

R. F. MOBLEY.
GIN SAW GUMMER.

No. 419,276.

Patented Jan. 14, 1890.



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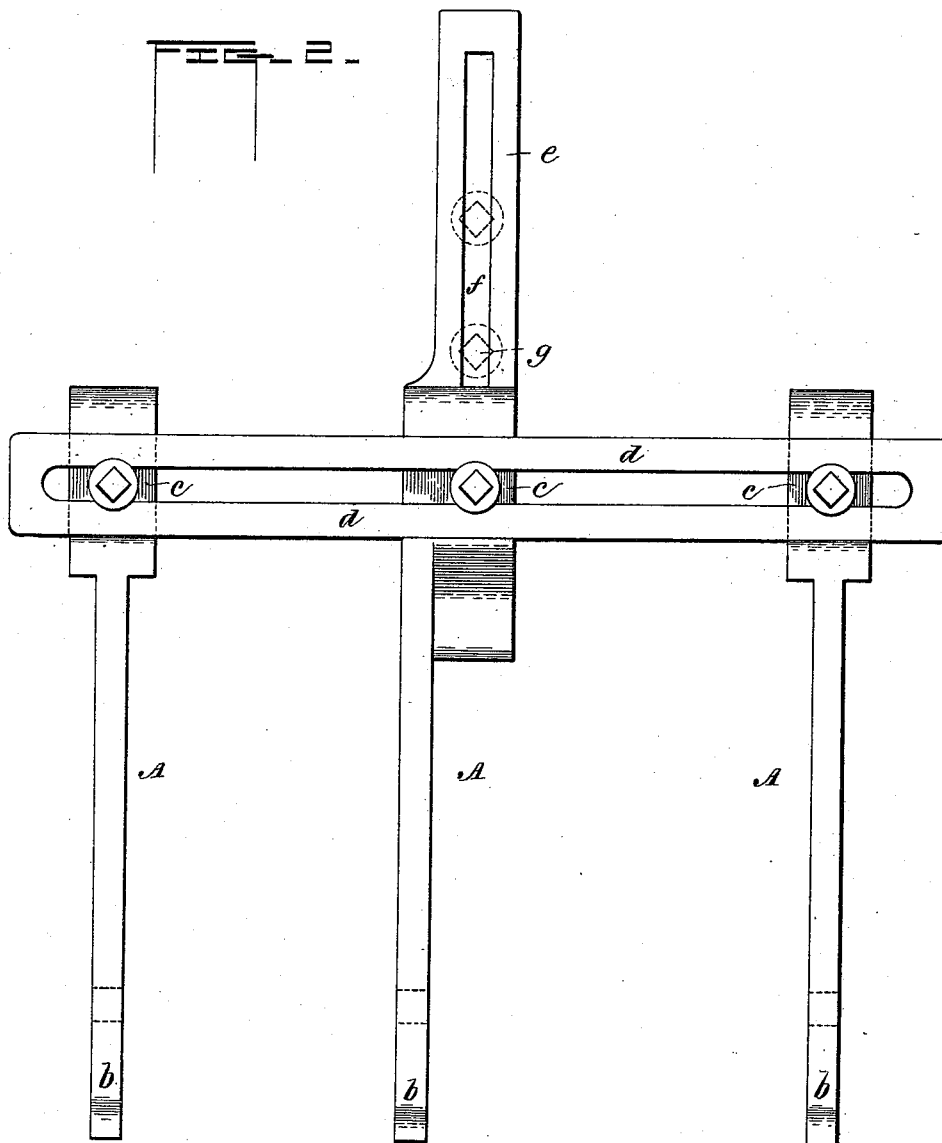
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WITNESSES:

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UNITED STATES PATENT OFFICE.

ROBERT F. MOBLEY, OF ROME, GEORGIA.

GIN-SAW GUMMER.

SPECIFICATION forming part of Letters Patent No. 419,276, dated January 14, 1890.

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To all whom it may concern:

Be it known that I, ROBERT F. MOBLEY, a citizen of the United States of America, residing at Rome, in the county of Floyd and State of Georgia, have invented certain new and useful Improvements in Gin-Saw Gummers, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates more particularly to that class of cotton-gin-saw gummers in which a rotary tooth-file is employed.

Heretofore in machines of this class the gumming operation has gradually reduced the length of the teeth, and consequently the efficiency of the saws, because the shorter the teeth the less will be the cotton gathered, and in the sharpening operation the file would frequently come in contact with the side of a tooth and break it out, thereby necessitating the substitution of a new saw. The frequent sharpening of the saws has often changed the degree of inclination and the face of the teeth, thereby making them irregular and defective in their work.

The object of my invention is to remedy these defects and to produce a machine in which the file will so adjust itself to the teeth that a single revolution of the file will produce an entirely new tooth of the original depth, inclination, and perfection.

A still further object of my device is to reduce the number of parts to a minimum and provide a machine that will be cheap, strong, durable, and effective.

With these ends in view my invention consists in the peculiar features and combinations of parts, more fully described hereinafter, and pointed out in the claims.

In the accompanying drawings, Figure 1 represents a side elevation of my complete invention as applied to a gin-saw, the rotary file and co-operating parts being shown in the act of performing the gumming operation; and Figs. 2, 3, and 4, detail views.

Reference-letter A represents the supporting-standards, which are provided with the usual curved feet *b* at the bottom and a recess *c* at the top, which receives a slotted cross-bar *d*. The central standard is provided with a vertical extension *e*, having

formed therein an elongated slot *f* for the reception of adjusting-bolts *g*, by means of which the section *h* is adjustably held in place. This section *h* is hinged to the upper part of the frame *i* at *h'*, for the purpose of allowing it to swing backward and forward for the purpose which will presently be explained. The lower portion of the frame-section *i* is provided with an elongated slot *l*, in which operates a set-screw *m*, which screws into the lower part of the frame *i*, to lock the latter at any desired angle.

A feed-lever *o* is fulcrumed on one of the vertical sides of the section *h* at *k'*, and has upon its lower end a gravitating pawl *p*, for the purpose of advancing the saw at the end of each revolution of the file *z* when a tooth is finished, as will be more clearly seen in dotted lines, Fig. 1. As shown in Fig. 3, this file has the general outline of an eccentric with one side *a* perpendicular to its axis and the other side *b* beveled. A notch *p''* is cut out of the body of the file, in order to permit the saw-blade to pass through the radius of the file at the end of each revolution, as will be presently described. The upper-arm *k''* of this lever is provided with a retracting-spring *g'*, which throws the lever back for a new purchase, in which position it is shown in full lines in Fig. 1. A lifting-bar *r* has a cam *r'* cast upon its upper end, which engages the upper arm *k''* of the feed-lever, whereby it is actuated. The front part of the section *h* is provided with a housing *t*, in which is journaled the main driving-gear *u*, which actuates the pinion *v*, keyed to the file-spindle *w*.

The shaft of the main driving-wheel *u* is provided with a crank *x*, by means of which the entire mechanism is operated, while upon its opposite end is secured a cam-block *y*, having a pair of adjustable cams *z*, seated within a recess extending the length of the block. These cams are separated in the middle by a screw-socket *x'*, located between their inner ends, and when it is desired to spread them apart thin pieces of metal *x''* may be interposed between these contiguous ends and the screw-socket, as seen in Fig. 3.

The lower end of the lifting-bar *r* is provided with an anti-friction wheel *r''*, which

rides over the cams as the latter are rotated. It will be evident that the farther the cams are spread apart the higher this lifting-bar *r* will be lifted, and hence the greater will be the sweep of the pawl upon the lower end of the feed-lever.

The binding-screw *g'*, which holds the cams within the blocks, is provided with an enlarged cap *a'*, which retains them securely in place.

The file-spindle *w* is allowed lateral or endwise play, as shown in dotted lines in Fig. 4, in order to adapt itself more readily to the teeth of the saw as it advances in the gumming operation. The file-spindle rotates in a pair of boxes *d'* and *e'*, which have their trunnions *o'* and *o''* mounted in apertures *m'* and *n'* in the arms *p'* and *p''*, extending down from the lower end of the housing. The spindle, as previously mentioned, is allowed a limited endwise play within these boxes, and the end to which the file is attached is given a free rising and falling movement by means of the elongated slots *n'*, which permits the trunnions *o''* to rise and fall upon the pivots or trunnions *o'*, as shown in Fig. 4.

In the endwise movement of the cutter-spindle the teeth of the pinion which mesh with the main drive-gear *u* slide back and forth, and the file is normally held down upon the saw by means of a coiled spring *w'* interposed between the boxes *e'* and the housing above.

The saw-holder *e'* consists in a pair of downwardly-extending jaws *f'*, which pass astride the saw and hold it rigid and steady during the gumming operation.

When it becomes necessary to lower the frame *h* so that the file and pawl will drop down and adjust themselves to the teeth of the saw, then the frame may be lowered by lowering the bolts *g*, which will slide up and down in the vertical slot *f* in the standard-extension *e*. In this operation the entire housing and all its co-operating parts are raised and lowered.

Having thus set forth the preferred mode of constructing my invention, I will now proceed to describe its operation. The machine is placed upon the saw-drum with its curved feet between the saws and with the holding-jaws *f'* astride the saw to be operated upon. The file is then placed over one of the notches between the teeth, and the gravitating pawl *p* is also dropped between the teeth. If the teeth should be of a depth or size that would require the pawl to have a greater sweep in order to advance the saw the required distance, then the fulcrum *k* of the feed-lever can be raised or lowered by means of the series of apertures *t'*. The feed can be reduced still finer by spreading apart the cams *z'* by means of the thin pieces of metal *x''*. By thus spreading the cams apart the lifting-bar *r* will be raised higher when the cams lift it, whereupon it will push the upper end of the feed-lever *o* farther back, as

shown in dotted lines in Fig. 1, and thereby increase the length of the stroke of the pawl *p*. The file can be adjusted to still better accommodate itself to variations in the pitch of the saw-teeth by means of the pivoted supporting-frame *h*, which can be swung back and forth upon the pivot *h'*. In Fig. 1 dotted lines show the frame swung out clear of the saw, while full lines show the file in the act of performing the gumming operation. Having thus adjusted the file and the feed-lever, the crank is rotated to the right, as indicated by arrows, which operation actuates the file through the medium of gear *u* and pinion *v*. As the file rotates, the cams pass under the bar *r* and raise the same, as shown in dotted lines, Fig. 1. The raising of this bar lifts the upper end of the feed-lever and advances the saw one tooth forward through the medium of the gravitating pawl *p*. Continuing to turn the crank, the cam will pass out from under said bar and the latter will drop back to its former position by means of the spring *g'*, which presses down upon the upper end of the feed-lever. When the feed-lever thus drops back, the gravitating pawl will also fall behind another tooth in the saw, in readiness for the advancing operation. As the file-spindle *w* rotates, the wider or tail portion of the file begins to operate upon the saw. In order to prevent the file from prematurely engaging the side of the tooth and thereby breaking it off, the diameter of the file is reduced at *g''*, so that it cannot touch the saw until the wider portion is brought around and descends and advances between the teeth, in which position it is better shown in Fig. 3. When the widest side of the file has passed through the saw, the gumming operation will have been performed and a tooth of the required length produced. The feeding mechanism is so timed that the pawl *p* will advance the saw and present another tooth to the action of the file the moment the file passes from out of engagement with the saw, at which time the opening *p''* permits the saw-teeth to pass freely through the radius of the file, as shown in Fig. 4. The beveled and flat sides of the file are provided with fine serrations in the usual manner. If the edge of the file should come against the top of a tooth as the wider portion descends and advances, the endwise play of its spindle will allow it to pull out or push back and consequently slide over the tooth and drop down into the notch between the teeth, and the spring above the spindle will force the file down into the notch and hold it there until the filing operation is completed. By this arrangement it will be impossible to break or bend or in any way injure a tooth by the file, and hence all liability to damage by accidents of this kind is avoided. With this arrangement it will be seen that the machine can be adjusted to saws having teeth of any pitch, size, &c., and when so adjusted it will form a perfect set of newly-gummed teeth in

the saw in a rapid and efficient manner, and when the saw has been operated upon by my machine it will be as efficient in its operation as a new saw.

5 It is evident that many slight changes which might suggest themselves to a skilled mechanic could be resorted to without departing from the scope and spirit of my invention; hence I wish it understood that I do not limit
10 myself to the specific mechanism herein shown.

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

15 1. In a machine for gumming gin-saws, a rotary file having an eccentric form in general outline, and a recess, such as p'' , in its body, whereby the saw is permitted to pass transversely through the radius of the file, in
20 the manner and for the purpose substantially as described.

2. In a machine for gumming gin-saws, a rotary file having an eccentric form in general outline and mounted upon a spindle pivoted to rise and fall to accommodate itself to the teeth of the saw, in the manner and for
25 purpose substantially as described.

3. In a machine for gumming gin-saws, a rotary file mounted upon a spindle having one end pivoted to rise and fall, and loosely held in boxes which permit it to have endwise
30 play, whereby it will accommodate itself to variations in the saw-teeth, substantially as described.

35 4. In combination with a rotary file having the form of an eccentric and provided with a recess, an adjustable cam, a feed-lever operated by the cam and provided with a pawl
40 timed to engage and advance the saw to the action of the file, in the manner and for the purpose described.

5. In a machine for gumming gin-saws, a standard having legs arranged to rest upon the cylinder between the saws, in combination with a frame for carrying the gumming-file
45 and its feed and driving mechanism, said frame being secured to the standards by bolts operating in elongated slots, whereby it is capable of horizontal and vertical adjustment, in the manner set forth.
50

6. The combination, in a gummer for gin-saws, of the supporting-standards provided with a slotted horizontal cross-bar, a slotted vertical extension bolted to the cross-bar provided with a frame composed of a rigid and
55 pivoted section, the latter being provided with a rotary file and driving mechanism, and a feed-lever actuated by cams upon said pivoted frame, in the manner and for the purpose substantially as described.
60

7. In a machine for gumming gin-saws, a rotary file mounted upon a spindle provided with a pinion, a driving-gear meshing with said pinion and having a cam upon its shaft, a vertical reciprocating rod actuated by said
65 cam, and a feed-lever actuated by the bar, all arranged and adapted to operate in the manner and for the purpose substantially as described.

8. In a machine for gumming cotton-gin
70 saws, a rotary file and its actuating mechanism, in combination with a pawl secured to the arm of a feed-lever, and an adjustable rotary cam arranged to actuate the lever, in the manner and for the purpose substantially as
75 described.

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

ROBERT F. MOBLEY.

Witnesses:

MYER COHEN,
R. G. DUBOIS.