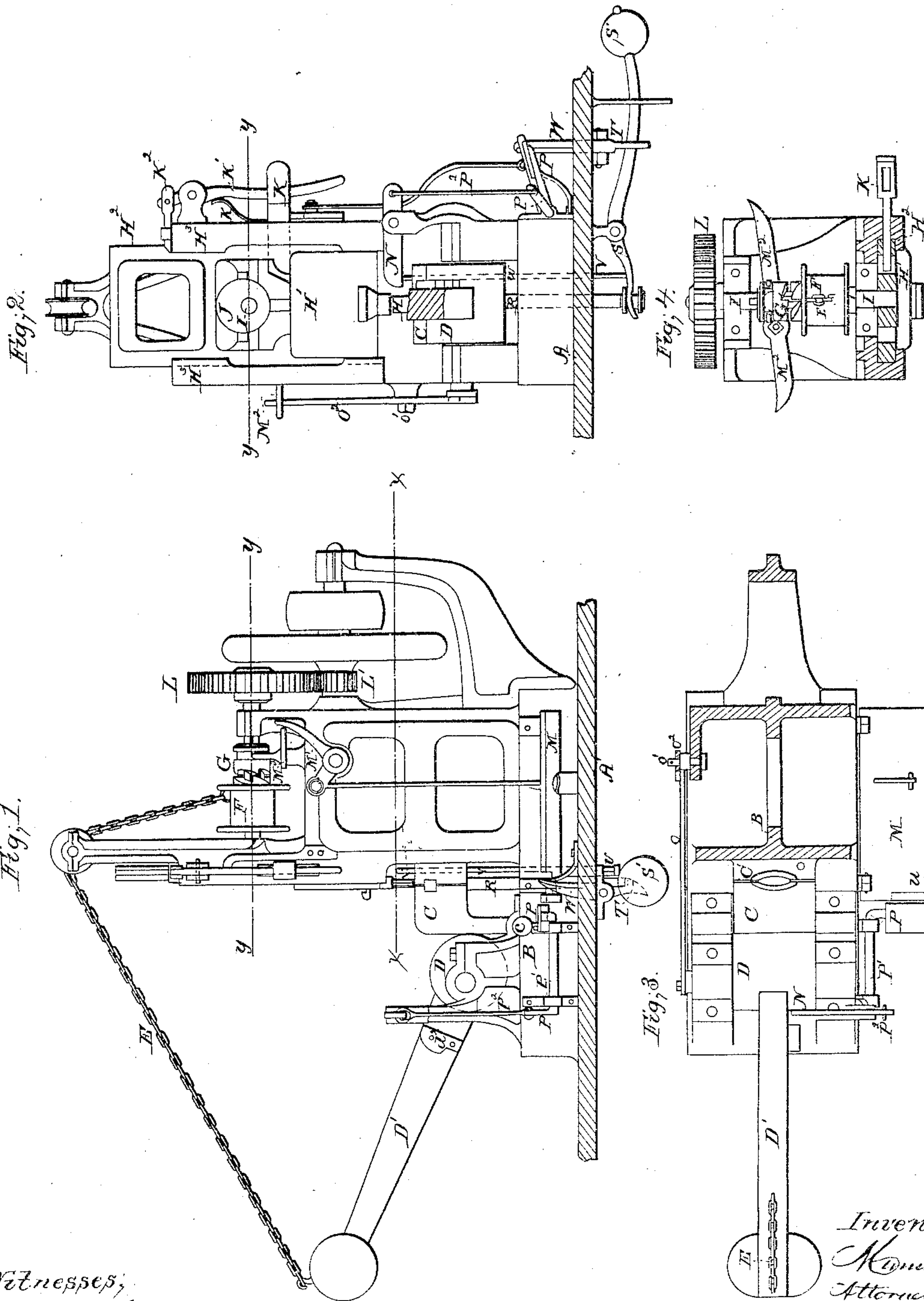


H. M. Hamilton.

Forming the Eyes of Picks, &c.

N^o 69,090.

Patented Sept. 24, 1867.



Witnesses,
Geo. W. Rothwell
J. L. Linn

Inventor,
H. M. Hamilton
Attorneys for
H. M. Hamilton
By O. L. Linn

United States Patent Office.

H. M. HAMILTON, OF NEW YORK, N. Y.

Letters Patent No. 69,090, dated September 24, 1867.

IMPROVEMENT IN MACHINES FOR FORMING THE EYES OF PICKS, &c.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, H. M. HAMILTON, of the city, county, and State of New York, have invented a new and improved Machine for Forming the Eyes of Picks, &c.; and I do hereby declare the following to be a full, clear, and exact description of the same, sufficient to enable one skilled in the art to which the invention appertains to make use of it, reference being had to the accompanying drawings, forming part of this specification, and in which—

Figure 1 is a side elevation.

Figure 2 is an end elevation.

Figure 3 is a horizontal section on the line *x x*, fig. 1.

Figure 4 is a horizontal section on the line *y y*, figs. 1 and 2.

The blank is held between jaw dies by a cam, while the punch descends and forms the eye by displacing the metal.

In making elongated eyes a lower rest, corresponding in shape to the end of the elongated socket, bears against the under side of the blank and retreats before the punch. The punch is brought into operation by the interposition of a sliding-block between the punch-stock and a continuously revolving cam.

In the drawings, A is the bed-plate, and B the frame in which the various parts of the machine are journaled and pivoted. C' is a stationary die, and C a movable die, journaled at *c* in the frame. The movable die is brought into close relation to the stationary die by means of the weighted lever and cam D, when the lever is in its lower position. The lever is raised, to permit the die to open, by means of the chain E, which is wound upon the drum F, when the clutch G is thrown into connection. The adjacent faces of the dies C C' are hollowed out so as to receive a blank of the required conformation, and to give it the desired shape when the punch, which descends and makes the eye, displaces the metal. The punch H is suitably attached to a stock, H¹, which forms a part of a gate, H², which has a vertical movement in slides or ways H³, attached to the frame of the machine. Journaled in bearings in the frame is a horizontal shaft, I, on which is a cam, J, which moves the punch-gate H², and the parts attached thereto. As the cam J is designed to be continuously driven by the gearing L L, and the motion of the gate is occasional, at such times as a blank is ready to be operated on, means are afforded for making an effective down stroke of the punch by the interposition of the block K between the cam J and the punch-stock H¹. When the downward motion of the punch is required the block K is thrust under the cam J by means of the lever K¹, and when it has effected a down stroke, and the swell of the cam lifts the gate H², the spring *k* retracts the block K, and the bolt K² enters a notch in the gate and sustains the latter in its elevated position. While the rotation of the shaft I is constant, that of the sleeve-drum F upon it is only occasional, as it may be required to raise the lever D' of the cam D for the purpose of allowing the die to open to remove the pick, and put in a new blank to be operated upon. This rotation of the drum F is effected by the clutch G, which is fastened by a pin to the shaft I, and revolves therewith, while it is capable of longitudinal motion thereon. The clutch is operated by the treadle M, which rotates the bell-crank M¹, and by vibrating the lever M² pushes the clutch into engagement with the correspondingly toothed portion of the drum F, which takes up the slack of the chain E, as the lever D' must not commence its rise until the punch has done its work. This being done the drum revolves with the shaft I, and winding up the chain E raises the lever D' until the latch N is passed by the catch *a*² on the lever D'. Soon after this point is passed the rod O, being eccentrically pivoted to the shaft of the cam D, vibrates the vertical lever O², which is pivoted at O¹ to the frame, and the lever O², by contact with the lever M², retracts the clutch G and allows the lever D' to fall till arrested by the latch N. In this position it remains while the blank is being adjusted in the die. The treadle P, by means of the rock-shaft P¹ and connecting-rod P², is the means of retracting the latch N to drop the lever when required. Projecting upwardly from below the bed-plate, and entering the hollow in the die, is a lower-rest or follower, R, whose duty it is to press upon the lower face of the blank when the latter is in the die, so as to afford some resistance to the entering blank when the punch enters it from above. Its effect is to cause the metal to spread laterally away from the punch and protrude downwards, and when the punch has penetrated a certain distance, so that the lower edge of the punch nearly touches the top of the follower R, the punch-stock H¹ comes against the top of the rod V and depresses it and the follower R, to which it is attached.

the punch continuing its motion through the blank to complete the eye. As the follower descends it vibrates the weighted lever S, which is caught by the catch T as soon as it has passed that point. It is thereby sustained in that position until, by touching the foot-trigger W, the weighted arm S' S is again released, and the follower is again thrust upward. The upward motion of the follower R is not positive in extent, nor is it regularly recurrent as it would be were it actuated by gearing from the prime motor. It is called into use, as required, at the proper moment by pressing the foot-trigger W.

The order of operation is as follows: The jaw C of the die being open, the red-hot blank is introduced thereinto. The lever D' is freed by withdrawing the latch N, and descending it binds the dies firmly shut. The trigger W now releases the follower, which rises and presses against the under surface of the blank in the die, at the point opposite to that to be entered by the punch. The block K is now pushed in under the cam J, which releases the gate H² by the withdrawal of the bolt K²; the cam revolving presses upon the block K, and by its interposition depresses the punch-block H¹ and punch H; the latter forces its way into the blank making an eye therein, the resistance offered by the follower R serving to spread the metal laterally into the hollow of the die. The follower retreats before it is touched by the punch, and is retained in its depressed condition by the catch T, while the punch continues its descent. The cam J continuing its revolution, the block K is retracted by the spring k; the gate H² is raised by the cam, and the bolt K² slips in and holds it. The depression of the treadle M throws in the clutch G, the chain E is wound up, the lever rises, the die opens, and the blank, with an eye punched in, is removed, to be followed with another eyeless blank as before. The upper surface of the follower R corresponds to the face of the elongated socket where such is made. The metal expelled by the punch is forced to fill the hollow of the die, and the rim or edge of the elongated socket is formed against the upper end of the follower R.

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

1. The arrangement of the block K, lever K¹, and bolt K², with the frame H², and cam J, operating substantially as described.
2. I claim the follower R acting upon the lower surface of the blank in opposition to the descending punch, and operated by the weighted lever, substantially as described.
3. I claim the detaching and detaining devices for lever D', consisting of connecting-rods O O² and lever M², which unclutch the chain-drum and a pawl or latch, N, acting as a detaining trigger.

H. M. HAMILTON.

Witnesses:

EDWARD H. KNIGHT,
 SOLON C. KEMON.