

No. 641,039.

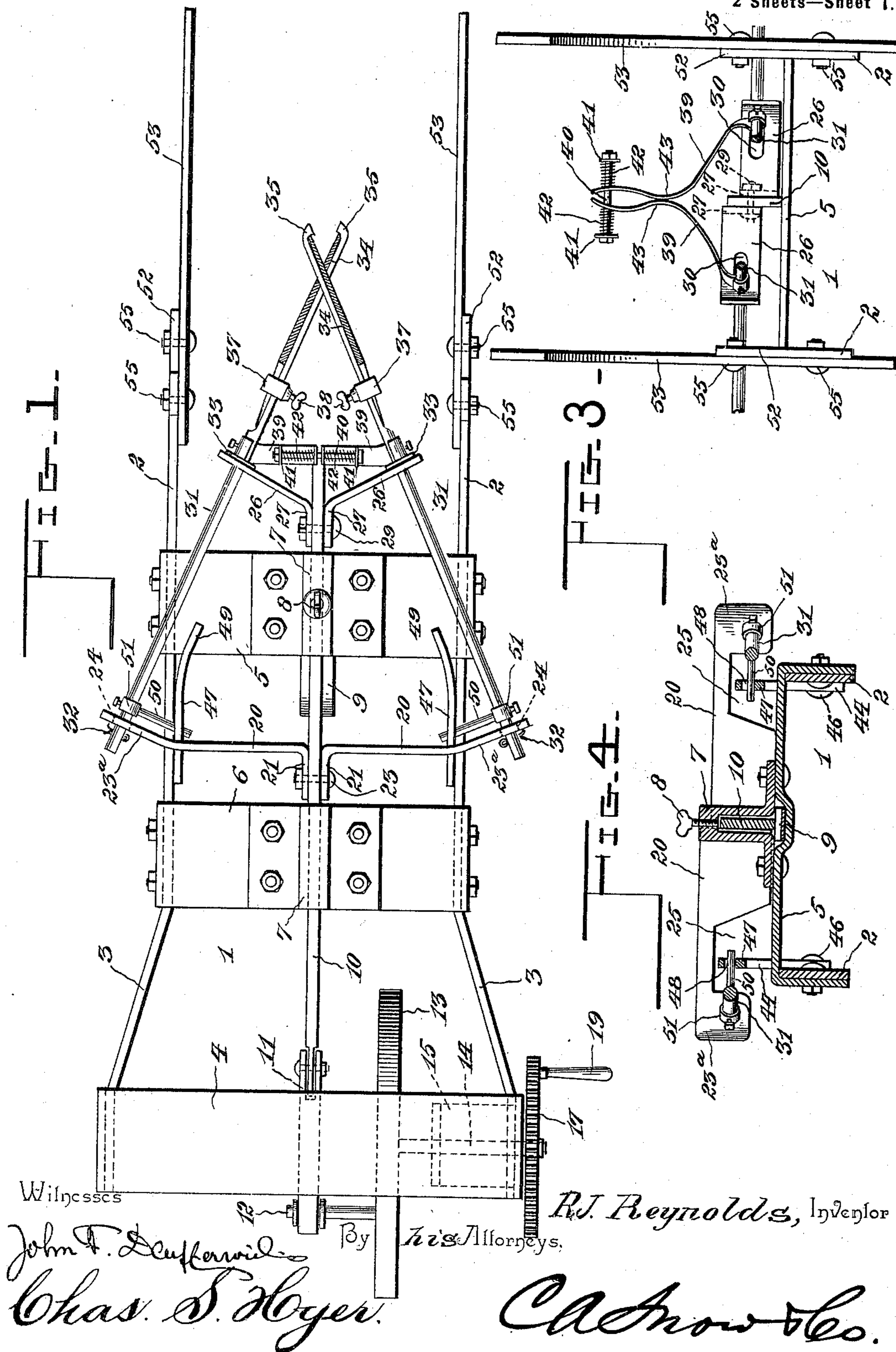
Patented Jan. 9, 1900.

R. J. REYNOLDS.
GIN SAW FILER.

(Application filed Aug. 9, 1899.)

(No Model.)

2 Sheets—Sheet 1.



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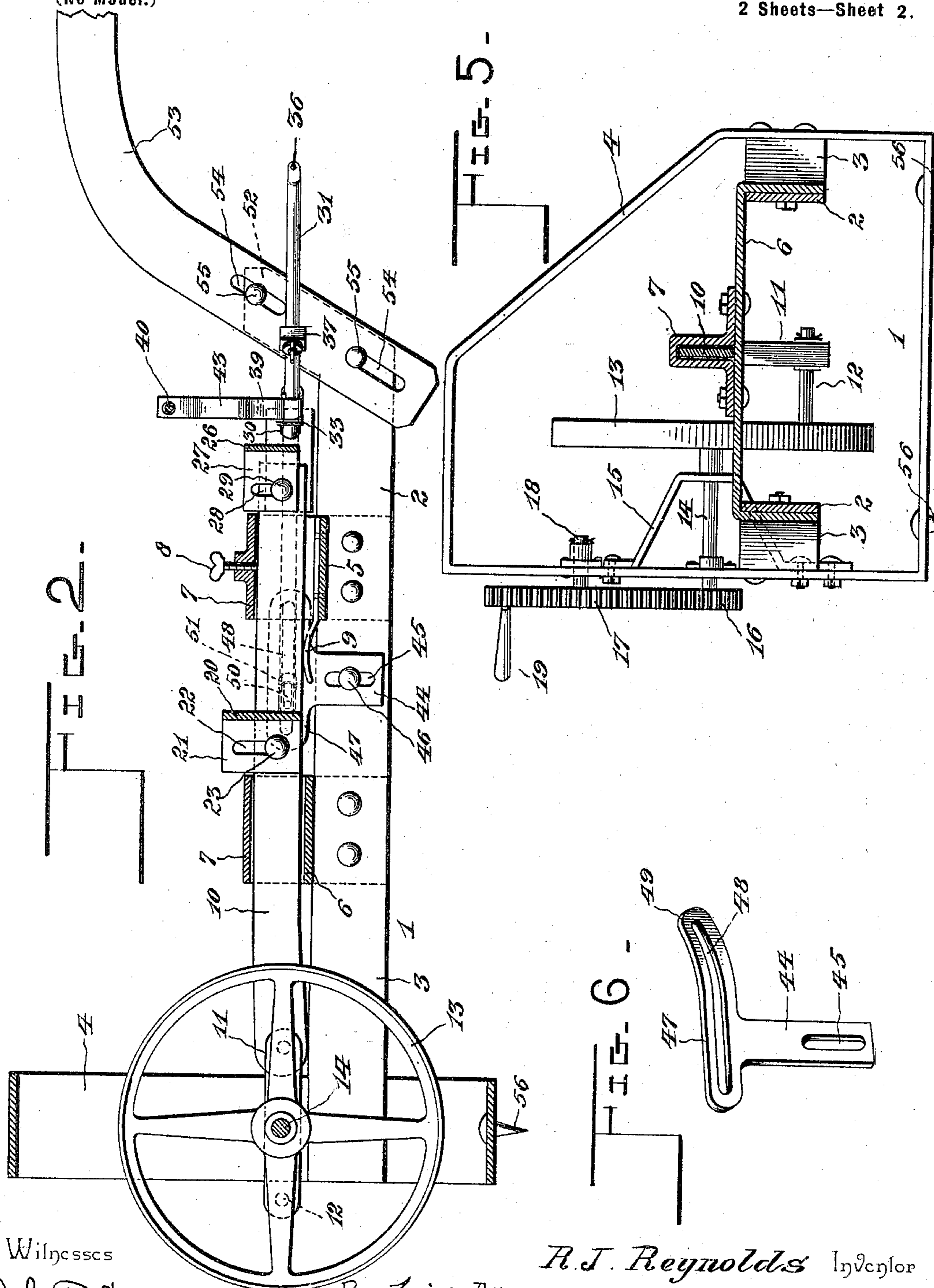
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GIN SAW FILER.

(Application filed Aug. 9, 1899.)

2 Sheets—Sheet 2.

(No Model.)



Witnesses

John T. Deufferwiel
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By his Attorneys.

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UNITED STATES PATENT OFFICE.

RICHARD J. REYNOLDS, OF TAYLOR, TEXAS, ASSIGNOR OF ONE-HALF TO
STEVEN F. EVANS AND JOHN B. BURKE, OF SAME PLACE.

GIN-SAW FILER.

SPECIFICATION forming part of Letters Patent No. 641,039, dated January 9, 1900.

Application filed August 9, 1899. Serial No. 726,700. (No model.)

To all whom it may concern:

Be it known that I, RICHARD J. REYNOLDS, a citizen of the United States, residing at Taylor, in the county of Williamson and State of Texas, have invented a new and useful Gin-Saw Filer, of which the following is a specification.

This invention relates to machines for sharpening gin-saws, and has for its object, mainly, to provide an improved machine of the character described wherein the saws may be sharpened without removing them or any other operative part from the gin and wherein the files in sharpening one tooth automatically operate to impart a partial rotation to the saw to bring the next saw-tooth in position to be filed.

It has for its further object to provide reciprocating file-holders connected to a pitman or sliding bar, between which and said holders yielding devices are interposed, whereby the files will act upon each tooth with the same force or power, irrespective of the resistance encountered or the applied driving power, and whereby, also, the files operate to sharpen each tooth alike, irrespective of the difference of length and regardless of any defects that may exist in the teeth.

The invention has for its further object to improve and simplify the construction of devices of this character and increase their efficiency generally.

To these ends the invention consists in the combination, arrangement, and construction of the several parts, which will be more fully hereinafter described and claimed.

A preferred embodiment of the improved machine is illustrated in the accompanying drawings and susceptible to variations in the proportions, size, and minor details within the scope of the invention, and in which—

Figure 1 is a top plan view of the machine embodying the invention. Fig. 2 is a central longitudinal vertical section of the same. Fig. 3 is a front end elevation showing the file-holders cut off or broken away. Fig. 4 is a transverse vertical section through a part of the machine. Fig. 5 is another transverse vertical section taken through the machine adjacent the driving mechanism and to the rear of the plane of the section illustrated by

Fig. 4, and Fig. 6 is a detail perspective view of a part of the machine.

Similar numerals of reference are employed to indicate corresponding parts in the several views.

The numeral 1 designates the frame of the machine, which is made up of opposite side bars 2, having rear divergent ends 3 secured to a supplemental supporting-frame 4 for the driving mechanism, which will be more fully hereinafter described. Extending transversely across the upper part of the frame and bolted or otherwise secured to the side bars 2 are transverse rests 5 and 6, which are spaced apart and have at their centers up-standing guides 7 in longitudinal alinement. Extending through the top of the guide 7 on the rest 5 is an adjusting-screw 8, and projecting rearwardly from the lower part of the said guide is a yielding tension-plate 9. In the guides 7 a pitman or slide-bar 10 is mounted and is adjustable to steady its movement or to vary a slight rise and fall thereof, particularly at the front extremity, by the said screw 8, the lower edge of the said pitman or bar 10 bearing upon the tension-plate 9 with a yielding pressure, owing to the resiliency of the said plate.

To the rear end of the pitman or slide-bar 10 a link 11 is pivotally connected and also movably applied to a crank-pin 12 on a crank-wheel 13, fixed on the inner end of a shaft 14, journaled in a bracket-bearing 15 and one of the sides of the supporting-frame 4. On the outer end of the shaft 14 a pinion 16 is secured and meshes with a spur-gear 17, having a stud 18 journaled in the side of the frame 4 above the location of the shaft 14. The spur-gear 17 has a suitable operating-handle or grip 19, and through its rotation the pinion 16 is revolved and the shaft 14 actuated to turn the crank-wheel 13, and the latter, through the pin 12 and link 11, reciprocates the pitman or slide-bar 10 in its guides 7. The pitman or slide-bar 10 is free to move in a longitudinal direction, but prevented from having any lateral play due to loose bearings, and to accommodate the adjustment at the front extremity the guide 7 on the rest 5 has a vertical extent greater than the guide on the rest 6. As clearly shown in Fig. 2, the tension-

plate 9 is of convex contour and the adjustment of the screw 8 is against the pressure of the said plate, and, as previously indicated, the pitman or slide-bar is by this means prevented from having a loose vertical play, and irregularity in the movement of the files on the teeth will be avoided. The elevation of the files relatively to a certain horizontal plane is by this means made regulable and a variation in the depth of cut may be easily obtained.

To the pitman or slide-bar 10, between the guides 7, oppositely-extending arms 20 are adjustably attached, the said arms having inner angular ends 21 parallel with the pitman or slide-bar and formed with vertical slots 22, through which and the adjacent part of the pitman a set-bolt 23 is adjustably or removably passed. From the said ends the arms 20 extend outward in planes at right angles for a greater portion of their length and have their outer extremities 23^a forwardly deflected and formed with openings 24 for a purpose which will be presently explained. At their outer portions the arms 20 have under recesses 25 for clearing parts over which they move and to admit of an adjustment in a vertical plane relatively to said parts. To the pitman or slide-bar 10, in advance of the forward guide 7, a pair of shorter arms 26 are also adjustably attached and have their inner ends 27 bent in planes parallel with the said pitman, and in said planes are vertical slots 28 to receive a set or clamping bolt 29, which extends through the adjacent part of the pitman or bar. From the said inner ends 27 the arms 26 extend forward at an angle of inclination and in planes parallel with the outer deflected extremities 23^a of the arms 20. As clearly shown by Fig. 3, the outer portions of the arms 26 have slots 30 cut therethrough, and movably mounted in the openings 24 of the deflected extremities 23^a of the arms 20 and the said slots 30 of the arms 26 are file-holders 31. Near their rear ends the said file-holders have stop-pins 32 extending therethrough to prevent a forward movement beyond a predetermined limit and in advance of the arms 26. Stop-washers 33 are also held on the said holders 31 against a forward movement beyond a certain point. By means of the pins 32 and the washers 33 the holders 31 are positively supported by the arms 20 and 26 against a longitudinal shifting of the same from a predetermined fixed adjustment. The greater part of each of the holders 31 is round or of rod form, and at the front, beyond the arm 26, an outwardly-facing seat 34 is cut or otherwise suitably formed in each holder, which terminates at the outer extremity in an inturned nose 35, having an aperture 36 therein to receive the file end. On this portion of the holders clamping-sleeves 37 are located and supplied with clamping-screws 38, the function of the said sleeves being to tightly hold the tang or adjacent portions of the files closely in the seats.

As clearly shown, the front seat portions of the holders and the files therein closely cross each other, so as to take against opposite faces of a saw and sharpen the teeth in a manner which will be readily appreciated. It is therefore necessary to elevate one holder in a plane above the other, and consequently the arms 20 and 26 on one side of the pitman or slide-bar 10 stand higher than those at the opposite side. This difference in the elevation of the arms, as stated, can be easily acquired through the medium of the slots in the inner ends 21 and 27, respectively, of the said arms, and when working it is also necessary to have the front diverging terminals of the holders yieldingly separate or open when the holders are moved forwardly by the action of the pitman or slide-bar and ride over the teeth of the saw to thereby gradually bring the thicker portions of the files into operation with obvious beneficial results. It is necessary that the holders and files be redispersed in a normal contracted or more closely drawn together position, so as to make their cutting action similar on all the teeth and at a uniform depth and angle in accordance with the primary adjustment. For this purpose the lower divergent ends of a pair of contracting-arms 39 are secured to the opposite holders, the upwardly-projecting inner ends of the said arms having a rod 40 passed therethrough, with outer stops 41, between which and the adjacent portions of the said arms coiled springs 42 surround the said rod and against the resisting tension of which the arms separate at their outer ends during the forward stroke of the holders and whereby said arms are gradually caused to assume a normal position on the return stroke. The said springs 42 tend at all times to draw the arms 39 together and to maintain the crossed front extremities of the holders in a regular normal position, and to obviate variations from the latter the upwardly-extending portions of the said arms have inward-curved deflections 43, which bear against each other when the crossed parts of the holders are free from working engagement with a saw. By this means it will be observed that the holders and files carried thereby are caused to always start with approximately the same tension on the saw-teeth. It is also necessary to have the files turned so as to bring different faces of the same in contact with the saw-teeth and equalize the wear as well as set up uniformity in the cutting action of the files. For this purpose the holders 31 are free to be manually turned in the arms 20 and 26 carrying the same. The keepers are adjustably secured to the side bars 2 of the main frame and comprise supporting-shanks 44, having vertical slots 45 therein, through which clamping-bolts 46 are adapted to be passed and through said side bars. The said shanks 44 depend from elongated heads 47, disposed at right angles thereto and provided with elongated slots 48, the said keepers being sub-

stantially of T-shaped form, and the front extremities of the heads have a slight inward deflection, as at 49, to clear the adjacent working parts. The heads 47 project upwardly into the recesses 25 in the arms 20, said recesses serving to permit the keepers to be adjusted vertically and the arms to clear the heads 47. The keepers may be adjusted independently of the arms 20 or aside from any proportionate arrangement which may be at times required. On the holders 31 inwardly-extending guide-pins 50 are adjustably secured and held in the slots 48 of the heads 47 of the keepers. The upward or downward movement of the pins 50 relatively to the holders 31 is sustained by set-collars 51 on the said holders and firmly fixed to the pins. This adjustment of the pins 50 on the holders 31, above and below the plane of the latter, will only be rarely utilized, as the collars 51 are particularly intended to provide sliding adjustable means for the said pins on the holders. The holders being free to turn in their arms will be held in a fixed adjusted position, so as to turn or twist the files in the seats 34 by raising or lowering the keepers and simultaneously moving the said pins and the holders in the same direction of adjustment. The holders at their forward portions have inward and outward movement, in accordance with the forward and return strokes of the pitman or slide-bar 10, and to accommodate this the slots 30 are provided in the arms 26.

The front extremities of the side bars 2, which are slightly upturned, as at 52, have hook-arms 53 adjustably connected thereto and formed with lower pairs of slots 54 for the reception of clamping-bolts 55, which are passed therethrough and the said extremities of the side bars. The slightly-upturned portions 52 of the said side bars afford bearings for the lower end of the hook-arms, and the latter are intended to be placed over the arbors of the saws, and thus hang the front end of the machine, the said arms being adjustable to properly locate the files in contact with the saw-teeth. The lower portion of the frame 4 is supplied with downwardly-projecting spurs 56, which prevent rearward movement of the frame after the hook-arms 53 are applied over the saw-arbors.

In operation the outer or front ends of the holders carrying the files are sprung apart and caused to engage the opposite sides of one of the saws, in which position the two files bear upon the edges of two teeth of the saw. The crank-wheel 13 being rotated, the pitman or slide-bar 10 is reciprocated back and forth in the guides 7. As the files engage the teeth of the saw at a point below the axis of the latter, the saw is rotated by the files as the latter advance, and as the saw rotates the files and their holders are forced downwardly by the rotating teeth, which movement is regulated and checked by the adjustment of the screw 8 in the holder 7 on the

rest 5 and the resistance offered by the tension-plate 9, and hence as the files continue to move forward they slide tangentially relatively to the saw and act on the teeth with a filing movement and sharpen the same. In this forward movement of the files to sharpen the teeth the springs 42, controlling the arms 39, will yield laterally, as explained, to permit the file-holders to slip one across the other to change the point of contact between the holders to accommodate the advancing movement of the files. At the end of the forward movement of the holders the driving mechanism operates to retract them, and in their rearward movement the files slip over the teeth without moving the saw, as the pressure of the files on the saw is not sufficient in such rearward movement to turn the gang of saws in their bearings and against the gin-driving mechanism. As the files are retracted the tendency of the spring or yielding tension-plate 9 will be to elevate the front end of the pitman or slide-bar, and hence the files bear against the under side of the teeth above them and round the rear edges of the teeth off. At or near the end of the rear movement of the holders the files disengage the teeth previously operated upon, and the said spring tension-plate, together with the tendency of the front part of the pitman or slide-bar to rise, immediately acts to throw the holders and files upward far enough and into position to engage the next succeeding teeth. As the files are again thrust forward they engage the teeth next above those previously sharpened, and the same operation becomes continuous until the saw-teeth are completely sharpened.

From the foregoing it will be understood that in the forward movement of the files they will first operate to partially rotate the saw to bring the teeth into proper position for engagement by the files on their next succeeding advance, and on their continued advance they operate to file the teeth. The holders 31 can be adjusted at any time to change the elevation of the files by vertically moving the arms 20 and 26, as before set forth, and at the same time the set-screw 8 will also be moved in a corresponding direction or to relatively change the elevation of the front extremity of the pitman or slide-bar. By this means the saw may be made to rotate a greater distance after each reciprocation of the files. By means of these adjustable applications of the several parts the files may be also caused to feed the saw, so that the teeth will be acted on successively or so that the alternate teeth only will be acted on, or the device can be adjusted to operate upon different-sized saws or saws having different-sized teeth or teeth of different pitch. The several adjustable features also compensate for saws in which the teeth have been stripped off, forming gaps or what is known in the art as "low places," and when new teeth are cut from these low places said new teeth are manifestly not in the same

circular plane as the other teeth, but are nearer the center of the saw. Provision is made for sharpening this kind of teeth in the present device, and in this event all of the adjustable features will be regulated to bring the files up in the same position relatively to such teeth as in treating regularly-formed teeth. The machine can be readily moved from operative position in front of one saw to a similar position in front of a succeeding saw and until the whole gang of saws have been treated, and being light of structure this change of position can be easily carried on.

Numerous advantages other than those mentioned will appear from time to time to those using the improved machine, and the comparatively small number of parts involved in the structural make-up of the device will render the cost of manufacture of the same exceptionally low.

Having thus described the invention, what is claimed as new is—

1. In a machine for sharpening gin-saws, the combination of a frame, a reciprocating slide-bar mounted in said frame and adapted to be limited in its vertical play in one of its bearings, two crossed file-holders carried by the said slide-bar and capable of vertical and lateral adjustment, and means for operating the said reciprocating slide-bar.

2. In a machine for sharpening gin-saws, the combination with a frame, of a reciprocating slide-bar, adjustable pairs of arms projected outwardly from said bar, two crossed and vertically and laterally yielding file-holders supported by the said arms, and spring-actuated contracting-arms attached to the said file-holders.

3. In a machine for sharpening gin-saws, the combination with a frame, of a reciprocating slide-bar, a tension-plate and adjusting-screw engaging a part of the said slide-

bar at opposite points, two crossed and vertically and laterally yielding file-holders carried by said slide-bar, and means for contracting the said holders.

4. In a machine for sharpening gin-saws, the combination with a frame, of a reciprocating slide-bar, two crossed file-holders carried by said slide-bar and adapted to removably receive files, slotted keepers mounted adjacent portions of the said holders and having a vertical adjustment, and inwardly-extending horizontally-disposed devices connected to the said file-holders and movable in the said keepers.

5. In a machine for sharpening gin-saws, the combination of a frame, a reciprocating slide-bar adapted to be limited in its vertical movement in one of its bearings, two crossed file-holders carried by the said slide-bar and having both a vertical and lateral adjustment, means for automatically contracting the said holders and holding them in normal position, and means for operating the slide-bar.

6. In a machine for sharpening gin-saws, the combination with a frame, of a reciprocating slide-bar, pairs of oppositely-extending arms secured on the slide-bar for vertical adjustment, the front pair of arms having less lateral extent than the rear ones, holders adjustably mounted in the said arms and crossed in advance of the front pair of arms, files removably mounted in said holders, and spring-actuated contracting means for the said holders.

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

RICHARD J. REYNOLDS.

Witnesses:

JOHN LLOYD,
J. S. JONES.