Nov. 1, 1932. J. E. PRACNY 1,885,288

MACHINE FOR MAKING CAP SCREW BLANKS

Filed June 5, 1930 3 Sheets-Sheet 1

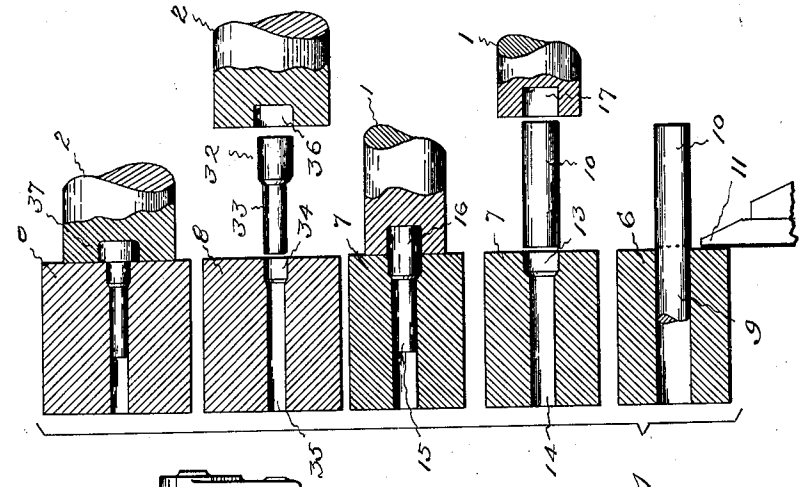


Fig. 1

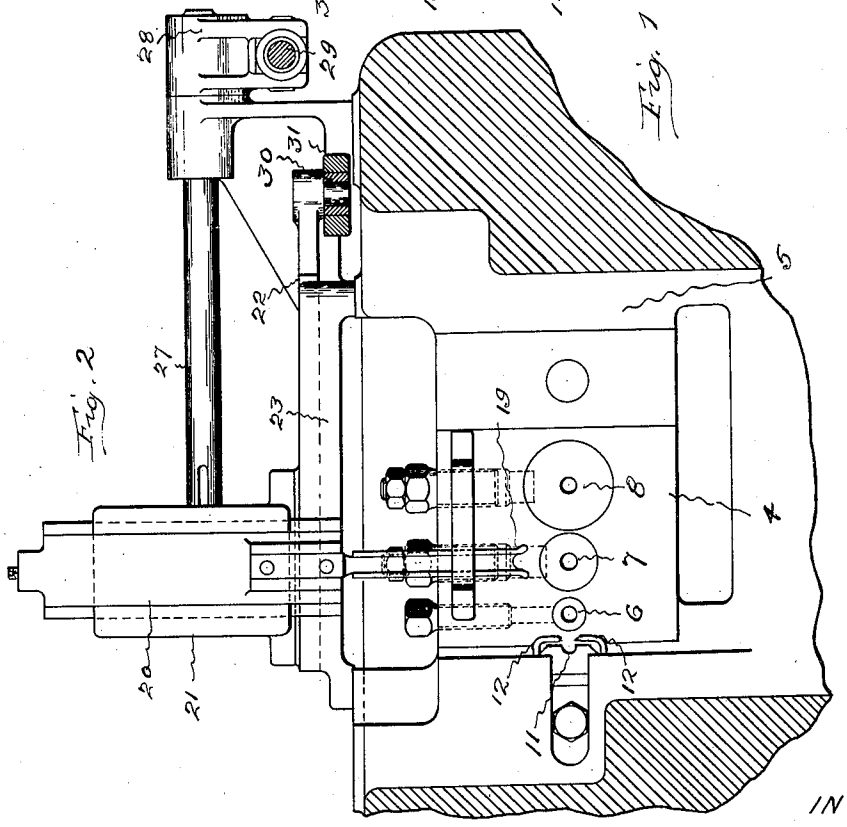


Fig. 2

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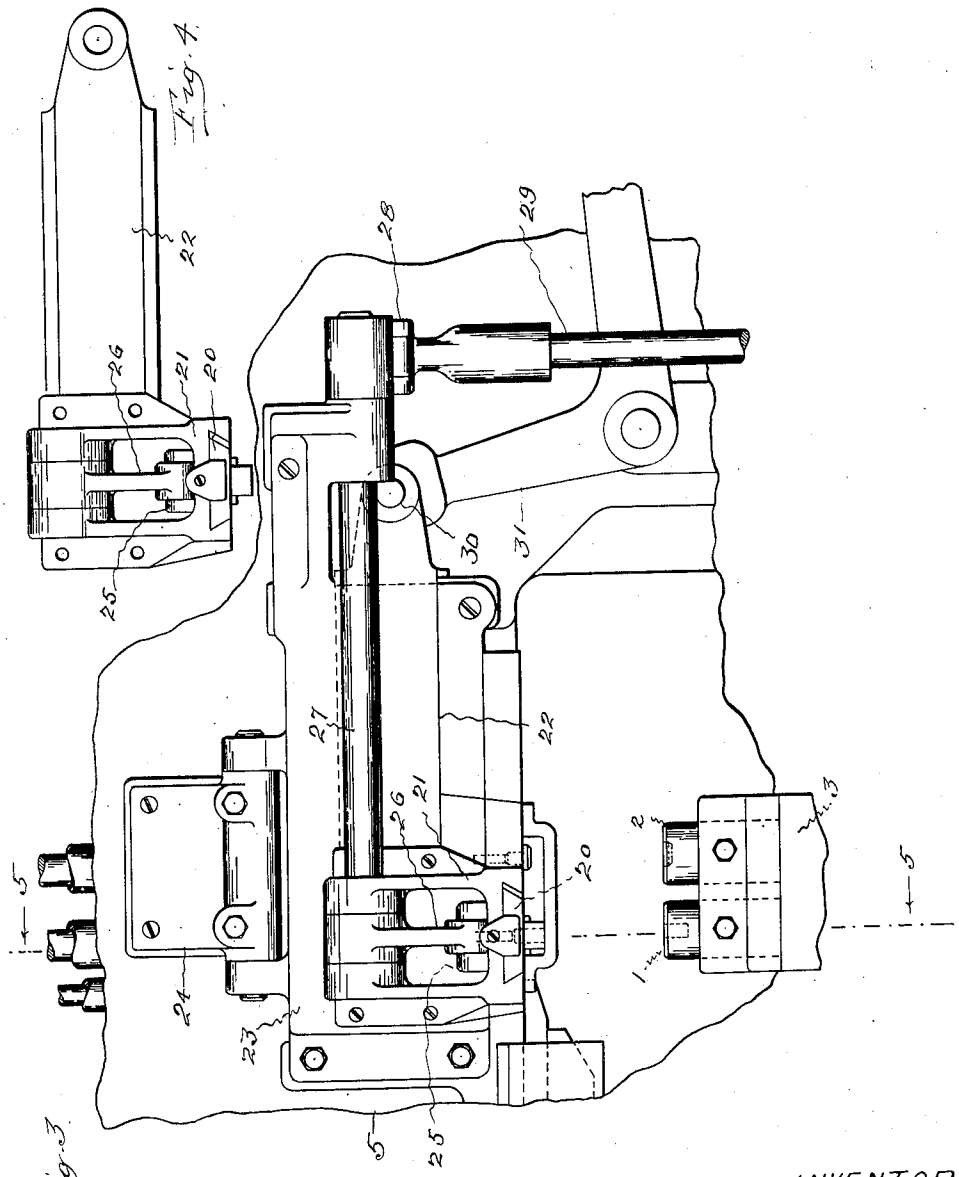


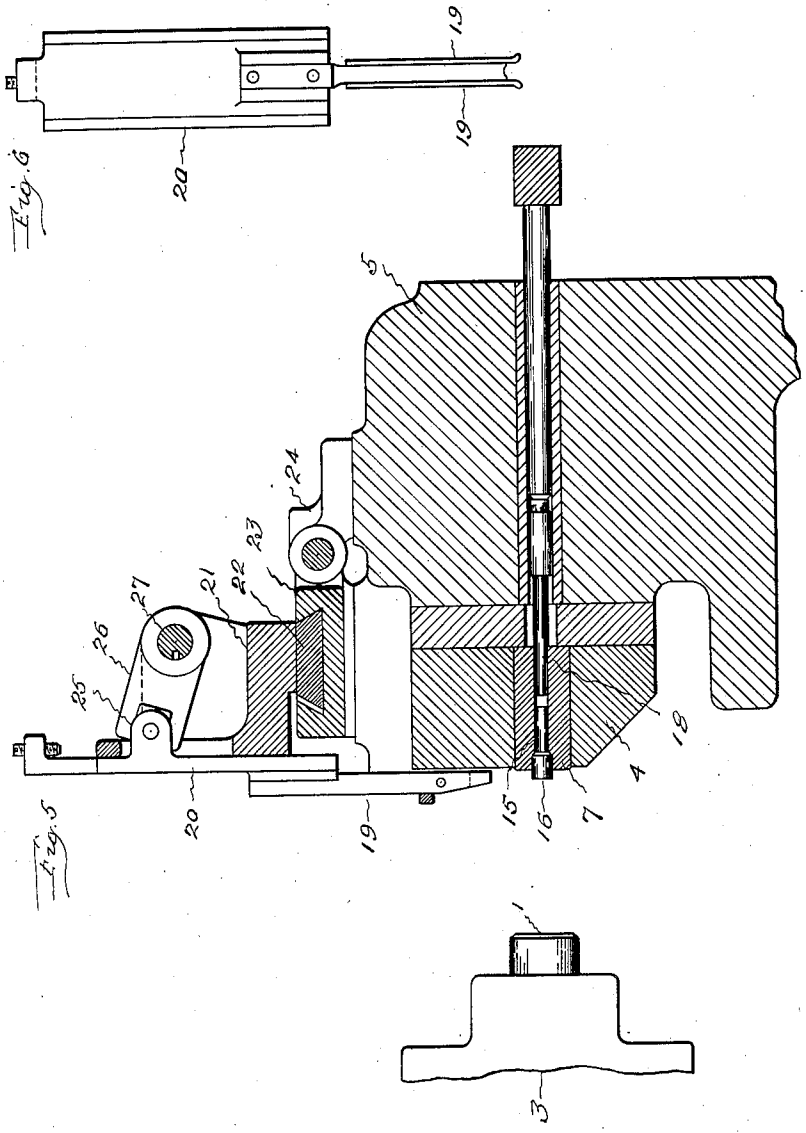
Fig. 3

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MACHINE FOR MAKING CAP SCREW BLANKS

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UNITED STATES PATENT OFFICE

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MACHINE FOR MAKING CAP SCREW BLANKS

Application filed June 5, 1930. Serial No. 459,268.

This invention relates to mechanism which is designed to transfer stock from between one punch and die into line with another punch and die in a metal heading machine of the type that has two reciprocating punches and two fixed dies arranged in the same horizontal plane.

The object of the invention is to provide a transfer mechanism for such machines which is relatively inexpensive to build and apply, rugged and durable, may be operated rapidly and will accurately present the stock in the proper positions, which mechanism is readily accessible for adjustment, cleaning and repairs.

The invention is illustrated in connection with a header that is provided with a punch and extruding die designed to reduce a section of oversize stock, and a punch and heading and extruding die which will upset the outer end and still further reduce a section of the stock and produce a cap screw blank.

In the accompanying drawings

Fig. 1 are sectional views illustrating the treatment of the stock by the punches and dies of such a machine as is mentioned.

Fig. 2 is a view looking toward the dies showing the transfer mechanism in elevation.

Fig. 3 shows a plan of the transfer mechanism applied to this machine.

Fig. 4 shows a detailed plan of the stock transfer slides.

Fig. 5 is a vertical section on the plane indicated by the dotted line 5—5 on Fig. 3.

Fig. 6 is a front elevation of the transfer fingers and vertically movable slide to which they are attached.

The punches 1 and 2 are arranged in the same horizontal plane in a punch holder 3 that is reciprocated by any common header ram reciprocating mechanism, the actuating means not being illustrated as they are well known to those skilled in this art. In a die block 4 in the end of the frame 5, and in the same horizontal plane as the punches, are a feed quill 6, an extruding die 7, and an extruding and heading die 8.

A rod of stock 9 that is larger in diameter than will be the body of the finished blank, is advanced through the quill 6 by any known feed mechanism, and a length 10 is severed by the action of the cutter 11 which is reciprocated across the quill by the usual cutter mechanism. The cutter blade has spring fingers 12 which grasp the severed piece of rod and with the blade carry it into line with the die 7. In the front end of this die and extending inward for a short distance is an opening 13 that is of substantially the same diameter as the oversize rod. The remaining length of the opening 14 through this die is of somewhat less diameter.

When the severed piece of rod carried by the cutter is in line with the die 7 the punch 1 advances and forces the piece into the die opening, causing a section 15 of the piece to be extruded, that is, reduced and lengthened. The outer end 16 of this piece retains its original diameter. When the piece has started into this die the cutter is returned so as not to obstruct the punch and to be in position to sever the section of stock next fed through the quill. This punch has a recess 17 which receives the outer end of the piece and all of the piece is not forced into this die.

During the withdrawal of the punch 1 the piece is pushed out of the extruding die 7 by the pin 18, Fig. 5, which is actuated by the knock-out mechanism commonly employed in this type of machines.

As the piece is pushed out of the extruding die 7 spring fingers 19 descend, grasp it and carry it sidewise into line with the die 8. These fingers are fixed to a slide 20 that is movable vertically in a way in the front face of a bracket 21 which is fastened on a slide 22 that is movable horizontally in a way in a frame 23. This frame is hinged to a bracket 24 fastened to the top of the machine frame.

Extending from the back of the vertical slide 20 are ears 25 and connected with these ears is an arm 26 that is splined upon a shaft 27 so as to be rotated by the shaft but have a movement longitudinally of the shaft. This shaft is supported by bearings in the frame 23 and at one end it has a rocker arm 28 to which a rod 29 is connected. This rod is reciprocated by any suitable and convenient

means so that at the proper times the fingers are carried up and down.

The end of the slide 22 has a roll 30 that is engaged by an end of an angle lever 31 which by any suitable and convenient means is oscillated at the proper times for moving this slide horizontally and carrying the fingers back and forth between the axes of the dies 7 and 8.

The piece ejected from the die 7 and which has a section 32 that is still oversize and a section 33, Fig. 1, that is somewhat reduced but not reduced to final size, is grasped by the fingers 19 and carried into line with the die 8 and the punch 2 moves forward to force it into this die. The die 8 has for a short distance in its outer end an opening 34 that is of substantially the size of the finished body of the blank to be formed, and has an opening 35 of a diameter which will leave that section of the blank of a size to permit the rolling of a thread thereon. In the end of the punch 2 is an opening 36 of a size and shape that will form the head 37 of the blank from the end of the oversize section 32 of the piece which is presented thereto.

The invention claimed is:

1. The combination with a heading machine which has two fixed solid dies and two reciprocatory punches located in the same horizontal plane, of a stock transfer mechanism which comprises a frame connected to the machine bed adjacent to the dies, a slide movable horizontally on said frame, means for reciprocating said slide, a bracket carried horizontally by said slide, a slide movable vertically on said bracket, fingers attached to said vertically movable slide, a shaft mounted on the frame, means for rocking said shaft, and an arm rotatable with and movable longitudinally along said shaft and connected with the vertically movable slide, whereby the fingers are given vertical and horizontal movements for transferring stock from between one punch and die into line with the other punch and die.

2. The combination with a heading machine which has two fixed solid dies and two reciprocatory punches located in the same horizontal plane, of a stock transfer mechanism which comprises a frame hinged to the top of the machine bed adjacent to the dies, a slide movable horizontally on said frame, means for reciprocating said slide, a bracket carried horizontally by said slide, a slide movable vertically on said bracket, fingers attached to said vertically movable slide, a shaft mounted on the frame, means for rocking said shaft, and an arm rotatable with and movable longitudinally along said shaft and connected with the vertically movable slide.

3. The combination with a heading machine which has two fixed solid dies and two reciprocatory punches located in the same horizontal plane, of a stock transfer mechanism which comprises a frame connected to the top of the machine bed adjacent to the dies, a slide movable horizontally on said frame, means for reciprocating said slide, a bracket carried horizontally by said slide, a slide movable vertically on said bracket, fingers attached to said vertically movable slide, a shaft mounted on the frame, means for rocking said shaft, and a rocker arm projecting from said shaft into engagement with the vertically movable slide for reciprocating said slide, said arm being carried longitudinally of the shaft by the horizontal movement of said slide.

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