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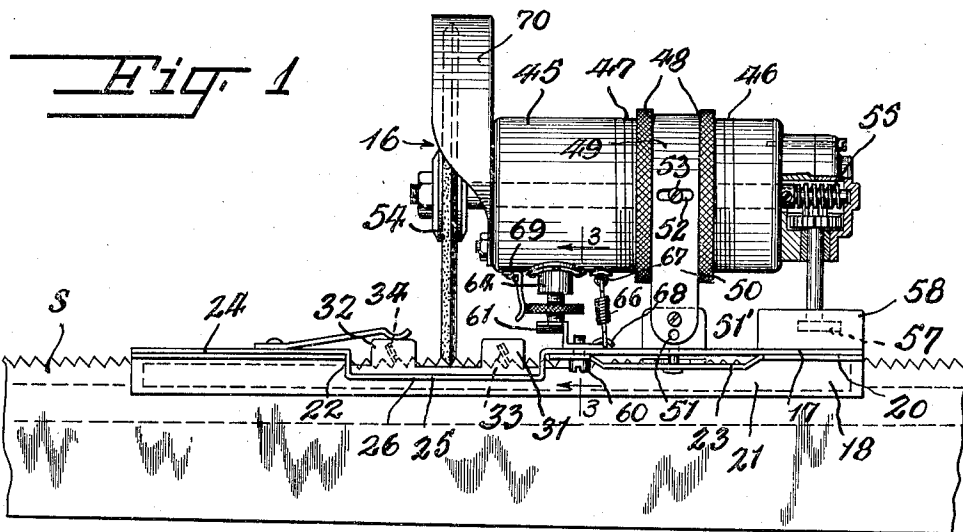
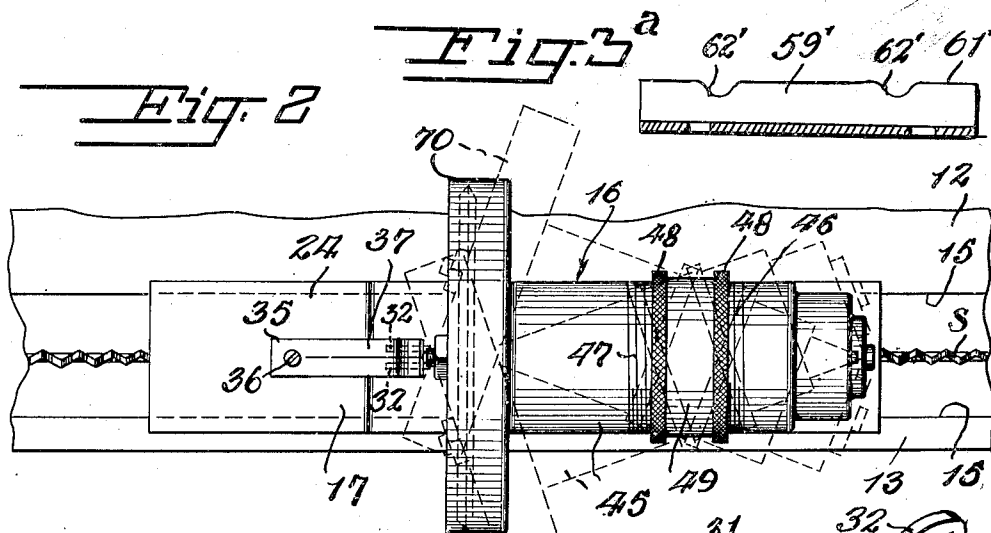
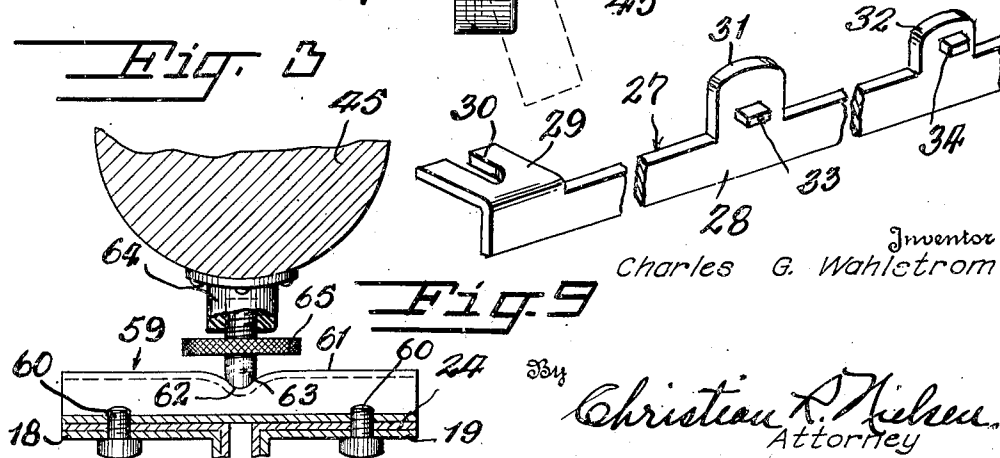
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2,490,244

SAW SHARPENING DEVICE

Filed Nov. 23, 1948

2 Sheets-Sheet 1



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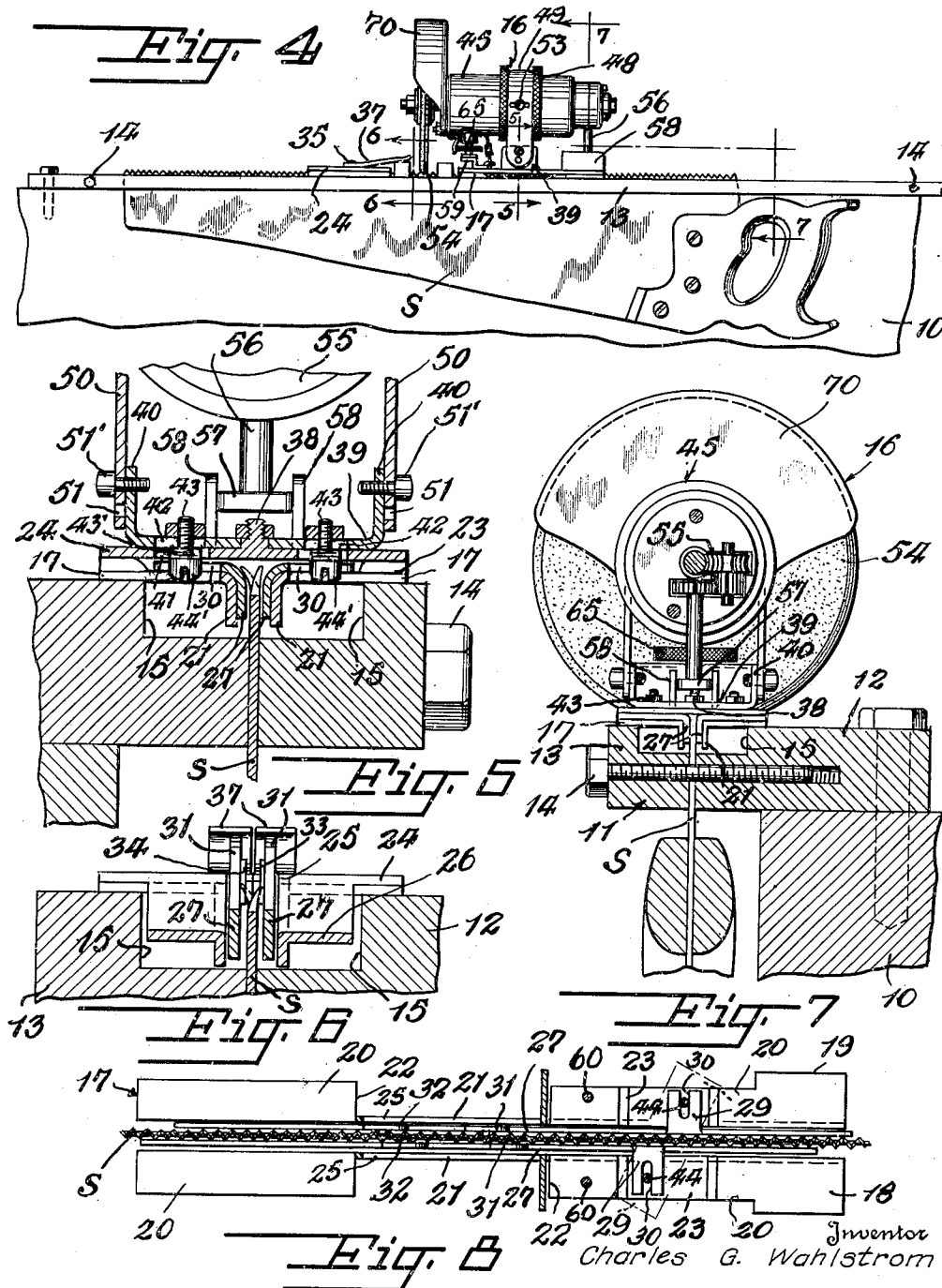
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SAW SHARPENING DEVICE

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5 Claims. (Cl. 76-42)

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This invention relates to saw sharpeners and it consists in the contructions, arrangements and combinations herein described and claimed.

It is a particular object of the invention to provide an improved and simplified construction over that shown and described in my United States patent, issued September 23, 1947; Number 2,427,754, and particularly with respect to movement of the device along the teeth of a saw blade being sharpened.

More particularly it is an object of the invention to provide a sharpening device for saws wherein a base member is employed having a longitudinal slot for reception of a saw; a motor, a mount therefor, and an emery wheel being oscillatably mounted thereon; there being a pair of slide members within opposed walls of the longitudinal slot, the slide members having lugs for engaging teeth of the saw and further having operative connection with the motor mount so as to reciprocate the slides alternately upon oscillation of the motor and mount and thereby progressively advancing the sharpener along the saw.

It is a still further object of the invention to provide a novel cam actuating means between the base and the motor to effect oscillation of the motor under rotation of the emery disk.

A further object of the invention is the provision of adjusting means whereby the device may be quickly set to sharpen course or fine tooth saws, as well as rip or cross cut saws.

A still further object of the invention is the provision of means between motor and the base whereby the former may be longitudinally adjusted with respect to the latter so that the emery disk may be adjusted to the teeth of a saw.

Additional objects, advantages and features of the invention will be apparent from the following description considered in conjunction with the accompanying drawings, wherein:

Figure 1 is a side elevation of the sharpening device mounted upon a saw, with the front clamp removed;

Figure 2 is a top plan view thereof indicating, by dotted lines, the oscillating motions of the sharpener;

Figure 3 is a cross section on the line 3-3 of Figure 1;

Figure 3a is a cross section of a guide employed when sharpening teeth of a cross cut saw;

Figure 4 is a reduced side elevation of the sharpening device, illustrating the manner of securing a saw in operative engagement with the sharpening device;

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Figure 5 is an enlarged cross section on the line 5-5 of Figure 4;

Figure 6 is an enlarged cross section on the line 6-6 of Figure 4;

Figure 7 is an enlarged cross sectional view on the line 7-7 of Figure 4, illustrating the drive for the emery disk and clamping means for securing the saw in position;

Figure 8 is a top plan view partly in section, illustrating, by dotted lines, the movement of the motor mount to effect alternate engagement of saw teeth to motivate the sharpener longitudinally of the saw.

Figure 9 is a fragmentary perspective view of one of the saw teeth engaging members.

There is illustrated a portion of a work bench or other suitable support 10 upon which there is secured a clamp generally indicated at 11. The clamp comprises a fixed jaw 12 and a movable jaw 13, the latter being drawn against the former by means of bolts 14 for the purpose of rigidly securing a saw blade therebetween, the bolts being spaced at points beyond the extremities of the saw blade, as clearly shown in Figure 4. The jaws 12 and 13 are rabbeted upon their upper faces forming opposed channels 15, which function for support of the sharpening device now to be described.

The sharpening device, generally indicated by the reference character 16, comprises a base member 17 consisting of a pair of angle iron members 18 and 19, each having a lateral flange 20 adapted to rest upon the jaws 12 and 13 of the clamp with angle portions 21 arranged in parallel spaced relation and positioned within the channel 15 of the clamp. The lateral flanges 20 of angle iron members 18 and 19 are cut away as indicated at 22 leaving only the angle portions 21. The angle irons 18 and 19 function as a guide for a saw blade and by removing the lateral flanges a path for an emery wheel is provided thereacross. Inwardly of the rear end of each of the angle irons 18 and 19 the flanges 20 are formed with a lowered surface 23 for a purpose presently to be described.

A plate 24, the same length as the angle irons, is secured to the flanges of the angle iron members to effect their securement together and at the portion where the flanges 20 have been removed, the plate is slotted as at 25 and formed with depressed portion 26 so as to align with the flanges permitting rotation of an emery across the depressed portion 26 of the plate.

It will be noted that the angle portions 21 form a parallel guide way, and within the guide

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way thus formed, a pair of saw tooth engaging members 27 are reciprocally mounted, one being positioned at respective sides of the angle portions as clearly shown in Figures 5 and 6 of the drawings. The construction of the members 27 is identical, and as clearly shown in Figure 9 of the drawings, comprises a metallic plate 28 of elongated form, one end of which is provided with right angularly disposed horizontal ear 29 having an open elongated slot 30. Intermediate of the length of the plate an upstanding tongue 31 is formed and a similar tongue 32 is provided at the extremity of the plate. As best seen from Figure 8, the members 27 are arranged in parallel relation upon opposite sides of the saw blade with the ears 29 positioned in the low or depressed portions 23 of respective angle irons 18 and 19. Each of the tongues 31 and 32 are formed with a right angular tooth engaging lug 33 and 34. The tongues are spaced two inches apart, so that they will be operative upon any saw, regardless of the number of teeth. A flat leaf spring 35 is secured upon the plate 24 as at 36, the spring being longitudinally split to define separate leaves 37 adapted to rest upon respective tongues 32, and thus tension the action of the member 27, yet permitting a slight vertical movement of the actuators to position the lugs 33 and 34 between teeth of a saw.

The plate 24 has an upstanding pivot 38 for oscillatingly mounting a yoke 39, the latter having upright apertured ears 40 for mounting of the motor unit, presently to be described. The plate 24 is formed with a slot 41 at respective sides of the pin 38 and the base of the yoke is similarly slotted as at 42. An actuator 43 is secured in each slot of the base of the yoke 39, here shown as a bolt 44, the head 44' of which occupies a position within respective slots 30 of the plate members 27. The head 44' has flat portions 43' disposed in the slot 41 for maintaining the bolt against rotation. The actuators 43 are adjustable along the length of the slots 41 and 42 by loosening the nut of the bolt to vary the length of travel of the members 27 to accommodate different sizes of saw teeth. Obviously, instead of the slots 41, a pair of spaced openings may be employed for securement of the actuators 43 in desired positions.

An electric motor 45 is employed consisting of a cylindrical casing exteriorly threaded as at 46 and 47, and upon these threads there is engaged respective locking rings 48 adapted to bind upon a collar 49, the latter having legs 50 for pivotal mounting in the ears 40 of the yoke. For obtaining vertical adjustment of the motor the legs 50 may be provided with two or more apertures 51 for receiving a machine bolt 51' and in order to adjust the motor horizontally with respect to the yoke, the collar is longitudinally slotted as at 52 and receives a machine screw 53 therethrough which is engaged in the motor casing. It will be understood that by loosening the screw 53 and adjusting the rings 48 as desired, the grinding disk 54 of the motor may be properly positioned with respect to teeth of a saw.

The motor includes a reduction gearing 55 having a driven shaft 56 the lower end of which has mounted thereon a cam 57 disposed between a pair of parallel upstanding plates 58 integral with the plate 24, the plates 58 extending in a plane longitudinally of the plate 24 and are of a length considerably greater than the diameter of the cam as best seen in Figure 1 of the drawings.

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Intermediate of the yoke 39 and the grinding disk 54, a guide plate 59 is detachably mounted upon the plate 24 and the angle iron members 18 and 19, by means of machine screws 60, the guide extending transversely thereacross. As clearly shown in Figures 1, 4 and 9, the guide includes a forward horizontal extension 61 of substantial width and intermediate the length thereof, a downwardly disposed recess 62 is formed, the recess having rounded surfaces at the meeting sides of the horizontal extension.

Upon the underside of the motor 45 and positioned in the medial longitudinal axis thereof, there is mounted a vertically adjustable stud 63, in the present instance, the stud is exteriorly threaded and engaged in an interiorly threaded boss 64 fixed to the motor. A knurled nut 65 is rigid with the stud to effect adjustment of the stud. The lower end of the stud is of rounded formation for smoothly traversing the extension 61 as well as the recess 62, and in order to maintain the stud in engagement with the extension, a tension spring 66 is connected between an eye 67 on the motor and a loop 68 on the base 24 (see Figures 1 and 4). A leaf spring 69 carried by the motor engages the periphery of the nut 65 for maintaining an adjustment of the stud. It will be apparent that by adjustment of the stud 63 upwardly or downwardly the motor will be raised or lowered, pivoting upon the bolts 51' and thus adjust the grinding disk 54 with respect to the teeth of a saw. The guide plate 59 is employed in conjunction with the sharpening of teeth of a rip cut saw, but when a cross cut saw is to be sharpened, the guide 59' shown in Figure 3a is substituted. In this instance, the extension 61' is formed with a pair of recesses 62' positioned to opposite sides of the longitudinal axis of the saw blade, and equally spaced therefrom.

For safety from contact with the grinding disk 54 during rotation, a shield 70 is mounted upon the forward end of motor housing.

The operation of the device will be substantially as follows: the proper guide 59 or 59' having been installed, depending upon whether a rip cut or a cross cut saw is to be sharpened, the saw being clamped between the jaws 12 and 13 by tightening the bolts 14. The sharpening device 16 is set within the rabbeted portions 15 of the clamp jaws, the angle irons 21 and tooth engaging members 27 being disposed upon respective sides of the saw blade S. The grinding disk 54 is then adjusted to the angle of the saw teeth, and when the motor is energized and manually guided, the grinding disk 54 will traverse and grind the engaged tooth, the disk having an angular cut transversely and arcuately of the saw blade as indicated by dotted lines in Figure 2. This movement of the motor and the grinding disk is effected by virtue of the rotation of the cam 57 and its contacting engagement with the upright plates 58, which, it will be recalled are integral with the plate 24, the yoke 39 oscillating upon the pin 38. Under oscillation of the yoke the heads 44' of the bolts 44 will impart alternate reciprocation of the actuators 43, and under such movement of the actuators, a vertical movement is imparted against the action of the springs 37, permitting the tongues 31 and 32 to engage between teeth of the saw, as best seen in Figure 1, and thereby advance the sharpener along the edge of the saw.

From the foregoing, it will be seen that I have provided a saw sharpening device which is automatic in operation and which may be readily ad-

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justed to the sharpening of different size and kinds of teeth of saws.

While I have shown and described a preferred form of the device, this is by way of illustration only and I consider as my own all such modifications in construction as fairly fall within the scope of the appended claims.

I claim:

1. A saw sharpener comprising an elongated base having a medial longitudinal channel to receive the blade of a saw, a pivot bolt mounted in said base and vertically disposed, a yoke oscillatably mounted on said bolt and including upright spaced arms, a motor having a grinding disk, pivotally mounted on said arms, a guide plate on the base in advance of the yoke, an adjustable stud on the bottom portion of the motor and having engagement with said guide plate for adjusting said grinding disk with respect to the teeth of the saw, means for oscillating said yoke and motor for moving the grinding disk transversely across and between a pair of teeth of the saw, and means alternately engageable with the teeth of the saw for advancing the base along the saw under oscillating movement of the motor.

2. The structure of claim 1, wherein the motor is longitudinally adjustable with respect to said yoke, and means for securing the motor in an adjusted position.

3. The structure of claim 1, in which the casing of the motor is provided with spaced right and left hand screw threads, a collar between said screw threads, a locking ring on said screw threads adapted to engage said collar, said collar having a slot and a lock bolt disposed in said slot and threadably engaged in the casing of the motor.

4. A saw sharpener comprising a base having a channel to receive the blade of a saw, an oscillatable yoke on the base, a motor carried by said yoke and including a rotatable grinding disk, said motor having a vertically disposed driven shaft, a cam on said shaft, a pair of upright plate members in contacting engagement with said cam whereby rotation of the cam will oscillate said yoke and motor to effect movement of said grinding disk transversely across and between a pair

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of teeth of the saw, a saw tooth-engaging member reciprocably positioned in opposed sides of said channel, said saw tooth-engaging member having spaced tongues for engagement with a pair of teeth of a saw, said tooth engaging members each having a lateral horizontal slotted extension at one end positioned beneath said yoke and an actuator carried by said yoke at opposite side of the vertical axis of the yoke, said actuators having a portion disposed within respective slots of said extensions.

5. A saw sharpener comprising a base having a channel to receive the blade of a saw, an oscillatable yoke on the base, a motor carried by said yoke and including a rotatable grinding disk, said motor having a vertically disposed driven shaft, a cam on said shaft, a pair of upright plate members in contacting engagement with said cam whereby rotation of the cam will oscillate said yoke and motor to effect movement of said grinding disk transversely across and between a pair of teeth of the saw, a saw tooth-engaging member reciprocably positioned in opposed sides of said channel, said tooth-engaging member having spaced tongues for engagement with a pair of teeth of a saw, said tooth-engaging members each having a lateral horizontal slotted extension at one end positioned beneath said yoke, spring means carried by the base and disposed above and in bearing engagement with the other end of said tooth-engaging members, permitting a limited upward movement of said tooth-engaging members, and an actuator carried by said yoke at opposite sides of the vertical axis of the yoke, said actuators having a portion disposed within respective slots of said extensions.

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