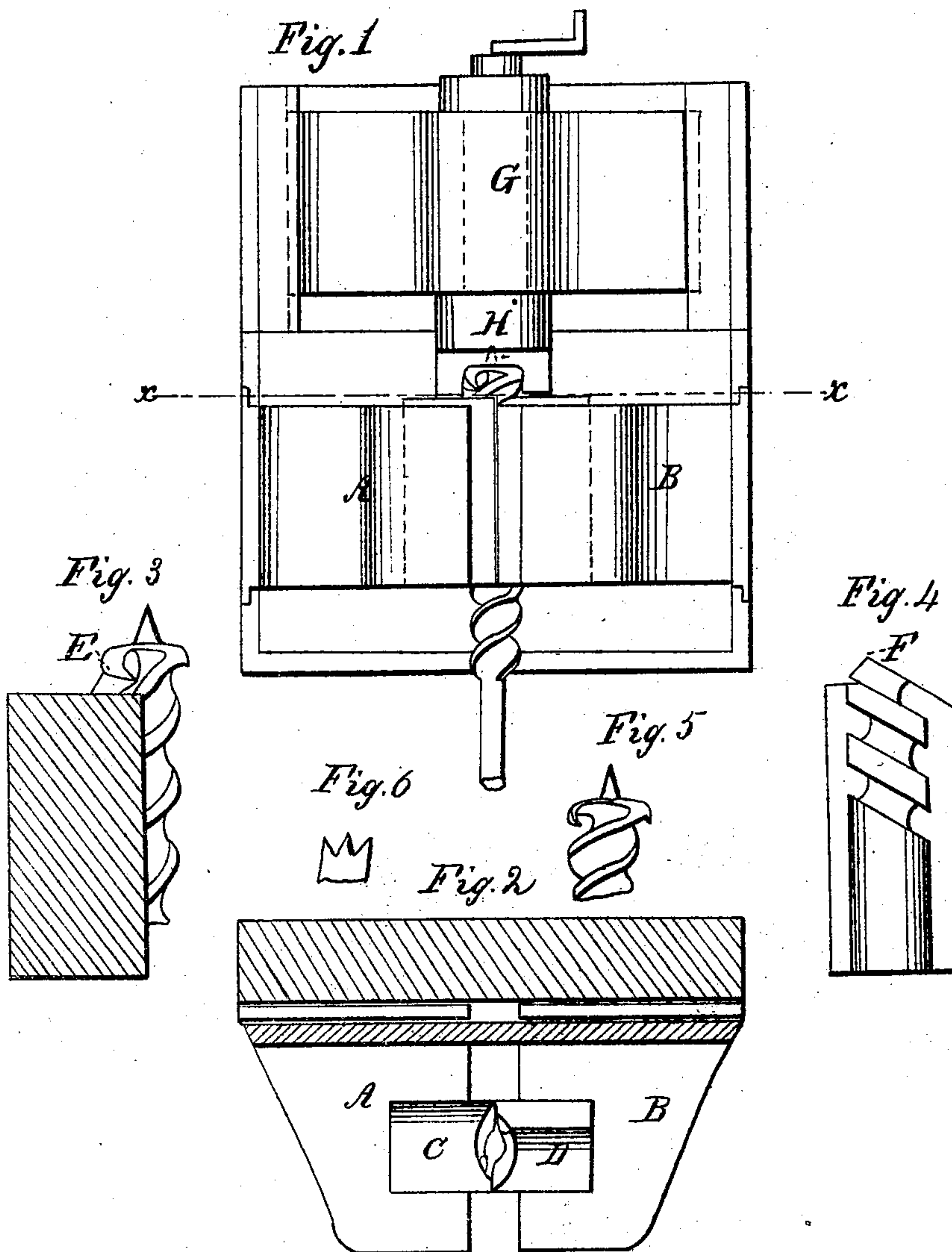


J. SWAN.

Machines for Forming the Lips of Augers.

No. 139,091.

Patented May 20, 1873.



Witnesses
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JAMES SWAN, OF SEYMOUR, CONNECTICUT.

IMPROVEMENT IN MACHINES FOR FORMING THE LIPS OF AUGERS.

Specification forming part of Letters Patent No. **139,091**, dated May 20, 1873; application filed April 13, 1869.

To all whom it may concern:

Be it known that I, JAMES SWAN, of Seymour, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in Manufacture of Curved-Lip Augers and Bits; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification.

The object of this invention is to provide a means of forming the curved lips and screw-points of augers and bits more rapidly and cheaply than can be done by the present method.

The invention consists in the combination of a set of forming devices, consisting of a pair of crimping-dies and a concave rotary former, all of the construction shown, and as hereinafter more fully specified.

Figure 1 represents a plan view of a machine wherein the improved forming devices which I use are arranged for operation. Fig. 2 represents a sectional elevation taken on the line *xx* of Fig. 1. Fig. 3 represents a plan view of one of the crimping-dies with a blank in connection, showing a lip formed over the projecting end. Fig. 4 represents a face view of one of the crimping-dies. Fig. 5 represents a side view of a part of a finished blank. Fig. 6 represents a plan of the punched blank.

Similar letters of reference indicate corresponding parts.

In a pair of sliding jaws, A B, I arrange a pair of crimp-dies, C D, which may be fixed in position by any suitable means. These crimp-dies are formed as those ordinarily used to clasp the pod of the bit to be operated, except at the ends where the forming is to be done, where they are armed with projections E F, constructed of such a form as to be the reversed counterpart of the interior form of the curved lips of the bit intended to be made. These sliding jaws, carrying the aforesaid dies, may be operated for the reception, holding, and discharge of the blanks in any suitable manner. G represents a carriage sliding at right angles to the sliding jaws, and carrying, in a line with the axis of the crimp-dies, a shaft, H, which has in the end nearest the crimp-dies a concavity of the form shown for forming the exterior of the curved

lips of the bit, there being a hole in the center of the concavity to receive and form the point intended for the screw of the bit. The said concavity is, to some extent, the reversed counterpart of the exterior of the curved lips of the bit.

The operation is as follows: A crimped bit-blank, after being cut to the shape required at the point by an ordinary punch with three projections, as shown at Fig. 6, and heated, is placed within the crimp-dies and firmly secured. In this position the portions of metal intended to make the lips and screw of the bit or auger lie practically just in front of the convex half of the forming devices, consisting of the peculiar projections E F on the ends of the crimp-dies. The shaft H and tool I are now made to revolve as rapidly as need be, (if for a right-hand bit, from right to left, and if for a left-hand bit, from left to right,) and the sliding carriage carrying them is made to advance by any preferred means with any suitable speed and pressure, carrying the concave tool I against the projecting points of the heated blank, which are thereby pressed and distended until the cavity between these two halves of the forming devices is entirely filled by the metal and the lips formed over the projections E F, as shown in Fig. 3, while the excess or superabundant metal is free to pass out between the two halves of the forming devices.

In this manner the bit is upset by the rotary and pressing action of the concave tool I.

After being thus formed the bits may be taken out and finished up in any preferred manner.

Instead of advancing the forming-tool I it may be in fixed bearings; and the crimping-dies may be arranged to advance to and from the former, as preferred.

By these means I am enabled to accomplish the forming of the curved lips by one heat and one operation, whereas the present method involves four distinct operations and as many heatings.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The combination of the crimp-dies, having the projections E F, with the rotary former I, substantially as specified.

Witnesses:

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