

(No Model.)

3 Sheets—Sheet 1.

W. ROSS.
GRINDING MACHINE.

No. 477,067.

Patented June 14, 1892.

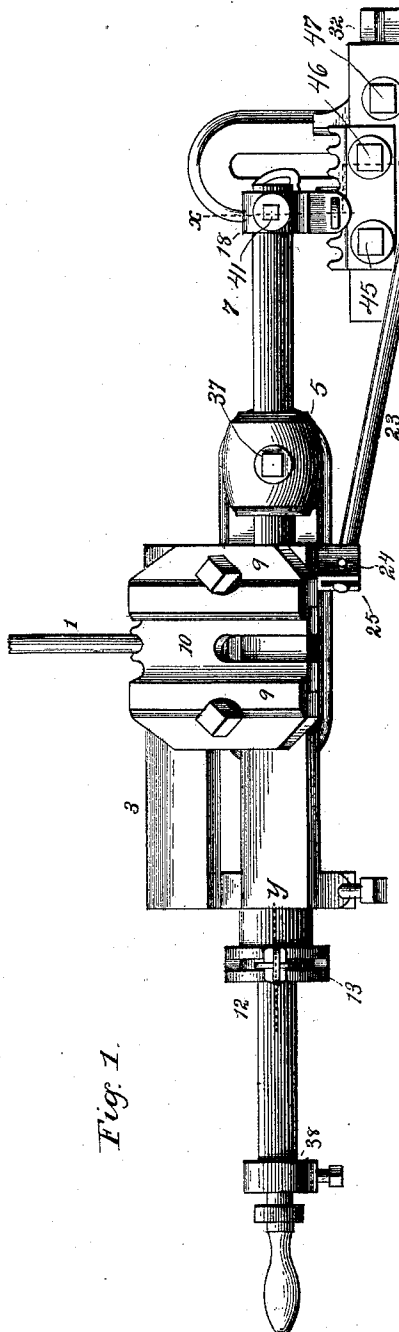
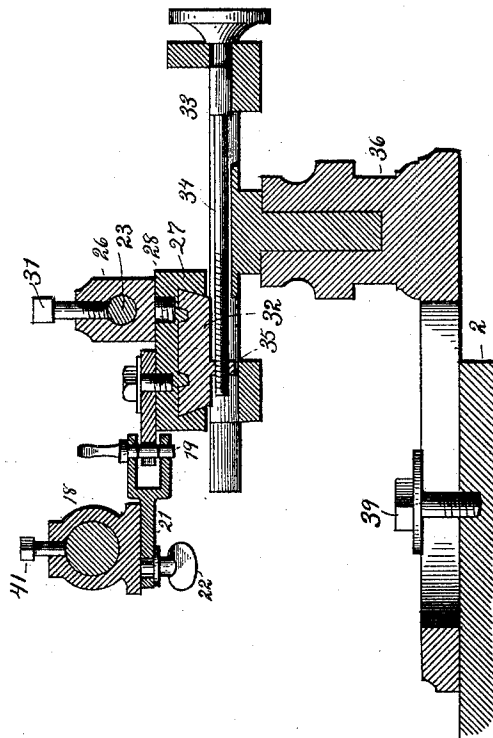


Fig. 1.

Fig. 4.



WITNESSES.

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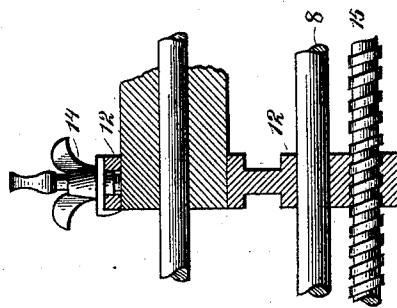
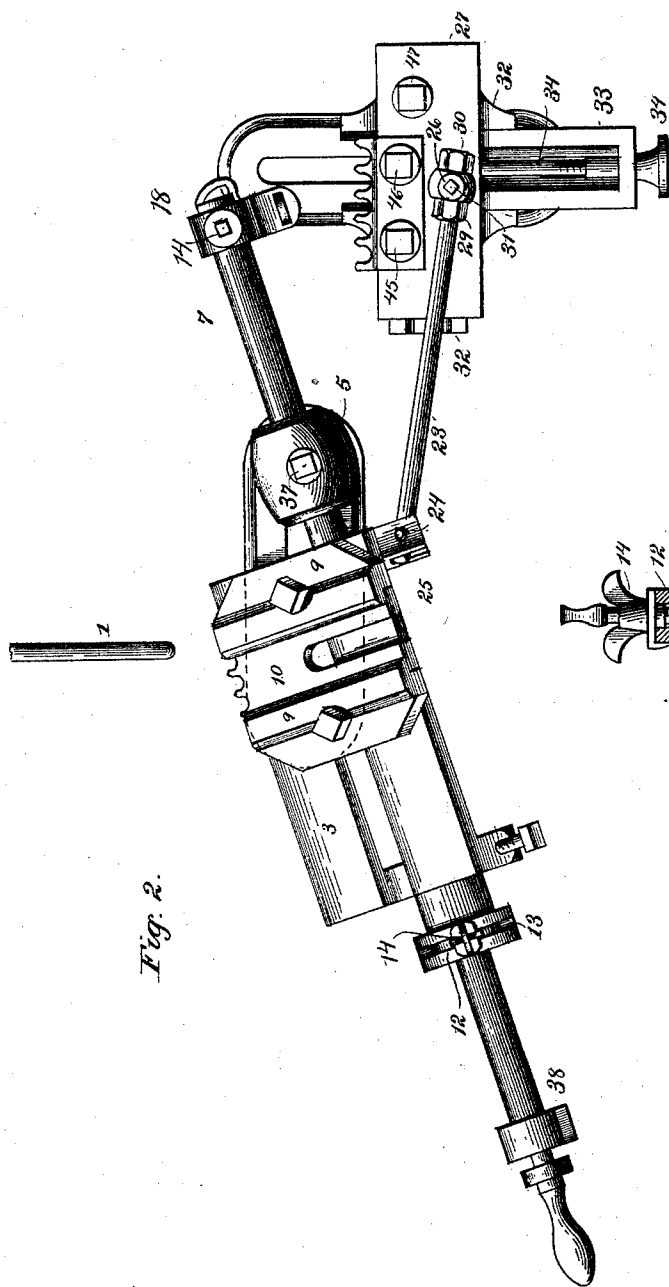
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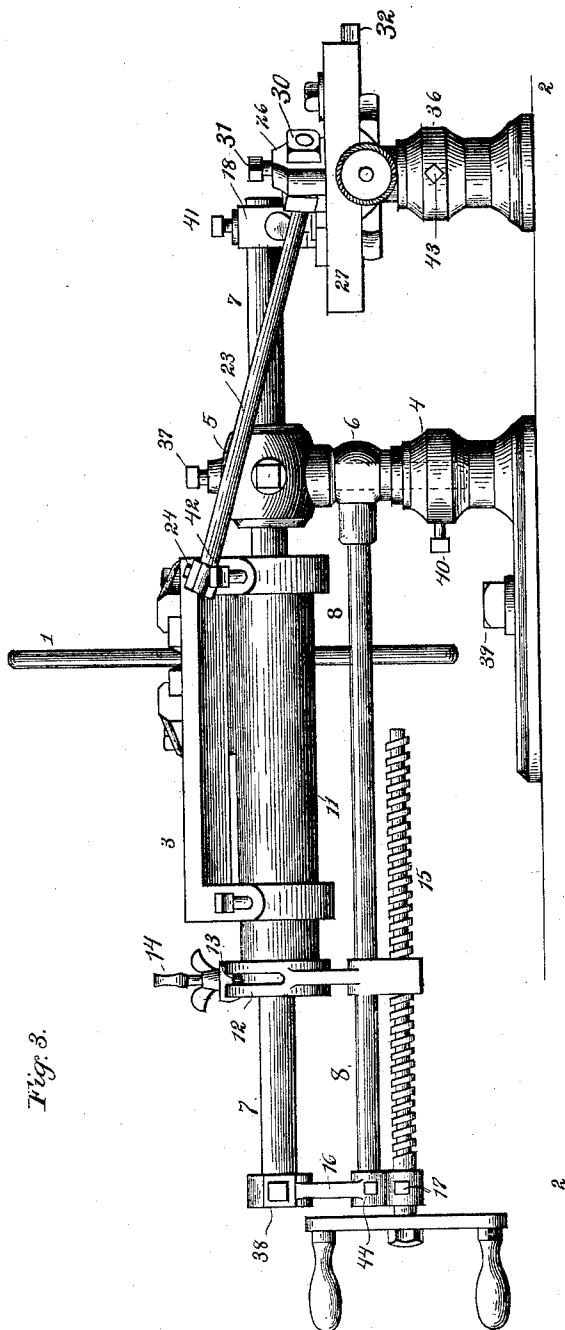


Fig. 3.

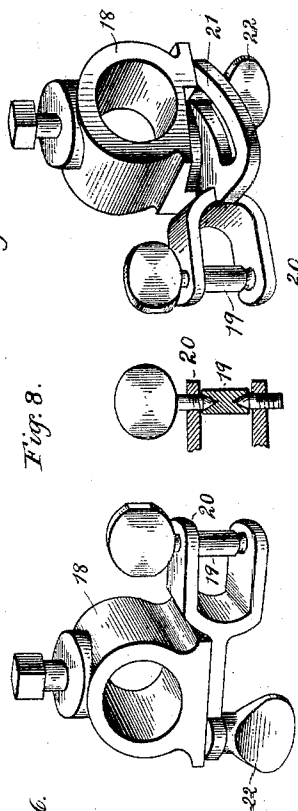


Fig. 7

Fig. 8.

Fig. 6.

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UNITED STATES PATENT OFFICE.

WILLIAM ROSS, OF WILLARD, TEXAS.

GRINDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 477,067, dated June 14, 1892.

Application filed January 20, 1892. Serial No. 418,680. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM ROSS, a citizen of the United States, residing at Willard, in the county of Trinity and State of Texas, have invented certain new and useful Improvements in Grinding-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to grinding-machines.

The object of my invention is to provide a machine chiefly adapted for making or grinding molding bits or knives with either a straight or irregular cutting-edge; but my invention is also adapted for making and grinding other edged tools and implements.

In the accompanying drawings, forming part of this specification, Figure 1 is a plan view showing the machine in operative position. Fig. 2 is a plan view showing the machine disengaged or swung back from the emery-wheel. Fig. 3 is a front elevation. Fig. 4 is a cross-section taken on the line xx of Fig. 1. Fig. 5 is a vertical longitudinal section taken on the line yy of Fig. 1. Fig. 6 is a detail perspective of the device for holding and adjusting the pattern-roller. Fig. 7 is a detail perspective taken from the opposite side of Fig. 6. Fig. 8 is a detail section of the roller and roller-bearing.

1 denotes an emery-wheel, mounted upon a table or platform 2.

3 denotes a reciprocating bit-carrier supported upon a frame, said frame being pivotally mounted to a standard 4 in bearings 5 and 6, as shown in Fig. 3. This frame consists of a shaft or arm 7 and a supporting-rod 8. The shaft 7 extends through the bearing 5, and carries upon one side of said pivotal bearing a pattern-roller, while upon the other side of said bearing is supported the bit-carriage 3, adapted to slide endwise on said shaft. This carriage is provided with a table for holding the bit-clamps 9, said table consisting of two horizontal pieces running parallel and forming ways upon which said clamps are secured. These clamps are provided with headed screw-bolts which pass through

said clamps and between the ways projecting below the latter and provided with snare-nuts which jam against the under side of said ways.

11 denotes a hollow shaft secured to the under side of the bit-carriage and is sleeved over the arm or shaft 7, its outer end resting in a brass casting 12, on which it may be rocked or turned. This casting is provided with a slot 13 and a thumb-screw and jam-nut 14, the purpose of which is to secure the carriage at any angle relative to the contacting edge of the emery-wheel.

15 is a screw-rod provided with a yoke and handles. This rod is detachably mounted to a brass casting 16, in which it turns, by a small set-screw 17, which engages a groove in the neck of the screw-rod. Said screw-rod also passes through the casting 12 in a screw-thread cut therein, whereby when said rod is turned it imparts an endwise motion to the carriage 3. The brass casting 16 connects the outer ends of the main shaft or arm 7 and the supporting-rod 8. The casting 12 slides on the rod 8.

18 is a sleeve secured to the free end of the shaft or rod 7 by a set-screw and is designed to hold the pattern-roller. By loosening the set-screw the sleeve may be moved endwise or turned at an angle on the shaft.

19 is a pattern-roller, which should be of the same thickness as the grinding edge of the emery-wheel. As shown in detail in Figs. 6 and 7, said roller is held in a bracket 20, fastened to the sleeve 18. This bracket is provided with a curvilinear slot 21 and set-screw 22 for giving the roller an adjustment to or from the templet or pattern.

23 is a rod connecting the bit-carriage and pattern-table. It is connected to a bracket on the carriage by a pin 24, passing loosely through the end of said rod, and on which the rod is free to turn. 25 is a bracket pivoted to said carriage by a screw-bolt or otherwise, having projecting ears or lugs, through which the pin 24 passes. The opposite end of the rod 23 is adjustably connected to the pattern-table by means of a sleeve 26, through which it passes. This sleeve, as shown in section in Fig. 4, is connected to the pattern-table 27 by

a screw-bolt formed integral therewith on its under side. The rod 23 is held in this staple by nuts 29 and 30 on either side thereof, as shown in Figs. 1 and 2. A set-screw 31 is also
 5 used in the top of the sleeve and serves to clamp the rod 23 in position. As seen in section in Fig. 4, the pattern-table rests upon a casting 32, forming therewith a dovetailed slide or way, upon which it travels. Said
 10 casting in turn rests upon a casting 33, forming therewith a dovetailed slide or way, upon which it travels at right angles to the pattern-table. The casting 33 is concave on top and is provided with a screw-rod 34, which
 15 extends lengthwise of said casting 33 in its concavity and passes through a lug 35 on the under side of the casting 32, which is screw-threaded to receive said rod. This screw-rod serves to move the casting 32, and thereby set
 20 the pattern-table 27 nearer to the pattern-roller.

36 is a stand upon which the casting 33 is mounted. Numbers 37 to 42 denote set-screws having T or clamp bolts.

25 45, 46, and 47 are nuts having screw-threaded bolts for securing the templet or pattern to the pattern-table.

As shown in Fig. 2, the machine may be swung away from the emery-wheel without
 30 disconnecting any of its parts, thus enabling the operator to examine the under side of the molding-bit or other tool or implement. The bit-carriage is adapted for carrying any-sized molding-bit up to ten inches long, but can be
 35 made to carry larger sizes. Figs. 1 and 2 show the bit clamped on the carriage, and by giving each bolt one turn the clamps are loosened and are movable the full length of the carriage-table. When the clamps are
 40 loosened, the bits can be readily removed. To adjust the bit higher or lower relatively to the emery-wheel, the jam-nut is loosened, which allows the carriage to be rocked or turned on the shaft or rod 7 when the nut is
 45 tightened to hold it in position. To move the carriage-bit endwise on the shaft or rod 7, the screw-rod 15 is operated by the handles. In case it is desired to give this motion to the bit-carriage without the aid of the screw-rod
 50 said rod may be removed by first releasing the set-screw 17 and then withdrawing the screw-rod from the castings 12 and 16, when the bit-carriage may be moved back and forth by hand. Fig. 1 represents the machine holding
 55 the molding bit or knife to an emery-wheel, the pattern-roller being in contact with the templet or pattern. As the operator moves the bit-carriage endwise on the shaft or rod 7, either by hand or by operating the
 60 screw-rod, the pattern-table is given the same motion by the connecting-rod, thus causing the pattern-roller to follow the lines of the templet, which causes the emery-wheel to duplicate said lines in the bit, as it throws the
 65 same to and from the emery-wheel. In order

to provide for wear of the emery-wheel, the pattern-table can be adjusted nearer to the roller by operating the screw-rod 34. The pattern roller or tracer, as shown in section in Fig. 8, has cone-shaped bearings resting in cone-shaped journals. By means of the curvilinear slot shown in Fig. 7 said roller may be adjusted to or from the templet or pattern. The sliding clamps on the bit-carriage may be removed, and clamps of other designs may be
 75 substituted for holding edge tools or implements of various shapes. When it is desired to use my machine without a templet or pattern, the rod 23 can be disconnected by removing the pin 24. If it should be desired
 80 to gum and sharpen circular saws, the following changes will be made: Loosen the jam-nut and turn the bit-carriage horizontally to the emery-wheel. Remove the bit-clamps and place the saw on the carriage-table, first
 85 placing a suitable washer on the saw, by which it may be clamped to the table. Then remove the connecting-rod 23 and screw-rod 15. The carriage may then be operated by hand, and the saw is revolved as each tooth
 90 is ground.

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

1. In a grinding-machine, the combination, 95 with a grinding-wheel mounted in stationary bearings, of a pivoted frame adapted to swing horizontally, having mounted thereon an adjustable carriage adapted to be moved back and forth upon said frame at one side of the
 100 pivotal point, the frame carrying upon the other side of the pivotal point a pattern-roller, said carriage and pattern-roller being movable simultaneously in opposite directions, the carriage to or from the grinding-
 105 wheel and the pattern-roller to or from the pattern-table.

2. In a grinding-machine, the combination, with a stationary grinding-wheel, of a horizontally - swinging frame having mounted
 110 thereon a reciprocating carriage at one side of the pivotal point, while at the other side is mounted the pattern-roller, and a pattern-table mounted independently of said frame, but coupled to said reciprocating carriage by a
 115 connecting-rod and adapted to move back and forth simultaneously a distance coequal therewith.

3. In a grinding-machine, the combination, with a stationary grinding-wheel, of a horizontally - swinging frame having mounted
 120 thereon a reciprocating carriage at one side of the pivotal point, while at the other side is mounted the pattern-roller, a pattern-table mounted independently of said frame, but
 125 coupled to said reciprocating carriage by a connecting-rod and adapted to move back and forth simultaneously a distance coequal therewith, said reciprocating carriage and pattern-table being operated by a screw-rod se-
 130

cured to said frame and said pattern-table being adjustable to allow for the wear of the emery-wheel.

5 4. In a grinding-machine having a horizontally-swinging frame, the bit-carriage constructed with a hollow shaft, one end of which is mounted in a casting and adjustably secured thereto, whereby said carriage may be

turned in said casting and raised or lowered relatively to the grinding-wheel. 10

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM ROSS.

Witnesses:

T. D. WILLS,
J. T. BEALL.