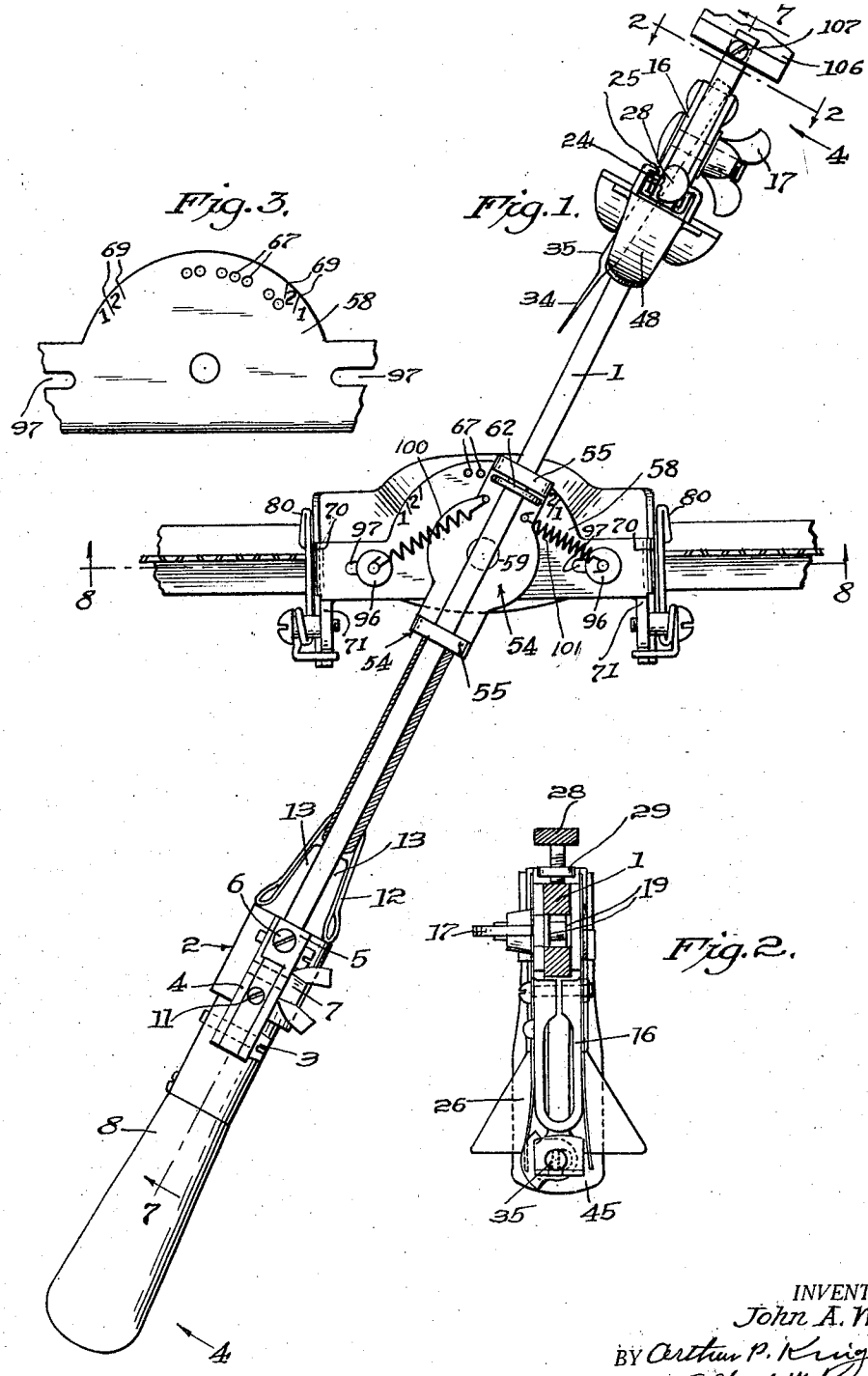
March 7, 1933. J. A. WALLER 1,900,084

SAW FILING DEVICE

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SAW FILING DEVICE

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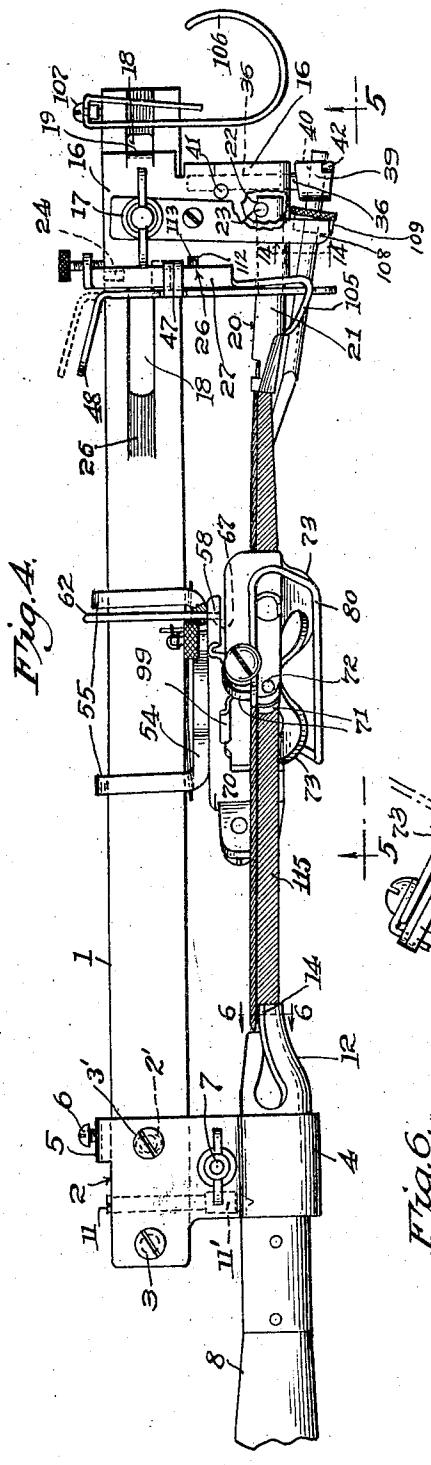


Fig. 4.

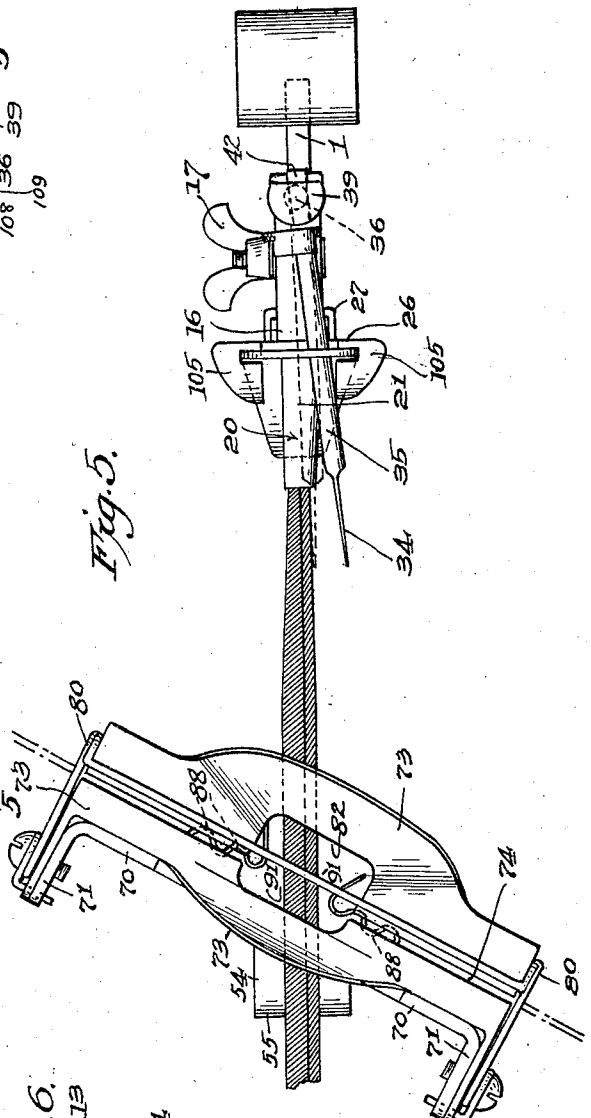


Fig. 5.

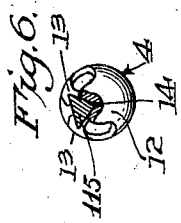


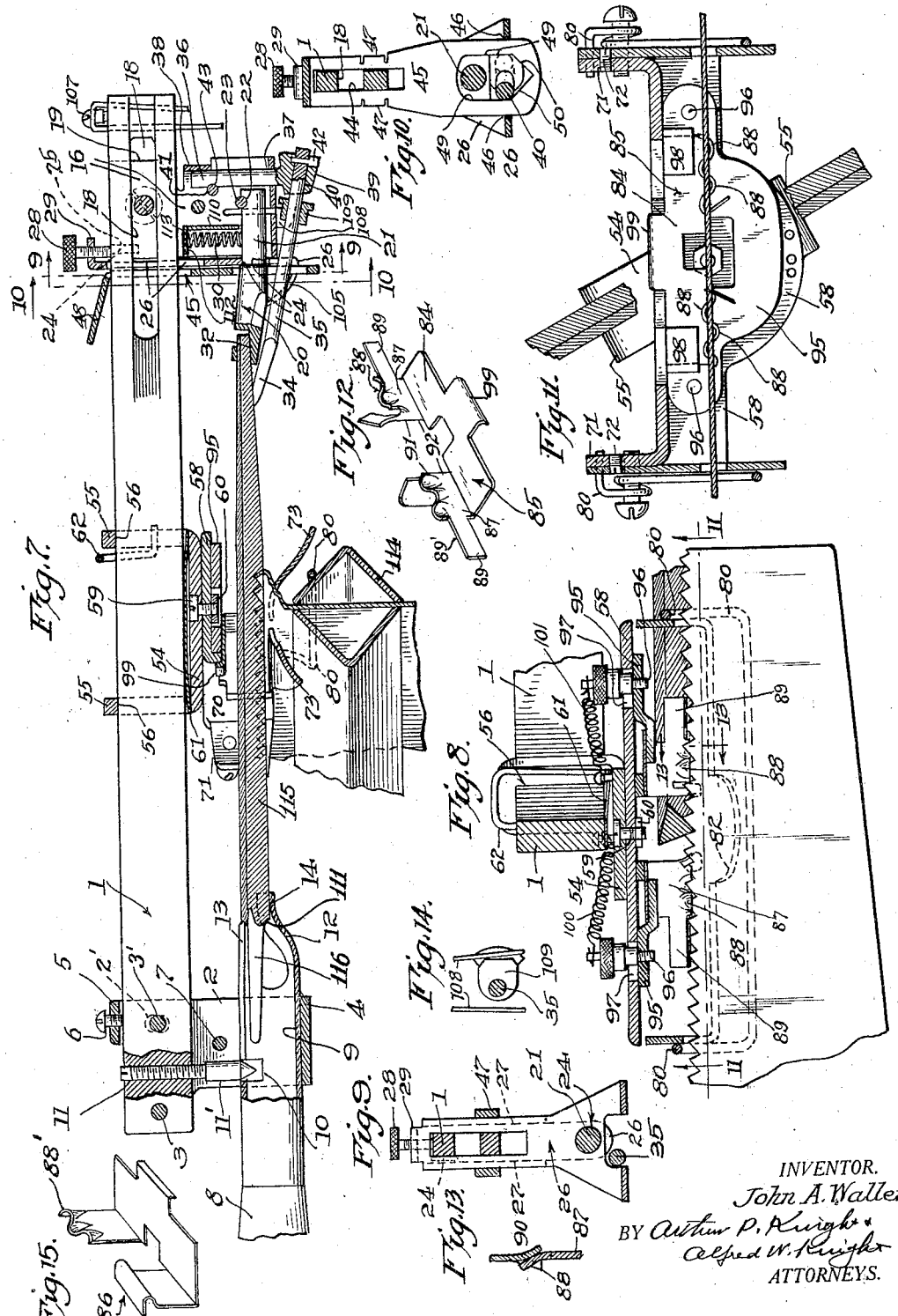
Fig. 6.

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SAW FILING DEVICE

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UNITED STATES PATENT OFFICE

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SAW FILING DEVICE

Application filed December 24, 1930. Serial No. 504,466.

This invention relates to means for filing the teeth of saws, and the main object of the invention is to provide a device for this purpose which will be effective, convenient and accurate in operation, and simple in construction.

A further object of the invention is to provide simple and effective means for performing the necessary adjustments required for operation of the device.

The accompanying drawings illustrate embodiments of my invention, and referring thereto:

Fig. 1 is a plan view of the device.

Fig. 2 is a section taken on line 2—2 in Fig. 1.

Fig. 3 is a plan of the control plate for horizontal angular adjustment of the device.

Fig. 4 is a side elevation of the device.

Fig. 5 is an inverted plan view taken from the line 5—5 in Fig. 4.

Fig. 6 is a vertical section on line 6—6 in Fig. 4.

Fig. 7 is a vertical section on line 7—7 in Fig. 1.

Fig. 8 is a section on line 8—8 in Fig. 1.

Fig. 9 is a section on line 9—9 in Fig. 7.

Fig. 10 is a section on line 10—10 in Fig 7.

Fig. 11 is a section on line 11—11 in Fig. 8.

Fig. 12 is a perspective view of the positioning means for engaging with the teeth of the saw to properly position the device thereon, said means being shown in inverted position.

Fig. 13 is a section on line 13—13 in Fig. 8.

Fig. 14 is a section on line 14—14 in Fig. 4.

Fig. 15 is an inverted perspective view of a modification of the positioning means, adapted for use with rip saws.

The device comprises a file-carrying frame provided with handle means, and with means for mounting a file thereon, and a supporting device adapted to be mounted upon the saw and provided with means for mounting and guiding the file-carrying frame.

The file-carrying frame may comprise a longitudinal member 1 formed preferably as a rectangular bar of steel, and a vertical bracket member 2 secured to said bar by screw 3, said member 2 consisting for example of a single piece of steel bent at its lower end to form a cylindrical sleeve 4 and having two side portions extending upwardly from said sleeve and embracing the bar 1, the screw 3 extending through said side portions and through said bar so as to form a pivotal connection therebetween. Another screw 3′ extends through member 1 and through slots indicated by dotted lines at 2′ in Figs. 4 and 7, in member 2. Said slots permit a limited pivotal movement of member 1 on pivot screw 3. One of said side portions of the member 2 is bent over the top of the bar 1, as shown at 5, and a screw 6 is screwed through said portion 5 and engages with the top of the bar 1 to adjust the vertical angular position of member 2 with respect to bar 1. A clamp screw 7 extends through one of the side portions of member 2 and screws into the other of said side portions, so as to clamp the member 2 on bar 1, when so desired.

A handle 8 is provided with a cylindrical shank portion 9 fitting in the sleeve portion 4 of member 2 and provided with a circumferentially extending slot 10 engaged by a head 11′ on a screw 11 mounted in a tapped opening in the bar 1, so as to hold the handle against endwise movement while permitting rotation thereof through a limited vertical angle in a plane transverse to the axis of the handle.

The handle 8 is also provided with file clamping means consisting preferably of a single lower spring jaw 12 and two upper spring jaws 13, said spring jaws being for example formed as extensions of the shank portion 9 aforesaid, and being suitably temperd to provide the necessary resilience. The lower spring jaw 12 extends beyond the upper spring jaws 13 and is formed with a V-shaped trough 14 (see Fig. 6) adapted to receive and fit the larger end of a three cornered file, and the upper spring jaws 13 are adapted to engage above and on either side of the shank of such a file, so as to hold the file firmly in position when it is forced endwise into position between the spring jaws.

At the end of the bar 1 remote from the handle, an adjustable file clamp is provided consisting for example of a U-shaped plate

16 whose side portions embrace the bar 1 and are gripped thereto by a clamp screw 17 extending through a longitudinal slot 18 in the bar 1, so as to provide for longitudinal movement of the clamp means on said bar. The side plates of member 16 are provided with inturned lugs 19 adapted to engage grooves 18 in bar 1 to guide member 16 on said bar. A file clamp member 20 is mounted within the bend of the U-shaped member 16 in such manner as to permit it to turn therein and to have a limited vertical movement. For this purpose said member 20 may be provided with a transverse notch 22 in its upper face engaged by a pin 23 secured to and extending between the vertical side portions of the U-shaped member 16, said pin holding member 20 from longitudinal movement but permitting a limited vertical movement on the bend of member 16 as a fulcrum. Said member 20 has a round shank 21 which fits rotatably in an opening 24 (see Fig. 10) in a vertical adjusting plate 26 which is provided with side flanges 27 having lug 24 engaging groove 25 in the U-shaped member 16, so as to guide the member 26 on member 16, the shoulder of shank 21 assisting in such guidance. A screw 28 working in a lug 29 at the upper end of member 26, engages the top of bar 1 to adjust the vertical position of member 26, a spring 30 being mounted between side portions of U-shaped member 16 and engaging at its upper end with a flange 113 on a member 110 mounted on bar 1 and at its lower end with the file clamp member 20, so as to tend to hold said file clamp and member 26 downwardly. The file clamp jaw 20 is provided at its outer end with a triangular recess 32 adapted to engage and fit the pointed or smaller end of a three cornered file.

Means are also mounted on the member 16 for engaging the teeth of the saw to advance the file carrier step by step along the saw, so as to file successive teeth or successive alternate teeth in sequence. Said means may consist of a rod or finger 35 provided with a spur 34 and pivotally mounted on the member 16 so as to swing horizontally thereon by means of a swivel pin 36 mounted in bearings 37 and 38 in member 16, and carrying a head 39 provided with a bore 40 in which the rod 35 is mounted, said rod being held in position in said head by pin 42. A cross pin 41 on member 16 engages a groove 43 in swivel pin 36, to hold the latter in proper vertical position and in contact with bearing 38. A control plate 45 is mounted on guide plate 26 by means of slots 46 in plate 26, in which plate 45 is adapted to slide by lugs 47 extending from said member 45 and slidably engaging the slide flanges 27 aforesaid on member 26, so as to permit vertical movement of member 45 while preventing horizontal movement thereof. Plate 45 has a slot 44 slidably fitting on bar 1, and is provided at its upper end with an inclined projection 48 for a purpose hereinafter explained. Said control plate is provided at its lower portion with an aperture 49 (see Fig. 10) through which pass the file clamp jaw 20 and the rod 40, the lower face of said aperture being formed in V-shape or with inwardly and downwardly inclined cam faces 50 adapted to engage the rod 40 as hereinafter described. Springs 108 are mounted on members 16 and engage with a cam 109 on rod 40, so as to tend to force the rod 40 toward the other side of said aperture and thereby hold the spur 39 at the outer end of said rod in proper position for the feeding operation.

A supporting and guiding means is provided for the file carrier and comprises a yoke 54 with upturned ends 55 slotted as at 56 to engage and slide on the bar 1, and a supporting member comprising a horizontal plate 58 on which the member 54 rests, said member 54 being provided with a central stud 59 extending through said plate 58 and provided with a nut 60 at its lower end adapted to retain the member 54 on the plate 58 while permitting relative rotation of said members. A friction spring 61 may be provided on member 54 engaging bar 1. Said members 54 and 58 may be held in any desired relative angular position by means of a spring catch 62 mounted on member 54 and formed as a wire bent in U-shape having its free end extending through an opening 66 in member 54 and adapted to extend into any one of a series of perforations 67 in member 58, said perforations 67 being arranged in an arc concentric with the pivotal center of member 54. If desired, marks indicated at 69 may be provided on the member 58, said marks reading in connection with one or the other side of the member 54 to indicate the angular position.

The supporting member 58 is preferably formed with downturned flanges 70 having rearwardly extending lugs 71 on which is pivotally mounted by screws 72 a guide plate 73 which extends under the member 54 and is provided with a longitudinal slot 74 extending diametrically under the pivotal center 59 aforesaid, this slot being adapted to embrace the saw blade and to bring the device approximately to aligned position over such blade. A spring formed, for example as a bail 80 of spring wire, is attached at its ends to screws 72 aforesaid and extends longitudinally beneath the guide plate 73 in position to resiliently engage a suitable support such as a saw clamp for the purpose hereinafter set forth. The guide plate 73 is preferably cut away at its central portion as shown at 82, to provide for free operation of the file.

Positioning means is preferably mounted on the supporting plate 58 to engage with the teeth of the saw so as to definitely position

the file carrier with respect to said teeth. For this purpose I prefer to provide a positioning element indicated at 85 and shown separately in Fig. 11, said positioning element being formed for example as a plate 84 adapted to be secured to the member 58 and having downturned flanges 87 which are corrugated or ruffled as shown at 88, the depth and spacing of the corrugations corresponding to the set and spacing or pitch of the saw teeth so that when the said positioning element is placed over the saw teeth, the corrugations at the lower edge of said element will fit on and between the respective saw teeth and will correctly position the device attached to said element with respect to said teeth. The engagement of the corrugated edges of member 85 is with the inclined portions of the teeth intermediate the points and the bottoms of the teeth so as to avoid injury to the points. The lower edges of the said corrugated portions 88 are preferably beveled as indicated at 90 to correspond to the beveled edges of the saw teeth, so as to more closely fit the same. At the central portion of the positioning element the corrugated members aforesaid are cut away as shown at 91 in Fig. 11 to provide space for operation of the file, and the inner portion 92 of the flanges 87 adjacent such cut, are bent obliquely outward and forward, as shown. Each flange 87 of the positioning element is provided with an extension 89 having a straight edge, preferably formed as a knife edge 89′ (see Figs. 8 and 12) adapted to ride between the tips of the reversely set saw teeth, to properly align the device.

In order to adapt the device for operation of saws of different pitch or tooth spacing, it is desirable to provide a plurality of positioning elements having their corrugated portions differently spaced in accordance with the different saws to be operated upon, means being provided for removably and interchangeably mounting the same on the file carrier support. Said mounting means may comprise a plate 95 slidably mounted below and in contact with the supporting plate 58 by means of screws 96 extending through slots 97 in plate 58 and screwing into the plate 95. Lugs 98 are provided on the plate 95 and the horizontal portion 84 of the positioning element is adapted to be inserted between said lugs and the plate 95 and has a rearward projection 99 which is bent down at the end thereof to engage back of the member 58 so as to retain the positioning element in position.

It will be understood that by loosening the clamp screws 96, the plate 95 may be separated from the member 58 sufficiently to enable the projection 99 to be disengaged from the back of member 58, and the positioning element 85 may then be removed and replaced by another positioning element which is then secured in position by tightening the clamp screws 96 so as to hold the projection 99 in engagement with the back of member 58. Lugs 105 extend upwardly from the plate 26 and are adapted to engage the member 73 at the completion of the rearward stroke of the device, to hold the member 73 down, while the file is being raised as hereinafter described.

When the operation of the device is to be reversed in filing alternate saw teeth, it is necessary to provide for a shift of the positioning element. For automatically effecting such shift, springs 100 and 101 are connected to the plate 95 and to the member 54 as shown in Figs. 1 and 7, the connection of said springs to member 54 being off center so that when the bar 1 with attached parts is swung to one side or the other of a plane perpendicular to the axis of the plate 58, the said springs will cause a corresponding shift in the plate 95, the screws 96 being provided with reduced portions 102 slidably engaging the slots 97 aforesaid in plate 58 and with shoulders 104 below said reduced portions whereby each screw may be tightened on the plate 95 while leaving the screw free to slide with respect to supporting member 58.

For use with rip saws, a modified form of the positioning means, as shown in Fig. 15 may be used, comprising a corrugated portion 88′ adapted to engage with the teeth that have been filed, and a flat portion 86 adapted to ride the teeth in advance of the saw file.

A hand-hold 106 is preferably mounted, for example, by a clamp screw on the outer end of bar 1 to facilitate manipulation of the device.

The operation of the device is a follows: The saw to be filed is mounted in a suitable support, for example, a clamp such as indicated at 114 in Fig. 7, and the device is assumed to be provided with a positioning element 85 corresponding to the pitch or tooth spacing of the saw. The clamp screw 17 for member 16 having been loosened, said member 16 is moved outwardly on bar 1 sufficiently to permit insertion of the file indicated at 115 and the shank of said file indicated at 116 is then inserted between the spring jaws 12 and 13. The shoulder 111 at the base of the file shank engages the ends of the spring jaws 13 and the base portion or larger end portion of the file rests in the V-shaped notch in the lower spring jaw 12. Clamp member 16 is then moved inwardly so as to bring the recess 32 at the end thereof into engagement with the smaller end of the file. The handle 8 is then turned so as to bring one face of the file in position for filing the forward faces of the respective saw teeth and the adjacent face of the file in position to file the rearward faces of said teeth. The recesses 14 and 32 in the respective file clamp means 12 and 20 are so positioned that when the file is held

therein, its lower edge will be substantially in a line joining the centers of rotation of the handle 8 and a member 20, and in the vertical plane of the axis of pivot 59. By means of screws 6 and 28, the respective members 2 and 16 may be adjusted so as to bring the lower edge of the file approximately parallel to the bar 1. The plate 58 is then angularly adjusted on the supporting member 54 by the means above described so as to correspond to the angle at which the teeth are to be filed, and the device is placed over the upper edge of the saw while the latter is supported in the clamp, the portions of the guide plate 73 at either side of the slot 74 embracing the upper edge portion of the saw and the corrugated lower edge of the positioning element 85 engaging on and between the saw teeth so as to position the supporting means both laterally and longitudinally with respect to the saw teeth. The spring means 80 is adapted to rest on the top of the saw clamp so as to exert an upward pressure on the file carrier, it being understood that in the filing operation the file carrier is pressed downwardly by the operator in opposition to this upward pressure so that the force of the filing operation may be modified as desired and the filing pressure may be relieved if desired on the back stroke.

The parts having been adjusted as above described, the filing operation is effected by moving the device by the handle 8, assisted by pressure on the outer or remote end of the device, such movement consisting of the longitudinal reciprocation of the bar 1 and attached parts with respect to the supporting means 54 thereby causing the two lower faces of the file to engage and file corresponding faces of the saw teeth. When any particular filing operation has been completed, as evidenced by the lack of resistance to the motion of the device, the device is drawn somewhat farther on its back stroke so as to cause the upper edge of one of the vertical end portions 55 of member 54 to engage the inclined projection 48 on the control plate 45 so as to raise said plate and cause an inclined face 50 thereof to engage the rod 35, forcing it inwardly so that the spur 34 thereon is brought into position to engage between two of the teeth of the saw with the result that in the next forward stroke of the device the operation of the spring 108 will cause the rod 35 to move relative to the file carrier and thereby cause the file carrier to advance, say two teeth, along the saw, the device being then in position for repetition of the operation on such new set of teeth. When the alternate saw teeth are to be filed, the member 58 is angularly adjusted by means 62 on the support 54 to a reverse angular position, and the said rod or finger 35 is manually shifted to the other side of the file clamp 20, and the cam 109 is then rotated on rod 40 to shift its engagement from one to the other of the springs 108 and to tend to move the spur 34 in a direction to advance the file reversely along the saw. The handle 8 is also turned through a sufficient angle to bring the two lower faces of the file in proper position to file in such reverse direction. The slot 10 in the shank portion of the handle is preferably formed so as to engage with the screwhead 11′ to limit the rotation of the file in either direction to the proper angle required for filing in one or the other direction on the saw.

I claim:

1. A saw filing device comprising a file carrier consisting of a longitudinal member and file clamps mounted on said longitudinal member and adapted to engage and hold the file, guiding means in which said longitudinal member is slidably mounted, a member pivotally mounted on one of said clamp members so as to swing transversely to said longitudinal member and provided with means for engaging the teeth of the saw and with a spring for moving it to effect advance of the file carrier upon such engagement, and a control member mounted adjacent said advance effecting means and provided with inclined faces for moving said advance effecting member inwardly against the action of said spring and provided with an inclined member adapted to be engaged and operated by the aforesaid guiding means for the longitudinal member of the file carrier, to effect the operation of said controlling member at the end of a complete stroke of the longitudinal member on the guiding means.

2. A construction as set forth in claim 1, in which said advance effecting member is moved to either side of the file carrier, and the said controlling member therefor is provided with oppositely inclined faces for cooperation with said advance effecting member when at either side of the file carrier, and the operating spring for said advance effecting member is adjustable to either side of said slot to cause movement of the advance effecting member away from central position at either side.

3. In a saw filing device, a file carrier, a guide member on which said carrier is slidably mounted, a supporting member on which said guide member is pivotally mounted, and a positioning element mounted on said supporting member and provided with corrugated lower edge portions adapted to engage the teeth of the saw to position the file carrier support longitudinally and laterally with respect to the saw tooth.

4. A construction as set forth in claim 3, in which said positioning element is detachably mounted on the supporting member.

5. A construction as set forth in claim 3, in which the said corrugated edge portions are constructed and adapted to engage the inclined portions of the saw teeth intermedi-

ate the points and the bottoms of the teeth.

6. A construction as set forth in claim 3 and comprising in addition, means for automatically shifting the positioning means on the supporting member, longitudinally of the saw, when the guiding member for the file carrier is pivotally shifted in the supporting member.

7. A construction as set forth in claim 3 in which said positioning element is provided with extensions having straight edges adapted to rest on the saw teeth adjacent the tips thereof.

In testimony whereof I have hereunto subscribed my name this 17th day of December, 1930.

JOHN A. WALLER.