

UNITED STATES PATENT OFFICE.

WILLARD H. FOX, OF NEW HAVEN, CONNECTICUT.

IMPROVEMENT IN MACHINES FOR MAKING SPLIT KEYS.

Specification forming part of Letters Patent No. **167,445**, dated September 7, 1875; application filed August 14, 1875.

To all whom it may concern:

Be it known that I, WILLARD H. FOX, of New Haven, in the county of New Haven and State of Connecticut, have invented a new and Improved Machine for Making Split Keys, of which the following is a specification:

My invention comprises pushers and formers, in combination with bending dies of peculiar construction, whereby flat pieces of metal for split keys will be bent double, with the usual ring at the bow, by being pushed through the dies edgewise.

The invention also comprises a contrivance whereby a number of pushers and dies, together with cutters for cutting long strips into suitable lengths for the keys, are organized in one machine.

Figure 1 is a plan of my improved machine. Fig. 2 is a plan of the same inverted. Fig. 3 is a longitudinal sectional elevation, taken on line *xx* of Fig. 1. Fig. 4 is a partial side elevation, and Fig. 5 is a front elevation, of one of the dies, a pusher, and a former. Fig. 6 is a side elevation of a key.

Similar letters of reference indicate corresponding parts.

A and A' represent two sets of stationary cutters on the upper side of the bench or bed B, over which the metal strips of which the keys are to be formed are fed under the movable cutters C and along the ways D to suitable stops, so that the middle of each blank rests in front of a pusher, E, and under a former, F, and also in front of the die G, so that they are forced edgewise through the dies, and bent up by them around the formers in the shape represented in Fig. 6. These dies are in the form of a block having a round

hole of the size of the round part *a* of the keys, with a slit, *b*, through the top, and tapered down from the top to ways D, so that the hole vanishes in a flat surface, making inclines which bend the blanks as they are pushed along up, while the middle portion is held down in the bottom of the hole.

The pushers consist of a flat metal bar, *e*, of the thickness of the strips of which the keys are made, extending around the formers, being loose thereon, so as to slide along freely in case the formers consist of a long stationary rod, as F', but fitted tight, so as to carry the formers in case they are short pieces, as F. The carriers H are mounted on slides I, arranged under the table, and worked by the crank-shaft J, and the cutters are worked by the lever K and cam L on the driving-shaft. L' represents a key being bent in a die.

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

1. A die, G, constructed and arranged substantially as specified.
2. The combination of a former, F or F', and a pusher, E, with a die, G, substantially as specified.
3. The combination of way D and cutters A C with the pusher E, former F, and die G, substantially as specified.
4. Two sets of cutters, A C, pushers E, formers F, and dies G, arranged and organized in one machine with one crank-shaft, J, substantially as specified.

WILLARD HENRY FOX.

Witnesses:

JAMES J. JARDINE,
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