

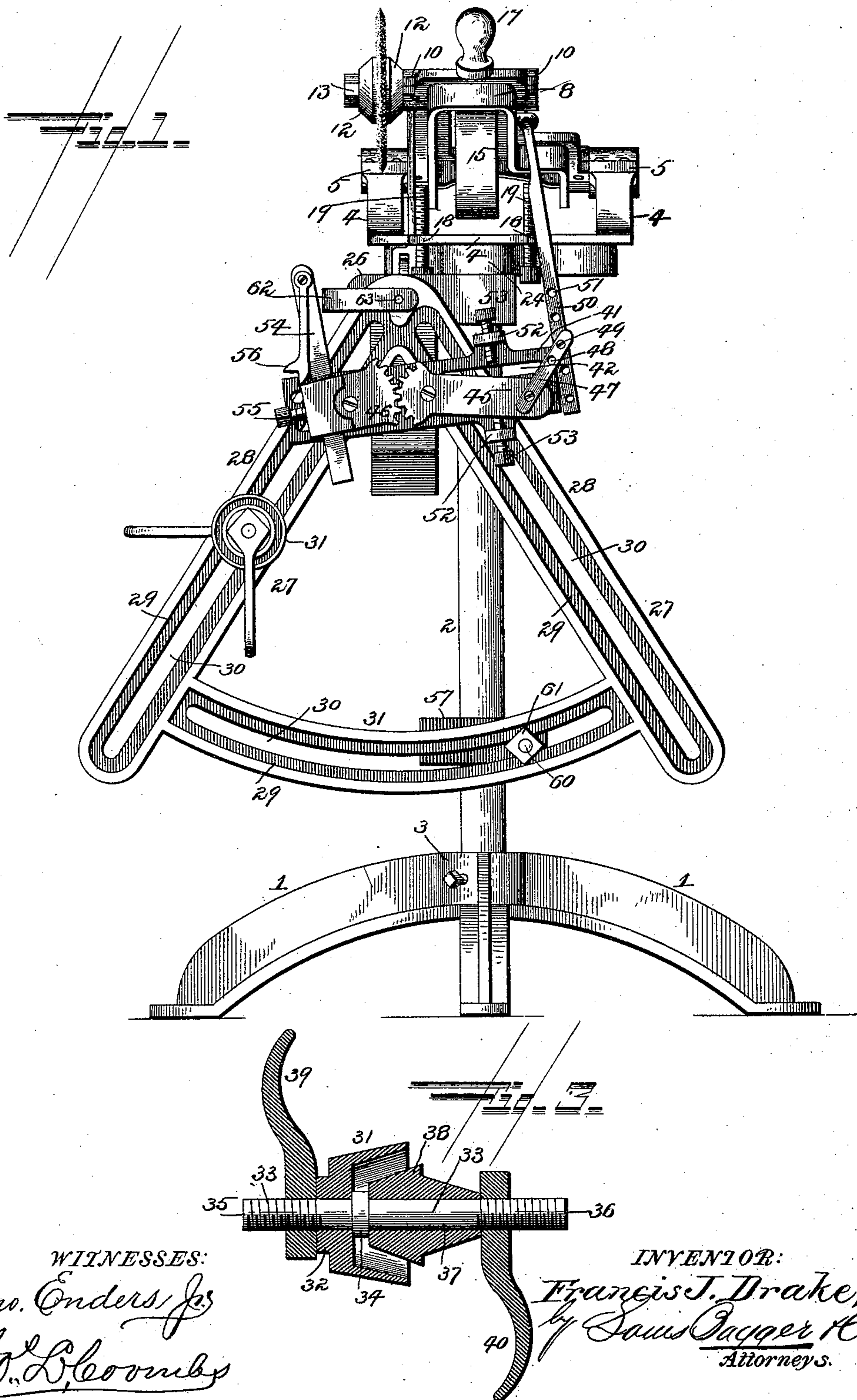
(No Model.)

2 Sheets—Sheet 1.

F. J. DRAKE.  
MACHINE FOR SHARPENING SAWS.

No. 472,865.

Patented Apr. 12, 1892.



WITNESSES:

Jno. Enders Jr.  
J. L. Bloomer

INVENTOR:

Francis J. Drake,  
by Sam. Ogger & Co.  
Attorneys.

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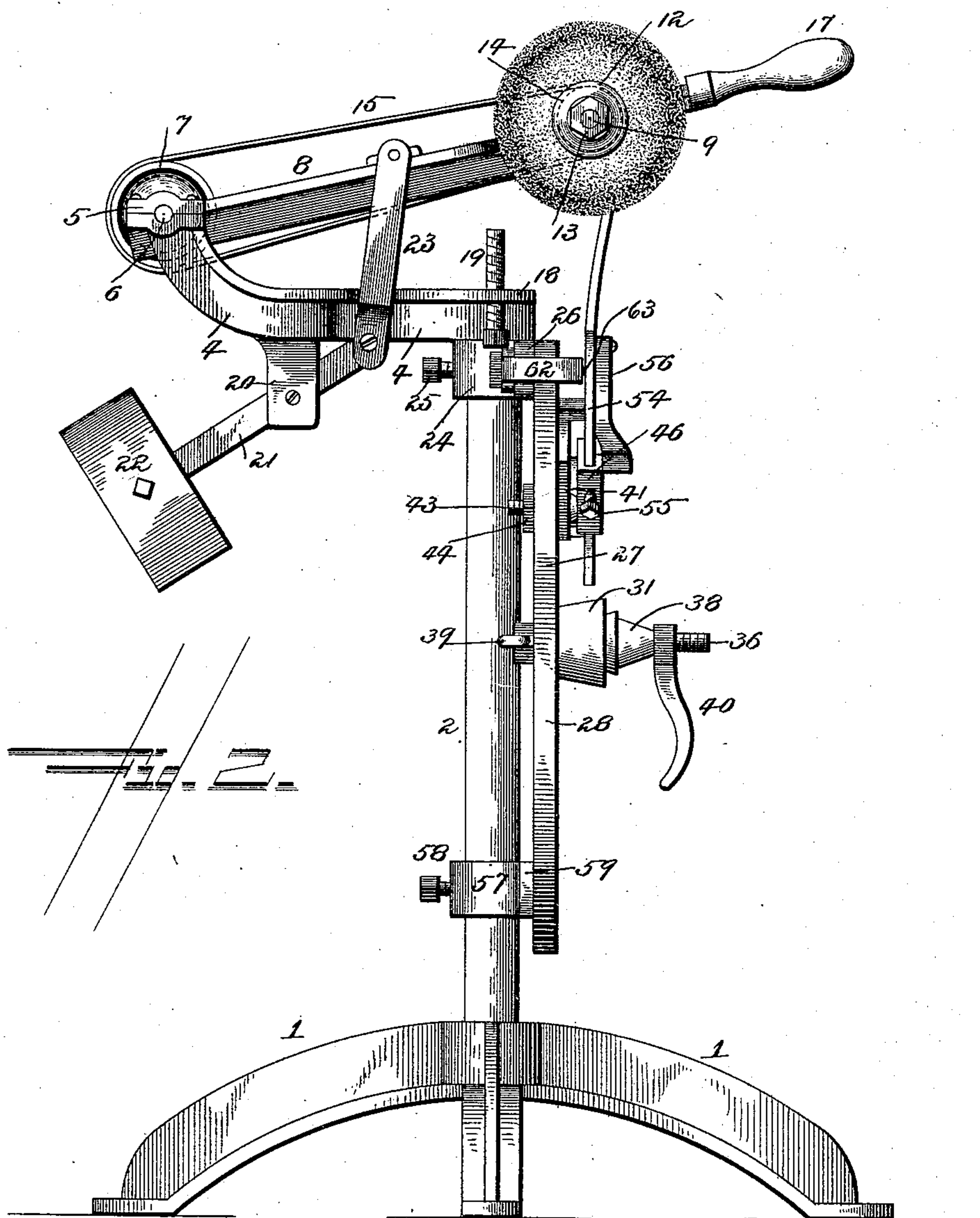
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J. L. Coombs

*INVENTOR:*

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# UNITED STATES PATENT OFFICE.

FRANCIS JAMES DRAKE, OF BELLEVILLE, CANADA.

## MACHINE FOR SHARPENING SAWS.

SPECIFICATION forming part of Letters Patent No. 472,865, dated April 12, 1892.

Application filed November 5, 1891. Serial No. 410,925. (No model.)

*To all whom it may concern:*

Be it known that I, FRANCIS JAMES DRAKE, a subject of the Queen of Great Britain, and a resident of Belleville, in the Province of Ontario and Dominion of Canada, have invented certain new and useful Improvements in Machines for Sharpening and Gumming Saws; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to improvements in machines for sharpening and gumming saws, whereby I attain superior results with respect to economy and simplicity in construction and efficiency in operation.

Among other objects my invention contemplates the provision of improved means for adjustably holding the saw to be sharpened or gummed so that the teeth thereof may be presented at different angles to the cutting or grinding disk, according to the description or character of the saw; also, the provision of improved means for automatically and successively presenting a new tooth to the grinding-disk by the act of elevating the disk to throw it out of engagement with a preceding tooth which has been sharpened. There are also other objects and advantages to be attained which will be apparent to those skilled in the art and need not be enumerated here.

The invention consists in the novel construction and combination of parts hereinafter described claimed.

In the accompanying drawings, Figure 1 is a front elevation of a saw sharpening and gumming machine constructed in accordance with my invention. Fig. 2 is a side elevation of the same. Fig. 3 is a detail sectional view of the saw-holding cone.

In the said drawings the reference-numeral 1 denotes the base of the machine, consisting of a series of legs adapted to be secured to a floor, radiating from a central hub having an aperture through which passes a vertical shaft 2, securely held therein by means of a set-screw 3. To the upper end of this shaft is secured a rearwardly-projecting bifurcated frame 4, having bearings 5, in which is jour-

naled a shaft 6, carrying driving-pulley 7. Pivoted or journaled on this shaft is the frame 8, which carries the emery or other grinding wheel or disk. The shaft 9, upon which said wheel is mounted, is journaled in bearings 10 in the forward part of the pivoted frame and is provided with a small disk 12, between which the said emery-wheel is clamped by means of the nut 13. Upon the shaft 9 is fixed a pulley 14, connected by means of a belt 15 with a pulley 16 on the shaft 6. The frame 8 is provided with a handle 17, by which its front end may be depressed to throw the grinding-disk into engagement with the saw-teeth. The frame 4 at its front end is provided with two laterally-projecting lugs 18, through which pass set-screws 19, which limit the downward movement of the frame 8. Intermediate of its ends said frame is also provided with a downwardly-depending arm 20, in which is pivoted a lever 21, provided at one end with a weight 22, while its other end is connected by a rod or bar 23 with the frame 8, so that when the handle 17 is released the weight will elevate the frame 8 and throw the grinding-disk out of engagement with the saw-tooth.

Journaled upon the shaft 2 near its upper end is a rotatable hub 24, having a set-screw 25 and provided with a projecting arm 26, to which is pivoted a gate 27, consisting of the inclined bars 28, having recesses 29 and slots 30. At their lower ends these bars are connected together by means of the curved arm 31, also provided with recesses 29 and slots 30, similar to the bars 28. By preference these parts are all made integral or in a single piece.

The numeral 31 denotes a cup-shaped hub having a central aperture and a boss 32, which latter is seated in the recess in bar 28 and is vertically movable therein. Passing through the aperture in the hub is a spindle 33, having a collar or annular flange 34 and a screw-threaded end 35, a screw-threaded end 36, and an intermediate plain portion 37, upon which fits a cone 38.

The numerals 39 and 40 designate tail-nuts fitting on the spindle 33.

Connected with the bars 28 is a horizontal plate 41, having a series of elongated slots 42, through which pass headed screws 43 and which also pass through the slots 30 in said



bars and are provided with nuts 44, whereby said plate is capable of vertical adjustment. Pivoted to this plate are two cogged segments 45 and 46, which intermesh with each other.

5 One of these segments 45 is provided with links 47, having a series of apertures 48, by which they are adjustably connected by means of a pin 49 with a downwardly-depending arm 50, also provided with a series of apertures 51, connected with the pivoted frame 8. The plate 41 is also provided at its upper and lower sides with two forwardly-projecting lugs 52, provided with adjustable screws 53, by which the movement of said segment 15 is limited. The segment 46 is provided with an aperture at its outer end, through which passes a bar 54, which is adjustable vertically, a set-screw 55 being provided to hold it in place. At its upper end this bar is provided with a pawl 56, which is adapted to engage with the saw-teeth.

20 Journalled upon the shaft 2 near its lower end is a rotatable hub 57, provided with a set-screw 58. This hub is provided with an ear 59, through which passes a headed screw-bolt 60. This bolt also passes through the slot in the arm 31 and is provided with a nut 61.

25 The numeral 62 designates a bracket connected with the arm 26, and is provided with a set-screw 63, adapted to bear against and steady the saws.

30 The operation is as follows: The tail-nut 40 is unscrewed and the cone 38 removed and passed through the central aperture in the saw to be sharpened. The cone and saw are then placed upon the spindle 33 and the tail-nut applied to hold the saw between the hub 31 and the cone. The tail-nut 39 is now loosened and the hub 31 adjusted so as to bring 40 the saw to the proper height to have its teeth engage with the grinding-disk. The tail-nut is then tightened to securely hold the hub and saw in their adjusted position. It will thus be seen that saws of varying diameters can 45 be readily adjusted vertically, so as to engage with the grinding-disk. The bar 54 is then adjusted so that the pawl 56 will engage one of the teeth of the saw just in rear of the tooth in line with the grinding-disk. The grinding-disk is now rotated by means of the pulleys and belt and the pivoted frame 8 depressed by means of its handle, which will cause the grinding-disk to engage with the saw-tooth in line therewith or sharpen the 50 same. When the sharpening is completed, the handle is released and the pivoted frame is elevated by means of the weight 22 and its connections. This movement of the frame 8 will also elevate or raise the arm 50, and by means of the links 47 will turn segment 45 on its pivot, which will actuate the segment 46, causing the pawl 56 to move forward the extent of one tooth and the saw to be correspondingly rotated, which will bring the next 55 succeeding tooth into position to be engaged by the grinding-tooth. As the pivoted frame is again depressed the pawl is returned to nor-

mal position. By means of the set-screws 53 the movement of segment 45 is regulated and the stroke of the pawl 56 lengthened or shortened, so as to move the saw a corresponding distance, so as to enable the machine to sharpen different saws the teeth of which are at different distances apart. By means of the adjusting-screws 19 the downward movement 75 of the pivoted frame 8 is limited and the grinding-disk prevented from making too deep a cut. It will be seen that the gate 27 is approximately triangular in shape, being pivoted to the arm 26 at the junction of the bars 80 28. By loosening the screw-bolt 60 the gate can be swung on its pivot to the right or left, whereby the front edge of the tooth may be presented to the grinding-disk at an angle to the perpendicular.

85 In sharpening crosscut-saws where a bevel is to be given to the side of the tooth the hubs 24 and 57 can be turned laterally by loosening the set-screws 25 and 58, causing the saw carried by the gate to be presented at an angle to the grinding-disk and the tooth be given the proper bevel.

90 The machine above described is employed for gumming and sharpening circular saws. When straight saws are to be sharpened, a horizontally-movable carriage is mounted upon the hubs 31 (in this instance one being employed in each arm 28) and is moved forward by the pawl 56. The construction otherwise is the same as that above set forth.

100 Having thus described my invention, what I claim is—

1. In a saw gumming and sharpening machine, the combination, with the upright, the rotatable hubs mounted thereon provided 105 with set-screws, and the arm projecting from the upper hub, of the gate pivoted to said arm, consisting of the inclined bars and curved connecting-arm having recesses and slots, and the screw-bolt connecting said arm and the lower hub on the upright, substantially as described.

2. In a saw gumming and sharpening machine, the combination, with the upright, the rotatable hubs mounted thereon, and the pivoted gate connected with one of said hubs, consisting of the inclined bars and curved connecting-arm provided with recesses and slots, of the saw-holder consisting of the spindle screw-threaded at each end, with an intermediate plain portion and a collar, the cup-shaped hub fitting on said spindle, having a boss adapted to seat in the recess in the inclined bars, the cone fitting on said spindle, and the nuts, substantially as described.

125 3. In a saw gumming and sharpening machine, the combination, with the upright, the hubs mounted thereon, and the pivoted adjustable gate, of the adjustable horizontal plate connected with said gate, the cogged segments connected with said plate, the adjustable bar and feed-pawl connected with one of said segments, the links connected with the other segment, the frame secured to the up-



per end of the upright, the pivoted grinding-disk frame connected therewith, and the arm connecting said pivoted frame and the links, substantially as described.

5 4. In a saw gumming and sharpening machine, the combination, with the adjustable saw-carrying gate, of the adjustable horizontal plate, the cogged segments pivoted there-  
10 to, the adjustable arm and feed-pawl connected with one of said segments, and means, substantially as described, for actuating said segments.

15 5. In a saw gumming and sharpening machine, the combination, with the adjustable saw-carrying gate, of the adjustable plate connected therewith, the cogged segments pivoted to said plate, the adjustable arm and feed-pawl connected with one of said segments, the set-screws for limiting the movement of  
20 the segments, and means, substantially as described, for actuating the segments.

6. In a saw gumming and sharpening machine, the combination, with the upright, the adjustable saw-carrying gate, the vertically-adjustable horizontal plate, the cogged seg- 25  
ments pivoted to said plate, the adjustable bar connected with one of said segments and provided with a pawl, the links connected with the other segment, and the set-screws for limiting the movement of said segment, of 30  
the frame secured to said upright, the grinding-disk frame pivoted therein, and the bar connecting said frame with the links, substantially as described.

In testimony that I claim the foregoing as 35  
my own I have hereunto affixed my signature in presence of two witnesses.

FRANCIS JAMES DRAKE.

Witnesses:

CHARLES WILL CRAIG,  
HERBERT CLEMENT PHILPOTT.