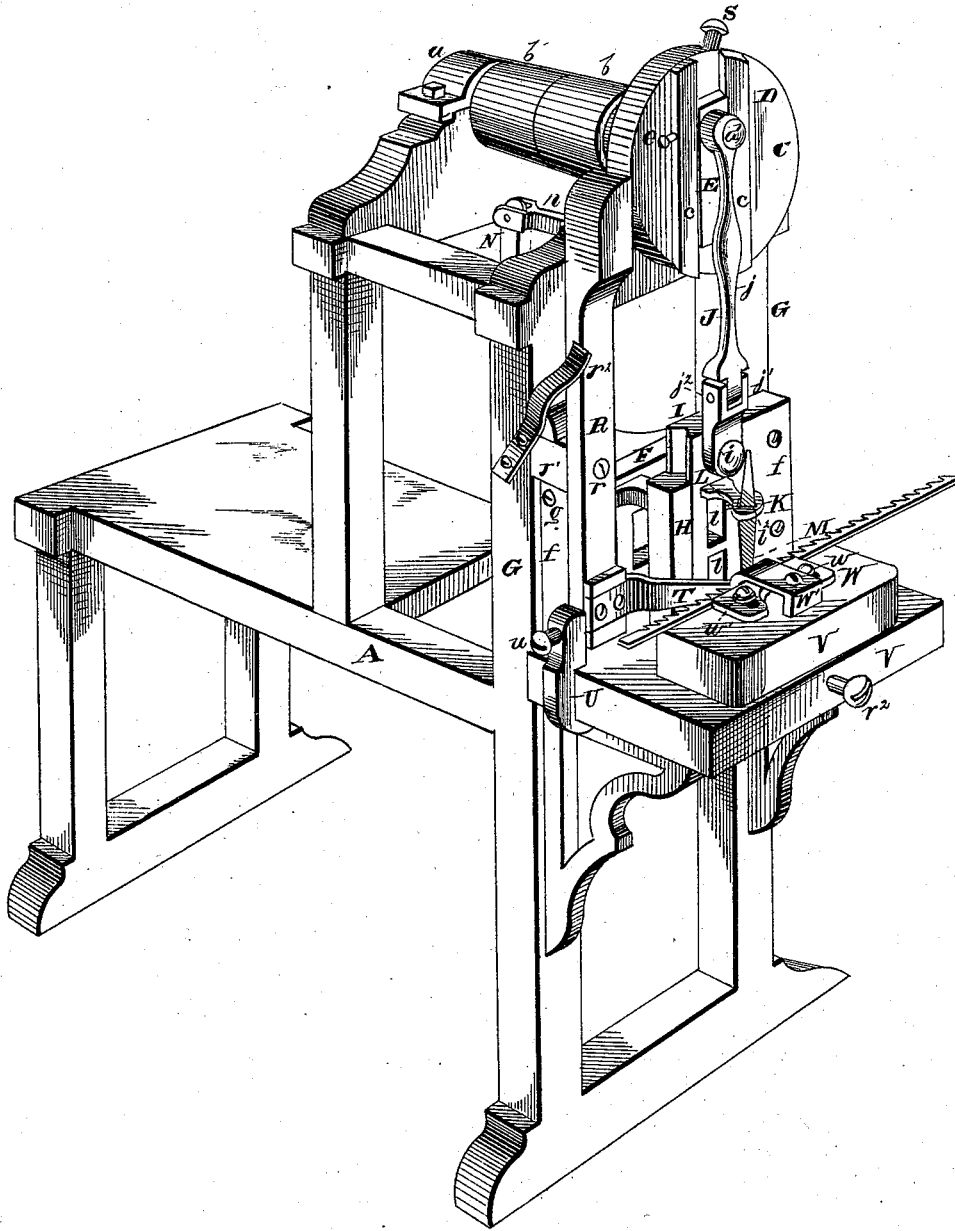


W. T. SMITH.
Saw-Filing Machine.

No. 203,383.

Patented May 7, 1878.



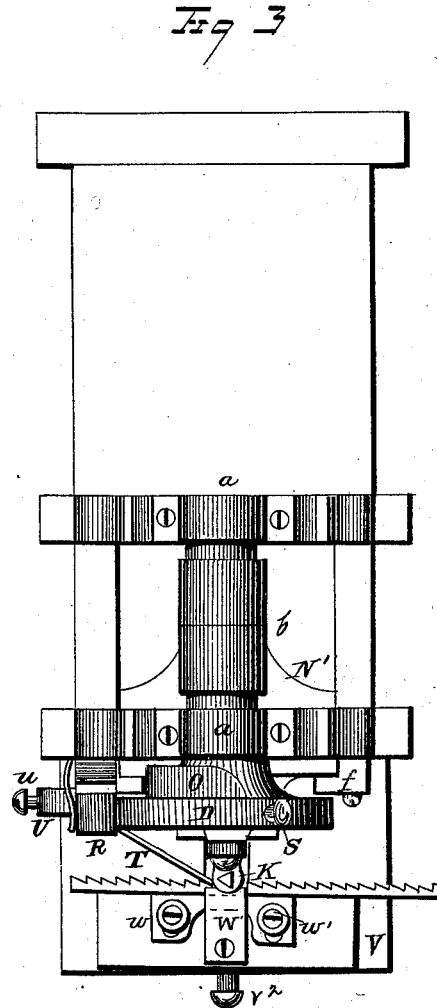
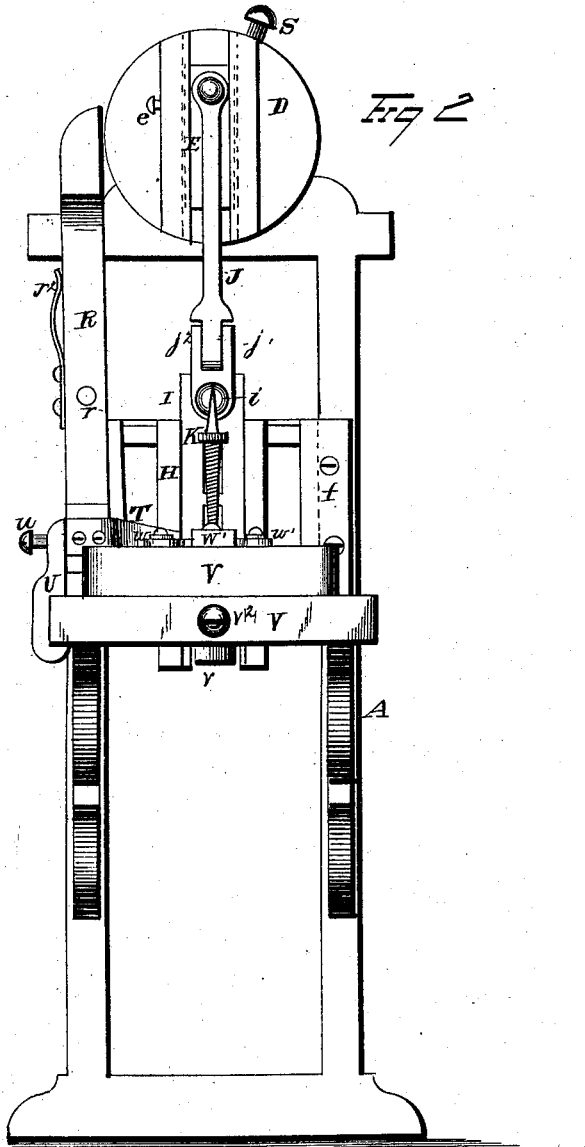
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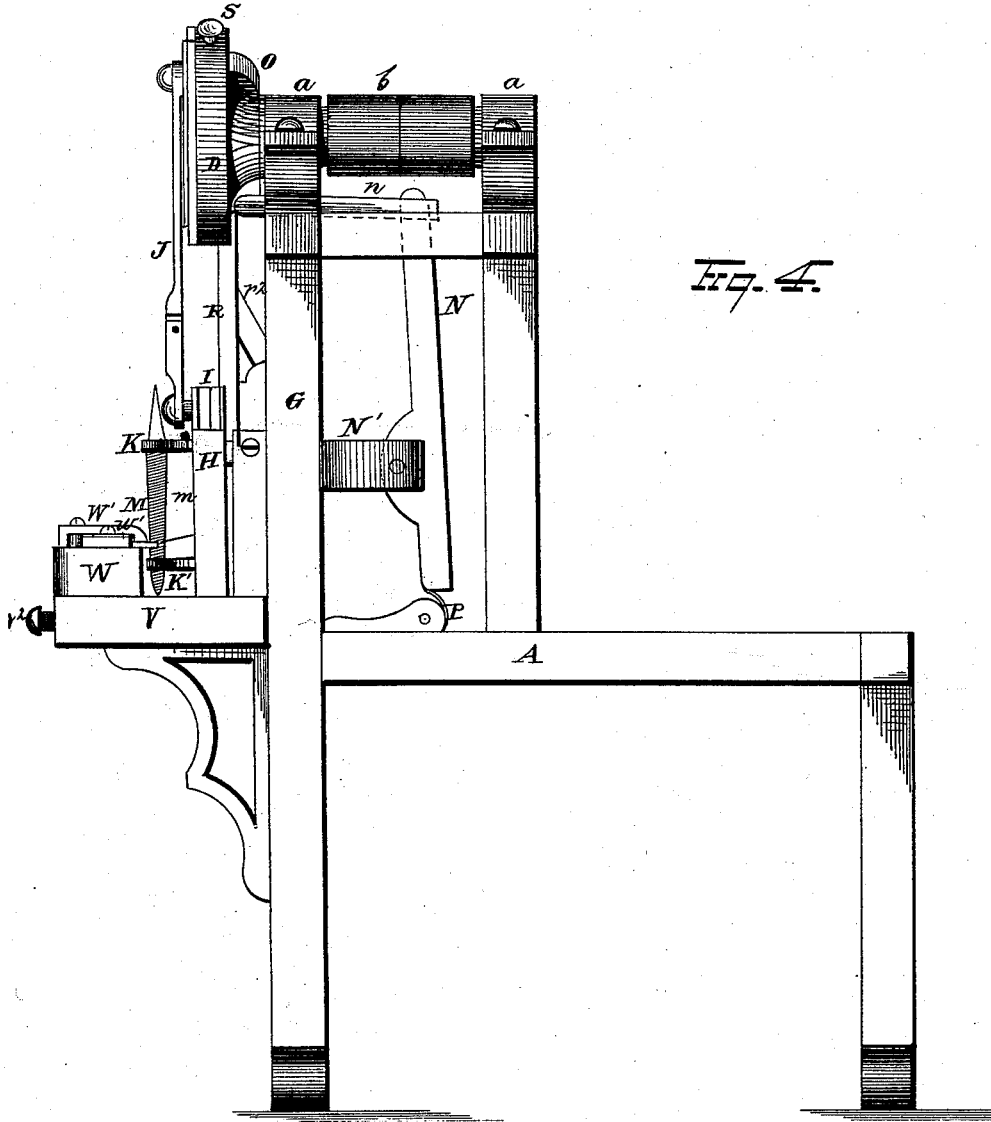


Fig. 4.

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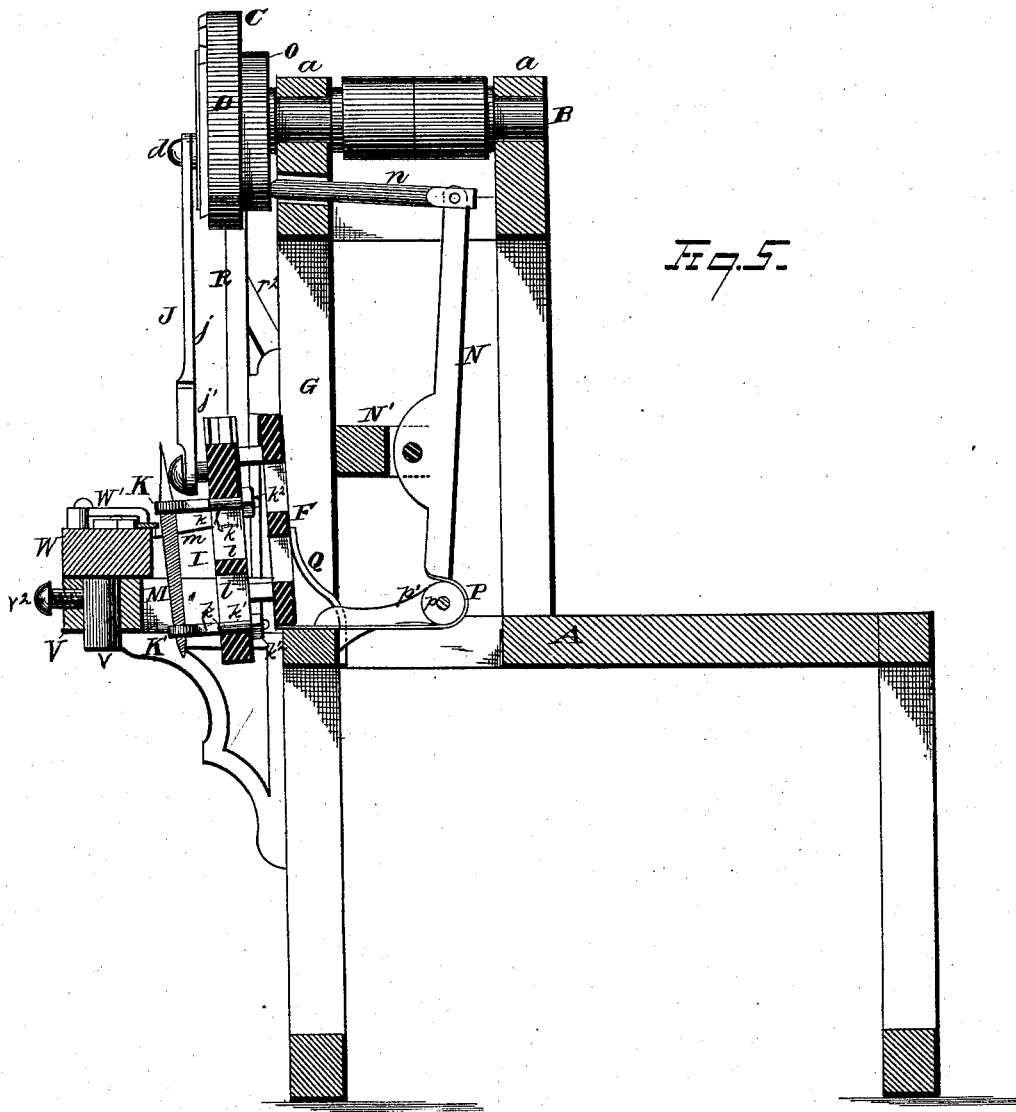


Fig. 5.

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UNITED STATES PATENT OFFICE.

WILLIAM T. SMITH, OF BALTIMORE, MARYLAND.

IMPROVEMENT IN SAW-FILING MACHINES.

Specification forming part of Letters Patent No. **203,383**, dated May 7, 1878; application filed March 25, 1878.

To all whom it may concern:

Be it known that I, WILLIAM T. SMITH, of the city of Baltimore, in the county of Baltimore and State of Maryland, have invented certain new and useful Improvements in Saw-Filing Machines; 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in saw-filing machines.

The object of my invention is to provide a machine of such construction that saws may be placed therein and automatically sharpened by means of a reciprocating three-cornered file; and to that end my invention consists in the several details of construction and combinations of parts, as will more fully appear from the following description and claims.

In the accompanying drawings, Figure 1 is a view, in perspective, of my improved machine. Fig. 2 is a front elevation, and Fig. 3 a plan view, of the same. Fig. 4 is a side elevation, illustrating the position of the several parts of the machine when the file is traveling through its down or effective stroke; and Fig. 5 is a similar view, showing the relative position of the several parts of the machine when the file is traveling through its upward stroke.

A represents the machine-frame. B is a shaft, supported in bearings *a*, said shaft being provided with fast and loose band-pulleys *b b'*. To the forward end of shaft B is secured an adjustable eccentric, C, which is constructed as follows: The outer face of disk D is provided with guides *c*, which are undercut, and between which is located a slide, E, to which is secured a wrist-pin, *d*. The slide E may be moved to or from the edge of the disk, thus carrying the wrist-pin *d* to or from the center of the disk D, and thus secured in any desired adjustment of the eccentric. The slide E is adjustably secured within the guides *c* by means of one or more set-screws, *e*. F represents a frame, the upper end of which is hinged or pivoted to the side bearings *f*, attached to the uprights G of the machine-frame. In the present instance the frame F is pivoted

to the side pieces or bearings *f* by means of screws or bolts *g*. Sufficient lateral movement is allowed the lower end of frame F, so that it may be moved forward and backward, for a purpose hereinafter set forth.

Frame F is provided with bevel-faced guides H, between which is placed a sliding block, I, the sides or edges of which are beveled to correspond with the beveled faces on the guides. J is a pitman-rod, the upper end of which is journaled on the wrist-pin *d* of eccentric C, while the lower end is journaled on the wrist-pin *i*, attached to the upper end of the sliding block I. Pitman-rod J is made in sections *j j'*, which are pivoted to each other by means of a pin, *j²*, in order to allow of the lateral movement of the sliding block as it is reciprocated by the pitman-rod. Sliding block I is provided with file-holders K K', which are constructed with shoulders *k*, that rest against the front of the block, and are formed with screw-threaded shanks *k¹*, to enable said holders to be adjustably secured to the sliding block by means of nuts *k²*. Block I is provided with elongated slots *l*, extending through the same, and within which are placed the shanks *k¹* of the file-holders K K'. When long files are used, the holders are secured at opposite ends of the elongated openings *l*, that the ends of the file may be secured within the holders. When short files are needed for use, the holders are moved toward each other, and the shanks secured in any desired position. The heads *l'* of file-holders K K' are constructed with triangular openings *l²*, for the insertion of different-sized files.

L is a set-screw, adapted to bear against one face of the file and secure it within the holder.

It will be observed that the triangular openings *l²* may be sufficiently large to admit the largest-size file necessary for use, while the smallest-size file is readily and firmly secured within said opening by means of the set-screw L.

M represents a three-cornered file, secured in proper position for work. The face *m* of file M is placed at right angles to the block, so that the file may be moved laterally without impinging on the points of the saw-teeth.

The lateral movement of the file, when in operation, is effected as follows: N is a lever piv-

oted to the cross-bar N'. The upper end of lever N has a rod, *n*, pivoted thereto. The opposite end of rod *n* projects through an opening in the machine-frame. O is a cam attached to the rear face of the disk D. As the disk revolves it vibrates lever N through the medium of the rod *n*, the forward end of which engages with the cam O. To the lower end of lever N is secured a strap or band, P, which latter passes over a pulley, *p*, journaled in bearings *p'*, and is secured at its opposite end to the lower edge of the vibrating guide-frame F. When the cam O forces the rod *n* and upper end of lever N outwardly the lower end of the lever is moved in the opposite direction, causing the band P to pull the frame F away from the saw, so that the file may be raised without coming in contact with the saw. When the disk carrying the cam has made a part revolution the end of the rod *n* is released from the cam, and when the parts are in this position the file has reached the end of its up-stroke. The springs Q, the free ends of which rest against the lower end of frame F, force the latter forward, carrying the file forward against the hub of a saw-tooth, when the file descends in a vertical line, subjecting the tooth to the action of the file throughout its entire length, if desired.

The saw is automatically fed forward in an intermittent manner by the following mechanism: R is a lever, pivoted at *r* to the frame or to a suitable block or standard, *r'*, secured thereto. The upper end of lever R is preferably enlarged to form a shoe, which is held in direct contact with the periphery of the disk D by means of a spring, *r''*. A spiral spring or weight might be combined with said lever and perform the same office. S is an adjustable abutment, secured to the periphery of disk D, and serves to impart movement to the lever R as the disk is revolved. To the lower end of lever R is secured a finger, T, the free end of which engages with the teeth of the saw to be filed. U is a standard located in rear of the lower end of lever R, and the same is provided with a set-screw, *u*, for the purpose of regulating the throw or movement of the finger, and thus allow it to be adjusted for different sizes of saw-teeth. Upon the table or standard V, located in front of the file, is placed an adjustable block, V'. Block V' is provided with a stud, *v*, which extends into or through an opening in the table V, and set-screw *v''*, inserted into the edge of the table, engages with said stud, whereby said block may be given any desired angular adjustment and secured in place by set-screw *v''*. To the upper surface of the block V' is secured an adjustable gage, W, which is provided with oblong holes *w*, and secured in place by screws *w'*. W' is a clamp attached to block V', the forward end of said clamp resting upon the saw with any degree of tension desired, to prevent the displacement of the saw.

The operation of my improved saw-filing machine is as follows: Motion is imparted to

the driving-shaft by a belt, and a rotary movement imparted to the adjustable eccentric C. As the latter is revolved toward the right it forces the sliding block through its down-stroke in a vertical line, and thus causes the file, which is attached to the block by suitable file-holders, as hereinbefore described, to sharpen the entire cutting-edge of the saw-tooth with which it engages. When the file has reached the limit of its downstroke the cam on the rear surface of the disk, in connection with the pivoted lever and strap or band, operates to pull the file away from contact with the saw-teeth. When the file has cleared the teeth the adjustable abutment on the disk strikes the feeding-lever, and operates to feed forward the saw the length of one tooth. The file is continually being raised out of all contact with the saw-teeth, and when it has reached the limit of its upward stroke the rod engaging with the cam O is released from the cam, and the springs resting against the rear surface of the frame within which the file-holders are supported serve to force the frame forward, and thus force the file into the next tooth, which is sharpened in the same manner as heretofore set forth.

Saws of any length can be sharpened in the most accurate and ready manner, and this without the aid of an attendant, as the machine works automatically.

The machine can be readily adapted to sharpen circular saws by simply securing an adjustable slide to the table, said slide being provided with a center for holding the eye of the same.

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

1. In a saw-filing machine, the combination of a sliding block provided with file-holders, of a swinging frame the lower end of which is adapted to have an oscillating or swinging movement imparted thereto, whereby the file may be removed clear of the saw during its upward stroke, and forced against the saw-teeth during its downward stroke, substantially as set forth.

2. In a saw-filing machine, the combination, with a sliding block provided with file-holders, said block mounted in a swinging frame, of a wrist-pin actuated by the driving-shaft and a jointed pitman, substantially as set forth.

3. In a saw-filing machine, the combination, with the cam O, lever N, rod *n*, and strap P, of the swinging frame H, and one or more springs, Q, substantially as set forth.

4. In a saw-filing machine, the combination, with a pivoted or hinged guide-frame, of a cam secured or formed on the rear surface of the eccentric disk, and intervening mechanism, substantially as set forth, for imparting an intermittent lateral movement to said guide, substantially as set forth.

5. In a saw-filing machine, the combination, with a revolving disk provided with an adjustable abutment, of spring-pressed lever

having a saw-feeding finger attached to its lower end, substantially as set forth.

6. In a saw-filing machine, the combination, with a revolving disk provided with an adjustable abutment, of a spring-pressed lever provided with a saw-feeding finger and an adjustable stop to regulate the feed, substantially as set forth.

7. In a saw-filing machine, the combination, with a swinging guide-frame, of a cam and mechanism for moving the frame away from the saw, and one or more springs or equivalent means engaging with the lower end of the swinging frame for forcing the file against the saw-teeth, substantially as set forth.

8. In a saw-filing machine, the combination

of the following elements, to wit: A sliding block, one or more springs for moving the lower end of the block toward the saw, cam on the disk attached to the driving-shaft, and intervening mechanism for moving the lower end of the block away from the saw, an adjustable saw-block, and automatic feeding-mechanism, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 22d day of March, 1878.

WILLIAM T. SMITH.

Witnesses:

FRANK GALT,
HENRY A. SEYMOUR.