(No Model.)

G. W. DAVIS.

GIN SAW GUMMER AND SHARPENER.

No. 458,124. Patented Aug. 18, 1891.

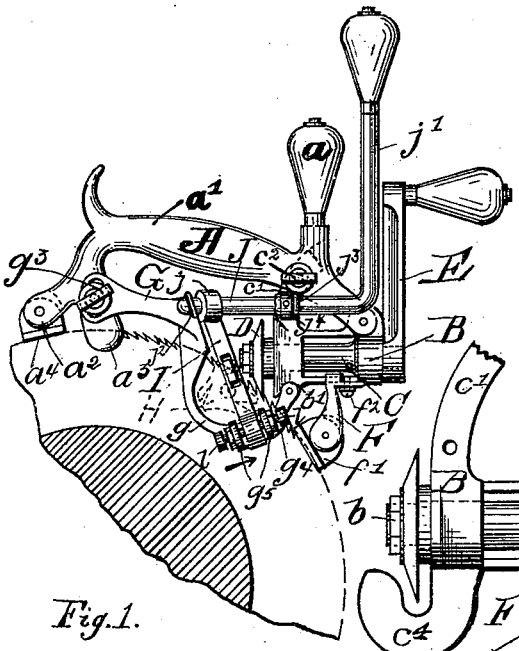

Fig. 1.

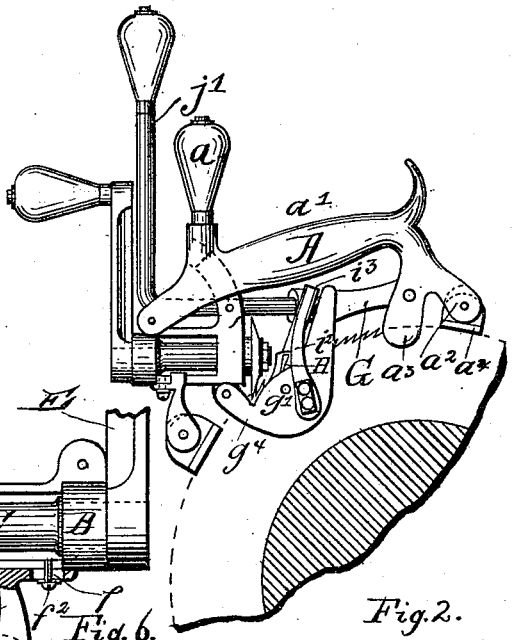

Fig. 2.

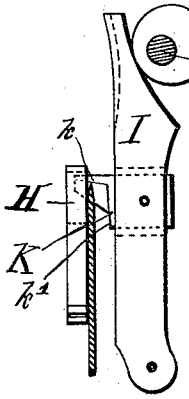

Fig. 3.

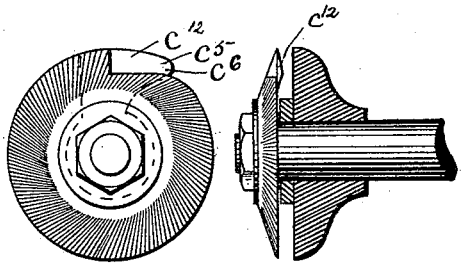

Fig. 4.

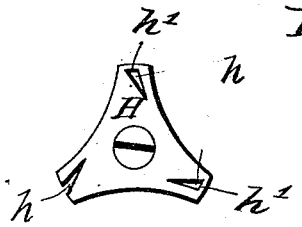

Fig. 5.

Fig. 6.

Witnesses
L. F. Hayden.
R. F. Wood

Inventor
George W. Davis
By his Attorney
Albert A. Wood.

UNITED STATES PATENT OFFICE.

GEORGE W. DAVIS, OF MEMPHIS, TENNESSEE.

GIN-SAW GUMMER AND SHARPENER.

SPECIFICATION forming part of Letters Patent No. 458,124, dated August 18, 1891.

Application filed October 8, 1890. Serial No. 367,439. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. DAVIS, a citizen of the United States, and a resident of Memphis, in the county of Shelby and State of Tennessee, have invented certain new and useful Improvements in Gin-Saw Gummers and Sharpeners; 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 of reference marked thereon, which form a part of this specification.

This invention relates to machines for sharpening the teeth of the saws forming part of cotton-gins, having more essential reference to roughing out and smoothing the teeth by means of a punch and a circular file, respectively, the invention consisting of means for applying these implements in successive order and of governing the angle of such application to the tooth, together with such additional devices as are necessarily employed in the operation, all of which are hereinafter fully described, and the parts claimed as new specifically pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of the device, and Fig. 2 is a view of the opposite side from that shown in Fig. 1, being also in side elevation. Fig. 3 is a detail of the punch-lever and cam, together with the saw and die, the same being as seen in the direction of the arrow 3 in Fig. 1. Fig. 4 are details in front and side elevations of the file and spiral feeding-lip. Fig. 5 is a side view of the die, showing two forms of construction of apertures therein. Fig. 6 is a detail of the mandrel-carrying frame and back-guide and special saw-guide clamp.

In the figures like reference-marks indicate corresponding parts in the several views.

The frame A is of metal, and may have, if desired, an upwardly-projecting handle a, and its body may be formed into another handle a'. On the forward end of the frame are carried the saw-guides a^2 and a^3, which rest on the periphery and on the sides of the saw, respectively, the guide a^2 carrying a swiveled bearing-block a^4, which may be grooved, if thought necessary, and the guide a^3 being formed by the slitting of the downwardly-projecting arm, said slit being approximately as wide as the saw is thick. Pivoted to the bifurcated back end of the frame A is the frame B, which carries the file-mandrel C, to which is secured the file D by means of the nut b.

The frame B is adjustable on its pivotal point by means of the segmental arm c', which enters a suitable aperture in the frame A and with which contacts the thumb-screw c^2, which enters through the side of said aperture, being screw-threaded therein for the purpose. The lip c^{12} is a radially-extending arm of sheet-steel, the part c^5 of which is set spirally or at an angle with the plane of revolution of the file, the point c^6 catching in the next tooth and feeding the saw one tooth as the file is revolved from the time of catching.

Attached to the mandrel C is a crank E, by means of which it and consequently the file D, secured thereto, are revolved. The arm F, secured to the frame B by means of the screw f^2, has motion longitudinally thereon by reason of the slot f in the base of said arm F. Said arm F carries the shoe f', which bears on the saw, as shown in Figs. 1 and 2, and holds the machine stationary as regards the center of the saw. It is obvious that any adjustment of the arm F on its bearing on the frame B will cause the machine to raise or lower from or to the saw, and thus allow the file D to work in the tooth above or the one below that in which it was seated before the adjustment.

Pivoted to the ear b' on the frame B and extending forwardly to the downwardly-projecting arm forming the guide a^3, or to some other convenient position, is a curved arm G, the bend g of which is slitted to fit over the saw, having a web g', Fig. 2, within one-half of the curved portion, the inner face of which web is at a short distance from the saw and to which is secured the female die H, which will be hereinafter described. The forward end of the arm G is slotted, and a screw g^3 passes through this slot into the arm a^3 or other suitable point. This slot allows the adjustment of the arm G and parts carried thereby to and from the saw. The part g^4, Fig. 2, of said arm is on each side of the saw, so the file when turned in either direction will

press the saw against one side of the slit. The die H, which is best shown in Fig. 5, is seated on the web g' in the downward bend of the arm G, the face of said die almost touching the saw when in position and one of the apertures h therein being so placed that when in correct adjustment it will exactly coincide as to form and position with the interdental space which it is desired to make. Attached to the arm G in a suitable position are the lugs g^5, through which pass pivot-screws l, on the tapering ends of which, by means of corresponding indentations, is pivoted the lever I, best shown in Figs. 1 and 3, which extends upwardly, and is so oscillated on the pivotal bearing just described by means of the cam j on the shaft J, said shaft being bent upwardly at its back end and forming a lever j'. Said shaft J is journaled in bearings j^2 and j^3 on the arm G and head B, respectively. The bearing j^3 is composed of two lugs a short distance apart, while between them and removably secured to the shaft J and revolving therewith is a collar j^4, which prevents longitudinal play of the shaft J and allows its withdrawal from the bearing j^2 when it is desired to turn back the lever I for the purpose of inserting a punch or other operation. The motion toward the saw of the lever I is resisted by a flat spring i^2, which is secured to the arm G and is seated in the groove i^3, Fig. 3. Pivotally seated within a recess in the lever I is the male die K, which has a leader k, projecting beyond the working face k' of said die K and a short distance into the female die H. This tapered leader is slightly narrower at its base than the body of the punch, which difference forms the cutting-shoulder, and the depth of the cut into the gum is the same as this difference. By reason of its angular face the male die has a shearing cut in operation, and owing to its being pivoted in the lever I it will be guided in cutting by the part h'. Limiting the movement of said punch on its pivot by the impingement thereon of the leader h and pivoting by means of a pin, as shown, forms a very desirable manner of securing the male die, as all that is necessary to replace a worn one is the removal of the pivoting-pin and its replacement.

The operation of this device is as follows: The machine being set on one of the saws of the cylinder in such a manner that the guide a^3 rests over the saw and the blocks a^4 and f' contact with the periphery thereof, the saw being between the two halves of the downwardly-extending portion of the arm G, the file-frame B is then, by means of the block f' and the movement of the segmental arm c', the movement of which into or out of the recess in the frame A being allowed by the loosening of the screw c^2, brought into such a position that the file D will set at the proper angle to fit the interdental spaces when the tooth is the desired form, which adjustment will also effect the position, the arm G carrying the male and female dies thereon, as hereinbefore specified, which effect will be counteracted and the said arm, and hence the dies, be brought into proper position to cut or enlarge the said interdental spaces by moving said arm, which is allowed by the loosening of the set-screw g^3. The operation of cutting and subsequently filing the teeth is then proceeded with, alternately giving the file D, and hence the spiral feeding leaf or lip c^4, one revolution and pulling down the lever j', which cut between the teeth, the cut edges being dressed and smoothed up by means of the file D.

In case it is desired to file and not to punch the teeth the punching device will be removed and a frame B, having a slitted hook c^4, will be employed in lieu of the part g^4 of the arm G.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a device of the class specified, the combination of the frame A, the saw-guides attached to the front end of the frame, the frame B, pivoted at its rear end to the rear end of the frame A, the adjusting-arm c', connecting the frame B at its front end with the frame A, the mandrel journaled in the frame B, the file attached to the front end of the mandrel, the crank E, secured to the rear end of the mandrel, and the adjustable support F, secured to the rear end of the frame B, substantially as described.

2. In a device of the class specified, the combination of the frame A, the saw-guides attached to the front end of the said frame, the adjustable frame B, pivoted at its rear end to the rear end of the frame A, the rotatable mandrel journaled in the frame B, the file carried by the said mandrel, the adjustable support F, secured to the rear end of the frame B, and the adjustable bifurcated arm G, connecting the front end of the frame B with the front end of the frame A, forming a guide, substantially as described.

3. In a device of the class specified, the combination of the frame A, the guides attached to the front end of the said frame, the adjustable frame B, pivoted to the rear end of the frame A, the adjustable bifurcated arm G, connecting the free end of the frame B to the frame A, the female die H, carried by the said arm, the lever I, pivoted to the said arm, the punch carried by the said lever, the rotatable shaft J, mounted in bearings in the arm G and the frame B, and the cam j, mounted on the said shaft and engaging with the free end of the lever I, substantially as described.

4. In a device of the class specified, the frame A, having secured thereto the arm G, having a downwardly-projecting curved portion adapted to fit over the saw and being slotted to receive said saw, said arm carry-

ing on one side of the saw a female die and on the other side of said saw the lever I, pivoted thereto and carrying a male die adapted to enter the apertures in the said female die, and means for operating said male die, all combined, arranged, and operating substantially as and for the purpose specified.

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

GEO. W. DAVIS.

Witnesses:
L. F. SHIPLEY,
A. M. DENTON.