(No Model.) 2 Sheets—Sheet I.

L. COSGROVE.

MACHINE FOR CUTTING KEY SEATS.

No. 280,582. Patented July 3, 1883.

Fig. 1.

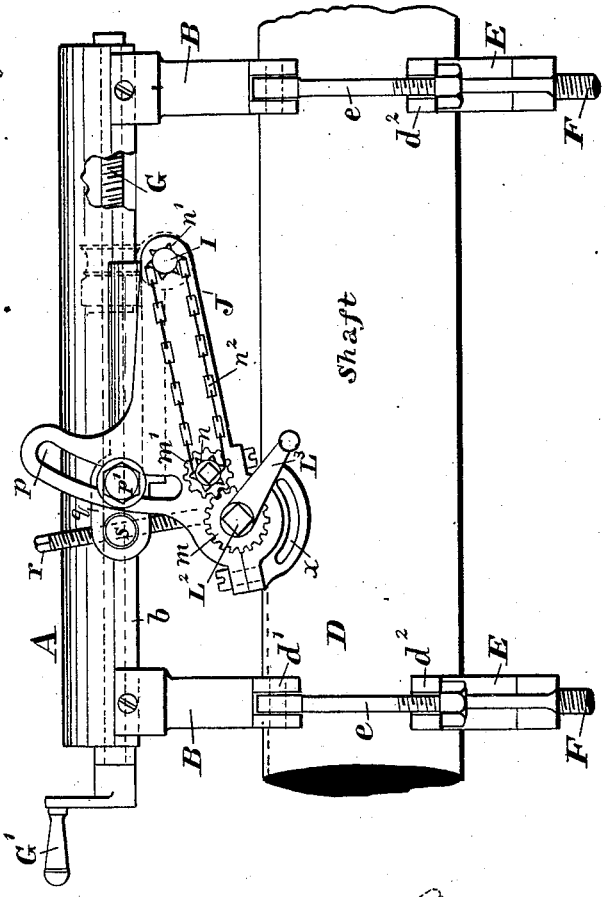


Fig. 3.

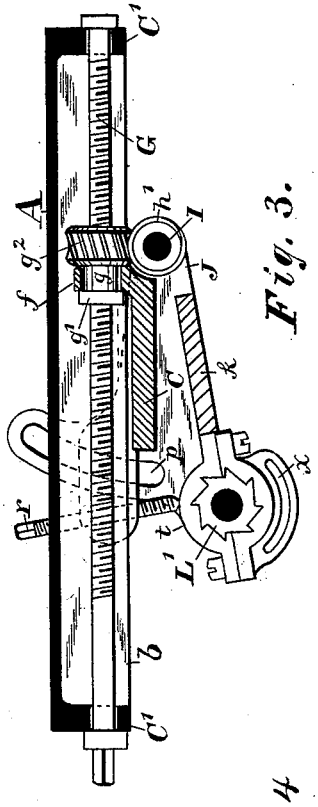


Fig. 2.

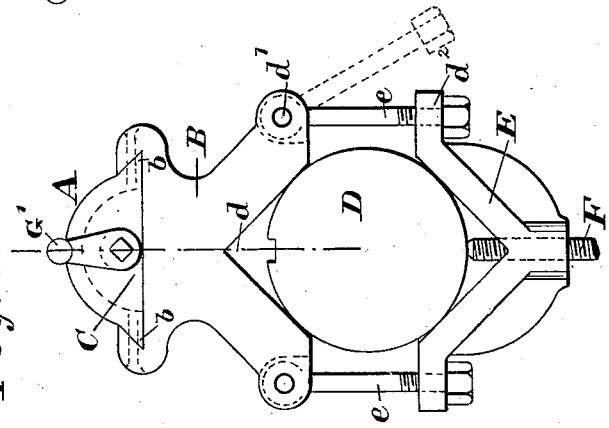
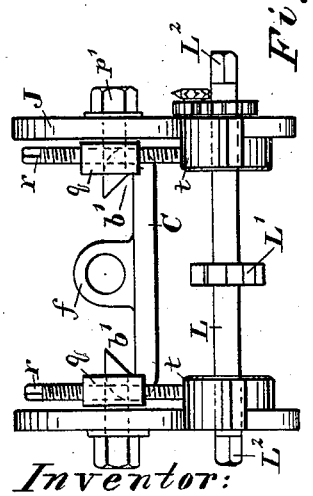


Fig. 4.



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(No Model.) 2 Sheets—Sheet 2.

L. COSGROVE.

MACHINE FOR CUTTING KEY SEATS.

No. 280,582. Patented July 3, 1883.

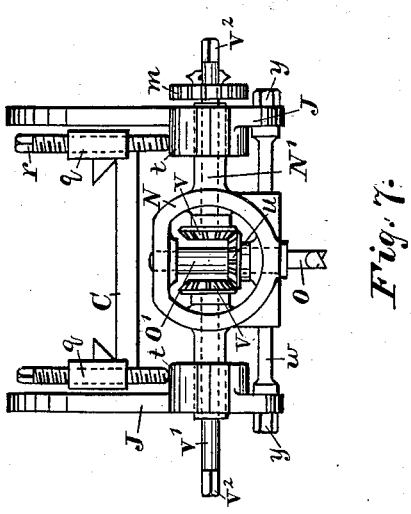

Fig. 7.

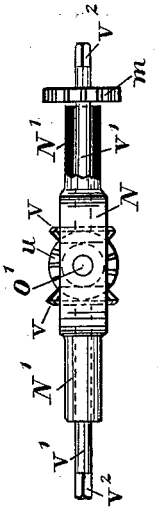

Fig. 8.

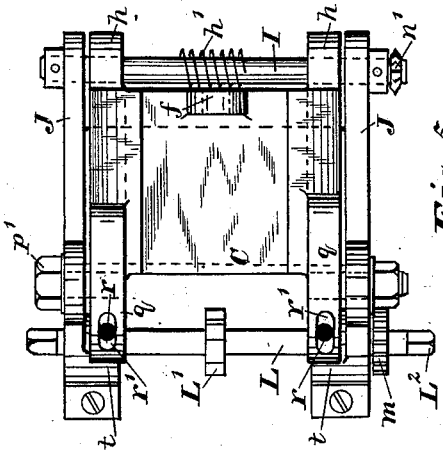

Fig. 5.

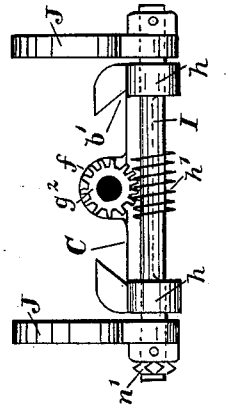

Fig. 6.

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UNITED STATES PATENT OFFICE.

LAWRENCE COSGROVE, OF BALTIMORE, MARYLAND.

MACHINE FOR CUTTING KEY-SEATS.

SPECIFICATION forming part of Letters Patent No. 280,582, dated July 3, 1883.

Application filed February 19, 1883. (No model.)

To all whom it may concern:

Be it known that I, LAWRENCE COSGROVE, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Portable Machines for Cutting Key-Seats, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to an improved portable machine for cutting key-seats on shafts, adapted to operate on shafts in any position, and will first be described, and then designated in the claims.

In the drawings hereto annexed, Figure 1 is a side view of the machine applied to a shaft. Fig. 2 is a view of the end of the machine. Fig. 3 is a longitudinal section of the machine. Fig. 4 is a view as seen from the front end, showing one form of cutter and all parts except the carriage-way. Fig. 5 is a top view of the cutter-carriage. Fig. 6 is a rear end view of same. Fig. 7 is a view as seen from the front end, showing another form of cutter and most of the parts except the carriage-way. Fig. 8 is a top view of the yoke which carries the cutter shown in Fig. 7.

The letter A designates a carriage-way having two taper edges, *b*, which serve as slides for the movement of the cutter-carriage C. The carriage-way is supported by two saddles, B, each having a right-angled stride, *d*, to set on the shaft D where the key-seat is to be cut. To each leg of the saddle a bolt, *e*, is pivoted at *d'*, thereby permitting the bolt to swing laterally. The two bolts thus attached to each saddle support a right-angled yoke, E, the ends d^2 of which have an open slot to receive the bolt, which latter is tightened by a nut, *e'*. A tightening-screw, F, passes through the angle of the yoke and serves to tighten the saddles onto the shaft. This device constitutes the means for fastening the machine to a shaft, and, owing to the right-angled shape of the saddle-stride and yoke, the same is adapted to fit shafts of a wider range of sizes.

The cutter-carriage C is on each side dovetail-shaped, as at *b'*, to fit and slide on the edges *b* of the way. A box, *f*, is secured to the carriage, in which turns an internally-threaded nut, *g*. The outer side of said nut is turned in a lathe to fit the box, and has a shoulder, *g'*, at one end, and carries a spiral gear wheel or pinion, g^2, at the other end. A fixed screw, G, extending lengthwise of the carriage-way, carries the nut *g*. The ends of this screw are in bearings C' on the carriage-way, whereby the screw may turn freely, but cannot itself advance. The nut *g*, therefore, turning freely in the box *f*, while the screw remains fixed, causes the cutter-carriage to move along the way. Shaft-bearings *h* are also at each side on the carriage, in line with but below the spiral pinion, and a shaft, I, is mounted in said bearings. A worm, *h'*, on the shaft engages with the spiral pinion, whereby the latter is rotated.

On each end of the shaft outside of the bearings *h*, an arm, J, has one end loosely mounted, whereby its other end is adapted to have movement. These two arms are connected by a cross plate or bar, *k*. A shaft, L, is carried on the movable end of the two arms, and a cutter, L', of suitable construction, is mounted on the shaft. Each end L^2 of the shaft is squared for the attachment of a crank, L^3, and on one end is a pinion, *m*, with which another, *m'*, gears. This latter carries a sprocket-wheel, *n*, and another sprocket-wheel, *n'*, is mounted on the end of shaft I, while an endless chain, n^2, connects the two sprocket-wheels. It will thus be seen that upon turning the cranks L^3 the key-seat cutter L' is rotated, and, through the connecting mechanism of sprocket-wheels and chain, the worm is turned, thereby slowly moving the carriage and carrying the cutter forward along the shaft.

The free or movable end of each of the arms J has a segment-slot, *p*, and a set-screw, *p'*, passes through each of the slots and enters an upward-projecting boss, *q*, integral with the side of the cutter-carriage. The segment-slots permit the movable ends of the two arms to be adjusted so as to set the cutter to cut the desired depth, and also to set it to shafts of varying sizes, and the set-screws *p'* serve to tighten or hold the arms at the desired point.

To prevent the arms from moving and insure that the cutter will maintain its position

as set, two supplemental screws, *r*, are provided. (See Figs. 4 and 5.) Each of these supplemental screws passes through slots *r'* in the boss *q* in a direction at right angles with the set-screws *p'*. A hub, *s*, is loosely mounted and adapted to rock in the boss, and the supplemental screws pass through the tapped and threaded hub in a direction at right angles to its axis. This construction of a loose hub threaded for the screw to pass, and a slot, permits the screw to be tilted on the hub, the tilting being limited by the length of the slot. The movable end of each arm has on the sides which confront each other a laterally-projecting shoulder, *t*, and, as seen in Figs. 3 and 4, the ends of the supplemental screws *r* bear on these shoulders. Thus the supplemental screws, by bearing on the arms, are very effective in keeping the cutter exactly to one position, and screws thus arranged may be used alone without the segment-slots. A crank, G', on the end of the screw G serves to move the cutter-carriage back or forth to any desired point on the carriage-way.

Figs. 7 and 8 illustrate a different form of cutter. In this case the shaft L is removed, and a yoke, N, having two tubular arms, N', is substituted. The cutter O is carried by a spindle, O', whose bearings are in the yoke. A bevel-gear, *u*, is on this spindle and gears with two other bevel-gears, *v*, each of which is on the end of a shaft, *v'*, which passes through the tubular arms N'. The other end of each shaft is squared, as at v^2, for the attachment of a crank, L^3. By turning the said crank the cutter O is rotated, and the tubular arms serve as trunnions whereby to tilt the yoke and cutter as desired. A stay-arm, *w*, extends from each side of the yoke parallel with the tubular arms, and the end of each stay-arm passes through a segment-slot, *x*, in the movable end of the arm J. This slot *x* is concentric with the shaft *v'*. A nut, *y*, on the end of the stay-arm serves to tighten and hold it to any desired position in the slot. Thereby when the cutter O and yoke have been tilted they are retained in the tilted position. The mechanism already described carries this cutter forward along the shaft as well as the other; but one cutter can be used in some positions where the other cannot.

Having described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a machine for cutting key-seats, the combination, with the immovable carriage-way having a fixed screw, G, extending lengthwise, of a carriage, C, having a box, *f*, and a worm-shaft, I, a rotatable cutter, L', mounted on the carriage, an internally-threaded nut, *g*, fitting the box and carrying a spiral pinion, g^2, which engages with the worm-shaft, and mechanism, substantially as described, to connect the rotatable cutter and the worm-shaft, as set forth.

2. In a machine for cutting key-seats, the combination of the cutter-carriage C, having a boss, *q*, at the side, a cutter, arms J, loosely mounted by one end to the carriage, and provided in the movable end which carries the cutter with a segment-slot, *p*, and a set-screw, *p'*, through the slot into the boss, as set forth.

3. In a machine for cutting key-seats, the combination of the cutter-carriage having a boss, *q*, provided with a slot, *r'*, and a hub, *s*, tapped in a direction at right angles to its axis, threaded, loosely mounted in the boss, and adapted to rock, a cutter carried on a movable arm, and a screw, *r*, passed through the slot and hub and having its end bearing on the movable arm, as set forth.

In testimony whereof I affix my signature, in presence of two witnesses, this 16th day of August, 1882.

LAWRENCE COSGROVE.

Witnesses:

JOHN E. MORRIS,

JNO. T. MADDOX.