but I prefer to groove the die through the head-forming cavity in connection with the slot-forming blade of the heading-punch to facilitate swaging the slot in the head. I therefore recess the die-blocks, as at 14, so that when two blocks are placed together, as in Fig. 2, grooves are formed by said recesses in the die on opposite sides of and opening into the head-forming cavity.

The heading-punch 15 is provided with a slot-forming blade 16, which blade and punch may be formed in any ordinary manner; but for cheapness of construction and for efficiency of operation I prefer to form said blade of plate metal or sheet metal and to insert and hold the same in the punch. The punch-shank 17 is preferably square in cross-section, and the slot-forming blade extends diagonally thereto, whereby when the shank is clamped in a socket of corresponding form in cross-section the slot-forming blade is always accurately located relatively to the grooves in the die. The body of the punch is threaded, as at 18, and the end is slotted, as at 19, Fig. 5. The body 20 of the slot-forming blade 16 is of the same contour as the slot in the punch. (See Fig. 5.) A screw-sleeve 21 is screwed upon the body of the punch to firmly hold the slot-forming blade in place. The length of the slot-forming blade in the direction of the axis of the blank to be headed is the same as the depth of the transverse groove through the heading-die, while the width of said blade

for its whole length corresponds with the diameter of the head-forming cavity in the die—that is to say, the width of said blade at its extreme forward end is the same as the diameter of the head-forming cavity at the bottom of the transverse grooves, and the width of said blade at its junction with the face of the heading-punch is the same as the width of the head-forming cavity at the top or mouth of the heading-die. (See the broken lines in Fig. 1 between the points of the die and punch thus described as being of the same dimensions.)

As in other dies, my heading-punch having the slot-forming blade is designed to give the last blow and follows the action of other heading punch or punches. By any suitable machine it is forced upon the blank in the heading-die. As said blade swages the slot in the head of the blank the surplus metal, or rather part of the metal necessarily displaced by said blade, flows out laterally into the groove through the heading-die and escapes to relieve the blade of undue pressure and forms lateral extensions 22 at each end of the slot 23 in the headed blank. (See Figs. 6 and 7.) The slot is made for substantially the entire width of the head and with the wall at its closed ends of the same slant or contour as the head in side view. In other words, the slot-forming blade displaces just metal enough to enable the slot to be swaged and does not displace any more than is necessary so to do, thereby relieving the dies from undue pressure and leaving the displaced metal on the blank in a form that can be conveniently removed by running a tool through the slot or cutting off the projecting metal by a tool moving across the ends of the slot and past the sides of the head. Generally the metal thrown out of the slot will be connected with the blank by a very thin portion, as shown; but when the swaging-blade and corners of the slot in the heading-die are new and sharp the projecting metal may sometimes be partially severed from the blank.

I claim as my invention—

1. A heading-die having transverse grooves at each side of and opening into its head-forming cavity and a heading-punch having a slot-forming blade, the width of which blade corresponds with the diameter of the head-forming cavity, substantially as described and for the purpose specified.

2. A heading-punch transversely slotted at its front end, a separately-formed slot-forming blade seated in said slot, and means for holding said blade to its seat, substantially as described and for the purpose specified.

3. A heading-die having transverse grooves at each side of and opening into its head-forming cavity, and a heading-punch having a slot-forming blade and a shank with flat faces for locating the blade relatively to said grooves in the die, substantially as described and for the purpose specified.

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