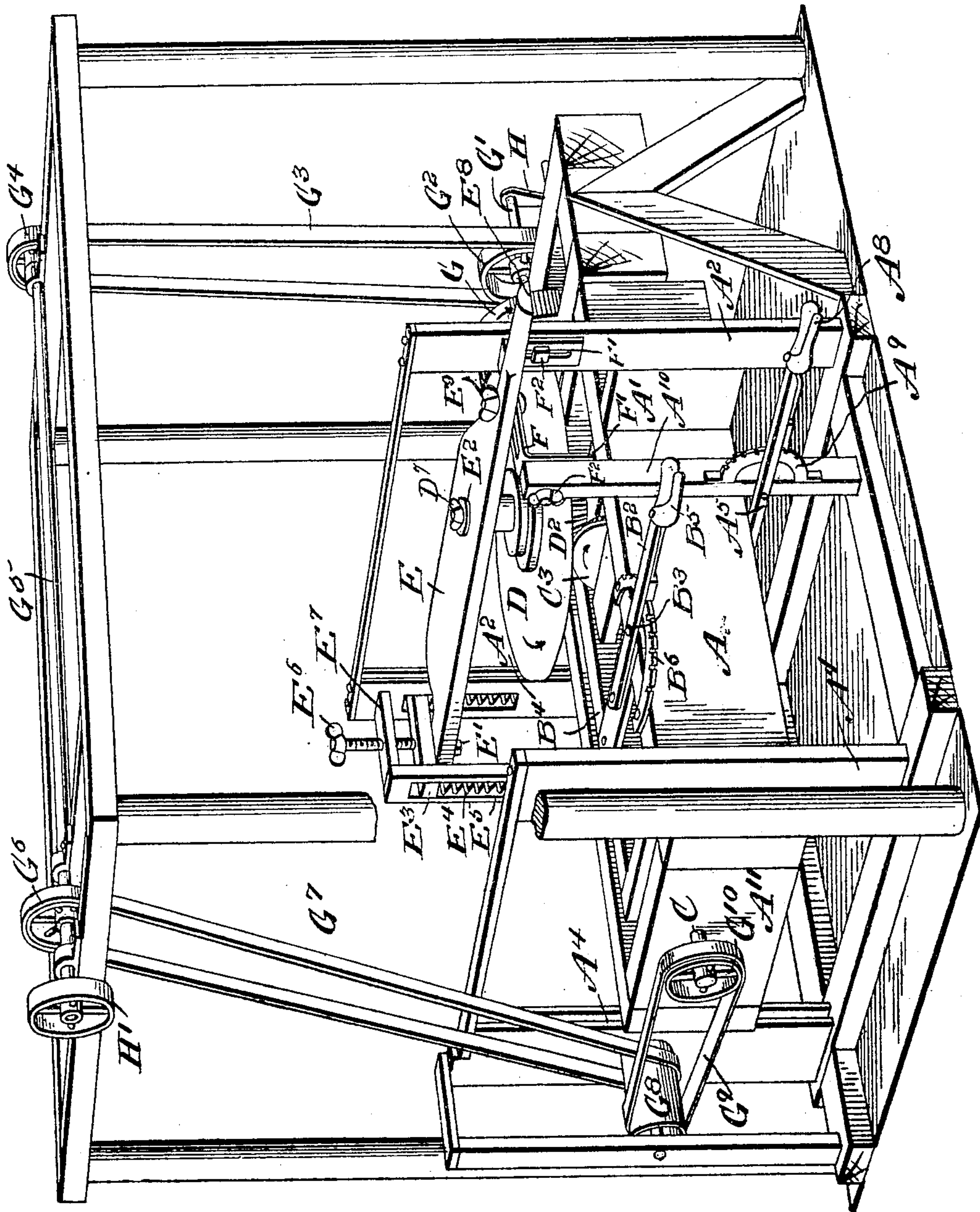


No. 795,271.

PATENTED JULY 25, 1905.

D. DIETZ.  
CUTTER GRINDER.  
APPLICATION FILED NOV. 29, 1904.

2 SHEETS—SHEET 1.



WITNESSES:

*Wm. F. Kyle.*  
*Alfred T. Gage.*

*Fig. 1.*

INVENTOR  
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Attorney

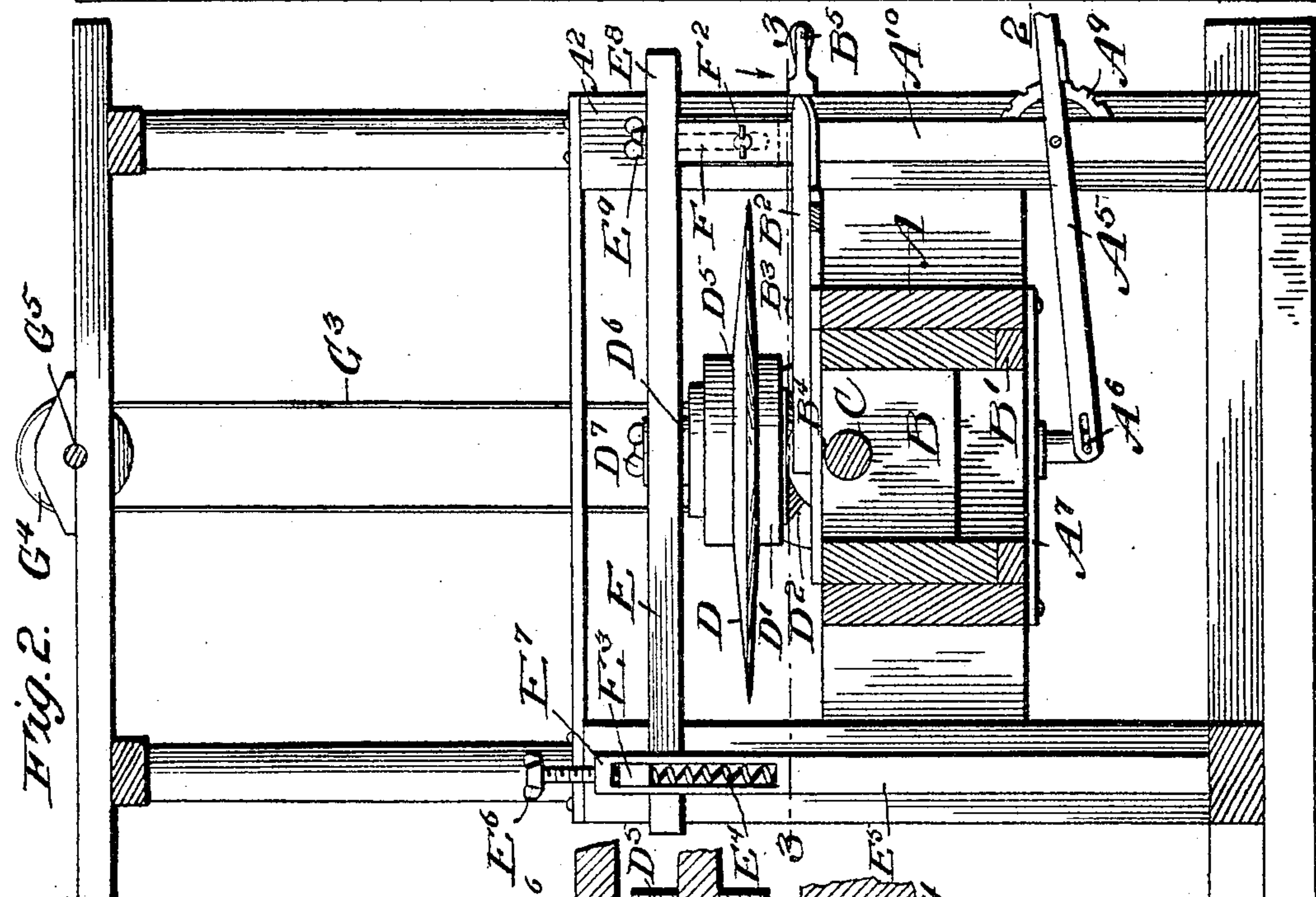
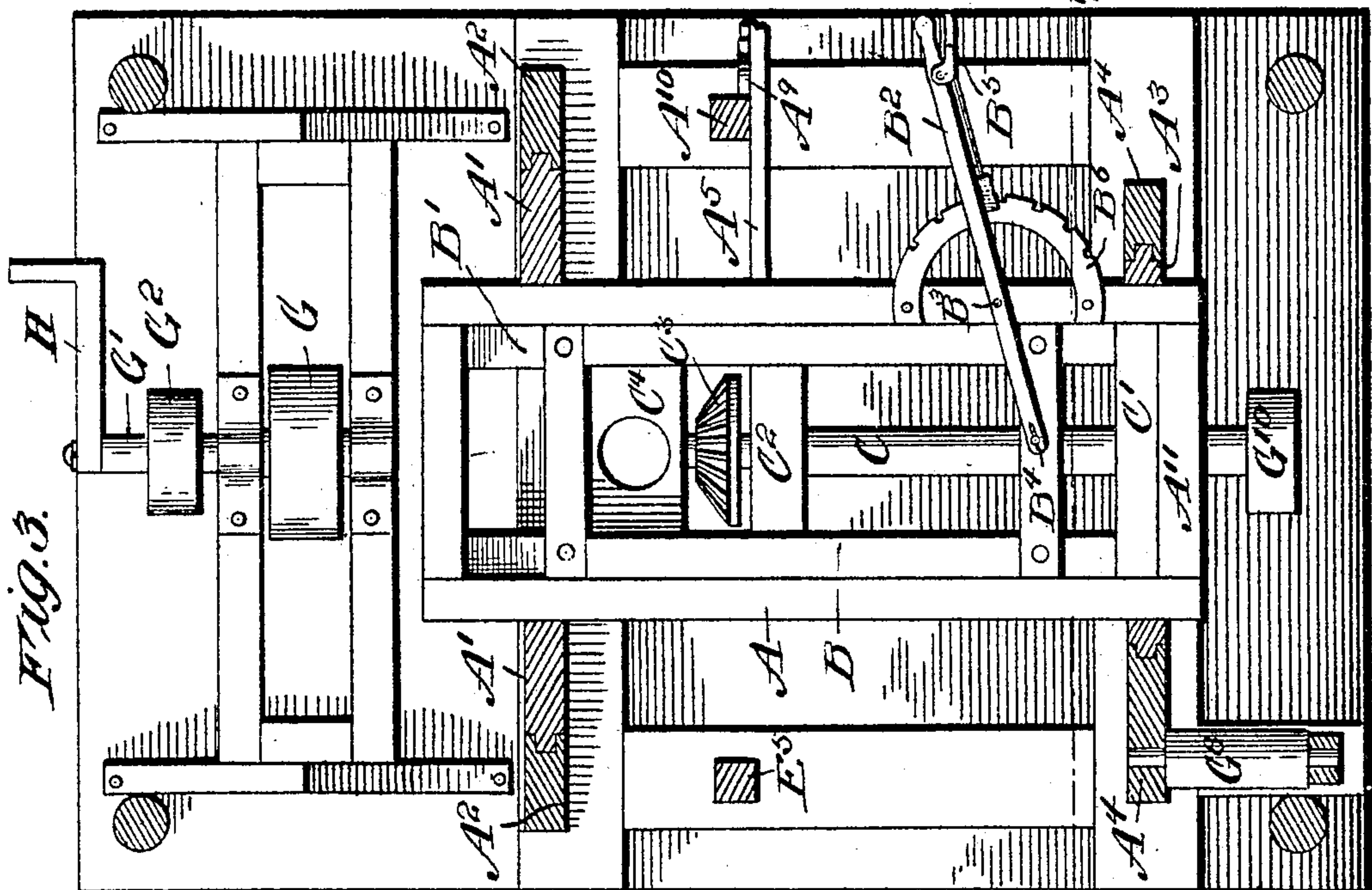
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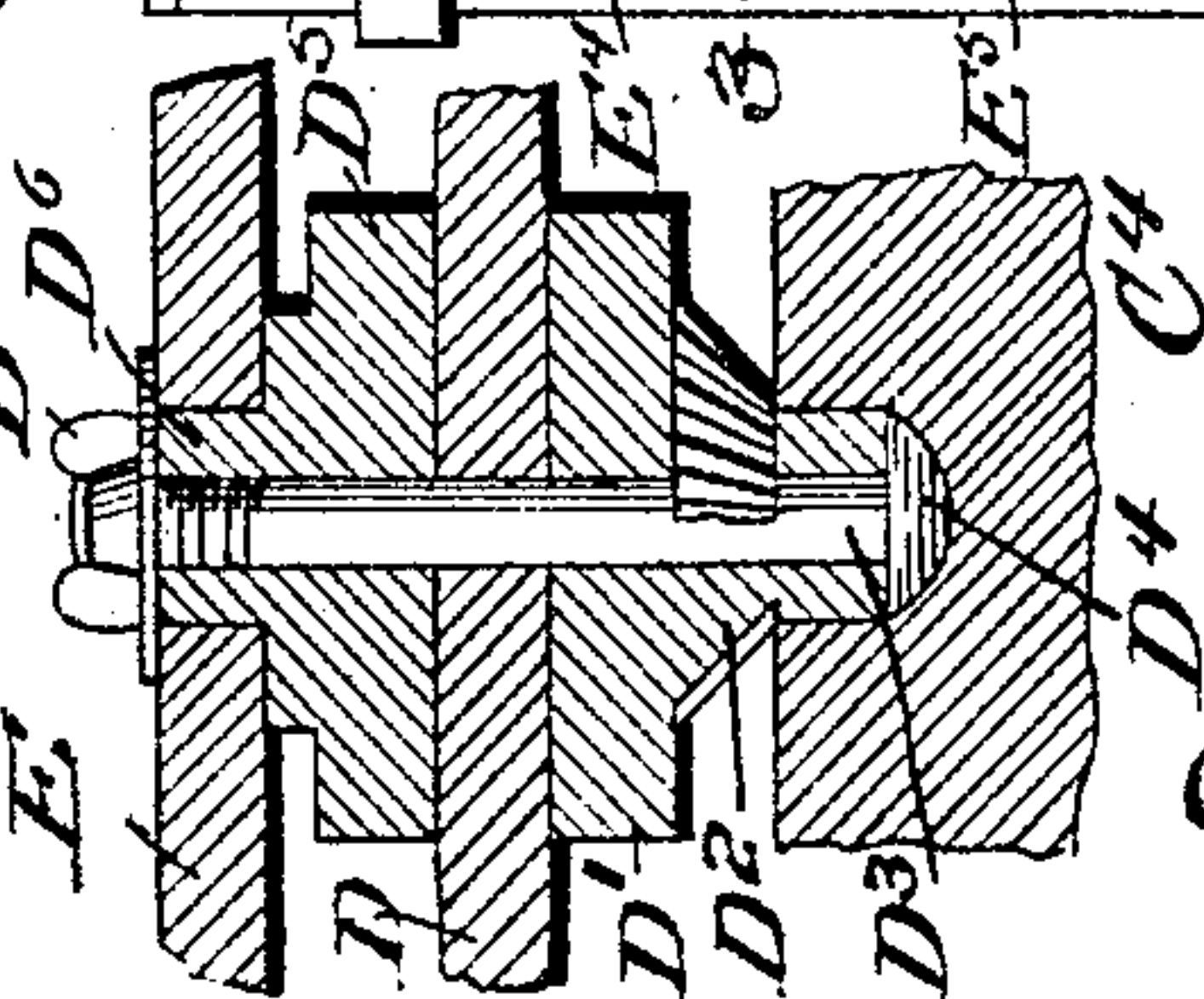
2 SHEETS--SHEET 2.



*WITNESSES.*

WITNESSES.  
~~M. F. York.~~  
 Alfred T. Gaye.

Fig. 4.  $F_1^0$



INVENTOR

*Douglas Dietz*

by  
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# UNITED STATES PATENT OFFICE.

DOUGLAS DIETZ, OF MURPHYSBORO, ILLINOIS, ASSIGNOR OF ONE-HALF  
TO FRANK IMHOFF, OF MURPHYSBORO, ILLINOIS.

## CUTTER-GRINDER.

No. 795,271.

Specification of Letters Patent.

Patented July 25, 1905.

Application filed November 29, 1904. Serial No. 234,799.

*To all whom it may concern:*

Be it known that I, DOUGLAS DIETZ, a citizen of the United States, residing at Murphysboro, in the county of Jackson, State of Illinois, have invented certain new and useful Improvements in Cutter-Grinders, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to a cutter-grinder, and particularly to a structure for grinding and sharpening disk cutters.

The invention has for an object to provide an improved construction of parts for supporting the cutter to be ground and adjusting the same with the carriage carrying the operating-gear in both horizontal and vertical planes while the disk is being continuously driven.

A further object of the invention is to provide improved means for supporting the disk upon its driving-gear and for applying a tension thereon to hold the edge thereof in proper contact with the grinding means.

Other and further objects and advantages of the invention will be hereinafter set forth, and the novel features thereof defined by the appended claims.

In the drawings, Figure 1 is a perspective of the invention; Fig. 2, a vertical section thereof on the line 2 2 of Fig. 3; Fig. 3, a horizontal section on the line 3 3 of Fig. 2, and Fig. 4 a detail vertical section through the cutter and its supporting means.

Like letters of reference refer to like parts in the several figures of the drawings.

The letter A designates the frame of the machine and may be of any desired construction and configuration—for instance, rectangular, as here shown—and is mounted for a sliding movement in a vertical plane by means of the projections A' at one end, engaging the tracks or ways A<sup>2</sup>, and a similar projection A<sup>3</sup>, engaging tracks or ways A<sup>4</sup> at the opposite end of the machine. By these means the frame A may be bodily adjusted, and this may be accomplished by means of the pivoted lever A<sup>5</sup>, secured at A<sup>6</sup> to a cross-bar A<sup>7</sup> upon the under side thereof and adapted to be held in its adjusted position by means of a latch A<sup>8</sup>, engaging a segment A<sup>9</sup>, mounted upon a fixed support A<sup>10</sup> at one side of the frame.

The frame A is provided with a carriage B, disposed within the same and mounted to reciprocate upon the ways B' at the lower portion of the frame, which reciprocation may be accomplished by any desired means—

for instance, an operating-lever B<sup>2</sup>, pivotally mounted at B<sup>3</sup> upon the upper edge of the frame and connected at B<sup>4</sup> with the carriage to move the same, while the parts may be held in their adjusted position by means of the latch B<sup>5</sup>, engaging the segment B<sup>6</sup>, mounted concentric to the pivot of the lever. Rotatably mounted within the carriage is a driving-shaft C, which shaft is projected through and has sliding bearing in the end wall A<sup>11</sup> of the frame, while within the carriage suitable bearings are provided in the cross-pieces C' and C<sup>2</sup>, by which the shaft is held against longitudinal movement in the carriage, while in the movement thereof the free end of the shaft freely slides through the end wall of the frame. The driving-shaft C is provided with a gear C<sup>3</sup> of any suitable character—for instance, a bevel-gear disposed at one side of a bearing-block C<sup>4</sup>, which is provided with a socket to receive the cutter-holding device. The cutter-support comprises a holder D', Fig. 4, upon which the cutter D is adapted to rest, which holder is provided at its lower portion with a bevel-gear D<sup>2</sup>, adapted to mesh with the gear C<sup>3</sup>, supported upon the carriage for the purpose of rotating the cutter. Extending through this holder and gear is a securing-bolt D<sup>3</sup>, the lower curved face D<sup>4</sup> thereof being rested in the socket of the block C<sup>4</sup> to have rotative bearing therein. Above the cutter a clamping-block D<sup>5</sup> is provided, which is formed with a reduced bearing portion D<sup>6</sup>, through which the bolt D<sup>3</sup> extends, and is there provided with a suitable securing means—for instance, a wing-nut D<sup>7</sup>. For the purpose of holding the cutter upon its seat and the gears in mesh, as well as for the minor adjustments thereof, an operating-lever E is pivotally mounted at E' upon one side of the machine and provided above the cutter-holder with a socket E<sup>2</sup>, through which the portion D<sup>6</sup> of the holder passes to form the upper bearing, so that the members of the holder are clamped together and the cutter thus rigidly held. The operating-lever at its pivoted end is supported by means of a cross-bar E<sup>3</sup>, yieldingly mounted at its opposite ends by spring E<sup>4</sup>, disposed in the vertical standard E<sup>5</sup> and body of track A<sup>2</sup>. For the purpose of adjusting the tension of these springs, as well as the position of the pivoted end of the lever, an adjusting-screw E<sup>6</sup> is mounted in a fixed bar E<sup>7</sup>, adapted to bear at its lower end upon the upper face of



the cross-bar  $E^3$ . The opposite end of the lever  $E$  is provided with a suitable handle  $E^8$  and adapted to be clamped in position by means of a screw-nut or similar device  $E^9$ , passing through a slotted support  $F$ . This support is slotted upon its upper face to permit a horizontal adjustment of the lever and is adapted for vertical adjustment by means of the opposite slotted ends  $F'$ , which lie in contact with one of the slides  $A^2$  and the standard  $A^{10}$  and may be clamped in position by wing-nuts  $F^2$ .

Adjacent to the end of the frame  $A$  a suitable grinding device is mounted—for instance, a grinding-wheel  $G$ , mounted in a frame of any ordinary character and adapted to be driven by a shaft  $G'$ . For the purpose of transmitting motion to the opposite end of the machine for driving the cutter independently of the grinding device a pulley  $G^2$  is provided upon the shaft  $G'$  and has extending therefrom a belt  $G^3$ , extending to a pulley  $G^4$  upon the counter-shaft  $G^5$ , supported above the machine or in any other desired position, from which motion is transmitted at its opposite end by means of a pulley  $G^6$  and belt  $G^7$ , extending to a drum-pulley  $G^8$ , from which drum a belt  $G^9$  conveys power to the pulley  $G^{10}$  upon the end of the shaft  $C$ . If it be desired to drive the parts by hand, it may be accomplished by means of a crank-handle  $H$ , applied to the shaft  $G'$ , or if steam or any other motive power is used the same may be applied to the shaft  $G^2$  by means of a driving-pulley  $H'$ , secured to the end thereof.

In the operation of the invention the disk cutter to be ground is applied upon the support and clamped in position by the block, when it will be inserted upon the bearing-block supported with the carriage, so that the bevel-gears will be in mesh. Power being then applied, it will be seen that the cutter will be rotated in a direction opposite to that of the grinding-wheel, thus presenting the parts in proper position for the grinding action. In case of the wear of the grinding-wheel or the grinding of a cutter of different size or character the frame carrying the carriage may be raised or lowered without interfering with the driving power, as the belt connection permits of such vertical movement thereof, while the carriage within the frame may also be reciprocated so as to move the same and the cutter carried thereby relative to the fixed grinding-wheel. These parts are adapted to be adjusted and held in their adjustment by means of the levers provided for that purpose. The operating-lever, by means of its mounting under tension, is adapted to provide an adjustable top bearing for the cutter and its support and hold them firmly in mesh with the driving-pinion therefor to prevent any vertical movement of the cutter relative to the grinding-wheel, against which it is yieldingly held, while provision is also

made for a limited adjustment of the lever in a horizontal and vertical plane toward and from the grinder to accommodate an adjustment of the carriage, by means of which the proper edge or finishing may be given to the disk being ground, and the parts are readily secured in their adjusted position by means of the set-screw at the pivoted end of the lever and the means shown for securing the free end thereof. The operating-lever provides means for a finer adjustment than can be secured by the frame and carriage levers and holds the cutter in such position.

It will be obvious that changes may be made in the details of construction and configuration without departing from the spirit of the invention as defined by the appended claims.

Having described my invention and set forth its merits, what I claim, and desire to secure by Letters Patent, is—

1. In a cutter-grinder, a frame, means for vertically adjusting the same, a carriage mounted to reciprocate within and inclosed by said frame, and a lever pivoted upon the frame and pivotally connected to reciprocate said carriage.

2. In a cutter-grinder, a frame, means for vertically adjusting the same, a carriage mounted to reciprocate within said frame, means carried upon the frame to reciprocate said carriage, a driving shaft and gear mounted to travel with the carriage, a bearing-block disposed adjacent to said gear, a cutter-support adapted to rest in said block and provided with a meshing gear, and a yieldingly-mounted operating-lever having a bearing therein for the upper portion of said cutter-support.

3. In a cutter-grinder, a frame, means for vertically adjusting the same, a carriage mounted to reciprocate within said frame, means carried upon the frame to reciprocate said carriage, a driving shaft and gear mounted to travel with said carriage, a bearing-block disposed adjacent to said gear, a cutter-support adapted to rest in said block and provided with a meshing gear, and a pivoted lever provided with a bearing intermediate of its ends for said cutter-support.

4. In a cutter-grinder, a frame, means for vertically adjusting the same, a carriage mounted to reciprocate within said frame, means carried upon the frame to reciprocate the carriage, a driving shaft and gear mounted to travel with said carriage, a bearing-block disposed adjacent to said gear, a cutter-support adapted to rest in said block and provided with a meshing gear, a pivoted lever provided with a bearing intermediate of its ends for said cutter-support, means for yieldingly supporting the pivoted end of said lever, and means for securing the free end of the lever in position.

5. In a cutter-grinder, a frame, means for vertically adjusting the same, a carriage mounted to reciprocate within said frame,



means carried upon the frame to reciprocate the carriage, a driving shaft and gear mounted to travel with said carriage, a bearing-block disposed adjacent to said gear, a cutter-support adapted to rest in said block and provided with a meshing gear, a pivoted lever provided with a bearing intermediate of its ends for said cutter-support, means for yieldingly supporting the pivoted end of said lever, means for securing the free end of the lever in position, means for vertically adjusting said yielding support, and means for adjusting said securing means.

6. In a cutter-grinder, a frame, means for vertically adjusting the same, a carriage mounted to reciprocate within said frame, means carried upon the frame to reciprocate the carriage, a driving shaft and gear mounted to travel with said carriage, a bearing-block disposed adjacent to said gear, a cutter-support adapted to rest in said block and provided with a meshing gear, a pivoted lever provided with a bearing intermediate of its ends for said cutter-support, means for yieldingly supporting the pivoted end of said lever, means for securing the free end of the lever in position, means for vertically adjusting said yielding support, means for adjusting said securing means, a grinding device supported at one end of the frame to engage said cutter, and means for driving said grinding device and cutter simultaneously in opposite directions.

7. In a cutter-grinder, a frame, a carriage mounted to reciprocate within said frame, means carried upon the frame to reciprocate said carriage, a cutter-support mounted upon said carriage, a driving-shaft extending in the path of travel of the carriage and through an end wall of the frame and there provided with a pulley, a grinding device supported at one end of the frame to engage said cutter, and means for driving said grinding device and cutter simultaneously in opposite directions.

8. In a cutter-grinder, a frame, means for vertically adjusting the same, a carriage mounted to reciprocate within said frame, means carried upon the frame to reciprocate said carriage, a cutter-support mounted upon said carriage, driving means therefor, a grinding device supported at one end of the frame to engage said cutter, a shaft for said driving device, a pulley and belt extending therefrom, a counter-shaft provided with a pulley for said belt, a drum-pulley at the opposite end of the machine from the grinding device belted to said counter-shaft, and a belted connection to the driving-shaft of said carriage.

9. In a cutter-grinder, a frame slidably mounted in opposite vertically-disposed ways, a lever mounted upon a fixed support for raising and lowering said frame, means for holding said lever in its adjusted position, and a cutter supported and driven within said frame.

10. In a cutter-grinder, a frame slidably

mounted in opposite vertically-disposed ways, a lever mounted upon a fixed support for raising and lowering said frame, means for holding said lever in its adjusted position, a cutter supported and driven within said frame, a sliding carriage for said cutter, an operating-lever for said carriage pivoted upon said frame, and means for retaining said lever in adjusted position.

11. In a cutter-grinder, a frame slidably mounted in opposite vertically-disposed ways, a lever mounted upon a fixed support for raising and lowering said frame, means for holding said lever in its adjusted position, a cutter supported and driven within said frame, a sliding carriage for said cutter, an operating-lever for said carriage pivoted upon said frame, means for retaining said lever in adjusted position, a driving-shaft secured to travel with said carriage and extending through said frame, and a belted connection for said shaft to permit longitudinal and lateral movement thereof.

12. In a cutter-grinder, a frame, a cutter mounted thereon, means for rotating the same, an operating-lever adapted to provide a bearing for the top of said cutter, a cross-bar upon which said lever is pivotally mounted, and a spring for yieldingly supporting said cross-bar.

13. In a cutter-grinder, a frame, a cutter mounted thereon, means for rotating the same, an operating-lever adapted to provide a bearing for the top of said cutter, a cross-bar upon which said cutter is pivotally mounted, a spring for yieldingly supporting said cross-bar, a tension device bearing upon said cross-bar to adjust the tension of said spring, and means for retaining the free end of said lever.

14. In a cutter-grinder, a frame, a cutter mounted thereon, means for rotating the same, an operating-lever adapted to provide a bearing for the top of said cutter, a cross-bar upon which said cutter is pivotally mounted, a spring for yieldingly supporting said cross-bar, a tension device bearing upon said cross-bar to adjust the tension of said spring, a slotted support for the free end of said lever, means for securing said lever in a horizontal position thereon, and adjustable depending ends from said support.

15. In a cutter-grinder, a cutter-holder comprising a support provided with a driving-gear, a bolt extending therethrough, an opposite clamping-block mounted upon said bolt to engage the cutter and provided upon its upper face with a bearing portion, and a member above said holder adapted to receive the bearing portion of said block.

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

DOUGLAS DIETZ.

Witnesses:

F. IMHOFF,

JOHN Q. A. KIMMEL.