(No Model.)

T. DONAHUE & W. W. CONE.

MACHINE FOR BENDING LOCK PLATES.

No. 265,396. Patented Oct. 3, 1882.

Fig. 1

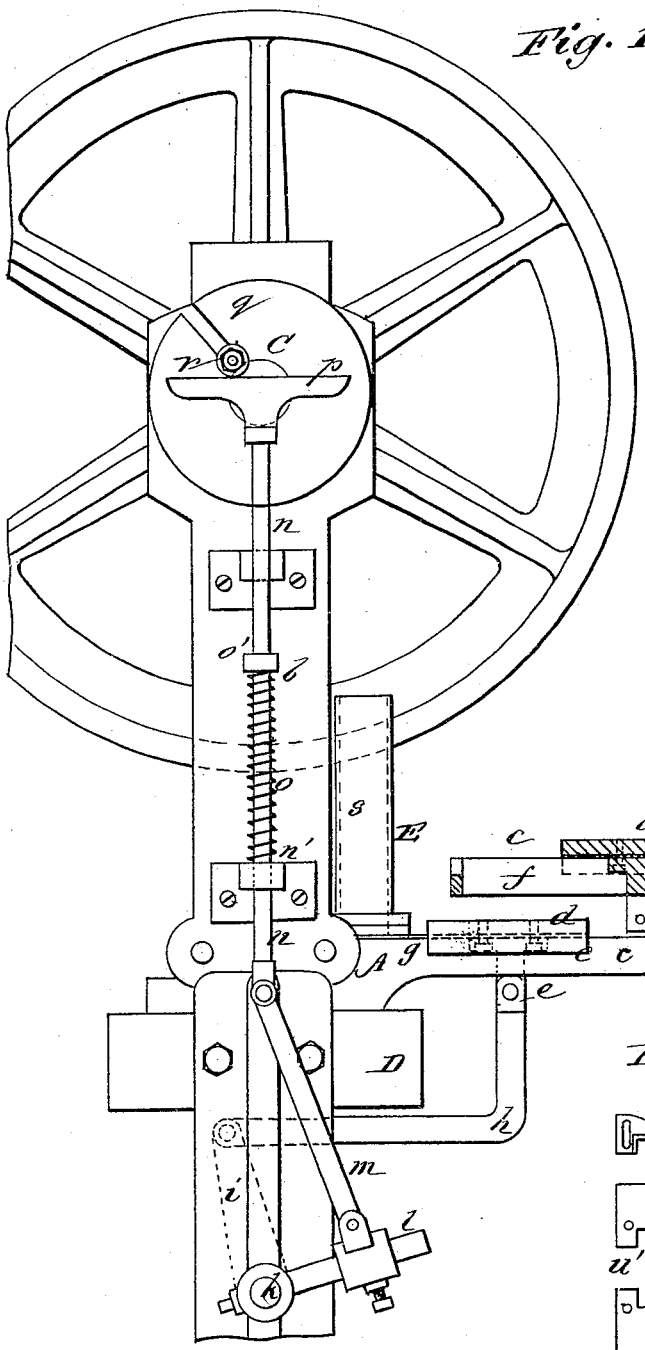

Fig. 2

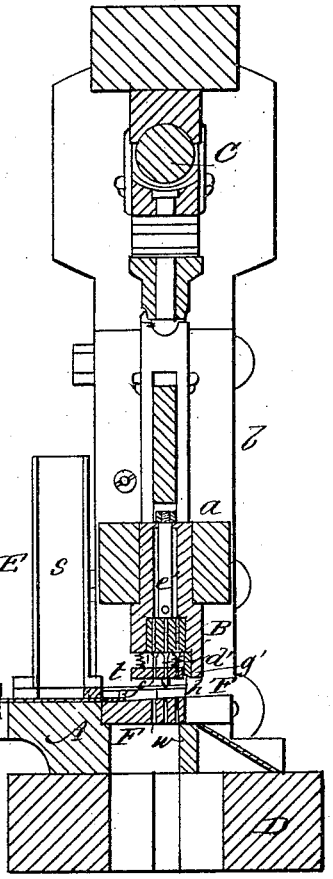

Fig. 4

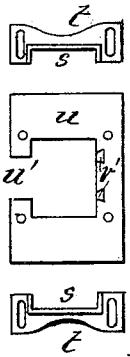

Fig. 3

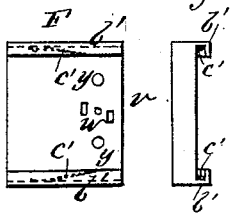

Fig. 5

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UNITED STATES PATENT OFFICE.

THOMAS DONAHUE AND WILLIAM W. CONE, OF TERRYVILLE, CONNECTICUT, ASSIGNORS TO THE EAGLE LOCK COMPANY, OF SAME PLACE.

MACHINE FOR BENDING LOCK-PLATES.

SPECIFICATION forming part of Letters Patent No. 265,396, dated October 3, 1882.

Application filed April 12, 1882. (No model.)

To all whom it may concern:

Be it known that we, THOMAS DONAHUE and WILLIAM W. CONE, both of Terryville, in the county of Litchfield and State of Connecticut, have invented a new and useful Improvement in Machines for Bending Lock Plates and Caps, of which the following is a full, clear, and exact description.

The object of this invention is to produce lock plates and caps more accurately and more cheaply than has heretofore been done; and it relates particularly to feed devices which we combine with such machines for automatically feeding the plates. The feed devices consist of a funnel in which the plates are stacked, and a reciprocating feeder that carries the plates one by one to the bending-die. The punch and die are constructed to bend the plates and cut the pin and cheek holes at the same time, and the finished plate is displaced by the next one brought beneath the dies, all as set forth more particularly hereinafter.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of a lock-plate-bending machine. Fig. 2 is a vertical section of the machine. Fig. 3 is a face view of the bed-die. Fig. 4 shows details of the funnel. Fig. 5 is a detail view of the bed-die.

The press shown is of ordinary construction, except in certain details hereinafter set forth.

A is the die-bed.

B is the punch, carried by a cross-head, *a*, that is fitted for reciprocation on standards *b b*.

C is the operating-shaft, sustained at the upper part of the standards, and carrying eccentrics which reciprocate the head *a*.

The die-bed A is fixed upon the main bed D of the press, and is formed with an extension, *c*, at the feed side, which is slotted lengthwise at *f* and beveled on its edges. On the extension *c* is a slide, *d*, made with beveled flanges at its edges that take beneath the beveled edges of the extension and are attached on a stud, *e*, that projects through the slot *f*. Between the slide *d* and stud *e* is attached a thin plate, *g*, of metal, which projects as a tongue upon the surface of bed A and toward the dies.

h is a bent link connected by a knuckle-joint to stud *e*, and extending beneath the main bed D, where it is jointed to an arm, *i*, of a rock-shaft, *k*, which is journaled on the standards *b*.

l is an arm on one end of shaft *k*, connected by a link, *m*, to a vertical slide-rod, *n*, that is sustained on one standard *b*.

o is a spiral spring on the rod between a collar, *o'*, and one of the boxes *n'*, whereby the spring acts to raise the rod, and by the connections described to move the slide *d* inward.

p is a T-head on the upper end of rod *n*.

q is a disk on the end of the main shaft C, provided with a friction-roller on a screw-stud, *r*, that is adjustable in a radial slot of the disk. The roller bears on the T-head *p*, so that it acts to force the rod *n* downward as the main shaft revolves, and thus compress the spring *o* and move the feed-slide *d* outward.

On the bed A, as close as may be to the dies, is fixed the funnel or hopper E, in which the plates are to be stacked. The funnel preferably consists of two flanged end plates, *s s*, attached on base-pieces *t t*, (see Fig. 4,) that are attached by screws to a piece, *u*, fixed on the bed, the attaching-screws passing through slots in pieces *t*, so that the plates *s* may be separated more or less to suit the length of plates. The piece *u* is apertured to allow the plates to rest on the bed, and is also grooved at its under side to allow the plates to pass out. At the front of piece *u* is an aperture, *u'*, through which the bottom plates can be inspected and moved in case they should be misplaced, and at the delivery side of the piece *u* pieces *v'*, of steel, are inserted to prevent rapid wear of the piece.

F is the bed-die, over whose edge *v* the plates are bent. In this die are holes *w*, corresponding to the cutting-punches, and also holes *y y* for guide-pins that are attached to the punch, such pins being placed to pass through the screw-holes of the plate. *b'* are undercut guide-flanges on the sides of die F, beneath which are springs *c'* for bearing on the plates to prevent their misplacement by jarring. The die F is set in the bed, with its edge level therewith on the side next the funnel, and the face of the die is ground to rise gradually toward the rear edge, thus forming

the bending edge at an angle of about eighty-eight degrees. This allows for the springing back of the plate after bending, and insures a right-angled position of the bent edge.

The punch-bed B carries punches d', held in by the head of the pin e', and beneath the punches is the spring presser-foot f', apertured to allow the punches to pass.

g' is the bending-die, formed on the outer edge of head B, and fitted on its inner face with a plate, h', of hardened steel.

In operation the lock-plates are stacked in funnel E, and the main shaft being revolved by suitable power, the feed-slide d is moved back and forth on the bed. At the backward movement of the slide, caused by depression of rod n, the tongue g is drawn out from beneath the hopper, so that the bottom plate of the stack drops on bed A. The tongue then moves beneath the hopper and carries the bottom plate out and upon the die F. The punch-head then descends, bends the forward edge of the plate and punches the holes, and rises again. The feed-slide then brings another plate upon the die, and the finished plate is thereby pushed off. It will be observed that the feed is accomplished by the action of the spring, or so that positive connections to the actuating-shaft are dispensed with. That arrangement avoids breakage in case the feed is stopped by a misplaced plate. The presser-foot f' takes upon the lock-plate before the projection g' commences to bend the edge and remains upon the plate after the head commences to rise, so that the plate is held firmly until the punches are fully withdrawn. In case the plate is misplaced, the punches will cut holes and the part punched out will be driven below the face of the die, thus preventing injury to the punches and leaving the plate free to be pushed out by the next plate.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. The die-bed F, formed with holes for the cutting-punches, and with its upper surface inclined, as and for the purposes set forth.

2. The combination of the punch-head B, formed with die g' and fitted with punches d', with the reciprocating head a and bed-die F, substantially as shown and described.

3. The combination of the rod n, provided with T-head p, the actuating-disk q, provided with stud r, spring o, rock-shaft k, feed-slide d, and connections, substantially as described, for operation as set forth.

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