

H. A. WILLS.
Making Spikes.

No. 3,012.

Patented March 21, 1843.

Fig. 1,

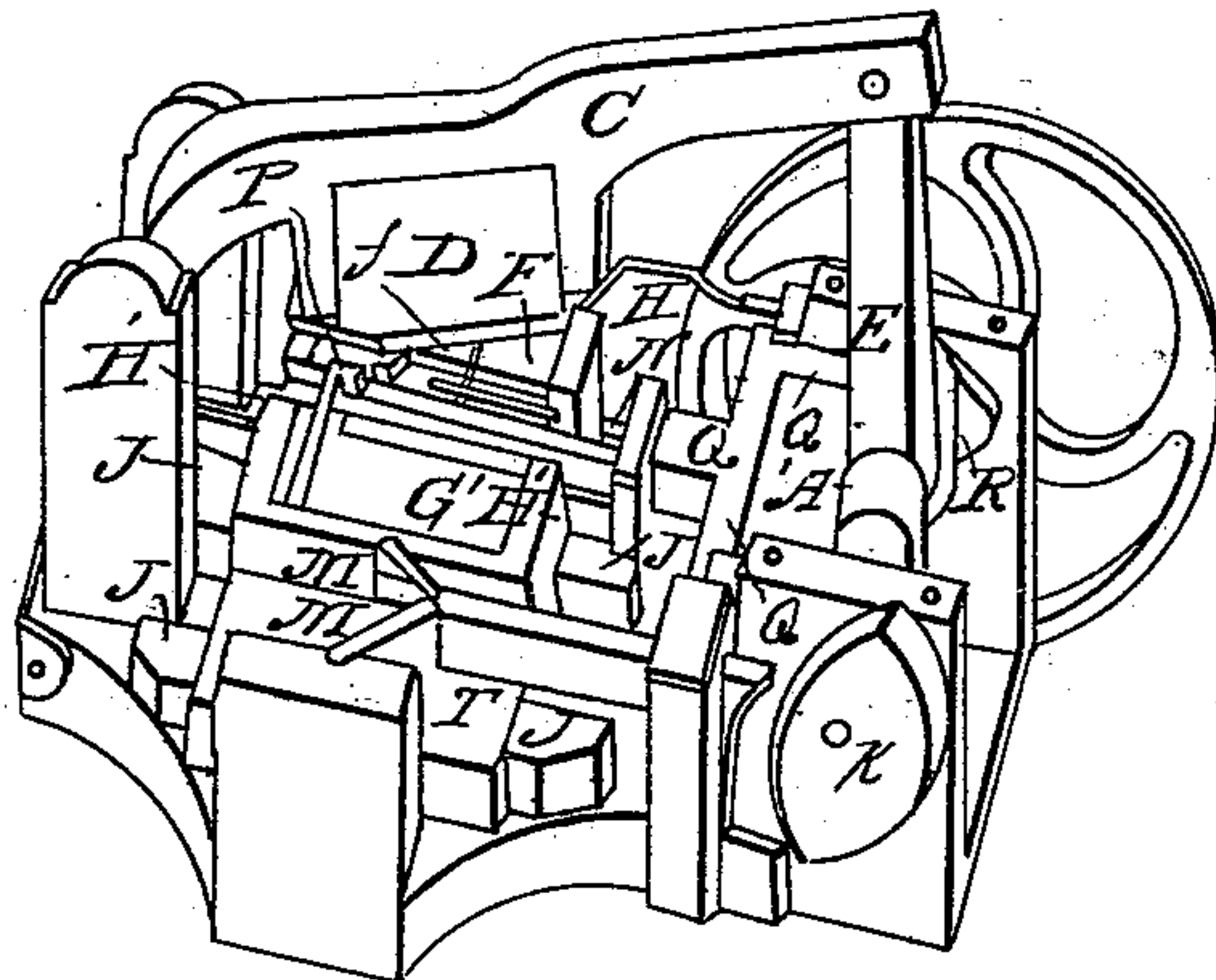


Fig. 3,

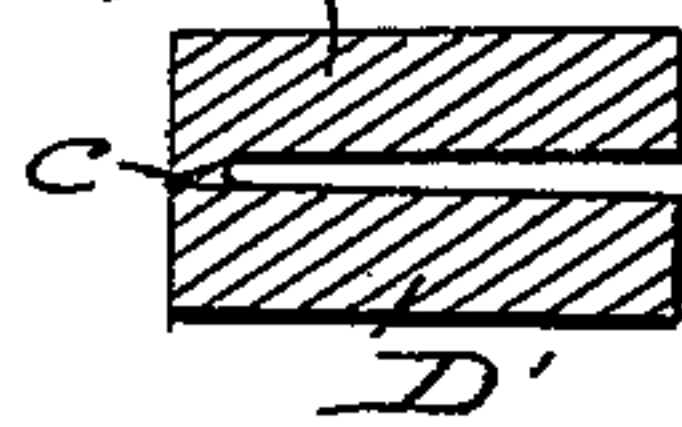
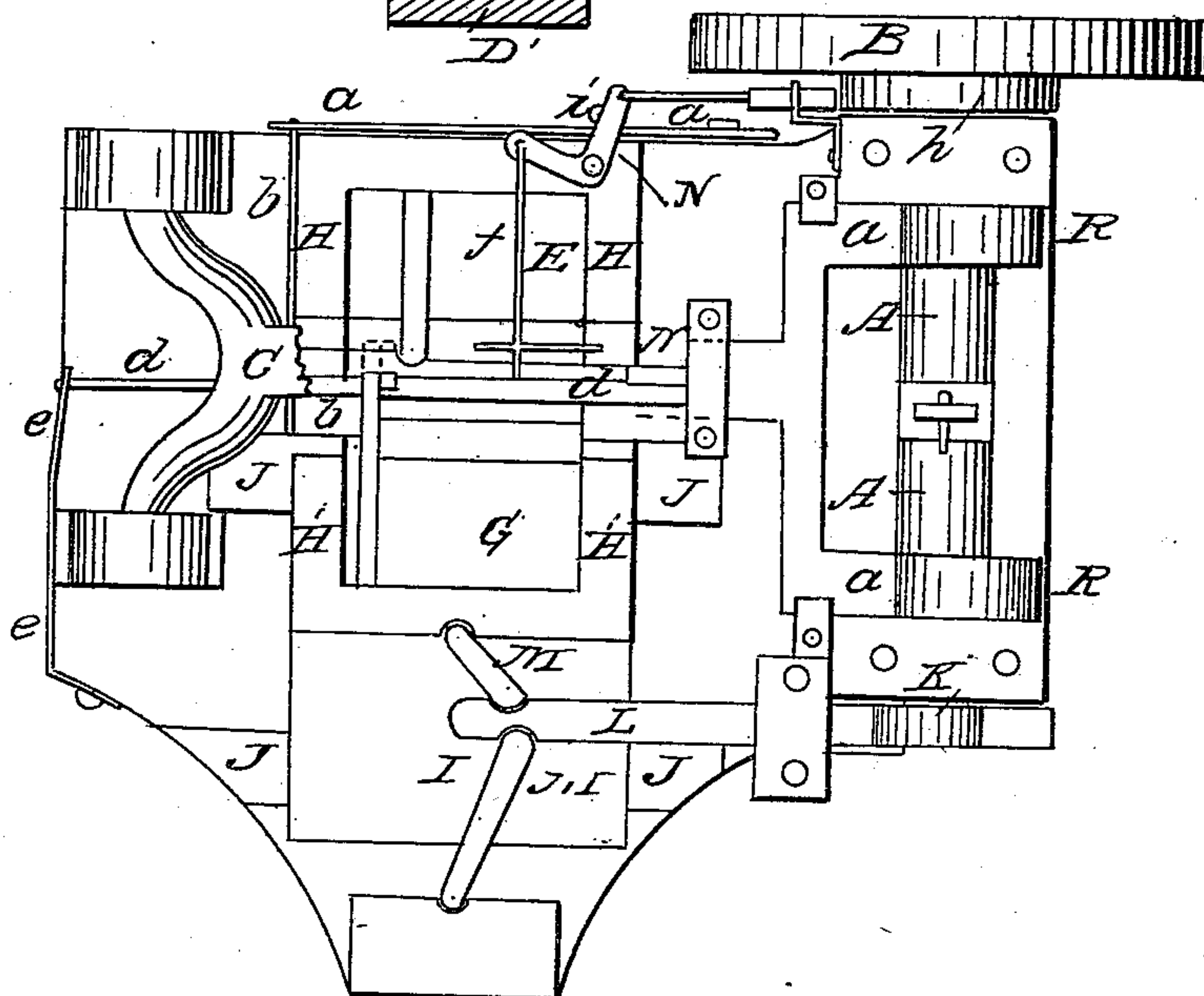


Fig. 2,



UNITED STATES PATENT OFFICE.

HARRY A. WILLS, OF KEESEVILLE, NEW YORK.

MACHINE FOR MAKING WROUGHT-IRON SPIKES, &c.

Specification of Letters Patent No. 3,012, dated March 21, 1843.

To all whom it may concern:

Be it known that I, H. A. WILLS, of Keeseville, in the county of Essex and State of New York, have invented certain new and useful improvements in the manner of constructing a machine for manufacturing spikes of wrought-iron or other metal and which may also be applied to the making of rivets and other articles of a like kind.

In the accompanying drawing, Figure 1, is a perspective representation of the machine, and Fig. 2, a top view of it; but in this figure, the lever which carries the upper pointing dies is shown as cut off, for the purpose of exhibiting the other parts of the apparatus the more distinctly. Fig. 1, is drawn to a scale of about one twelfth, and Fig. 2, about one eighth, of the size of the actual machine.

The whole of the frame will be best made of cast-iron; the dies, of course, being of steel.

A, A, is the main crank shaft, to which the motive power may be applied, either by bands or cog gearing.

B, is a fly wheel on one end of said shaft.

C, is a lever which carries the upper pointing die D; which die, as well as the others, is to be held and adjusted by screws, in any of the ways ordinarily adopted in such machines. The lever C, is made to vibrate up and down by means of the crank A', to which it is connected by the pitman, or connecting rod, E. The rod from which the spikes are to be made, is passed in between the stationary gripping dies F, and the movable gripping dies G, which are affixed and adjusted in the frames H, H', H'', H'''; the latter of which is made fast upon a sliding bed I, which sliding bed rests upon the bottom plate, or bed piece, of the machine, and is guided between the studs J, J.

The movable gripping die is made to operate in the following manner. K, is a cam on the end of the main shaft A; which cam operates against the outer end of a slide L, and by means of the two progressive levers M, which constitute a toggle joint, forces the gripping die G, against the rod which is to be pointed and headed; a, a, is a spring that acts upon a rod b, b, the inner end of which bears against the frame H¹, H¹, and causes it to recede when the cam K, is not acting upon the slide L; a spring for this purpose may, of course, be differently arranged. The cam K, holds the gripping dies

in place during the time necessary for the heading and pointing of a spike.

The gripping dies are, in the drawing, represented as open; in which position, of course, the rod is to be fed in between them, until its inner end is brought into contact with the heading die N, which stands in the situation to which it has retreated after having headed the last formed spike; the cam, K, then begins to act on the slide I, and causes the die G, to advance toward the die F, and in its progress the rod is cut off preparatory to its being gripped, pointed, and headed. O, and P, are the cutting dies, which are made fast to the upper sides of the gripping dies; and the die P, has its cutting end bent at right angles to its length, as shown in the drawing; and this is done for the purpose of cutting off a piece from the iron rod of the right length to admit of its being pointed by the pointing dies, and of allowing the upper pointing die to descend upon the lower pointing die for that purpose, the descent of the upper pointing die taking place when the bent end of the die P, has passed the end of the die O, so far as to stand in the position shown by the dotted lines; the length of the pointing dies being such as to require the whole length given by the offset in the die P.

In Fig. 3, the form of the pointing dies is shown, D, being the upper pointing die attached to the lever C; and D¹, the lower pointing die, which is attached to the stationary gripping die. When the lever C, is brought down, the pointing portions c, of the dies D, D¹, perform their office, elongating the spike in so doing; and this they are enabled to effect in virtue of the pointing space allowed in the cutting off of the rod by the bent die P; and the pointing action is also favored by the curve in which the lever C, is brought down, which causes the pointing die to give a rubbing, elongating motion toward the point of the spike.

The heading die N, is held by a sliding frame Q, Q, and while the spike is retained between the gripping and pointing dies, the heading die is brought up against it by the action of two cams R, R, formed on the crank shaft, and which are made to operate on the two ends of the frame Q, Q; this frame may be forced back by means of a rod d, d, acted upon by a spring e, e, or in any other manner that may be preferred. When the gripping dies are opened, the fin-

ished spike may be pushed off by means of a rod *f*, attached to the bell-crank lever *g*, which may be forced forward by a cam *h*, on the crank shaft; *i*, is the upper end of a
5 spring for forcing the crank *g*, back; the removal of the spike may, however, be effected in other ways. A suitable rest should be placed at the opening of the gripping dies to cause the spike rod to enter between
10 the cutting dies by which the piece is to be separated, and which then falls into its place on the gripping and lower pointing dies. The heading die may be variously formed according to the nature of the work to be
15 performed; as may also the pointing and gripping dies.

Having thus fully described the manner in which I construct my machine for the manufacturing of spikes, and shown the operation of the respective parts thereof, what I claim 20 as new therein, and desire to secure by Letters Patent, is—

The manner of forming the cutting off dies, and of arranging and combining them with the pointing dies, so that the piece may 25 be elongated, and the pointing be effected, substantially in the manner herein fully made known.

HARRY A. WILLS.

Witnesses:

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F. B. WILLS.