

(No Model.)

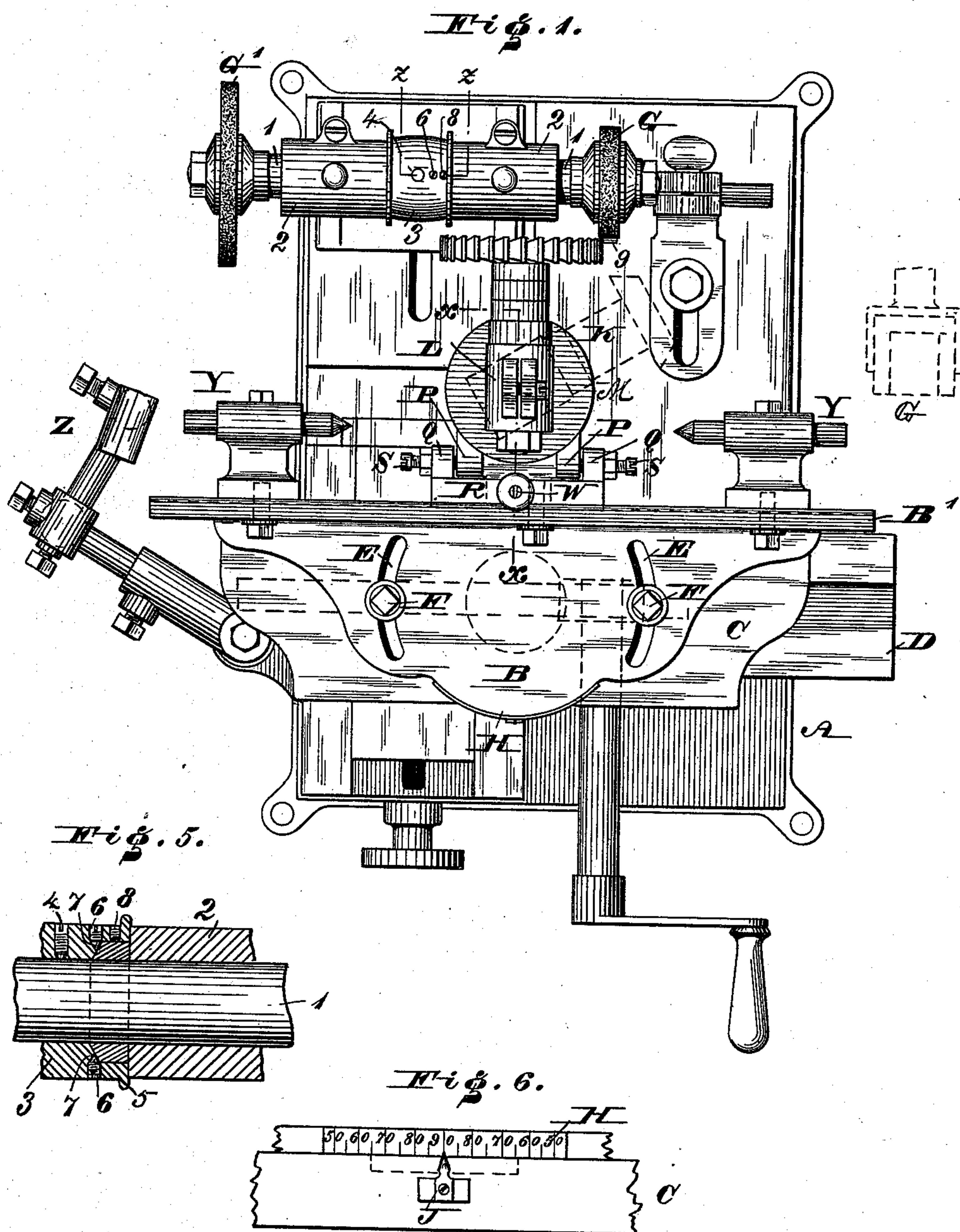
2 Sheets—Sheet 1.

A. BENDER.

CUTTER GRINDING MACHINE.

No. 412,589.

Patented Oct. 8, 1889.



Witnesses
Theo. Rolle'
A. P. Jennings.

Inventor
Adam Bender

By his Attorneys
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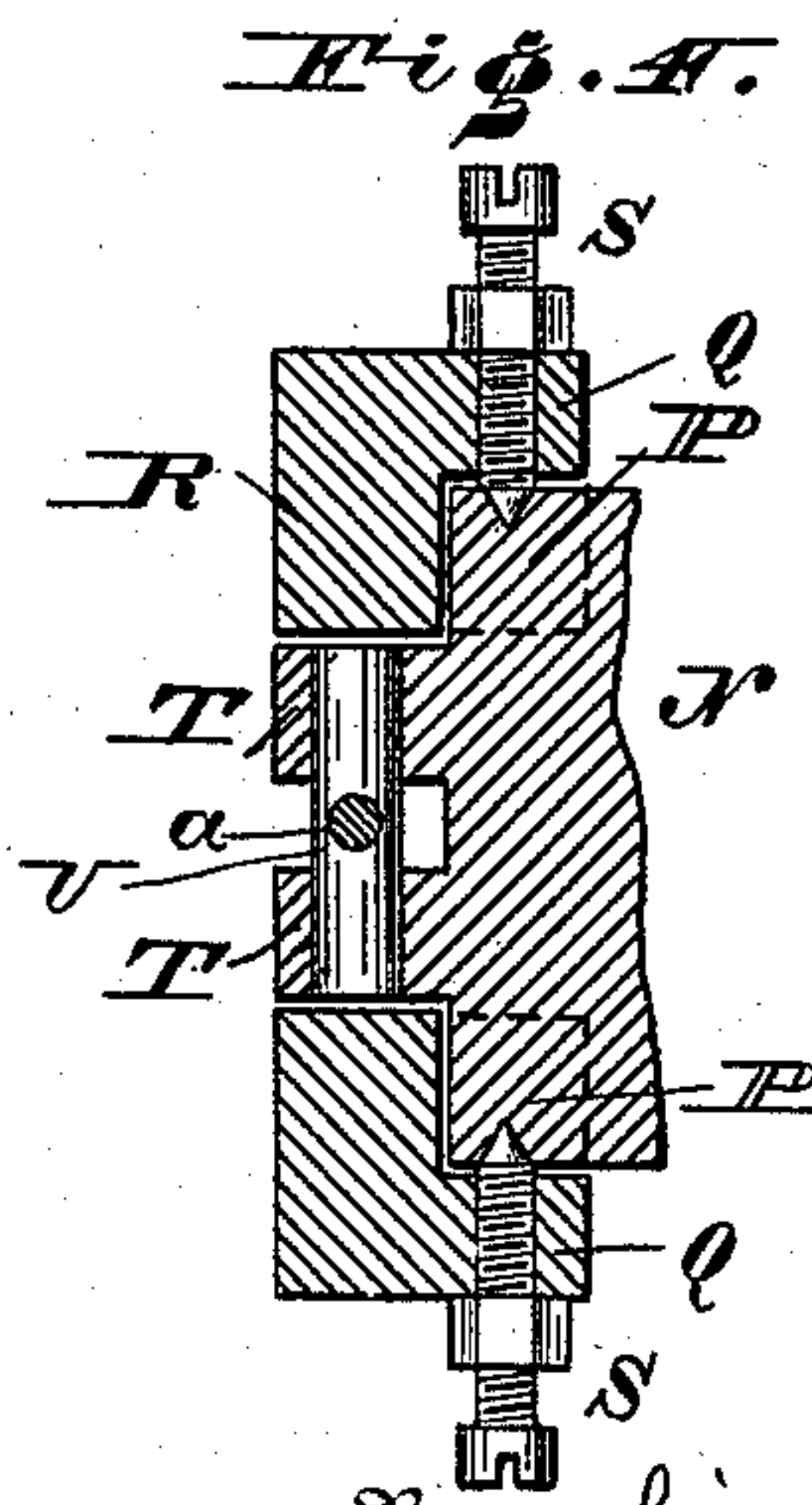
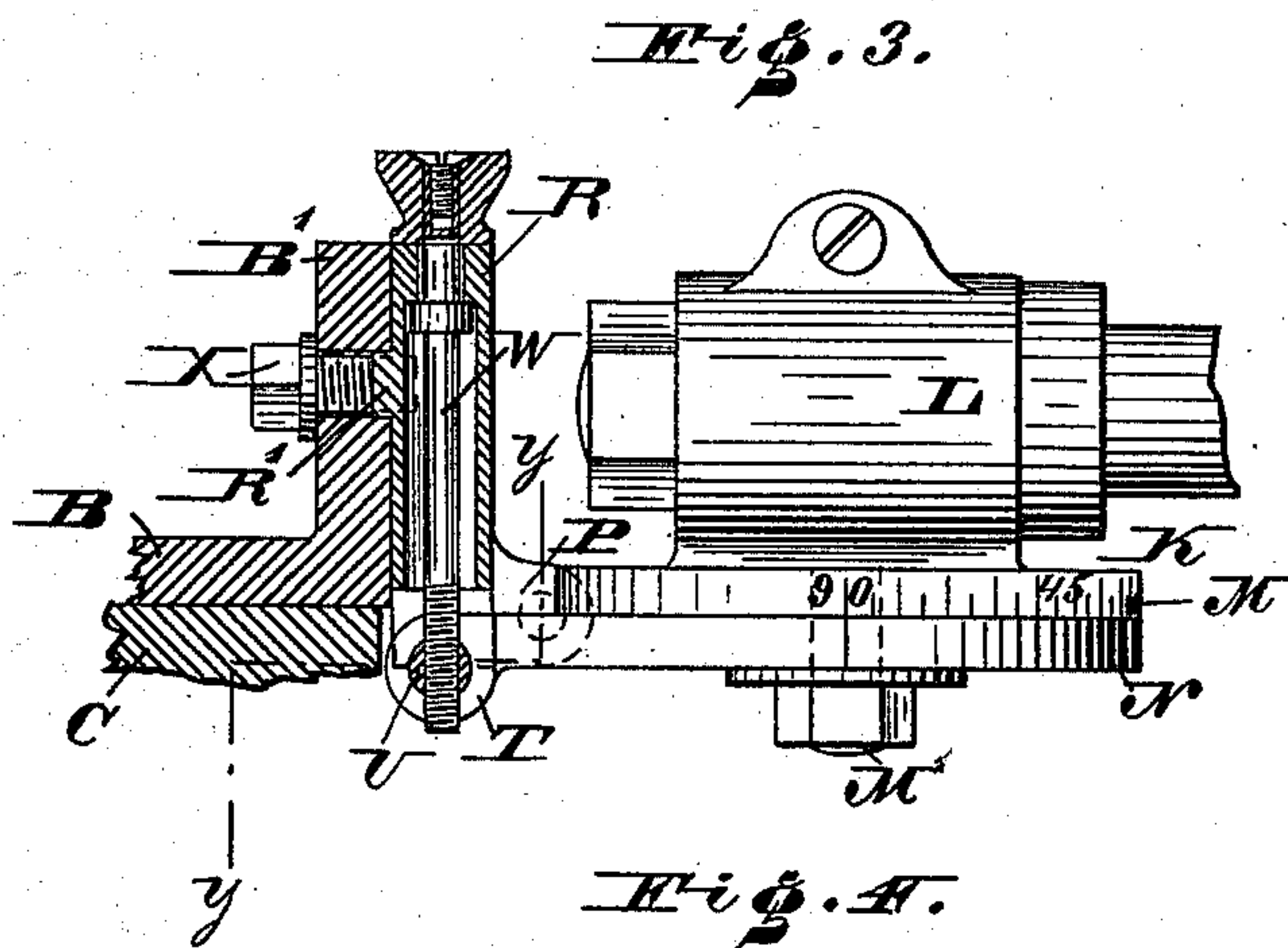
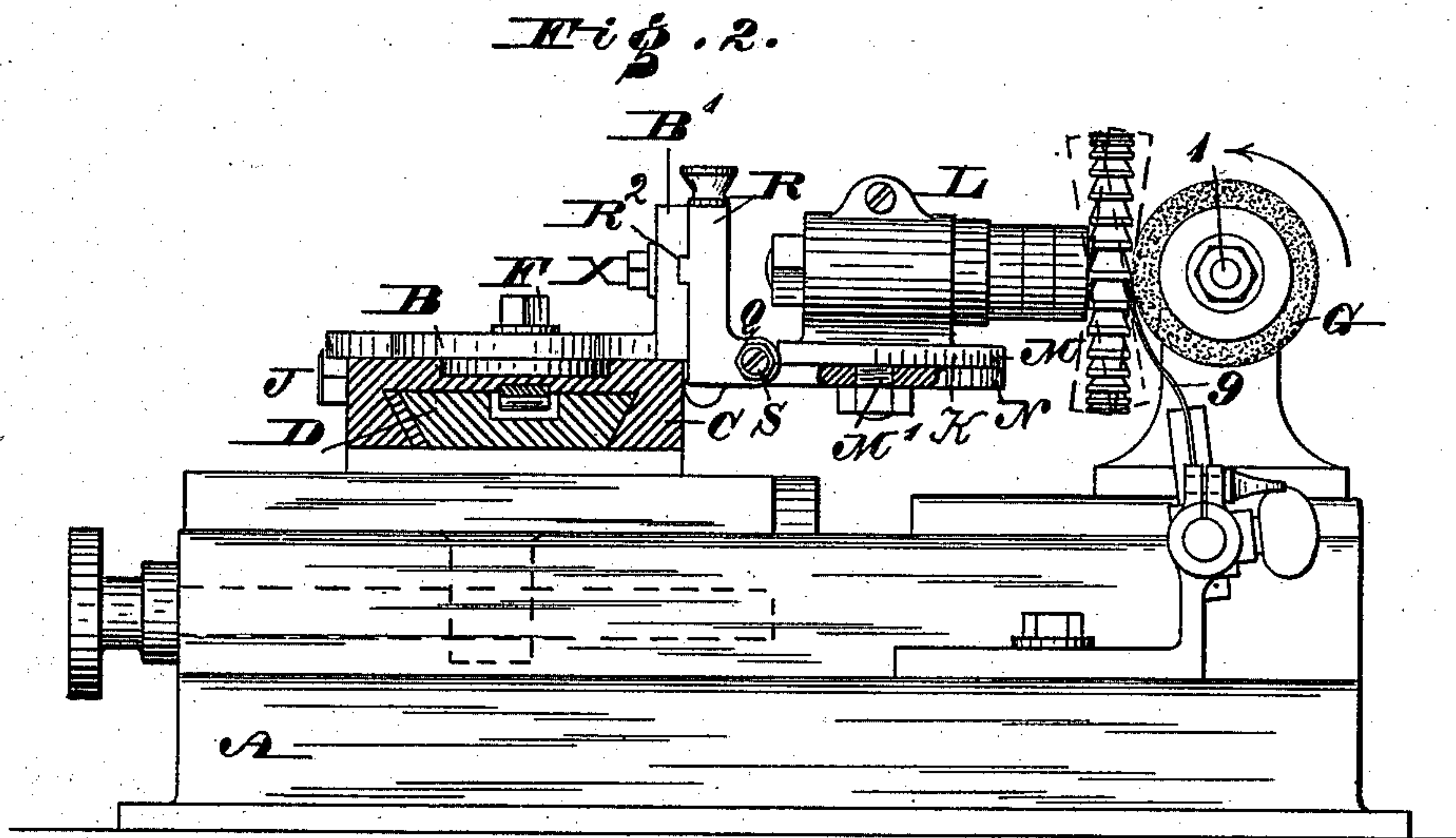
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UNITED STATES PATENT OFFICE.

ADAM BENDER, OF PHILADELPHIA, PENNSYLVANIA.

CUTTER-GRINDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 412,589, dated October 8, 1889.

Application filed December 21, 1888. Serial No. 294,263. (No model.)

To all whom it may concern:

Be it known that I, ADAM BENDER, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Universal Cutter-Grinding Machines, which improvement is fully set forth in the following specification and accompanying drawings.

My invention consists of a machine for grinding cutters and other implements embodying novel means, as hereinafter described and claimed, for adjusting the holder of the cutter or implements in various angles in lateral directions relatively to the emery or grinding wheel.

It also consists of novel means, as hereinafter described and claimed, for raising and lowering said holder for adjusting the cutter or implement in various angles in vertical directions relatively to the emery or grinding wheel.

Figure 1 represents a top or plan view of a grinding-machine embodying my invention. Fig. 2 represents a partial side elevation and partial vertical section thereof. Fig. 3 represents a partial side elevation and partial vertical section of a portion in line *xx*, Fig. 1, on an enlarged scale. Fig. 4 represents a section on line *yy*, Fig. 3. Fig. 5 represents a section of a portion on line *zz*, Fig. 1, on an enlarged scale. Fig. 6 represents a side elevation of a graduated plate and an index or figure of the machine.

Similar letters and numerals of reference indicate corresponding parts in the several figures.

Referring to the drawings, A represents the bed of the machine, and B represents a carriage which is pivotally mounted upon a table C, the latter being fitted upon a support D, which rests on the bed A, it being seen that the table may be moved on the said support D and the latter moved on said bed A, the motions of said table and support being at a right angle to each other. In the table B, around the axis thereof, are segmental slots E, and through said slots are passed screws F, which are fitted in openings in the table C, so that when screws are loosened the carriage B may be readily turned on its axis, thus presenting the cutter or tool or

implement to be ground at an angle to the emery or other wheel G. The center of the side of the carriage B has secured to it a graduated plate H, curvilinear drawn from the axis of said carriage, and adjacent thereto is an index or finger J, which points to the graduations, by which provision the angle of the carriage may be set with precision.

K represents a carrier, which is provided with a holder L for the shaft of the cutter to be ground, said holder being adapted to clamp said shaft and firmly hold the same. The carrier is of the form of a disk having a graduated periphery M, and is connected by a screw M' with a plate N, whose back is formed with ears P, adjacent to which are ears Q on an upright plate R, said ears being connected by screws S as axes, whereby the carrier K may be raised and lowered, as will be hereinafter set forth. Projecting from the plate N, back of the axial portion thereof at what may be termed its "heel," are ears T, through which is freely passed a pin or rock-shaft U, the same having a threaded opening α , to which is fitted a screw W, which is swiveled to the upright plate R. It will be seen that owing to the bolt or screw M' the carrier K may be turned on the plate N, so as to set the sides of the cutter at various angles to the wheel G, as illustrated in the dotted lines, Fig. 1. When the carrier is adjusted, the screw M' is tightened, whereby said carrier firmly retains its adjusted position, the carrier then being advanced to the wheel G, so that the sides of the cutter or implement may be ground.

In order to raise or lower the carrier K, and consequently the holder L, the screw W is properly rotated, whereby, owing to the connection of said screw with the rock-shaft U in the ears T of the plate N, said carrier turns on its axis, thus adapting the cutter or other implement to have its back or other proper portion of the cutter presented to the wheel G at different angles, as will be seen by the dotted lines, Fig. 2. The plate R is freely connected with the upright portion B' of the carriage B by means of a screw X, fitted to said portion B' and tightening against said plate. By this provision the carrier, and consequently the holder, may be laterally adjusted on the carriage B, according to require-

ments. The plate R is provided with a tongue R', which enters a groove R² in the portion B', thus steadying said plate. Connected with the ends of the carriage B are centers Y, for holding reamers, &c., to be ground, and pivoted to the end of the bed A is a holder Z for a twist-drill, said holder being formed of jointed arms, so that the drill may be readily presented to an emery or grinding wheel and firmly held during the grinding operation, it being seen that the shaft 1 of the grinding-wheel G carries on the end adjacent to the drill-holder Z a grinding-wheel G'.

Between the bearings 2 of the shaft 1 is the driving-pulley 3, which is provided with the fastening-screw 4. At the ends of said pulley, on the interior thereof, are shoulders 5, within which are collars 6, the latter encircling the shaft 1. The inner sides of said collars are beveled, and against the same bear the conical points of screws 7, the latter passing through the pulley 3. It will be seen that owing to the screw 7 the collars 6 may be forced against the contiguous portions of the bearings 2, thus forming tight joints between the parts, preventing emery or dust from reaching the shaft 1. A set-screw 8 is provided for causing the collars 6 to rotate with the pulley.

In order to prevent return of the cutter, I employ a tooth or dog 9, of spring metal, the same being adjustably connected with the frame A and acting as a pawl, engaging with the teeth of the cutter for preventing reverse rotation thereof.

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

1. In a cutter-grinding machine, a bed A, having the movable support D thereon, the table C, movable on said support, and the carriage B, pivotally mounted on said table,

the graduated plate H, secured to the center of the side of the carriage B, and the index-finger J, the latter being curvilinear drawn from the axis of the said carriage, said parts being combined substantially as described.

2. A tool carrier or holder, in combination with a plate to which said carrier or holder is pivoted, a rock-shaft in the heel end of said carrier or holder, and a screw fitted to said plate and engaging with said rock-shaft, substantially as described.

3. In a cutter-grinding machine, a carriage with upright portion, an upright frame with ears, a plate with ears, pivotal screws connecting said ears of plate and upright, and a carrier with holder connected with said plate, said parts being combined substantially as described.

4. In a cutter-grinding mechanism, a carriage, an upright plate secured to said carriage, a plate pivotally connected with said upright plate, a rocking shaft journaled in said pivoted plate and having a screw-threaded opening, a screw-bolt swiveled in said upright plate and working in said opening in the shaft, and a carrier with holder secured to said pivoted plate, said parts being combined substantially as described.

5. In a cutter-machine, a rotary shaft with grinding-wheel thereon, a pulley mounted on said shaft between the bearings thereof and having shoulders 5, a beveled collar encircling the shaft adjacent to said shoulders and bearings, and a screw working in the pulley with its point bearing against the beveled face of the collar, substantially as and for the purpose set forth.

ADAM BENDER.

Witnesses:

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JAMES F. KELLY.