

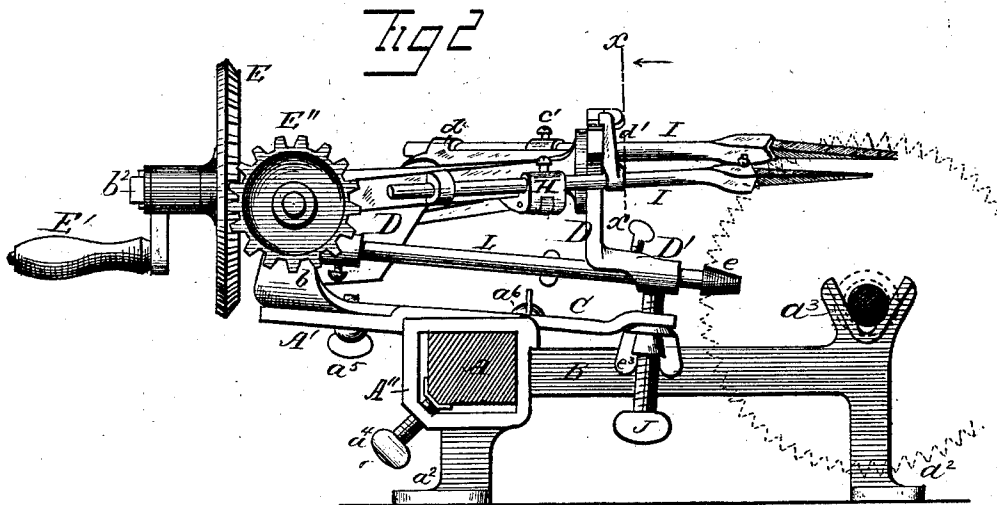
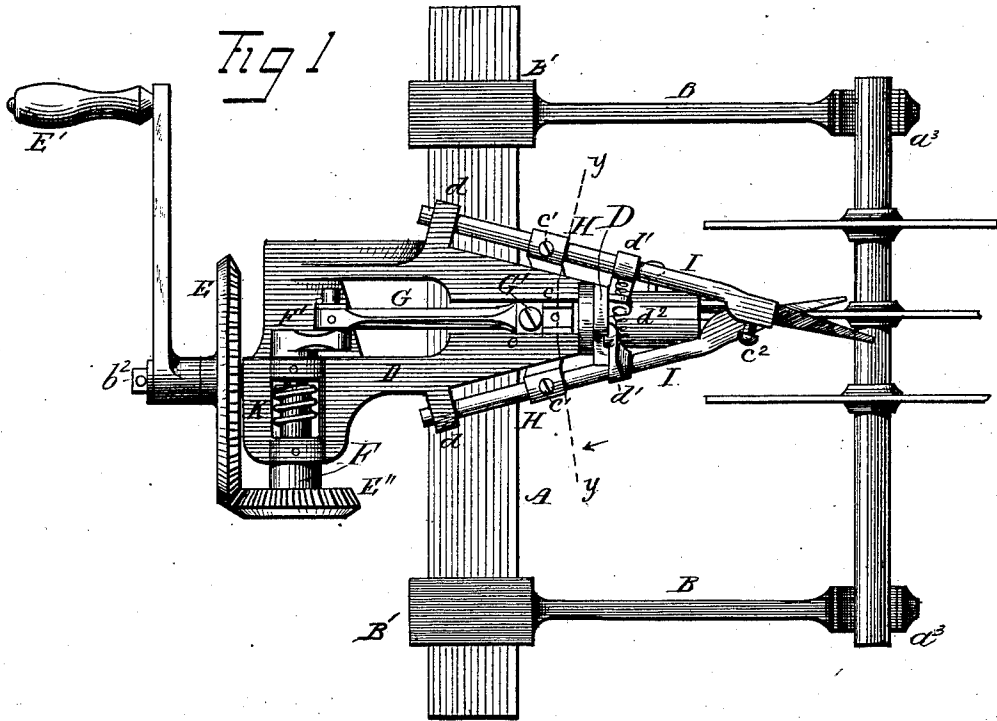
(Model.)

2 Sheets—Sheet 1.

A. A. WOOD.  
Gin Saw Filing Machine.

No. 232,321.

Patented Sept. 14, 1880.



Witnesses  
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A. A. Vose,

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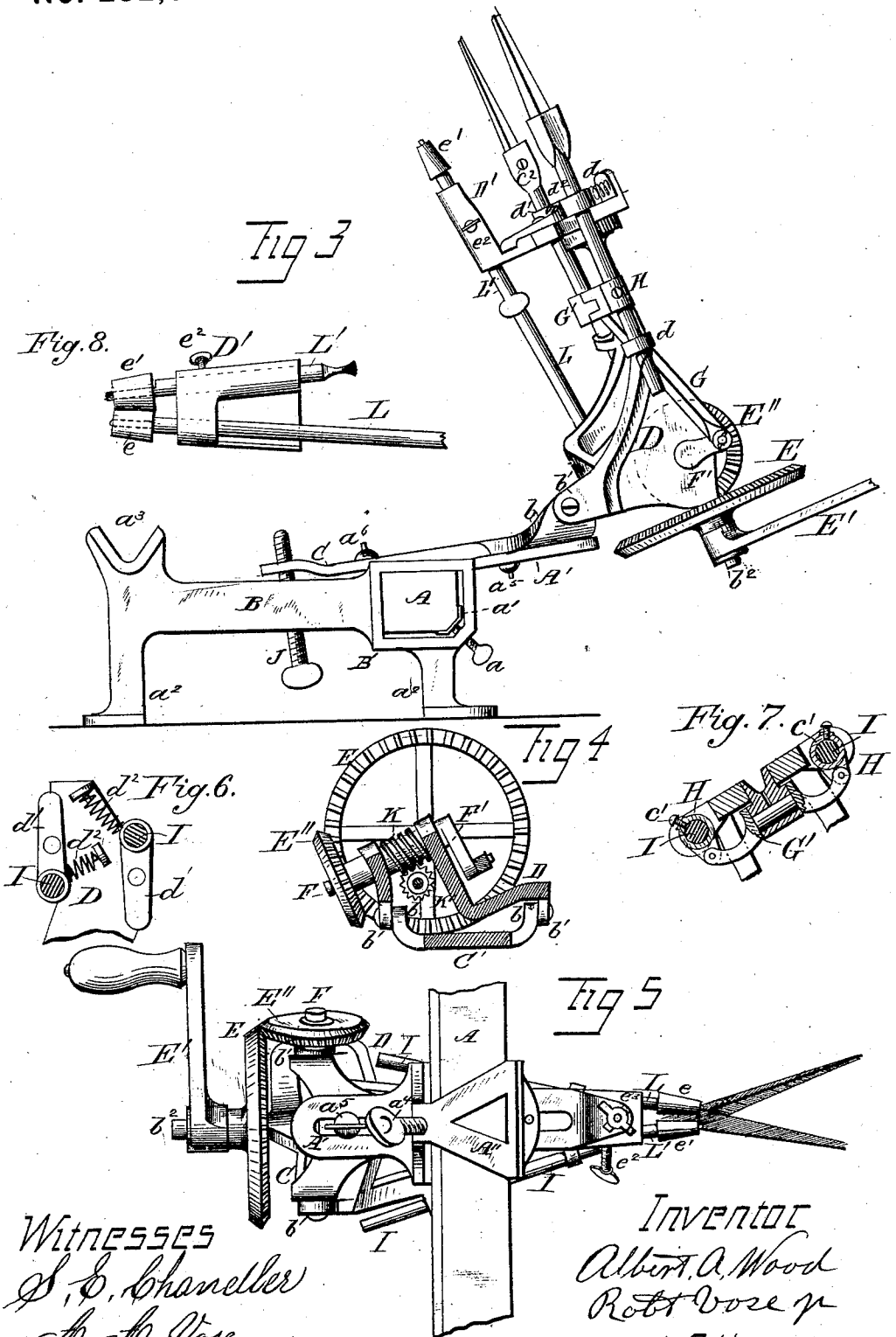
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# UNITED STATES PATENT OFFICE.

ALBERT A. WOOD, OF ATLANTA, GEORGIA.

## GIN-SAW-FILING MACHINE.

SPECIFICATION forming part of Letters Patent No. 232,321, dated September 14, 1880.

Application filed May 3, 1880. (Model.)

*To all whom it may concern:*

Be it known that I, ALBERT A. WOOD, a citizen of the United States, residing at Atlanta, in the county of Fulton and State of Georgia, have invented certain new and useful Improvements in Machines for Filing Gin-Saws; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to an improvement in that class of machines used for sharpening the teeth of gin-saws without removing them from the shaft or arbor upon which they are secured when in use.

The object of my invention is to give to the files which point the saw-teeth both reciprocating and semi-rotary motions, thereby forming what may be termed "needle-points" to the teeth of the saw, which is moved or fed to the files by being steadily but slowly rotated upon its axis instead of by the intermittent feed heretofore used for such purposes. The result is a better and stronger point to each tooth than can be produced by other machines now used, it being fully equal to that produced by the best hand-work in shape and strength, but far superior to it, as the machine imparts regularity to the teeth of all the saws on an arbor.

The invention consists in the construction and arrangement of the several parts of the machine, as will be hereinafter fully described, and then specifically pointed out in the claims.

In the drawings, Figure 1 is a plan view of the machine with a series of saws upon their arbor in proper position for the files to act upon their teeth. Fig. 2 is a side view with the files in position for work. Fig. 3 is a view of the opposite side of the machine from that shown in Fig. 2, the files and their operating mechanism being turned back from the saws. Fig. 4 is a transverse section, showing the means for operating the feeding-gear. Fig. 5 is a bottom plan of the frame of the machine, illustrating the means of attaching the file-operating mechanism to the bed and adjusting said means relatively to each other. Fig. 6 is a

section through the line  $xx$ , Fig. 2. Fig. 7 is a section through  $yy$ , Fig. 1; and Fig. 8 is a detail view of the under surface of the pressure and feed rolls with their operating-shafts.

The bed of the machine consists of a bar, A, which may be of either wood or metal, and is of such length that when once in position the operating parts may be moved along it to file all the saws upon an arbor. Upon this bar A are adjustably secured the stands or supports B by means of the set-screws  $a$ , which pass through an angle of the clips B' on the rear ends of the stands and bear against a wearing-plate,  $a'$ , Fig. 3, which is formed to fit one angle of the bar, as shown in the drawings. By this means the supports B may be adjusted as required to the length of the arbor holding the saws to be operated upon. These supports B are each provided with feet  $a^2$  and with a bifurcated or V-shaped upward projection,  $a^3$ , in the bifurcation of which the arbor carrying the saws is placed. The angular shape of the forks allows the bearings of the arbor to rest and rotate steadily therein, no matter what their diameter may be.

Secured in any desired position upon the bar A by means of the clip A' and set-screw  $a^4$  is the slotted bed A', provided upon its upper side with a seat for the reception of the adjustable bed-plate C, which is held thereon by the screws  $a^5$   $a^6$  passing through slots in the opposite ends of the bed and bed-plate, thus allowing a longitudinal adjustment of the bed-plate upon the bed A'.

The rear end of the bed-plate is provided with two upwardly-projecting ears,  $b$   $b$ , to which is hinged the frame D by means of the downwardly-projecting ears  $b'$   $b'$ , attached to its lower side. This frame D carries the operative parts of the machine, which consist of the driving-gear E, mounted upon a stud,  $b^2$ , projecting from the rear of the frame, and which is provided with the hand-crank E' or other suitable means of rotation. This gear E imparts rotation to the pinion E'' mounted upon one end of the shaft F, which revolves in suitable bearings formed in the frame, and has attached to the end opposite the pinion a crank, F', which carries one end of the connecting-rod G, the opposite end of which is pivoted to the cross-head G'.

Two vertical projections upon the cross-head

move between ways  $c c$  of the frame, thus preserving a straight longitudinal movement of the cross-head in its reciprocations. To a projection on each side of the cross-head is pivoted a carrier, H, through suitable orifices in which pass the extended arms of the file-holders I I, which are adjustably secured in the carriers by the set-screws  $c' c'$ . These file-holders reciprocate in bearings formed in the lugs  $d d$  at their rear ends, while their opposite ends are carried in the spring-adjusted bearings  $d' d'$ , pivoted to the front of the frame D. Each file-holder has an enlargement at its front end pierced by a triangular orifice, which forms a socket for the reception of the files, and in which they are held by the set-screws  $c^2 c^2$ .

It will be observed that the springs  $d^2 d^2$ , attached to the bearings  $d' d'$ , allow a certain amount of lateral movement to the file-holders, thus causing the files to act upon the teeth of the saw with yielding pressure.

At each forward movement of the cross-head G' the carriers H, pivoted to each side thereof and attached to the converging file-holders I, are brought nearer together, thus giving them a partial rotation at each reciprocation, the two motions enabling the files to produce the rounded needle-point upon the saw-teeth, which has been found to be the most desirable.

In order to feed the saw regularly forward, a worm, K, is placed upon the crank-shaft F, which gears with a worm-wheel, K', placed upon the rear end of a feed-shaft, L, revolving in bearings attached to the frame D, and having an endwise movement therein to allow the feed-rolls to be adjusted to or from the saw-center. The front end of this shaft L is provided with the slightly-conical rubber feed-roll  $e$ , which, when the machine is adjusted for use, bears against one side of the saw being operated upon.

The pressure of the saw against the feed-roll  $e$  is regulated by the pressure-roll  $e'$ , mounted upon the eccentric-shaft L', the bearing of which and the front end bearing of the feed-roll shaft L are formed in the projection D' of the frame D.

In order to hold the eccentric-shaft L' in place after it has been turned to adjust the pressure-roll  $e'$  with reference to the thickness of the saw being operated upon, a set-screw,  $e^2$ , is provided, the end of which may be brought firmly in contact with the shaft L', holding the latter in any desired position.

It will be observed that these feeding devices impart a steady rotary motion to the saws, the flexibility of the connections of the file-carriers with the cross-head allowing the files to adjust themselves to each tooth for a sufficient length of time to give it the required point.

An adjusting-screw, J, provided with a jam-nut,  $e^3$ , passes through the bed-plate C and bears against the front end, D', of the frame D, thus allowing the latter, together with the files and feed mechanism mounted thereon, to

be adjusted to any desired angle with the radius of the saw.

The method of using this machine in the sharpening of gin-saws is as follows: The saw-arbor, with all its saws in position upon it, is taken out of the gin and placed with its journals in the V-shaped supports, which are put at such a distance from each other upon the bar A as to receive them. The frame D, with the operative parts of the mechanism, is raised, turning upon the pivots or hinges, by which it is connected with the bed-plate C, until the files and feeding devices are high enough to clear the saws. The bed A' is then moved along the bar A until it is exactly opposite the saw to be filed, when the frame D is lowered into position with the feed-rolls on either side of the saw. The distance from the center of the saw at which these rolls bear causes its periphery to travel faster or slower, as may be desired, to suit coarse or fine teeth, or to allow the files a longer or shorter period for action upon each tooth. The proper angle is then given to the files by means of the adjusting-screw J. The bed-plate C is now adjusted longitudinally until the files are in such position that their points will not become disengaged from the saw in their backward reciprocation, nor the ends of the file-holders come in contact therewith in their forward movement; and, finally, the bed-plate C and frame D, with its operative parts, are secured in place upon the bed A' by the screws  $a^5 a^6$ . The pressure-roll upon the eccentric-shaft L' is then brought into contact with the side of the saw opposite the feed-roll with sufficient force to give the latter the frictional contact with the saw needed to cause the saw to revolve steadily when the feed-roll is rotated. Power being now applied to the crank, or the wheel E rotated by other means, the files will commence their semi-rotary reciprocating movements, acting upon the teeth of the saw, which is steadily revolved by the feed mechanism, one after another, until all are brought to the desired point, when the operative mechanism is released from that saw and moved along the bar into position for operation upon the next saw, and so on until all the saws upon the arbor have attained the proper degree of sharpness.

Having thus described my invention, I claim as new, and desire to secure by Letters Patent, the following:

1. In a machine for filing gin-saws, the frame D, provided with lugs or bearings  $d d'$ , crank-shaft F, connecting-rod G, cross-head G', hinged carriers H, and file-holders I I, in combination with the revolving feed-shaft L, having conical elastic feed-roll  $e$ , and the eccentric-shaft L', having conical pressure-roll  $e'$ , substantially as and for the purposes set forth.
2. In a machine for filing gin-saws, the combination of the bar A, transversely-adjustable supports B, having clips B' and arbor-stands  $a^3$ , and the transversely-adjustable bed A',

having clip A'', with the longitudinally-adjustable slotted bed C and adjustable hinged frame D, substantially as described.

5 3. In a machine for filing gin-saws, the adjustable frame D, carrying the driving-gear E upon the stud  $b^2$ , and provided with the lugs  $d$  and spring-adjusted bearings  $d'$ , in combination with the pinion E'' upon the crank-shaft F, connecting-rod G, cross-head G', hinged  
10 carriers H, and file-holders I I, all constructed and arranged substantially as shown and described, for the purpose of imparting a reciprocating and partially-rotating movement to the files.

15 4. In a gin-saw-filing machine, the adjustable frame D D' and crank-shaft F, carrying the worm K, in combination with the feed-shaft L, carrying the worm-wheel K' and conical elastic feed-roll  $e$ , and the eccentric-shaft  
20 L', having conical pressure-roll  $e'$ , all constructed and arranged as shown, for the purpose of giving a steady feed to the saw, substantially as specified.

5. The combination of the frame D, provided with bearings  $d d'$ , located as described, cross-  
25 head G', means for reciprocating said cross-head, hinged carriers H, and file-holders I, substantially as specified.

6. A frame provided with bearings  $d d'$ , in combination with a reciprocating cross-head,  
30 suitable carriers hinged thereto, and file-holders attached to the carriers, whereby the files are caused to both reciprocate and semi-rotate, substantially as described.

7. The combination, with a frame having  
35 bearing-lugs, as described, of a reciprocating cross-head, carriers hinged thereto, file-holders attached to the carriers, and suitable mechanism for continuously rotating the gin-saw, substantially as set forth.

In testimony whereof I affix my signature  
40 in presence of two witnesses.

ALBERT A. WOOD.

Witnesses:

J. W. MEAKIN,  
B. F. SAWYER.