(No Model.)

2 Sheets—Sheet 1.

W. H. PARRY.

SAW FILING AND SETTING MACHINE.

No. 445,858. Patented Feb. 3, 1891.

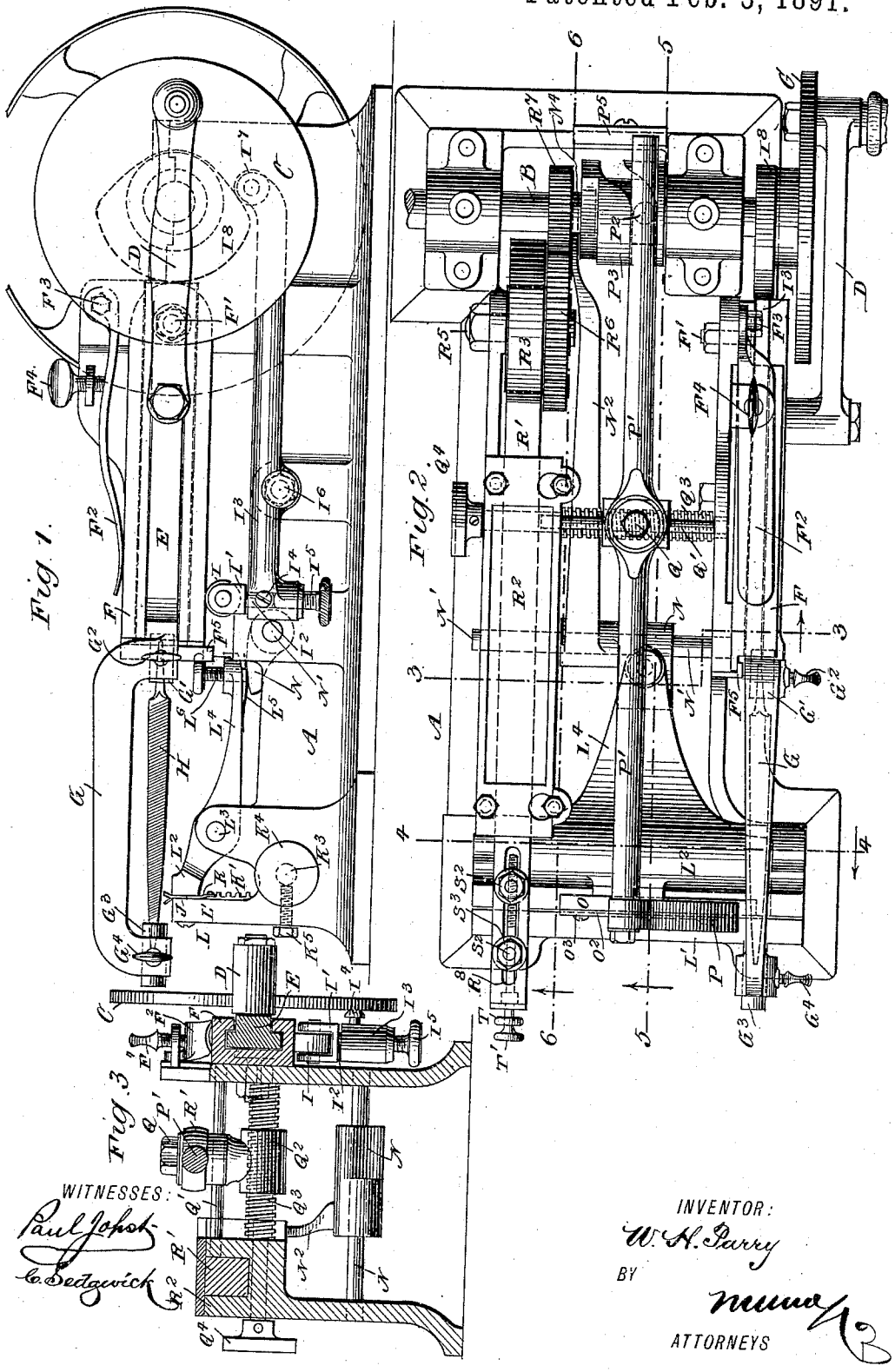

Fig. 1.

Fig. 2.

Fig. 3.

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(No Model.) 2 Sheets—Sheet 2.

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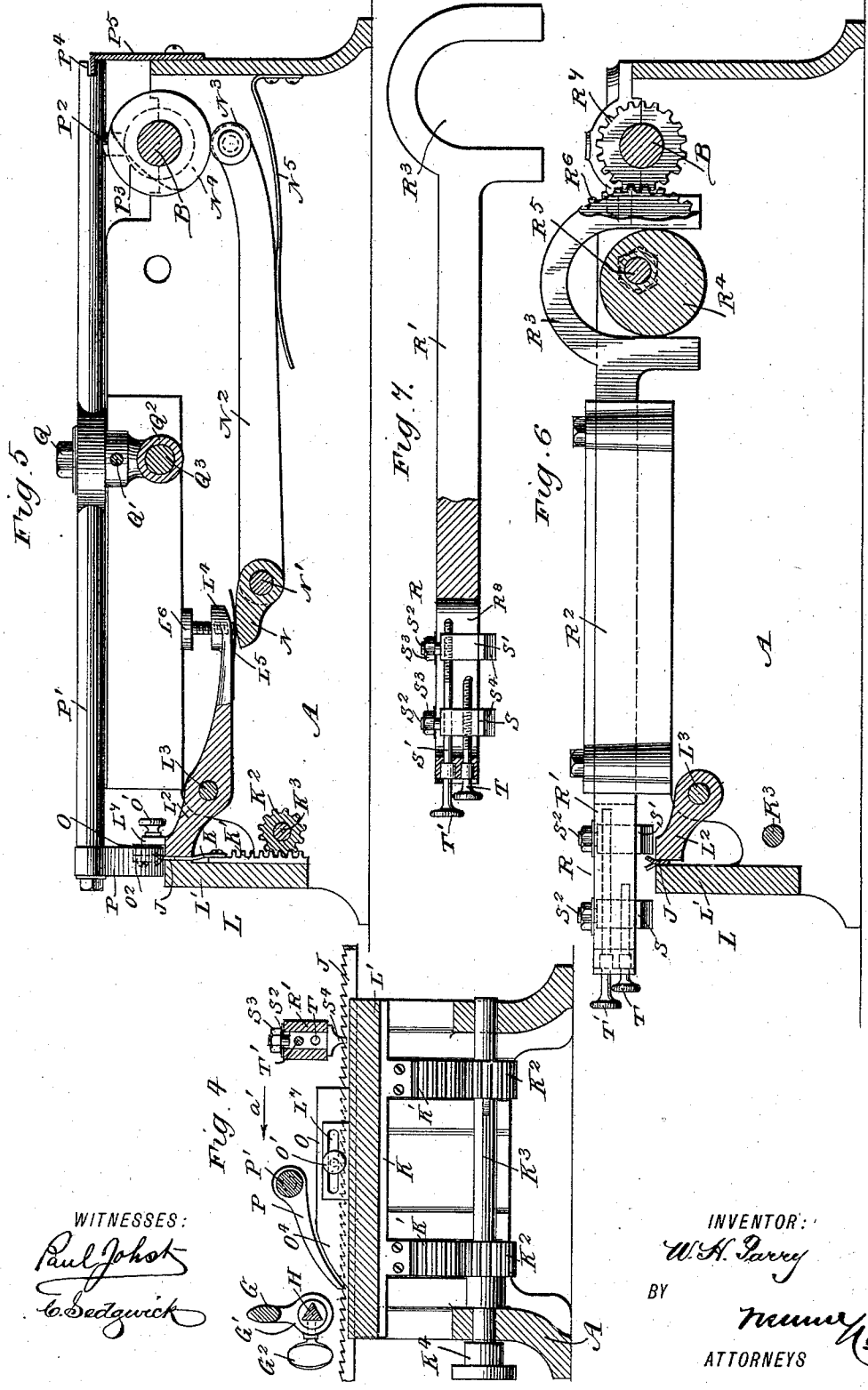

Fig. 5

Fig. 4

Fig. 6

Fig. 4

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UNITED STATES PATENT OFFICE.

WILLIAM H. PARRY, OF NEW YORK, N. Y., ASSIGNOR TO JAMES H. HAVENS, OF SAME PLACE.

SAW FILING AND SETTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 445,858, dated February 3, 1891.

Application filed July 2, 1890. Serial No. 357,492. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. PARRY, of the city, county, and State of New York, have invented a new and Improved Saw Filing and Setting Machine, of which the following is a full, clear, and exact description.

The invention relates to saw filing and setting machines such as shown and described in the Letters Patent No. 227,898, granted to me May 13, 1890.

The object of the present invention is to provide a new and improved saw filing and setting machine which is simple and durable in construction and in which the feeding of the saw to the reciprocating file-holder is accomplished very accurately, so that the teeth appear uniform when filed.

The invention consists of certain parts and details and combinations of the same, as will be fully described hereinafter, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the improvement. Fig. 2 is a plan view of the same. Fig. 3 is a transverse section of the same on the line 3 3 of Fig. 2. Fig. 4 is a like view of the same on the line 4 4 of Fig. 2. Fig. 5 is a longitudinal section of the improvement on the line 5 5 of Fig. 2. Fig. 6 is a similar view of the same on the line 6 6 of Fig. 2, and Fig. 7 is a sectional side elevation of the saw-set.

The improved saw filing and setting machine is mounted on a suitably-constructed frame A, in one end of which is held the transversely-extending main shaft B, connected by suitable means with machinery for imparting a rotary motion to the said shaft. On the shaft B is secured a crank-disk C, pivotally connected to a pitman D, connected with a slide E, mounted to slide in a guideway F, pivoted at one end, at F′, to the main frame A. On the outer end of the slide E is formed a file-holder G, supporting a file H, preferably of three-cornered shape, as shown in the drawings. The pointed base end of the file H fits into an aperture in a bushing G′, secured by a set-screw G^2 on the inner end of the file-holder, as is plainly illustrated in the drawings. The outer end of the file H fits into a bushing G^3, held in the outer end of the file-holder G and secured therein by a suitable set-screw G^4. By adjusting the bushings in the file-holder G different-sized files may be readily supported in the file-holder. The bushings G′ and G^3 are preferably arranged in line with the slide E.

The free end of the guideway F is supported at its under side on a friction-roller I, mounted to turn in a frame I′, having a shank I^2 fitted to slide vertically in one end of a lever I^3, fulcrumed on the main frame. The shank I^2 is adapted to be fastened in place by a set-screw I^4, and the shank, with the frame I′ and the friction-roller I, is adapted to be raised and lowered by a set-screw I^5, screwing in the lever I^3 in line with the said shank and from underneath.

In order to adjust the friction-roller I, the set-screw I^4 is loosened and the screw I^5 is turned so as to either raise or lower the shank I^2. When the guideway F is in the proper position the set-screw I^4 is adjusted so as to screw against the shank I^2, in order to hold the same rigidly in place on the lever I^3. The fulcrum I^6 of the lever I^3 is between the ends of the same, and on the rear end of the lever is arranged a friction-roller I^7, engaging the periphery of a cam I^8, secured on the main shaft B. When the main driving-shaft B is rotated, the said cam I^8 imparts an up-and-down swinging motion to the said lever I^3, whereby the guide F, carrying the slide E′, is swung up and down. The cam I^8 is arranged in such a manner that when the slide E moves outward the guide F remains in about a horizontal position, so that the file H cuts uniformly on the saw to be filed, while on the return-stroke of the said slide the cam I^8 presses the outer end of the lever I^3 downward, so that the guide F is swung upward and the file-holder G, with the file H, is raised off of the saw.

In order to hold the guideway F in contact with the friction-roller I, a spring F^2 presses with its free end on the top of the said guideway, the said spring being fulcrumed at F^3 on the main frame A. A screw F^4, screwing in a lug on the main frame and onto the top of the said spring F^2, serves to regulate the tension of the latter. In order to prevent side-

wise movement of the guide F, a flange F^5 is secured on the main frame and engages the outer free end of the guideway, as is plainly shown in Figs. 1 and 2.

The saw J is held on a transversely-extending bar K, held between the fixed and movable jaws L′ and L^2, respectively, of a clamping device L. The transverse bar K is connected with vertically-arranged racks K′, fitted to slide in suitable bearings on the inside of the fixed jaw L′, the said racks being in mesh with gear-wheels K^2, secured on a transversely-extending shaft K^3, mounted to turn in suitable bearings in the main frame A. On one end of the shaft K^3 is arranged a handle or knob K^4 for conveniently turning the said shaft, to cause, by means of the gear-wheels K^2 and the racks K′, an up-and-down sliding motion of the transverse bar K, so as to adjust the latter according to the width of the saw-blade J. When the desired position of the bar K has been obtained, the shaft K^3 is locked in place by a set-screw K^5, screwing in the end of the frame A and against the said shaft.

The fixed jaw L′ of the clamping device L extends transversely and is formed on the main frame A. The movable jaw L^2, which serves to press the saw-blade J against the fixed jaw L′, is made in the form of a lever fulcrumed on a pin L^3, secured on the main frame A. The jaw L^2 is provided with an outwardly-extending tail-piece L^4, carrying on its under side a spring L^5, the free end of which rests on a cam N, fulcrumed on a pin N′, secured on the main frame A. A set-screw L^6 screws in the tail-piece L^4 against the said cam N, so as to regulate the opening between the two jaws L′ and L^2 for different thicknesses of saw-blades. The spring L^5 has the tendency to hold the jaw L^2 closed against the saw-blade to prevent the latter from being moved too far forward by the feed-pawl.

The cam N is provided with a rearwardly-extending arm N^2, carrying at its rear end a friction-roller N^3, engaging the periphery of a cam N^4, secured on the main driving-shaft B. When the latter is rotated, the cam N^4 acts on the friction-roller N^3 and imparts a swinging motion to the cam N, so that the latter presses the spring L^5 against the screw L^6 and forces the jaw L^2 toward the saw-blade, and during certain intervals the cam N^4 permits the arm N^2 to swing upward, so that the jaw L^2 can open. In order to hold the friction-roller N^3 against the periphery of the cam N^4, the spring N^5 is provided, which is secured by one end of the main frame A, and presses at its free end on the under side of the arm N^2. (See Fig. 5.)

On the top of the movable jaw L^2 is formed a slotted lug L^7, through the slot of which passes a set-screw O′, supporting on the front of the lug L^7 a transversely-extending block O, having its front face in line with the face of the movable jaw L^2. On the front face of this block O is arranged a guide-bar O^2, held vertically adjustable by suitable set-screws O^3. The under side of this bar O^2 is adapted to engage the top of the teeth of the saw-blade, so as to prevent the latter from moving upward, thereby holding the saw-blade in place as it is fed along on top of the transverse bar K. The front edge of the block O is rounded off, as at O^4, (see Fig. 4,) and over this front edge is adapted to travel the free end of the feed-pawl P, serving to feed the saw-blade J forward to bring a new tooth in line with the reciprocating file H.

The feed-pawl P is pivoted on the outer end of a feed-lever P′, fulcrumed on a stud Q, and having its other end provided with a a pin P^2, engaging the cam-groove of a cam P^3, secured on the main driving-shaft B. At every revolution of the said main driving-shaft B the cam P^3 imparts a full swinging motion to the feed-lever P′, so that the feed-pawl P is moved forward and backward for every revolution of the main driving-shaft. The cam P^3 is so arranged relative to the crank-disk C that when the file-holder G moves outward to file the saw-tooth the pawl P is on its back-stroke passing over the rounded-off end O^4 of the block O.

In order to guide the feed-lever P′, its rear end is provided with a transverse slot P^4, engaged by a flange on a bracket P^5, secured to the main frame A, as is plainly shown in Figs. 2 and 5.

The stud Q, on which the feed-lever P′ is fulcrumed, is mounted to slide transversely, being guided on a transverse rod Q′, secured at its ends in the sides of the main frame A. The under side of the stud Q is formed into a nut Q^2, screwing on a screw-rod Q^3, mounted to turn in suitable bearings in the sides of the main frame A, and provided on one outer end with a handle or knob Q^4 for conveniently turning the said screw-rod Q^3 to move the stud Q laterally.

By changing the position of the stud Q the feed of the pawl P′ is regulated—that is, the free end of the said pawl passes a longer or shorter distance beyond the front end of the transverse block O, thus imparting more or less feed to the saw-blade, according to the position of the stud Q. For instance, if the stud Q is moved toward the front of the machine near the guideway F, then the feed of the said pawl is increased, as the said pawl travels a longer distance beyond the front end of the said transverse block O and a longer distance over the top of the said block.

It will be understood that the throw of the pawl as imparted by the cam P^3 remains the same at all time; but the feeding forward of the saw-blade is changed according to the position of the stud Q, on which the pawl-lever is mounted to turn. In order to regulate the feed of the saw-blade J to a very fine degree, the block O is held laterally adjustable, so that by adjusting the said blade and the position of the stud Q the correct feed can be readily obtained for the saw-blade.

The saw-setting device R is located on the rear side of the machine, and is provided with a longitudinally-extending bar R′, fitted to slide in suitable bearings R^2, formed on the main frame A. The inner end of the bar R is provided with a recess R^3, (see Fig. 6,) engaged by an eccentric R^4, mounted to turn loosely on a stud R^5, secured to the rear side of the main frame A. On the front face of the eccentric R^4 is secured a gear-wheel R^6, the center of which coincides with the center of the stud R^5. The gear-wheel R^6 is in mesh with a pinion R^7, secured on the main shaft B, so that when the latter is rotated the said pinion makes two revolutions to one revolution of the gear-wheel R^6, so that the bar R′ makes a forward and backward stroke to two full strokes of the file H. In the front end of the bar R′ is formed a vertical slot R^8, in which the dies S and S′ are fitted to slide for setting alternate teeth to the right or left on the saw-blade J. The dies S and S′ stand to the right and left of the saw-blade J, and are held adjustably on the bar R′ by set-screws T and T′, respectively, mounted to turn in the front end of the said bar R′. (See Fig. 7.) By adjusting the screw-rods T and T′ the dies S and S′ can be moved into the desired position, so as to set the teeth of the saw-blade more or less to the right and left.

When the dies S and S′ are adjusted to the desired position, they are fastened in place by means of the bolts S^2, projecting from each of the dies S and S′, and on which screw nuts S^3, adapted to abut on washers held on top of the bar R′. The lower ends of the dies S and S′ are provided with sidewise projections S^4, engaging the under side of the bar R′, so that when the nuts S^3 are screwed up the said dies are securely held in place.

The operation is as follows: When the several parts are in place, as illustrated, and motion is imparted to the main driving-shaft B, then the file H swings forward and backward and at the same time moves up and down by the action of the cam I^8, as previously described. When the file moves forward, it files one of the teeth of the saw-blade J in the usual manner, and at its return-stroke it is raised above the saw-blade to disengage the same entirely. On the return-stroke of the file H the cam N is in its lowermost position, so that the movable jaw L^2 is disengaged from the saw-blade J and the latter is moved forward the distance of one tooth by the feed-pawl P of the feeding mechanism, moving the saw forward in the direction of the arrow *a*′. As soon as the cam N^4 swings downward to its lowermost position the movable jaw L^2 clamps the saw-blade J onto the fixed jaw L′, and then the die S or S′ is moved longitudinally, so as to engage a tooth of the saw-blade and press the same outward. The bar R′ operates in conjunction with the file-holder G and file H, as previously described, so that the succeeding teeth are pressed alternately to the right and left by the dies S and S′. The forward feeding of the saw-blade J by the pawl P always brings the saw-blade into the proper position for the file to cut the tooth, the saw remaining in the exact position it is left by the pawl on account of the spring L^5 pressing the open jaw sufficiently tight on the blade to prevent a further forward movement than the movement given it by the pawl P.

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

1. In a saw filing and setting machine, the combination, with a pivoted guideway and a slide fitted to slide therein and provided with a file-holder, of a vertically-adjustable friction-roller engaging the said guide, a lever carrying the said friction-roller, and a cam for imparting a swinging motion to said lever, substantially as shown and described.

2. In a saw filing and setting machine, the combination, with a pivoted guideway, of a friction-roller engaging the under side of the said guideway near its free end, a frame in which the said friction-roller is journaled, and a lever mounted to swing and in which the said frame is held vertically adjustable, substantially as shown and described.

3. In a saw filing and setting machine, the combination, with a pivoted guideway, of a friction-roller engaging the under side of the said guideway near its free end, a frame in which the said friction-roller is journaled, a lever mounted to swing and in which the said frame is held vertically adjustable, and means, substantially as described, for adjusting the said frame in the said lever, as set forth.

4. In a saw filing and setting machine, the combination, with the saw-clamp having a movable and a fixed jaw, of a block carried by the movable jaw and having on its front face a guide-bar to prevent upward movement of the saw, substantially as set forth.

5. In a saw filing and setting machine, the combination, with the saw-clamp having a movable and a fixed jaw, of a block on the movable jaw and a vertically-adjustable guide-bar on the front face of the said block to prevent the saw from moving upward, substantially as set forth.

6. In a saw filing and setting machine, the combination, with the saw-clamp having a movable and a fixed jaw, of a block on the upper end of the movable jaw having a rounded surface at one end, and a feed-lever provided with a pawl to travel on said block and engage the saw-teeth, substantially as set forth.

7. In a saw filing and setting machine, the combination, with the saw-clamp having a fixed and a movable jaw, of a vertically-adjustable seat on the fixed jaw to support the saw, a block carried by the movable jaw and rounded or inclined at one end, a vertically-adjustable guide-bar on the front face of the block, and a feed-lever provided with a pawl traveling on the block to engage the saw-teeth, substantially as set forth.

8. In a saw filing and setting machine, the combination, with the saw-clamp having a fixed and a movable jaw, and a vertically-adjustable saw seat or support on the fixed jaw, of a longitudinally-adjustable block on the upper end of the movable jaw, a vertically-adjustable guide-bar on the front face of the said block to prevent upward movement of the saw, and a feed-lever having a pawl traveling along the upper edge of the said block to engage the saw-teeth, substantially as set forth.

9. The combination, with the saw-clamp, of the feed-lever P′, provided with a pawl at its front end, a slot P^4 in its rear end, a vertical pivot-stud between its ends, provided with a nut on its lower end, a transverse screw-rod engaging said nut to adjust the lever, the bracket P^5, having a flange to enter slot P^4, a pin P^2, and a cam engaging the said pin, substantially as set forth.

10. In a saw filing and setting machine, the combination, with a feed-lever carrying a pawl and a cam for imparting a swinging motion to the said lever, of an adjustable stud forming the fulcrum for the said lever and a screw-rod mounted to turn and engaging a nut on the said stud, substantially as shown and described.

11. In a saw-filing machine, a clamping device comprising a fixed jaw, a pivoted jaw provided with a spring on its lower face at its rear end, a pivoted arm N^2, having at one end a cam adapted to engage the said spring to press the said pivoted jaw toward the fixed jaw, a rotary cam, and a spring pressing the rear end of said arm N^2 upward against said rotary cam, substantially as shown and described.

WILLIAM H. PARRY.

Witnesses:
THEO. G. HOSTER,
EDWD. M. CLARK.