

H. A. Harvey,
Heading Bolt and Screw Blanks,
N^o 44,090. Patented Sep. 6, 1864.

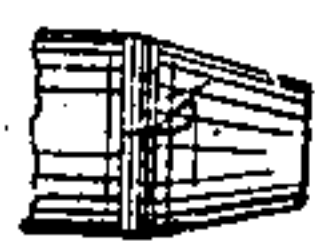
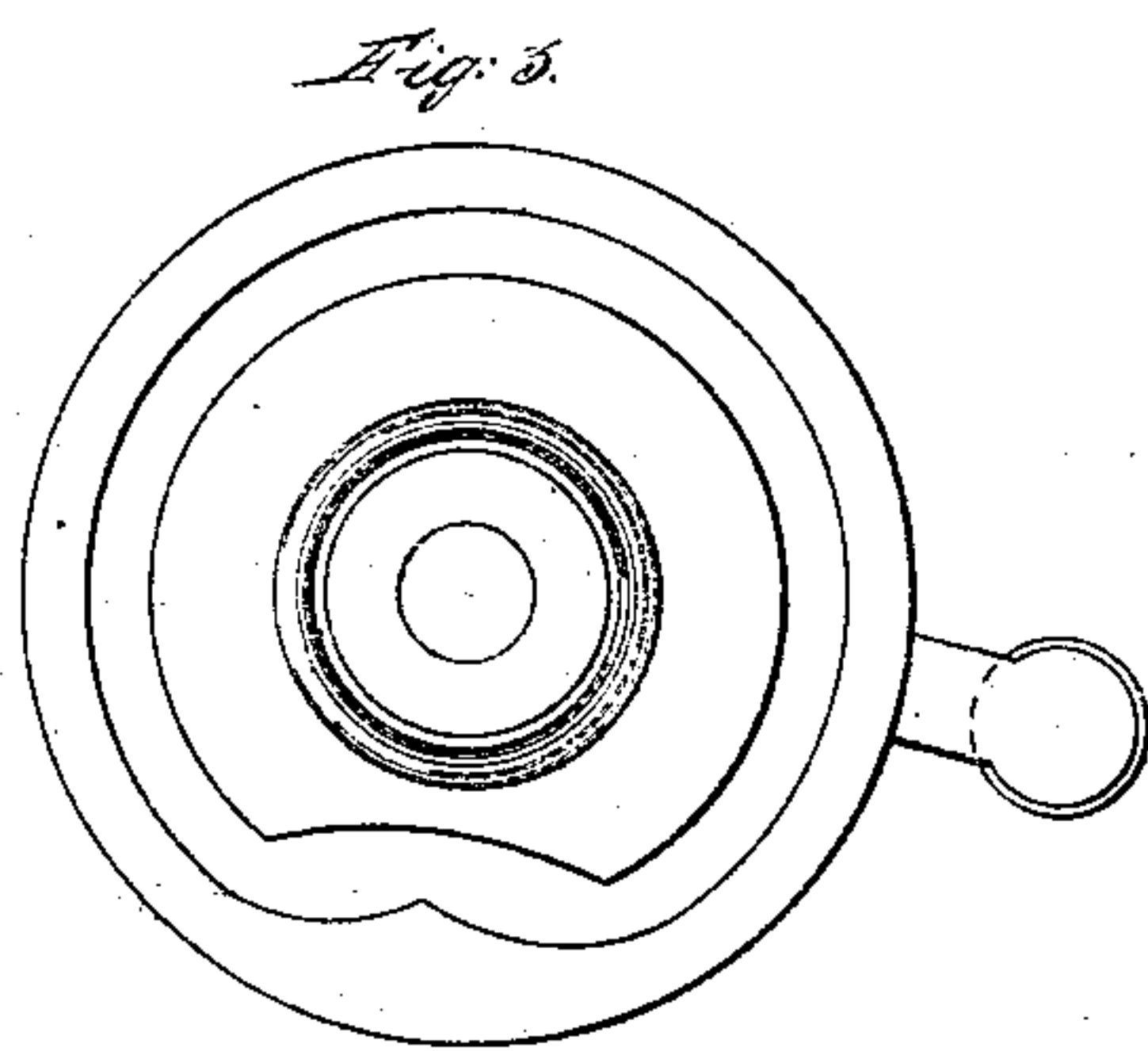
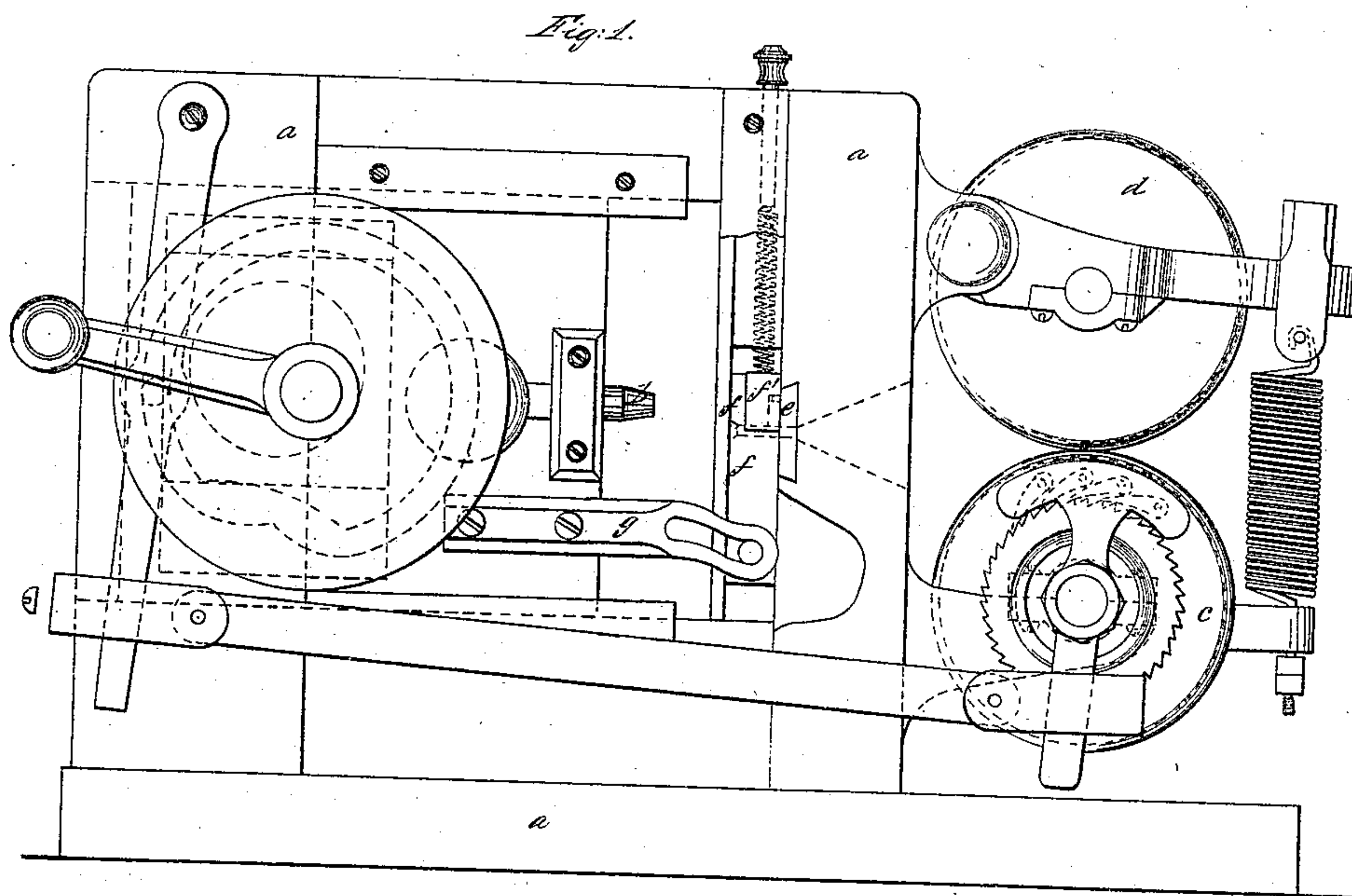
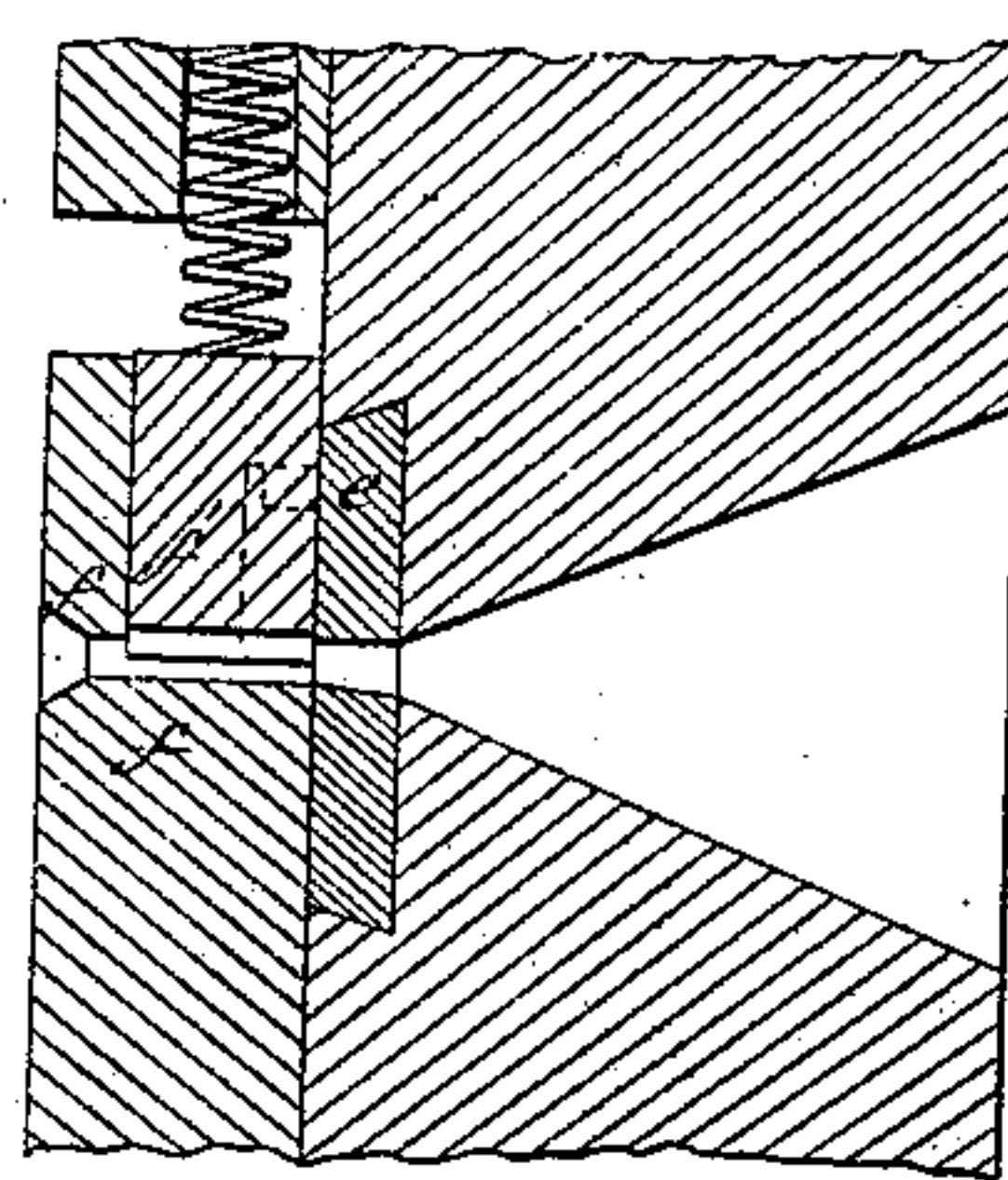


Fig. 2.



Witnesses:

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Charles

Inventor:

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UNITED STATES PATENT OFFICE.

HAYWARD A. HARVEY, OF NEW YORK, N. Y.

IMPROVEMENT IN DIES FOR HEADING SCREW-BLANKS.

Specification forming part of Letters Patent No. 44,090, dated September 6, 1894.

To all whom it may concern:

Be it known that I, HAYWARD A. HARVEY, of the city, county, and State of New York, have invented a new and improved die in which screw-blanks, rivets, and other similar articles may be made; and I do hereby declare that the following, taken in connection with the drawings, is a full, clear, and exact description thereof.

In the drawings, Figure 1 is a side elevation of a heading-machine exhibiting one of the forms of my improved die. Fig. 2 is a vertical section on a larger scale through a die and shear-plate, the heading-punch being shown in elevation; and Fig. 3 is an elevation of the cam, showing the groove which gives motion to the feeding apparatus.

My invention relates to the die only, which may be used in any suitable machine, and I have represented and described a whole machine merely to exhibit one way of applying the die to practical use.

In the drawings, the frame of the machine is shown at *a a*. In this frame is mounted a shaft, which may be revolved by any suitable machinery. This shaft has mounted upon it a cam, and also an eccentric, which works in a block that slides in proper ways in a punch-stock, to which is secured a punch, *b*. The revolution of the shaft causes the punch to reciprocate.

A lever is pivoted at its upper end to the frame, and has attached to and projecting from it a pin, which enters the groove in the cam. This lever is at its lower end connected with an oscillating connecting-rod, which latter is at its other end connected to a vibrating rock-shaft, in which are mounted a series of dogs. These dogs engage with ratchet-teeth on one of the feeding-rollers, clearly shown at *c*. As the main shaft revolves this feeding-roller will be caused to move with an interrupted rotary motion.

An upper feeding-roller, *d*, is mounted above the other upon swinging bearings, and is forced toward the lower feeding-roller by a spring. The wire or rods from which the screw-blanks or rivets are to be made is fed into the die between these rollers.

An opening or aperture is cut through that part of the frame between the feeding-rollers and the punch, and a shear-plate, *e*, is affixed to the frame, the aperture through it being a

continuation of that through the frame. The die *f f'* is mounted on the same part of the frame, and as the machine shown in the drawings is of that variety in which the die moves and forms one of the shear-blades the die is confined in proper slides, and is forced to move up and down to shear off lengths of the rod by an arm, *g*, attached to the punch-stock and provided with a slot which embraces a pin attached to the die.

In such a machine any of the ordinary kind of dies might be used. Such dies are usually of two varieties—solid dies and parting dies—and both classes are objectionable in use, especially where the shanks of the rivets or screw-blanks are comparatively long and small in diameter. The solid dies admit of the formation of a good smooth head without fins; but the shanks are apt to bend while the head is formed, this bending being technically termed "crippling." The parting dies, on the contrary, hold the wire or rod so firmly round the shank of the rivet that no crippling takes place, but the parting in the dies usually produces a fin on the under side of the head.

My invention is intended to obviate the difficulties incident to the use of each of these kinds of dies; and it consists in making the die in at least two pieces, with the countersink or matrix for the head formed in one part thereof only, while both parts are so formed as to grip the shank of the blank to be formed between them, substantially as described.

In the form in which my invention is exhibited in the drawings that part of the die which contains the counter-sink or matrix for the head of the rivet or screw-blank is shown at *f* and the other part at *f'*. Both pieces slide in the same ways or guides in order to secure perfect matching of the parts; and in the drawings the piece *f'* is shown as attached to a spring, which forces it downward for a certain distance and then holds it so that the other part of the die, as it is carried down, may move slightly away from it.

The action of the parts is as follows: The feed-rollers supply the machine with a proper length of wire. The dies then rise and cut the length of the wire off. Just before the axis of the wire comes opposite to that of the punch the piece *f'*, which has been forced upon the wire by the spring, strikes against the frame and grasps the wire firmly between itself and

the other part of the die. The punch, which has been advancing during the upward movement of the dies, now strikes the wire and heads the blank. It then retreats and the dies descend, the headed blank being discharged by the entrance of the succeeding piece of wire.

The closing of the two parts of the die upon the wire prior to the formation of the head effectually prevents crippling, and the head is without fins on the under side, as it is formed in a matrix cut out in the solid part of the die, there being no joint or fissure in that part of the die which determines the shape of the head.

The formation of the die may be variously modified, so long as that part thereof in which the head is formed is solid, or, in other words, has no parting in it, and so long as the other part of the die has a parting whereby the parts of the die may be caused to grip the wire or rod so as to prevent crippling, as described.

The precise mechanical means which may be used for causing the parts of the die to close upon the wire prior to the heading thereof are unimportant, and I intend at times to make the piece *f'* stationary, and to move the other part of the die to and from it, and the piece *f'* may cover a greater or less part of the length of the blank or of its diameter, so

long as it holds the wire fast at the time of heading. I sometimes intend to cut a slot through a solid die and to make the piece *f'* like a wedge or key, sliding in the slot in lines either perpendicular or parallel or inclined to the axis of the blank so as to grip the blank; but in all cases that part of the die in which the head is formed must have no parting in it, and the other part must be so formed that it clamps or holds the blank as in a vise prior to and at the instant when the head is formed; and in case the blank should be clamped only for a small part of its length, it is to be understood that such clamping ought to be near the under side of the head.

I claim as of my own invention—

A die having the counter-sink or matrix for the head formed in one part only thereof, so as to avoid finning, as described, and having also a capacity to clamp the shank to prevent crippling by a construction, substantially as described, the die as a whole being constructed and capable of operating substantially in the manner hereinbefore set forth.

In testimony whereof I have hereunto subscribed my name.

H. A. HARVEY.

In presence of—

EDW. E. QUIMBY,
CHAS. BLIVEN.