

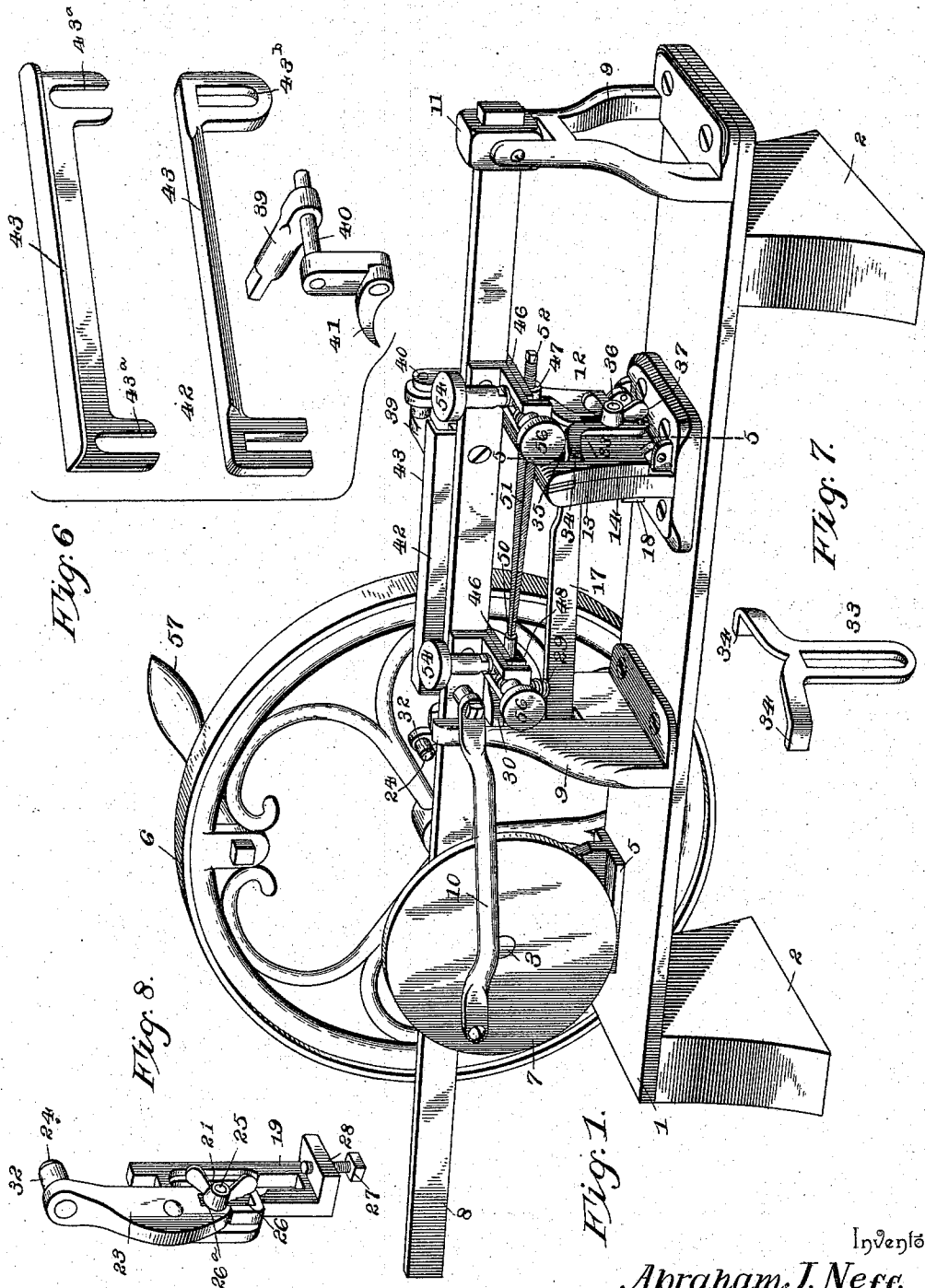
(No Model.)

2 Sheets—Sheet 1.

A. J. NEFF.
SAW FILING MACHINE.

No. 528,179.

Patented Oct. 30, 1894.



Witnesses

Charles Ford.
O. B. Hays

By his Attorneys.

Chas. Snow & Co.

Inventor
Abraham J. Neff,

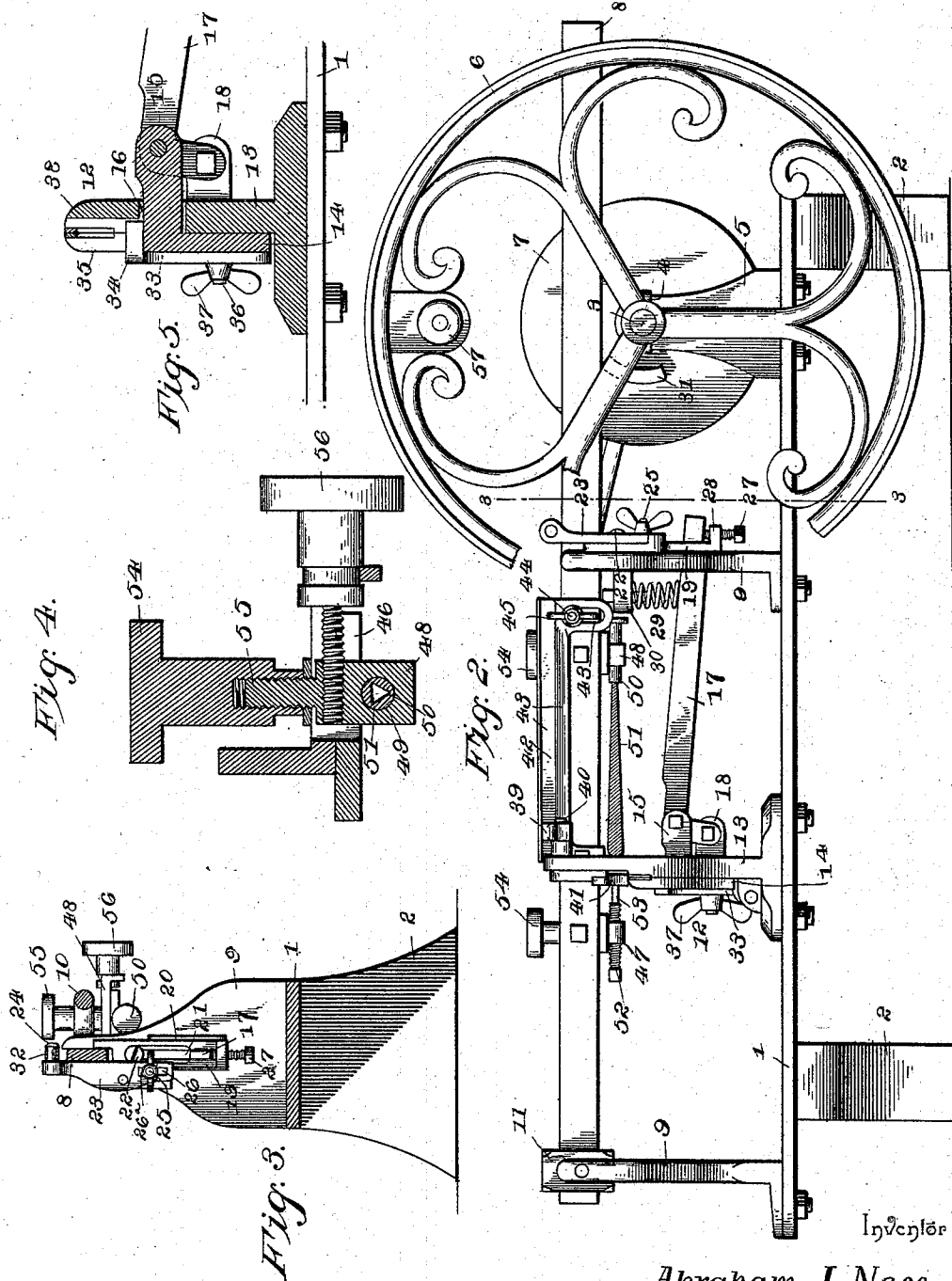
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UNITED STATES PATENT OFFICE.

ABRAHAM J. NEFF, OF GOSHEN, INDIANA, ASSIGNOR OF ONE-HALF TO
WM. B. LEHMAN, OF SAME PLACE.

SAW-FILING MACHINE.

SPECIFICATION forming part of Letters Patent No. 528,179, dated October 30, 1894.

Application filed February 24, 1894. Serial No. 501,408. (No model.)

To all whom it may concern:

Be it known that I, ABRAHAM J. NEFF, a citizen of the United States, residing at Goshen, in the county of Elkhart and State of Indiana, have invented a new and useful Saw-Filing Machine, of which the following is a specification.

My invention relates to saw-filing machines, and it has for its object to provide a simple, direct, and automatic device capable of feeding the saw, periodically opening the clamp to release the saw, and removing the file from contact with the teeth during the movement of the same to avoid scoring; and furthermore, to provide means for adjusting the various parts or the mechanism to vary the clamping action of the movable jaw of the clamp, to vary the throw of the feeding mechanism, and to alter the inclination or angle of movement of the file to suit different bevels of teeth, and also to regulate the stress of the pressure of the file upon the saw.

Further objects and advantages of my invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claim.

In the drawings: Figure 1 is a perspective view of a saw-filing machine embodying my invention. Fig. 2 is a side view showing the opposite side from that shown in the perspective. Fig. 3 is a transverse section on the line 3—3 Fig. 2. Fig. 4 is a detail sectional view of one of the file holders. Fig. 5 is a detail vertical section of the clamp. Fig. 6 is a detail perspective of the feeding mechanism, with the parts detached. Fig. 7 is a detail detached view of the saw-support. Fig. 8 is a similar view of the connection between the file-carrying bar and the clamp-operating lever.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

1 designates the base of the machine, which in the construction illustrated in the drawings is elevated upon the pedestals 2.

3 represents the drive-shaft journaled in a bearing 4 at the upper end of the standard 5 and carrying the fly or driving-wheel 6, and 7

represents a crank-disk fixed to the opposite end of said driving-shaft.

8 represents a slidable file-carrying bar, mounted to operate in bearings at the upper ends of the uprights 9, and connected by means of a pitman 10 with the crank disk 7, the bearing for the file-bar in the upright adjacent to the crank-disk being slotted to allow vertical movement of the rear end of the file-bar, and a rocking or pivotal bearing-box 11 being provided in the other upright to enable the file-bar to vibrate without binding.

12 represents the saw-clamp having the fixed jaw 13 and the movable or hinged jaw 14, the latter being provided with a stem 15 which projects through an opening 16 in the fixed jaw, and 17 represents a clamp-operating lever, which is of the bell-crank order, and is fulcrumed to a bracket 18 arranged upon the fixed jaw of the clamp, its angle being pivotally connected to the extremity of the stem 15.

A vertical slide 19 is mounted upon the upright 9 adjacent to the crank-disk between the parallel guide-ribs 20, and is provided with a central slot 21 through which extends the long arm of the clamp-operating lever 17, a fixed stop 22 on the upright fitting in the upper end of the same slot to limit the downward movement of the slide. The arm 23 which forms a part of the slide and which carries a stud 24 projecting over the upper edge of the file-carrying bar, is preferably formed separate from the body-portion of the slide and is adjustably secured thereto by means of an adjusting bolt 25, which is arranged in a slot 26 in the body-portion of the slide and is adapted to engage a notch 26* in the lower end of the arm, the latter being pivotally connected to the body-portion, whereby it may be swung away from and out of contact with the file-carrying bar.

With a uniform grade of saws the clamp will operate satisfactorily with the above described mechanism, but when the thickness of the saws which are sharpened varies it is desirable and necessary to provide means for adjusting the position of the long arm of the clamp-operating lever with relation to the slide, and this I accomplish by means of a

set-screw 27, arranged in an off-set 28 at the lower end of the slide and forming a rest for the end of the lever. I also employ a return spring 29, arranged between the upper side of the clamp-operating lever and an off-set 30 on the upright, to depress the lever after each operation.

The file-carrying bar is elevated to open the clamp by means of a cam 31 carried by the crank-disk and an antifriction roll 32 is mounted on the stud 24 to avoid friction during the forward movement of the file-carrier.

To regulate the height of the saw in the clamp and provide for the desired pressure of the file upon the teeth thereof, I employ an adjustable support 33, comprising a Y-shaped plate, provided at the terminals of its arms with projections 34 which are fitted in vertical slots 35 formed in the hinged jaw of the clamp, the stem of said plate being slotted for the reception of a threaded stud 36 which is engaged by a set-nut 37. The supporting projections 34 at the terminals of the arms of the Y-plate are of sufficient length to remain under the saw during the movement of the hinged jaw of the clamp, and the fixed jaw is provided in registration with the slots 35 with corresponding grooves 38 for the passage of the ends of said projections.

The feeding mechanism comprises a bell-crank lever 39, the arms of which are preferably off-set, as shown, and connected by a rock-shaft 40, a gravity pawl 41 pivotally connected to and carried by one of the arms, and a cam or inclined guide 42 carried by the file-carrying bar and engaging the other arm. This inclined guide consists of a plate provided with parallel upper and lower flanges 43 between which the extremity of the horizontal arm of the bell-crank lever fits and operates, and in order to vary the throw of the feeding mechanism, to provide for teeth of different sizes or arranged at different intervals, I attach said guide adjustably to the bar, whereby its inclination with relation thereto may be altered. In the drawings I have illustrated a simple means of accomplishing this adjustment, consisting in slotting both ends of the guide, as shown at 43^a, and in order to enable the interval between the flanges 43 to be regulated to suit the thickness of the arm of the bell-crank lever, and compensate for wear, the lower flange may be made separate from the upper flange and provided with corresponding slots 43^b, as shown in the drawings. Said slots are engaged by threaded studs 44 and the parts are held at the required adjustment by thumb-nuts 45.

Projecting laterally from the file-carrying bar are twin pairs of ears 46, the members of each pair being arranged parallel, and suitably mounted between and projecting below said ears are the file-holders 47 and 48, consisting of angular blocks arranged between the ears and provided below the plane of their lower edges with horizontal perfora-

tions. In the perforation of the file-holder 48 is arranged a horizontal socket 50 having an angular bore to receive the angular end of the file 51, and in the perforation of the file-holder 47 is arranged an adjustable threaded socket 52 provided with a round bore to receive the stem or shank 53 of said file. Clamping nuts 54 are threaded upon pins 55 at the upper ends of the file-holders to lock the blocks at the desired points of the ears to secure the desired inclination of the file, and adjusting screws 56 are revolvably mounted at the ends of the ears and threaded in said blocks whereby the latter may be arranged accurately to secure the desired inclination of the file previous to clamping.

This completes the description of the construction of my improved saw-filing machine, and the operation thereof, briefly stated, is as follows: The rotation of the fly-wheel or driving wheel, which may be provided with a handle 57, as shown, communicated through the crank-disk and pitman causes a reciprocation of the file-carrying bar. During the forward movement of the bar the file is in contact with the subjacent tooth of the saw, the degree of pressure thereon being regulated by the adjustment of the saw-supporting plate 33, but after the bar has reached the limit of its forward movement its rear end is elevated by the cam 31, thereby removing the file from contact with the saw during its backward movement. The elevation of the rear end of the file carrying bar causes the elevation of the slide 19, the operation of the clamp-operating lever, and the opening of the clamp, thus releasing the saw, which during the forward movement of the file is firmly locked by the pressure of the spring 29. During the backward movement of the file-carrying bar the inclined guide 42 elevates the arm of the pawl-operating lever which is engaged therewith, and thus while the saw is released by the clamp it is fed forward the distance necessary to bring the next tooth into position to be operated upon by the file in its succeeding forward movement.

It will be understood that various changes in the form, proportion and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

Having thus described my invention, what I claim is--

1. In a device of the class described, the combination with a file-carrying bar, a driving shaft operatively connected to said bar, and means whereby the bar is elevated at one end during its return movement, of a saw-clamp, a clamp-operating lever provided with an actuating spring, a slide connected to the lever and provided with a stud arranged in the path of the bar during its vertical movement, and a feeding-mechanism operatively connected to the bar, substantially as specified.

2. In a device of the class described, the combination with a file-carrying bar, a driving

snapt, operating connections and means for elevating one end of the said bar during its return movement, of a saw-clamp, a clamp-operating lever provided with an actuating spring, a slide connected to said lever and provided with a pivotal arm 23 carrying a stud which may be arranged in the path of the said bar, and feeding mechanism operatively connected to the bar, substantially as specified.

3. In a device of the class described, the combination with a file-carrying bar and means for reciprocating the same, and a saw-clamp arranged in operative relation with said bar, of a pawl-carrying rocking lever and a guide carried by the file-carrying bar and having parallel flanges engaging an arm of said lever, substantially as specified.

4. In a device of the class described, the combination with a file carrying bar, a driving shaft operatively connected to said bar, and means for elevating the bar at one end during its return movement, of a saw-clamp, a clamp-operating lever provided with an actuating spring and connected at one end to a movable member of the said clamp, a slide provided with a stud arranged in the path of the file-carrying bar, whereby the slide is moved longitudinally as the file-carrying bar is elevated, and a screw 27 carried by the slide and engaging the adjacent end of the clamp-operating lever, substantially as specified.

5. In a device of the class described, the combination with a file-carrying bar, and means for reciprocating the same, and a saw clamp arranged in operative relation with said bar, of a pawl-carrying lever, and a guide carried by the file-carrying bar and comprising independent flanges provided with trans-

versely slotted extremities, and threaded studs engaging the slots in the extremities of the flanges and engaged by thumb-nuts, whereby the flanges are capable of joint and independent adjustment to vary the interval therebetween and to vary their inclination to adjust the throw of the pawl-carrying lever, one arm of the latter being engaged between said flanges, substantially as specified.

6. In a device of the class described, the combination with a file-carrying bar and means for operating the same, of file holding devices consisting of twin pairs of parallel ears fixed to the side of said bar, perpendicular to the plane thereof, file-holders slidably arranged between said ears, and means for adjusting the holders to vary the horizontal inclination of the file, substantially as specified.

7. In a device of the class described, the combination with a file-carrying bar and means for operating the same, of file-holding devices comprising parallel ears arranged in pairs upon the side of the said bar, file-holders consisting of blocks slidably fitted between said ears and having depending sockets to receive the terminals of a file, adjusting screws mounted between the outer ends of the ears and threaded in perforations in the block portions of the holders, and clamping screws carried by the blocks and adapted to secure the same at any desired adjustment, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

ABRAHAM J. NEFF.

Witnesses:

C. J. CREGIER,
H. D. WILSON.