

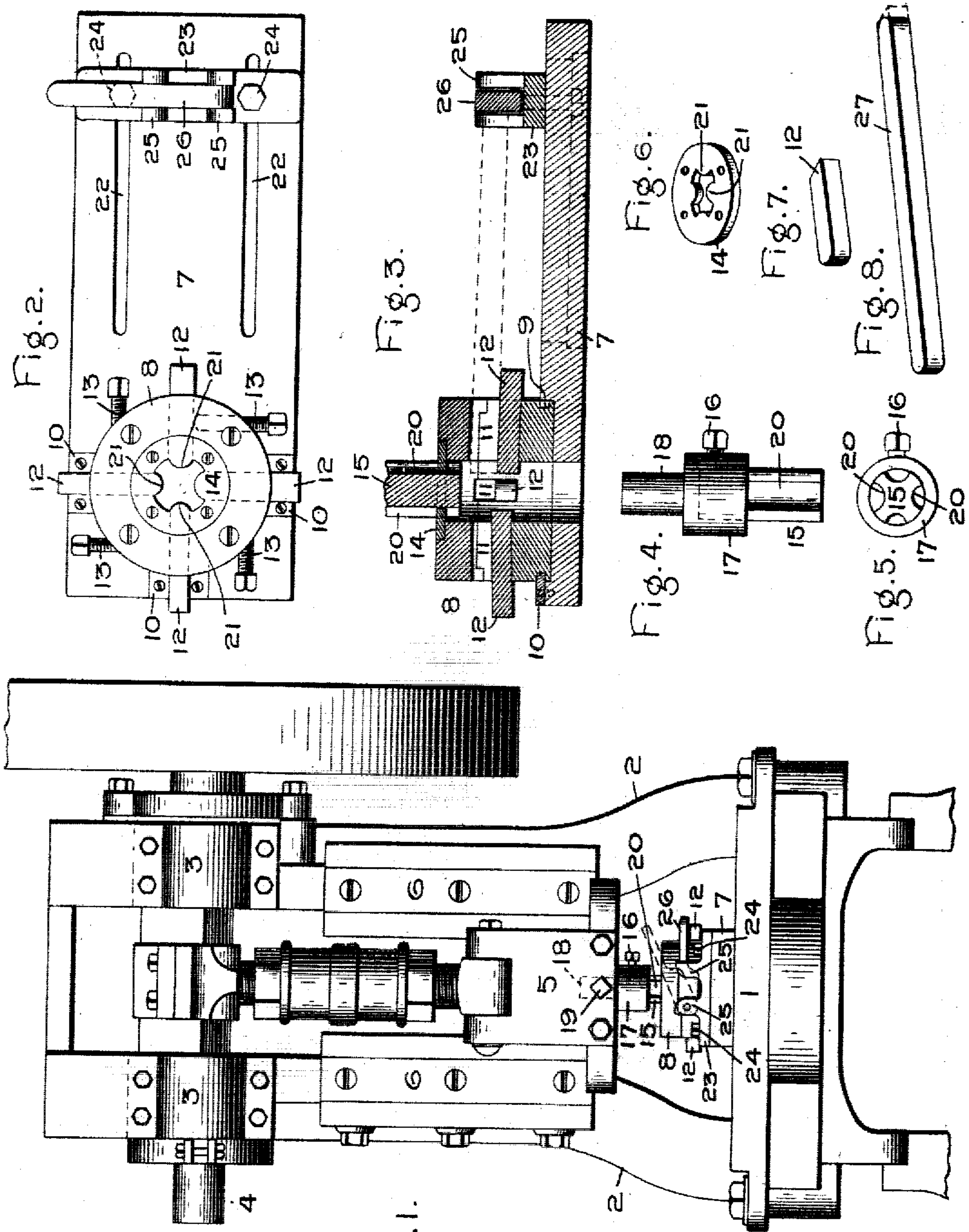
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H. GEISENHÖNER.

MACHINE FOR SHAPING THE ENDS OF METAL BARS.

APPLICATION FILED SEPT. 29, 1902.



Witnesses:

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Fig. 1.

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by *Albert H. ...*  
Att'y.



# UNITED STATES PATENT OFFICE.

HENRY GEISENHÖNER, OF SCHENECTADY, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

## MACHINE FOR SHAPING THE ENDS OF METAL BARS.

No. 811,771.

Specification of Letters Patent.

Patented Feb. 6, 1906.

Application filed September 29, 1902. Serial No. 125,204.

*To all whom it may concern:*

Be it known that I, HENRY GEISENHÖNER, a citizen of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Machines for Shaping the Ends of Metal Bars, of which the following is a specification.

This invention relates to metal-working machines; and its object is to rapidly and cheaply shape the ends of metal bars, such as the keys used for fastening belt-pulleys, gear-wheels, and the like to shafting. It is well known that the ends of such keys must be rounded in order to fit the ends of the keyways, the latter having rounded ends because they are milled out by a cylindrical cutter. Heretofore the keys have been shaped by hand or in a milling-machine, so that one workman could turn out but a few hundred in a day. By my invention he can make several thousand in the same time and much more accurately than by hand.

My invention consists of a machine in which a reciprocating shearing-tool having a suitably-shaped cutting edge is caused to pass transversely across the end of a blank having square ends, thus cutting off the corners of the blank and rounding or otherwise shaping the end. Suitable holding and gaging devices are provided to insure uniformity in the keys and enable those of the same size to be interchangeably used.

In the accompanying drawings, Figure 1 is a front elevation of the machine. Fig. 2 is a top plan view, on an enlarged scale, of the blank holder and gage. Fig. 3 is a longitudinal section of the same. Fig. 4 is a side elevation of the shearing-tool. Fig. 5 is an end view of the same. Fig. 6 is a perspective view of the guide-plate for said tool. Fig. 7 is a perspective view of one of the rests for the blank, and Fig. 8 is a perspective view of a finished key.

The machine in the main resembles a punching-machine, having a bed 1 and standards 2, carrying bearings 3 for a power-driven crank-shaft 4, which reciprocates a cross-head 5 in vertical guides 6 above the bed. On the bed is fastened a plate 7, having at one end a shallow circular socket in which is rotatably mounted a work-holder consisting of a cylinder 8, provided with a circumferential groove 9. Retaining-segments 10 are bolted

to the plate 7 and project into the groove 9 to hold the cylinder in place in the socket, but leave it free to rotate therein. In the walls of the cylinder are one or more transverse slots 11, preferably radial and of different sizes. In each slot is a short bar 12, serving as a rest for the key-blank. The slot or the upper surface of the rest, or both, is or are inclined slightly upward and inward for a purpose hereinafter set forth. A clamping-screw 13 passes transversely through the holder into each slot. In the upper end of the cylinder is secured a guide 14 for the shearing-tool 15, which is secured by a set-screw 16 in a socket 17, having a shank 18, inserted into a socket in the cross-head and fastened by a set-screw 19. The sides of the tool have longitudinal flutes 20 of semicircular or other shape in cross-section and of different sizes. The guide 14 has teeth 21, fitting into said flutes, and the ends of the rests 12 conform to the shape of the tool.

The tool is not withdrawn from the guide 14 at the upper end of its stroke, so that it is always in alinement with the slots 11 in the holder, which is thus maintained concentric therewith.

The plate 7 has a longitudinal guideway parallel to a radius of the cylinder, such as the parallel slots 22, and a gage-block 23 can be clamped at any point along the slots by suitable means, such as the bolts 24. The block has ears 25, in one of which is pivoted a stop 26, which when down engages with the other ear.

The operation of the machine is as follows: The key-blanks consist of metal bars of the desired length, width, and thickness having square ends, as indicated in dotted lines at the right-hand end of Fig. 8. They can be rapidly made by sawing up a long rod into proper lengths. When a quantity of a given size have been prepared, the workman selects the slot in the cylinder which fits the blank and turns the cylinder to bring said slot to the front. The tool turns with the cylinder, the set-screw 19 being slacked off until the cylinder and tool are in the right position and then tightened. The gage 23 is then adjusted, so that when the outer end of the blank rests against the stop 26 its inner end will be in line with the deepest part of the flute 20 in the tool corresponding with the slot selected. The clamping-screw 13 is



then set tightly against the blank. The machine is then started and the tool descends, shearing off the superfluous metal from the end of the blank and leaving it rounded, as shown in Fig. 8, or otherwise shaped, according to the shape of the tool. The shearing action of the tool tends to draw it diagonally across the blanks, and it is in order to counteract this effect that the rest is inclined upward. The divergence from a line normal to the axis of the tool is just enough to cause the shaped end of the key to be perpendicular to its top and bottom. By lifting the stop 26 the blank can be slid out for reversal end for end, and the finished key 27 can be similarly removed after both ends have been shaped.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. A machine for shaping the ends of metal bars, comprising a shearing-tool, a work-holder adjacent to the line of movement of said tool and having one or more slots transverse to said line of movement, and a work-rest in each slot having its end conforming to the shape of the tool.

2. A machine for shaping the ends of metal bars, comprising a shearing-tool, a work-holder adjacent to the line of movement of said tool and having one or more transverse slots, and a work-rest in each slot having its upper surface inclined slightly upward toward the tool.

3. A machine for shaping the ends of metal bars, comprising a shearing-tool, a work-holder adjacent to the line of movement of said tool having one or more radial slots inclined slightly upward toward the tool, a rest in each slot, and means for clamping the work in said slots.

4. A machine for shaping the ends of metal bars, comprising a shearing-tool, a work-holder adjacent thereto and provided with transverse slots inclined slightly upward toward the tool, a removable rest in each slot having its end conforming to the shape of the tool, and means for clamping the work in said slots.

5. A machine for shaping the ends of metal bars, comprising a shearing-tool, a rotatable work-holder concentric with said tool and hav-

ing one or more radial slots, and a clamping-screw entering each slot.

6. A machine for shaping the ends of metal bars, comprising a shearing-tool, a rotatable work-holder concentric therewith and having one or more radial slots, and a guide on said holder engaging with said tool to keep it in alinement with said slots.

7. In a machine for shaping the ends of metal bars, the combination with a cylindrical work-holder having radial slots of different sizes, of a shearing-tool having cutting edges corresponding with said slots, and a guide on said cylinder engaging with said tool during its entire stroke to keep it in proper alinement with said slots.

8. In a machine for shaping the ends of metal bars, a work-holder comprising a plate, a cylinder rotatable thereon and having radial slots, and a gage adjustable radially to said cylinder.

9. In a machine for shaping the ends of metal bars, a work-holder comprising a plate, a cylinder rotatable thereon and having radial slots, and a gage adjustable radially to said cylinder and provided with a pivoted stop.

10. In a machine for shaping the ends of metal bars, a gage comprising a block provided with ears, and a stop pivoted to one of said ears for movement into inoperative position and engaging with the other.

11. In a machine for shaping the ends of metal bars, a work-holder comprising a plate having a shallow circular socket at one end and slots parallel with a radius of said socket, a cylinder rotatable in said socket and having radial slots and a circumferential groove, retaining-segments fastened to said plate and projecting into said groove, clamping-screws entering said radial slots, and a gage-block having a pivoted stop and adjustable in said parallel slots.

In witness whereof I have hereunto set my hand this 22d day of September, 1902.

HENRY GEISENHÖNER.

Witnesses:

HELEN ORFORD,  
G. C. HOLLISTER.