

(No Model.)

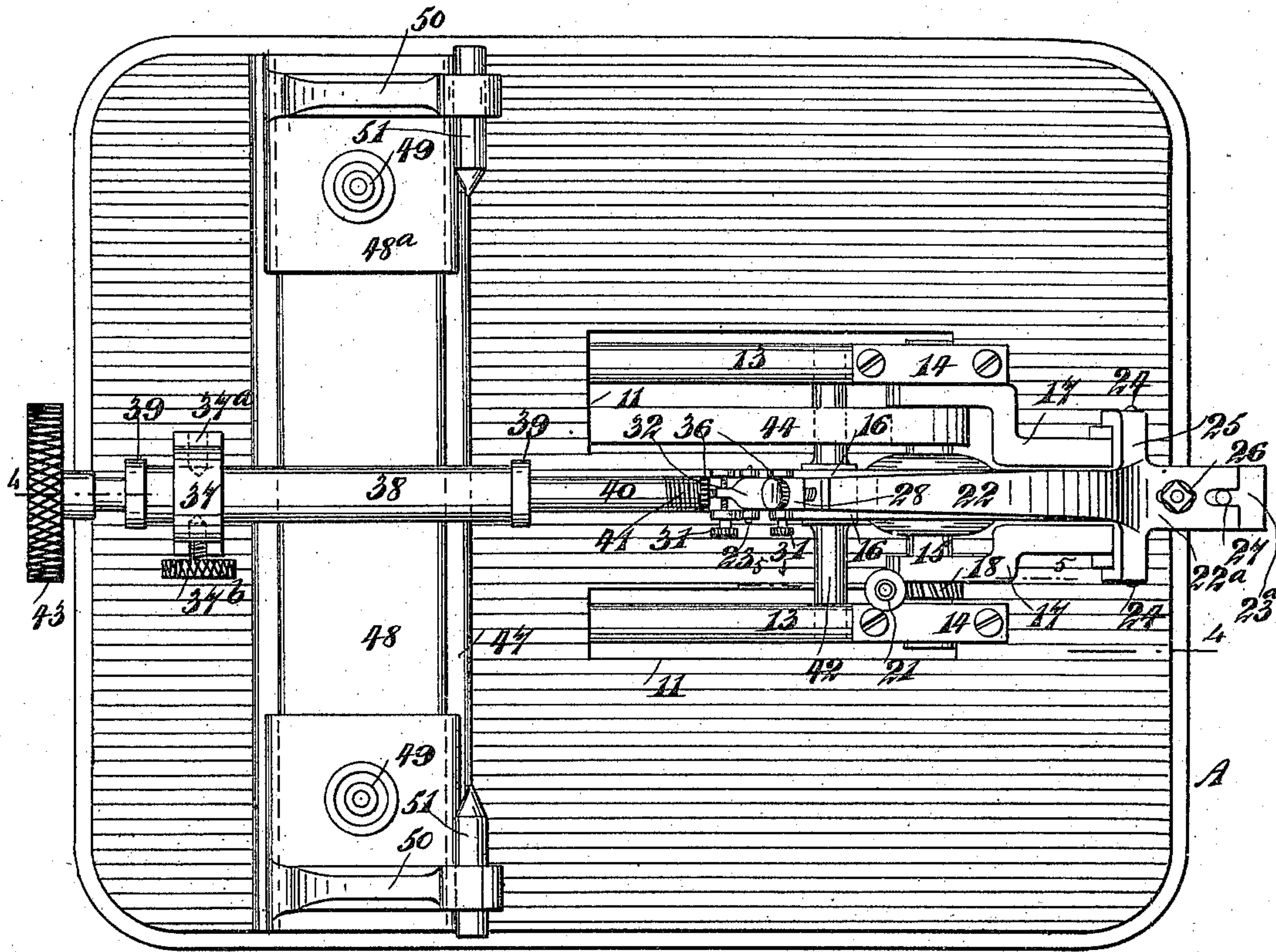
2 Sheets—Sheet 1.

F. P. & C. M. KUHN.  
GRINDING LATHE.

No. 575,250.

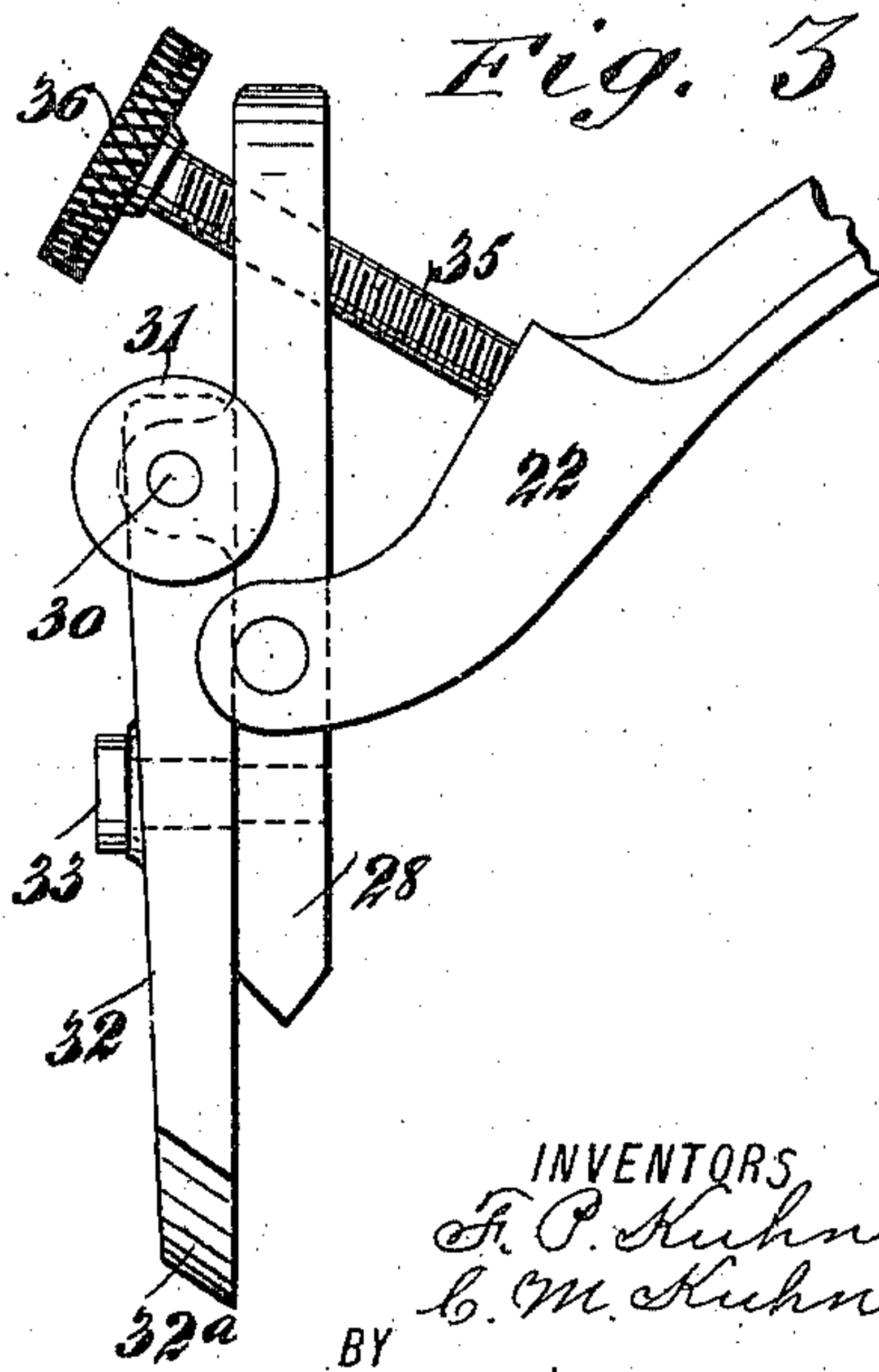
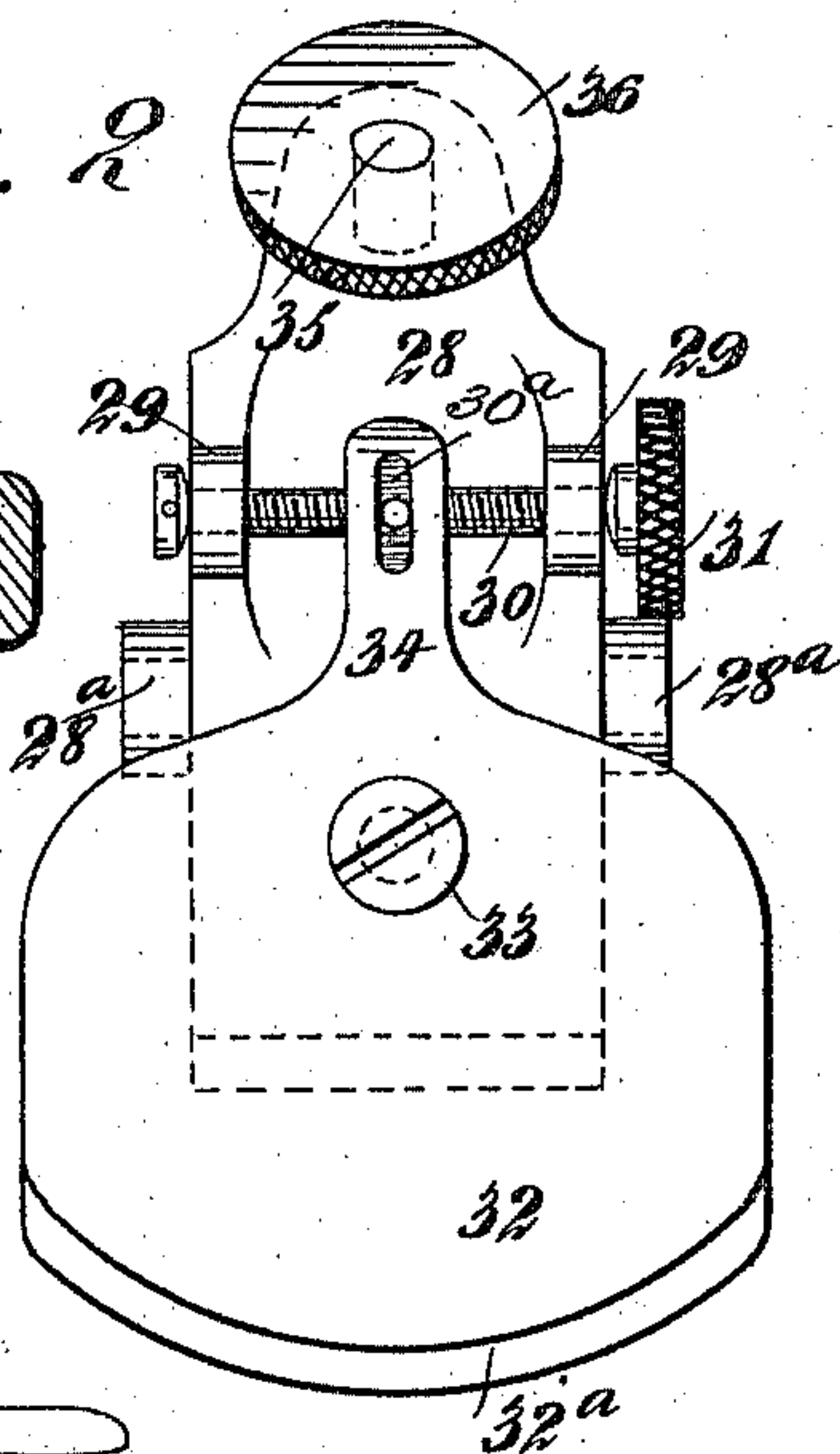
Patented Jan. 12, 1897.

*Fig. 1*



*Fig. 2*

*Fig. 6.*



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(No Model.)

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Fig. 4

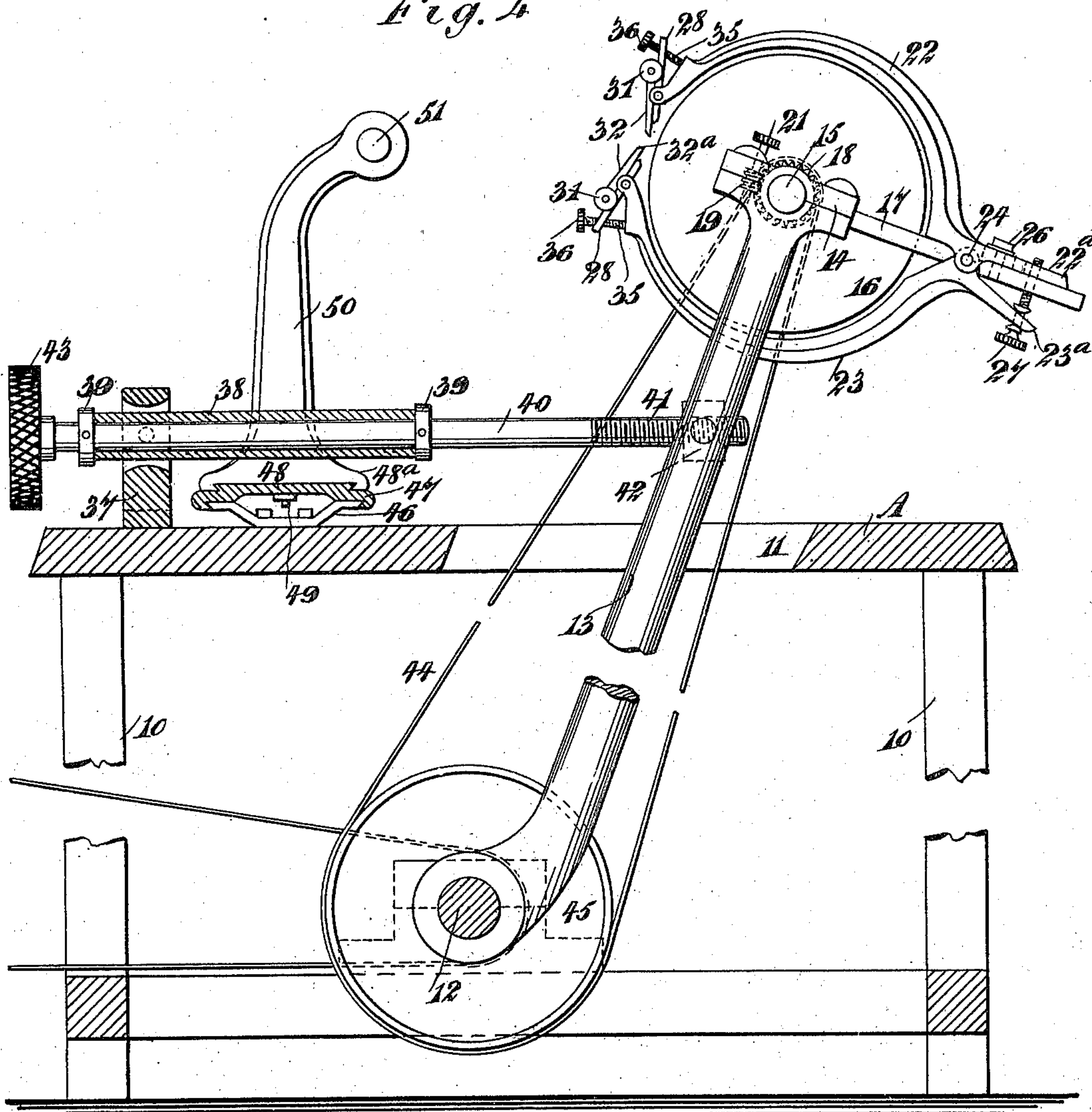
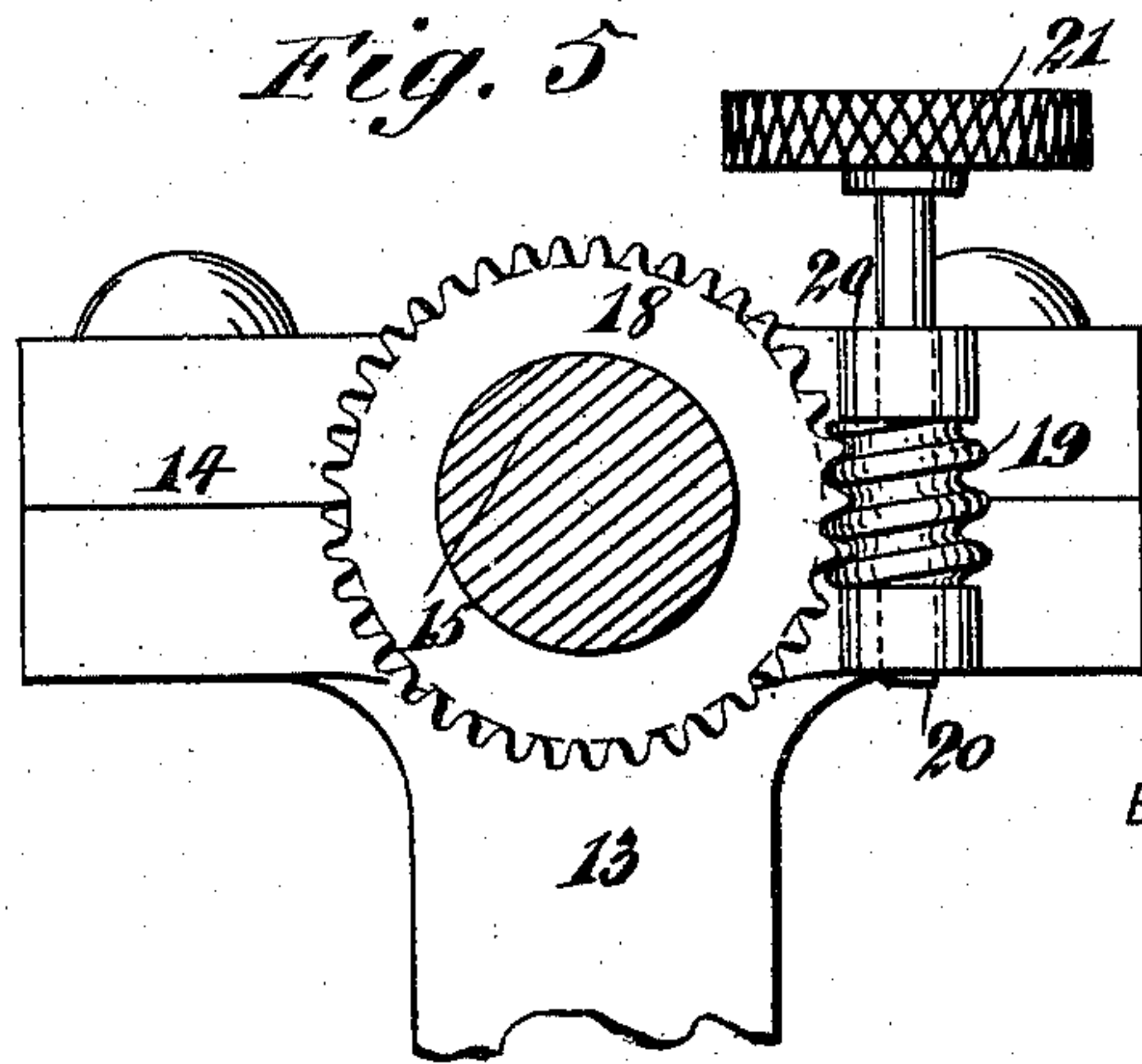


Fig. 5



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# UNITED STATES PATENT OFFICE.

FRANK P. KUHN AND CHARLES M. KUHN, OF KEARNEY, NEBRASKA,  
ASSIGNORS OF ONE-HALF TO JOSEPH H. BLACK & SONS, OF SAME  
PLACE.

## GRINDING-LATHE.

SPECIFICATION forming part of Letters Patent No. 575,250, dated January 12, 1897.

Application filed January 13, 1896. Serial No. 575,313. (No model.)

*To all whom it may concern:*

Be it known that we, FRANK P. KUHN and CHARLES M. KUHN, of Kearney, in the county of Buffalo and State of Nebraska, have invented a new and Improved Grinding-Lathe, of which the following is a full, clear, and exact description.

Our invention relates to machines adapted for grinding the sickles or blades of lawnmowers, harvesters, or reapers, or the sickles or blades of other machines.

The object of the invention is to simplify the construction of such machines, and especially to provide a means for adjusting the stone to the blades from the front of the machine instead of from the back or from the sides, and, furthermore, to provide fingers or guides as supports for the blades to the ground, and to so form these supports or guides that they may be adjusted to admit of the proper grinding of different shapes of blades to different angles, and whereby, further, when the different guides or fingers are adjusted they will remain in their adjusted position.

Another object of the invention is to provide the guides or fingers with adjustable shoes with which the blades come in direct contact, the shoe of the lower finger or guide being adapted as a support for the blade and the shoe of the upper finger or guide being adapted to prevent the blade from flying upward when in contact or in engagement with the grindstone.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

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

Figure 1 is a plan view of the machine. Fig. 2 is a detail front elevation of the shoe of the upper finger or guide. Fig. 3 is a side elevation of the aforesaid shoe and its support and a portion of the upper finger or guide, to which the support is attached. Fig. 4 is a longitudinal vertical section taken substantially on the line 4 4 of Fig. 1; and Fig. 5 is a detail

longitudinal section on the line 5 5 of Fig. 1, illustrating the manner in which the guides or fingers are vertically adjustable. Fig. 6 is a detail section illustrating the means for adjusting one of the shoes.

In carrying out the invention a table A is supported upon a suitable base 10, and in the said table, at each side of the center, a longitudinal opening 11 is made, as shown in Figs. 1 and 4. The drive-shaft 12 may be mounted upon the base 10, and two arms 13 are loosely mounted upon the said drive-shaft, which arms extend upward, one through each slot 11, to a point above the table at the rear, and each arm at its upper end is provided with a box or bearing 14, in which boxes or bearings the arbor 15 of the grindstone 16 is mounted to revolve.

A bow or yoke arm 17 has its members loosely mounted on the boxing of the arbor of the stone, one at each side thereof, as shown in Fig. 1, and the said bow or yoke arm extends rearwardly a predetermined distance. This arm is given vertical adjustment, that is to say, it may be raised or lowered, preferably, through the medium of a worm-wheel 18, which is fast upon one side of the arm, the said wheel being loosely mounted on the stone-arbor 15 and is engaged by a worm 19 on a shaft 20, journaled in suitable bearings in one of the boxes 14, and said shaft is provided with a cap 21, preferably serrated at its periphery, in order that it may be readily turned with the fingers.

Two guides or fingers 22 and 23 are employed in connection with the stone, and these guides or fingers are semicircular, one being located above the stone and the other below it. A suitable space is made to intervene the inner faces of the fingers or guides and the periphery of the stone, and the fingers or guides are connected at the rear of the stone, but a space intervenes their forward or free ends. The two fingers or guides are pivoted by the same pivot-pin 24 upon the rear portion of the bow-arm 17, each of the guides or fingers being provided with a bracket 25 to straddle the said bow-arm, as shown in Fig. 1. The upper arm 22 is permanently fastened to the bow-arm by means of a set-



screw 26, which is usually passed through an elongated slot formed in a rear extension 22<sup>a</sup> of the upper finger or guide and into the bow-arm 17, it being understood that the pivot-pin 24 is primarily intended for pivotally connecting the two fingers or guides.

The lower finger or guide 23 is adjustable to and from the stone, and to that end it is preferably provided with a downwardly and rearwardly projecting extension 23<sup>a</sup>, and an adjusting-screw 27 is passed through the opening in this extension and into a correspondingly-threaded opening in the rear end of the bow-arm 17, as is clearly shown in Fig. 4.

Each guide or finger at its forward end is provided with a supporting-plate 28 and a shoe 32, carried thereby, the plate and shoe of the upper finger or guide extending downward tangentially to the periphery of the stone, and the corresponding parts of the lower finger or guide extend upward tangentially to the periphery of the stone. Both supporting-plates and shoes are adjusted upon and connected alike with the upper and the lower guides or fingers. This connection is best shown in Figs. 2, 3, and 4, in which it will be observed that the supporting-plate 28 is pivoted in ears 28<sup>a</sup>, formed upon the arm to which the plate is to be attached; and ears 29 are formed at each side of the outer face of the supporting-plate 28, having openings to receive the threaded stem of an adjusting-screw 30, and the said screw is preferably provided with a milled head 31, in order that it may be readily turned.

The shoe 32 is pivoted upon the lower front portion of the supporting-plate by means of a screw 33 or its equivalent, and the edge of the shoe adjacent to the stone is somewhat segmental and is beveled in direction of the stone, as shown at 32<sup>a</sup> in Figs. 2 and 3. The shoe is provided with a central extension 34 at what may be termed its "outer" end, the extension having an opening receiving a nut 30<sup>a</sup>, which is pivotally and slidably mounted in the opening and through which the adjusting-screw 30 passes, so that by manipulating the screw 30 the shoe is adjusted sidewise or horizontally with respect to the axis of the grinding-wheel.

The shoes are given vertical adjustment to and from the periphery of the grinding-stone through the medium of a screw 35, which has bearing upon the arm to which the supporting-plate is pivoted and passes through a threaded opening in the said plate, being provided, preferably, with a milled head 36 at its outer or forward end. It will thus be observed that all of the adjustments, with possibly the adjustment of the guides or fingers relative to the stone, are made from the front of the machine.

At or about the central portion of the machine, near the front, a pillar 37 is secured, provided with an opening through which a sleeve 38 is passed. The said sleeve is pivoted in the opening of the pillar by means of

a fixed stud 37<sup>a</sup> at one side and an adjustable stud 37<sup>b</sup> at the opposite side. The sleeve 38 constitutes a guide for an adjusting-shaft 40, which is provided with a threaded rear end 41, the said threaded end being passed through a threaded opening at the central portion of a connecting-rod 42, uniting the two supporting-arms 13 for the grindstone, and at the outer or forward end of the shaft 40 preferably a milled head 43 is secured, in order that the said shaft 40 may be turned readily from the front of the machine and the supporting-arms 13 of the grindstone be carried toward the front or toward the rear of the table, as the character of the work may demand. The shaft is prevented from having end movement in the sleeve by securing collars 39 on the shaft at each end of the sleeve, as shown in Fig. 4.

A belt 44 is usually passed over the pulley 45 on the drive-shaft and over a smaller pulley located on the arbor of the grindstone, as shown in Figs. 1 and 4. A bench-bracket 46 is secured transversely on the top of the table A in front of the opening 11 therein, and this bracket is somewhat V-shaped in cross-section, and has horizontal side flanges, as shown in Fig. 4, the said side flanges having a dovetail slide connection with a bed 47, (shown in Figs. 1 and 4,) and the said bed is provided with a central longitudinal rib or raised surface 48, having undercut sides, being adapted to constitute slideways for the base 48<sup>a</sup> of two center-posts 50, each of which is provided ordinarily with an inwardly-extending center-pin 51, and the said posts are held in their adjusted position on the bed by means of a set-screw 49, the top of which is preferably at the upper surface of the base portions of the center-posts. The lower ends of the screws pass through nuts located at the under face of the raised section or rib 48 of the bed, as illustrated in Fig. 4.

Under this construction when the stone is moved to or from the operator to accommodate it to different-sized mower-knives, or when the shoes of the fingers or guides are moved up or down or adjusted laterally to obtain the proper bevel at which the blades are to be ground after the adjustment is accomplished, the guides or fingers will remain in their adjusted position as long as may be desired; and since the guides or fingers are arranged around the stone, and move forwardly or rearwardly with the stone, the said guides or fingers will never be out of proper relation to the stone, and it is evident that even when they are adjusted vertically they will sustain the same relation to the stone, since they simply move around it.

No wrench is required in connection with the machine, since all of its adjustments may be readily made by hand.

The machine is adapted for other work than that of grinding the knives of mowers and like articles, as, for example, it may be advantageously used in sharpening printers'



paper-cutters, fluted reamers, skates, drills, or the finger-plates of a common mower, as well as the sickle. The right and left adjustment of the shoes enables the machine to be adapted to any spiral surface that may occur in the work.

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

1. The combination, with a grindstone, of guides or fingers adjustable with reference to the said grindstone, one of the guides or fingers being adjustable to and from the stone, substantially as shown and described.

2. The combination, with a grindstone and its arbor, of a bifurcated support loosely mounted on the boxing of the arbor at each side of the said stone, guides or fingers located one above and the other below the stone, conforming to the curvature of said stone, being carried by the aforesaid support, and means, substantially as described, for vertically adjusting the said support, as and for the purpose set forth.

3. The combination, with a grindstone, its arbor and the bearings therefor, of a support having a bifurcated end straddling the stone and loosely mounted on the boxing of the arbor thereof, segmental guides or fingers located one above and the other below the stone, the said guides or fingers being carried by the bifurcated support, one of the said fingers or guides being adjustable to or from the stone, and an adjusting mechanism connected with the said support, whereby the support may be raised and lowered and the fingers or guides may be adjusted around the stone without changing their relative positions thereto, as and for the purpose set forth.

4. The combination, with a grindstone, its arbor and a support therefor, of semicircular fingers or guides located one above and the other below the said stone, and mounted to have adjustment around the stone, and a shoe located at the free end of each finger or guide, having adjustment to and from the periphery of the stone, and in direction of the sides of the same, as and for the purpose specified.

5. The combination, with a grindstone, its arbor and the supports therefor, of semicircular fingers or guides arranged one above and the other below the stone, being mounted to revolve around said stone, a supporting-plate pivoted at the free end of each finger or guide, means for adjusting the said plates to and from the periphery of the stone, and shoes located upon the said supporting-plates, being capable of side adjustment and having their edges adjacent to the stone curved and beveled, as and for the purpose set forth.

6. The combination, with a grindstone, of

guides partially encircling the said stone, adjustable to and from its periphery and capable of rotary movement around said periphery, and shoes carried by the free ends of the guides or fingers, having adjustment to and from the periphery of the stone, and likewise being capable of side adjustment, substantially as shown and described.

7. In a machine for grinding sickles and other blades or cutters, the combination, with a grindstone and guides or fingers partially surrounding the same, of a plate pivoted to the free end of each finger or guide, the said plates extending in direction of each other and in direction of the periphery of the stone, adjusting-screws having bearings on the said fingers and connected with the ends of the plates farthest removed from said stone, a shoe pivoted upon each of the plates, extending from the free ends of the plates in direction of the periphery of the stone, and adjusting-screws carried by the plates and connected with the shoes, whereby the latter may have side adjustment, as and for the purpose specified.

8. The combination with a frame having a work-holder thereon, of a grinding-wheel mounted on the frame, a yoke fixed adjacent to and embracing the grinding-wheel and two curved fingers pivoted on the yoke and capable of adjustment with relation to the grinding-wheel, substantially as described.

9. The combination with a frame having a work-holder thereon, of a grinding-wheel mounted on the frame, a yoke held on the support of the grinding-wheel and embracing the grinding-wheel, and two curved fingers carried by the yoke and extending around the grinding-wheel, the fingers being adjustable with relation to the grinding-wheel, substantially as described.

10. The combination with a frame having a work-holder, of a grinding-wheel mounted on the frame, a curved finger pivotally mounted adjacent to the wheel, and an adjustable screw carried by the finger, substantially as described.

11. The combination with a frame having a work-holder, of a pivotally-mounted arm carried by the frame, a grinding-wheel mounted on the arm, means for moving the arm, a yoke carried by the arm, and a curved finger pivotally connected to the yoke and capable of adjustment with relation to the grinding-wheel, substantially as described.

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Witnesses:

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P. F. SMEAD.