

J. D. VIRDIN.  
GRINDING AND SHARPENING MACHINE.  
APPLICATION FILED APR. 27, 1911.

999,610.

Patented Aug. 1, 1911.

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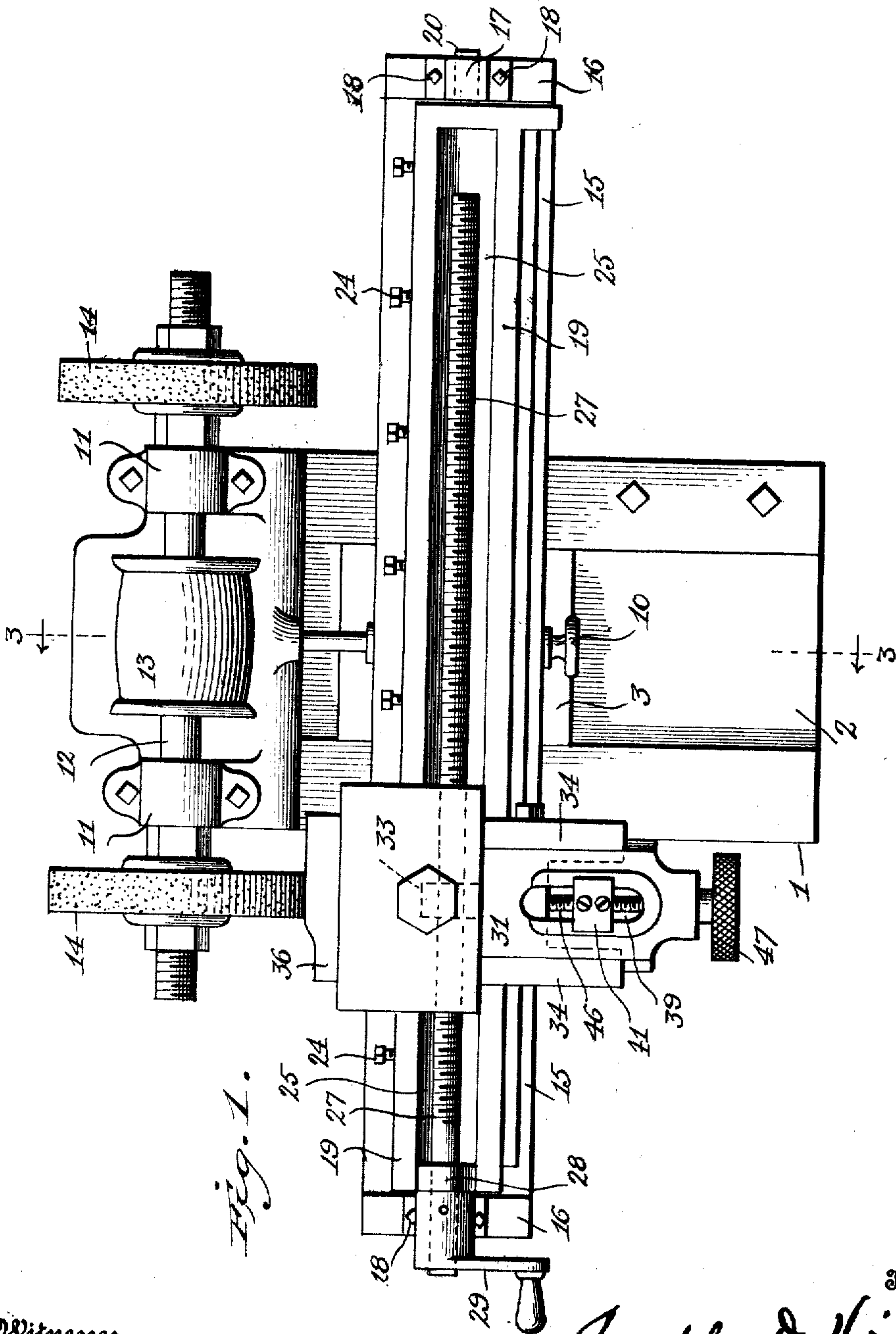


Fig. 1.

Witnesses

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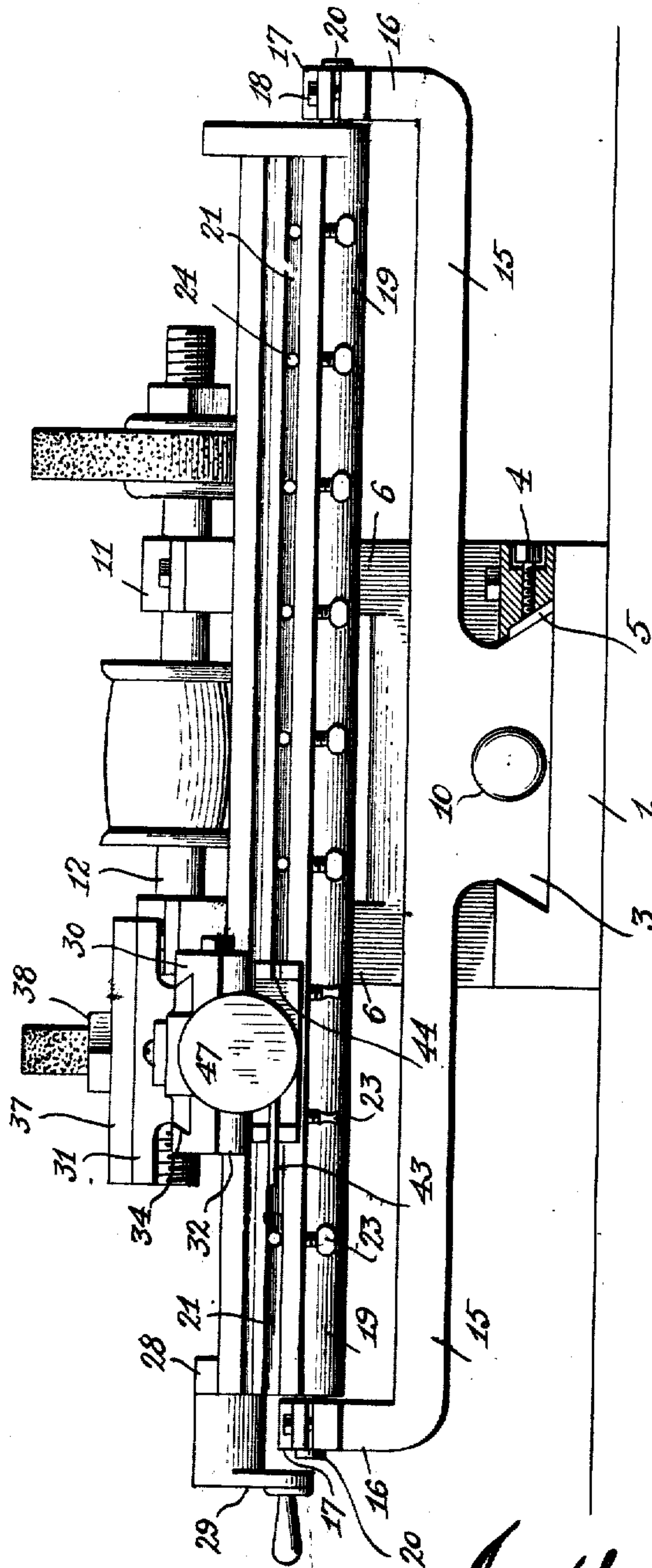
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Fig. 2.



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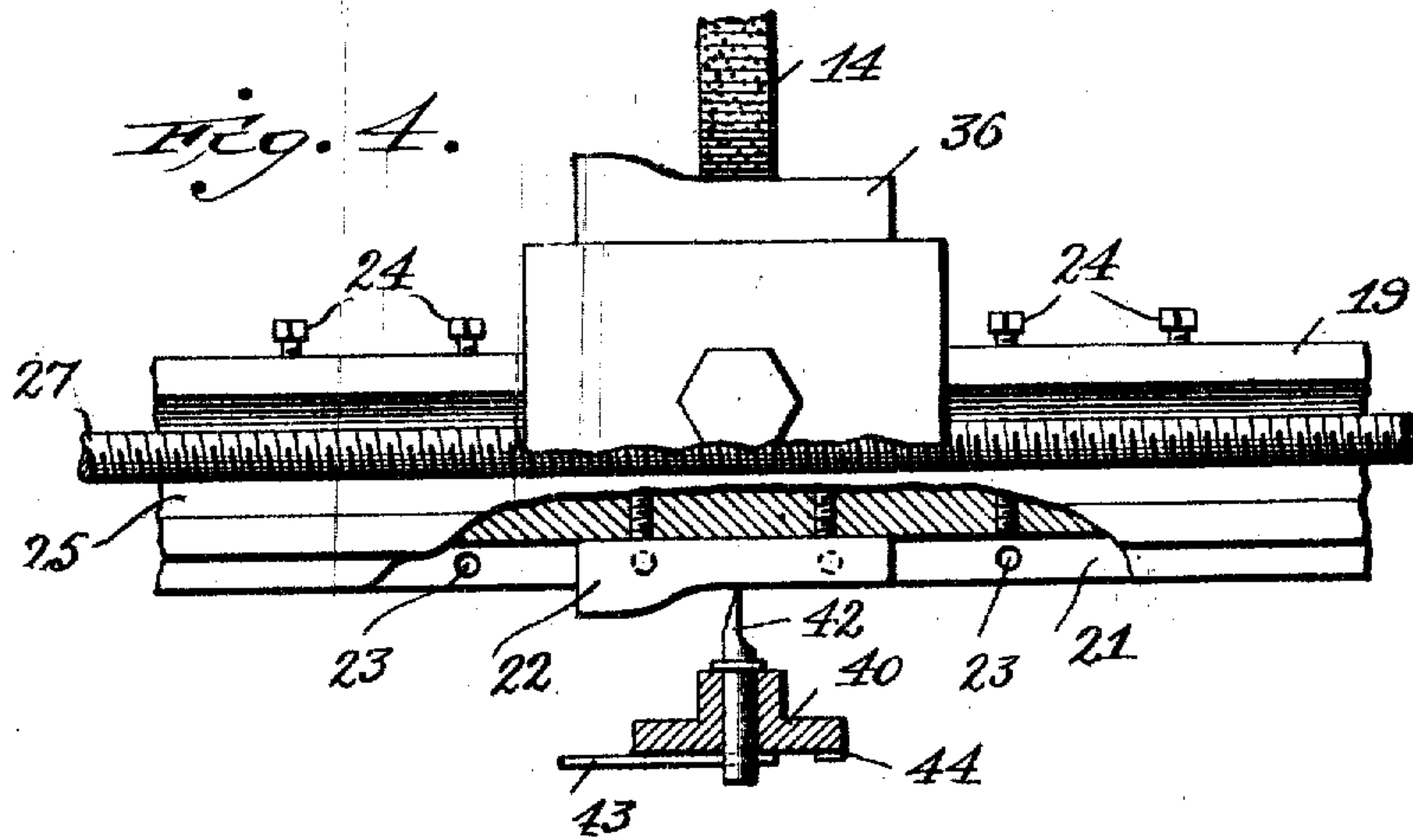
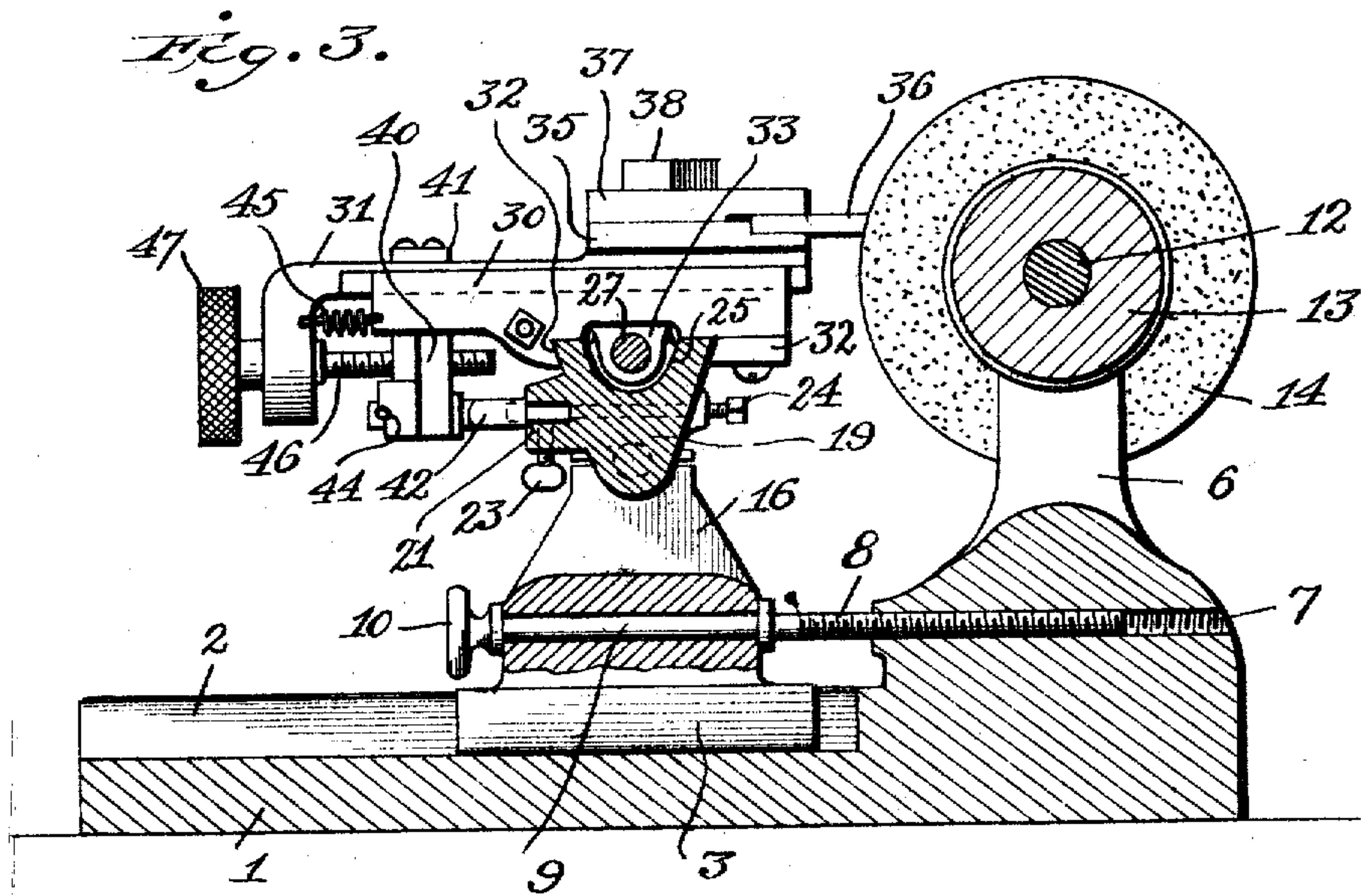
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# UNITED STATES PATENT OFFICE.

JOSEPH D. VIRDIN, OF BALTIMORE, MARYLAND, ASSIGNOR OF ONE-HALF TO D. M. WOLF, OF MOUNT WASHINGTON, MARYLAND.

## GRINDING AND SHARPENING MACHINE.

999,610.

Specification of Letters Patent.

Patented Aug. 1, 1911.

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*To all whom it may concern:*

Be it known that I, JOSEPH D. VIRDIN, a citizen of the United States, residing in the city of Baltimore and State of Maryland, have invented certain new and useful Improvements in Grinding and Sharpening Machines, of which the following is a full, clear, and exact specification.

My invention relates to apparatus for grinding and sharpening knives of irregular contour such as those used in planing machines for producing ornamental surfaces, as, for example, picture and other moldings.

The object of the invention is to provide a simple machine which will not easily get out of order and by the use of which the knife will be expeditiously given a cutting edge of the exact form desired.

A further object of the invention is to provide means whereby the knife may be adjusted to various angles relative to the grinding wheel so as to produce any desired bevel on the cutting edge.

A further object of the invention is to provide improved means for adjusting the working parts to meet the varying conditions created by the wearing away of the grinding wheel or disk.

A further object of the invention is to provide a machine of this character whereby a series of knives may be sharpened or ground with their cutting edges identical in contour, in every respect, thereby enabling the use of said series of knives on a single revolving cutter head of a planing machine.

Other incidental objects of the invention will appear as the description of the same proceeds and the novel features of the invention will be pointed out in the claims at the end of the description.

In the accompanying drawings, which fully illustrate my invention, Figure 1 is a plan view of the improved machine; Fig. 2 is a front elevation of the same; Fig. 3 a vertical transverse section on the line 3—3 of Fig. 1; Fig. 4 is a detail plan view partly broken away.

In carrying out my invention, I employ a base or bed plate 1 provided with transverse ways or tracks 2 in which a guiding and supporting body 3 is slidably mounted. One track is integral with the bed plate or otherwise fixed while the other track is preferably detachable and has mounted therein ad-

justing screws 4 by which a wear-plate 5 may be held between the track and the supporting body to compensate for wear and cause the travel of the said support to be true and straight throughout the life of the machine. At the back end of the bed plate posts 6 rise from the sides thereof while between said posts a transverse threaded bore 7 is provided in the bed plate. This threaded bore is engaged by the rear threaded end 8 of an adjusting rod 9 which has a swiveled connection with the base of the support, as shown in Fig. 3, and is provided at its front end with an operating knob or handle 10.

On the upper ends of the posts 6 are bearings 11 in which is journaled a grinding shaft 12 having a driving pulley 13 fixed thereon between the posts and a grinding wheel 14, preferably an emery disk secured on its end. It will be understood, of course, that the grinding shaft may be extended more or less and provided with any number of grinding wheels. I have shown two such wheels, but such showing is merely illustrative and only one or any greater number may be employed without involving any departure from the invention.

The support comprises a lower sustaining member and an upper gage or guide member. The lower member in the form of a yoke or fork having its side arms 15 carried laterally from its main body, as shown most clearly in Fig. 2, the extremities of the arms being turned up, as shown at 16, and equipped with cap plates 17 which are secured upon the upper extremities of the upturned terminals 16 by clamping screws or bolts 18. The upper gage or guide member of the support consists essentially of a bar 19 having trunnions 20 at its ends which extend between the cap plates 17 and the upstanding members 16 which latter are recessed or notched to receive the trunnions. It will be readily noted that the trunnions form a center about which the bar may be adjusted and that it may be secured in any angle to which it may be adjusted by turning home the screws or bolts 18 so as to clamp the cap plates 17 firmly upon the trunnions and thereby cause the same to bind upon the upturned members 16. The bar 19 is provided in its front face with a longitudinal narrow groove 21 in which is secured a templet or pattern plate 22, the front edge of which



has an outline corresponding to the outline of the knife to be ground. This templet is secured in place by thumb screws 23 mounted in the bar 19 and extending up into the  
 5 groove 21 to bear upon the templet and bind the same against the upper wall of the groove. In order to accommodate templets of various widths, set screws 24 are mounted in the bar 19 and extend through the  
 10 same from the rear thereof to enter the groove 21 and thereby hold the templet in such position that every portion of its edge will project from the front face of the carriage member to be engaged by the tracer.  
 15 A longitudinal groove or trough 25 extends the full length of the member 19 in the top of the same and in this groove or trough is arranged a screw or worm 27, one end of which is swiveled in a bearing 28, on the  
 20 member 19, and equipped with a crank handle 29 or other driving instrumentality.  
 Slidably mounted on the upper member or bar 19 of the carriage is a carriage consisting of a base or track member 30 and a  
 25 clamp member 31 slidably mounted therein. The track member 30 rests firmly on the upper side or top of the bar 19 or upper pivoted member of the support and is provided on its under side with depending lugs  
 30 or lips 32 which engage the side of the said member 19. It will be observed on reference to Fig. 3, that the sides of the upper member 19 diverge upwardly and that the inner edges of the lips engaging the same  
 35 are correspondingly chamfered so that the lifting of the carriage from the support is prevented. One of the lips is removable to facilitate assembling of the parts. The base member of the carriage is further provided with a depending perforated threaded  
 40 ear 33 which is engaged by the feed screw 27 whereby the carriage may be shifted longitudinally of the bar or member 19 which constitutes a track for the carriage.  
 45 On the top of the carriage member 30 at the sides of the same, are overhanging ribs 34 providing a way which extends from front to rear of the machine and in which is slidably mounted the upper carriage  
 50 member, or clamp bar 31, the side edges of this bar engaging under the overhanging flanges 34 as shown. Said bar is constructed on its upper side, at its rear end, with a boss 35 provided with a recess at its rear edge  
 55 whereby it forms a jaw to receive the knife 36 to be ground. An upper clamping jaw or plate 37 is secured firmly upon the under jaw or boss 35 and is also recessed at its rear edge to fit upon the knife whereby  
 60 when the securing bolt 38 is turned home, the knife will be firmly clamped between the jaws. In the forward portion of the clamp bar 31 is a slot 39 through which projects the upper end of a tracer-holder or  
 65 hanger 40 having a cross bar or head 41 at

its upper end projecting laterally beyond the walls of the slot 39 to rest upon the upper side of the clamp bar and thereby suspend the hanger. Through the lower end of this hanger is inserted a tracer pin or  
 70 point 42 which bears against the front or pattern edge of the templet as shown. The tracer is held against turning in the tracer-holder by a key 43 inserted through the front end of the tracer and engaging  
 75 notches, recesses or grooves 44 in the front side of the tracer holder. A spring 45 is secured to and extends between the front ends of the members of the carriage and tends to draw the clamp bar rearward  
 80 thereby holding the tracer against the templet and the knife against the grinding wheel. The tracer holder is adjusted along the slot 39 so as to bring the tracer into proper engagement with the templet by an  
 85 adjusting screw 46 threaded through the tracer-holder and swiveled in the downturned front end of the clamp bar, being provided with a milled head 47 at its front  
 90 extremity.

The operation will be readily understood from the foregoing description, taken in connection with the accompanying drawings.

The knife being secured in position and the templet and tracer being brought into  
 95 proper engagement as shown and described, the adjusting rod 9 is manipulated to bring the knife against the grinding wheel. To bring the knife into the proper angular position to produce any desired bevel on its  
 100 cutting edge, the upper member 19 of the support is rotated on its trunnions and is clamped in its adjusted position by means of the cap plates 17 as hereinbefore stated. The grinding wheels are then rotated and  
 105 the worm 17 manipulated to cause the carriage to move over the support. The tracer will be thereby caused to travel longitudinally of the templet and, following the sinu-  
 110 osities of the same, will impart a back and forth movement to the clamp bar so that the knife carried by the rear end thereof will be caused to move past the grinding wheel in an irregular path duplicating the path of  
 115 the tracer and, consequently, will be ground exactly to the desired shape. While I have shown the worm or screw 27 as adapted to be operated by hand, it may be connected by a train of gearing with the motor which drives  
 120 the grinding shaft and while I have illustrated only one carriage two or more may be mounted on the support so that a plurality of knives may be ground simultaneously, and have their ground edges exact duplicates  
 125 of each other. Likewise when a series of knives are ground one at a time their grinding edges will be exact duplicates of each other so long as the adjustment of the mechanism is not altered.

Having thus fully described my inven- 130



tion what I claim and desire to secure by Letters Patent of the United States is:—

1. In a machine for grinding knives, the combination of a bed plate, a grinding wheel  
5 mounted on the bed plate in fixed relation thereto, a support comprising a base member movable on the bed plate to and from the grinding wheel and an upper member pivotally mounted on the base member, means for  
10 maintaining the base member in its position relative to the grinding wheel, means for securing the pivoted member in angular relation to the base member, a carriage mounted on said pivoted member and adapted to  
15 move a knife past the grinding wheel, and means for moving said carriage.

2. In a machine for grinding knives, the combination of a bed plate, a grinding wheel mounted on the bed plate, in fixed relation  
20 thereto, a support comprising a base member movable on the bed plate to and from the

grinding wheel and an upper member pivotally mounted on the base member, means for maintaining the base member in its position relative to the grinding wheel, means 25 for securing the pivoted member in angular relation to the base member, a templet on said pivoted member, a carriage comprising a track member movable along the pivoted member and a clamp bar movable back and forth upon the track member and carrying 30 the knife to be sharpened, a tracer holder suspended on the forward portion of the clamp bar, and a tracer mounted in the tracer holder and riding against the templet. 35

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOSEPH D. VIRDIN.

Witnesses:

ALBERT W. CLARK,  
JOHN F. JACOBS.