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CHAIN SAW TOOTH GRINDER AND SUPPORT

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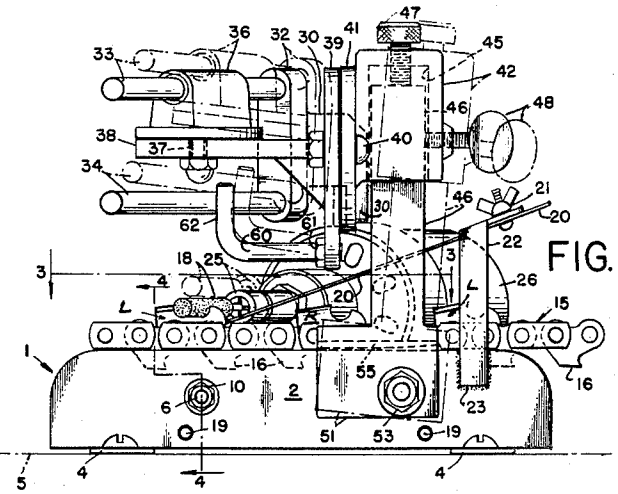


FIG. 1

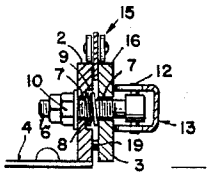


FIG. 4

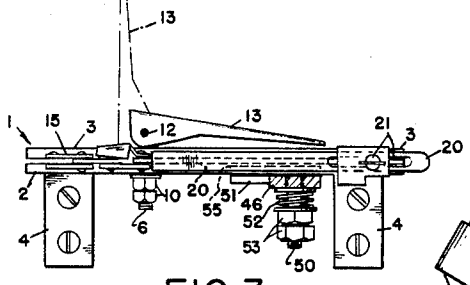


FIG. 3

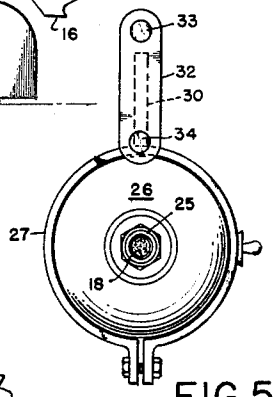


FIG. 5

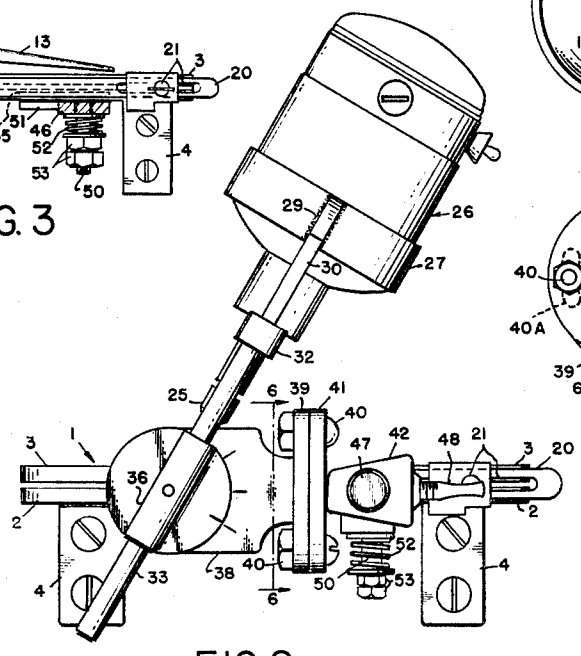


FIG. 2

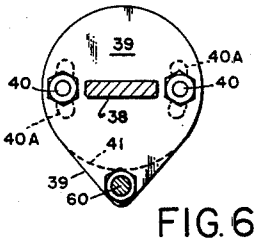


FIG. 6

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CHAIN SAW TOOTH GRINDER AND SUPPORT

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2 Claims. (Cl. 76—40)

This invention relates broadly to improvements in devices for sharpening saws and specifically to devices for sharpening the teeth of chain saws.

It is the principal object of the present invention to provide a sharpening device of the character described in the form of a grinder in combination with a permanent mounting for shop use and operative means for the grinder and automatic locating and holding means for each individual saw tooth being dealt with whereby a uniform edge can be applied to all the teeth of a given series.

The foregoing and other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawing forming a part hereof and in which:

Figure 1 is a side elevational view of our invention showing a fragment of a chain saw removed from its saw bar and clamped in a sharpening position within the base of the device.

Figure 2 is a top plan view of Figure 1 with the chain saw removed.

Figure 3 is a sectional top plan view on a reduced scale taken along the line 3—3 of Figure 1.

Figure 4 is a sectional end view taken along the line 4—4 of Figure 1.

Figure 5 is an end view of a grinder and a support therefor; and

Figure 6 is a sectional detail view taken approximately along the line 6—6 of Figure 2.

With continuing reference to the drawing, in which like references of character designate like parts throughout the several views, reference numeral 1 indicates generally a base comprising a fixed vertical plate 2 and vertical clamping plate 3. The fixed plate is provided with apertured feet 4 for permanent attachment to a work-bench or other suitable horizontal support indicated at 5. The clamping plate is carried by the fixed plate by means of bolt 6 extending through aligned apertures 7 in both plates and surrounded by a compression spring 8 whose one end bears against the plate 3 and whose opposite end bears against the plate 2 within a recess 9 concentric with the aperture 7 in the plate. The bolt is provided with locknuts 10 at one of its ends and the head at its opposite end has a pin 12 extending therethrough which also extends through and provides a fulcrum for one end of a cam lever 13.

With the cam lever in the released broken line position shown in Figure 3 the top edges of the plates 2 and 3 provide a track along which a chain saw 15 after removal from the saw bar can be drawn while guided by the link guides 16 moving between the plates. For locking the chain saw to the base and hence any selected tooth thereof in relation to a cylindrical type grinding wheel 18 it is merely necessary to swing the cam lever into the full line position shown. The clamping plate is stabilized during movement into and out of clamping positions by guide pins 19 extending therethrough and secured to the plate 2.

The saw teeth are pulled along the track progressively into position to receive the grinding wheel and then locked as aforesaid. To facilitate such positioning and to insure uniform grinding of all the teeth in the series we provide a detent in the form of a leaf spring 20 adjustably secured as at 21 at one of its ends to the top end of a vertical support 22 welded or otherwise secured as at 23 at its bottom end to the fixed base plate 2. The opposite end of the detent is in sprung contact with the top of the chain saw and as the chain saw is moved to the left as viewed in Figure 1 said opposite end will drag over and snap down behind each tooth and engage the back end thereof to hold the engaged tooth against displacement until its guide 16 is securely clamped between the base plates 2 and 3 as above described.

The grinding wheel 18 is chucked as at 25 to the shaft of a motor 26 removably secured to a clamping band 27 which is welded as at 29 to the bottom end of a right angular bracket 30. The opposite or free end of the bracket is provided with a vertical plate 32 to which are secured the inner ends of parallel top and bottom guide arms 33 and 34. The top guide arm 33 extends through and thereby supports the motor 26 relative to a slide bearing 36 pivotally mounted as at 37 to an indexing platform 38 integrated with a vertical supporting plate 39 adjustably attached by bolts 40 and arcuate slots 40A to a face plate 41 of a head 42. The head is provided with a downwardly opening recess 45 for placement over the top end of a vertical support 46 and is vertically adjustable and lockable relative to the support by thumbscrews 47 and 48.

The support is mounted for limited swinging movement relative to the base by means of a bolt 50 secured to the fixed base plate 2, extending outwardly therefrom, through the enlarged bottom portion 51 of the support, surrounded by a spring 52 and provided with adjustable locknuts 53. The swinging movement of the support 46 is limited by a ledge 55 extending inwardly from the support, gradually reduced in thickness from left to right as shown in Figure 1, and overlying the top edge of the fixed base plate 2. By this arrangement the motor and hence the grinding wheel can be tilted upwardly into the broken line positions shown so that the grinding wheel will clear the finished tooth as it is moved away from the grinding position and also clear the oncoming tooth. When the oncoming tooth reaches the grinding position the detent will hold it in place as aforesaid while the base plates are being clamped to the tooth guides 16 by returning the cam lever 13 to the full line position shown in Figure 3. The support is then swung back toward its vertical position which will automatically drop the grinding wheel onto the tooth beneath it. The depth of the cut, which will thus be uniform in all the sharpened teeth, is controlled by the left end of the ledge 55 coming into contact with the top edge of the base plate 2 and, of course, the vertical setting of the head 42 relative to the support 46. To control the width of the cut relative to the length of the tooth we provide a limit stop in the form of an arm 60 secured at one of its ends as at 61 to the bottom of the plate 39 and upturned as at 62 at its opposite end to abut the bottom guide arm 34.

Either the bracket 29 or the housing of the motor 26 provides a convenient handgrip for an operator since the grinder and its related and supporting parts move only in short arcuate path while being operated.

For tilting the grinding wheel into an upwardly or downwardly inclined operative position relative to the saw teeth, it is merely necessary to loosen the nuts on the bolts 40, tilt the indexing platform 38 to the desired angle, then reset the nuts.

Since the teeth of a chain saw are positioned thereon so that their cutting faces are oppositely disposed in

alternate relation to each other, such teeth, for example, the left-facing teeth L, may be filed from one side of the base 1 with the guide bars set in the angular position shown in Figures 1 and 2, then by swinging the guide bars 33 and 34 relative to the indexing platform 38 by means of the rotatable slide bearing 36, the right-facing teeth R may be filed from the same side of the base.

While we have shown a particular form of embodiment of our invention we are aware that many minor changes therein will readily suggest themselves to others skilled in the art without departing from the spirit and scope of the invention. Having thus described our invention what we claim as new and desire to protect by Letters Patent is:

1. A chain saw sharpener comprising a base having a top edge and a bottom edge and adapted for fixed attachment to a supporting surface and to slidably support a chain saw along its top edge, manually operable means carried by the base and adapted to lock a chain saw to said top edge of the base, a normally vertically disposed supporting member swingably attached at its bottom end to the base and limited in movement from vertical to an angular position to one side thereof, a head adjustably supported by the supporting member, a horizontal indexing platform carried by the head, a pair of guide arms slidably and pivotally carried by said platform and terminating at one of their ends in a bracket, means for securing a grinder to said bracket with the wheel thereof extending across a chain saw disposed upon the base, whereby swinging said vertically disposed supporting member off the vertical to one side thereof will elevate the grinder wheel from an operative to an inoperative position relative to a sharpened saw tooth and upon return of said supporting member to a vertical position will position the grinder wheel for engagement with a following tooth moved manually into a position beneath it.

2. A chain saw sharpener comprising a base including an elongated vertically disposed plate having a top edge and a bottom edge and adapted at its bottom edge for fixed attachment to a supporting surface, a matching plate carried by and movable toward and away from the fixed plate whereby to slidably support along the top edges of both plates a chain saw having link guides extending downwardly between both plates, manually operable means carried by one plate and attached to the other and adapted to clamp both plates to said link guides, a normally vertically disposed supporting member swingably attached at its bottom end to the base and limited in movement from vertical to an angular position to one side thereof, a head adjustably supported by the supporting member, a horizontal indexing platform carried by the head, a pair of guide arms slidably and pivotally carried by said platform and terminating at one of their ends in a bracket, means for securing a grinder to said bracket with the wheel thereof extending across a chain saw disposed upon the base, whereby swinging said vertically disposed supporting member off the vertical to one side thereof will elevate the grinder wheel from an operative to an inoperative position relative to a sharpened saw tooth and upon return of said supporting member to a vertical position will position the grinder wheel for engagement with a following tooth moved manually into a position beneath it.

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