Aug. 22, 1933. L. LOIBL 1,923,445

FILING DEVICE

Filed April 15, 1931 3 Sheets-Sheet 1

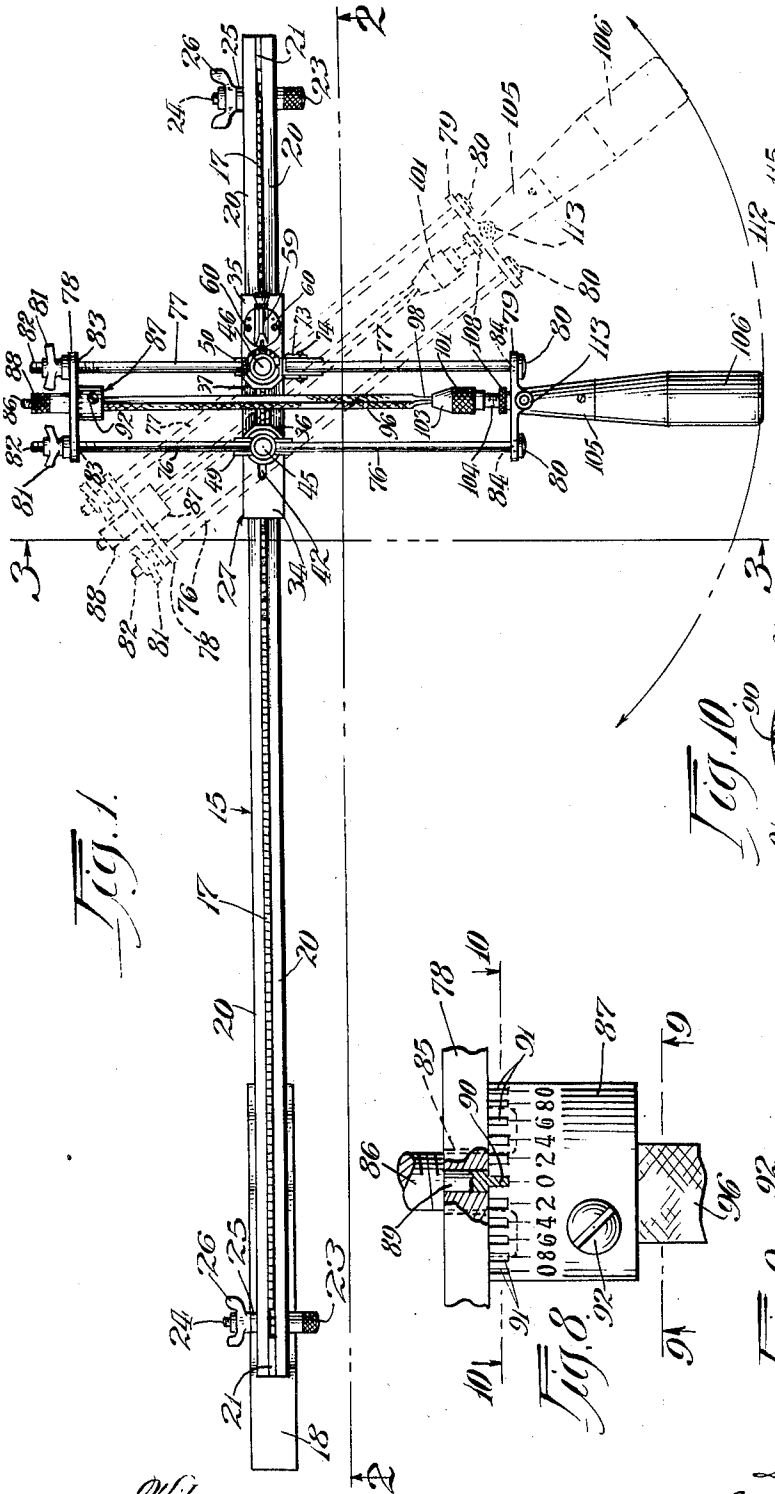


Fig. 1.

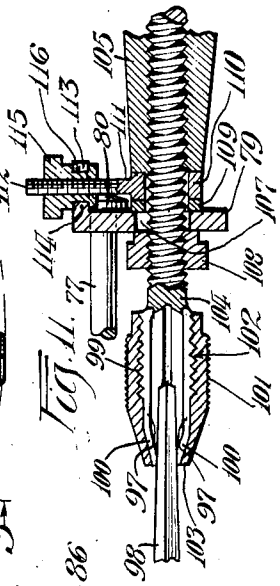


Fig. 11.

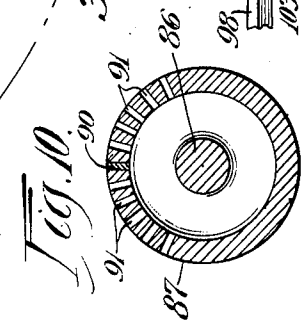


Fig. 10.



Fig. 8.

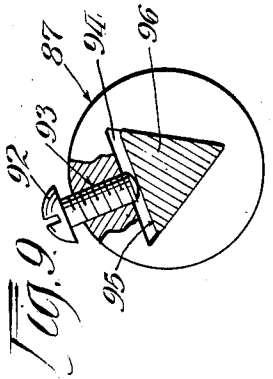


Fig. 9.

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FILING DEVICE

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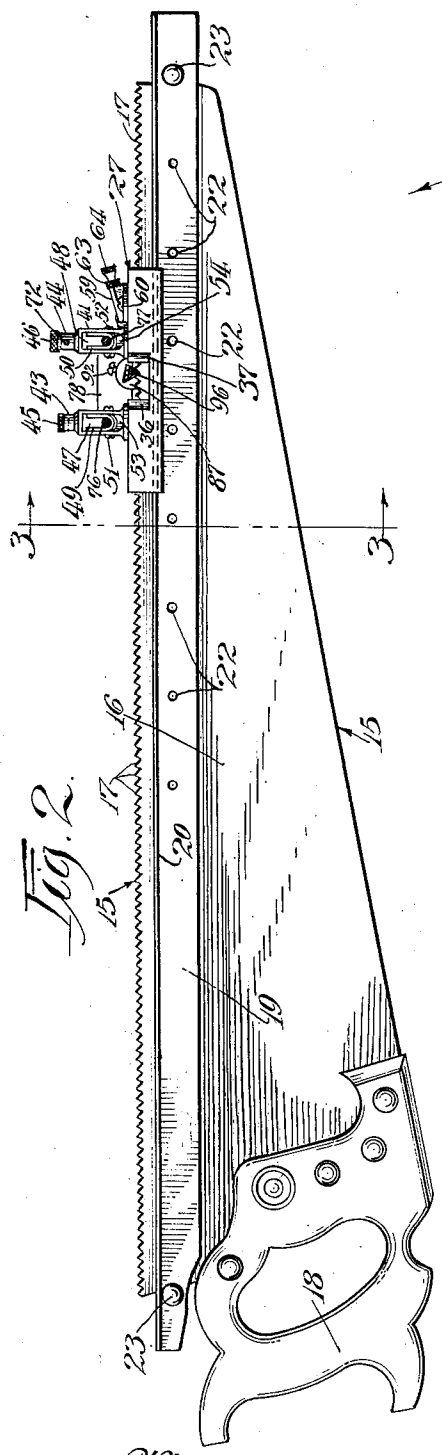


Fig. 2.

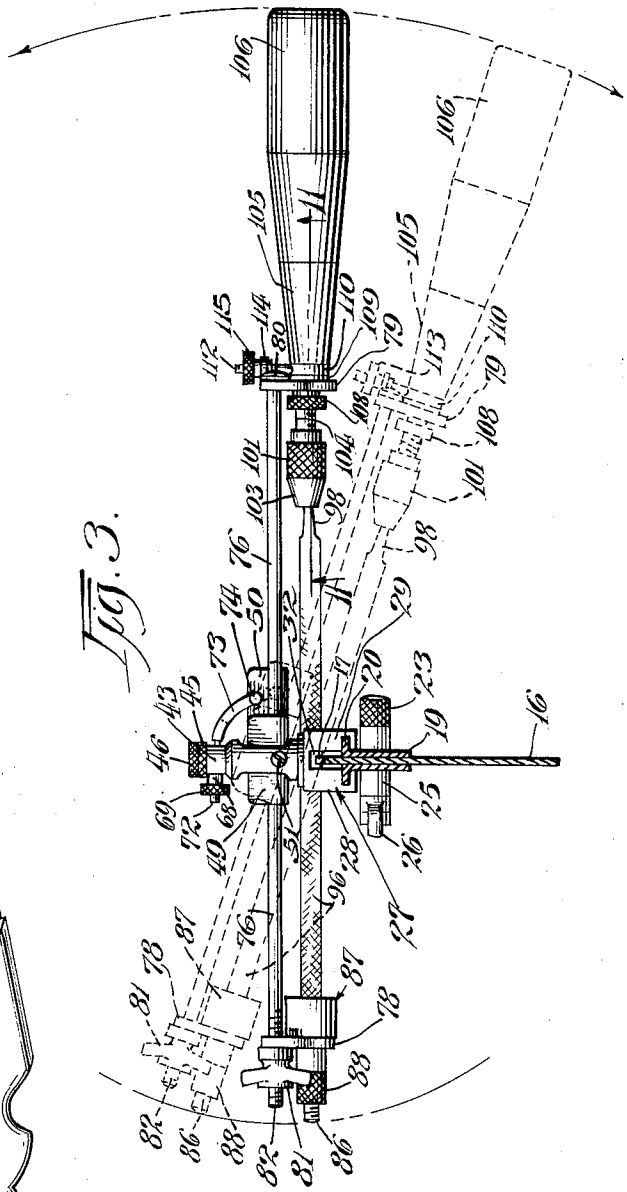


Fig. 3.

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Aug. 22, 1933. L. LOIBL 1,923,445

FILING DEVICE

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Fig. 4.

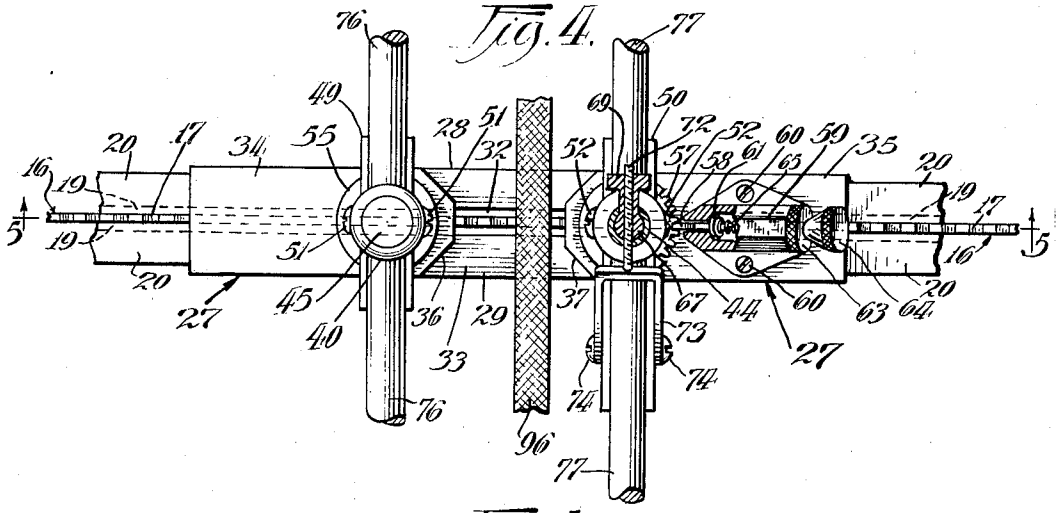


Fig. 5.

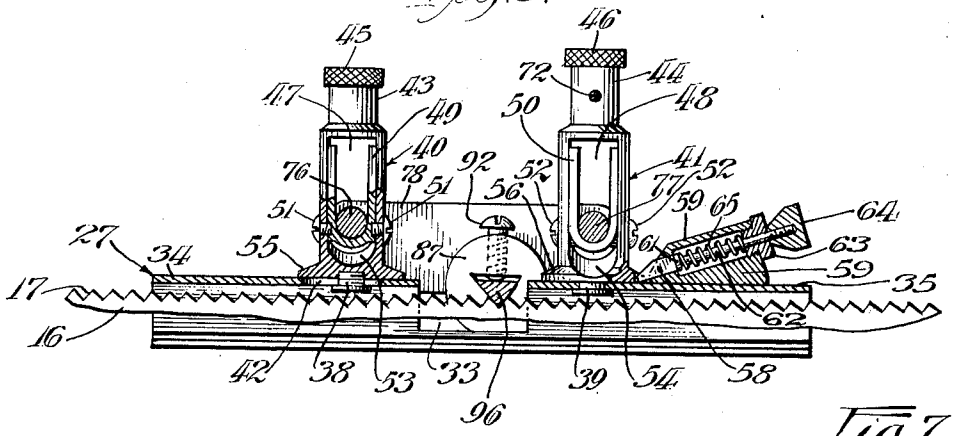


Fig. 7.

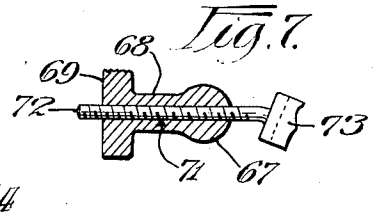
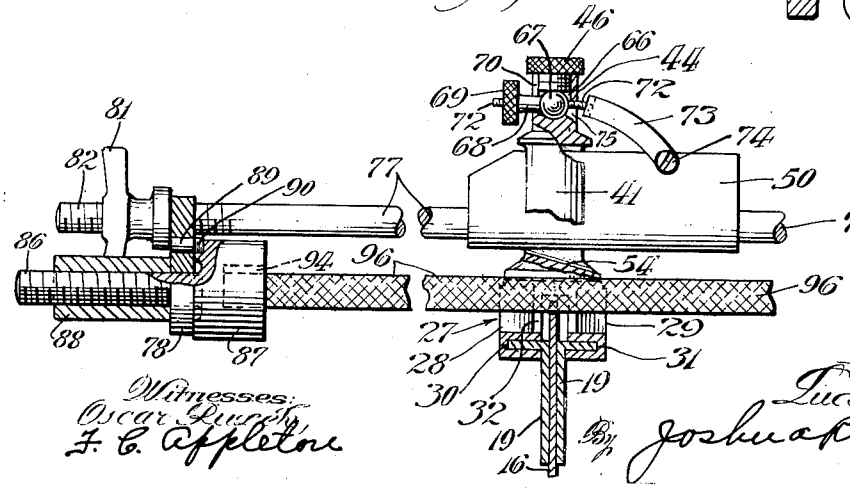


Fig. 6.



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Patented Aug. 22, 1933 1,923,445

# UNITED STATES PATENT OFFICE

1,923,445

## FILING DEVICE

Ludwig Loibl, Chicago, Ill.

Application April 15, 1931. Serial No. 530,353

8 Claims. (Cl. 76—31)

This invention relates to improvements in filing devices and the like, and more particularly to improved means for filing the teeth of the ordinary saw. An object of the invention is the provision of improved means for positioning a filing mechanism in a desired relation to the teeth of a saw to be filed and maintaining the mechanism in a definite relationship to the saw, to the end that the teeth of the saw may be filed more uniformly and speedily than heretofore. Another object is the provision of improved mechanism for positioning the filing mechanism in all the usual relationships to a saw to be filed and maintaining the said relationships so that the teeth of a saw may be filed in practically every conceivable manner desired with increased accuracy, uniformity and speed.

The invention also has for an object the provision of mechanism for accomplishing the said results which will be simple of construction, easy of manufacture and relatively inexpensive.

These and other advantages and objects of my invention will appear from the specification hereinafter set forth, and in which

Fig. 1 is a plan view of the device applied horizontally and transversely to the ordinary saw;

Fig. 2 is an elevational view of the same;

Fig. 3 is an elevational view of the sliding carriage and the incidental mechanism;

Fig. 4 is a plan view, partly in section, disclosing the means for attaining the transverse horizontal adjustment of the file;

Fig. 5 is an end view, partly in section, of the same, taken on the line 5—5 of Fig. 4;

Fig. 6 is an elevational view, partially in section, of a part of the sliding carriage mechanism, showing the means for attaining transverse longitudinal angular adjustment of the device and the rotative adjustment of the file on the device;

Fig. 7 is a detail sectional view showing one of the elements of the mechanism shown in Fig. 6 in enlarged form;

Fig. 8 is a plan view, partly in section, illustrating on an enlarged scale the file adjusting lockhead;

Fig. 9 is a sectional view, taken on the line 9—9 of Fig. 8;

Fig. 10 is a sectional view, taken on the line 10—10 of Fig. 8; and

Fig. 11 is a sectional view, taken on the line 11—11 of Fig. 3, of the chuck and truing mechanism for the file.

The preferred form of construction as illustrated in the drawings is displayed in cooperation with the usual saw 15 having a blade 16, teeth 17, and a handle 18. The device includes guides 19 which are provided with flanges 20, as shown in Figs. 1, 2, 3, and 6. Provided between the guides 19 adjacent to the ends are spacers 21 for the purpose of allowing room between the guides to permit the blade 16 of the saw 15 to be inserted between the guides 19. The guides 19 are further equipped with a plurality of apertures 22. These apertures are placed at various intervals along the guides for the accommodation of blades of various lengths. A stud 23 having a screw 24 capable of cooperating with a lock nut 25, as particularly shown in Fig. 1, is employed to tighten the guides 19 upon one end of the blade 16 when the blade has been inserted between the guides. The stud is preferably provided with a wing nut 26. A similar stud and lock nut, et cetera, are provided at the other end for a similar purpose. By means of the foregoing the guides may be adjusted upon the blade and locked thereupon in position for cooperation with the rest of the mechanism to be described.

For cooperation with the guides and adapted to reciprocate thereupon, is a sliding carriage 27 in which the actual filing mechanism is designed to be mounted. The sliding carriage comprises a left reciprocating block 28 and a right reciprocating block 29 which are provided with horizontal slots 30, 31, respectively. The purpose of these slots 30, 31, is to enable the carriage 27 to be slidably mounted upon the flanges 20 of the guides 19, said flanges working in the slots 30 and 31. Located between the blocks 28 and 29 there is a vertical slot 32, the function of which is to provide room therebetween for the teeth 17 of the blade 16 which extend slightly above the plane of the flanges 20 of the guides 19, as shown in Figs. 3 and 6. The blocks 28 and 29 are cut away as at 33, to provide a recessed portion to expose the teeth 17 of the blade 16, as shown in Figs. 2 and 4. The end top portions of the blocks 28 and 29 are joined together by plates 34 and 35, respectively. The inner portions of the blocks 28 and 29 where they are cut away as at 33 to expose the saw teeth and afford clearance for adjustment and operation are beveled, as at 36 and 37, as shown in Fig. 4. The purpose of the beveling is to eliminate the corners of the blocks to allow for a greater range in the lateral movement of the file.

Pivotally mounted at 38 and 39 upon the sliding carriage 27 are two posts 40, 41, respectively, as shown in Fig. 5. The plate 34 is equipped with a longitudinal slot 42 in which to permit longitudinal movement of the pivot 38 of the post 40 there-

in. The posts 40 and 41 are provided at their upper ends with screw-threaded necks 43 and 44 adapted to receive screw-threaded caps 45 and 46 and also with slots 47 and 48 in which supporting guides or cradles 49 and 50 are pivotally mounted at 51 and 52, respectively, as shown particularly in Figs. 2, 3, 4, and 5. The bottom surfaces 53 and 54 of the posts 40 and 41 are inclined and concave, as particularly shown in Fig. 5, and the inclination is shown to be in only one direction. The purpose of the foregoing mechanism is to provide elements for guiding the mechanism hereafter to be described, and to limit the angularity of the working stroke of the file in relation to the teeth.

Each of the posts 40 and 41 at the lower end thereof is provided with flanges 55 and 56. Upon the flange 56 of the post there are provided teeth 57, as particularly shown in Fig. 4. Adapted to cooperate with the teeth 57 is a locking latch 58 in a housing 59 which is mounted upon the plate 35 by means of screws 60. The latch 58 extends through the housing 59, as shown in Fig. 5, and is provided with a shoulder 61 which is connected to a stem 62 extending through a plug 63 screw-threaded in the housing 59. At the outer end of the stem is a knurled knob 64. The shoulder 61 is normally held seated against the lower end of the interior of the housing 59 by means of a spring 65 and is adapted to be removed therefrom by retracting the stem 62 by means of the knurled knob 64 through the plug 63. Said latch 58 is located adjacent to the teeth 57 so as to be capable of being inserted between any of said teeth and thereby locking the pivotally mounted post 41 against rotation. In other words, in case it is desired to place the supporting guide or cradle 50 in a desired lateral relationship to the device, the latch 58 may be withdrawn from its normal engagement with the teeth 57 of the flange 56 at the base of the post 41 and the same will thereupon be free to pivot. It may then be pivoted until the supporting guide or cradle 50 has been turned to the desired lateral direction and the position of the teeth 57 has been altered accordingly, and the latch 58 may thereupon be released and allowed to become engaged with the teeth 57. By this means, when the proper relationship has been established for the supporting guide or cradle 50, the same may be maintained indefinitely by the engagement between the latch 58 and the teeth 57.

As shown in Figs. 3, 5 and 6, the post 41 has a chamber 66 formed in the neck portion 44 thereof adapted to receive a spherical enlargement 67 of a stem 68 of a knob 69. The stem 68 extends through an opening 70 in the neck portion 44. The spherical enlargement 67, the stem 68, and the knob 69 are preferably integral and are provided with a threaded bore 71 constructed and arranged to receive a screw-threaded extension 72 of a yoke member 73, the legs of which are pivotally attached at their outer ends 74 to the supporting element or cradle 50. As stated hereinbefore, the neck portion 44 has a screw-threaded cap member 46 which serves to lock the spherical enlargement 67 against rotation when the same is not desired and thereby holds the cradle in the desired angularly adjusted position. The mechanism just described is to regulate the vertical inclination of the supporting element or cradle 50 which, as will be seen hereafter, affects in an important degree the ultimate action of the file. In other words, if it is desired to adjust the supporting guide or cradle on its pivot, all that it is necessary to do is to unscrew the cap member 46 until it is out of engagement with the spherical enlargement 67 and the knob 69 may then be rotated, which will cause the stem 72 to move in or out of the threaded bore 71 of the spherical enlargement 67, stem 68 and knob 69, and thereby the supporting guide or cradle 50 which is attached to the stem 72 by means of the yoke 73 will be tilted accordingly as the knob 69 is rotated in one direction or the other.

As stated before, when the desired inclination has been obtained the device may be locked by screwing the cap member 46 into position in the neck 44 of the post 41. The opening 75 by means of which the extension 72 extends into the neck portion 44 and into the spherical enlargement 67, is elongated. The reason for this is that in the normal operation of the extension 72 in its passage through the bore 71 of the spherical enlargement 67, the stem 68 and the knob 69, the angular position of the extension 72 will be altered and it will have the nature of a rocking action. The elongation is provided to allow for the rocking.

Adapted to be supported by and to ride in the supporting guides or cradles 49 and 50 are parallel rods 76 and 77, as shown in Figs. 1, 2, 3, 4, 5, and 6. As also particularly shown in Fig. 1, the rods 76 and 77 are connected by means of plates 78 and 79 and retained therein by means of heads 80 and screw-threaded wing nuts 81 which are adapted to thread on the screw-threaded portions 82 of the rods 76 and 77 which extend through apertures 83 in the plate 78. At the other extremities the rods extend through apertures 84 in the end plate 79.

Also provided in the end plate 78 is an aperture 85, and inserted in said aperture is the reduced screw-threaded portion 86 of a lock head 87. A knurled knob 88, which is internally threaded, is adapated to thread on the outer end of the reduced portion 86 which serves to clamp the lock head 87 to the plate 78. Extending through the end plate 78 and fixed thereto is a pin 89 having a lug 90 integral therewith and adapted to mesh with any pair of teeth 91 which are provided upon the lock head 87 and lock same against rotation. A set screw 92 is provided to thread in a threaded bore 93 in the lock head 87 and projects into a triangular socket 94 so as to engage against one side 95 of a file 96 which may be located in said socket 94.

By means of the foregoing mechanism it may be observed that a file 96 may be placed in the socket 94 and although the file may not be snugly fitted therein, movement of the file in the socket may be eliminated by manipulating the set screw 92. Further, when the file 96 has been properly adjusted in the socket 94 of the lock head 87 and it is desired to attain a definite vertical relationship between the sides of the file and the teeth to be filed, the file may be rotated with the lock head until the desired relationship is attained, and by means of intermeshing the lug 90 between any two of the teeth 91 the desired relationship may be maintained and movement of the lock head 87 will be prevented.

In the mechanism just described we have shown the means for holding one end of the file 96. At the other end the file is retained by gripping jaws 97 for grasping and retaining the reduced shank portion 98 of the file. The gripping jaws 97 are provided with a threaded portion 99 and conic

shoulders 100. Located outside the gripping jaws 97 is a clamping sleeve 101 which is internally threaded at 102 for cooperation with the threaded portion 99 of the gripping jaws 97. The clamping sleeve 101 is also provided with a conical shoulder 103 to register with the conical shoulder 100. This chuck construction has a shank extension 104 screw-threaded into the ferrule portion 105 of an operating handle 106 and it extends through an elongated opening 107 in the plate 79.

Provided adjacent the handle 106 is a knurled nut 108 for cooperating with the handle to clamp the end plate, said nut being internally threaded to cooperate with the threads on the shank portion 104 of the ferrule 105. Located also adjacent the handle but on the opposite side of the plate 79 is a spacer 109, and adjacent thereto is a collar 110 having a stud 111 threaded as at 112 and which extends through a slot 113 in a lug 114, which, in the preferred form, shown in Figs. 1, 3 and 11, is integral with the plate 79. A screw-threaded thumb nut 115 having an annular grooved portion 116 to register with the lug 114 is positioned on the outer end of the stud or bolt 111. The mechanism just described relates to the means for adjustably holding the end of the file which is nearer the handle. The collar 110 with the stud or bolt 111 and the thumb nut 115 are provided to true the file with respect to the parallel rods 76 and 77. By rotating the thumb nut 115 the mechanism will be altered accordingly, the opening 107 being elongated to allow for vertical movement of the file holding means in the plate 79.

In operation the guides 19 with their flanges 20 are mounted upon the saw blade and locked thereupon by means of the lock nuts and wing nuts described. The sliding carriage 27 is then mounted upon the flanges 20 of the guides 19 by placing the horizontal slots 30 and 31 in registry with the flanges 20 and inserting the flanges therein. By this means the guides will support and enable the carriage to reciprocate thereupon. As shown in the drawings, the teeth of the saw extend somewhat above the upper plane of the flanges, and as especially shown in Figs. 4 and 5, the teeth will extend upwardly through the vertical slot 32 in the sliding carriage and will contact with the file 96. The file is then in position to file a tooth of the saw by means of reciprocating the handle and the units carried thereby in the adjustable supporting guides or cradles. When the filing of one tooth has been completed and it is desired to proceed to the next, the file may be lifted out of mesh with the tooth by lifting the handle which will cause the rods supporting the file to be lifted in the cradles. By manipulating the handle the sliding carriage may then be caused to move longitudinally to a point where the file is positioned over the next tooth to be filed.

After the sliding carriage has been reciprocated to a point where the file is superimposed over a tooth which is to be filed, it may be desired to establish various relationships between the file and the tooth in order that the tooth may be filed according to a variety of specifications. For example, if it is desired to attain a certain angularity in the tooth serration, the knurled knob 88 on the reduced screw-threaded portion 86 of the lock head 87 may be unscrewed and the clamping sleeve 101 in the chuck arrangement for holding the other end of the file may be unscrewed to release the file at that end. After the lock head 87 is drawn out of engagement with the lug 90 it may then be rotated until the desired angular position of the file is attained, when the teeth 91 of the lock head 87 may then be placed again in mesh with the lug 90 and the knurled knob 88 may then be screwed back upon the reduced screw-threaded portion 86 of the lock head 87. The other end of the file may then be locked by tightening the clamping sleeve 101.

It may further be found that one end of the file is lower than the other, and it may be desired to true the file with respect to the teeth to be filed. To accomplish this, as stated hereinbefore, it is necessary to manipulate the knurled nut 115 which will cause the shank extension 104 to be raised or lowered in the elongated opening 107. To do this, it is also necessary to loosen the nut 108 and ferrule portion 105.

In case it is desired to attain a certain horizontal angular adjustment, the knurled knob 64 may be retracted to cause the locking latch 58 to be released from engagement with the teeth 57. In this condition by means of the handle the device may be rotated to the desired position. When this position has been attained the knurled knob 64 may be released, permitting the locking latch 58 again to be sprung into engagement with the teeth 57. In case it should be desired to attain a definite longitudinal angular relationship the knob 69 may be rotated to cause the screw-threaded extension 72 to move in one direction or the other and accordingly to adjust the supporting guide or cradle 50 on its pivot.

It may be observed that the file is off center between the rods 76 and 77. The purpose of this arrangement is to give the file more leeway in its horizontal angular adjustment and prevent any binding within the recessed portion 33. It may also be noticed that one of the supporting guides or cradles, to-wit, 50, is longer than the other. The advantage of this arrangement is that greater leverage is given in effecting the angular adjustment of the supporting guide or cradle and more ample bearing is afforded for the rod in its reciprocatory movement thereon. It is obvious from the foregoing description that inasmuch as the rod 77 which works in cradle 50 is linked up to rod 76 by means of plates 78 and 79, that any adjustment caused in rod 77 by means of the cradle 50 will be transmitted to rod 76. It must also be obvious from the foregoing that in the working operation of the device the sliding carriage 27 is adjusted on the guides 19 to a position above the tooth which it is desired to file, and the file is placed in contact with the tooth and reciprocated transversely to the sliding carriage 27, through the recessed portions 33 thereof.

While I have illustrated and described the preferred form of construction for carrying my invention into effect, this is capable of variation and modification without departing from the spirit of the invention. I, therefore, do not wish to be limited to the precise details of construction set forth, but desire to avail myself of such variations and modifications as come within the scope of the appended claims.

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

1. The combination with a guide detachably mounted on a saw adjacent the teeth thereof, of a carriage slidably supported on said guide, and means for supporting a file on said carriage whereby said file may be reciprocated transversely of the saw, said means including a pair of posts pivotally mounted for adjustment upon said carriage, channel members pivotally mounted on

said posts, a pair of reciprocatory rods adapted to work in said channel members, plates connecting said rods, and a file mounted in said plates.

2. The combination with a guide detachably mounted on a saw adjacent the teeth thereof, of a carriage slidably supported on said guide, means for supporting a file on said carriage whereby said file may be reciprocated transversely of the saw, said means including a pair of posts pivotally mounted for adjustment upon said carriage, channel members pivotally mounted on said posts, a pair of reciprocatory rods adapted to work in said channel members, plates connecting said rods, and a file mounted in said plates, and means for securing rotative adjustment of the file, including a lock head mounted in one of said plates, said lock head having teeth thereon, and a lug on said plate adapted to engage said teeth and thereby secure the lock head against rotative movement.

3. The combination with a guide detachably mounted on a saw adjacent the teeth thereof, of a carriage slidably supported on said guide, means for supporting a file on said carriage whereby said file may be reciprocated transversely of the saw, said means including a pair of posts pivotally mounted for adjustment upon said carriage, channel members pivotally mounted to said posts, a pair of reciprocatory rods adapted to work in said channel members, plates connecting said rods, and a file mounted in said plates, and means for securing rotative adjustment of the file, including a lock head mounted in one of said plates, said lock head having teeth thereon, and a lug on said plate adapted to engage said teeth and thereby secure the lock head against rotative movement, said lock head having a socket therein and adapted to receive the end of the file.

4. The combination with a guide detachably mounted on a saw adjacent the teeth thereof, of a carriage slidably supported on said guide, means for supporting a file on said carriage whereby said file may be reciprocated transversely of the saw, said means including a pair of posts pivotally mounted for adjustment upon said carriage, channel members pivotally mounted to said posts, a pair of reciprocatory rods adapted to work in sand channel members, plates connecting said rods, and a file mounted in said plates, means for securing rotative adjustment of the file, including a lock head mounted in one of said plates, said lock head having teeth thereon, a lug on said plate adapted to engage said teeth and thereby secure the lock head against rotative movement, and chuck mechanism for supporting the other end of said file with reference to the other of said plates.

5. In a device of the class described, a guide adapted to be detachably mounted on a saw adjacent the teeth thereof, a carriage slidably supported on said guide, a pair of posts pivotally mounted on said carriage, one of said posts being longitudinally adjustable on the carriage, channel members pivotally mounted on said posts, a pair of reciprocatory rods adapted to work in said channel members, plates connecting the ends of said rods and file supporting means on said plate, substantially as described.

6. In a device of the class described, a guide adapted to be detachably mounted on a saw adjacent the teeth thereof, a carriage slidably supported on said guide, a pair of posts pivotally mounted on said carriage, channel members pivotally mounted on the posts, a pair of reciprocatory rods adapted to work in said channel members, plates connecting said rods, file supporting means on said plates, a yoke pivotally connected to one of said channel members and having a threaded stem, a member swiveled in the corresponding post and threaded on said stem for adjusting the horizontal angle of the channel member, substantially as described.

7. A device as set forth in claim 6 further characterized by a clamping screw threaded in the post and adapted to engage said swiveled member to lock the device in adjusted position, substantially as described.

8. A device as set forth in claim 5 in which the post having pivotal movement only is provided with a notched flange, and a latch on the carriage adapted to engage the notches on said flange, as and for the purpose specified.

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