

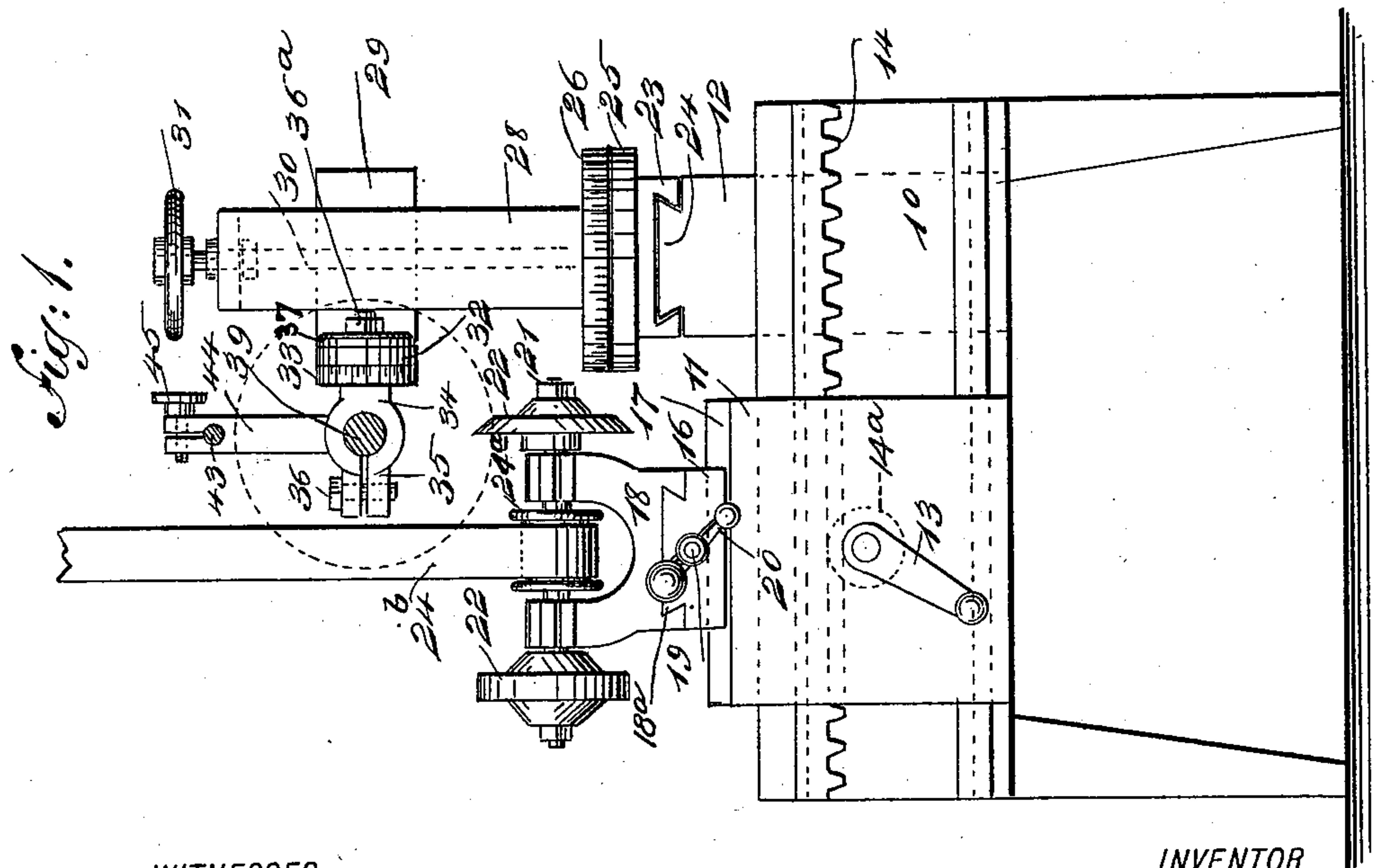
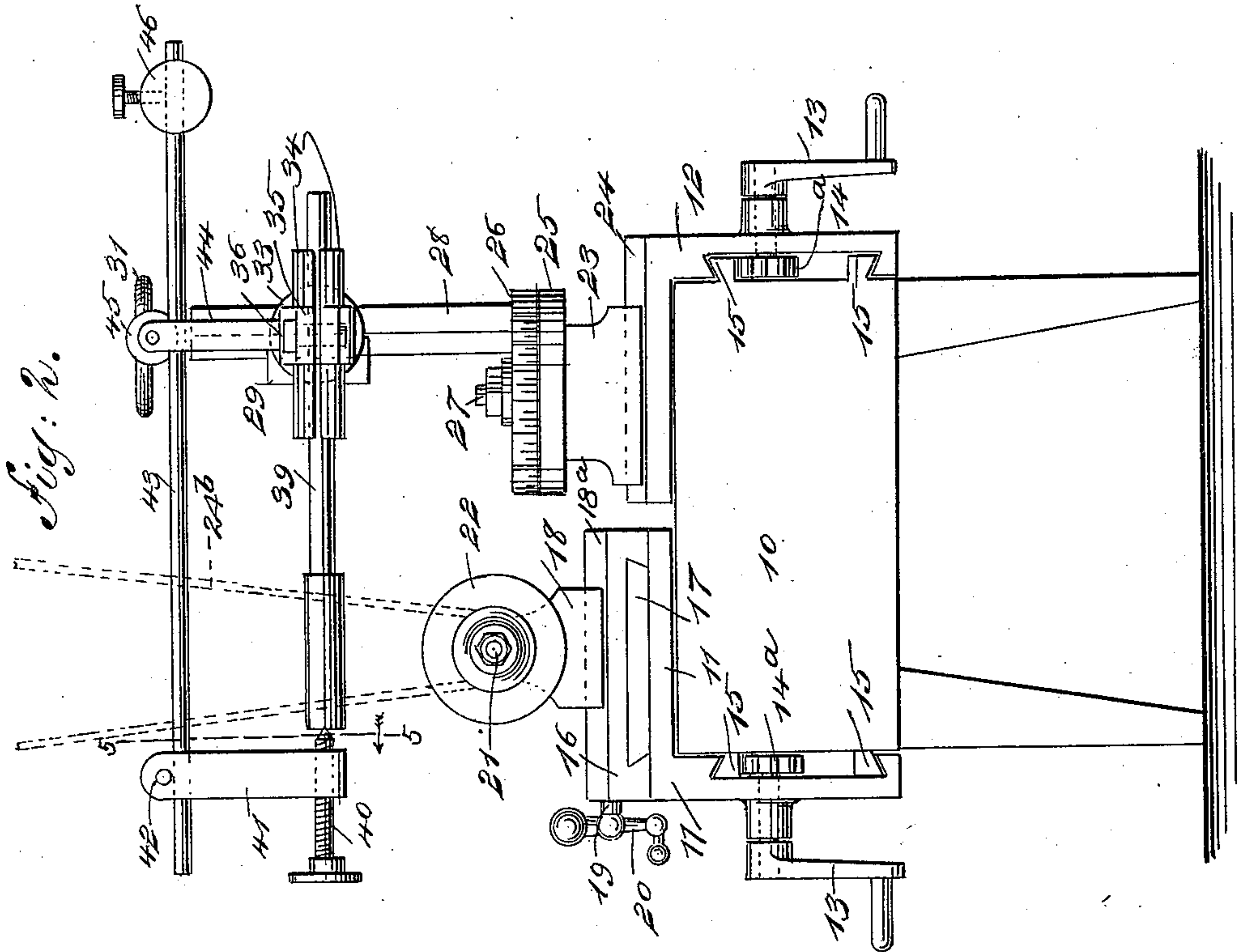
(No Model.)

2 Sheets—Sheet 1.

A. HARTLEY.  
GRINDER.

No. 548,051.

Patented Oct. 15, 1895.



WITNESSES:

*Chas. Nida.*  
*W. B. Hutchinson*

INVENTOR

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BY *Munn & Co*  
ATTORNEYS.

(No Model.)

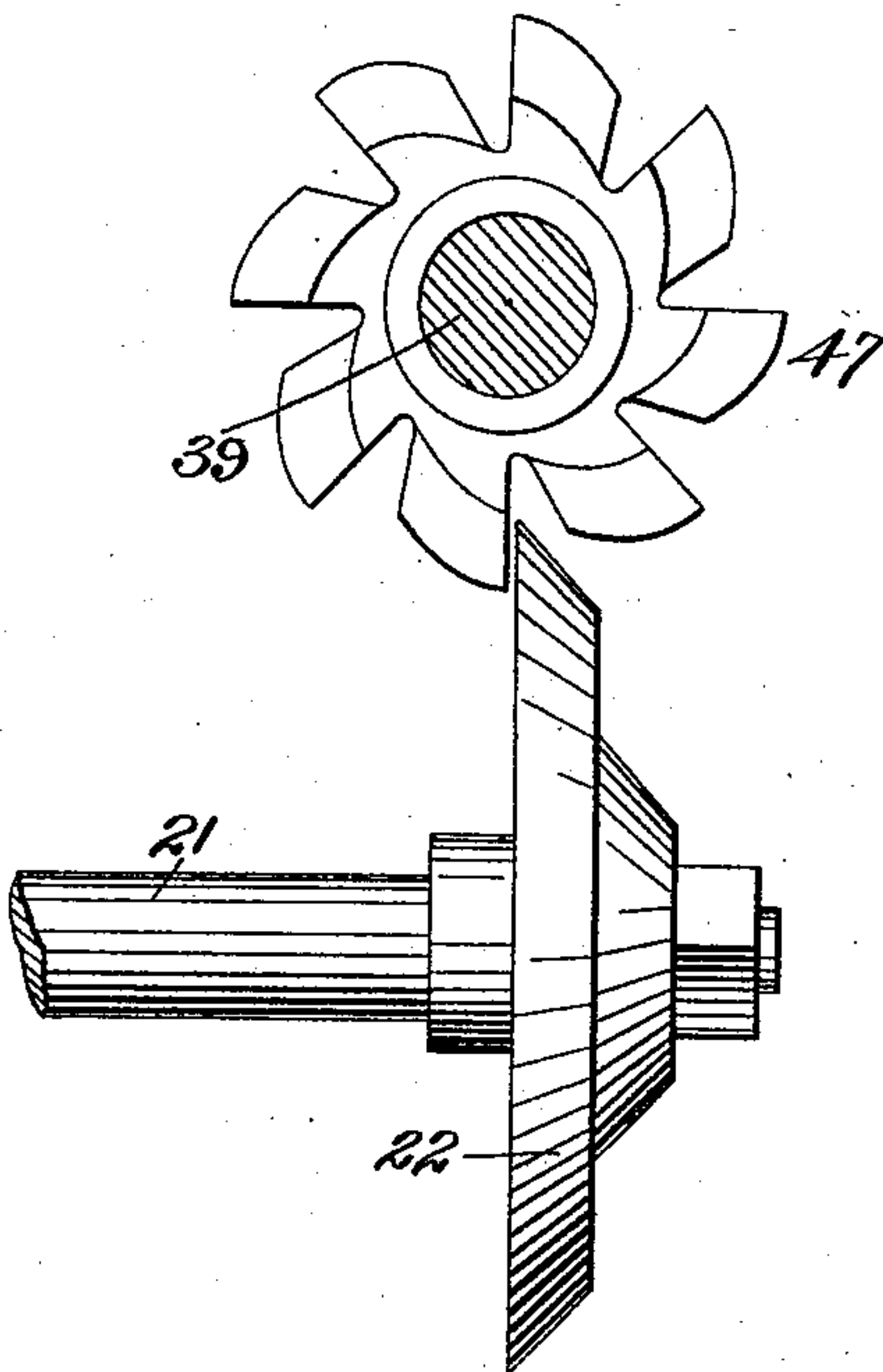
2 Sheets—Sheet 2.

A. HARTLEY.  
GRINDER.

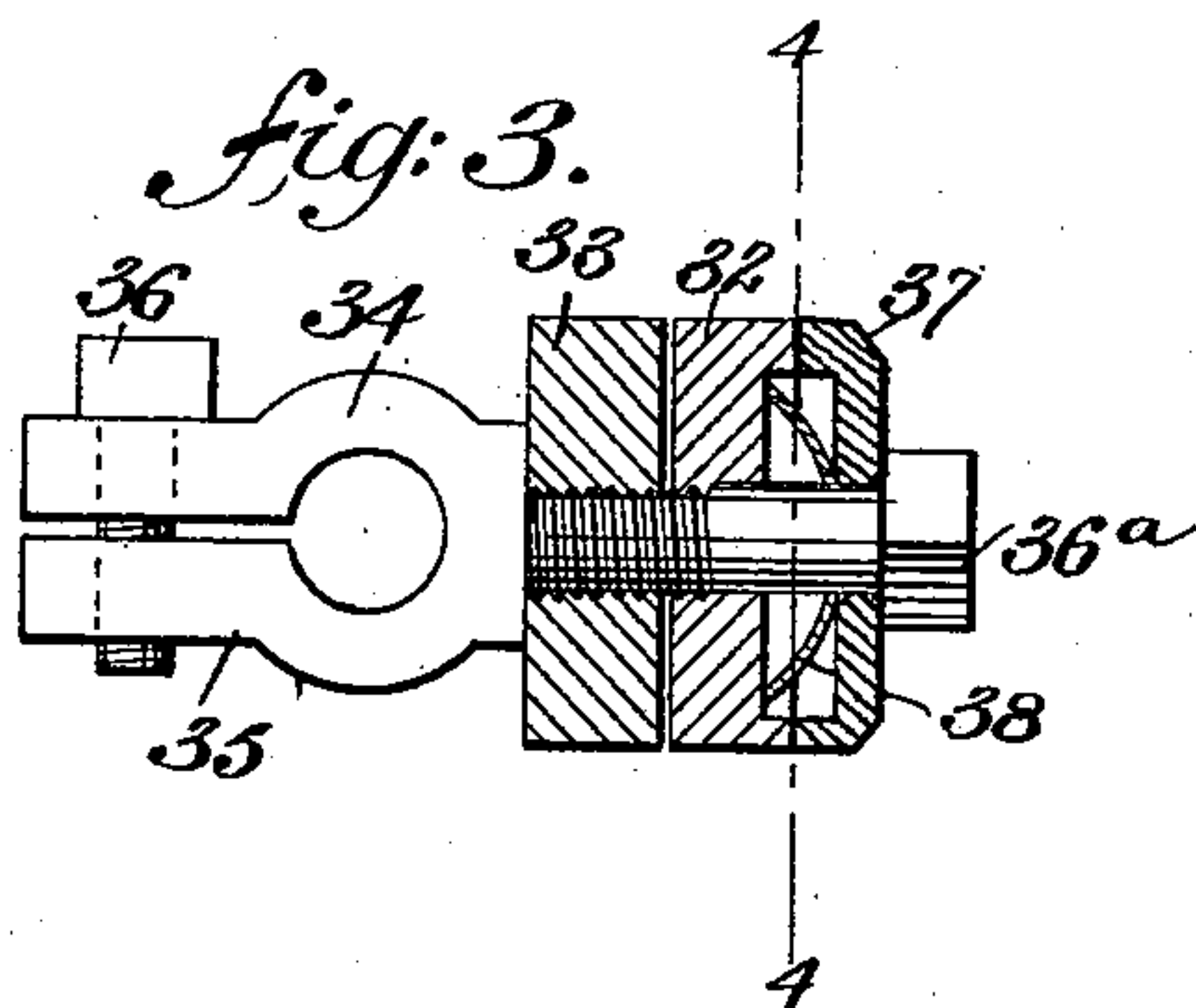
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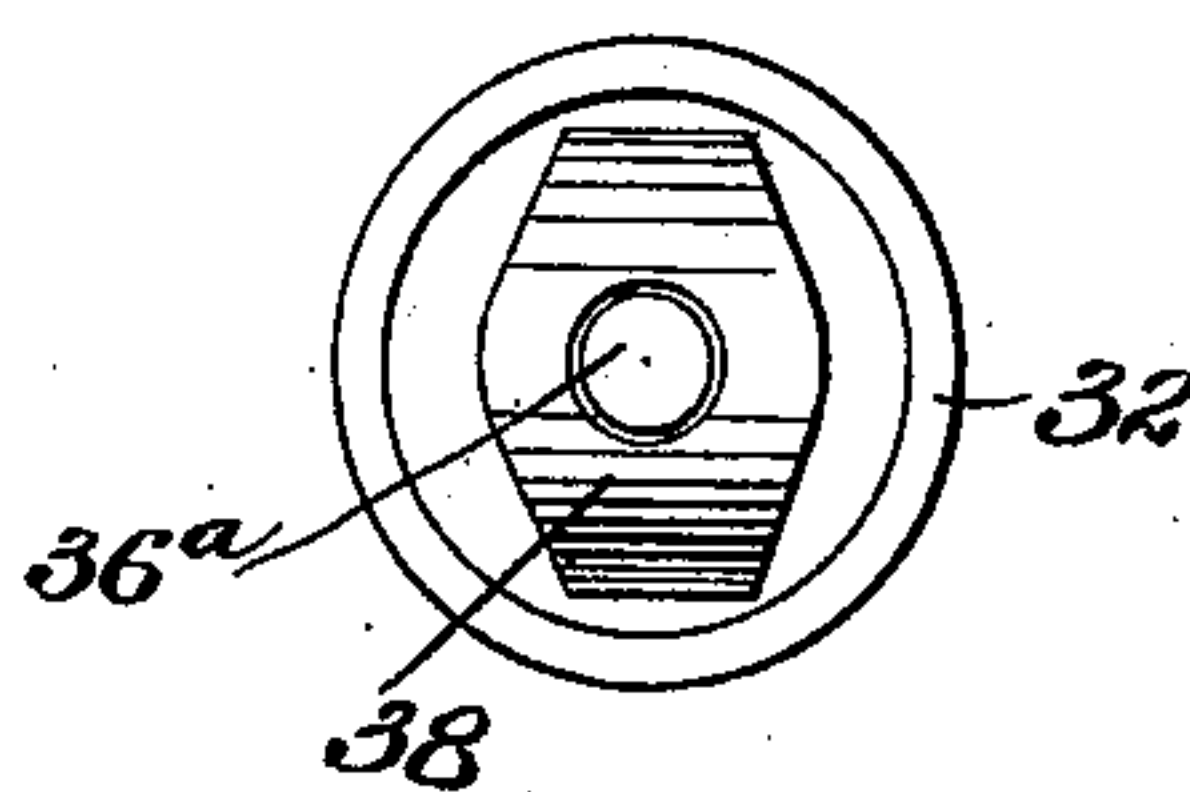
*fig: 6.*



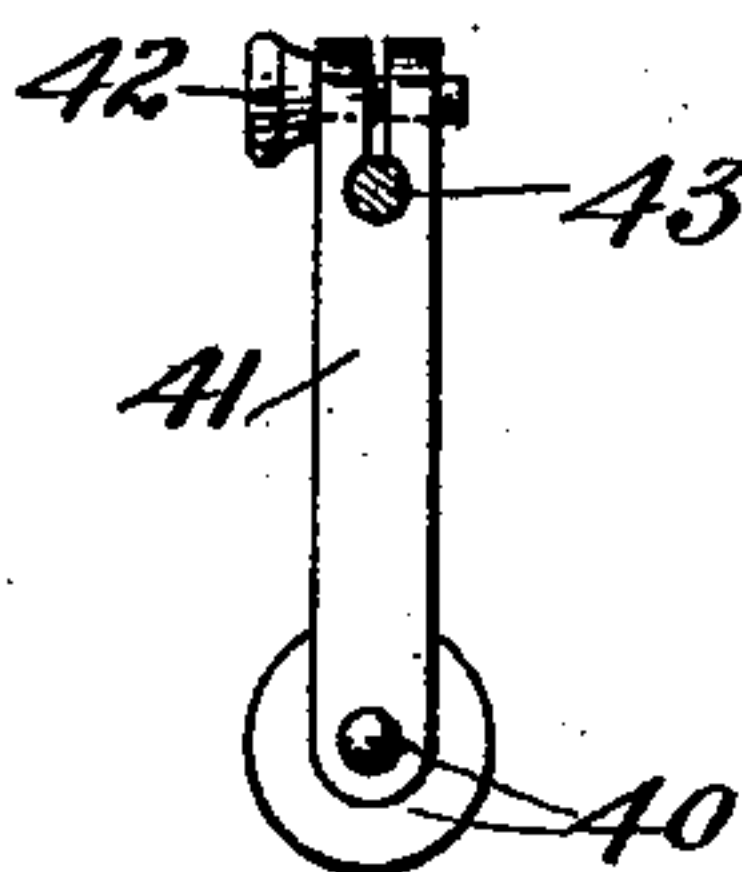
*fig: 3.*



*fig: 4.*



*fig: 5.*



WITNESSES:

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# UNITED STATES PATENT OFFICE.

AMOS HARTLEY, OF OTTAWA, KANSAS, ASSIGNOR OF ONE-HALF TO A. J. SCHAEFER, OF SAME PLACE.

## GRINDER.

SPECIFICATION forming part of Letters Patent No. 548,051, dated October 15, 1895.

Application filed April 3, 1894. Serial No. 506,187. (No model.)

*To all whom it may concern:*

Be it known that I, AMOS HARTLEY, of Ottawa, in the county of Franklin and State of Kansas, have invented a new and Improved  
5 Grinder, of which the following is a full, clear, and exact description.

My invention relates to improvements in grinders; and the object of my invention is to produce a simple grinder which may be con-  
10 veniently adjusted horizontally and vertically and also turned to any angle to the horizontal or perpendicular, so as to bring the tool to be ground into the exact position required, thus enabling it to be truly and accurately  
15 shaped.

To these ends my invention consists of certain features of construction and combinations of parts, which will be hereinafter described and claimed.

20 Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a sectional elevation of the machine embodying my invention, showing a front view of the main portion of the machine. Fig. 2 is an end view of the machine, showing the adjusting devices in side elevation. Fig. 3 is a detail view of the adjusting-  
30 clamp which carries the split arm supporting the mandrel of the grinder. Fig. 4 is a cross-section on the line 4 4 of Fig. 3. Fig. 5 is a cross-section on line 5 5 of Fig. 2, and Fig. 6 is a detail view illustrating the manner of grinding a cutter.  
35

The machine is provided with a suitable bed 10, and on this are movable carriages 11 and 12, which are arranged on opposite sides, so that they may move by one another, each  
40 being actuated by means of a crank 13, on the shaft of which is a gear-wheel 14<sup>a</sup>, meshing with a rack 14 on the side of the bed. The carriages are dovetailed to the sides of the bed, as shown at 15 in Fig. 2. On the carriage 11 is a movable base-plate 16, which  
45 slides on the rib 17 of the carriage, and the base-plate is provided with a transverse rib 18<sup>a</sup>, upon which the bracket or post 18 is mounted, so that it may be conveniently  
50 moved in and out on the machine.

The bracket or post 18 is adjusted by means

of a screw 19, having suitable handles 20; but this construction is not shown in detail, as it is similar to the means ordinarily employed on a lathe for moving such parts. The post 55 18 carries a shaft 21, on which are grinding-wheels 22, and these may be of any approved kind, and the shaft is driven by a pulley 24<sup>a</sup> and belt 24<sup>b</sup>. The mechanism carried by the bracket 18 (and in fact the bracket itself) I do 60 not claim as my invention, but this arrangement is adapted to be used to advantage in connection with the attachments to be hereinafter described.

On the carriage 12 is a raised rib 24, which 65 extends at right angles to the direction in which the carriage moves on bed 10, and on this slides the base-plate 23 of the grinder attachment, which has a circular plate 25 thereon, and on this plate rests a similar one 26, 70 these plates being provided with gage-marks, so that the upper one may be turned and held in a desired position in relation to the lower one, and the two plates are fastened rigidly together by means of a bolt 27 and suitable 75 nuts.

Projecting upward from the plate 26 is a post 28, on which is a vertically-adjustable slide-plate 29, which is moved by a screw 30, having a hand-wheel 31 at the top to turn it. 80 The connection between the screw 30 and the plate 29 is not shown in detail, as it is the usual screw connection for moving a sliding part. The slide-plate 29 has at one end a circular clamping-plate 32, and to this is fas- 85 tened a similar plate 33, these plates being provided with gage-marks, so that they may be accurately turned and fastened in relation to each other.

The plate 33 has secured to it a projecting 90 split arm 34, which serves as a bearing for the mandrel 39, referred to below, and the arm has meeting flanges 35, which are fastened together by a bolt 36 and which enables the split arm to be clamped securely to the 95 mandrel. The plate 32 has on its back side a washer 37, which is arranged between the plate and the head of the bolt 36<sup>a</sup>, and behind the washer and in a recess in the plate (see Fig. 3) is held a spring 38, which presses 100 against the washer and bolt with sufficient friction to hold the plate 33 against the plate



32 hard enough to prevent the accidental displacement of the plate 33, but also in a manner to permit the plate 33 and connected parts to be turned by hand when it is necessary or desirable so to do. The split arm 34 supports one end of a mandrel 39, adapted to hold articles to be ground, and the other end of the mandrel 39 is supported on a screw 40 in an arm 41, which is split at its upper end and fastened by a screw 42 to a supporting-shaft 43, which is clamped to an arm 44 by means of a set-screw 45, this arm 44 being parallel with the arm 41 and being rigidly attached to the split arm 34. The shaft 43 projects through the arm 44 and has at one end a weight 46, which is adjustable thereon and which counterbalances the shaft, the mandrel, and the arm 41. If a cutter 42 is to be ground, it is secured to the mandrel 39, as shown in Fig. 6, and the several parts are adjusted so as to bring the cutter into correct contact with the grinding-wheel 22.

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

1. The herein-described grinder attachment, comprising a base plate having a rigid circular plate thereon, a gage plate held to the circular plate, a post on the gage-plate, a vertically adjustable slide plate on the post, and a tool-carrying mandrel secured to the slide plate and mounted on a horizontal axis, substantially as described.

2. The herein-described grinder attachment, comprising a base plate, a circular plate thereon, a gage plate adjustably secured to the circular plate, a post on the gage plate, a

slide plate held to move vertically on the post, circular clamping gage plates carried by the slide plate and adjustable in relation to each other, a split arm projecting from one of the clamping gage plates, a mandrel held in the arm, a shaft arranged parallel with the mandrel and supported from the split arm, and a center screw hung from the shaft opposite the end of the mandrel, substantially as described.

3. The combination, with the supporting post mounted on a horizontally rotatable support, of the vertically adjustable slide plate on the post, the split arm secured to the slide plate so as to turn on a horizontal axis, means for regulating the position of the split arm, a supporting arm on the split arm, a shaft carried by the supporting arm, and a center screw hung from the shaft opposite the split arm, substantially as described.

4. The combination, with the slide plate, of the clamping gage plate thereon, a second circular plate held opposite the gage plate, a fastening bolt uniting the two plates, a spring washer on the fastening bolt, and tool-holding mechanism carried by the gage plate, substantially as described.

5. The combination, with the supporting bed, of the tool-carrying mandrel supported above the bed and adjustable vertically and laterally and also adapted to turn in a vertical plane, and the grinding wheel attachment held to move on the bed adjacent to the tool-carrying device, substantially as described.

AMOS HARTLEY.

Witnesses:

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W. S. JENKS.