(Model.)

H. N. CRAMER.

Gin Saw Filing Machine.

No. 238,092. Patented Feb. 22, 1881.

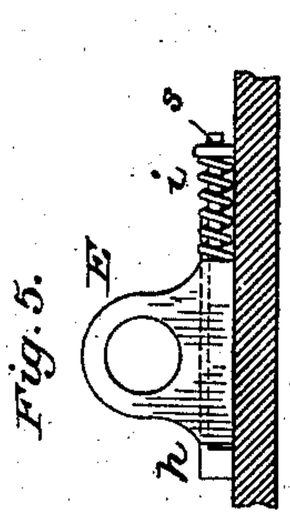

Fig. 5.

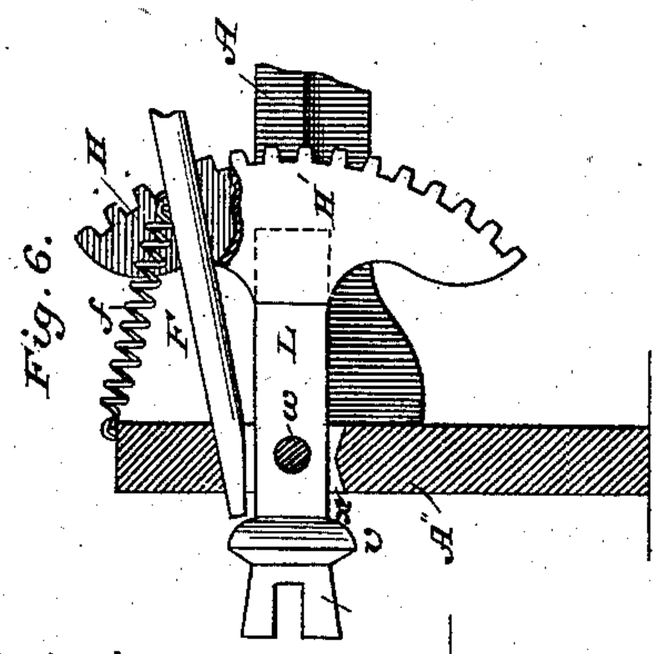

Fig. 6.

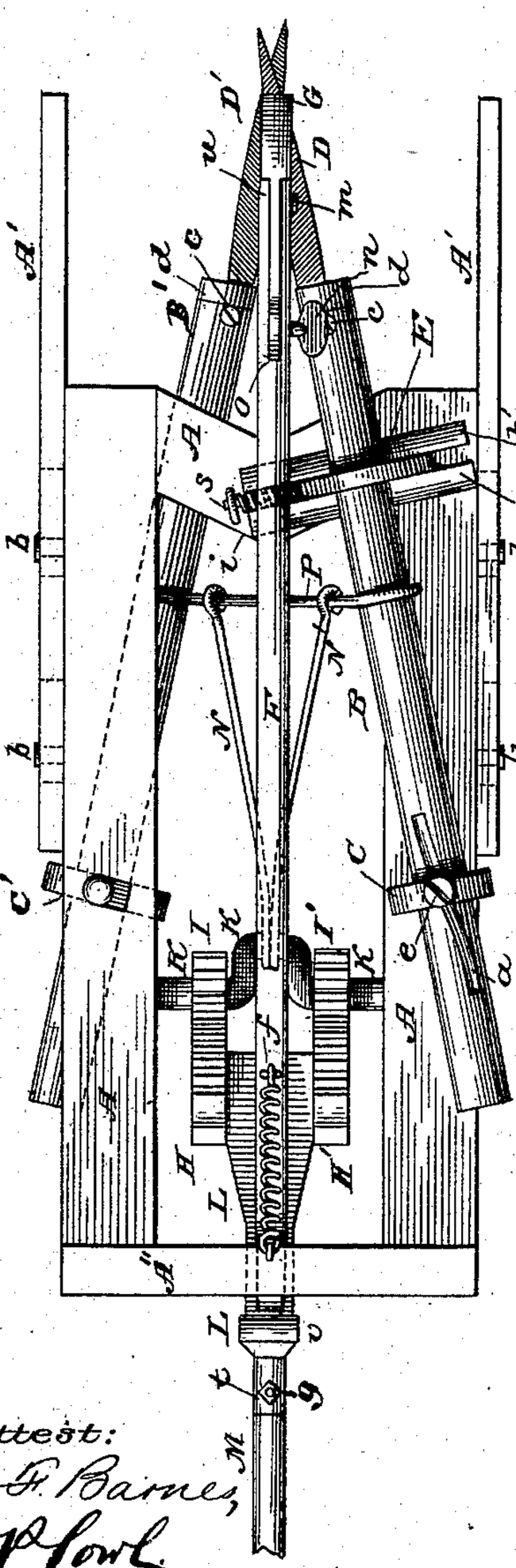

Fig. 1.

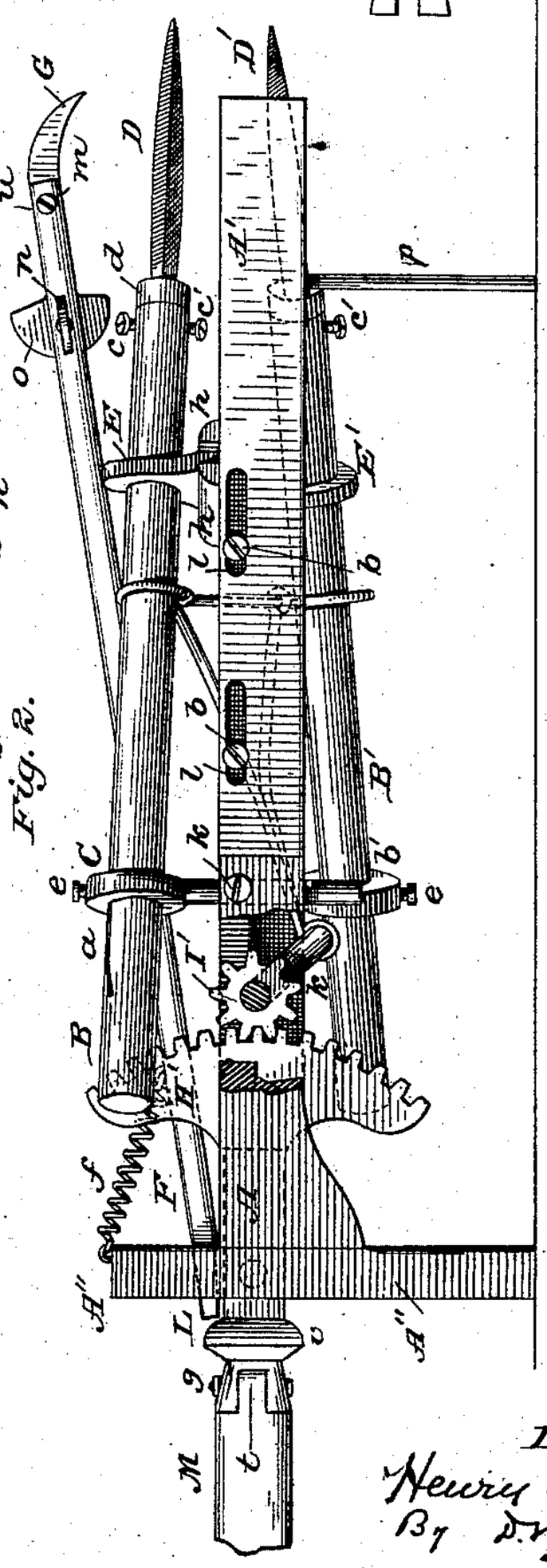

Fig. 2.

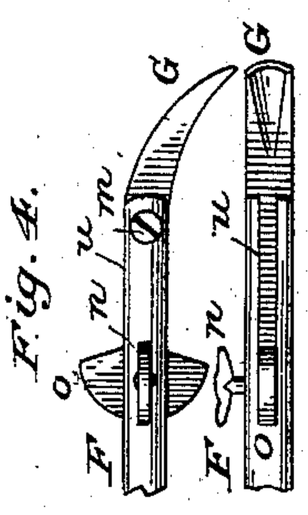

Fig. 4.

Fig. 3.

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UNITED STATES PATENT OFFICE.

HENRY N. CRAMER, OF ATLANTA, GEORGIA.

GIN-SAW-FILING MACHINE.

SPECIFICATION forming part of Letters Patent No. 238,092, dated February 22, 1881.

Application filed June 2, 1880. (Model.)

To all whom it may concern:

Be it known that I, HENRY N. CRAMER, of Atlanta, in the county of Fulton, State of Georgia, have invented certain new and useful Improvements in Gin-Saw-Filing Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to improvements in gin-saw-filing machines in which the file-holders have a longitudinal as well as a semi-rotary reciprocal motion in a horizontal plane; and it consists in the manner of constructing, arranging, and adapting the parts which control the motion of the file-holders, so as to file more in the throat of the saw-teeth than on the sides, and to secure at the same time a long stroke from a short lever.

It also consists in the extension-sides of the machine-frame, as well as of the form and adjustment of the file-holder bearings on the side frame, whereby the filing device may be adapted to any size of saw.

It also consists in the manner of constructing the file-holders, so that the files may be easily and accurately adjusted at any angle desired, all of which will more fully appear hereinafter.

Figure 1 is a plan of the machine, showing the pawl and pawl-arm, file-holder, and adjustable bearings, the longitudinally-curved groove in the file-holders, the files adjusted, and the propelling-power. Fig. 2 is a side elevation of the same with a part of the side frame broken away to show the segments of gear-wheels and pinions by which the files are actuated, and also the extension-sides. Fig. 3 is a detail of the file-arm, showing the ferrule and set-screws for adjusting the files. Fig. 4 is a detail of the adjustable pawl, showing the fan-shaped disk and the thumb set-screw. Fig. 5 is a detail of the forward file-holder bearing, secured between ways on a track or bar and abutting against a spiral spring. Fig. 6 is a detail, showing the fulcrum of boss L, the projection thereon, and the means for operating the pawl-arm F.

Similar letters of reference indicate corresponding parts.

A substantial frame, A, resting on its end A″, made deep enough to serve as a foot for one end thereof, and provided with adjustable extension-sides A′ A′, secured thereto through slots *l l* by large headed screws *b b*, carries the filing and actuating machinery. The extension-sides A′ are designed to be thrown forward between the saws and to rest on the axle of the saw to be filed, and are provided with legs *p*, to hold the machine in a horizontal position.

Secured by their long shanks, one from above and one from below, in suitable mortises or slots in the sides of frame A, are adjustable ring guides or bearings C C′, in which the rear ends of the file-holders B B′ are mounted. Adjusted on the forward part of frame A, between ways *h h′*, one above and one below, secured by and sliding on bars *s s*, and abutting against spiral springs *i i*, which regulate the pressure of the files on the saw-teeth, are other ring-guides or bearings, E E′, in which the forward ends of the file-holders B B′ are mounted. The adjustable bearings C C′ are secured in position by set-screws *k*, and may be raised or lowered, and can be moved in or out by wedges arranged in the mortises. The adjustable bearings E E′ are arranged in such a manner on the front part of the frame A as to bring the forward ends of the file-holders toward each other and the center of the front part of the table, and the tensions of the springs *i i′* govern the pressure of the files on the saw-teeth.

The file-holders B B′ are cylindrical shafts of suitable length and diameter, having a longitudinally-curved groove, *a*, cut into the periphery of each, near one end, and an incision or recess, *r*, for the admission of a file-shank in the other. The recessed end is surrounded by a ferrule, *d*, and has two entering set-screws, *c c*. The set-screws *c c* enter the recess *r* at right angles to each other behind the file-shank, and when properly manipulated, in addition to securing it in place, they are made to adjust

the file D in the holder at any angle therewith desired.

These file-holder shafts B B′ are secured in guides or bearings C E and C′ E′, respectively, one above and one below the frame A, in such a manner that the ends of the file-holders come toward each other, and the points of the files cross so that the right-hand file will file on the left side of the saw and the left-hand file will file on the right side of the saw—in other words, that the opposite sides of the saw-teeth may be filed. Passing into each of the guides or bearings C C′ is a spline, *e*, the end of which enters the longitudinally-curved groove *a* in the file-holder B or B′, whereby a semi-rotary or eccentric motion is given to the said holders as they are moved forward and back. A metal cross-bar, P, with loops at each end, connects the file-holders B B′ together near and immediately in the rear of the bearings E E′.

Attached to cross-bar P by loops is a diverging connecting-rod, N N′, which terminates in a single clasp on crank K, from which motion is conveyed to the file-holders B B′. On crank K, which has suitable bearings on or in the sides of frame A, beside the connecting-rod N, are keyed two pinions, I I′, which gear with two segments of a large gear-wheel, H H′, secured to a boss, L, beyond which they extend sufficiently far to permit crank K to revolve.

Boss L, passing through a mortise, *x*, in the frame end A″, where it finds a fulcrum on bolt *w*, secured therein, has a protuberance, *v*, just without the frame, for actuating the pawl-arm F, and terminates in a gripe, *t*, in which the actuating-lever M is secured by a king-bolt, *g*.

Suspended by a spiral spring, *f*, from the top of frame end A″, the rear end passing through a mortise, *x*, therein, immediately above and taking foot against the protuberance *v* on boss L without the frame, is a pawl-shaft, F, which extends thence forward over the machine, terminating in a deep incision or set of jaws, *u*, for the admission of a tenon on the pawl-arm.

Pawl G has a curved beak at one end to catch, hold, and rotate the saw that is being filed, and a long tenon terminating in a fan-shaped or semi-disk, *o*, at the other. The tenon end of pawl G is inserted in the mortise, incision, or jaws *u* of the pawl-shaft F, where it is secured by a bolt, *m*, on which it may be raised or lowered, it being secured in any desired position by a thumb set-screw, *n*, brought against the disk *o*.

The set-screws *c c′*, near the end of the file-holders B B′, enter the recess *r* at opposing angles in such a manner that when the points come together the screws will stand at right angles to each other, so that when they come against the shank of the saw-file D the file can be secured at any angle desired. The file D passes into the incision *r* from the end of the file-holder B, under the ferrule *d*, by which it is held in place.

When the parts have been constructed and adjusted as hereinbefore described and the files secured in place the machine is placed in position in front of a saw to be filed, the extension-sides are thrown forward and made to rest upon the axle of the saw, and the files D D′ and pawl G adjusted in the proper teeth. The lever M is moved up and down, conveying, through the segments of the gear-wheels H H′, pinions I I′, crank K, diverging connecting-rod N N′, to file-holders B B′, a longitudinal backward and forward motion in their respective bearings C E and C′ E′, as well as eccentrical or semi-rotary motions through the splines *e e*, meshing in the grooves *a*, whereby the angle of the file is thrown up into the throat of the saw-teeth without injury to the adjacent tooth; and when the tooth has been sufficiently filed the lever M is thrown a little higher to bring the protuberance *v* against the end of pawl-shaft F, which is thrust forward, carrying with it the saw being filed one tooth, and when the lever is again lowered the spring *f* recalls the pawl-shaft, so that the pawl-beak will drop into, catch, and hold the following tooth, which operation is repeated until the saw is completely filed.

Having now fully described both my device and the mode of constructing and using the same, what I esteem as novel, and desire to protect by Letters Patent, is—

1. In gin-saw-filing machines, a cylindrical file-holder with a longitudinally-curved groove in its periphery, near one end, and a recess surrounded by a ferrule for holding a file at the other, provided with two set-screws, *c c′*, entering at right angles to each other for adjusting the files D D′ in their holders at any angle desired, substantially as shown and described.

2. The combination of bar P, having loops at each end, cylindrical file-holders B B′, adjustable file-holder bearings C E on top and C′ E′ beneath the frame, diverging connecting-rods N N′, crank K, pinions I I′, segments of gear-wheels H H′, boss L, pivoted at *w*, and lever M, substantially as shown and described.

3. In combination, lever M, boss L, pivoted on fulcrum *w*, having a protuberance, *v*, pawl-shaft F, pawl G, gear-segments H H′, pinions I I′, crank K, diverging connecting-rods N N′, cross-bar P, having loops at the ends, file-holders B B′, and suitable bearings, substantially as shown and described.

4. A beaked pawl having a long tenon terminating in a semi-disk, by which it may be raised or lowered, in combination with pawl-shaft F, having an incision, *u*, bolt *m*, and thumb-screw *n*, substantially as shown and described.

5. A beaked pawl having a long tenon terminating in a semi-disk, in combination with pawl-shaft F, having an incision in its forward end, spiral spring *f*, boss L, provided with protuberance *v*, adjustable file-holders B B′, coup-

ling-bar P, connecting-rod N N′, crank K, pinions I I′, and segments H H′, substantially as shown and described.

6. A machine-frame, A A″, as described, provided with extension-sides A′ A′, adjustable file-holder bearings C C′ E E′, one set above and one set below the frame, in combination with file-holders B B′ and the actuating mechanism, substantially as shown and described.

In testimony that I claim the foregoing I have hereunto set my hand this 13th day of April, 1880.

HENRY N. CRAMER.

Witnesses:
L. L. FLOYD,
BENJ. F. BIGELOW.