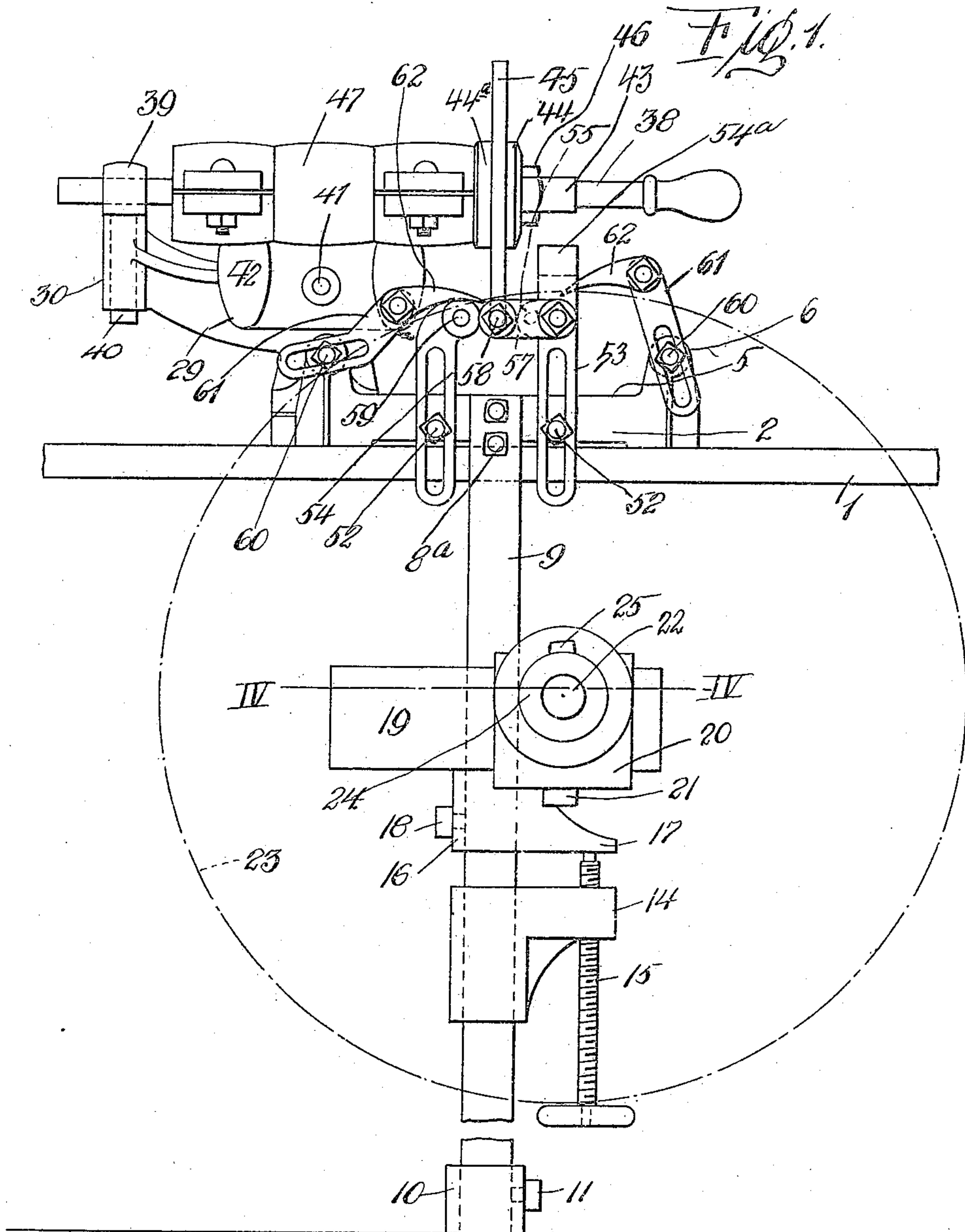


F. A. HUNTER & G. S. TURNER.  
SAW GRINDING MACHINE.  
APPLICATION FILED JULY 24, 1908.

952,907.

Patented Mar. 22, 1910.

4 SHEETS—SHEET 1.



Witnesses

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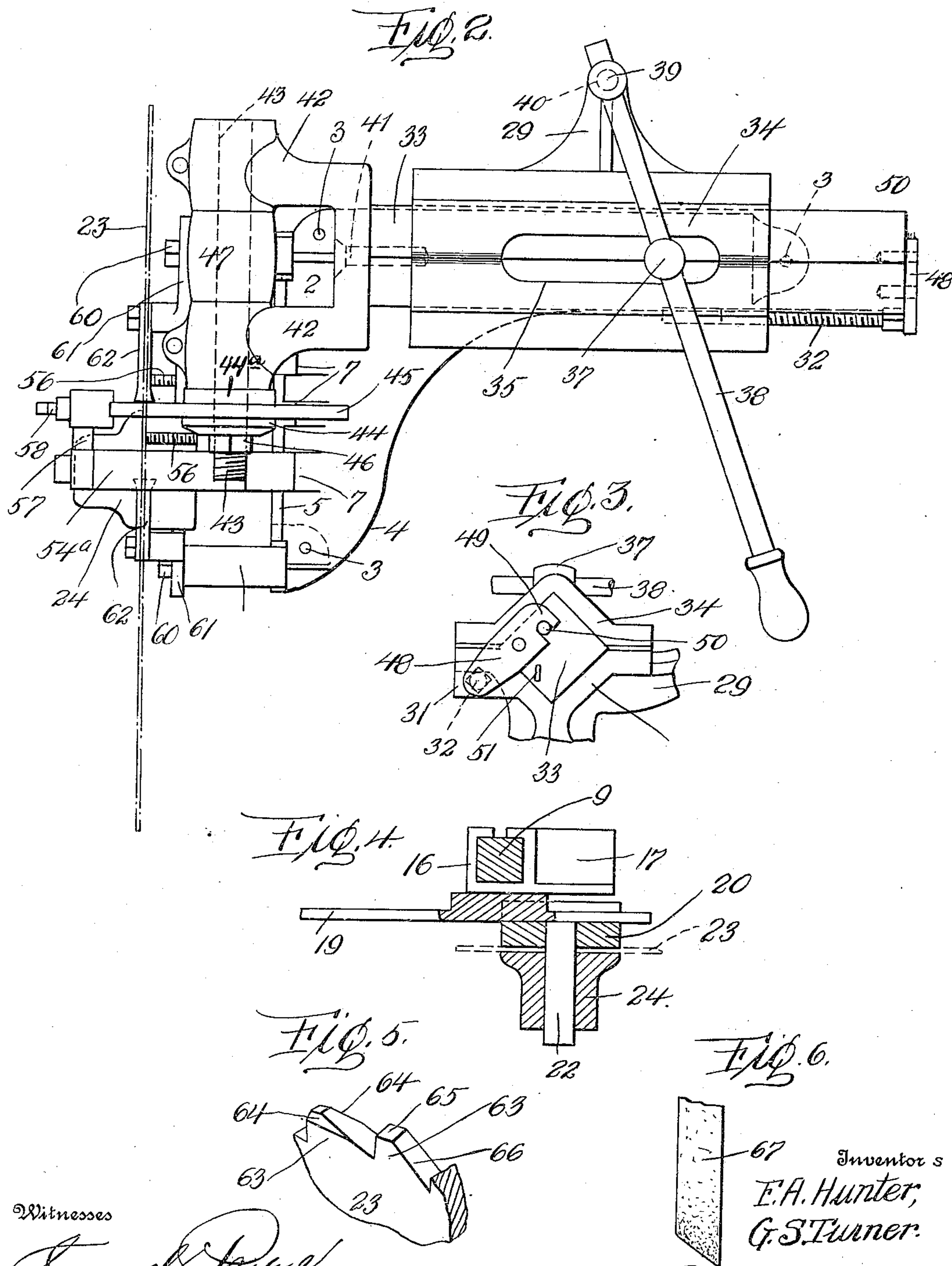
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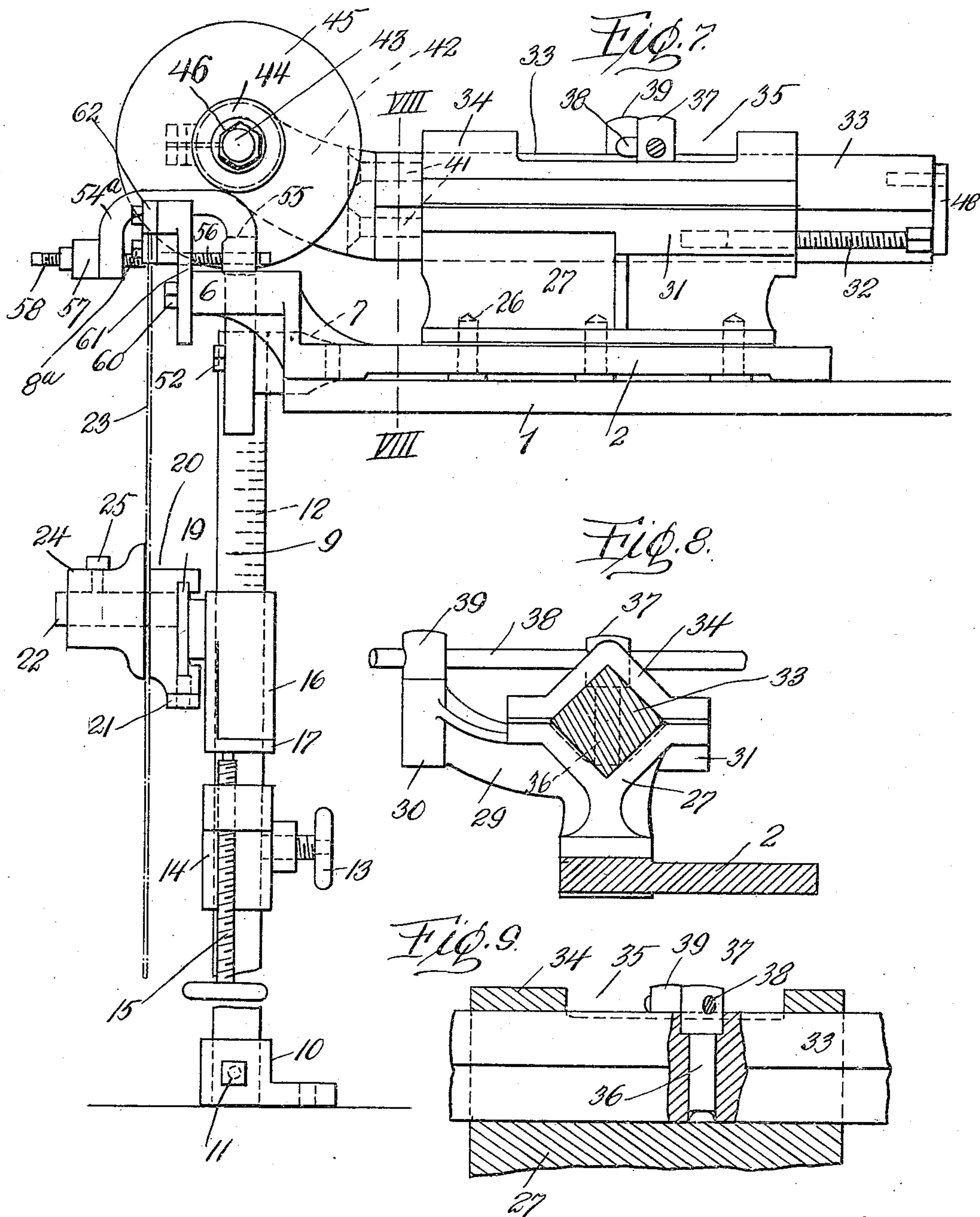
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4 SHEETS—SHEET 3.



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4 SHEETS—SHEET 4.

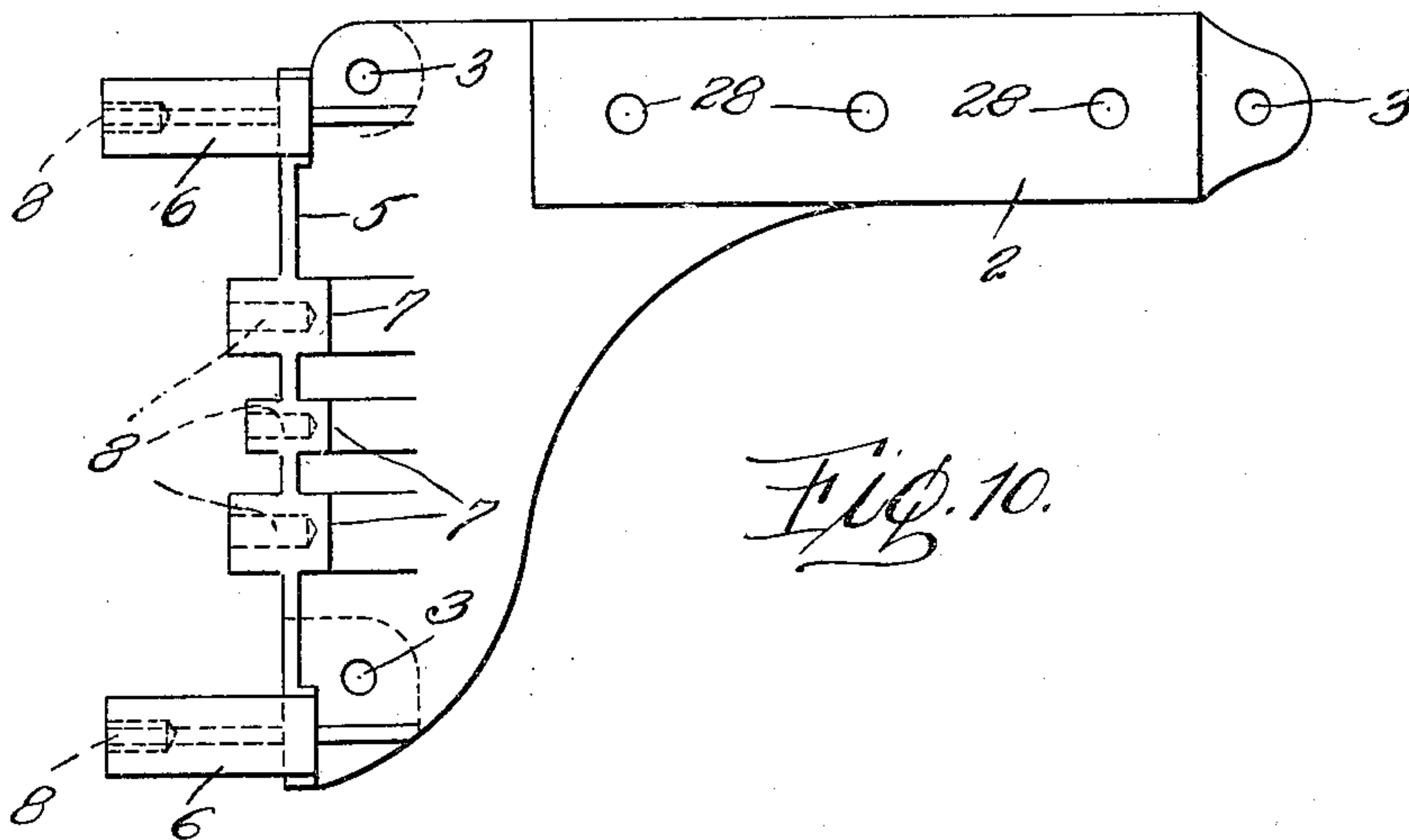
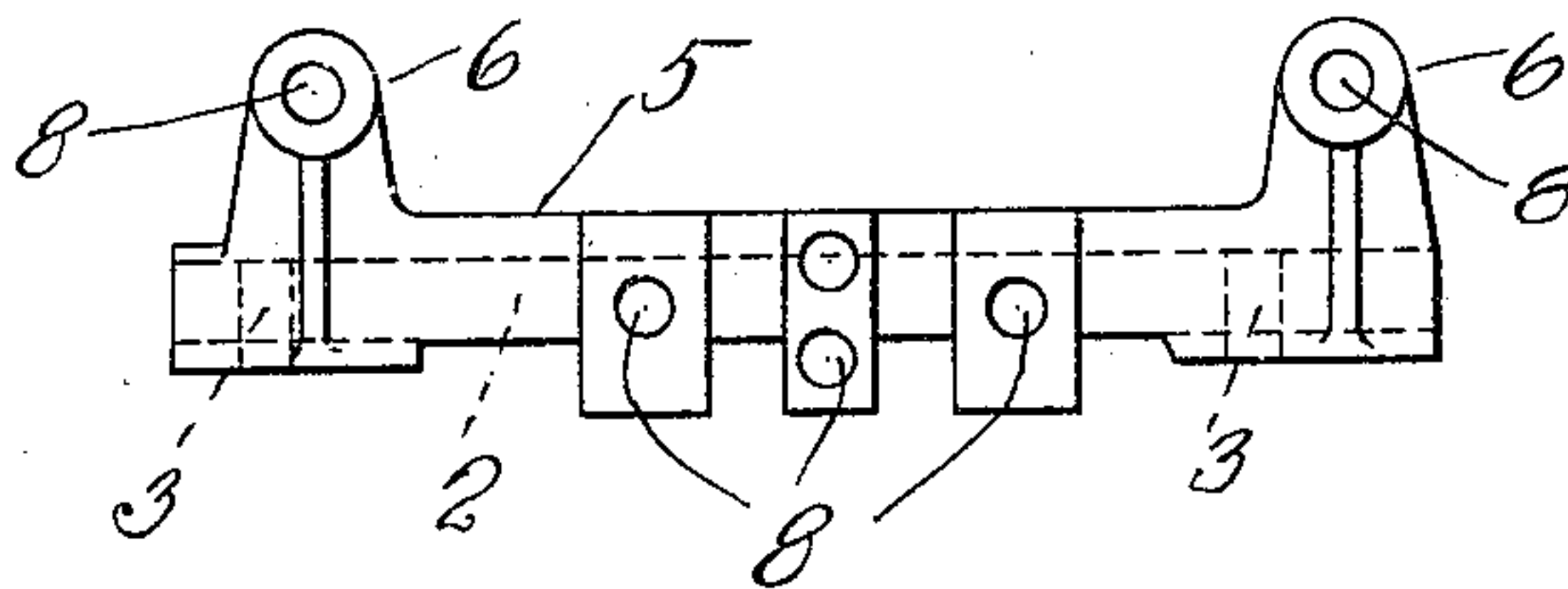


Fig. 10.

Fig. 11.



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# UNITED STATES PATENT OFFICE.

FRANK A. HUNTER AND GEORGE S. TURNER, OF PITTSBURG, PENNSYLVANIA.

SAW-GRINDING MACHINE.

952,907.

Specification of Letters Patent. Patented Mar. 22, 1910.

Application filed July 24, 1908. Serial No. 445,231.

*To all whom it may concern:*

Be it known that we, FRANK A. HUNTER and GEORGE S. TURNER, citizens of the United States of America, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Saw-Grinding Machines, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to saw grinding machines, and the objects of our invention are, first, to provide positive and reliable means for beveling the teeth of saws of various diameters; second, to obviate the necessity of using beveled emery wheels for producing the beveled faces upon the teeth of a saw; third, to facilitate the dressing of the saw teeth at a required angle of clearance; and fourth, to provide a strong and durable machine that will be positive in its action, free from injury by ordinary use and easily operated.

We obtain the above objects through the following instrumentalities: two adjustable stops by the side of the saw which hold the saw blade rigid and at right angles to the emery wheel; two adjustable pawls for spacing; bearings at each side of the belt wheel, avoiding the tilting of the spindle when the bearing becomes slightly worn; a standard graduated so that when changed from one size of saw blade to another, the same can be accomplished readily with very little displacement; a positive latch for grinding the bevel, so that each bevel is made exactly the same; a ram fitting in the angular position eliminating lost motion found in grinders of this style, the ram fitted with cover making the same absolutely dust proof, and a safe type of slide handle.

Our invention comprehends a grinding machine having a latch stop and an adjustable screw enabling an operator to quickly throw the latch stop out of operation to obtain a full stroke of the ram, and also quickly place the latch stop in an operative position and adjust for a successful operation.

The machine is also provided with a novel pin that can be moved vertically and laterally enabling an operator to grind the tops of the teeth of a saw with any desired angle of clearance within the limits of the ma-

chine, and also to grind bevels on the teeth with any angle of clearance, and cut the face of teeth with any angle back of the center and within the limits of the machine.

In the drawings:—Figure 1 is a front elevation of our machine, Fig. 2 is a plan of the machine, Fig. 3 is a rear end view of the ram and ram bearing, Fig. 4 is a horizontal sectional view taken on the line IV of Fig. 1, Fig. 5 is a perspective view of a portion of the saw illustrating the teeth thereof, Fig. 6 is an edge view of a portion of a beveled emery wheel that can be used in connection with the machine, Fig. 7 is a side elevation of the machine, Fig. 8 is a cross sectional view of the machine taken on the line VIII of Fig. 7, Fig. 9 is a longitudinal sectional view of a ram bearing illustrating the ram thereof as partly broken away and partly in section, Fig. 10 is a plan of a base plate, and Fig. 11 is an elevation of the same.

In the accompanying drawings, 1 designates a shelf or suitable support for a base plate 2, which can be bolted to the shelf or supported by bolts (not shown) passing through openings 3 provided therefor in the base plate 2. The base plate 2 is formed with an angular extension 4 and the forward end of said base plate is provided with a vertical flange 5 having end brackets 6 and intermediate bosses 7, all of which are provided with threaded recesses 8, for a purpose that will hereinafter appear.

Secured to the central boss 7 by screw bolts 8<sup>a</sup> is a vertical standard 9 having the lower end thereof secured in a socket 10 by means of a set screw 11, said socket being located beneath the front edge of the shelf or support 1. The standard 9 is graduated, as at 12, and adjustably mounted upon said standard by virtue of a set screw 13 is a carrier 14 for an elevating screw 15.

Slidably mounted upon the standard 9 is a clearance slide 16 having an angular extension 17 resting upon the upper end of the screw 15, which is employed for minutely adjusting said clearance slide. The clearance slide can be held permanently in engagement with the standard 9 by a set screw 18. The front side of the clearance slide 16 is provided with a slide head 19, and slidably mounted upon said head is an adjustable slide 20, said slide being fixed with re-



lation to the head 19 by a set screw 21. The adjustable slide 20 supports a bearing pin 22 for a circular saw 23, said saw being rev-  
 5 olubly held upon the bearing pin 22 by a saw collar 24, detachably mounted upon the bearing pin 22 by a set screw 25.

Through the medium of the above elements, we accomplish a vertical and lateral adjustment, permitting of the saw 23 being  
 10 properly positioned for the clearance desired. This adjustment is facilitated by the graduations 12 of the standard 9.

Fixed to the base plate 2 by screw bolts 26 is a slide bearing 27, said screw bolts extending through openings 28 provided there-  
 15 for in the base plate 2. The slide bearing 27 is substantially Y-shaped in cross section and is provided intermediate the ends thereof with a right angular bracket 29 having a  
 20 vertical bearing 30. One side of the slide bearing 27 is enlarged, as at 31, for a longitudinal screw 32, the object of which will presently appear.

Slidably mounted upon the bearing 27 is  
 25 a ram 33 rectangular in cross section. The ram is retained in the bearing 27 by an inverted V-shaped cap 34 having a longitudinal slot 35 formed therein.

Revolubly mounted in the ram 33 is a  
 30 ram post 36 having a head 37 in which is fixed a slide handle 38 having one end thereof slidably mounted in the head 39 of a bracket post 40, revolubly mounted in the bearing 30 of the bracket 29.

Secured to the forward end of the ram  
 35 33 by screws 41 is a bifurcated spindle bearing 42 for a spindle 43 having a threaded end protruding beyond the spindle bearing 42. Upon the projecting end of the spindle  
 40 43 is mounted the fixed collar 44<sup>a</sup> and loose collar 44 of an emery wheel 45, said wheel and loose collar being retained upon the spindle by a spindle nut 46. Mounted upon the spindle 43 in the furcation of the bearing  
 45 42 is a belt wheel 47 by which said spindle is driven from a suitable source of power.

Pivotaly connected to the rear end of the ram 33 is a latch 48 having a hook-shaped  
 50 end 49 adapted to engage a pin 50, carried by the ram 33. Movement of the latch 48 is limited by a lug 51 carried by the ram 33. This latch, when in engagement with the pin 50, is adapted to abut against the end of the screw 32 and limit the stroke of  
 55 the ram 33 upon the bearing 27.

Adjustably connected to the other of the bosses 7 of the base plate 2 by set screws 52 are slotted arms 53 and 54, these arms being  
 60 located upon the rear side of the saw 23, as best shown in Fig. 7 of the drawings. The arm 53 is provided with an overhanging bracket 54<sup>a</sup> extending in front of the saw 23. The arm 53 upon the rear side of the saw is provided with a bearing 55 for a screw or  
 65 stop 56, and in front of the saw is provided

with an auxiliary arm 57 for a screw or stop 58, these screws or stops 56 and 58 holding the saw blade rigid and at right angles to the emery wheel 45. The arm 54 upon the rear side of the saw 23 is also pro-  
 70 vided with a screw 59 for the same purpose. By reference to Fig. 1, it will be observed that the screw 58 is positioned intermediate the screws 56 and 59, thereby positively bracing the saw 23 contiguous to that por-  
 75 tion of the periphery thereof to be operated upon by the emery wheel 45.

Adjustably connected to the bracket 6 of the base plate 2 by the screw 60 are slotted arms 61 carrying pivoted pawls 62 which  
 80 are designed to engage the teeth 63 of the saw 23 and prevent said saw from rotating, that is to say, one of the pawls is capable of preventing rotation of the saw in one direc-  
 85 tion, that direction depending upon the angle of the cutting teeth which are presented to the pawl. The other pawl which engages the back of the tooth slides over the tooth if the saw is rotated in that direction.

Operation: In practice, the belt wheel 47  
 90 is connected by a belt to an overhead shaft (not shown), and assuming that the spindle 43 was driven from a suitable source of power, the operator stands at the right hand side of the machine and manipulates  
 95 the handle 38 to reciprocate the ram 33, and locate the emery wheel 45 at a position to cut a desired bevel or sharpen one of the teeth 63 of the saw 23. With the saw adjusted as illustrated in Fig. 7 of the draw-  
 100 ings, the emery wheel 45 will cut a bevel 64 upon the inner side of the tooth 63 of the saw, and to cut a bevel upon the outer or opposite side thereof, the saw is reversed in the spindle with the outer or opposite side  
 105 next to the machine and with the head 17 and the attachments thereof moved upon the slide 19 sufficient to obtain the desired clearance. To cut the teeth 63 as illustrated at  
 110 65, the saw 23 is lowered from the position illustrated in Fig. 7, whereby the emery wheel 45 can move back and forth over the periphery of the saw. Should it be desired to sharpen the inclination 66 of the teeth 63,  
 115 a beveled emery wheel 67 can be used in lieu of the flat faced emery wheel 45.

From the foregoing description taken in connection with the drawings, it will be observed that we have devised a novel adjust-  
 120 able support for a circular saw together with adjustable screw-arms and pawl-arms for steadying and governing the movement of the saw. The operating handle 38 permits of an operator easily controlling the sharpening of a saw, while the screw 32 and  
 125 latch 48 are designed to limit the movement of the ram 33, whereby all teeth will be similarly beveled or sharpened.

While in the drawings forming a part of this application there is illustrated the pre-  
 130



ferred embodiments of our invention, we would have it understood that the same can be varied or changed as to shape, proportion and manner of assemblage without departing from the spirit of the invention.

Having now described our invention what we claim as new, is:—

1. A saw grinding machine comprising an abrading wheel, and an adjustable supporting means for the saw, said supporting means embodying a standard, a carrier adjustably mounted upon the standard, a clearance slide mounted upon the standard, a screw carried by the carrier for supporting said clearance slide, a slide head carried by said clearance slide, an adjustable slide mounted upon said slide head, a pin carried by said adjustable slide for supporting a saw, and means carried by the pin for re-

2. In a saw grinding machine, a longitudinally movable ram adapted to carry at one end an abrading tool, a bearing for said ram, said bearing substantially Y-shaped in cross section, an inverted V-shaped cap secured to said bearing and provided with a longitudinally extending opening at the apex thereof, a post secured in said ram and having a head projecting from the ram and through said opening, a bracket projecting from said bearing and terminating in a vertical bearing, a post revolvably mounted in said vertical bearing and provided with a head, and a handle connected to the last mentioned head and extending through the first mentioned head and projecting from the bearing for the ram, said handle in connection with said heads constituting means for longitudinally shifting the ram.

3. In a saw grinding machine, a longitudinally shiftable ram, a bearing therefor, an adjustable abutment projecting from the rear end of said bearing, and a pivoted latch carried by the rear end of the ram and adapted to engage said abutment for limit-

ing the movement of the ram in one direction.

4. In a saw grinding machine, a vertical standard provided with graduations, a clearance slide mounted upon said standard and provided with an angular extension, a carrier block mounted on the standard below the slide and carrying an adjustable elevating screw engaging the extension of the slide for adjusting the slide, means for fixing the slide in its adjusted position, a slide head projecting from the clearance slide, an adjustable slide mounted upon said head and provided with means for maintaining it fixed with relation to the head, a bearing pin projecting from the adjustable slide and adapted to support the saw, a collar mounted upon the pin and adapted to clamp the saw against the adjustable slide, and means for fixing the collar to the pin.

5. A saw grinding machine comprising the combination with the base plate of the machine provided with a pair of upwardly extending brackets, each provided with a threaded recess, of a controlling means for the saw, said means consisting of a pair of slotted arms, one of which is provided with an angular extension, said arms being adjustable, threaded elements extending through the arms and engaging in said recess for maintaining the arms in their adjusted position, a pawl pivotally connected to the angular extension of one of said arms, a pawl pivotally connected to the upper end of the other of said arms, said pawls projecting toward each other and extending substantially at right angles with respect to said brackets.

In testimony whereof we affix our signatures in the presence of two witnesses.

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GEORGE S. TURNER.

Witnesses:

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