

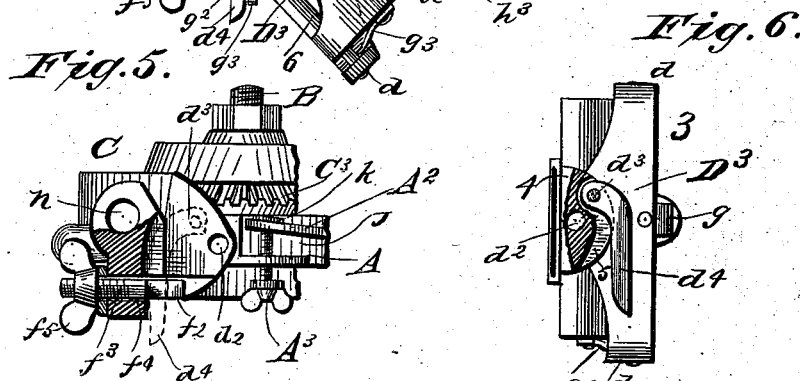
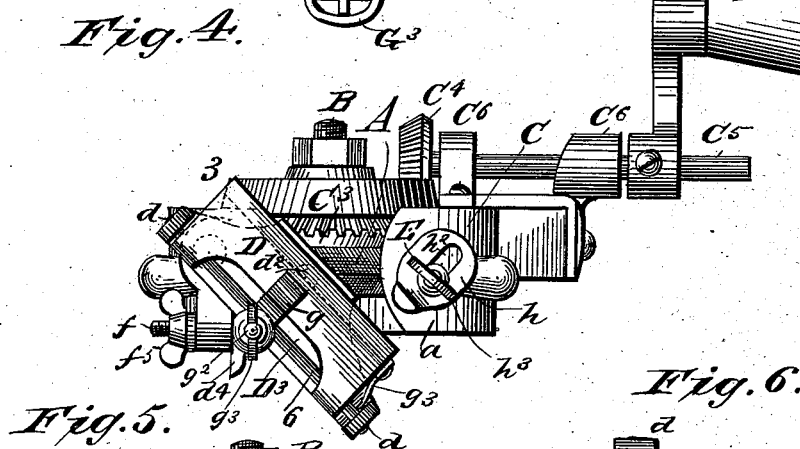
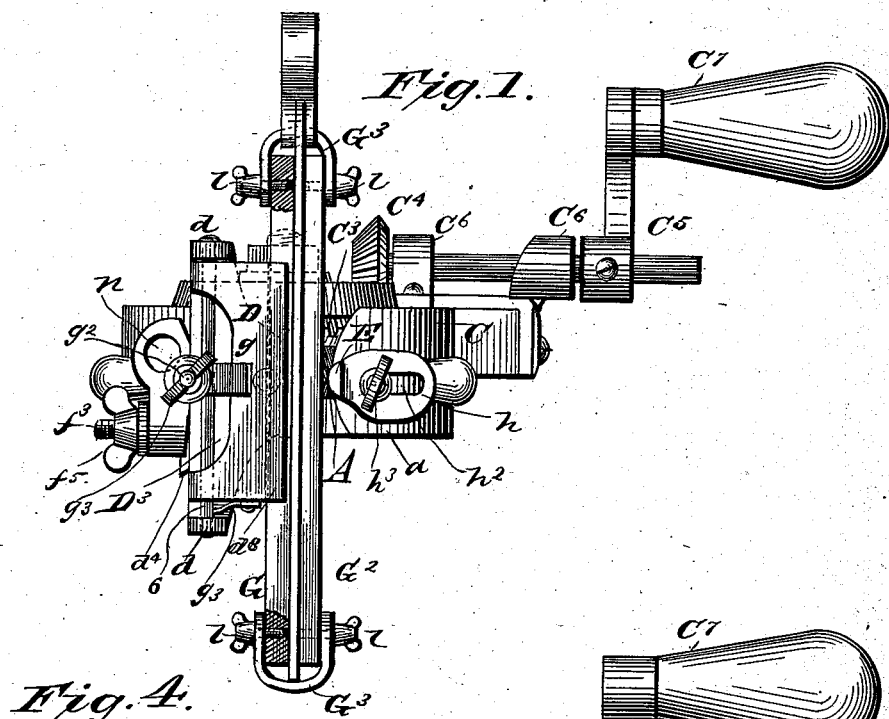
(No Model.)

3 Sheets—Sheet 1.

D. W. JOHNS.
SAW FILING MACHINE.

No. 381,249.

Patented Apr. 17, 1888.



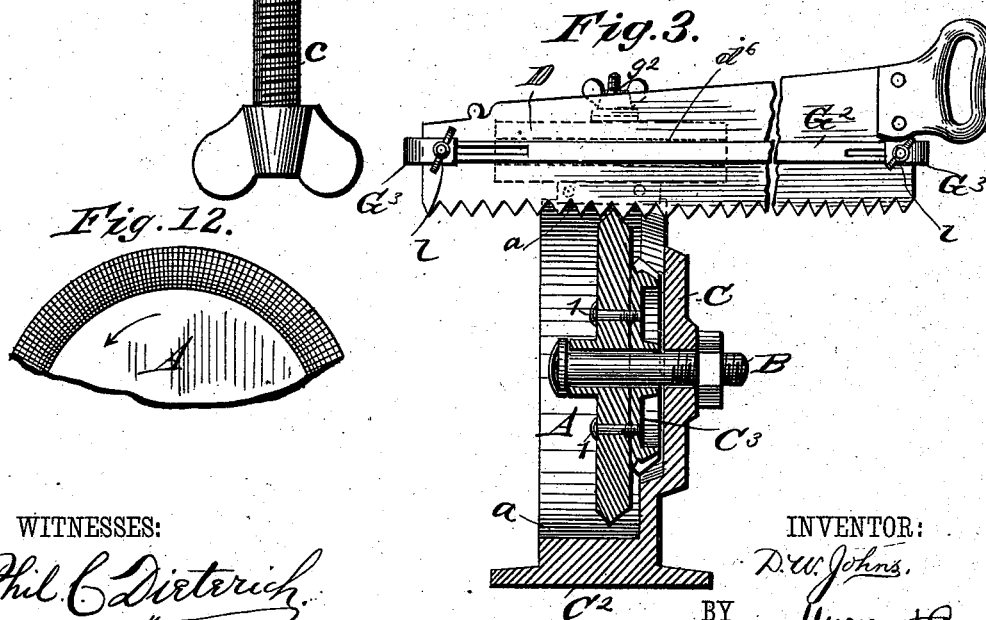
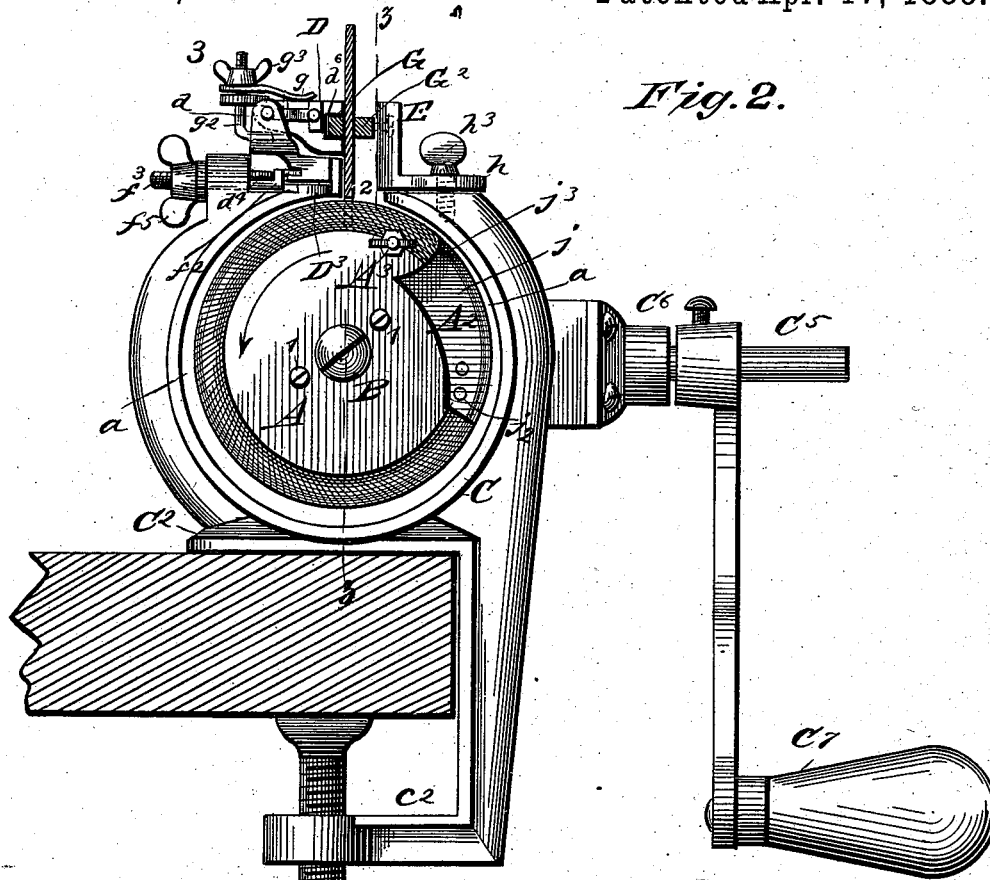
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3. Sheets—Sheet 2.

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WITNESSES:

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C. Sedgwick

INVENTOR:

D. W. Johns,
Munn & Co.
ATTORNEYS.

(No Model.)

3 Sheets—Sheet 3.

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Fig. 7.

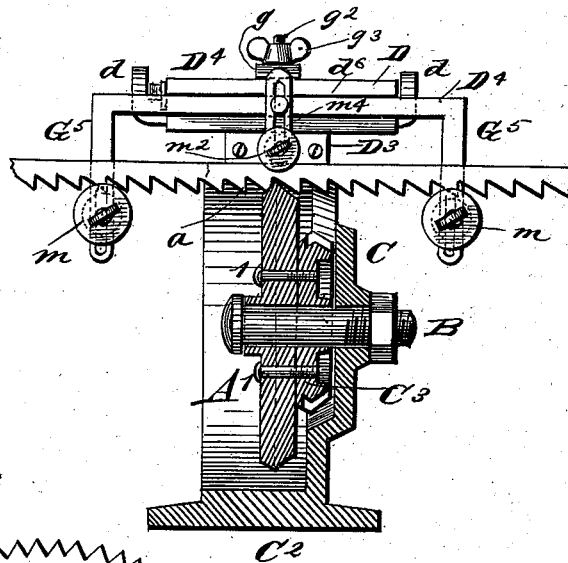
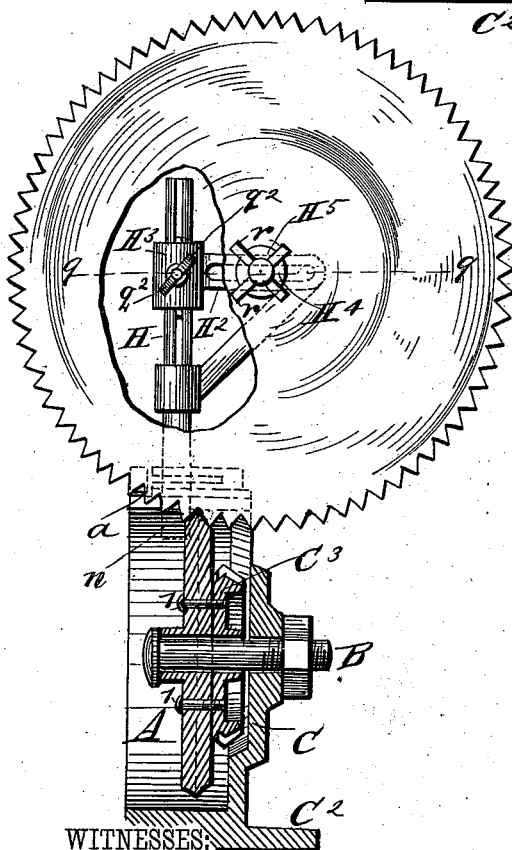


Fig. 8.



WITNESSES:

Phil C. Dietrich.

C. Dietrich

Fig. 9.

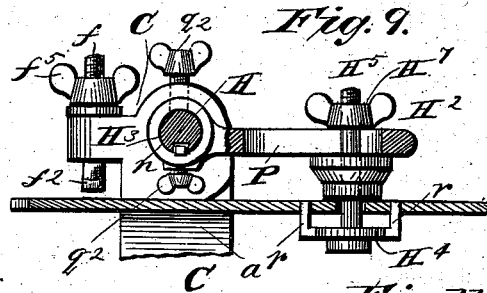


Fig. 10.

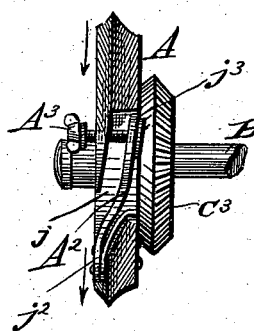
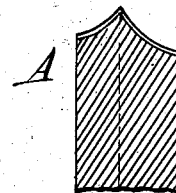


Fig. 11.



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UNITED STATES PATENT OFFICE.

DAVID WASHBURN JOHNS, OF ALLEGHENY CITY, PENNSYLVANIA, ASSIGNOR
OF ONE-HALF TO JOSEPH F. BELFOUR, OF SAME PLACE.

SAW-FILING MACHINE.

SPECIFICATION forming part of Letters Patent No. 381,249, dated April 17, 1888.

Application filed November 17, 1887. Serial No. 255,430. (No model.)

To all whom it may concern:

Be it known that I, DAVID WASHBURN JOHNS, of Allegheny City, in the county of Allegheny and State of Pennsylvania, have invented a new and Improved Saw-Filing Machine, of which the following is a specification, reference being had to the annexed drawings, forming a part thereof, in which—

Figure 1 is a plan view, partly in section, of my improved saw-filing machine. Fig. 2 is a side elevation. Fig. 3 is a vertical transverse section taken on line *z z* in Fig. 2. Fig. 4 is a plan view with the saw and saw-carrier removed. Fig. 5 is a partial plan view, partly in section, showing the adjustable feeding-cam and the clamping mechanism of the saw-guide. Fig. 6 is an inverted plan view, partly in section, of the saw-guide. Fig. 7 is a vertical transverse section of the saw-filing machine, showing the attachment for holding and guiding band-saws. Fig. 8 is a vertical transverse section of the machine, showing the device for holding circular saws in position for filing. Fig. 9 is a horizontal section taken on line *q q* in Fig. 8. Fig. 10 is an edge view of the rotary file. Fig. 11 is an enlarged transverse section of the edge of the rotary file, and Fig. 12 is a partial side elevation of the rotary file.

Similar letters of reference indicate corresponding parts in all the views.

The object of my invention is to construct a machine for quickly and accurately filing all varieties of saws, including circular, crosscut, and rip saws, long saws, and band-saws.

My invention consists in a rotary file having a segment removed and replaced by an adjustable plain-faced cam for automatically feeding the teeth of the saw forward and in mechanism for holding and guiding saws of different kinds.

It also further consists in a rotary file having a beveled concave edge for filing straight teeth on bevel-toothed saws held diagonally across the plane of rotation of the file.

The circular file A is fitted to the stud B, projecting axially into the chamber *a* of the main frame C. To the stud B is also fitted a bevel-wheel, C¹, which is attached to the rotary file A by means of screws 1. In the ears C², projecting from the main frame, is journaled a shaft, C³, which carries a bevel-pinion,

C⁴, engaging with the bevel-wheel C³. Upon the shaft C³ is placed a hand-crank, C⁵, which is made adjustable along the length of the shaft C³. The frame C is provided with a foot, C⁶, for contact with the bench to which the machine is secured, the frame C being provided with a right-angled arm, c², through which passes a clamping-screw, c, for binding the machine to the bench.

The edge of the rotary file A is beveled to conform to the space between the teeth of the particular saw to be filed, and a segment of the file is removed, forming a recess, *j*, in one end of which is secured a cam, A², by rivets *j*², the said cam being of spring material and conforming to the curvature of the periphery of the file, but bent laterally in the form of a reversed curve, the fixed end of the cam coinciding with the ridge or highest part of the wheel and the free end being laterally removed from the ridge of the wheel a distance equal to the length of the base of one or two of the teeth of the saw to be filed. A screw, A³, is inserted in the side of the rotary file A opposite the free end *j*³ of the spring-cam A², and is swiveled in the end of the said spring-cam, so that by turning the screw A³ the spring-cam A² may be adjusted according to the requirements of the work.

In the top of the frame C is formed a slot, 2, upon one side of which is pivoted a saw-guide, 3, upon the stud *d*², the guide consisting of the lower part, D³, provided with the downwardly-projecting semi-cylindrical boss 4, which is received in a recess of corresponding form made in the top of the frame C, concentric with the pivot *d*². In the boss 4 is formed a slot, 5, in which is pivoted a curved bar, *d*⁴, upon the pin *d*³. In a hole, *f*⁴, bored in the frame C at right angles to the bar *d*⁴, is inserted a bolt, *f*³, provided with a hook, *f*², adapted to engage the bar *d*⁴, and upon the outer end of the bolt *f*³ is placed a wing-nut, *f*⁵, by turning which the bar *d*⁴ may be clamped in any desired position, thus holding the lower part, D³, of the saw-guide at any desired angle with reference to the rotary file A.

Upon the lower part, D³, of the saw-guide are formed ears *d*, between which is pivoted the upper part, D, of the saw-guide upon the

rod 6. The upper part, D, of the saw-guide consists of a plate having a groove, d^6 , in its free edge for receiving the hand-saw carrier, which will presently be described. To the lower part, D³, of the saw-guide is secured a screw-threaded stud, g^2 , which extends upward above the face of the part D, and receives a flat spring, g , which may be made to bear with more or less pressure upon the top of the part D by means of the wing-nut g^3 . To the top of the frame C, upon the opposite side of the slot 2, is secured a gage, E, having a slotted arm, h , by means of the thumb screw h^3 , passing through the slot h^2 of the gage into the top of the frame.

The hand-saw carrier consists of two bars, G G², which are clamped together upon the sides of the saw to be filed by screws l , passing through yokes G³. If the saw is to be filed straight across, the saw-guide 3 is arranged at right angles to the plane of the rotary file A, and the spring-cam A² is adjusted so that the distance between its free extremity and the ridge of the rotary file will be equal to the length of the base of one tooth of the saw. The saw-carrier is then inserted in the saw-guide, and the file A is rotated by turning the crank C⁷, when the file by one revolution files one tooth, and by means of the cam A² moves the saw into position for filing the second tooth, and so on. In the case of a bevel-toothed saw it is necessary to arrange the saw-guide so as to direct the saw in a diagonal path across the edge of the rotary file A and to adjust the cam A² so that only alternate teeth will be filed in passing the saw through the machine with one adjustment of the saw-guide, when by arranging the saw-guide oppositely with respect to its first position the saw is again passed through the machine, filing the intermediate teeth. In addition to this change of adjustment for bevel-toothed saws the file itself must necessarily be of a different form from that employed in filing straight across the saw.

It is well known that the line of the intersection of an oblique plane with a cone or conical surface is curved. Thus it is evident that if a saw were passed obliquely across a truly-conical rotary file the edge of the tooth would be made concave. To correct this error in filing bevel-toothed saws, I make the beveled surfaces of the rotary file concave, as shown in Figs. 10 and 11, so that a saw held obliquely upon the edge of the rotary file will have its teeth filed approximately straight.

To adapt my improved machine for filing band-saws, I provide a guide, D⁴, consisting of a bar bent twice at right angles in the same direction, forming arms G⁶, which support adjustable grooved rollers m , over which the band saw passes. The guide D⁴ is held in the

slot d^6 of the saw guide 3 by a clamp, m^4 , held by a thumb-screw, m^2 , entering the boss 4.

For filing circular saws, a grooved standard, H, is inserted in a hole, n , bored in the top of the frame C. To the standard H is fitted a bracket, H³, provided with a feather fitted to the slot of the standard and furnished with a thumb-screw, q^2 , for clamping the bracket at any desired height. The horizontal arm P of the bracket H³ is slotted to receive an arbor, H⁵, upon which the circular saw is mounted, and which is provided with a washer, H⁴, having studs r , adapted to enter holes in the saw to be filed. The teeth of the saw are operated upon in the same manner as in the cases before described, the saw turning on the arbor H⁵ as the operation of filing progresses.

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

1. A circular-saw file having bevel concaved filing-surfaces for filing bevel-toothed saws, substantially as herein specified.

2. In a saw-filing machine, the combination, with a rotary saw-file, A, provided with a feeding-cam in its edge, of a recessed frame, C, a stud, B, inserted in the frame and adapted to support the file, and a saw-guide, 3, formed of the lower part, D³, provided with ears d and the boss 4, the upper part, D, pivoted between the ears d and provided with a longitudinal groove, d^6 , and the gage E, adjustably secured to the frame C, substantially as specified.

3. The combination, with the boss 4 of the saw-guide 3, of the bar d^4 and the clamping-bolt f^3 , substantially as specified.

4. In a saw-filing machine, the combination, with the saw-guide 3, of the saw-carrier formed of the bars G G² and clamps G³, substantially as specified.

5. In a saw-filing machine, the combination, with the frame C, provided with the socket n , of the standard H, the slotted bracket H³, and the arbor H⁵, substantially as specified.

6. In a saw-filing machine, the combination, with the saw-guide 3, of the bar D⁴, bent twice at right angles and carrying adjustable saw-guiding rollers m , substantially as specified.

7. In a saw-filing machine, the combination, with the rotary file A, provided with the adjustable feeding-cam A², of the bevel-wheel C³, the bevel-pinion C⁴, the shaft C⁵, the crank C⁷, adjustable on the shaft C⁵, the frame C, and the supports for the rotary file A, the bevel-wheel C³, and the shaft C⁵, substantially as specified.

DAVID WASHBURN JOHNS.

Witnesses:

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JAMES ROESER.